

# Tynemouth Software

## VIC1541 IEEE (1541 TO 2031 CONVERSION)

### OVERVIEW

This board is based on a design published in German C64'er magazine in the 1980s. The ROM in the drive needs to be changed to support the IEEE-488 bus. Details are available in the "vc1541-ieee" archive at <http://www.zimmers.net/anonftp/pub/cbm/documents/projects/ieee-488/>

### PARTS LIST

- 1 x VIC1541 IEEE488 PCB
- 3 x 100nF axial capacitor
- 2 x 3K3 Resistor
- 3 x 1N4148 signal diode
- 1 x 74LS136 quad open-collector XOR gate
- 1 x 75160 IEEE-488 data transceiver
- 1 x 75161 IEEE-488 control transceiver
- 2 x 20 pin and 1x 14 pin sockets (optional)
- 1 x 40 pin DIP socket (with central supports removed)
- 1 x 40 pin DIP double ended pin to pin
- 2 x 0.1" 1x2 pin right angled pin headers + jumper
- 1 x 0.1" 2x12 pin header or shrouded pin header as required
- Cabling for GPIB connector or 24 way edge connector

### ASSEMBLY

Start with the resistors, capacitors, and diodes. Next, the IC socket and pin to pin header need to be installed in the correct order. Start with the 40 pin socket in position in the set of pads set in from the edge of the board. Carefully remove the two internal support sections before soldering, to give easier access to the other row of pins.

Then insert the pin to pin header under the PCB in the set of pads closest to the end of the board and solder the pins that poke through the top of the PCB. You will need to go in from the side of the socket for the end pins.

Once the tricky sockets are done, the rest should be installed as normal.

There are various options for the pin header for the IEEE-488 bus, either find a space to mount a GPIB connector on the drive. Desoldering the IEC sockets should leave space, but it does mean cutting the case.

Alternatively, fit a ribbon cable and solder that to a 2x12 way 0.156" edge connector to plug into the PET's IEEE-488 port.

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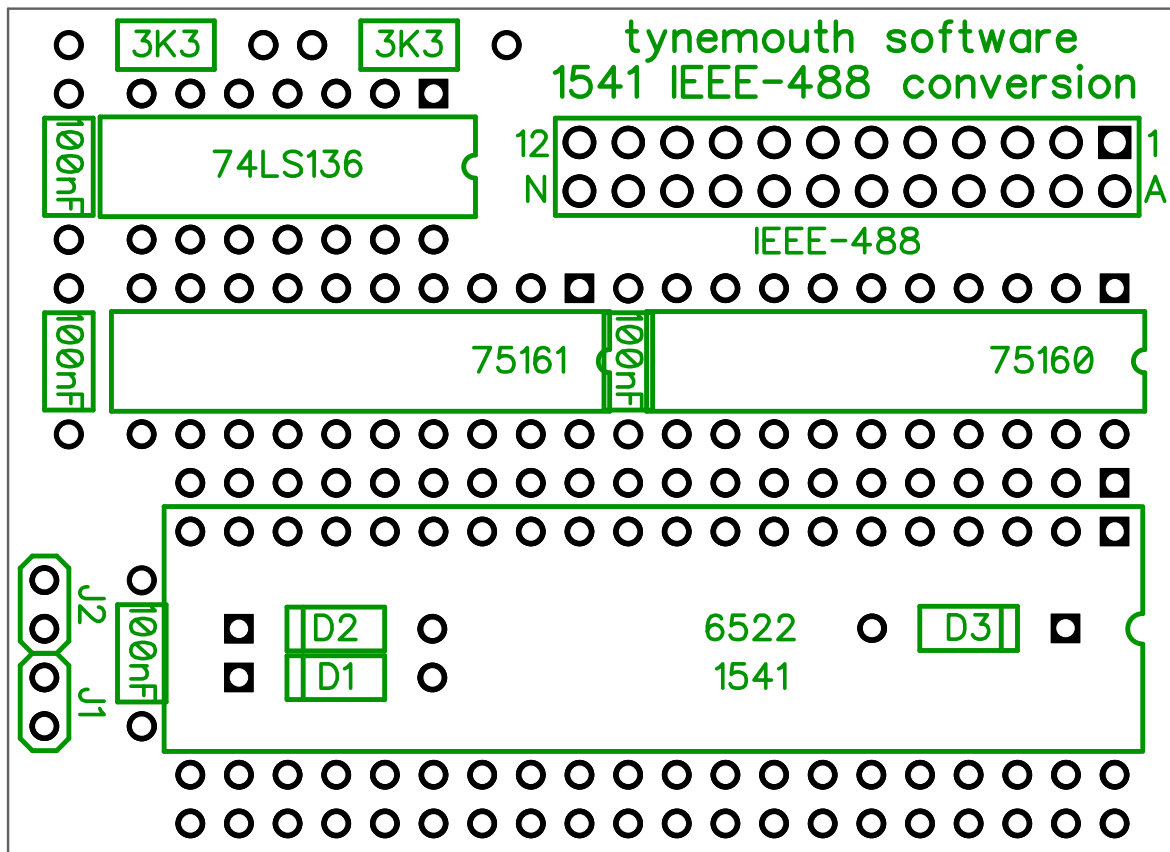
## INSTALLATION

The 6522 in socket UC3 on the 1541 should be removed and this module installed in its place. The 6522 can then be inserted into the partial pass through socket on this board.

See the following blog post for pictures of the build and installation.

<http://blog.tynemouthsoftware.co.uk/2016/08/commodore-1541-disk-drive-to-2031.html>

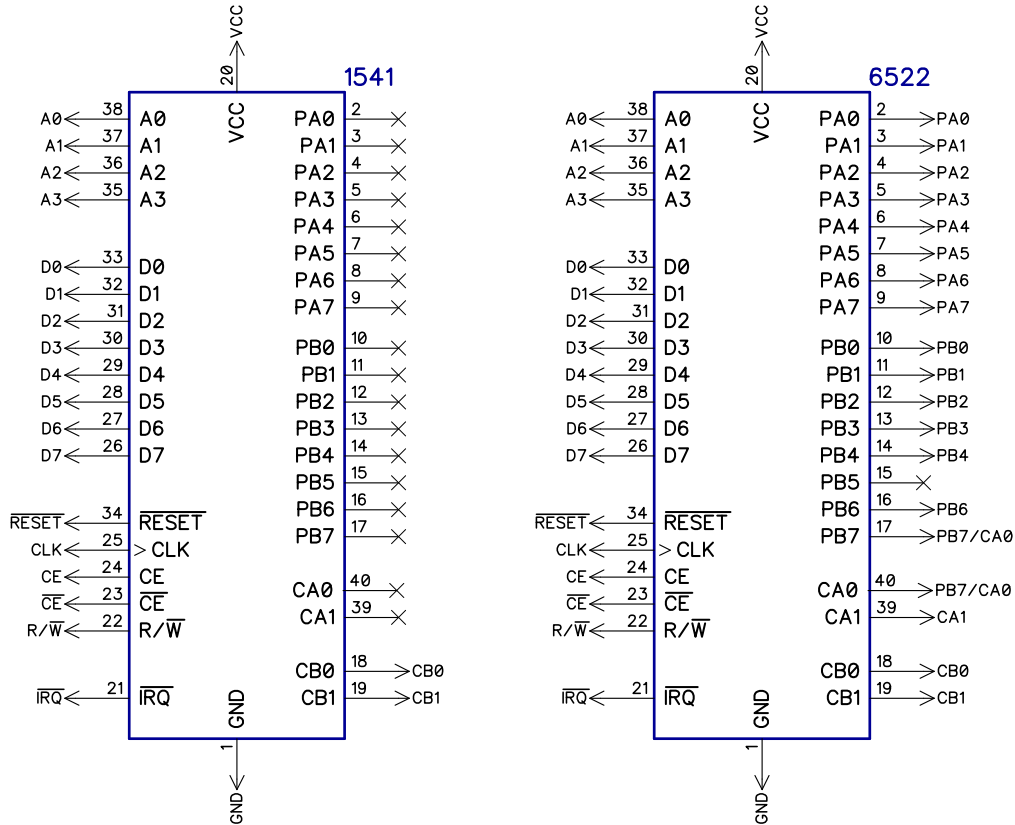
## COMPONENT PLACEMENT



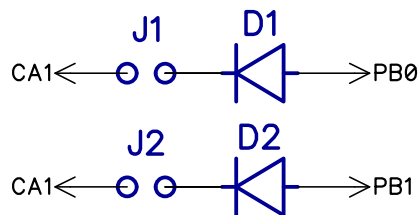
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## SCHEMATIC

This board repurposes the UC3 6522 VIA chip to drive the IEEE-488 bus. As such, the signals from ports A and B are not connected through from the board, only the data, address and control pins and CB0 and CB1 (which are used for other things in the 1541).

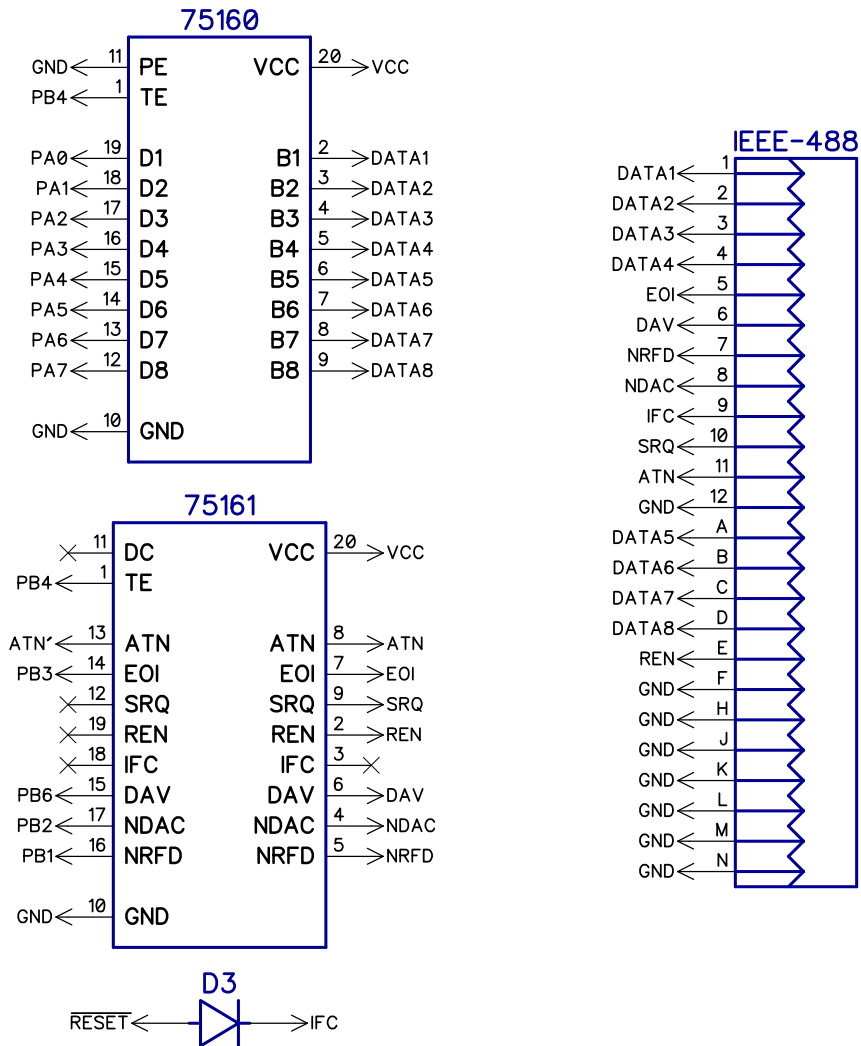


Two jumpers set the device address. The default is 8 with both jumpers installed.

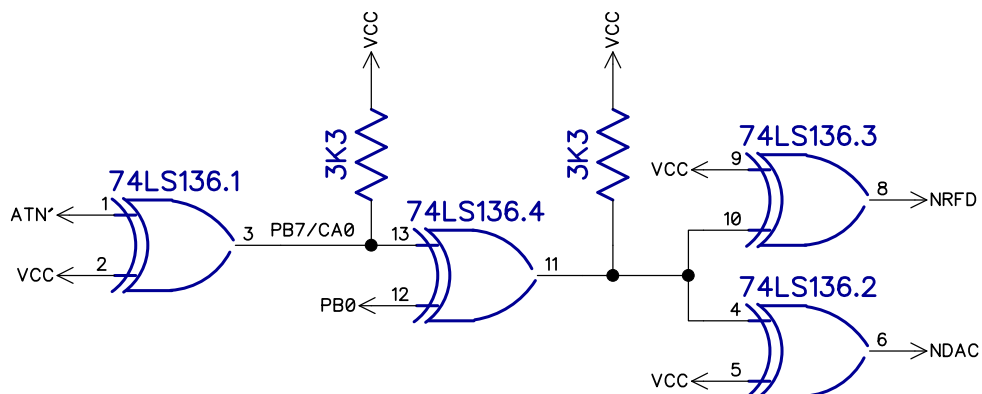


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Most of the bus IO is controlled from those chips and attached to the IEEE-488 bus via two 7516x bus transceivers (and one diode).



There is some additional logic created with the open-collector XOR gates. These generate an interrupt from the ATN signal and set the NRFD and NDAC signals active immediately, to avoid "device not present" if the software does not acknowledge the ATN signal fast enough.



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## 2364 ADAPTER

### OVERVIEW

This board will allow a 28 pin 27C64-512 EPROM to be used in place of a 24 pin 2364 mask EPROM.

Jumpers are provided to select 1-8 ROM images depending on the size of the EPROM.

### PARTS LIST

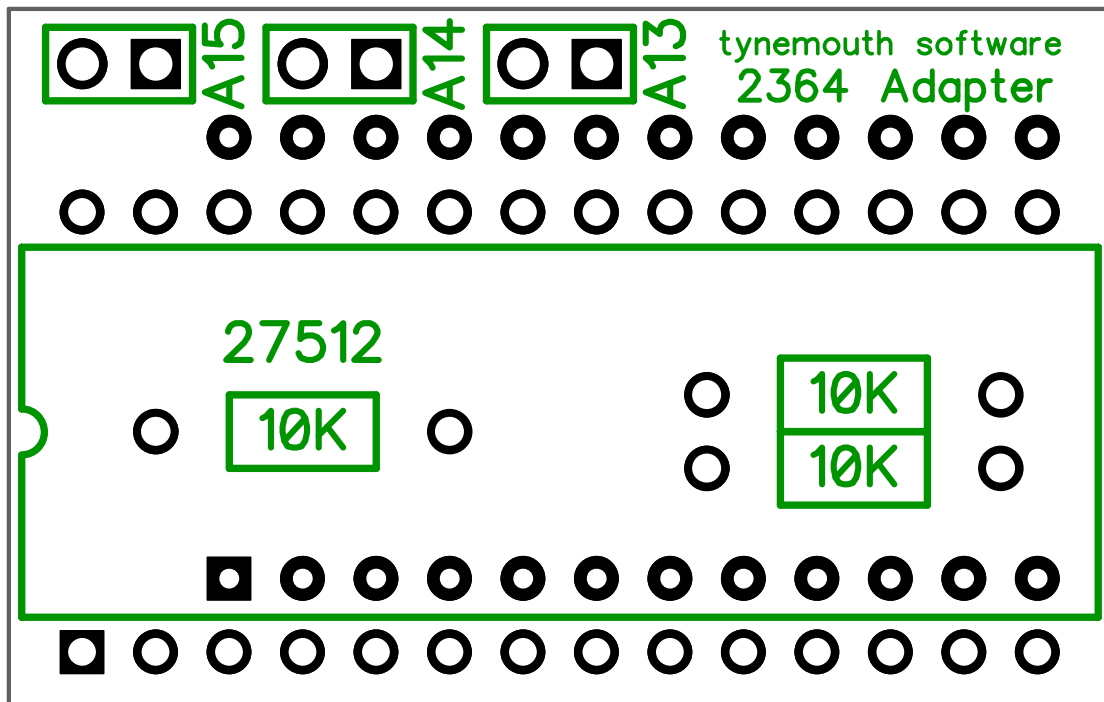
- 1 x 2364 adapter PCB
- 3 x 10K resistor (optional)
- 3 x 0.1" 1x2 pin right angled pin headers + jumper (optional)
- 1 x 28 pin DIP socket (with central support removed)
- 1 x 24 pin DIP double ended pin to pin

### ASSEMBLY

The IC socket and pin to pin header need to be installed in the correct order. Start with the 28 pin socket, carefully remove the internal support section before soldering, to give easier access to the other row of pins.

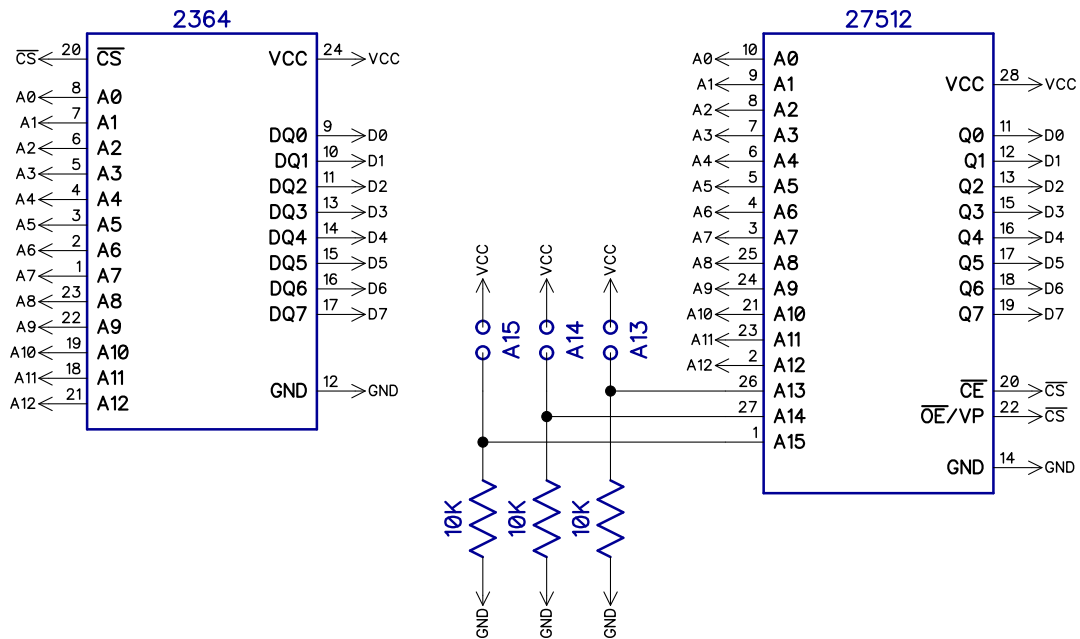
Then insert the pin to pin header under the PCB and solder the pins that poke through the top of the PCB. You will need to go in from the side of the socket for the end pins.

### COMPONENT PLACEMENT



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## SCHEMATIC



Most of the pins from the 8K 2364 socket are passed through to the 8K-64K EPROM socket.

The top three address lines on the EPROM can be selected via jumpers, where the value is logic 1 with the jumper fitted, and logic 0 with the jumper removed.

Alternatively, fit wire links, in place of the jumper only for logic 1, or in place of the resistor only for logic 0.

## ROM ADDRESSING

All the supported EPROM types have 25 pins wired identically and 3 pins with some differences. It is these three pins which are wired to the jumpers. They are labelled using the designations from a 27C512 EPROM.

Jumper	Pin	27C64	28C64	27C128	27C256	28C256	27C512
<b>A15</b>	1	VPP	NC	VPP	VPP	A14	A15
<b>A14</b>	27	PGM	WE	PGM	A14	WE	A14
<b>A13</b>	26	NC	NC	A13	A13	A13	A13

If you use a chip larger than a 27C64, you can place multiple 8K ROM images in there, and select the appropriate one using the jumpers. This table shows the jumper settings which should be used to select the ROM image. '-' indicates do not use.

A15	A14	A13	27C64	28C64	27C128	27C256	28C256	27C512
0	0	0	-	-	-	-	-	ROM 1
0	0	1	-	-	-	-	-	ROM 2
0	1	0	-	-	-	-	ROM 1	ROM 3
0	1	1	-	-	-	-	ROM 2	ROM 4
1	0	0	-	-	-	ROM 1	-	ROM 5
1	0	1	-	-	-	ROM 2	-	ROM 6
1	1	0	-	-	ROM 1	ROM 3	ROM 3	ROM 7
1	1	1	ROM 1	ROM 1	ROM 2	ROM 4	ROM 4	ROM 8