

Raspberry Pi – Universal Co-Processor Kit

Thanks for buying this Raspberry Pi Co-Processor, for the BBC Micro range including Model B, B+ and Master 128. It is also suitable for the Acorn Electron, with the correct interface. This intro leaflet will explain how to install, turn the Co-Processor on and off, and how to select different cores.

Installation

Connect the 40 way ribbon cable to the Co-Processor, so the cable faces away from the board. Then plug the other end of the cable into the Tube port under your machine. Turn your machine on, and you should see:

Acorn TUBE 6502 64K

If not, recheck the connections, and reseat the Tube end of the connector half a dozen or so times, as it could have become tarnished over the years. If using on a BBC Master, and you don't get that startup message, it could simply be disabled in the configuration. Try issuing the following star command:

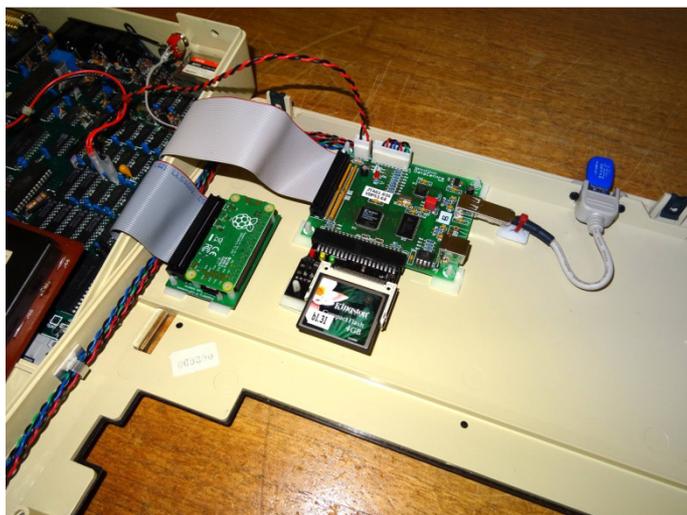
***CONFIGURE TUBE**

and

***CONFIGURE EXTUBE**

Pressing a **<CTRL><BREAK>** will then initialise it.

You can also mount the Co-Processor inside the case of your machine, as it's so small and compact. Below is an example installation alongside a DataCentre, routing the tube cable under the motherboard.



Using the Co-Processor

Once you see the Acorn TUBE message, the installation is complete, now you can go onto using it. Different CPU cores can be selected, by issuing ***FX 151,230, <n>** - where **<n>** is:

- **0 - Up to 274MHz 65C102**
- **1 - 3MHz 65C102 - for games compatibility**
- **4 - 60MHz Z80**
- **8 - 80286 - for DOS**
- **9 - 6809**
- **12 - 9MHz ARM2 - An emulation of the original ARM Development System**
- **13 - 32016 Cambridge Co-Processor**
- **15 - 700 MHz Native ARM CPU**

Using 14 will also disable the Co-Processor on the Pi itself, to save having to power it off. You can also disable the Co-Processor by removing the power jumper on the board, or even fitting a switch to it, to allow you to turn it on and off at will.

NOTES

Software for the various cores is available on the net, or I can supply some samples. Remember that most games - infact all apart from the special version of Elite will NOT run with the Co-Processor active, so you will need to disable it for a gaming session.

The 40 way cable supplied is short not because I'm running low on cable! It's like this to minimise the chances of data corruption. Signals across the cable flow at 2MHz to the main machine, so cable that is much longer may cause issues. You may remember if you had a cheese wedge second processor back in the day, just how short those cables were.

Any second processor needs the Tube Host code inside the BBC to run. This is always fitted in a Master 128, and is usually present in a B+. However, a Model B may not have it fitted. If you turn the machine on and cannot get the Acorn TUBE startup line, please send me a screenshot of your computer displaying the results of a *HELP - I should be able to diagnose from there what the issue is.

Further information, technical specifications, and software updates can be found on the Github web page for the project:

<https://github.com/hoglet67/PiTubeDirect>

If you require and assistance with this, please don't hesitate to get in touch.

RetroClinic
1st Floor, 14 Market Place
Howden, East Riding of Yorkshire
DN14 7BJ. UK.
Tel - 01430 430420
Mob - 07976 112407

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