

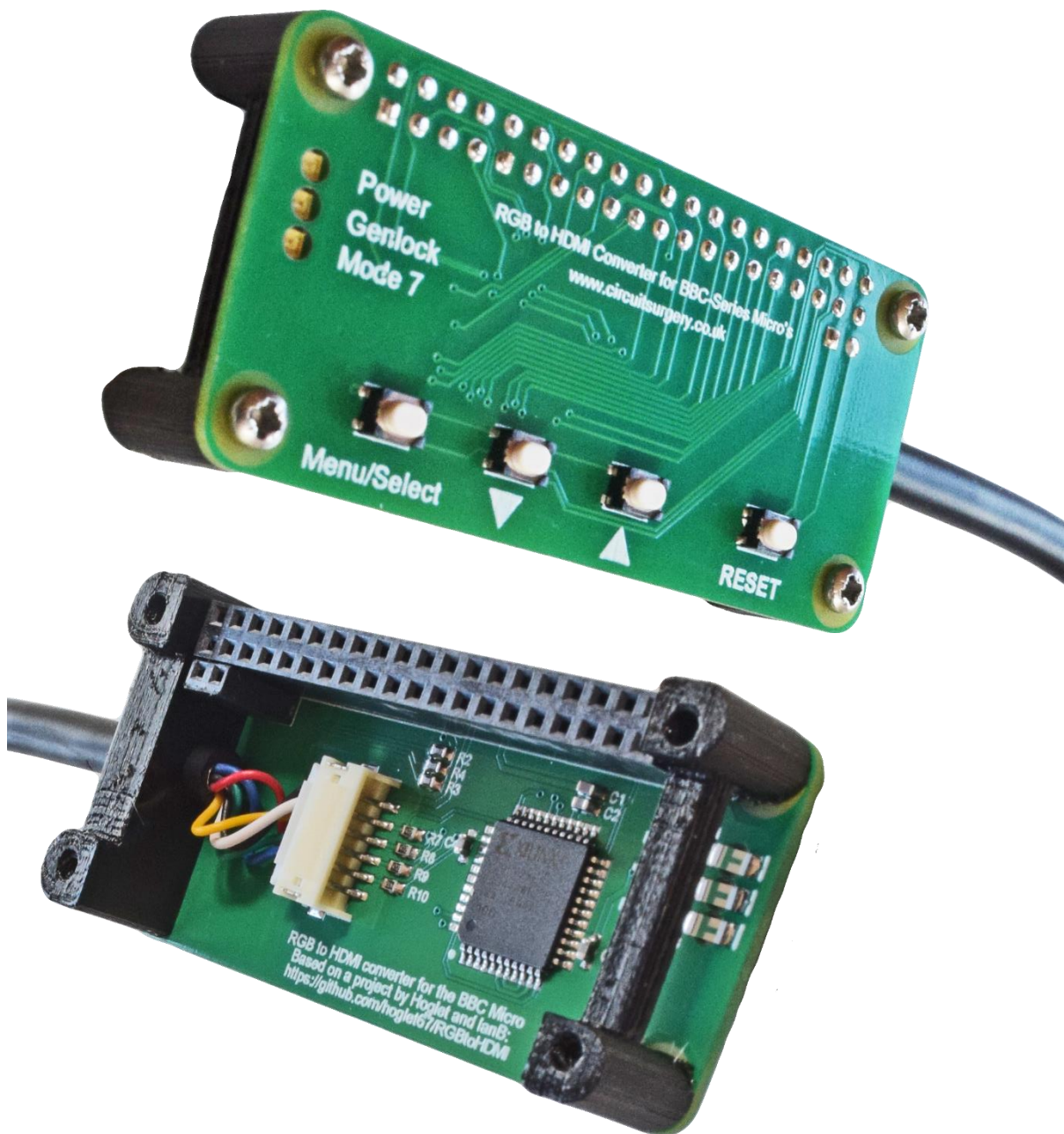
RGB to HDMI Adapter

For the Acorn/BBC range of microcomputers

User Manual



www.circuitsurgery.co.uk



Introduction

This device, when paired with a Raspberry Pi Zero, will allow the BBC Micro to be used with any TV or monitor with an HDMI interface.

This adapter is based on an open-source project by David Banks (hoglet), Ian Bradbury (IanB), Dominic Plunkett (dp11), and Ed Spittles (BigEd). The RGB to HDMI project can be found [here](#).

The unit is highly configurable via the on-screen menu system and the on-board buttons. Although the unit offers many options, it can also be used with no alteration to the default configuration.

Any version of the Raspberry Pi Zero can be used, however the later Zero 2 boards do not support a reset function.

The Raspberry Pi Zero, micro-SD card and software can be provided as optional extras

Included as standard are:

- The interface board.
- Cable with 6-pin DIN plug for the RGB connection to the BBC.
- 3D-printed cable clamp and spacer.
- Self-tapping screws.
- 2-pin header for soldering to the Pi Zero's Reset pads

Requirements

In addition to the supplied items, the following will be needed:

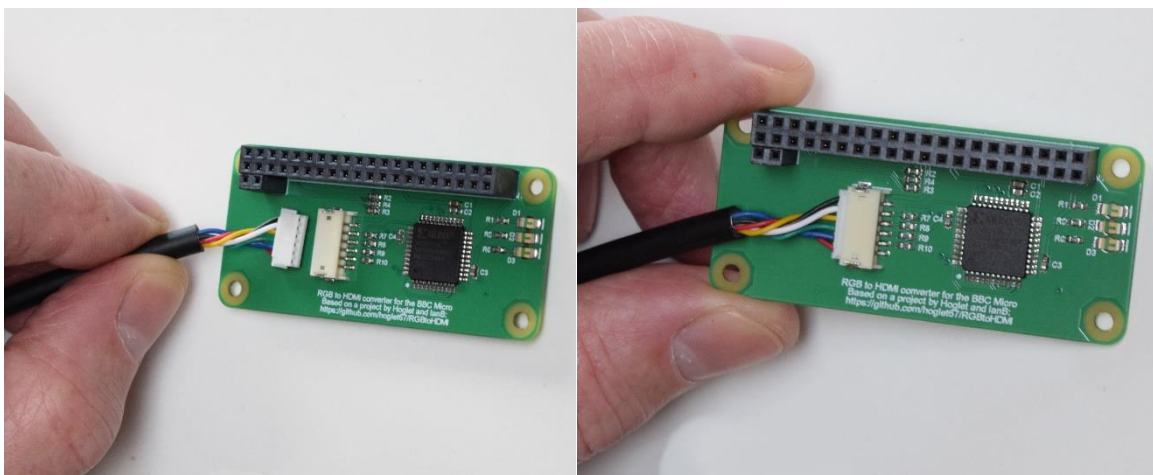
- A Raspberry Pi Zero with a 40-way header
- A Micro-SD Card
- A Mini HDMI to HDMI cable
- A No.1 Pozidrive screwdriver
- If required, a suitable enclosure*

*An excellent 3d printed enclosure has been designed by a user of this adapter and has been published on Thingiverse here: <https://www.thingiverse.com/thing:6905877>

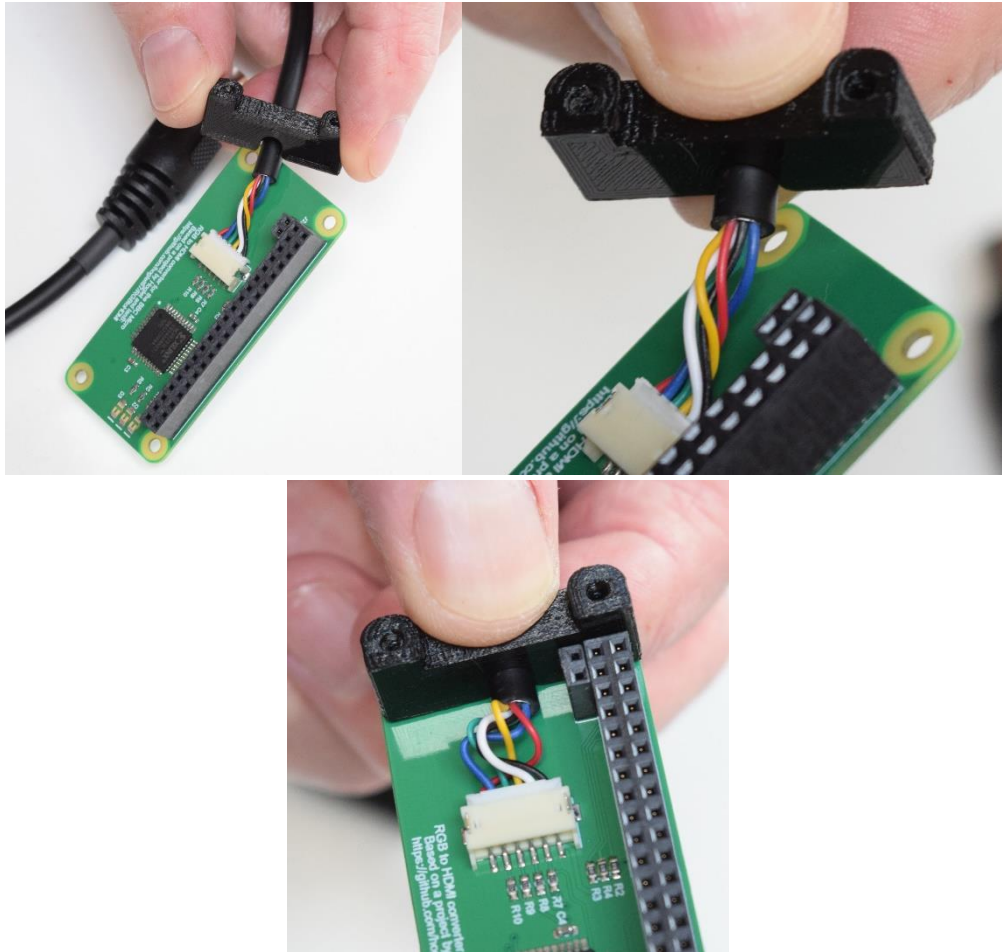
Alternatively, search Thingiverse for “radiofan” to see all his designs.

Assembly

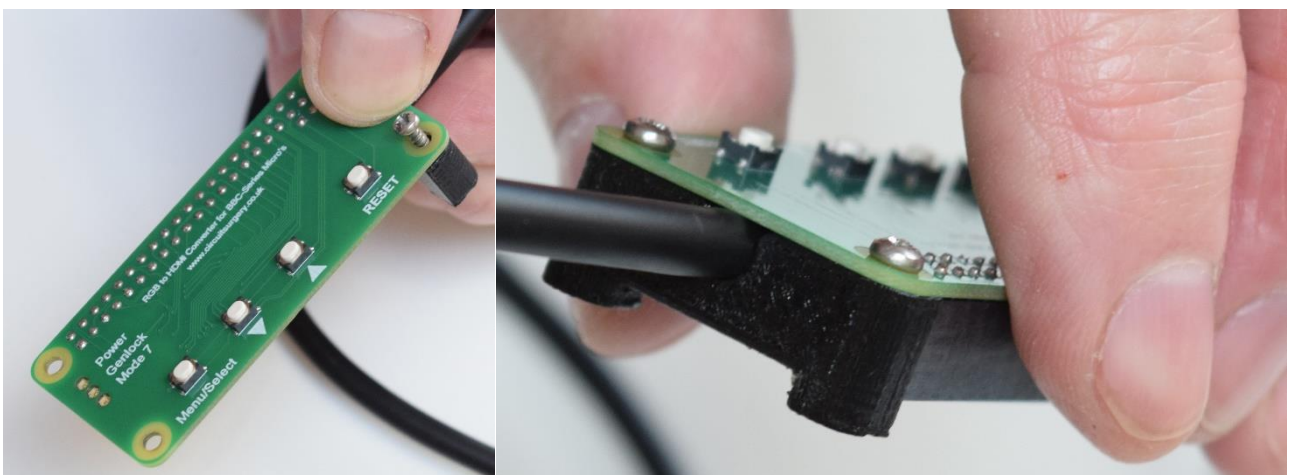
1. Insert the small 6-pin connector of the RGB cable into socket of the adapter board.



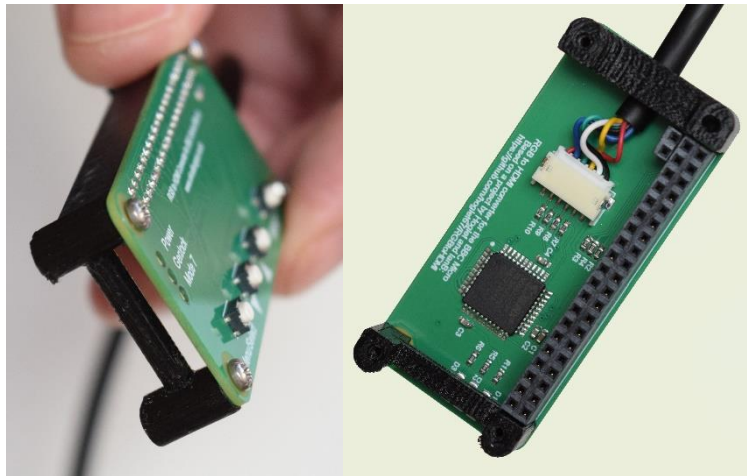
2. Press the cable clamp over the cable close to the exposed wires, and align with the fixing holes at the end of the board, making sure that the flat face of the clamp faces toward the connector.



3. Use two of the fixing screws to secure the clamp in place.



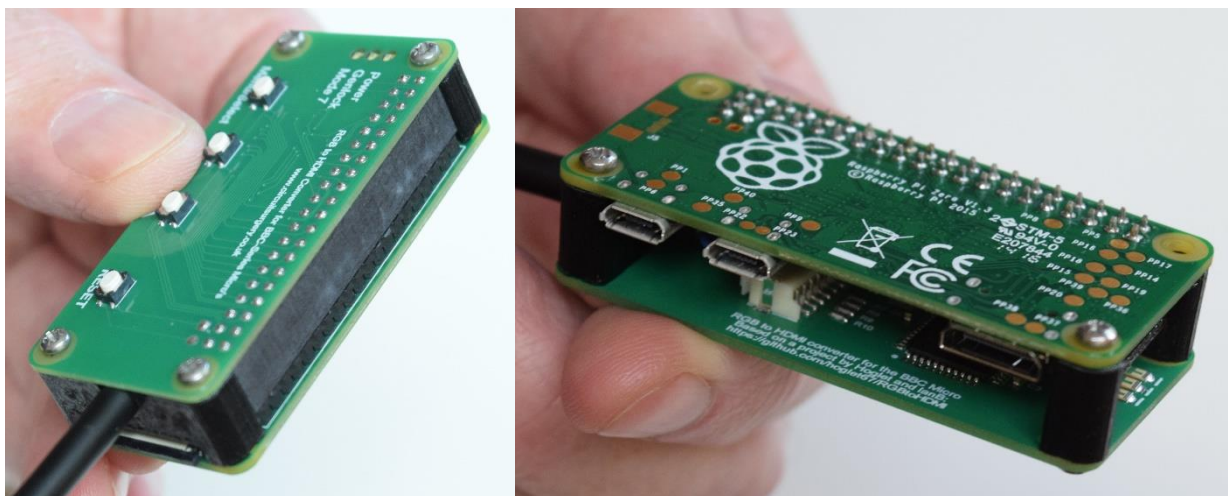
4. Fix the spacer at the other end of the adapter.



5. If not already done so, fit a 40-way header to the Raspberry Pi Zero and the supplied 2-pin header to the pads marked **Run**. **Note:** if using a Pi Zero 2 these pads will not exist and the reset functionality will be lost.



6. Plug the two boards together and secure using the remaining two screws. It is not necessary to fit screws to the points at each end of the connector on the Pi Zero side of the assembly.



Installing the Software

To install the software using a PC or MAC:

1. Start with a blank Micro SD Card (it should be FAT32 formatted)
2. Download the latest release zip file from [here](#)
3. Unzip this to the SD Card (so all the files are in the root directory of the SD Card)
4. Safely remove the SD Card from the PC
5. Insert the SD Card into the Raspberry Pi

Alternatively, an SD Card image is available [here](#) which, when extracted from the .zip file, can be flashed directly to a suitable card using *Win32DiskImager* or similar.

This software is *bare metal* software, meaning that there is no Raspberry Pi, or other, operating system and its sole function is to drive the adapter.

It should also be noted that the software is designed to accommodate numerous other vintage computers, so expect references to machines other than Acorn ones!

All this is covered in the [Quick Start Guide](#) within the project's Wiki.

Connection and Use

Important: Connect all the cables before powering on the system and never plug or unplug cables with the power on.

Connect the adapter to your Acorn/BBC machine, and the HDMI output of the Pi Zero to the HDMI input of your TV/Monitor.

No power adapter is required as power is taken from the BBC through the RGB cable.

Turn on the microcomputer and the green **Power** LED on the adapter should illuminate.

I test all units before packing, so the adapter will probably function straight from the box (plug-and-play), however if there is a message displayed stating that the CPLD is blank, then please refer to the project's [Quick Start Guide](#).

It is important to note that even if you do not need to go through the CPLD programming procedure, there may be issues with the display, for example: jitter (especially in Mode 7), incorrect colours, or rolling. If this is the case, please refer to the [Powering On](#) section of the guide.

The Menu

The adapter's menu is displayed by pressing the **Menu** button. Navigation is via the **up** and **down** buttons and selection of an option is by pressing the **Menu** button again. There are many options available, but for basic use most can be ignored and, as mentioned, it may not be necessary to change anything.

The [Quick Start Guide](#) on the project's Wiki is an excellent resource describing in detail the set-up, with links to further information about the software. I would encourage you to visit that site even if you don't feel it necessary!

