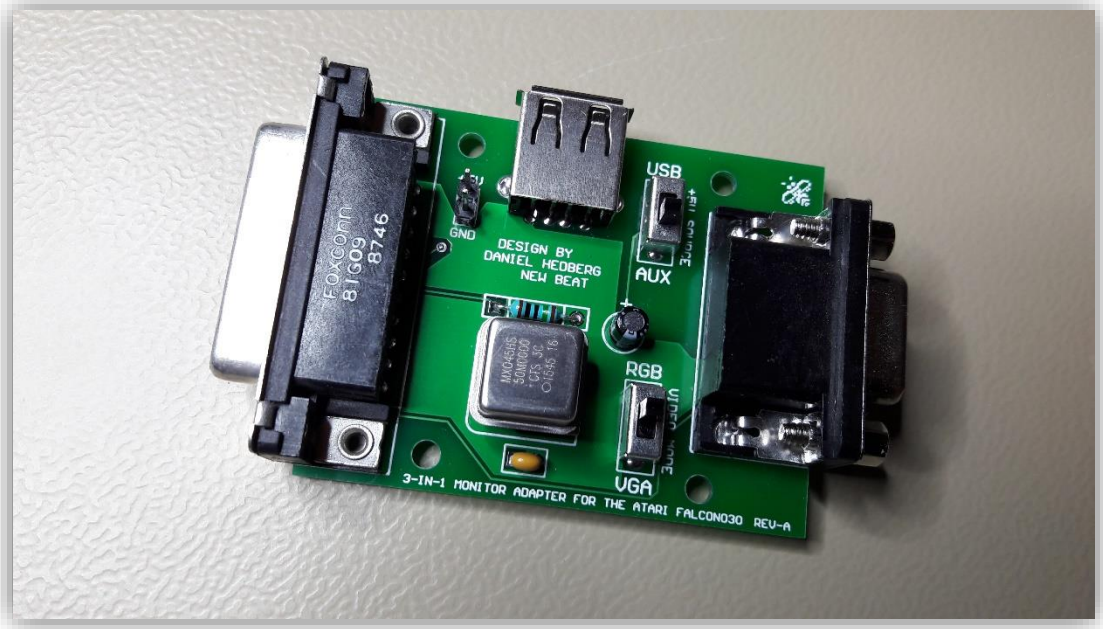

3-IN-1 MONITOR ADAPTER

for the Atari Falcon030

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3-in-1 Monitor Adapter

The 3-in-1 monitor adapter is a small piece of hardware that plugs into the monitor port of the Atari Falcon030. Its main purpose it to make it possible to connect the Falcon030 to a monitor using a standard VGA cable, but it also provides a switch to toggle between RGB and VGA video modes (useful for monitors that accept both RGB and VGA frequencies), and an external clock signal to the Falcon030 video chip (to enable higher screen resolutions) compatible with the Blow-Up software.

The monitor adapter comes with two oscillators of different frequencies. The oscillator on the adapter card is mounted in a socket to make it easy to replace it. The oscillator provides an external clock signal to the video chip of the Falcon030 to make it possible to achieve higher resolutions than the standard video modes when used in combination with the Blow-Up software.

The default oscillator has a frequency of 50MHz. This is the frequency of the oscillator used in the original Blow-Up (Hard I) hardware which this adapter board is compatible with. It will enable the highest resolutions of the two oscillators. The other oscillator has a frequency of 40MHz. With the lower frequency, the resolutions possible to achieve will be lower, but on the other hand the video chip of the Falcon030 will use less of the internal data bus. As the bus is shared by the CPU, it means that the more of the bus that is used by the video chip, the less is available for the CPU. If your Falcon030 is equipped with a bus accelerator such as the Nemesis or Phantom, I would recommend the 50MHz oscillator. If your Falcon030 has no bus accelerator, the 40MHz oscillator may be more suitable.

When using the 40MHz oscillator, the horizontal and vertical scan frequencies shown in the Blow-Up configuration software will not be correct as the values are calculated based on a 50MHz oscillator. Most modern monitors can show this information as well and it will show the correct values regardless of the oscillator used.

VGA connector

The VGA connector is a standard DSUB-15 connector and can be used to connect the Falcon030 to a monitor using a standard VGA cable.

Video Mode Switch

The Atari Falcon030 has both RGB and VGA video modes. Usually the internal wiring of the monitor adapter will determine the video mode. A VGA adapter will make the Falcon030 use the VGA video mode, and an RGB adapter that lets you connect an RGB monitor or TV (via a SCART cable) will make the Falcon030 use the RGB video mode.

The 3-in-1 monitor adapter is a VGA adapter, but by providing a Video Mode switch it lets you manually control the video mode of the Falcon030. This is useful if you have a VGA monitor that can handle the horizontal scan frequencies of both the RGB and VGA mode. The position of the Video Mode switch is read when Falcon030 is switched on, the reset button is pressed, or when the video mode is changed from the Desktop or by any other means.

To prevent damage to your monitor, the Video Mode switch should only be put in the RGB position if you are certain that the connected monitor supports the lower horizontal scan frequency of the RGB video mode.

Power Source Switch

The position of the Power Source switch (marked +5V Source on the monitor adapter) determines from where the 5V is taken to power the oscillator. If set to USB, the power is taken from the USB port of the card. If set to AUX, the power is taken from the two-pin connector next to the DSUB-19 connector. The Power Source switch can also be used as an ON-OFF switch for the oscillator as only one power source is required.

If the AUX connector is used to power the oscillator, ensure that the voltage of your power source is 5V and that the polarity is correct! See the +5V and GND marks next to the connector. The adapter has no overvoltage or polarity protection circuit. Not providing the correct voltage or reversing the polarity will damage the components of the monitor adapter and possibly also the Falcon030 (if connected). I strongly recommend using the USB connector to avoid making any mistakes.

Blow-Up Software

To take advantage of the clock signal of 3-in-1 monitor adapter's oscillator you need to install and configure the Blow-Up software. The Blow-Up software has been released along with its source code by its author and can now be freely copied.

Frequently Asked Questions and Trouble-Shooting

The external oscillator does not seem to provide a clock signal to the video chip

The oscillator needs a 5V power source to work. The 5V power source should be connected to either the USB connector or the AUX connector and the Power Source switch must to be in the corresponding position.

Ensure that the orientation of the oscillator is correct. There is a rectangle on the adapter card under the 8-pin socket. Three corners of the rectangle are rounded and the fourth is square. The same is true for the oscillator and it should be mounted in the socket to match the corners of the rectangle on the adapter card.

Check and make sure that all pins of the oscillator are properly inserted into the socket.

There is some interference on the screen (moving bars) when the adapter is plugged-in. Why is this?

I cannot say for sure what is causing the interference other than it seems to be a general issue with the Falcon030. The original Blow-Up hardware causes interference as well so it is not a problem specific to the 3-in-1 monitor adapter.

Fortunately, there are some simple things you can do to minimize the interference.

- In standard video modes, the clock signal provided by the adapter board is not used. If a standard video mode is used you can simply turn off the oscillator by using the Power Source switch on the adapter to get rid of all interference.
- If you experience interference in a video mode that is making use of the oscillator on the adapter card, slightly adjust the vertical/horizontal scan frequencies in the Blow-Up configuration software. Changing the vertical scan frequency just by 0.5 Hertz up or down usually has a big impact on the interference.

I have tested the adapter on several Falcon030 computers and monitors. Some monitors seem to be more sensitive than others. The interference also seems to decrease with power-on time.

The interference may also be related to the quality of the power source. I have taken measurements to clean up the power signal by using de-coupling capacitors on the adapter card but a poor power source may still have an impact. So, it may be worth trying a different power source.

One Falcon030 that I tried the adapter on showed more interference than others. It turned out that one of the GND pins (pin 11) of the monitor connector was bent and did not make contact. After straightening the pin, the interference improved. So, the interference seems to at least partially be related to insufficient grounding.