

# Video to VGA Converter

The Video to VGA Converter below can be bought on Ebay for less than £20 and they are sold by many Ebay vendors. The box and the number inputs and outputs are the same but the number of control buttons can vary and so does the way the buttons control the settings when bought from different sellers.

## Basic Function

Composite, S-video can be converted to VGA output and there is a VGA input for a pass through.

I have been using one to watch TV via scart composite adapter from a HD set top box. The set box's HDMI output laying in waste as the HD TV is broken.

## A VGA monitor for The Einstein TC01

I am also trying out its use for a VGA Monitor for the Einstein TC01. In this document is a record of progress showing what has been achieved in practice and further thoughts and speculation for upgrading displays for the Einstein



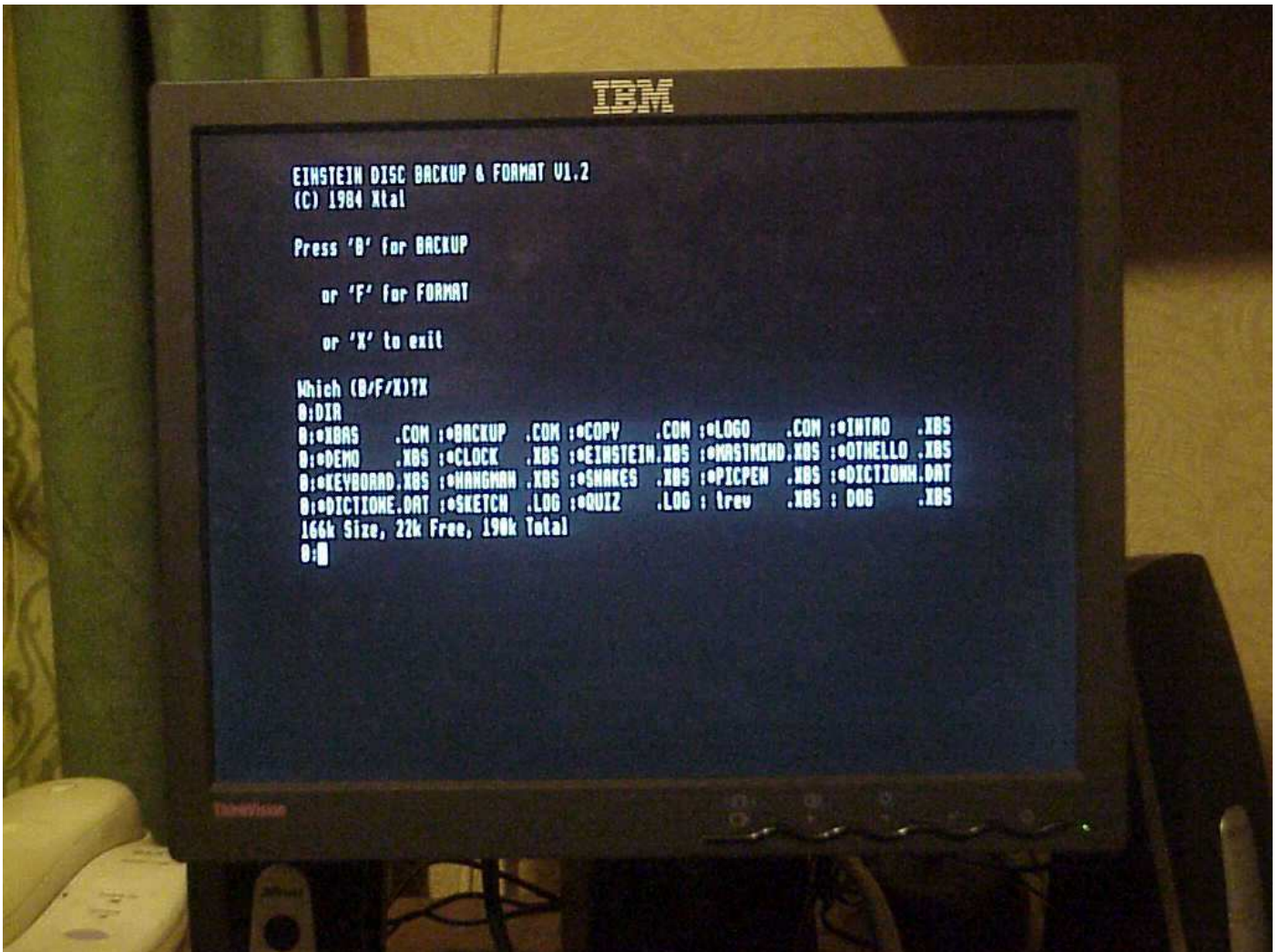
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Einstein 80 Column display on a VGA Computer Monitor

Einstein 40 Column colour display on a VGA Computer Monitor

Author Chris Coxall

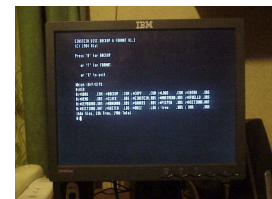
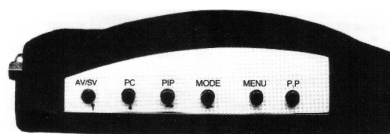
## A simple connection for a monochrome 80 column card.



## Einstein 80 column display on a IBM 15" ThinkVision 9205 Hb2 VGA Monitor



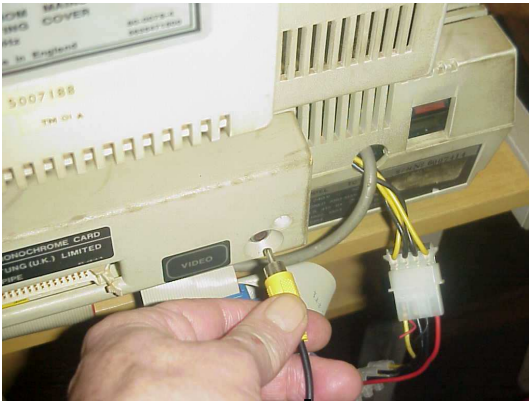
### VIDEO To VGA Converter



Composite 80 column card → To composite input → VGA out to Monitor

# Composite 80 column card VIDEO To VGA Converter

Composite 80 column card card to video to VGA converter is straight forward. Just connect one RCA plug of a video cable into the 80 column card and the RCA plug on the other end into the converter,



My use of the Einstein has always been for 80 column card mode. I never had reason to drop down into 40 column mode or the need for colour. I can't remember the last time I booted up into 40 column mode. It was only when using 40 column mode for testing the converter for a computer monitor display that I realized that it wasn't booting up into a blue screen but grey. A transistor (Q0001 if you have the Einstein Hardware Manual to identify it) needed replacing.

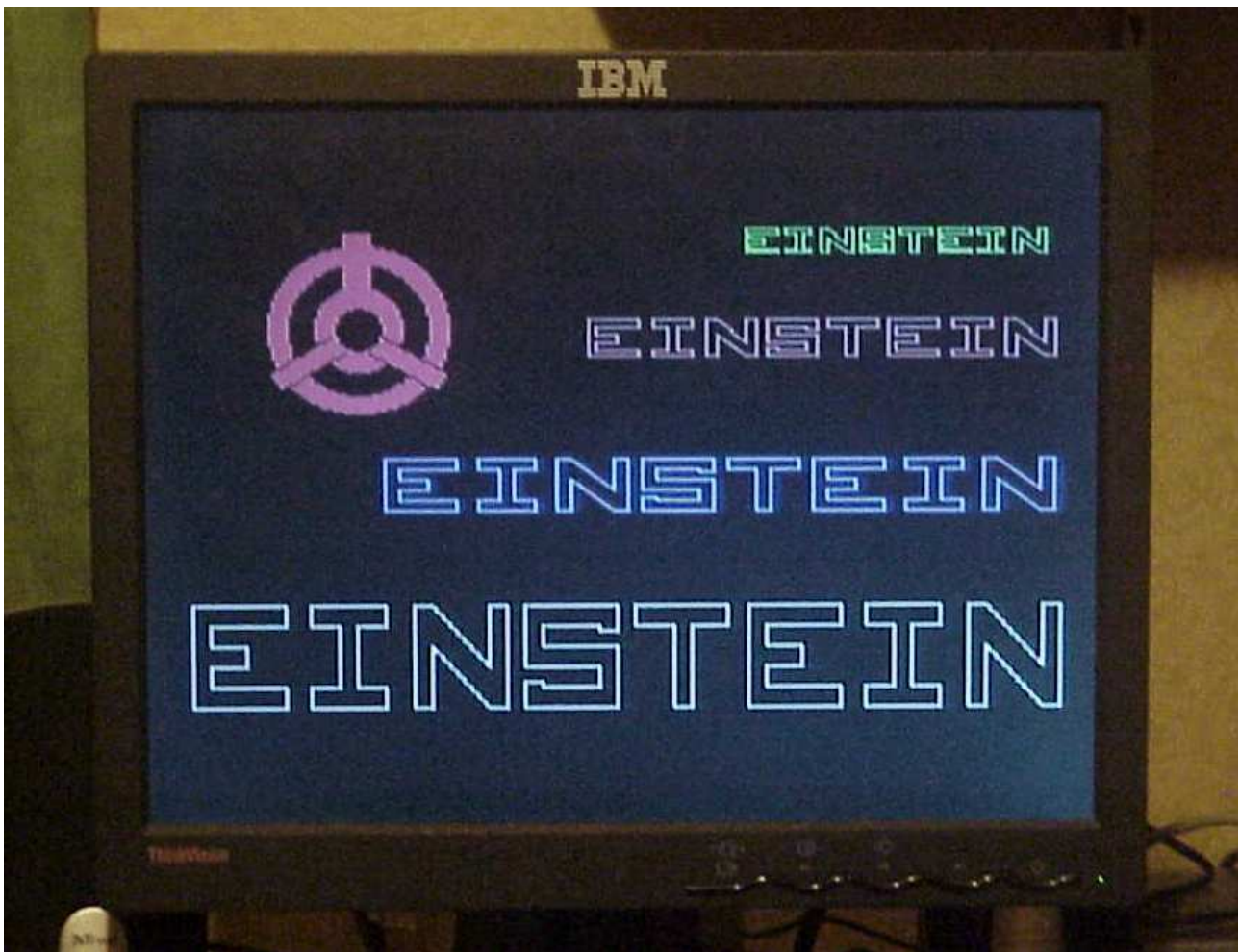
If there are problems with 40 column mode but like me you are content to use to use just the 80 column mode there is nothing more to be done except for fitting the converter. The 15 pin VGA plug from the monitor to the converter and the RCA cable from the 80 column card to the converter. If the Einstein is wanted to share the monitor with a PC add the VGA output from the PC to the VGA input of the converter. If both the Einstein and PC are booted up and plugged into the converter there is a function that allows a small window of the Einstein's display on the PC screen.

## Composite Out from the Einstein

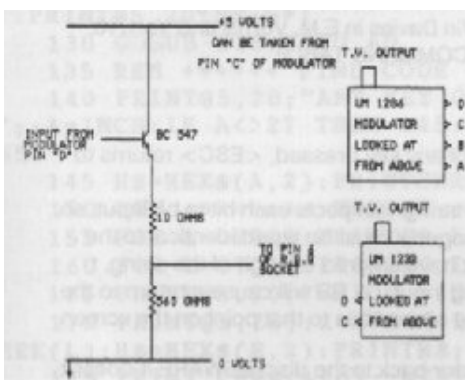
To get composite out for the Video to VGA converter is not so straight forward. At the time the Einstein was made most televisions only had one input an ariel socket and so the Einstein used all its composite potential to and for a modulator for RF output.



# Composite Out from the Einstein Displayed on a Computer Monitor



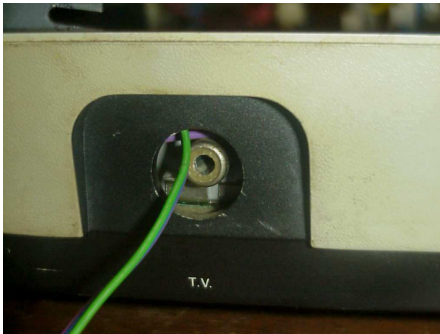
## Composite Out from the Einstein



Stuart Marshall's article in Einstein Monthly VOL 2/4 page 13 shows how composite can be tapped off before it gets to the RF modulator. The electronic circuitry is simple - shown right. The Einstein does have to be opened up and soldering inside has to be done but this is not too intricate.

A very improvised adaptation of Stuart's circuit to test the practice is shown next page. The Einstein's lid was removed and the right hand 3" drive needs to be removed temporarily if fitted. A three wire strip of ribbon cable was pushed through the cavity where the RF TV output is.

There are 4 wires that go from the mother board into the RF modulator. The wire nearest the side of the case is the composite video. One wire is soldered to it. The next wire is 5 volts used for powering the circuit. A second wire is soldered to this. The best place to solder the third wire for ground was at the other end of the modulator where it's tin box is anchored to the board.



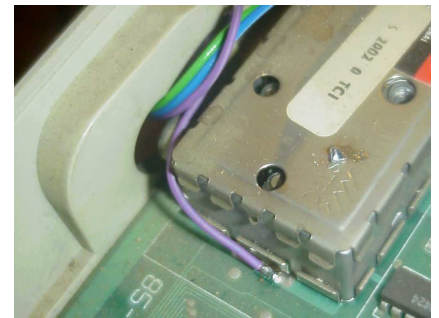
LEFT  
TV output on the right hand side of the Einstein TC01



RIGHT  
The RF modulator



RIGHT  
Green wire used for composite.  
Blue for 5 Volts



LEFT  
Violet wire for ground

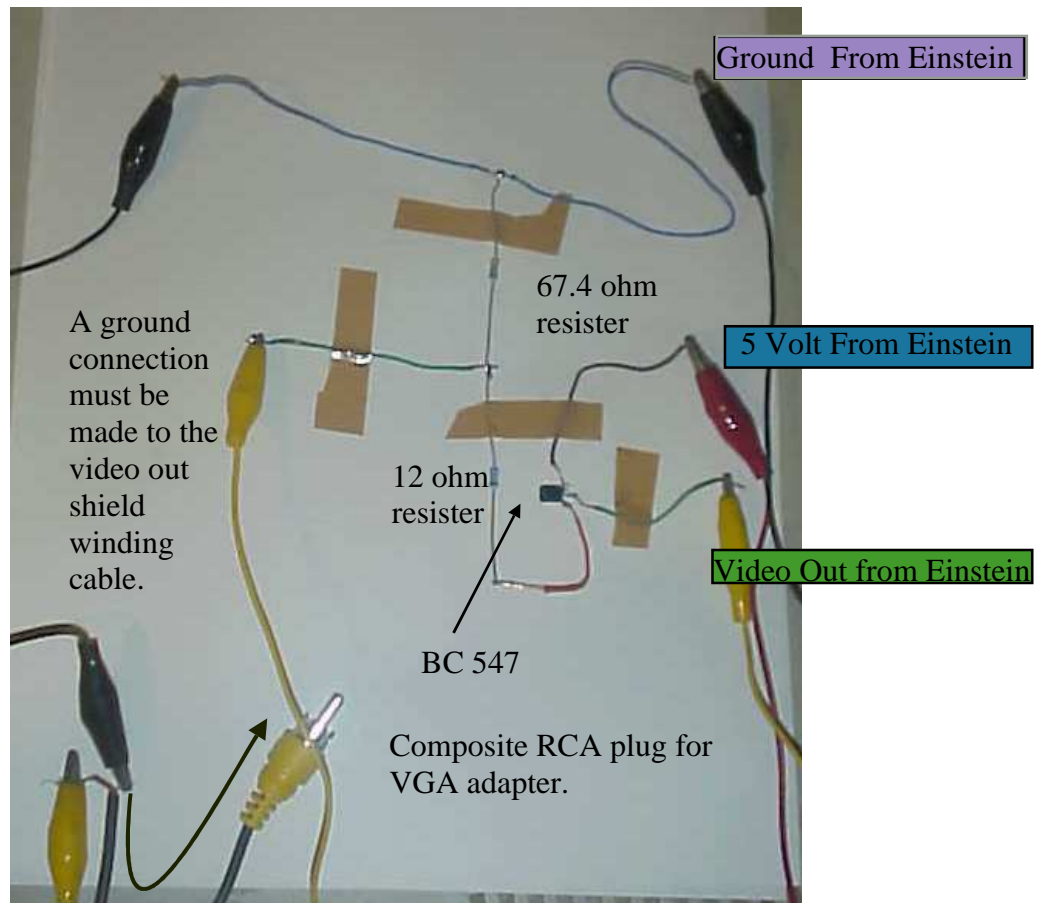
### A Very Improvised Circuit to Test the Theory in Practice.

With the external access to composite and power to experiment with I tried out the circuit from Einstein Monthly VOL 2/4 Page 13.

I found it worked OK with the Video to VGA Converter but a little weak and not too steady.

I have some training for digital but of analogue electronics for audio and video my knowledge is nil.

With reference to text books I used two extra resistors in parallel to forward bias the transistor to around half the supply voltage.



Ground From Einstein

5 Volt From Einstein

Video Out from Einstein

A ground connection must be made to the video out shield winding cable.

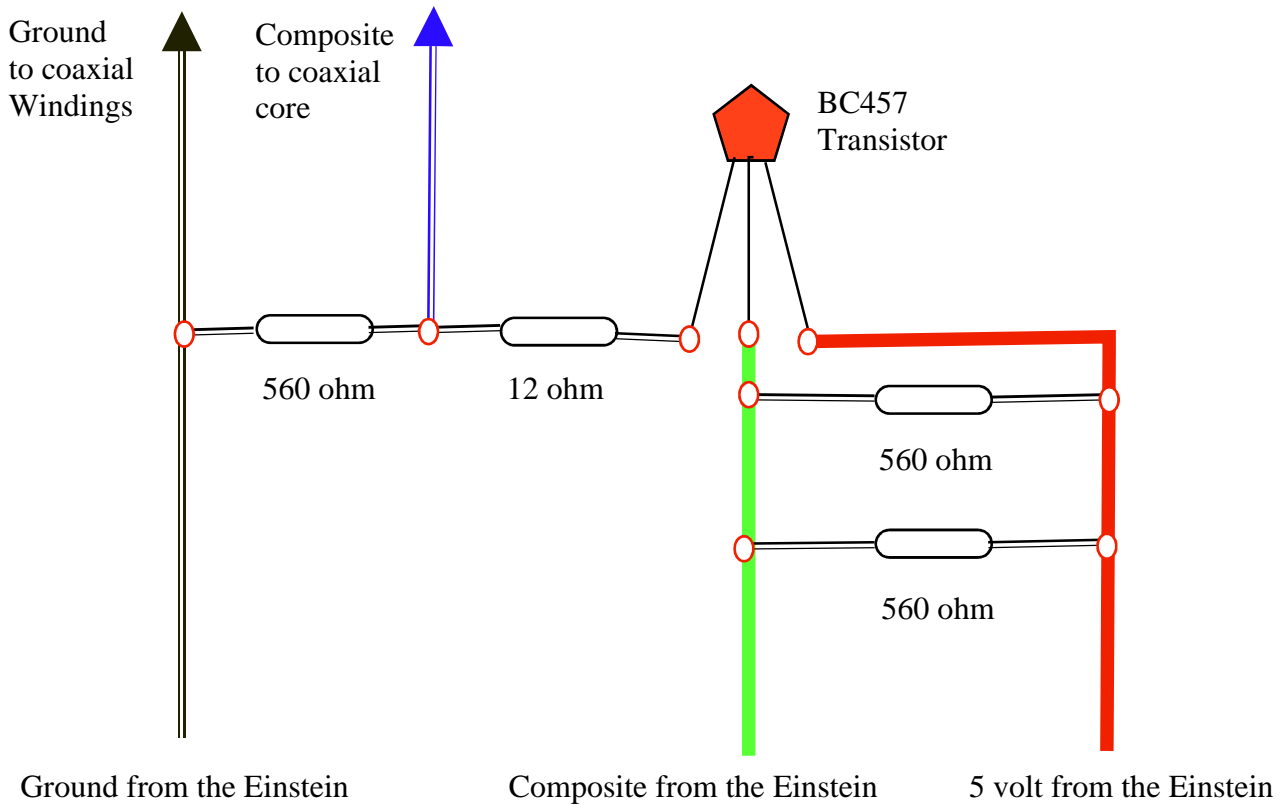
67.4 ohm resistor

12 ohm resistor

BC 547

Composite RCA plug for VGA adapter.

## A satisfactory working circuit.



The above circuit to the VGA adapter is providing good stable display on the 15" monitor I bought at a boot sale for £10. The nearest I had to the 10 ohmm resistor used by Stuart Marshall was 12 ohms. The two 560 ohm resistors used in parallel were my own addition which most electronic text books I had said it would make an improved circuit. The two 560 ohm resistors could be replaced by one 280 ohm resistor. I used what I had available at the time.

Unless advised by good reason such as a more efficient circuit or that my lack of knowledge of video output is putting equipment at risk I intend to make it up in a switch box for two inputs. One from the composite out created above and the other for the 80 column card.

Finding the right sized box the most difficult I think. The switch will change from 80 column display to colour 40 column. The VGA pass through on the converter will allow Einstein and PC to use the same monitor. The box I intend to attach to the side of the Einstein with velcro. Easy to detach when ever the need to open up the Einstein.

