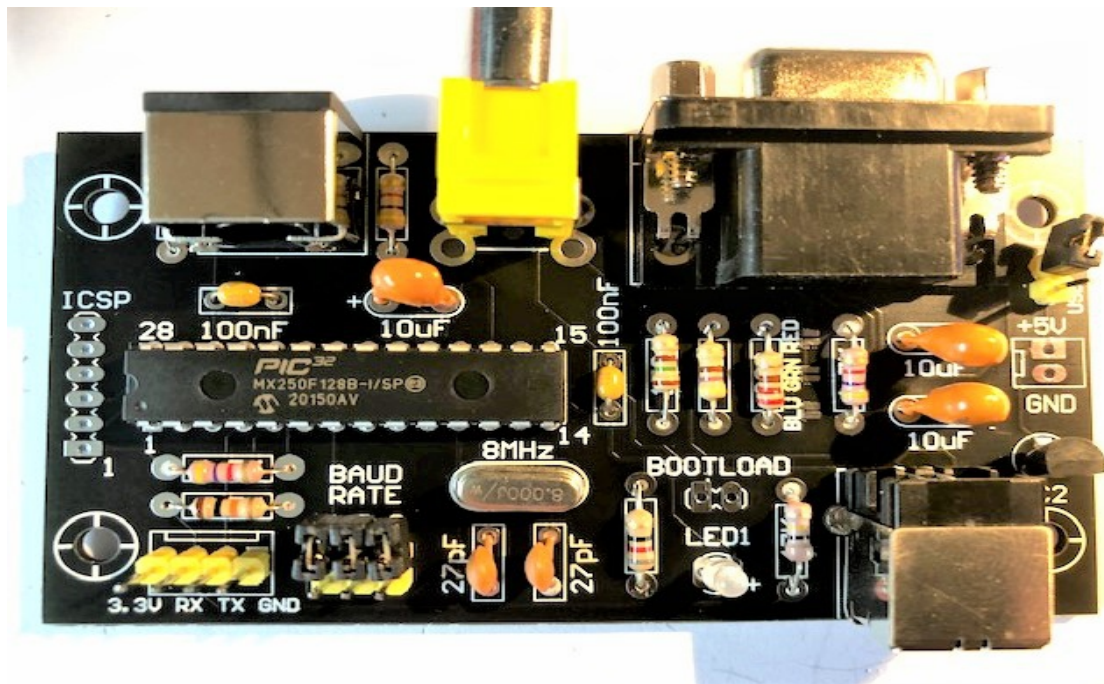


# BUILDING KIT ASCII VIDEOTERMINAL

Serial connection to VGA or Composite video out



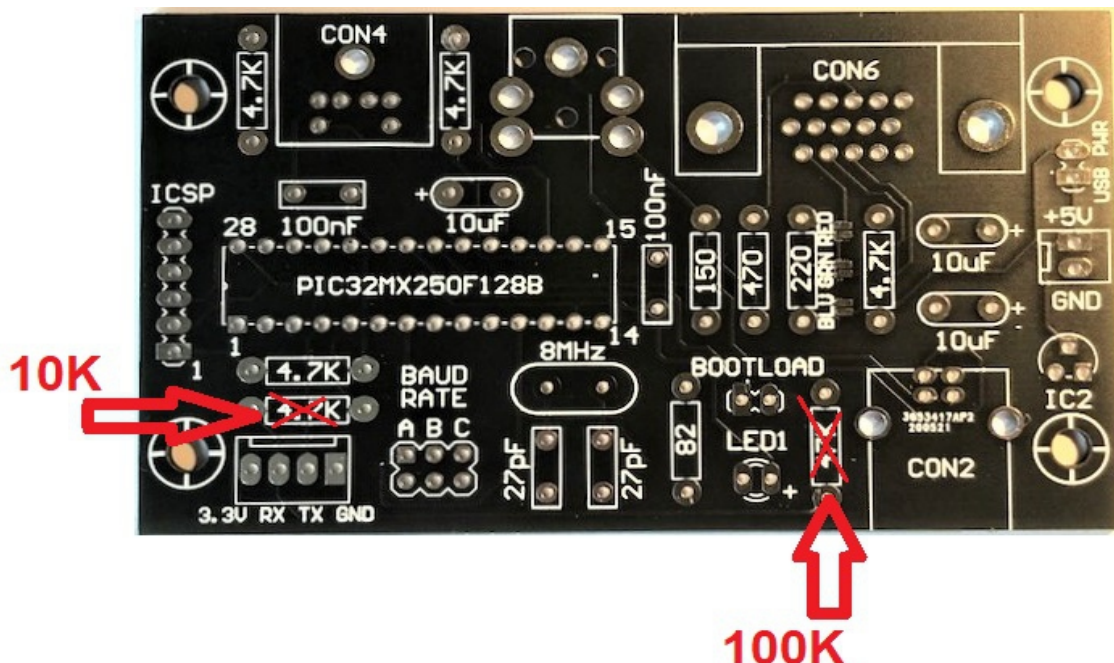
## Specifications

- Single chip ASCII video display terminal with VT100 and VT52 emulation
- VGA or Composite Video output with automatic switch over. Composite can be PAL or NTSC.
- VGA can display 24 lines x 80 characters or an extended resolution of 36 lines x 80 characters
- Composite video can display 18 lines x 48 characters (PAL) or 15 lines x 44 characters (NTSC)
- Standard PS2 compatible keyboard input with support for standard US keyboard layout or French, German, Italian, Belgian, Russian or United Kingdom keyboard layouts
- TTL or RS232 serial input/output. Baud rates from 40 to 1,000,000 bits per second with odd, even or no parity and one or two stop bits
- USB input with serial emulation. This can be used as a USB to serial converter
- Extended VT100 terminal emulation. Extensions include graphics codes for drawing lines, boxes and circles (which can be hollow or filled)
- Graphics resolution is 480x288 pixels in VGA 25 line mode, 480x432 pixels in VGA 36 line mode, 288x216 in PAL composite and 264x180 pixels in NTSC composite mode
- Three built in fonts (standard, large and jumbo) and four character attributes (normal, underline, reverse and invisible)

# PARTS LIST

- 1x PCB, 90mm x 51mm
- 1x USB B connector
- 1 x 15 pins VGA connector
- 1x RCA connector
- 1x 6 Pin Mini DIN PS/2 keyboard connector
- 1x 8MHz quartz
- 1x Pin header
- 4x jumpers
- 1x programmed PIC32MX250F128B-I/SP microcontroller
- 1x MCP1700-3002 voltage regulator
- 1x 3mm LED
- 2x 27pF ceramic capacitor
- 2x 100nF ceramic capacitor
- 3x 10 $\mu$ F ceramic capacitor
- 1x 82 $\Omega$  (grey red, black)
- 1x 150 $\Omega$  (brown, green, brown)
- 1x 220 $\Omega$  (red, red, brown)
- 1x 470 $\Omega$  (yellow, violet, brown)
- 4x 4K7 $\Omega$  (yellow, violet, red)
- 1x 10K $\Omega$  (brown, black, orange)
- 1x 100K $\Omega$  (brown, black, yellow)

**ATTENTION! Before you start soldering, first look at picture below and read the text!**



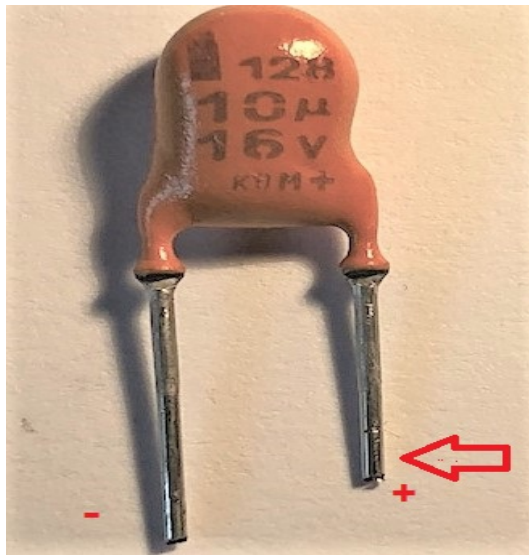
**On the PCB there are two resistor values wrong, just place the right resistors on the indicated place as indicated by the red arrows. The building kit contains the right resistor values.**

# Building the kit

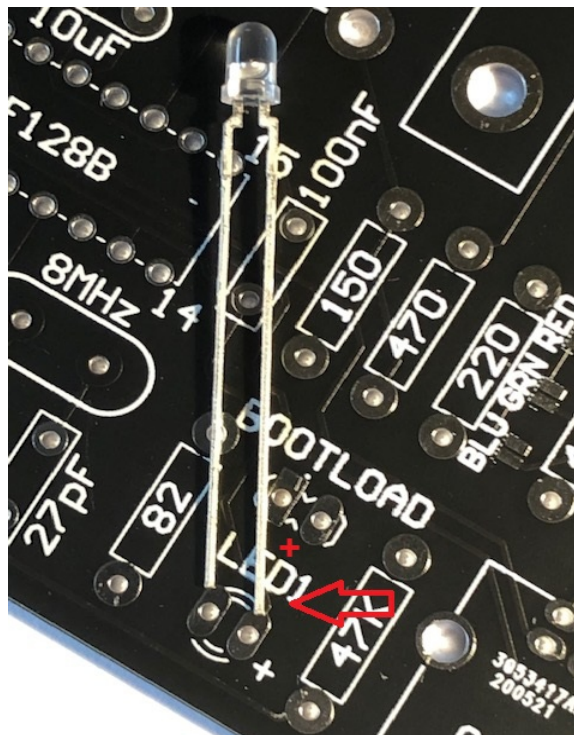
The building kit is easy to construct. Every part is clearly indicated on the PCB (except the 2 resistors :))

First solder all the resistors in the correct place and also take care to solder the right values as indicated by the two red arrows.

Now solder all the ceramic capacitors and the 10 uF tantalum capacitors. The tantalum capacitors have a + and – side. This is indicated on the PCB. Look at the picture below to see what side is the – and +.

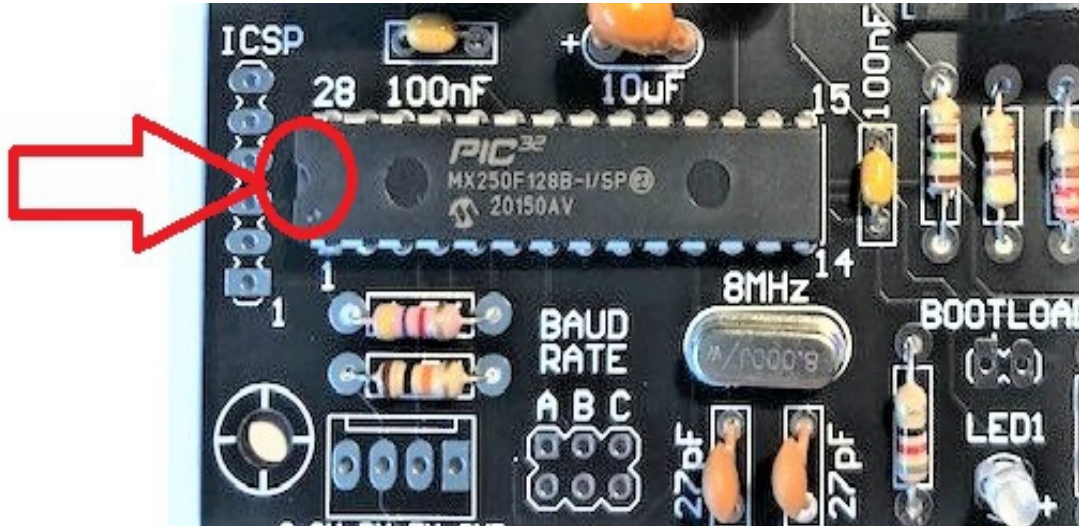


Connect the LED and take care of + and -. See picture.



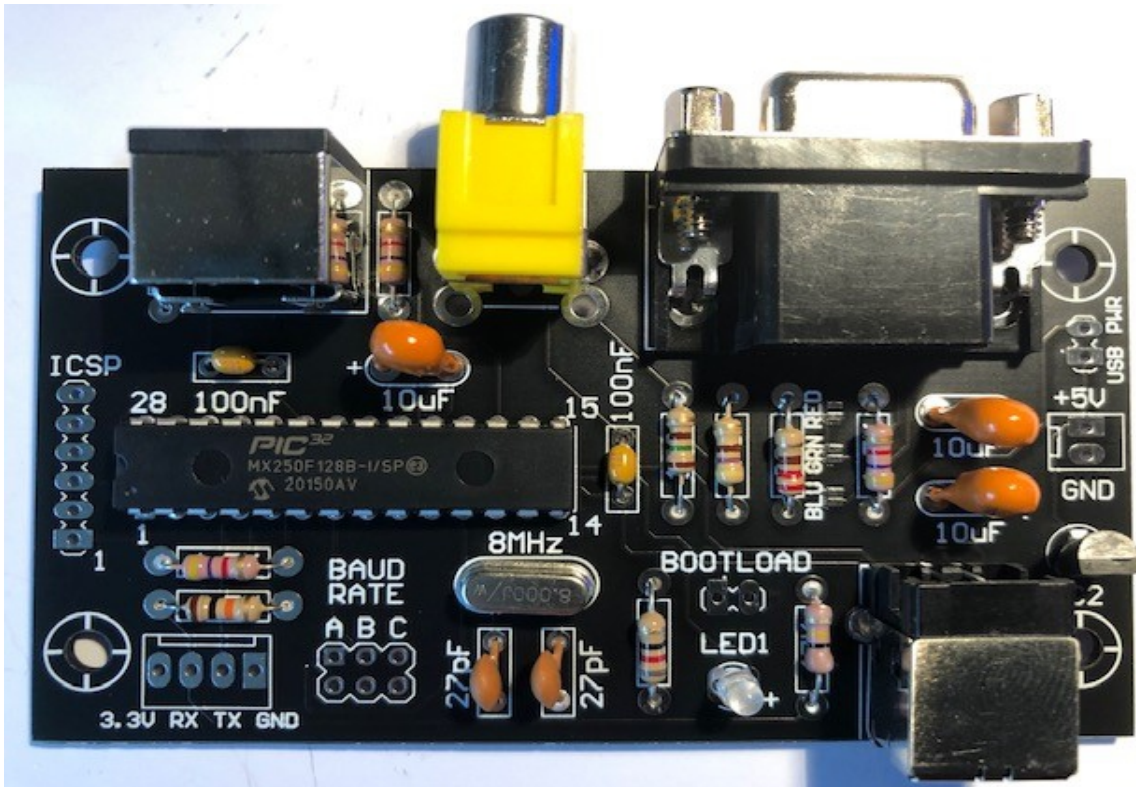
Connect the quartz and the voltage regulator exactly as indicated on the PCB. The voltage regulator takes the 5 volt power supply to 3,3 volts because that is the voltage the microcontroller uses.

Now solder the microcontroller but TAKE CARE! that you solder it in the right orientation. The microcontroller has a little dent on one side. This small dent has te face to the OUTSIDE of the PCB. See picture:

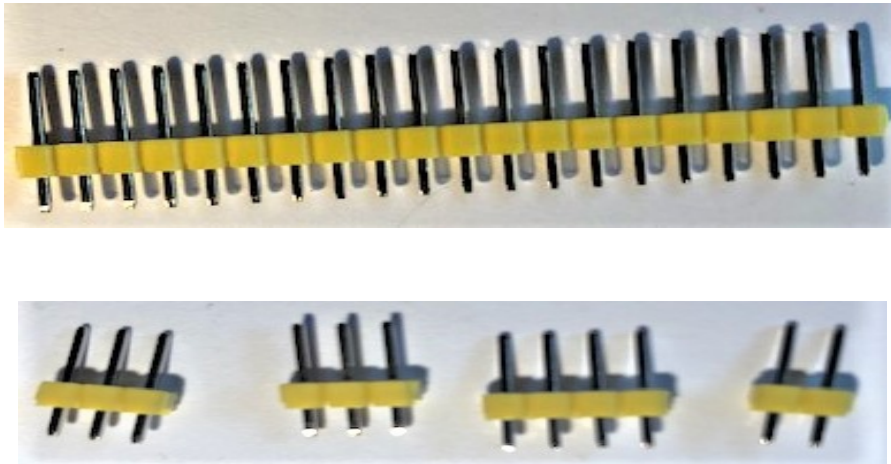


Look twice to make sure the microcontroller is facing the right way before you solder it. because it is very difficult to take it out again after you soldered it in. Short soldering and not to hot.

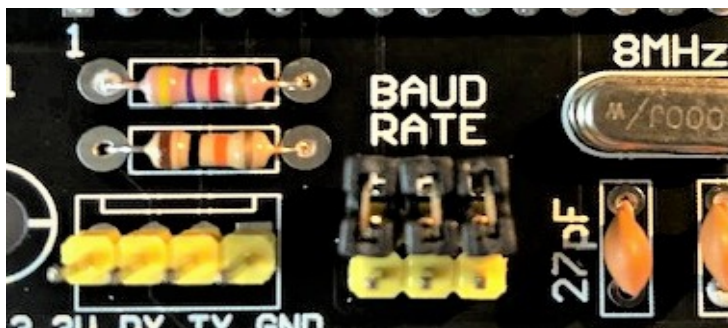
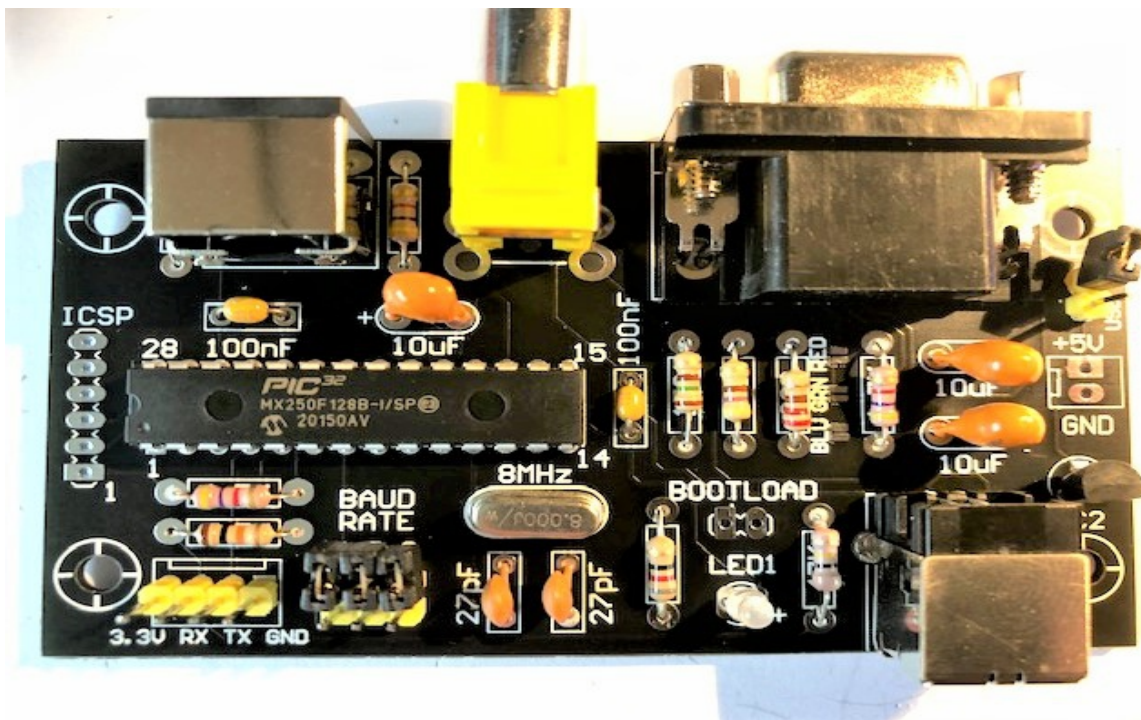
Now solder all the connectors and look at the picture below to compare it with your own results.



If all is well cut the header to the right size.



Solder the headers as shown below.



The baudrate jumpers are not really needed because you can also set the baudrate in the software, later more about this. On the picture they are placed on just one of the pins in the neutral position. In the other downloadable manual you can see how to set the baudrate with the jumpers. Headers for ICSP and bootload are not needed. You can also place a header on the 5 volts input but maybe you want to connect this in another way.



The jumper on the USB PWR connector is only placed on both pins if you connect the module to the USB connector. It will get its power supply from the USB in that case. If this is NOT the case do NOT CONNECT this header. Never connect the USB header and also the 5 volts power supply. Just choose for one of the two.

As a last thing you have to choose which colors the output of the ASCII terminal will have. green, red or blue. To choose you have to connect one of the jumpers with a little blob of solder. In the picture below we did choose red. Only connect one of the solder jumpers.



Now everything is ready connect the terminal to a VGA or composite monitor, connect a PS/2 keyboard and power it up with a stabilised 5 volts power supply. Take care to connect the – and + in the right way.

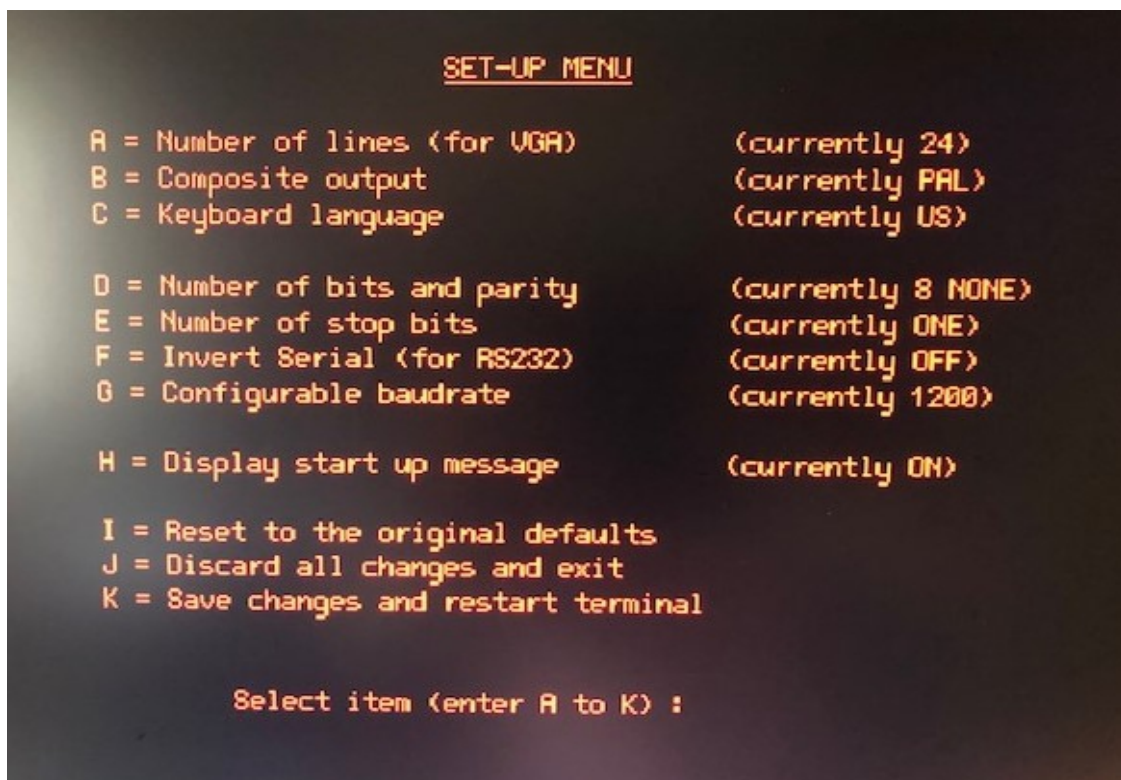
If all is well you get a message as shown below.



Congratulations you succeeded building the kit successfully.

It does not work? Check all parts, check for solder blobs between pins, read this manual again and compare pictures and so on.

If it works you can press together the Shift and F12 key's to get to the setup menu as shown below.



Here you can make all the needed changes and save them, by pressing K. Option G is for changing the baudrate. If the standard is 1200 you can change the baudrate with the jumpers on the PCB. But this is not really needed normally. So just use the setup here. If you save the changes the module will remember them after powering down and up again.

**Good luck with the ASCII terminal!**