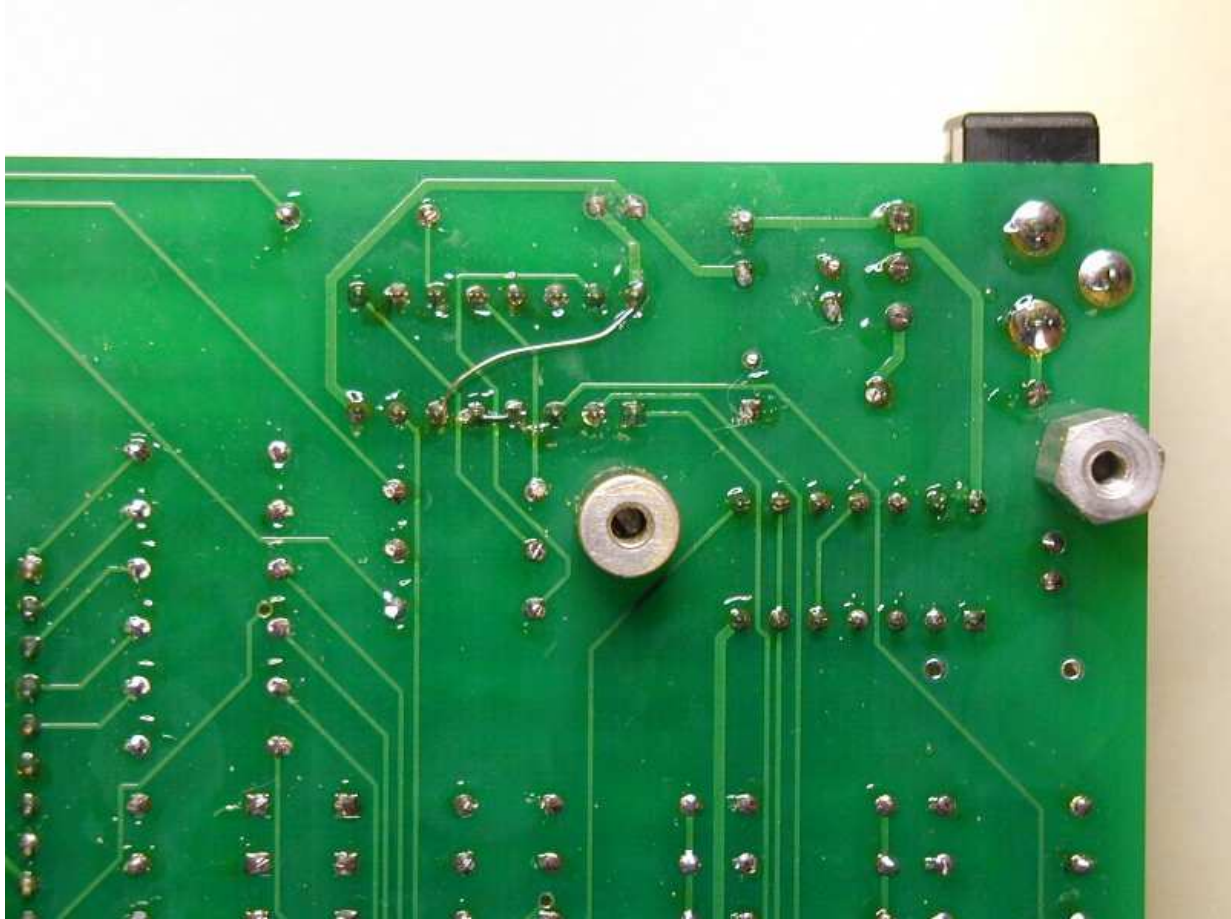


Chiptest Assembly Notes. Ver 1.0 and 1.1 PC Bds 4/12/13
Please read before assembling your board.

The V1.0 pc boards have a small connection error which requires two traces on the top side to be cut (already done) and a small jumper wire (supplied) to be soldered between two pins of U5 on the bottom side. Also you will need to short two pins on U5 with a small piece of resistor lead, also on the bottom side. This photo shows the jumpers:



There is one jumper from U5 pin 6 to U5 pin 16, and also U5 pins 4 and 5 are shorted together. Please install these jumpers with the socket for U5 empty. **Note: These mods are not required and should not be performed on the V1.1 pc boards.**

You may want to install the lower components (resistors and diodes) first and install the higher ones last. That gives the most time for the board to lie flat while you are trying to solder it. You will need to bend the resistor leads fairly close to the body of the resistors to fit the hole spacing used.

The two 100 uF capacitors, C8 and C10, are polarized, and must be installed correctly. The **positive** end is indicated on the pc board with a small + sign nearby.

Please use sockets for all six chips, to ease replacement in case of failure or damage. Also, I will be updating the source code for U1 if bugs are reported. Machine-pin sockets are more reliable long-term, but also more expensive

Make sure that the notch on each socket is next to the square pad (pin 1) before soldering.

The voltage regulator, diodes, and transistors must be installed as shown on the parts placement diagram.

When installing the crystal, keep it slightly away from the top side of the PC board, so it won't touch any traces. One way to do this is to cut a small strip of thin cardboard, about 3/16" wide, and place it between the two leads of the crystal, between the crystal and the board, to lift the crystal up a little while it is being soldered. After soldering, pull the cardboard out.

Two connectors are provided for the serial cable. The dual-row one has the correct pinout for a ribbon cable with IDC (crimp) connectors on both ends. One end would have a DB-9 and the other a 2x5 female. This cable would plug directly into the serial port on a PC. The other connector is intended for connection to USB to serial adapters that require a 6-pin header. This has not been tested, but I think the pinout matches some of these adapters.

Pin one of each connector header has a square pad on the pc board. For P2, pin two is across from it. The odd-numbered pins are down the inside of the connector, and the even-numbered ones are down the outside.

To attach the connector to the ribbon cable, slide one end of the cable into the interior of connector, and allow about one half inch of it to stick out the other side. The ribbon cable should fit nicely into the ribbed lower side of the top part of the connector. Check the centering of the cable to insure that there is a wire above each of the contacts in the lower section. The connector should lie across the ribbon cable, perpendicular to it. You may want to place a small piece of scotch tape from the ribbon cable, across the top part of the connector, and to the ribbon cable on the other side, to hold the connector in the correct position. Once you have it placed properly, place the connector in a vise and squeeze the two halves of the connector together slowly until the top half locking pieces snap into place on both sides. This will force the cable onto the contacts in the lower part of the connector, which will cut through the insulation and make contact to the wires. (If you are not pleased with the way it looks after the two halves are pressed together, you can gently pry out the locking pieces at either end of the connector and slide the top part up, then carefully remove the cable from the contacts and try again. Don't try taking the connector apart after squeezing it unless you are pretty sure you need to. An ohmmeter can be used to check for shorts or open contacts. You can use a resistor lead to probe the connector contacts.) The outer wire of the cable on the pin, near the pin one side of the header connects to pin one of the header. The next wire connects to pin 2, etc..

Voltage and current:

The 7805A regulator used in this design should have no trouble supplying the current needed for any of the supported chips. This regulator requires approx 7V DC minimum to provide 5V. It can tolerate a maximum input voltage of 35 volts. The 1N4003 diode protects the circuit in case the input voltage has the wrong polarity. The diode adds another 0.6V to the minimum voltage needed by the board, so you should feed in at least 7.6V or so to get 5V from the regulator. A 9V DC adapter with 150-200 mA current rating (or higher) would be a good choice.

Typical idle current for the board alone is about 20 mA. During testing, the current will increase as power is applied to the voltage dividers and to the device under test. Some chips may draw as much as 100 or 150 mA, but most will be more like 50 mA.

Resistor color bands:

1 Ohm	brown black gold gold
220 Ohms	red red brown gold
470 Ohms	yellow violet brown gold
820 Ohms	gray red brown gold
2.0K Ohms	red black red gold
6.8K Ohms	blue gray red gold
10K Ohms	brown black orange gold
18K Ohms	brown gray orange gold

Capacitor Marking:

0.1 uF caps may also be marked "104"

And finally, to quote Heathkit:

Always use rosin core, radio type solder (60:40 or 50-50 tin lead content) for all of the soldering in this kit. The warranty will be void for any kit in which acid core solder or paste has been used.