IRVC pc board/kit Assembly Notes. Ver 1.2 11/21/06
Please read before assembling your kit.

Make sure you have the polarity correct before applying voltage to your board. Incorrect polarity can damage the voltage regulator, the IRVC chip, and the IR sensor. Pin 1 (square pad) of the header should be connected to the positive voltage input.

You may want to install the lower components (resistors) 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 4.7 uF capacitor is polarized, and must be installed correctly. The square pad is the **positive** end, and is also marked with a + sign nearby. The negative side of the capacitor is marked with a – sign.

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

The voltage regulator, if used, and the IR sensor must be installed as shown on the parts placement diagram. The dome-shaped bulge on the IR sensor faces away from the center of the board.

The flat side of the LED is closer to the negative, or cathode lead. This end connects to pin 3 of the IRVC chip. The lead farther away from the flat is the positive, or anode end, which connects to the 240 ohm resistor. You may want to bend the LED leads so that the LED will face sideways, instead of straight up. If the LED doesn't light when you have power applied to the kit and you go into "learn" mode, it may be installed backwards. This won't hurt it, it just won't light.

If necessary, you can mount the IR sensor on one of our remote sensor boards and leave the LED on the IRVC pc bd, or you can mount the LED remotely, and attach it to the IRVC pc bd with wires. Leave at least 1.5" between the LED right and the IR sensor, to avoid interference.

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

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 78L05 regulator supplied with the kit requires approx 6.7V minimum to provide 5V. It can tolerate a maximum input voltage of 35 volts. This regulator is rated for 100 mA maximum continuous output current, but is capable of peak currents of around 250 mA at 25 degrees C. With no heatsink, the regulator can dissipate approx 0.7 watts. (Exceeding this value will cause it to shut down.)

Typical idle current for the IRVC board alone is about 4 mA, which is mostly the idle current of the 78L05 regulator. When the Learn LED is on, the current should increase to about 18 mA. Other voltage regulators can be used in place of the 78L05, if you need lower idle current, or minimum input voltage lower than 6.7Volts. Two choices might be LP2950 or LM2931 types. The TO-92 versions of these have the same pinout as the 78L05. If you select a lower quiescent current regulator, you may also want to change to a 50-100 uF electrolytic capacitor on the output of the voltage regulator, for better dynamic regulation. Also, you can use the board without a voltage regulator, provided you have 5 volts available. To do this, you will need to use a wire jumper to connect the voltage regulator input and output connections together. Without the regulator, the idle current should be approx 1.2 mA.

Avoiding latchup:

The PGA2310 and CS3310 chips require that the supply voltages to the analog part of the chip be present before applying the digital supply voltage. Failure to do this can cause damage to the chip. Also, you should not apply power to the IRVC chip when the PGA chip does not have its digital power supply voltage applied. One way to make sure that this does not happen is to power the IRVC chip from the same +5V supply used to power the digital part of the PGA chip.

Resistor color bands:

100 Ohms	brown black brown gold
240 Ohms	red yellow brown gold
10K Ohms	brown black orange gold
47K Ohms	yellow violet orange gold
470K Ohms	yellow violet yellow 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.