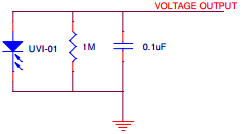
# Acquisition

See equipment list.xls,

# Construction

<http://airpi.es/step2.php> for pictures

Instructions does all construction then coding, preferable to do one sensor at a time I think – pick the easy ones first

1. Add cobbler to breadboard
   1. 55V, 3.3V and ground from cobbler to side rails on breadboard
2. Add ADC
   1. Notch at top, from above, pins on right to pi, pins on left inputs
   2. This is the same sensor, but a datasheet is available
   3. Right hand pin connections
      1. Pin 1 → 3.3V
      2. Pin 2 → 3.3V
      3. Pin 3 → Ground
      4. Pin 4 → GPIO #18
      5. Pin 5 → GPIO #24
      6. Pin 6 → GPIO #23
      7. Pin 7 → GPIO #25
      8. Pin 8 → Ground
3. Add Temperature and humidity sensor
   1. For DHT 22 – may be different for the Honeywell sensor, pins numbered with sensor facing
      1. Pin 1 → 3.3V
      2. Pin 2 → 3.3V via a 10KΩ resistor
      3. Pin 2 → GPIO #4
      4. Pin 4 → Ground
   2. Honeywell datasheet suggests
      1. 2.3V to 5.5V – 3.3 therefore ideal
      2. 1 VDD connect via 0.22 µF to ground – requires capacitor - 30p from maplin
      3. 2 VSS supply ground
      4. 3 SCL I 2 C clock – diagram suggest to supply via 2.2 kOhm resistor and clock?
      5. 4 SDA I 2 C data – diagram suggest to supply via 2.2 kOhm resistor and data?
   3. This sensor may require different code – the equations are in the datasheet
4. LDR
   1. One end to ground – the other to 3.3V via 2.2KΩ resistor, and to input 1 on ADC
   2. Ensure light can reach sensor
5. TGS2602
   1. May be slightly different as sensor has been upgraded
      1. Pin 1 → 5V
      2. Pin 2 → 5V
      3. Pin 3 → Ground via the 22KΩ resistor
      4. Pin 3 → Input 2 of the ADC
      5. Pin 4 → Ground
   2. According to diagram 2 and 3 are reversed, 1 and 4 should probably also be reversed
6. Connect MiCS 2714
   1. Slightly different code
      1. Pin 1 → Ground
      2. Pin 2 → Ground via the 10KΩ resistor
      3. Pin 2 → Input 3 of the ADC
      4. Pin 3 → 3.3V via the two small resistors (in series)
      5. Pin 4 → 5V
   2. According to datasheet
      1. H to 5 V
      2. A to grund via 75 ohm + 56 ohm resistor – which may be on board
      3. A to ground via 75 ohm resistor and FET?
      4. J to 5V
      5. ??
7. CO sensor
   1. Different to instructions
   2. MICS 5525
      1. Pin 1 → Ground
      2. Pin 2 → Ground via the 100KΩ resistor
      3. Pin 2 → Input 4 of the ADC
      4. Pin 3 → 5V via the three small resistors (in series)
      5. Pin 4 → 5V
   3. TGS 2442
      1. Looks the same as the TGS 2602 – but needs a pulse through 2 and 4
      2. Pulse cycle of 1 second – who knows how this works
      3. Precision timer available from maplin fro 30p
8. UV sensor
   1. Connect capacitor and resistor in parallel
   2. 
      1. Pin 2 → Ground via the 10K resistor
      2. Pin 2 → Pin 6 via the 4.7MΩ resistor
      3. Pin 4 → Ground
      4. Pin 6 → Pin 4 of the ADC
      5. Pin 7 → 5V
   3. Connect on op amp? Dunno what this means
      1. Because the output voltage is quite low (~100mV maximum), it is often used with a fixed gain amplifier to multiply the output before passing the signal into the analogue input pin (which typically measure 0 to 5V dc).
9. MQ135 not on instructions
10. PM 2.5
11. <http://www.instructables.com/id/Air-Pollution-Detector/>