Ultrasonic Ranging

First, the principle

　　The ultrasonic distance sensor to transmit a short ultrasonic burst, and then listen to the echo to detect objects. Can be calculated by measuring the echo pulse width (time), the distance of the target, the host micro-controller sends a trigger pulse control potentiometer ultrasonic sensor sends the crackle of a short 40 kHz (ultrasonic), this crackles in the air propagation speed of about 1130 feet per second, when it hit an object reflected back to the sensor, the sensor will produce an output pulse to the host microcontroller that echo is detected, the pulse width is corresponds to the burst echo to return to the sensor time required.

Second, to achieve

a) the delay function: the minimum delay is 0.1ms;
b) shows the function: to display the measured distance, in meters;
c) The data acquisition function: computing ranging to subtle as a unit;
d) Data processing functions: calculate the distance measured in centimeters as the unit;
e) The primary functions:
　1.Timer / Calculator initialization;
　2.Call the functions of data acquisition and data processing functions;
f) The timer 1:
　1. call the display function;
　2. every 500 milliseconds launch a measurement signal;

Note: The potentiometer ultrasonic distance sensor in the following cases can not accurately measure the distance:
a) and the object distance is greater than 3 m.
b) the reflection angle with the surface of the object is too small, so that sound waves can not reflect back to the sensor.
c) objects are too small to have sufficient strength to the sound to return to the sensor.