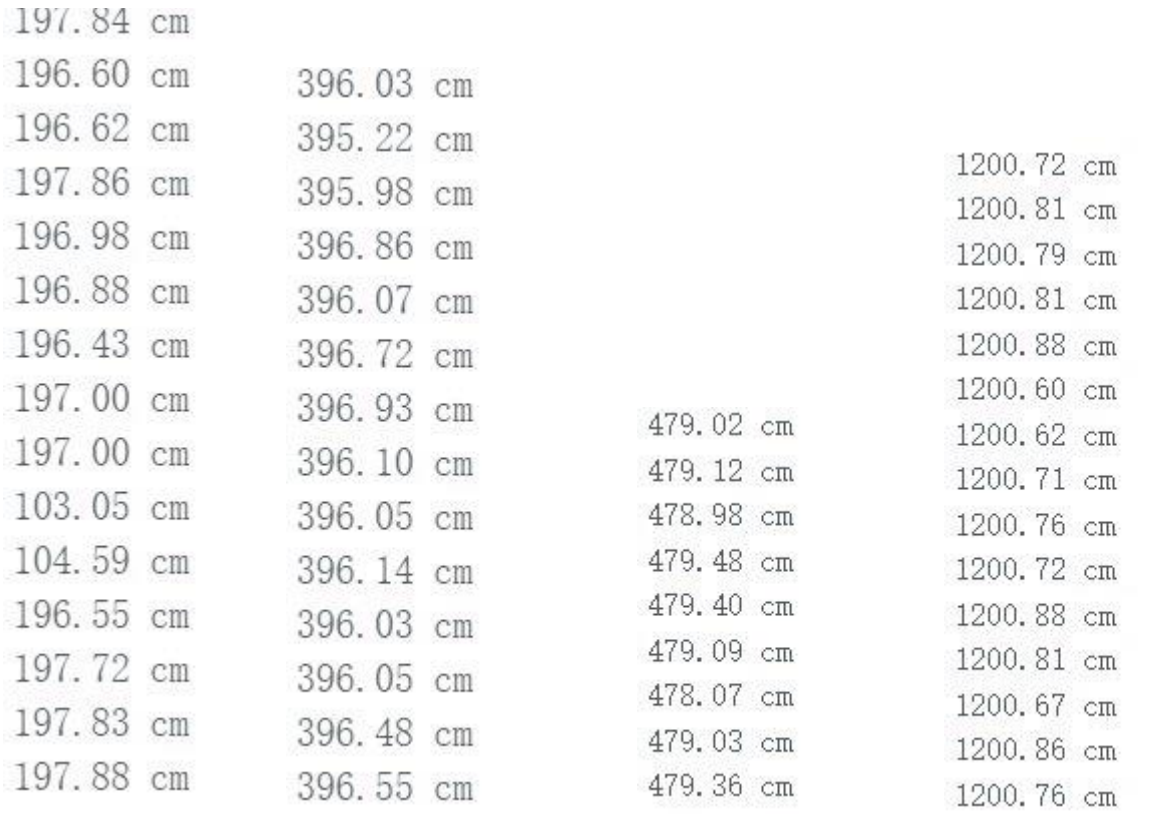
Ranging Distance

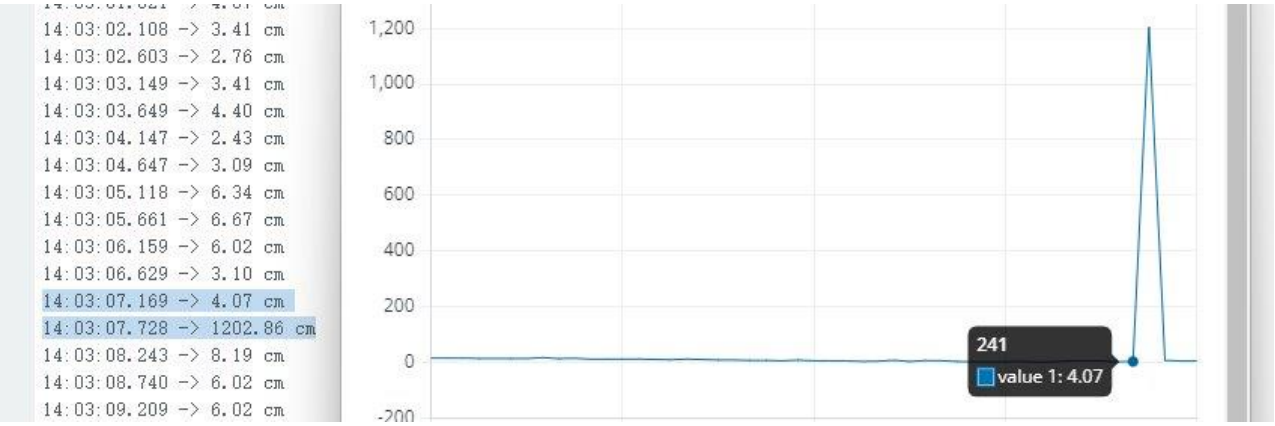
Maximum distances



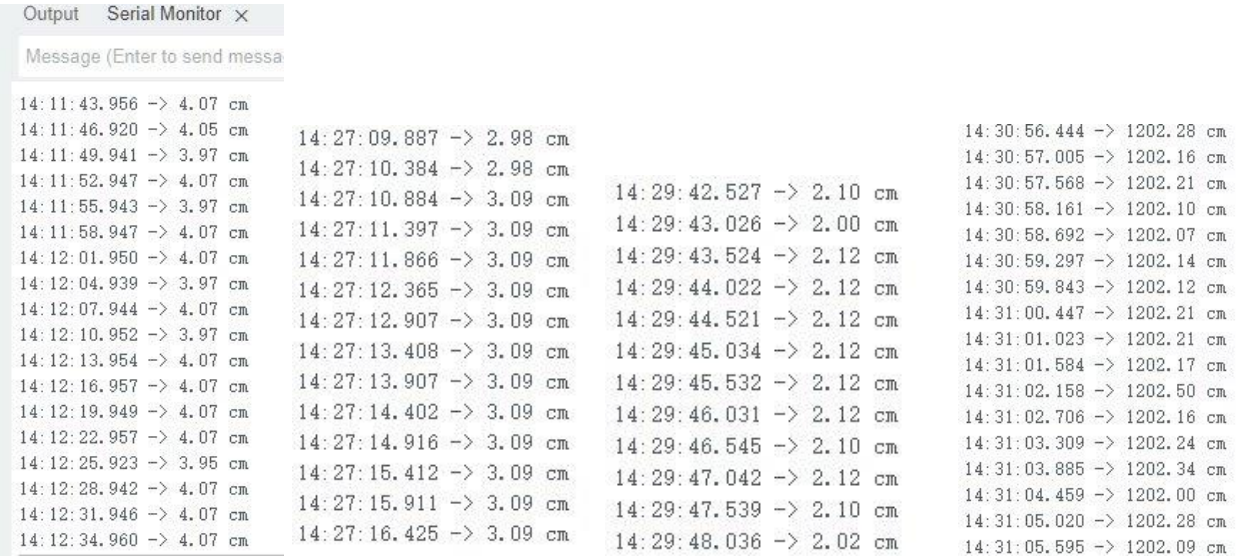
When the distance is less than 500cm, the sensor can stably read data. If the distance exceeds 500cm but is below 800cm, the data begins to fluctuate severely and cannot obtain stable data. If the distance exceeds 800cm, precise measurement cannot be achieved.

The Maximum distance is approximately 500cm.

Minimum distances



Gradually approaching the sensor, it can be noticed that the data suddenly stops at 4cm



4CM 3CM 2CM <2CM

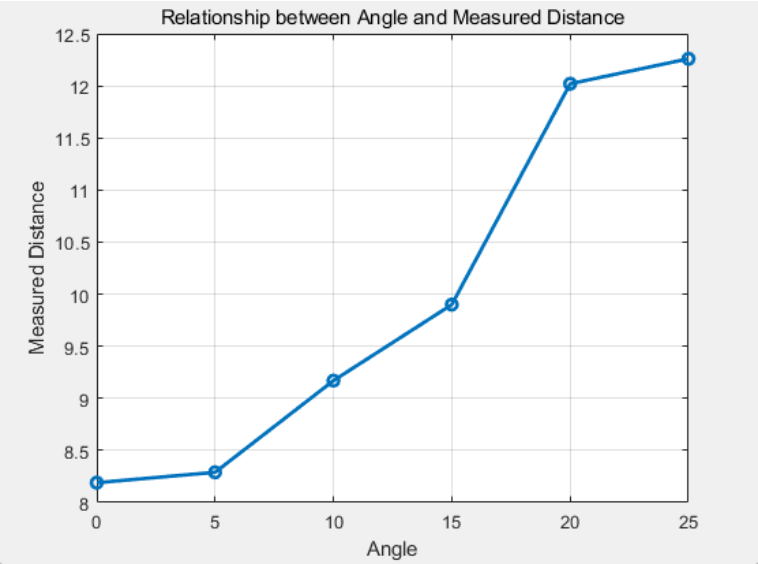
It can be noticed that the sensor cannot detect data when it is less than 2cm.

The Minimum distance is 2cm.

Measuring Angle

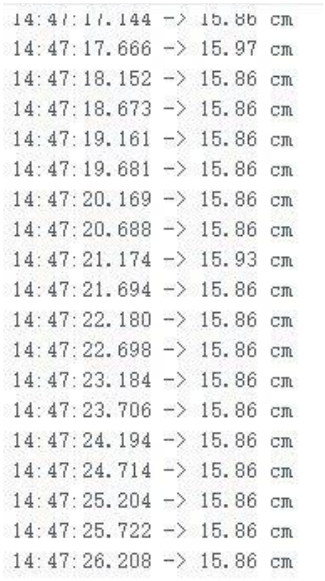
Gradually increase the angle of the sensor, and the data is also gradually increasing. It can be inferred from this that the measurement angle is approximately 15-20 degrees.

```
15:33:09.945 -> 8.19 cm
15:33:10.466 -> 8.19 cm
15:33:10.954 -> 8.29 cm
15:33:11.472 -> 8.29 cm
15:33:11.961 -> 8.19 cm
15:33:12.480 -> 8.17 cm
15:33:12.969 -> 8.29 cm
15:33:13.487 -> 8.29 cm
15:33:13.975 -> 8.17 cm
15:33:14.494 -> 9.90 cm
15:33:14.984 -> 12.12 cm
15:33:15.502 -> 12.02 cm
15:33:15.992 -> 12.12 cm
15:33:16.509 -> 10.26 cm
15:33:16.997 -> 12.10 cm
15:33:17.519 -> 12.00 cm
15:33:18.005 -> 12.12 cm
```

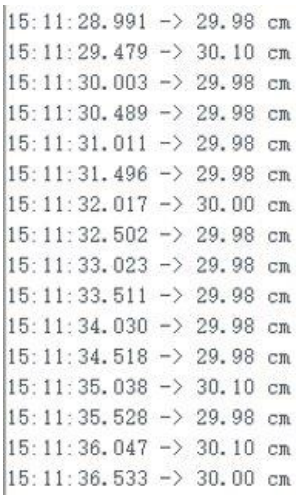


The measuring Angle is about 15-20 degrees.

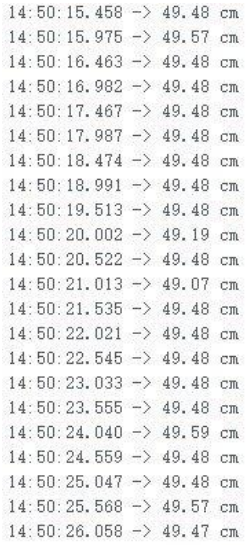
Accuracy



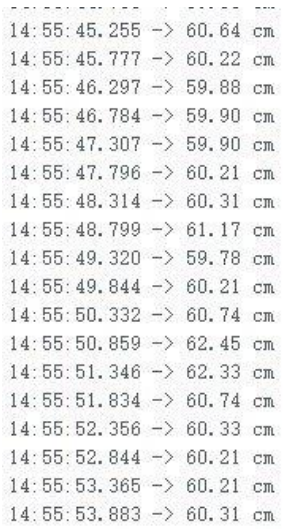
15cm



30cm



50cm



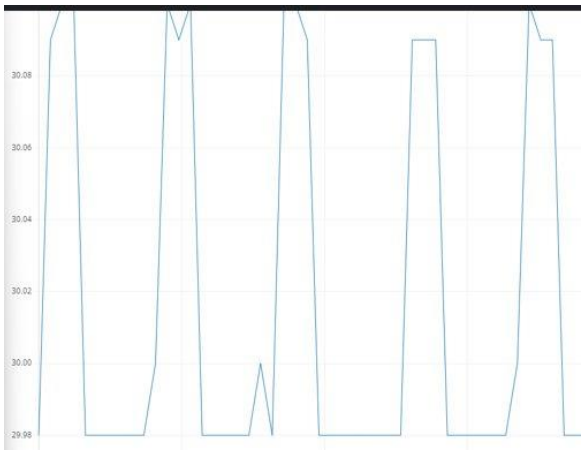
60cm

We can observe that the error of the sensor is basically within plus or minus 0.5cm

Precision

Place the object 30cm in front of the sensor, measure multiple sets of data.

```
15:13:06.857 -> 29.98 cm
15:13:06.952 -> 29.98 cm
15:13:07.050 -> 29.98 cm
15:13:07.147 -> 30.00 cm
15:13:07.277 -> 29.98 cm
15:13:07.374 -> 30.10 cm
15:13:07.471 -> 30.10 cm
15:13:07.569 -> 30.09 cm
15:13:07.697 -> 29.98 cm
15:13:07.795 -> 29.98 cm
15:13:07.893 -> 29.98 cm
15:13:07.990 -> 29.98 cm
15:13:08.088 -> 29.98 cm
15:13:08.185 -> 29.98 cm
15:13:08.317 -> 29.98 cm
15:13:08.414 -> 29.98 cm
15:13:08.511 -> 30.09 cm
15:13:08.606 -> 30.09 cm
15:13:08.736 -> 30.09 cm
15:13:08.834 -> 29.98 cm
15:13:08.930 -> 29.98 cm
15:13:09.028 -> 29.98 cm
15:13:09.157 -> 29.98 cm
15:13:09.253 -> 29.98 cm
```



30cm

- The Mean: 29.8932 cm
- The Variance: 0.005761 cm^2
- The Standard Deviation:s≈0.0759 cm