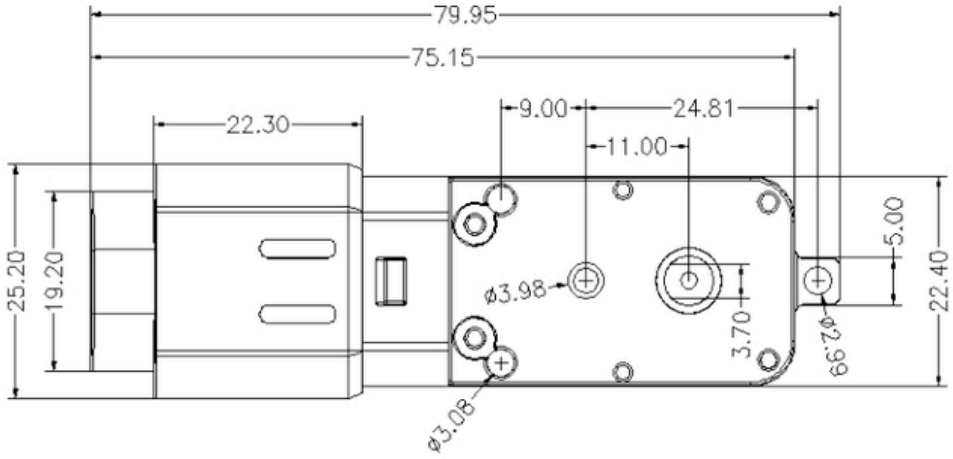
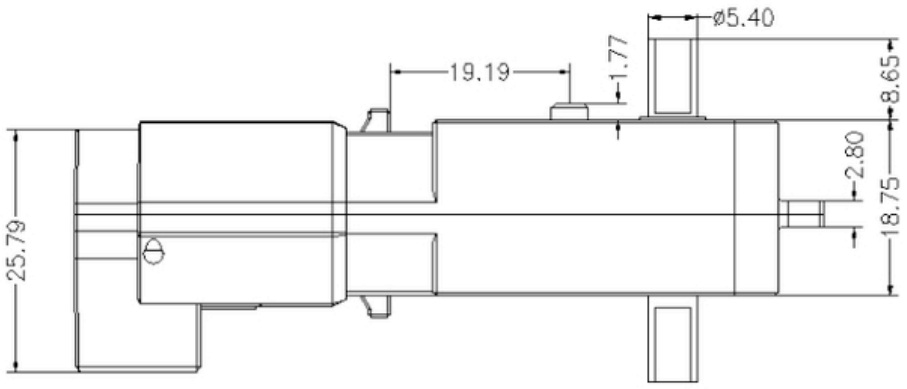
DG01D-E-sparkfun motor with encoder

Specification:
Dimension: 80x22.4x25.8mm
Voltage:4.5V~9V
Gear ratio:1:48
No load RPM 140RPM @4.5V
No load current 0.15A
Stall torque 0.15 N.M
Stall current 0.75A @6V
Encoder resolution : 6 for 1 round
Dimension drawing:





1.Encoder board specification
Board size: 26*22*1.2mm
2. Terminal pin definition:

G: hall power negative;
H1: hall H1 output signal, square wave;
H2: hall H2 output signal, square wave;
V: hall power positive;
M+: motor positive pole;
M-: motor negative pole;

Remark: 1. The voltage between V-G is determined according to the power supply voltage of the single chip microcomputer used, generally 3.3V or 5V is used.

2. The frequency of the output square wave of H1 and H2 and the speed of the motor are related to the number of poles of the used magnetic disk.

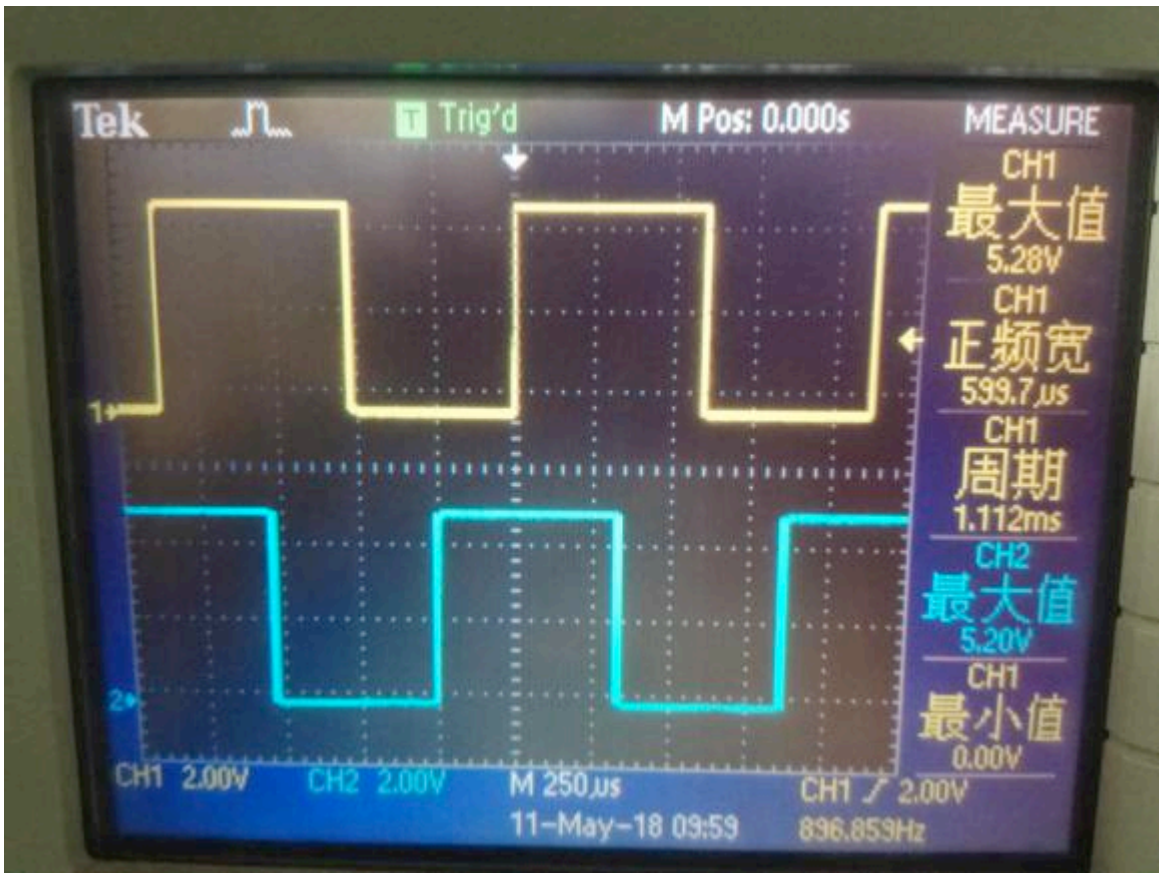
3. The voltage between M+ and M- is set according to the motor voltage used.

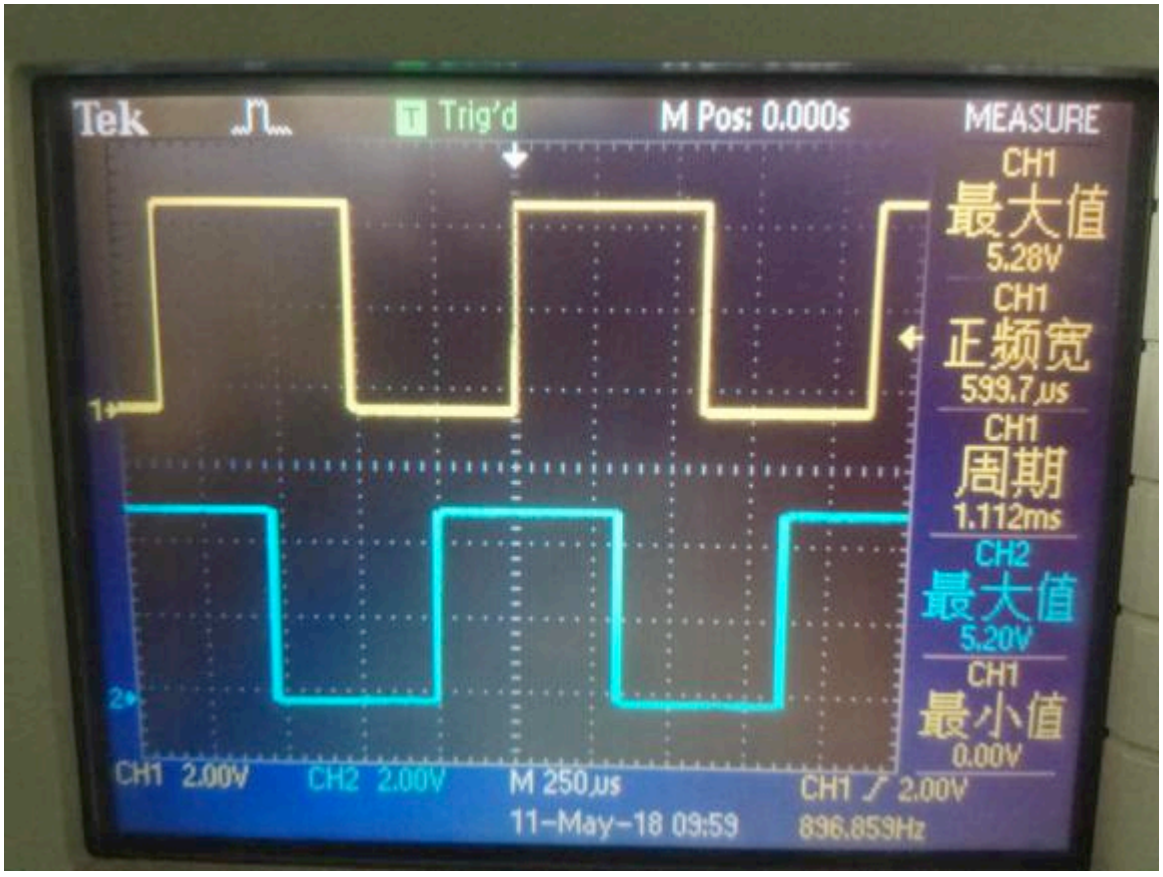
3. Principle

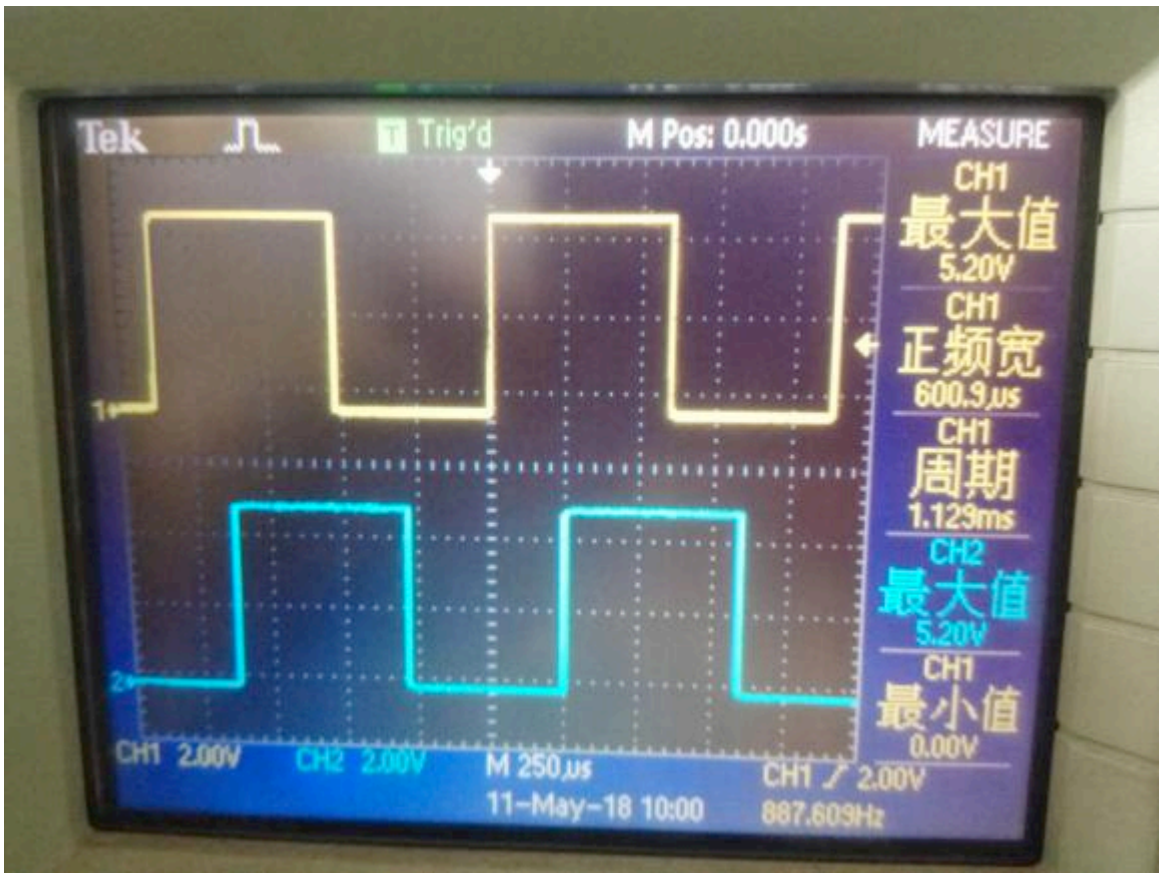
3.1 Motor speed measurement: The Hall sensor can sense the N and S poles of the magnetic plate. We use the Hall of the S pole to sense that when each Hall sensor senses the S of the magnetic plate, the Hall output will output a high level; When the N pole of the magnetic plate, the Hall output will output a low level. When the motor rotates continuously, a square wave is output at the Hall output. The speed of the motor can be known based on the period T of the output square wave. Assuming that the magnetic disk we use is the P-polarity, the measured square-wave period is T. Measure motor speed: n=60/PT.

3.2 Motor reversal measurement: Two Hall sensors are placed in two different positions in the circuit. When the motor turns differently, the two Hall outputs have different square waves.

When the motor rotates forward, H1 detects the rising edge, H2 enters the falling edge; when the motor reverses, H1 detects the falling edge, H2 is also the falling edge.


Tek
Trig'd
M Pos: 0.000s
MEASURE
CH1
最大值
5.28V
CH1
正频宽
599.7µs
CH1
周期
1.112ms
CH2
最大值
5.20V
CH1
最小值
0.00V
CH1 2.00V
CH2 2.00V
M 250µs
CH1 ∕ 2.00V
11-May-18 09:59
896.859Hz


Tek
Trig'd
M Pos: 0.000s
MEASURE
CH1
最大值
5.28V
CH1
正频宽
599.7µs
CH1
周期
1.112ms
CH2
最大值
5.20V
CH1
最小值
0.00V
CH1 2.00V
CH2 2.00V
M 250µs
CH1 ∕ 2.00V
11-May-18 09:59
896.859Hz


Tek
Trig'd
M Pos: 0.000s
MEASURE
CH1
最大值
5.20V
CH1
正频宽
600.9µs
CH1
周期
1.129ms
CH2
最大值
5.20V
CH1
最小值
0.00V
CH1 2.00V
CH2 2.00V
M 250µs
CH1 ∕ 2.00V
11-May-18 10:00
887.609Hz