Servo Software---Communication

1. Basic functions of software

The position of basic function buttons of RSConfigurator software is shown in Figure 1. There are 7 common buttons, which are ① Language, ② Communication Settings, ③ Parameter editing and management, ④ Tunning and scope, ⑤ Driver status, ⑥Modbus 03 Read register , ⑦Modbus 06 Write signle register.

Figure 1

① Language

RSConfigurator software language supports Chinese and English, and the two languages can be switched. It should be noted that the software needs to be restarted each time the language is switched to take effect.

② Communication settings

The communication settings are shown in Figure 2. Among them, the port information can be checked through "Computer-Properties-Device Manager". After selecting the port correctly, click "Connect" to successfully communicate.

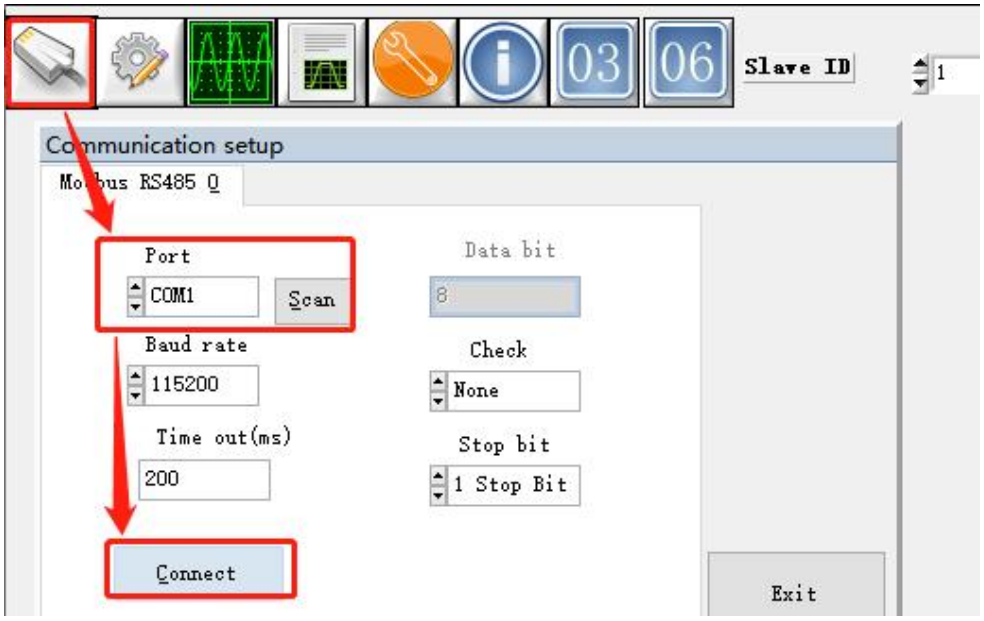
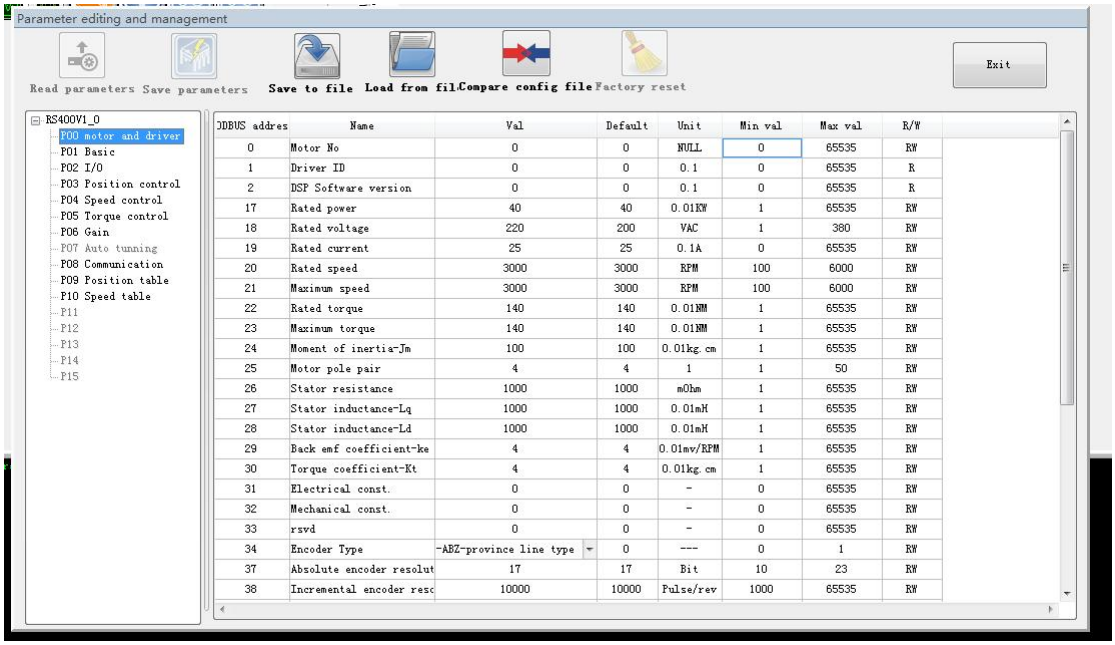


Figure 2

③ Parameter editing and management

The interface of parameter editing and management is shown in Figure 3. In this interface, there are 7 function buttons. They are “Read parameters”, “Save parameters”, “Save to file”, “Load from file” and “Compare config file”, “Factory reset”.



ODBUS addres	Name	Val	Default	Unit	Min val	Max val	R/W
0	Motor No	0	0	NULL	0	65535	RW
1	Driver ID	0	0	0.1	0	65535	R
2	DSP Software version	0	0	0.1	0	65535	R
17	Rated power	40	40	0.01KW	1	65535	RW
18	Rated voltage	220	200	VAC	1	380	RW
19	Rated current	25	25	0.1A	0	65535	RW
20	Rated speed	3000	3000	RPM	100	6000	RW
21	Maximum speed	3000	3000	RPM	100	6000	RW
22	Rated torque	140	140	0.01NM	1	65535	RW
23	Maximum torque	140	140	0.01NM	1	65535	RW
24	Moment of inertia-Jm	100	100	0.01kg.cm	1	65535	RW
25	Motor pole pair	4	4	1	1	50	RW
26	Stator resistance	1000	1000	mOhm	1	65535	RW
27	Stator inductance-Lq	1000	1000	0.01mH	1	65535	RW
28	Stator inductance-Ld	1000	1000	0.01mH	1	65535	RW
29	Back emf coefficient-ke	4	4	0.01mv/RPM	1	65535	RW
30	Torque coefficient-Kt	4	4	0.01kg.cm	1	65535	RW
31	Electrical const.	0	0	-	0	65535	RW
32	Mechanical const.	0	0	-	0	65535	RW
33	rsvd	0	0	-	0	65535	RW
34	Encoder Type	-ABZ-province line type	0	---	0	1	RW
37	Absolute encoder resolut	17	17	Bit	10	23	RW
38	Incremental encoder resc	10000	10000	Pulse/rev	1000	65535	RW

Figure 3

As shown in Figure 3, don’t modify the parameters of group P00. This group of parameters are motor parameters, which are stored in the encoder. Abnormal parameters will cause the drive to alarm.

Read parameters：Read the data from the drive to the debugging software.

Save parameters：Permanently save the currently set/modified parameters to the drive.

Save to file：Save the parameters of the drive in the computer in the form of a file.

Load from file： Import the drive parameter file saved before into the debugging software.

Compare config file：There are two comparison functions:

A. Import two different parameter files, which can be compared automatically, and it is convenient to check the difference parameters.

B. Import only one parameter file, and then check "Current drive parameters" to compare the current drive parameters with the saved parameter file, which is convenient for checking the difference parameters.

Reset：Restore the parameters of the drive to the factory default values.

④ Tunning and scope

The interface of tunning and scope is shown in Figure 4.

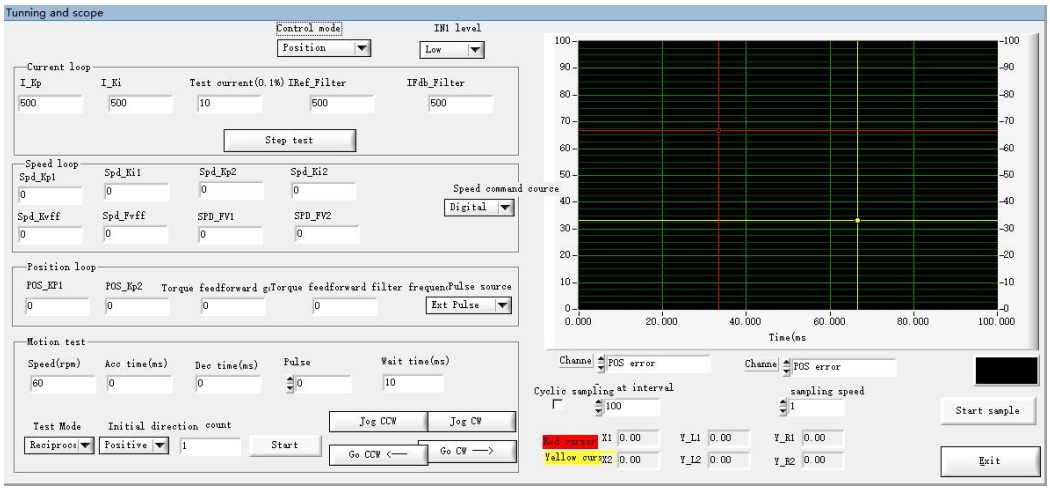


Figure 4

⑤ Driver status

The interface of driver status is shown in Figure 5.

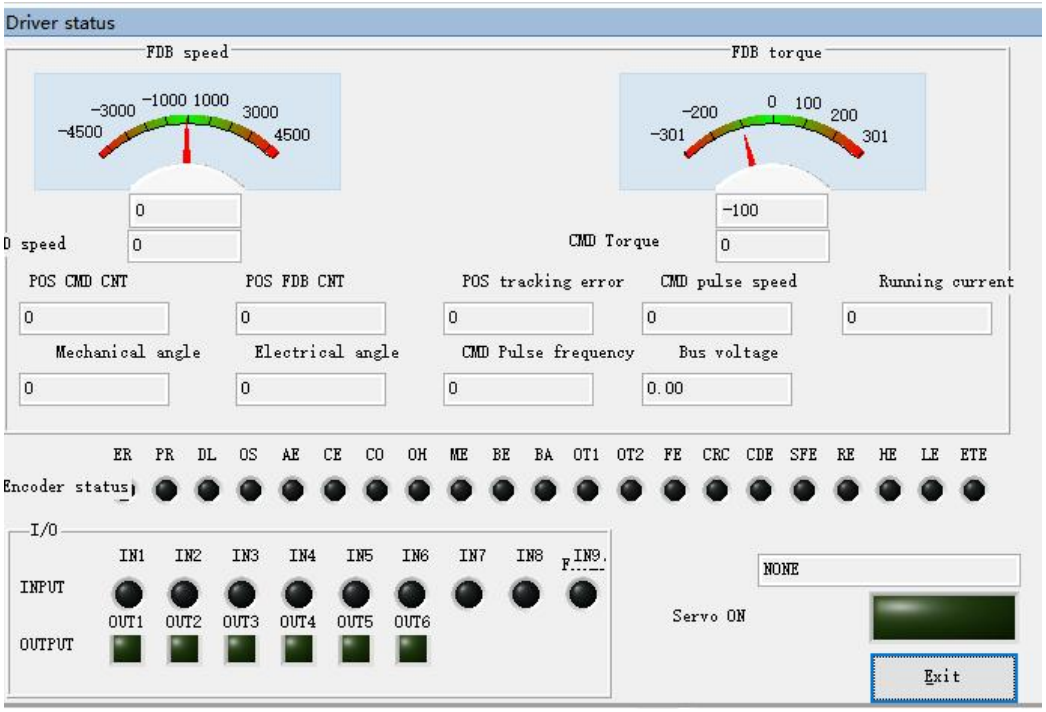


Figure 5

POS CMD CNT：Determine whether the motor has lost steps by monitoring the input of the number of pulses. This function can only be seen after the drive is enabled.

FDB speed： Monitor the current maximum speed of the motor and the difference between the actual speed and the given speed.

FDB torque： Determine whether the motor is in an overload state by monitoring the state of the motor running torque.

Current fault status: Display the alarm information of the drive.

Input/Output Port: Monitor the IO status of the drive.

⑥ Modbus 03 Read register

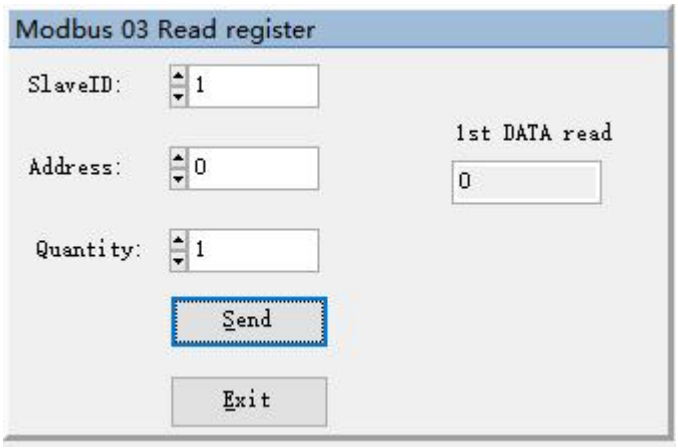


Figure 6

⑦ Modbus 06 Write signle register

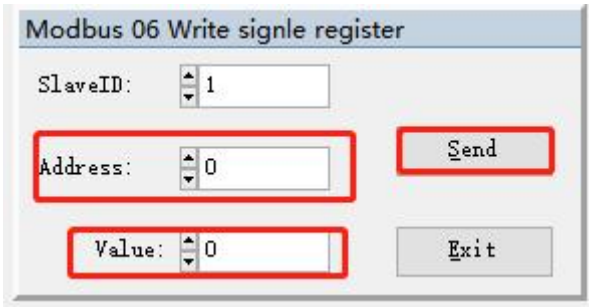


Figure 7

As shown in Figure 7, write the address of the target parameter in "Address", write the parameter value of the target parameter in "Value", and finally click "Send".

2. Motion test

On the basis of successful communication, motion test can be performed. As shown in Figure 8, the control mode selects "Position", the IN1 level selects "High", the speed command source selects "Tunning", and the pulse source selects "Tunner".

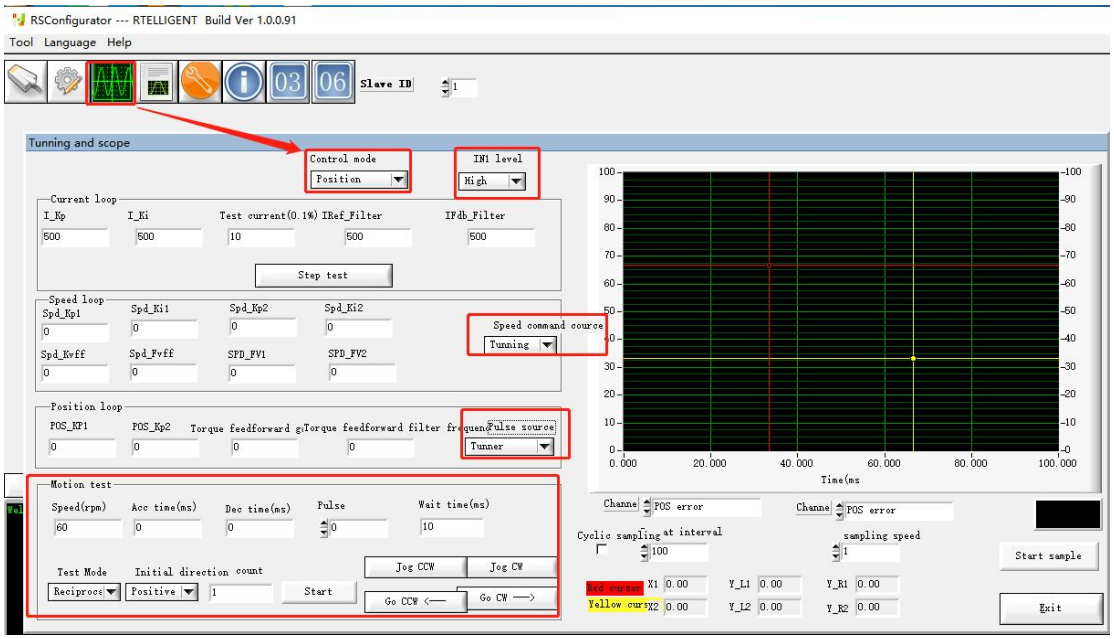


Figure 8

3. Oscilloscope monitoring operation

The oscilloscope monitoring interface is shown in Figure 9.

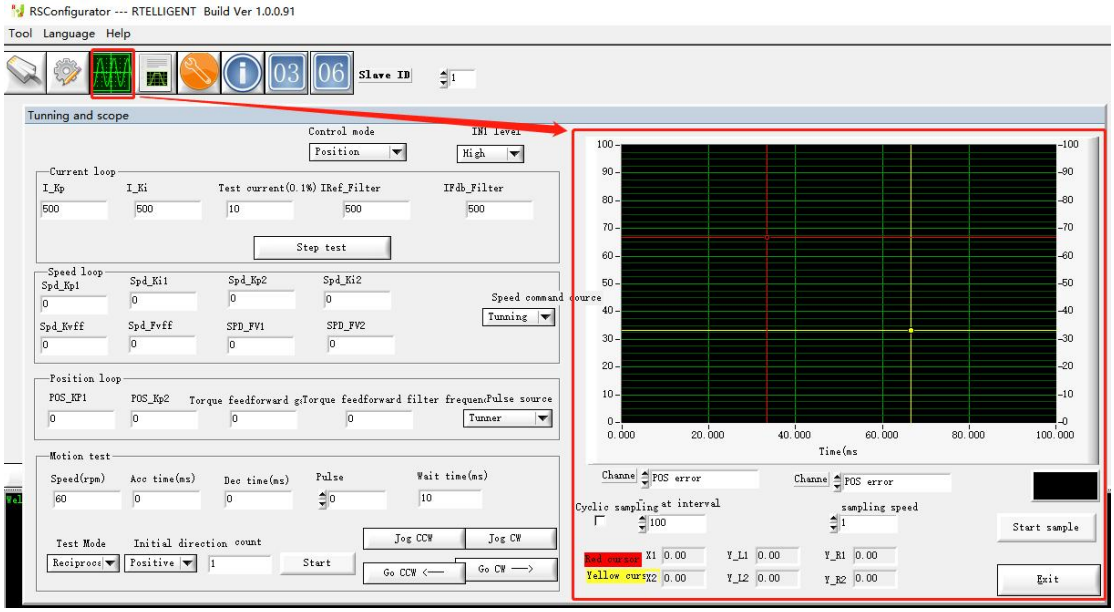


Figure 9

The oscilloscope can sample two parameters at the same time, so as to

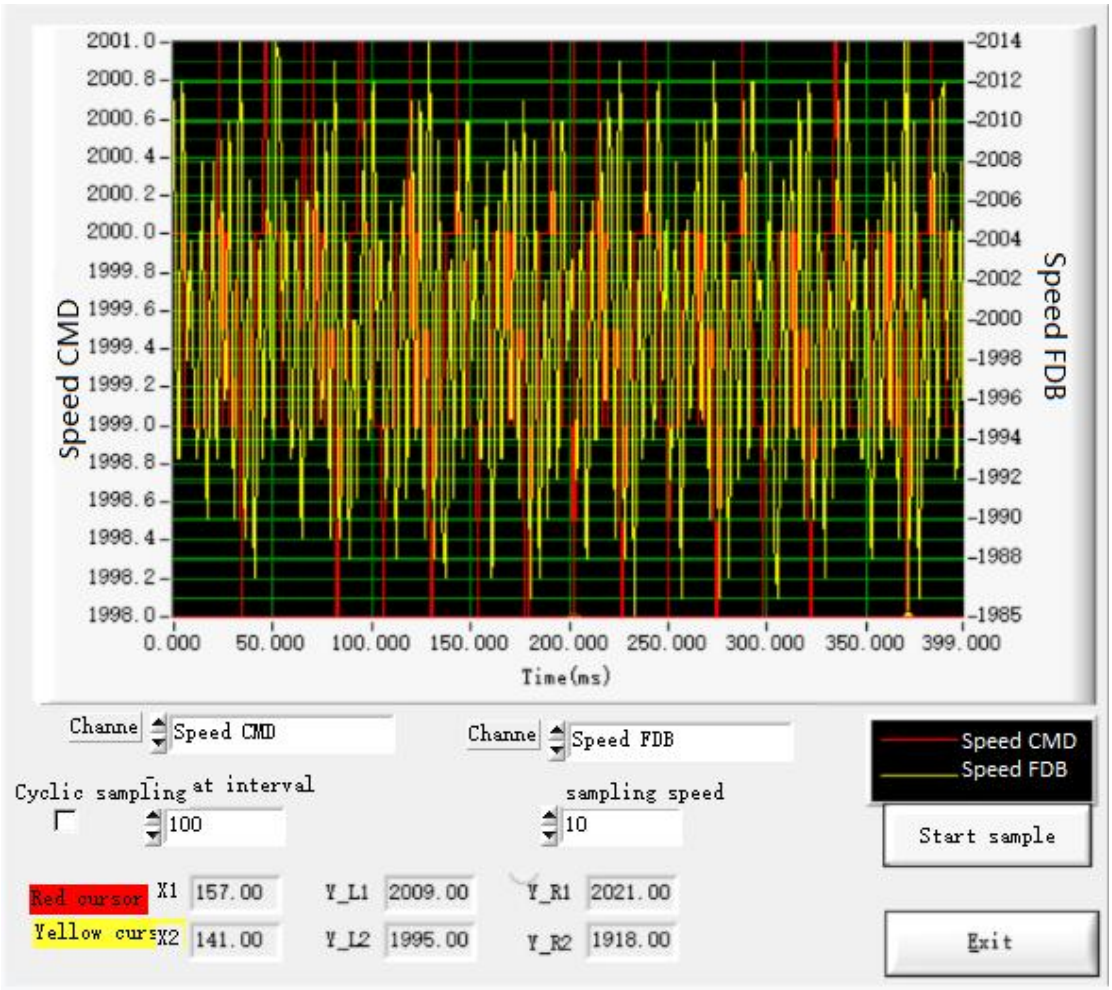
get a more detailed understanding of the changing trend of the parameters during the operation of the motor.

For the use of oscilloscope, first set the contents to be observed on channel 1 and channel 2. Set the sampling speed to an appropriate value to collect waveforms of one or more running cycles, which can be set according to specific conditions, and then sample when the motor is running.

The following is a sampling example of commonly used parameters.

A. Speed loop setting and speed feedback monitoring

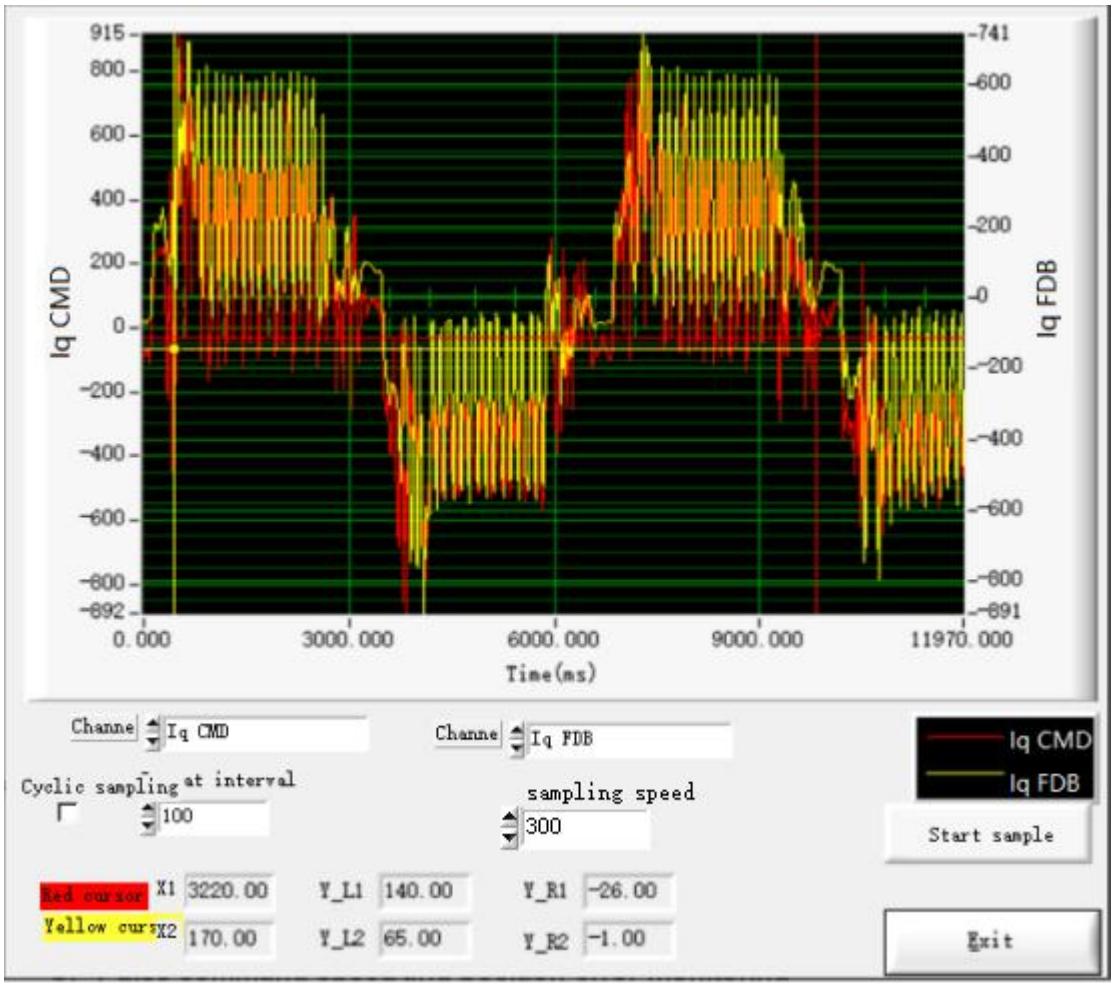
The speed of the motor is sampled while the motor is running continuously at 2000 rpm.



From the sampling results, it can be seen that the speed loop of the motor is given in line with the 2000 rpm condition we set. The speed feedback of the motor is around 2000 rpm, and there is a deviation of 15, which is a normal situation.

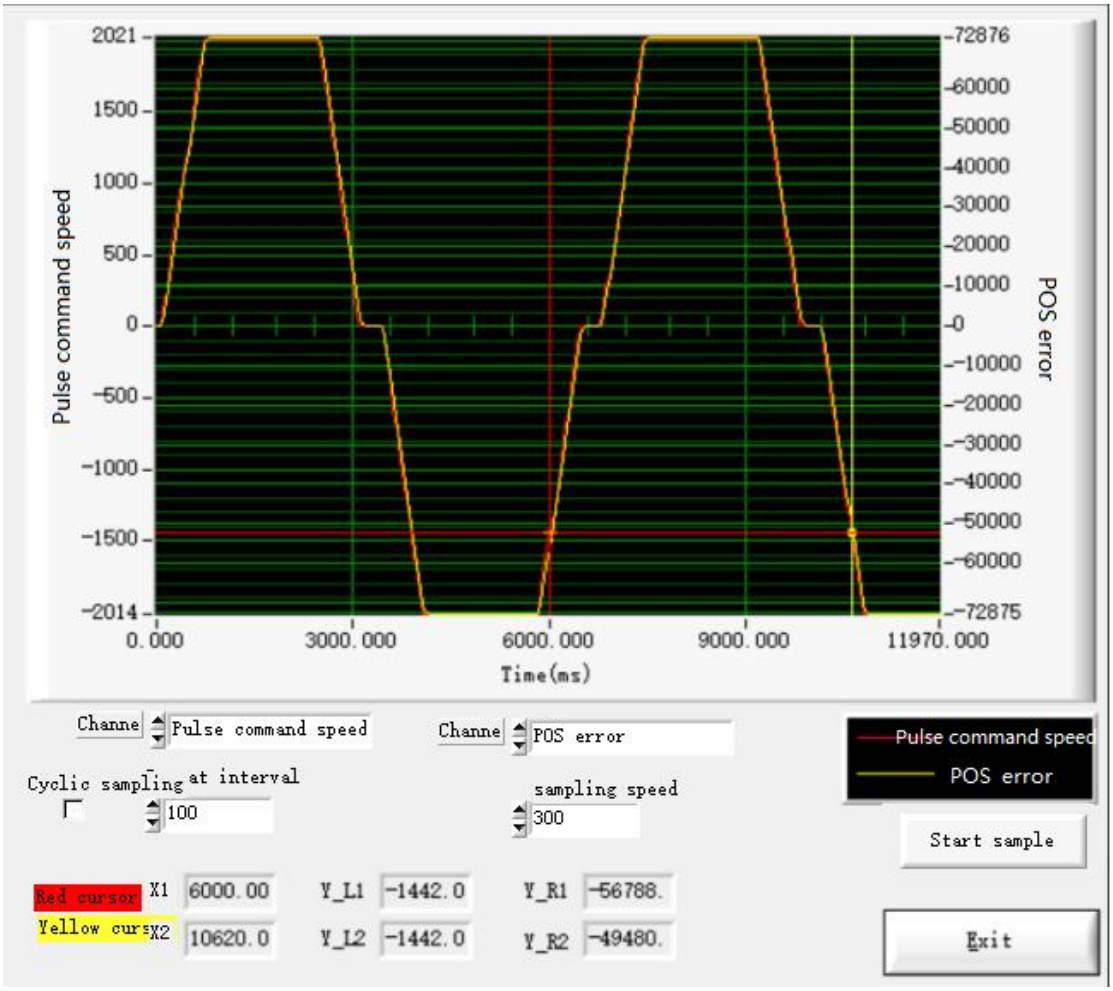
B. Current monitoring

Sampling the motor current waveform when the motor runs forward and reverse at 2000 rpm, 3 times overload, and no load. (Motor rated current 2.1A)



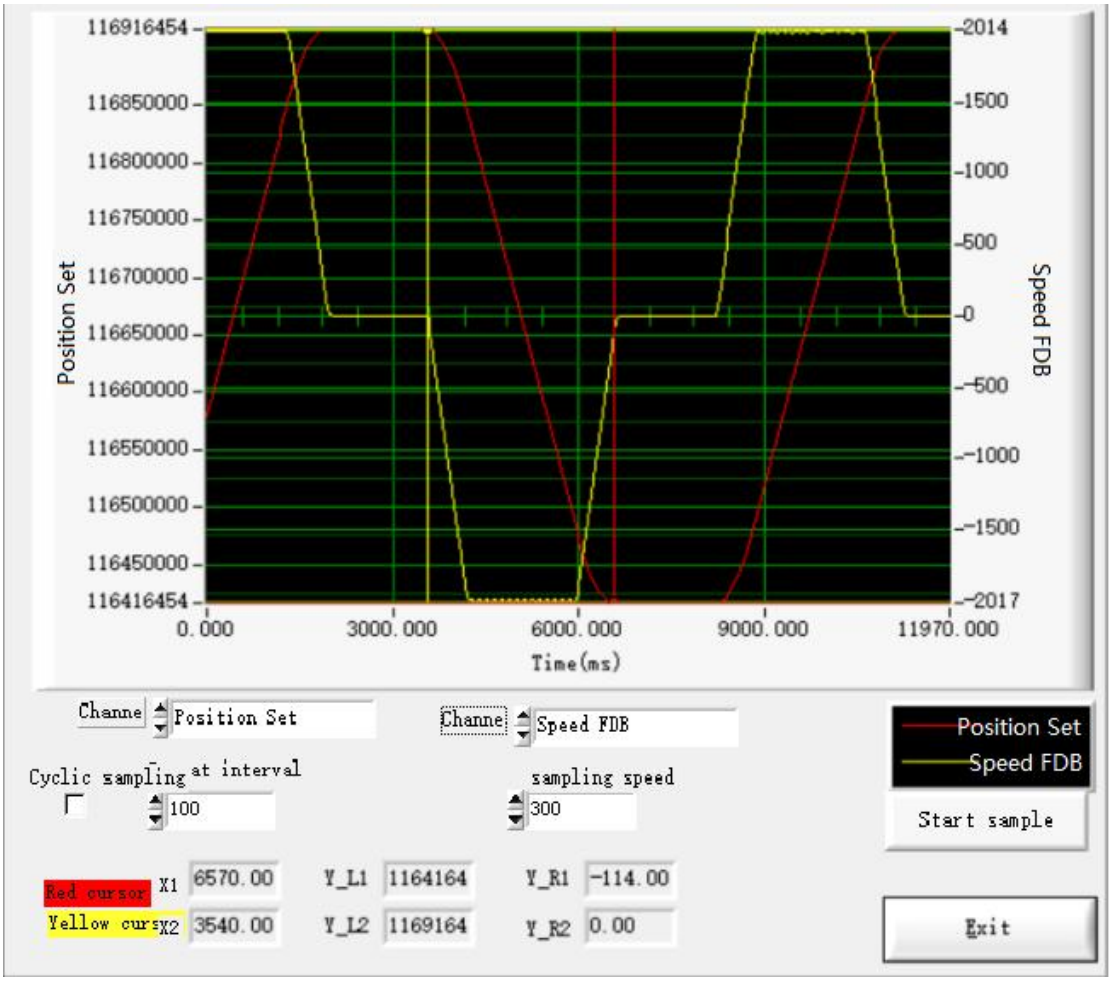
The results show that the peak current under this condition is only 0.9A.

C. Pulse command speed and position error monitoring



From the command speed curve and position error curve, the real-time situation of the command given by the host computer can be detected, and the corresponding time length of the motor in different states can be measured. Waiting time, time required to accelerate from 0 to specified speed, time to run at specified speed, time to decelerate from specified speed to 0. In the actual situation, if the monitored position error curve fluctuates greatly, the corresponding parameters can be adjusted according to the curve.

D. Position given monitoring



The position given curve can detect the actual position of the motor. The above figure shows that the motor is always moving between two points. The constant value part of the red curve in the above figure is that the motor is always in the current position, and its area represents the time spent at the current position. The dwell time in the above figure is 994ms; the rising (falling) curve represents the movement from the starting point to the end point (the end point to the end point to 994ms). starting point), its length is the time for the motor to run a distance, the running time in the above figure is 1894ms.