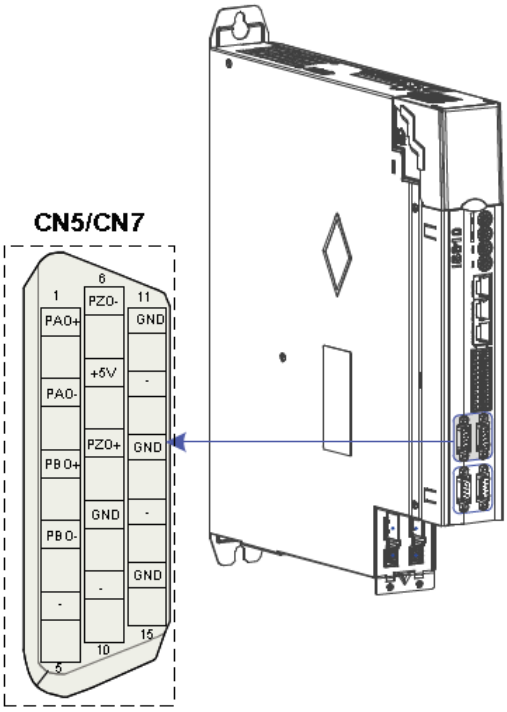
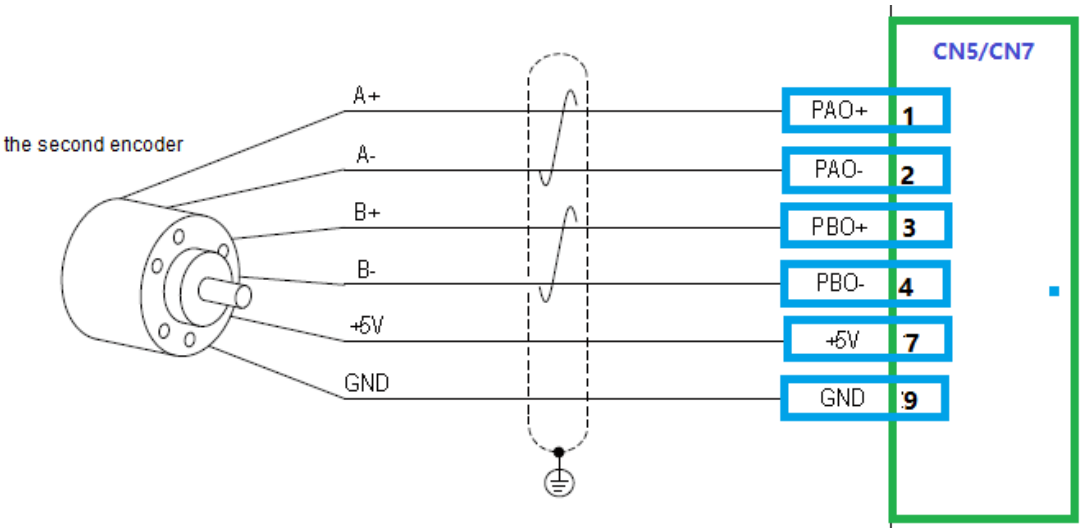
Full closed loop of IS810N Drivers

In full closed-loop control mode, the frequency-division output function cannot be used, and the frequency-division output terminal is used as the input terminal of external scale signal.

The port of CN5 is the Full closed loop interface of Axis1, The port of CN7 is the Full closed loop interface of Axis2

When you use Full closed loop , you can use **Cyclic synchronous position mode(CSP)，we do not support** Profile Position Mode (PP).





Relevent Parameters:

① H05-38=2

H05-38	Servo pulse output source	0: Encoder frequency-division output 1: Pulse synchronous output 2: Frequency-division or synchronous output inhibited	-	Set the servo pulse output source.	At stop	Power-on again	0

② H0F-00=1

H0F-00	Parameter name	Encoder feedback mode			Property	At stop	Control Mode	P
	Setting Range	0 to 1	Unit	-	Effective Time	Immediate	Default	0

It sets the encoder feedback signal source in full closed-loop control.

Value	Meaning	Description
0	Internal encoder feedback	The position feedback signals come from the internal encoder of the motor.
1	External encoder feedback	The position feedback signals come from the full closed-loop external encoder. 1st electronic gear ratio is used.

③ H0F-01

Manually rotate the motor and observe H0F-18(Feedback pulse counter of internal encoder)and H0F-20(Feedback pulse counter of external encoder), if H0F-18 and H0F-20 increase or decrease at the same time, then H0F-01 does not need to be modified, otherwise, H0F-01 needs to be modified

H0F-01	Parameter name	Running direction of external encoder			Property	At stop	Control Mode	P
	Setting Range	0 to 1	Unit	-	Effective Time	Immediate	Default	0

It sets the counting direction of feedback pulses from the external encoder relative to the internal encoder during motor rotation.

Value	Meaning	Description
0	Standard running direction	During motor rotation, the pulse feedback counter of the external encoder (H0F-20) has the same direction as the internal encoder (H0F-18).
1	Reverse running direction	During motor rotation, the pulse feedback counter of the external encoder (H0F-20) has the opposite direction as the internal encoder (H0F-18).

Note:

1. Ensure to make check before trial running. For details on the operation, refer to *Chapter 5 Control Modes*.

2. Incorrect setting of this function will cause a runaway accident.

④ H0F-04

H0F-04	Parameter name	External encoder pulses per one motor revolution			Property	At stop	Control Mode	P
	Setting Range	0 to 1073741824	Unit	External encoder unit	Effective Time	Power-on again	Default	10000

It sets the feedback pulses from the external encoder that causes one turn of the motor shaft.

This parameter defines the count relationship between feedback pulses from the external encoder and those from the internal encoder.

Calculate the value based on analysis of mechanical parameters. When it is rigid coupling between the motor and the external encoder (scale), you can also set as below:

1) Manually rotate the motor and observe H0F-18 (Feedback pulse counter of internal encoder) meanwhile. After ensuring that the motor rotates for a turn (H0F-18 = servo motor resolution), calculate the change of H0F-20 (Feedback pulse counter of external encoder).

The absolute calculated data is the value of H0F-04.

2) If H0F-18 = X1, H0F-20 = Y1 before rotating the motor, and H0F-18 = X2, H0F-20 = Y2 after rotating the motor:

H0F-04 = Servo motor resolution x (Y2 – Y1)/(X2 – X1)

The calculated data must be positive; if not, perform the first step again.

There is a deviation with the data calculated by using this method for non-rigid connection.

Note:

Ensure correct setting of H0F-04. Otherwise, Er.B02 may occur after servo running.

⑤ H0F-08

H0F-08	Parameter name	Full closed-loop position deviation excess threshold			Property	During running	Control Mode	P
	Setting Range	0 to 1073741824	Unit	External encoder unit	Effective Time	Immediate	Default	10000

It sets the position deviation threshold at which the servo drive detects fault Er.B02 indicating that the position deviation is excessive.

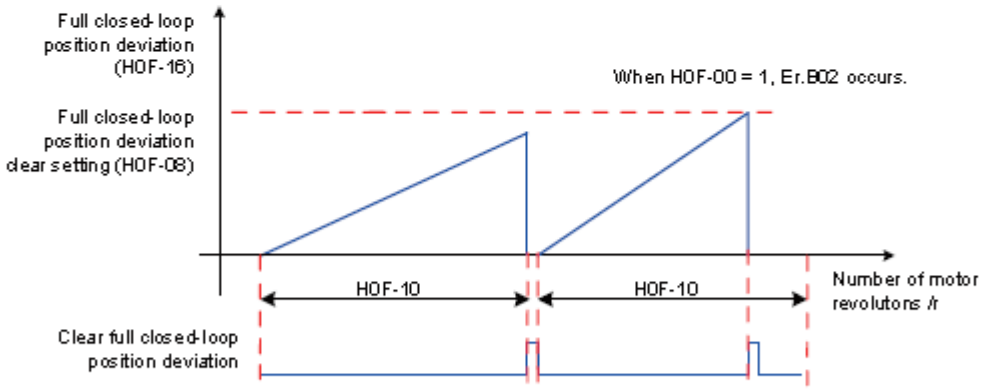
When H0F-08 = 0, the servo drive does not detect Er.B02 and always clears the full closed-loop position deviation.

⑥ H0F-10

H0F-10	Parameter name	Full closed-loop position deviation clear setting			Property	During running	Control Mode	P
	Setting Range	0 to 100	Unit	r	Effective Time	Immediate	Default	0

As the motor turns the number of revolutions set by this parameter, the servo drive clears the full closed-loop position deviation to 0. The number of revolutions is expressed by the internal encoder feedback pulses in H0F-18.

Value n	Meaning
0	The servo drive always clears the full closed-loop position deviation.
1 to 100	If the position deviation remains smaller than H0F-08 after the motor turns n revolutions, the servo drive clears the position deviation at the nth resolution, and counts the position deviation and number of motor revolutions from 0 again.
	Once the position deviation becomes larger than H0F-08 after the motor turns n revolutions, the servo drive immediately clears the position deviation. If external encoder feedback (H0F-00 = 1 or 2) is used, Er.B02 will occur.



Note:

The number of motor revolutions will not be cleared to 0 when the servo drive is not in running state.

For example, assume that H0F-10 = 10:
If the motor turns for five revolutions when the S-ON signal becomes inactive, the servo drive clears the data to 0 when the motor turns for another five revolution after the S-ON signal resumes active.
Then, the servo drive clears the value for each 10 motor revolutions.

⑦ H0F-18

H0F-18	Parameter name	Feedback pulse counter of internal encoder			Property	Display	Control Mode	P
	Setting Range	-1073741824 to 1073741824	Unit	Internal encoder unit	Effective Time		Default	0

It counts and displays the feedback pulses of the internal encoder (after divided or multiplied by electronic gear ratio, in internal encoder unit).

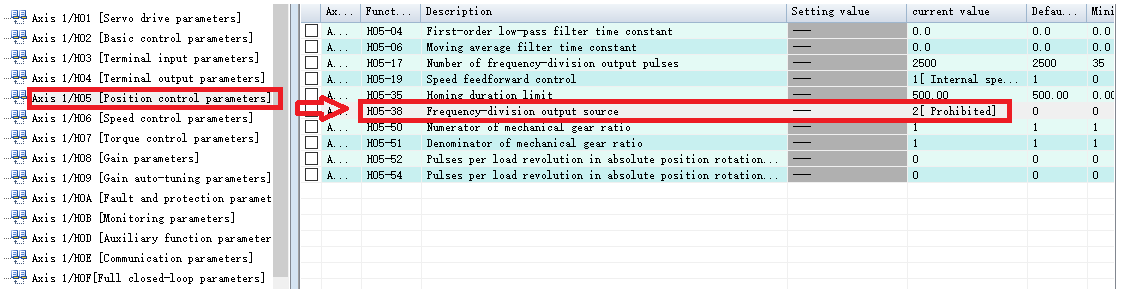
⑧ H0F-20

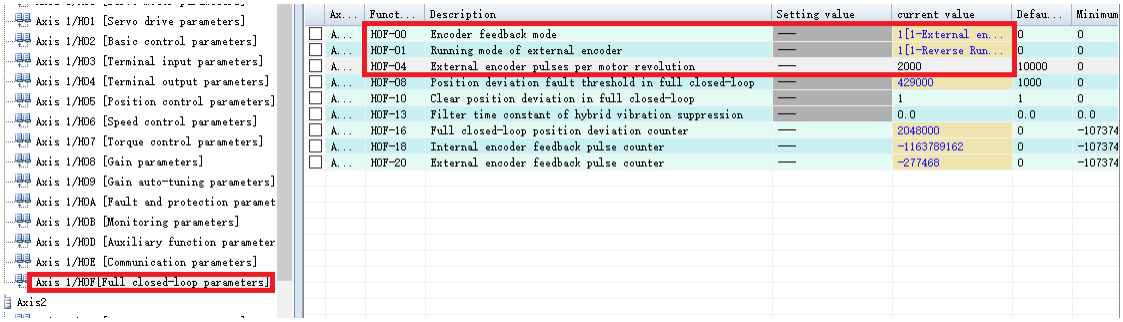
H0F-20	Parameter name	Feedback pulse counter of external encoder			Property	Display	Control Mode	P
	Setting Range	-1073741824 to 1073741824	Unit	External encoder unit	Effective Time	-	Default	0

It counts and displays the feedback pulses of the external encoder (after divided or multiplied by electronic gear ratio, in external encoder unit).

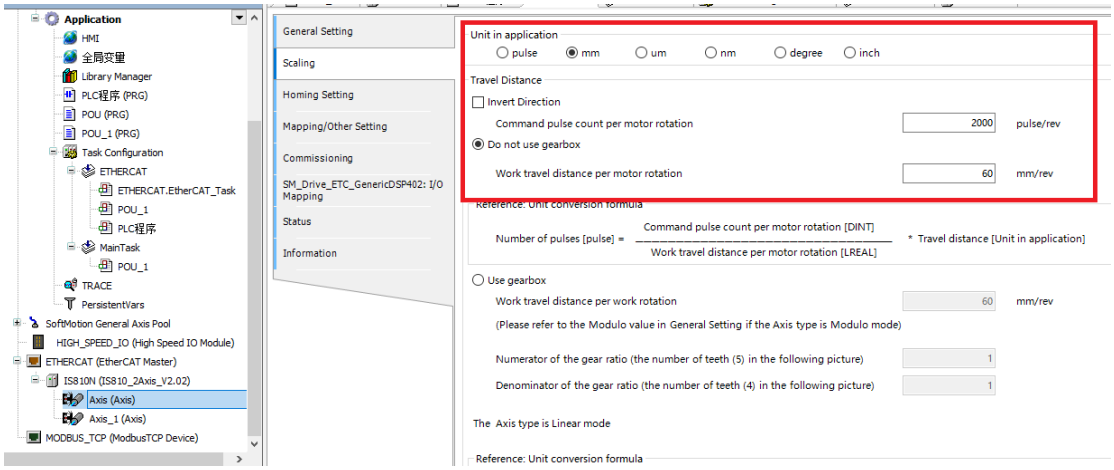
【Example】：

Set Relevent Parameters

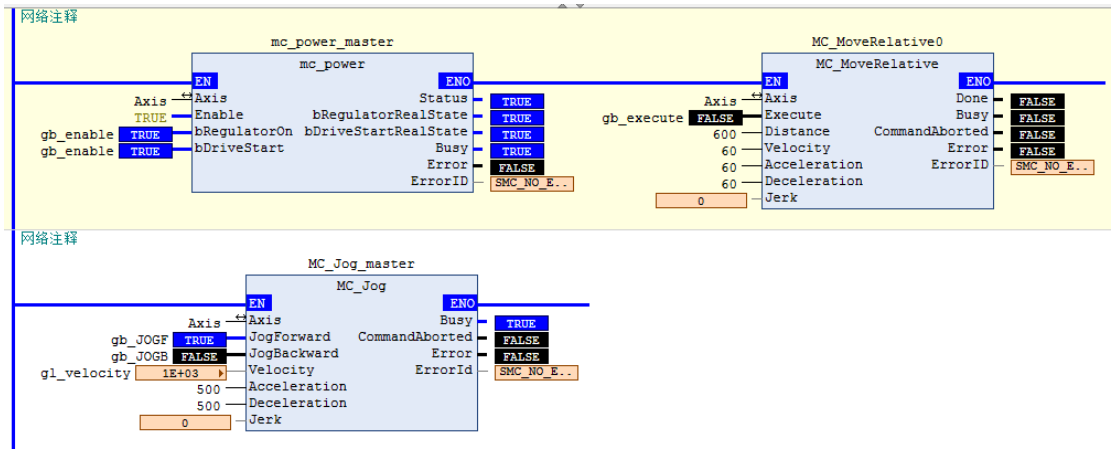


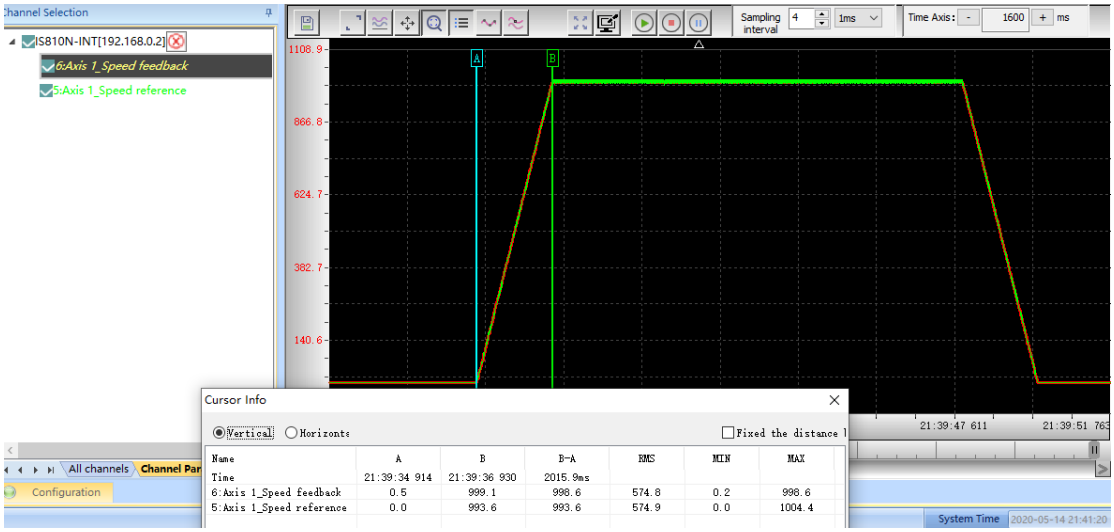


Use am600PLC,set travel distance:



When using" MC_JOG" function, the Velocity is 1000mm/s, the Acceleration and decleration is 500mm/s^2.





When using" MC_MoveRelative" function， the Distance is 600mm, the Velocity is 60mm/s， the Acceleration and decleration is 60mm/s^2.