MMC Quick Start Guide
Lesson 5) Using Closed Loop

Stepper Controllers with encoder feedback can perform closed loop control to pursue a destination position and not lose sync if disturbed or overloaded.

Wiring Considerations

Step 1) Encoders are regarded as axes 4, 5, and 6. Wire the encoders based on the following wiring table. If the encoder is single ended and not differential then leave the "-" signal disconnected. Do not connect the "-" to ground.

| DSub Pin	Description
1	Encoder 4 I+
14	Encoder 4 I-
2	Encoder 4 B+
15	Encoder 4 B-
3	Encoder 4 A+
16	Encoder 4 A-
4	5 Volts
17	Ground
5	Encoder 5 I+
18	Encoder 5 I-
6	Encoder 5 B+
19	Encoder 5 B-
7	Encoder 5 A+
20	Encoder 5 A-
8	5 Volts
21	Ground
9	Encoder 6 I+
22	Encoder 6 I-
10	Encoder 6 B+
23	Encoder 6 B-
11	Encoder 6 A+
24	Encoder 6 A-
12	5 Volts
25	Ground

Configuration

**Step 2)** Start Snap2Motion. Open the program "Closed Loop Package <rev>".

Step 3) Click on the "Blocks" tab.

Step 4) Select "Closed Loop" item in the list below "Blocks"


Step 5) Examine the blocks shown.
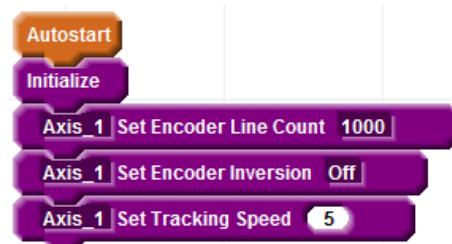
These adjust closed loop settings. Click on the encoder line count field and set for the encoder you are using. Tracking Speed establishes how fast a lagging motor will try to catch up. This speed must be higher than the fastest speed you intend to use but can be set faster.

Step 6) Select the "OnButton" listed.
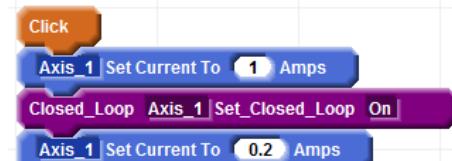
The current setting indicated above the block turning on closed loop should be a high value to insure a stable accurate initialization. After turning on closed loop the current can be reduced.

Step 7) Click the "Run" button and wait for status to indicate "Running"


Step 8) Test for motor stability by trying to twist the motor shaft. If Closed Loop is working properly the motor will deflect and when released move back to the original position. If Closed Loop is not working properly the motor will cog and not return. In this case change the value of Encoder Inversion in the block list

Click the Stop button and click the Run button to try again.

Step 9) If more then one axis will perform closed loop, right click on the first block after initialize and select "Duplicate". Append these blocks to the list, indicate Axis_2 instead of Axis_1 and establish Axis_2 settings.
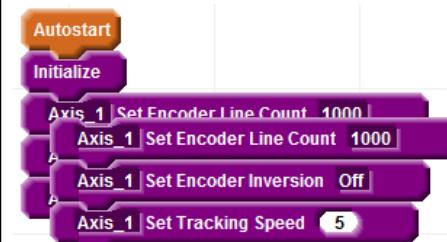

Apply to Current Project

Step 10) Click on the "Console" tab

Step 11) Select the Top plate, usually named "main" in the top left list
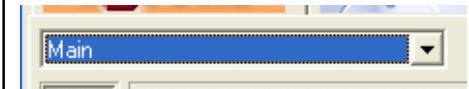
Step 12) Click on the package named "Closed Loop".
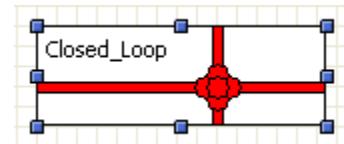
Step 13) Menu select "Edit | Copy"
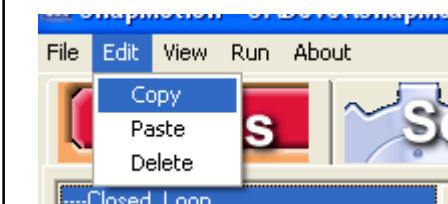
Step 14) File | Open the current project, click on the Console Tab, Click on the top item, usually named "Main" in the top left list, and menu select Edit | Paste
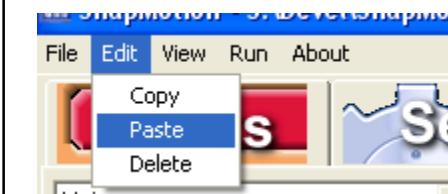
Drag the Closed Loop package to the right, off form, to reduce clutter.