

How to check and/or adjust the settings on Easy Route ATC servo motor drives.

1. Press set button
2. Press mode button until you come up to PA000 settings
3. Using the arrow keys select the PAxxx setting you want to check and press set. The current setting will be shown and to adjust it use arrow keys then press set.
4. Repeat for all PA settings below.
5. Once done with all press mode repeatedly until you get to d0ISP and press set.
6. Reboot the CNC router for settings to take effect.

Default settings for ATC servo motor drives.

Setting	X	Y1	Y2	Z
PA000	100	100	100	100
PA002	1	1	1	1
PA003	14	14	14	14
PA006	0	0*	1*	0
PA007	3	3	3	3
PA400	83	83	83	83
PA009	62144	62144	62144	32768
PA010	1875	1875	1875	125

PA000 - **Three axis synchronisation** parameters ensure that when a job is running all 3 axes are in sync according to the instructions from the GCODE enabling precision and accuracy of the work. In other words the motion of the axes is synchronised such that all the axes start and stop moving simultaneously, and at any point during the move, each axis has completed the same percentage distance (or ratio) of its move.

PA003 - **Motor rigidity** is the ability of the motor shaft to resist external torque interference. We can adjust the rigidity of the motor in the servo driver. The mechanical stiffness of servo motor is related to its response speed

PA004 - **Motor inertia ratio** in servo-driven systems, can be used as a measure of how well the motor is able to control the acceleration and deceleration of the load. Inertia ratios are typically given for stepper or servo motors, and they are calculated by dividing the total amount of load inertia (or reflected load inertia if geared) by the rotor inertia of the motor. If these values are exceeded, the motor may miss steps, stall, or vibrate.

PA006 - **Motor direction** is determined by the pulse sent to the motor, in essence servo motor control of the shaft position comes from using a pulse width modulation signal (PWM)

to turn the shaft clockwise or counter clockwise, depending on the pulse width of the signal. Typically, a pulse width of 1 ms will rotate the shaft clockwise and a 2 ms pulse will rotate the shaft counter clockwise.

PA007 - **Pulse mode** (3 means pulse addition) Servo systems are used when the application calls for precise control of position, velocity, or torque — or a combination of the three. Depending on the parameter being controlled, the servo system can be operated in torque mode, velocity mode, or position mode or any optimum combination of these (pulse addition).¹

¹ Knowledge Base article by [Takura Mutami](#)