

A P P L I C A T I O N N O T E

Doc No.: TN30-13
Date: Aug 2000
Version: 1.0
Subject: Step and Direction interface

The Trio Motion Coordinator Series controllers are capable of driving stepper or servo amplifiers.

The basic interface for a single-ended stepper output is shown below. The method shown here can usually be used to drive a differential input by biasing one of the inputs at 2.5V and connecting the Motion Coordinator's step or direction output to the second input. Some stepper drives have the bias circuit built-in as shown below. Alternatively, the Trio P280 Differential Stepper daughter board can be used which has full differential *step* and *direction* output circuits (+step, -step, +dir, -dir).

Commands used in conjunction with step and direction mode include: MICROSTEP, INVERT_STEP, PP_STEP and ATYPE (MC202 and Euro205 only). Please consult manual for a complete description.

MICROSTEP is used to switch the internal divider between $\div 16$ and $\div 2$.

	Divider Ratio	Max. Output Rate	Comments:
MICROSTEP = OFF (Default)	16	62.5 kHz	Low pulse jitter for smooth operation of majority of stepper drives.
MICROSTEP = ON	2	500 kHz	High frequency output for control of microstepping drives.

INVERT_STEP is used to change the step edge sensitivity. Default is *falling* edge to clock the stepper drive. Set this parameter if the step polarity of drive is inverted or if the drive's internal stepper circuit clocks on the rising edge. For example, making a connection to the "-" step input rather than the "+" step input of the drive may require INVERT_STEP=ON. If the step polarity is wrong then steps may be lost when the drive changes direction.

PP_STEP multiplies encoder pulses to allow matching of high count microstepper motors to encoder resolution.

For example: Stepper motor = 20000 steps per revolution.

Encoder = 1000 PPR (4000 edges per rev.)

Set the PP_STEP to 5. (5 motor steps per encoder count)

Note: the PP_STEP parameter can only be set to integer values.

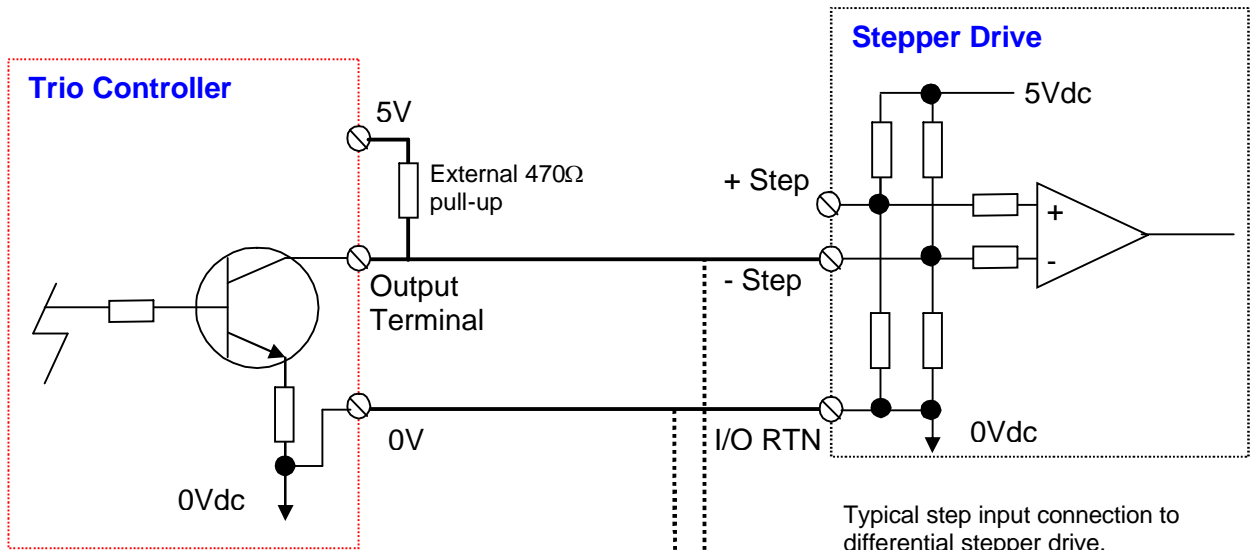
ATYPE. MC202 and Euro205 ONLY:

ATYPE=1 sets up step mode for a particular axis.

ATYPE=2 is for servo control.

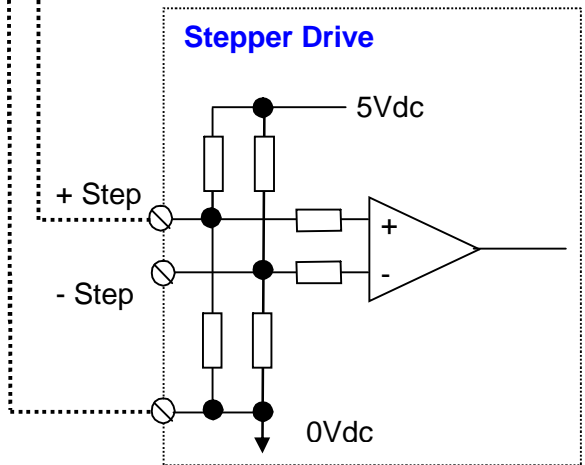
ATYPE=4 is for Stepper with Encoder Verification.

Note: Motion Coordinators which use Axis Daughter Boards have the ATYPE set automatically.



Note: See INVERT_STEP parameter to select the active step edge. Default is "falling edge".

OR



Typical step input connection to differential stepper drive.