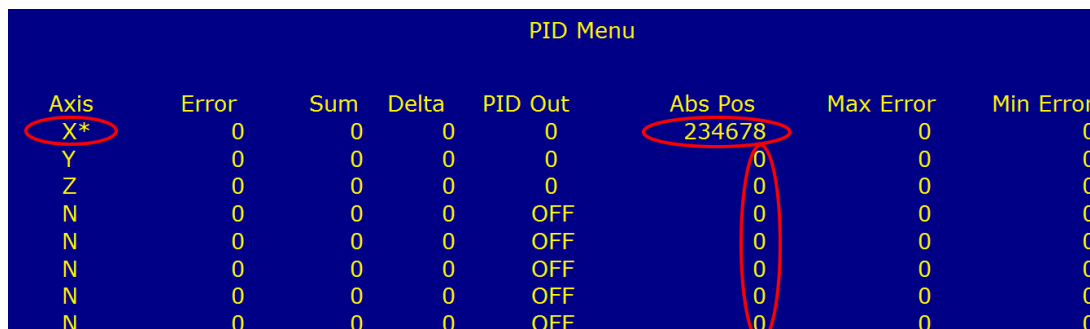# TB281 (Rev1) – Encoders Not Counting / DRO Does Not Update

When trouble shooting issues with an encoder not counting and/or the DRO not updating, it is always best to watch the Abs Pos values in the PID screen rather than observing the DRO values on the Main screen. To enter the PID screen from the Main screen press: F1-Setup->F3-Config(pw = 137 press enter)->F4-PID

					PID Menu			
Axis	Error	Sum	Delta	PID Out	Abs Pos	Max Error	Min Error
X*	0	0	0	0	234678	0	0
Y	0	0	0	0	0	0	0
Z	0	0	0	0	0	0	0
N	0	0	0	OFF	0	0	0
N	0	0	0	OFF	0	0	0
N	0	0	0	OFF	0	0	0
N	0	0	0	OFF	0	0	0
N	0	0	0	OFF	0	0	0

1. Confirm that the encoder cable is plugged in. Visually inspect the encoder cable at the motor and the control end and verify that both ends are plugged in.

2. Confirm that the encoder is plugged into the correct input. Your issue may be as simple as having the encoder plugged into the wrong encoder input. With Estop pushed in, manually rotate the shaft of the motor while observing the Abs Pos positions on the screen. If you see an Abs Pos updating that does not correspond to the axis you are testing, simply move the encoder cable from the axis that is updating to the encoder input for the axis under test. Rotate the shaft again to confirm the encoder for the axis under test now updates as expected.

3. Are the encoders mapped correctly? (MPU11 & ALLIN1DC based systems only) For CPU7 and CPU10 based systems (motion control card plugged into PC motherboard), encoder mapping does not apply. Please skip to step 4. For MPU11 and ALLIN1DC based systems, parameters 308-315 need to be set correctly in order to map the encoder input to the appropriate axis.

For systems with encoders plugged into the MPU11 or ALLIN1DC, for testing purposes, set parameters 308-313 as follows: 308 = 1, 309 = 2, 310 = 3, 311 = 4, 312 = 5, 313 = 6.

For systems with encoders plugged into an Optic4 board, AC/DC drives or 3rd party drives w/Optic Direct interface, for testing purposes, please set parameters 308-313 as follows: 308 = 7, 309 = 8, 310 = 9, 311 = 10, 312 = 11, 313 = 12.

For systems utilizing an MPU11 with LegacyAdd board and encoders plugged into an SD1 or SD3, set parameters 308-313: 308 = 7, 309 = 8, 310 = 9, 311 = 10, 312 = 11, 313 = 12.

To enter the parameters screen from the Main screen press:
F1-Setup->F3-Config(pw = 137 press enter)->F3-Parms

NOTE: The system must be powered off after changing the encoder mapping parameters in order for the new mapping to take effect.

4. Rotate the other encoders in the system. If the Abs Pos for any of the other axes update correctly, exchange the encoder in question with an encoder on one of the known good encoder inputs (Abs Pos was updating) on the MPU11, ALLIN1DC, AC/DC, Optic4, CPU7, CPU10, SD1 or SD3. If none of the ABS Pos fields update, please see step 5 to check your encoder wiring.

Does the Abs Pos for the axis under test now update when connected to a known good encoder and cable? If the Abs Pos for the axis under test does not update with a known good encoder and cable, it's likely a problem with the encoder input itself. Please contact your dealer to arrange repair, replacement or further troubleshooting.

Does the Abs Pos for the known good encoder input axis test now update when connected the encoder under test? If the Abs Pos for the known good encoder input does not update when connected to the encoder and cable under test, it's likely a problem with the encoder or encoder wiring. Please step 5 below to check your encoder wiring.
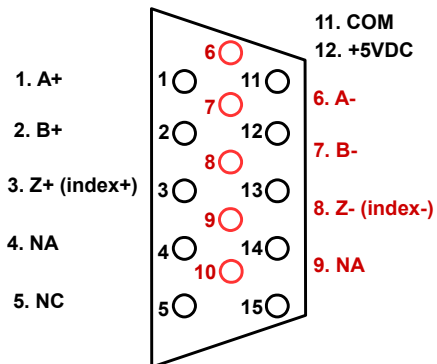
5. Confirm that the encoder cable is wired correctly

**CPU7, CPU10, MPU11* &
Spindle encoder on SD3**

1. NC
2. COM
3. Z- (index-)
4. A-
5. B-

6. Z+ (index+)
7. A+
8. B+
9. +5VDC
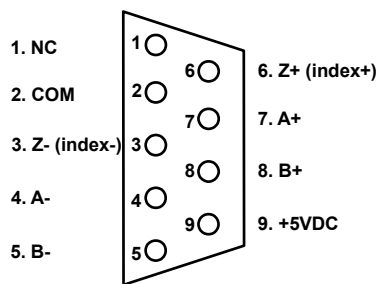
Solder side DB9-Male mating connector on cable
and DB9-Female socket side at the CPU7, CPU10
or MPU11 connector.

***Note: Includes Optic Direct &
Optic4 boards.**

SD1, SD3 & ACDC** Drives

11. COM
12. +5VDC

1. A+
2. B+
3. Z+ (index+)
4. NA
5. NC

6. A-
7. B-
8. Z- (index-)
9. NA

Solder side DB15-Male mating connector on cable
and DB15-Female socket side at the SD1, SD3 & ACDC.

**Note: The U, V & W channels are not
needed to update the Abs Pos fields.**

**AC/DC Drives require that the encoders are plugged in at power up. If the encoders were not plugged in when the AC/DC was powered, the encoders will not read, please power off the system, plug in all encoders and then power the AC/DC drives back up.

**AC/DC Drives require that jumper J3 be set correctly in order for the encoders to count correctly. For AC/DC drives with fiber optic cables plug into them, JP3 should be removed. For AC/DC drives without fiber optic cables, JP3 should be installed. JP3 is located next to fiber optic inputs 4 & 5. In the photo below, JP3 is <u>removed</u>. When installed, JP3 should connect to both pins.