DM8010 Test Procedure

Equipment required:

1. Test computer with ISA slot and WIN98SE.
2. OptiStepPlus controller card.
3. DB25 cable, M – F: 332-0000-005.
4. DM8010 Test Station, with two ammeters and a 42M1150 motor.
5. DMM.
6. Adjustable torque wrench with 1/16" hex key drive. 15 – 25 oz-in.

Procedure:

1. The PCB is attached to the heatsink by means of two plastic standoffs and the 13 TO-220 devices' screws (with insulating washers). Tighten the screws with white washers (Q8, Q9, Q10, Q11) to **15 oz-in.** Tighten those with black washers to **25 oz-in**. Do not overtighten the screws.

✓

2. Check that there is **not** continuity between each screw and it respective TO-220 tab.

✓

3. Before applying power, check that the +12V and +5V supplies are not shorted: no continuity across C23, C24, or C25.

✓

4. On the DM8010 Test Station, confirm that the 8-position plug for J1 has a 1.53K resistor between pins 3 and 2 and 765 ohms between pins 2 and 1. (These give a peak output current of 10A and idle current of about 3.3A.)

✓

5. Place the DM8010 on the Test Station. Connect the plugs to J1 and J2.

6. Turn the Test Station's switch to 40V. Check:
   1. The internal power LED is on. ✓
   2. The external /ONFS (on full-step) LED is on. ✓
   3. The internal TEMP LED if off. ✓
   4. The internal and external /FAULT LEDs are off. (They may light briefly.) ✓

7. Short U5.14 to ground (J1.3) through100 ohms. Confirm that the TEMP LED lights. ✓

8. Short U5.1 to ground through 100 ohms. Confirm that the internal and external FAULT LEDs light and then turn off after ½ second. ✓

9. Turn the Test Station's switch to 80V. Record:
   1. V_{mm} (J1.3 to J1.4) 72.6
   2. +5V (4.75 to 5.25) across C24 and across C25. 4.997 5.006
   3. +12V (11.25 to 13.0) across C23. 12.17

10. Important: power down. Set the jumpers for half-stepping: P0 – P3 in. Power up: 40V. Use the test program's jog function and the Test Station's onboard ammeters to record motor currents in 8 successive positions. Each phase should go through zero, middle, and maximum magnitude currents. Confirm that each phase has definite zeros (<0.02A), that all middle values are within 0.8A of each other, and that all maximum values are within 0.8A of each other. Here are sample values:

Sample Values		Test Values	
Phase A	**Phase B**	**Phase A**	**Phase B**
0.00 (0)	3.37 (MAX)	0.00	3.43
2.66 (MID)	2.17 (MID)	2.66	2.12
3.60 (MAX)	0.00 (0)	3.57	0.00
2.25 (MID)	-2.40 (MID)	2.24	-2.56
0.00 (0)	-3.34 (MAX)	0.00	-3.42
-2.64 (MID)	-2.12 (MID)	-2.62	-2.17
-3.59 (MAX)	0.00 (0)	-3.55	0.00
-2.25 (MID)	2.44 (MID)	-2.24	2.58

11. Important: power down. Set the jumpers for quarter-stepping: P0 out, P1 – P3 in. Load the G-code file 8010fs.cnc. Switch the Station to 80V. Run the program for 5 minutes. ✓

12. Jog the motor to its zero index mark. Load and run mill6.cnc. Confirm that the motor returns to its zero position. ✓

13. Switch the Test Station's power off. Remove the DM8010. Install the P0 jumper ~~and the plugs for J1 and J2.~~ ✓

14. Affix a serial number: DV ("A").
Package the DM8010. ✓

Completed by: hn on 4-13-2007.