OSMC Current Limiter (CL)

Revision 1.0

This CL board monitors the Open Source Motor Controller's (OSMC) input current from the power supply. The CL board will momentarily disable the OSMC if the input current exceeds a user-adjustable current threshold. The limiting occurs on a pulse-by-pulse basis so as to enable the OSMC to operate at the maximum current as set by the user. The CL board uses a hall effect sensor to monitor current instead of the less efficient dropping resistor method.

As seen in Figure 1 below, the CL board was designed as a two-part assembly with the main board encased in a plastic enclosure that should withstand most uses. While it was designed to withstand significant abuse, normal static handling procedures should be observed.

The hall sensor was mounted on a secondary board to separate the high current power signal from the control lines to minimize noise problems caused by high current switching.

Figure 1: Current Limiter Rev. 1.0

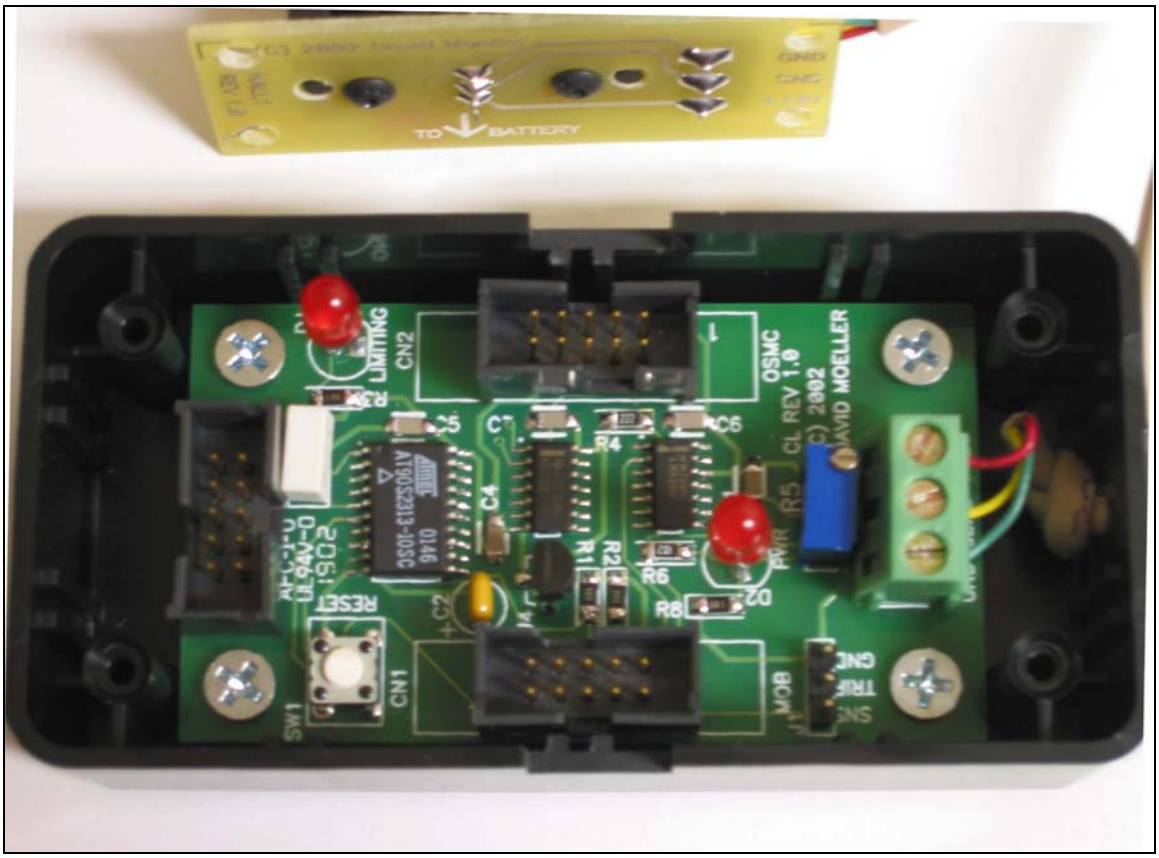


Figure 2: Internal View

CONNECTIONS

There are five main connectors on the CL Board as follows:

- ***Sensor Connection*** *(3-conductor screw terminal)*
  The hall current sensor should be attached to this connection.

- ***MOB or uMOB Connection CN1*** *(10-pin shrouded header)*
  This is an input connection from the MOB or uMOB board.

- ***OSMC Connection CN2*** *(10-pin shrouded header)*
  This is an output connection to the OSMC board.

- ***Programming Connection*** *(10-pin shrouded header)*
  This connector can be used to reprogram the on-board microprocessor (AT90S2313).

- ***Set-up Header Connection J1*** *(3-pin male header)*
  This connector allows the user to set the current threshold by adjusting potentiometer R5 and monitoring the output voltage on this connector. See Setup section below.

SETUP

1) Thread the OSMC BATT+ wire through the hall sensor in the direction indicated by the area on the bottom of the hall sensor board.

   IMPORTANT NOTE: The OSMC BATT+ wire MUST be oriented correctly for the CL board to function properly. Failure to do so will render the CL board useless and allow the OSMC to draw excess current and possibly result in damage to the OSMC.

2) After establishing the hall sensor, OSMC, and MOB/uMOB connections, power up the OSMC.
3) Select the peak or RMS current desired and use the graph illustrated in Figure 3 to identify the TRIP voltage.
4) With a voltmeter, adjust the voltage from GND to TRIP on connector J1 to match the TRIP voltage identified through Figure 3.
5) The board should now be ready to use.

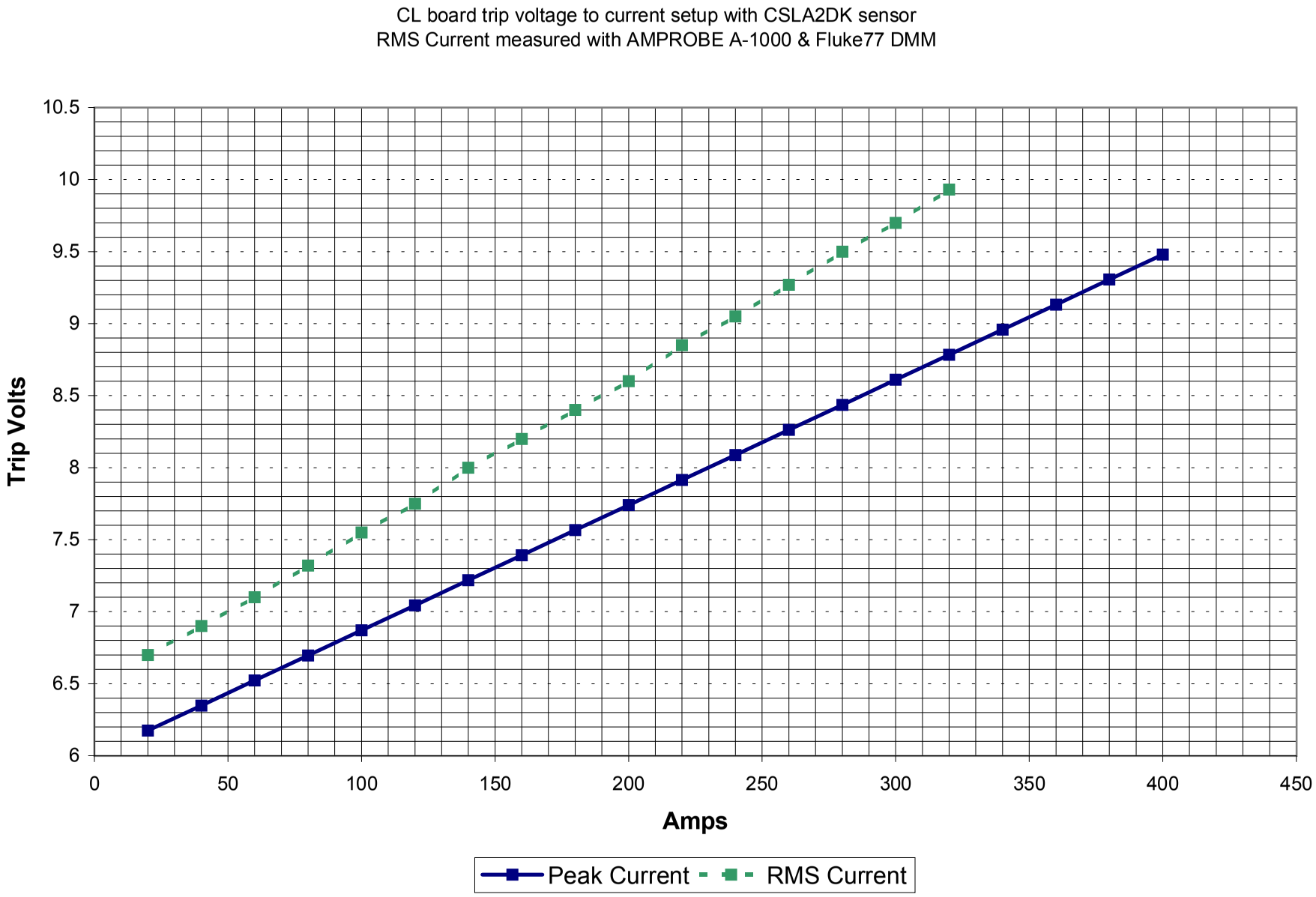
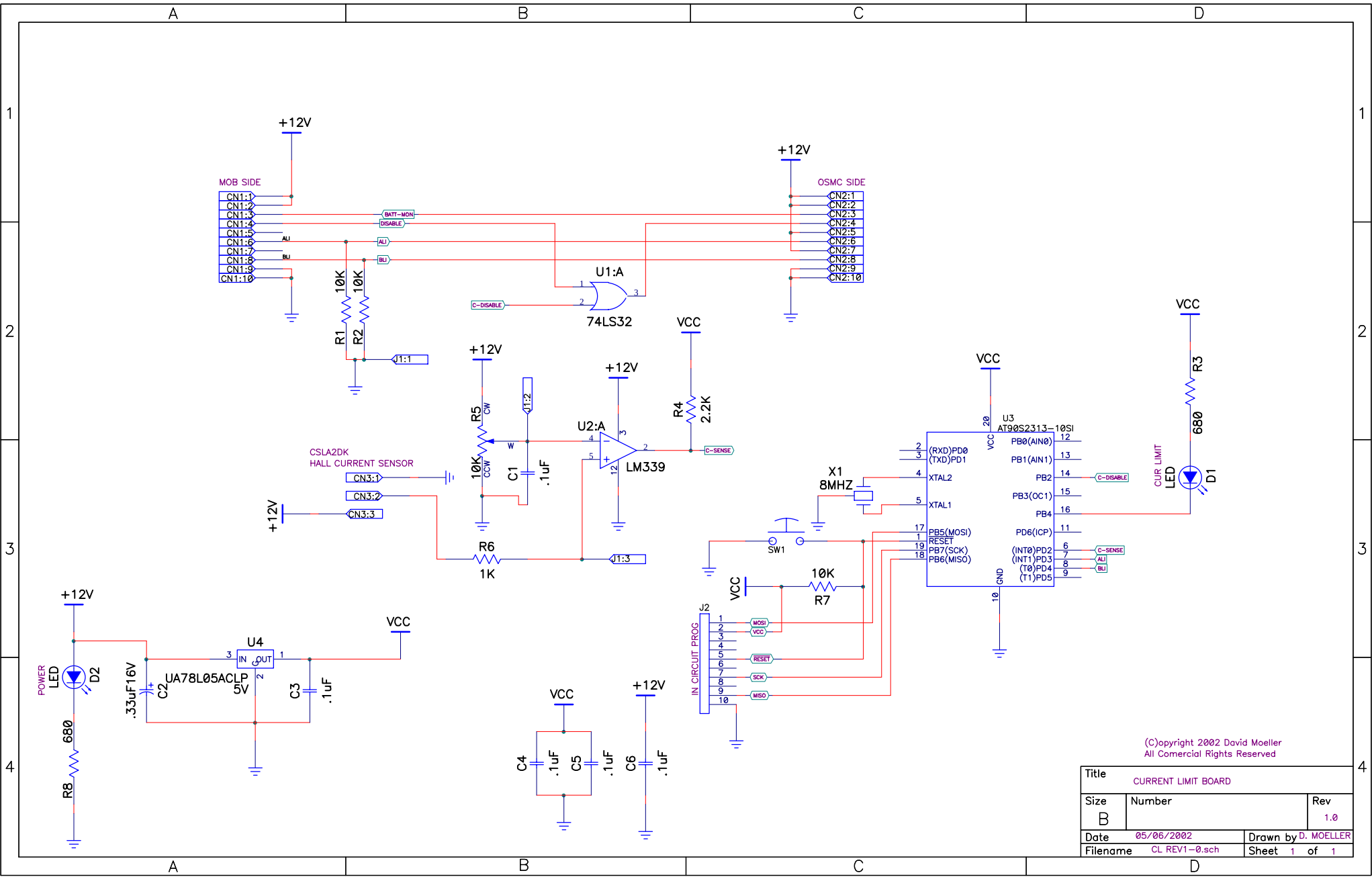

CL board trip voltage to current setup with CSLA2DK sensor
RMS Current measured with AMPROBE A-1000 & Fluke77 DMM
Trip Volts
10.5
10
9.5
9
8.5
8
7.5
7
6.5
6
0
50
100
150
200
250
300
350
400
450
Amps
Peak Current
RMS Current

Figure 3



Title	CURRENT LIMIT BOARD	
Size B	Number	Rev 1.0
Date 05/06/2002		Drawn by D. MOELLER
Filename CL REV1-0.sch		Sheet 1 of 1

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