

Locomotive Motion Sensor Kit Assembly Instruction Sheet

This document describes the assembly of the locomotive motion sensor board. The kit includes all the parts from the BOM with the exception of a 10-pin header which is not fitted, typically you'd solder directly to the board. Below you'll find the assembly drawings, bill of materials, schematic diagram, and pictures of the completed board.

NOTE: This kit is for experienced builders! If you have no experience with surface mount components, you may have difficulty assembling the board.

Locomotive Motion Sensor BOM					
RefDes	Value	Name	Manufacturer	Pattern	Qty
C1	33uf 25V	EMVA350ADA330MF55G	United Chemi-Con	CAPAE-6.6x6.6h5.4	1
C2	1uf 35V	CL21B105KLFVPNE	Samsung	CAP_0805	1
C3	0.1	CC0603ZRY5V9BB104	Yageo	CAP_0805	1
CON1		10-pin header	<i>not-fitted</i>	HDR10 2.54/1.0	1
D1, D3	100ma	1SS355VMTE-17	Rohm	SOD-323F	2
D2	15V	MMSZ5245B-TP	M.C.C.	SOD-123	1
K1	Relay	IM06DG	TE Connectivity	GN-A	1
Q1		2N7002-7-F	Diodes, Inc.	SOT23	1
R1	4.7k	RC0805FR-074K7L	Yageo	RES_0805	1
R2	1k	RC0805JR-071KL	Yageo	RES_0805	1
R3	1Meg	RC0805FR-071ML	Yageo	RES_0805	1
R4	47k	RC0805JR-0747KL	Yageo	RES_0805	1
VO1		LTV-8141S	Lite-On	4-SMD Opto	1

Figure 1 LMS Bill of Materials

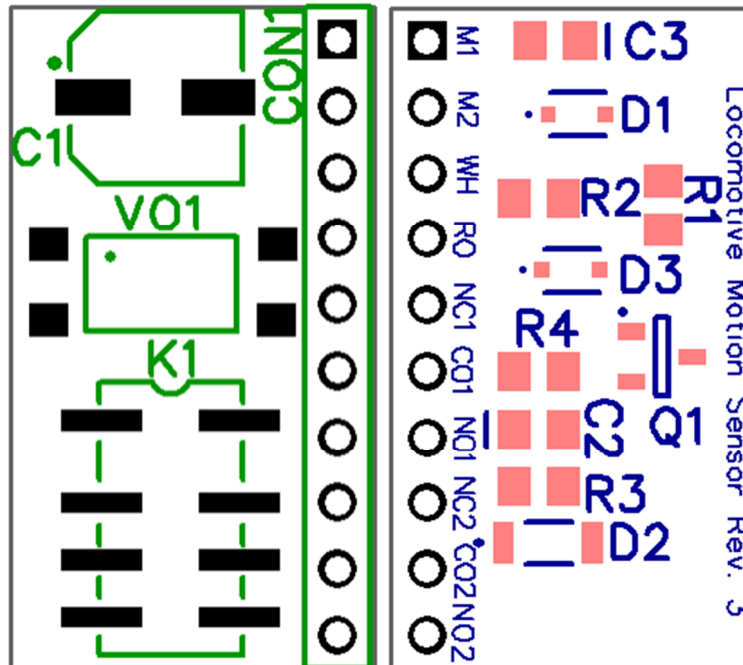


Figure 2 LMS Assembly Drawing

Some assembly notes:

- You will note on the assembly drawing that all the diodes have a dot to the left. This is where the band on the component should be positioned.
- Although C2 and C3 have polarity markings on the board, the actual ceramic capacitors have no polarity and can be installed in either direction.
- All resistors are marked with a 3-digit standard value code, thus 473 would be the 47k resistor, 102 would be the 1k resistor, etc.
- The opto-isolator at V01 has a dot that corresponds to the dot on the assembly drawing.

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These are shots of the finished and tested board. If you assemble it correctly, you will get a working board.

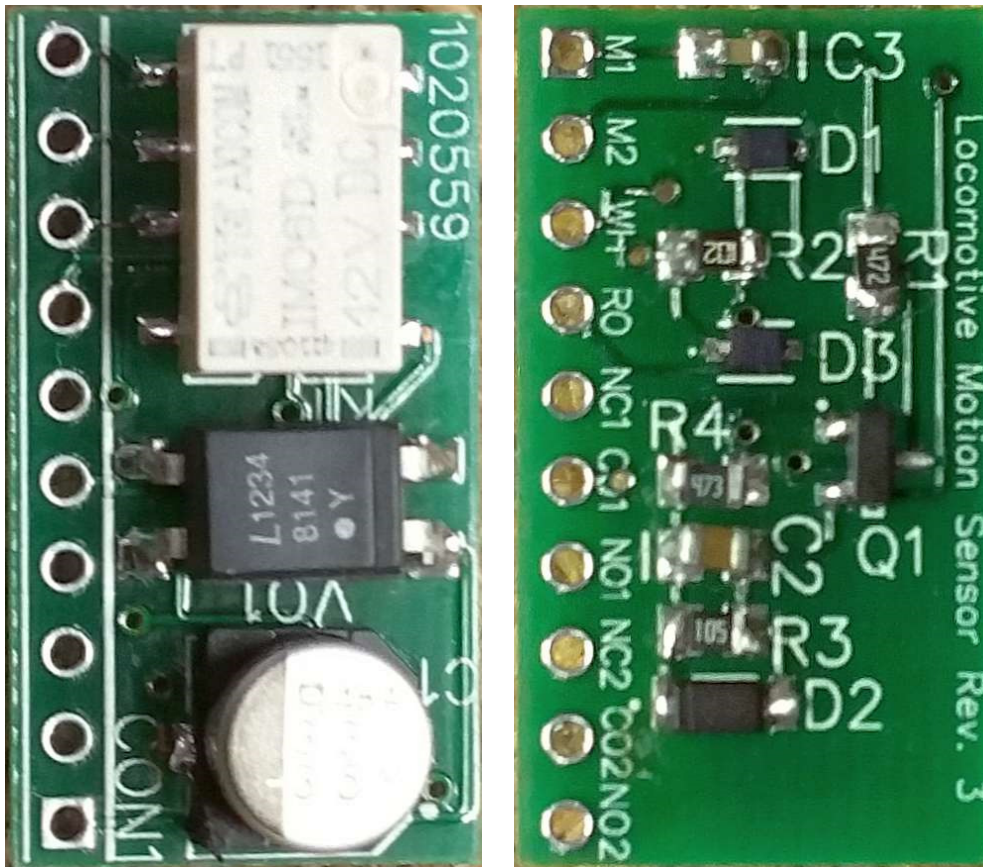


Figure 3 LMS Assembled Board

Locomotive Motion Sensor, Rev. 3 Schematic

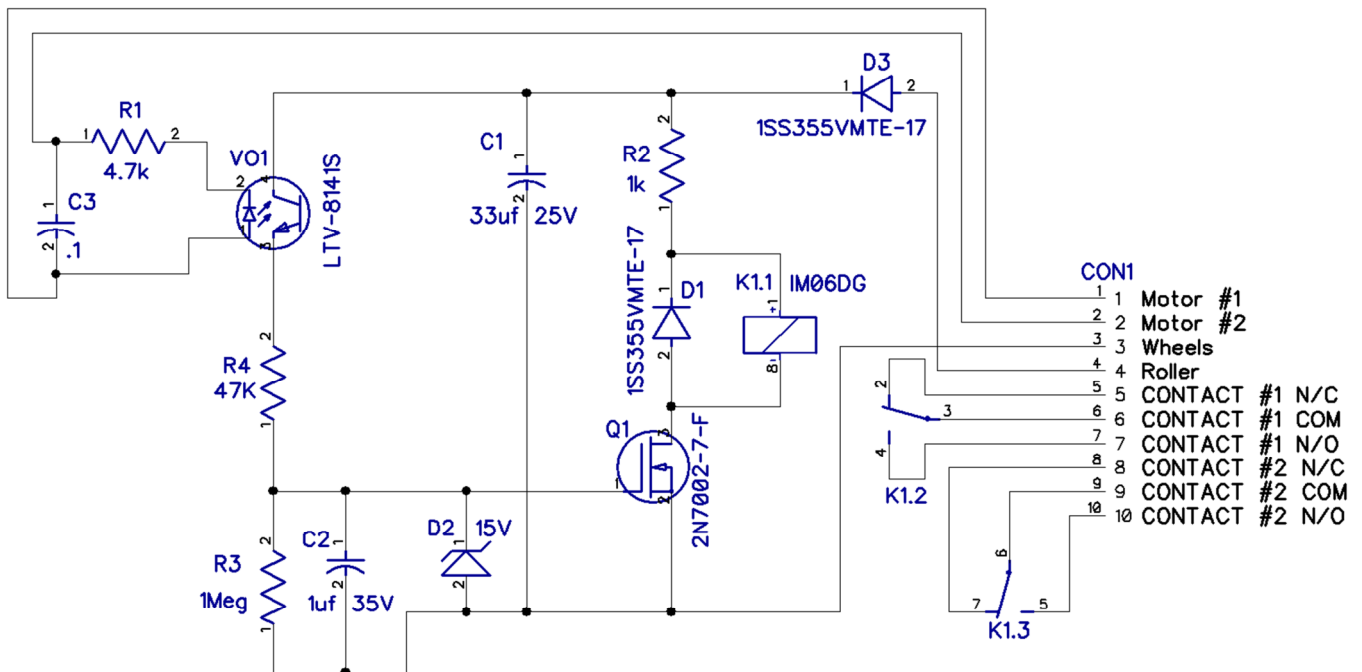


Figure 4 LMS Schematic Diagram