This is the Revision A verion of the CompassDT1 RoboBrick. The status of this project is work in progress.

CompassDT1 Robobrick (Revision B)

Table of Contents

This document is also available in PDF format.

1. Introduction

The CompassDT1 RoboBrick is a RoboBrick that can be used to connect to a Devantech CMPS01 compass module. This compass uses two Philips KMZ10A megnetic field sensors to measure the direction accurate to 0−3599 (i.e. .01 degree accuracy.) Please note that the magnetic field inside a build can be off by 10's of degrees.

2. Programming

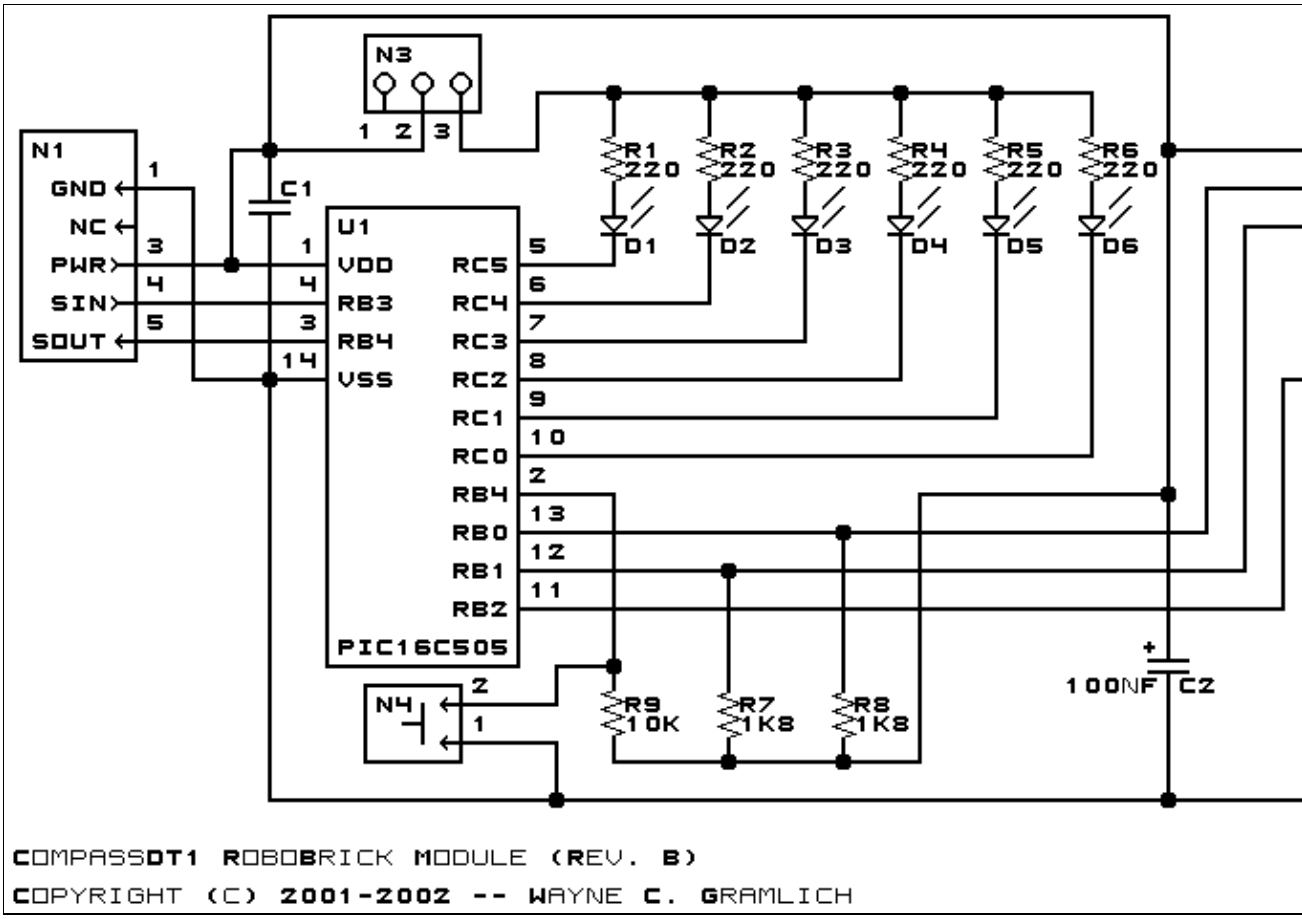
{To be written}

3. Hardware

The hardware consists of a circuit schematic and a printed circuit board.

3.1 Circuit Schematic

The schematic for the CompassDT1 RoboBrick is shown below:



The parts list kept in a separate file −− compassdt1.ptl.

3.2 Printed Circuit Board

The printed circuit board files are listed below:

compassdt1_back.png
: The solder side layer.

compassdt1_front.png
: The component side layer.

compassdt1_artwork.png
: The artwork layer.

compassdt1.gbl
: The RS−272X "Gerber" back (solder side) layer.

compassdt1.gtl
: The RS−272X "Gerber" top (component side) layer.

compassdt1.gal
: The RS−272X "Gerber" artwork layer.

compassdt1.drl
: The "Excellon" NC drill file.

compassdt1.tol
: The "Excellon" tool rack file.

4. Software

The CompassDT1 software is available as one of:

compassdt1.ucl
: The µCL source file.

compassdt1.asm
: The resulting human readable PIC assembly file.

compassdt1.lst
: The resulting human readable PIC listing file.

compassdt1.hex
: The resulting Intel® Hex file that can be fed into a PIC16C505 programmer.

The CompassDT1 test software is available as one of:

compassdt1_test.ucl
: The µCL source file.

compassdt1_test.asm
: The resulting human readable PIC assembly file.

compassdt1_test.lst
: The resulting human readable PIC listing file.

compassdt1_test.hex
: The resulting Intel® Hex file that can be fed into a PIC16F628 programmer.

5. Issues

Any fabrication issues that come up are listed here.

A. Appendix A: Parts List

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# Parts list for CompassDT1 RoboBrick (Rev. B)
#
C1: Capacitor10pF − 10 pF Ceramic Capacitor [Jameco: 15333]
C2: Capacitor100nF − .1 uF Tantalum Capacitor [Jameco: 33486]
D1−6: LEDGreen − Green LED [Jameco: 34606]
N1: Header1x5.RBSlave − 1x5 Male Header [5/40 Jameco: 160881]
N2: Header1x9.CompassDT1 − 1x9 Female Header [9/36 Digikey: 929974−01−36−ND]
N3: Header1x3.CompassDT1 − 1x3 Male Header [3/40 Jameco: 160881]
N4: Header1x2.CompassDT1 − 1x2 Male Header [2/40 Jameco: 160881]
R1−6: Resistor220 − 220 Ohm 1/4 Watt Resistor [Jameco: 30470]
R7−8: Resistor1K8 − 1.8K Ohm 1/4 Watt Resistor [Digikey:1K8−QBK−ND]
R9: Resistor10K − 10K Ohm 1/4 Watt Resistor [Jameco: 29911]
U1: PIC16C505.CompassDT1 − Microchip PIC16C505 [Digikey: PIC16C505−04/P−ND]
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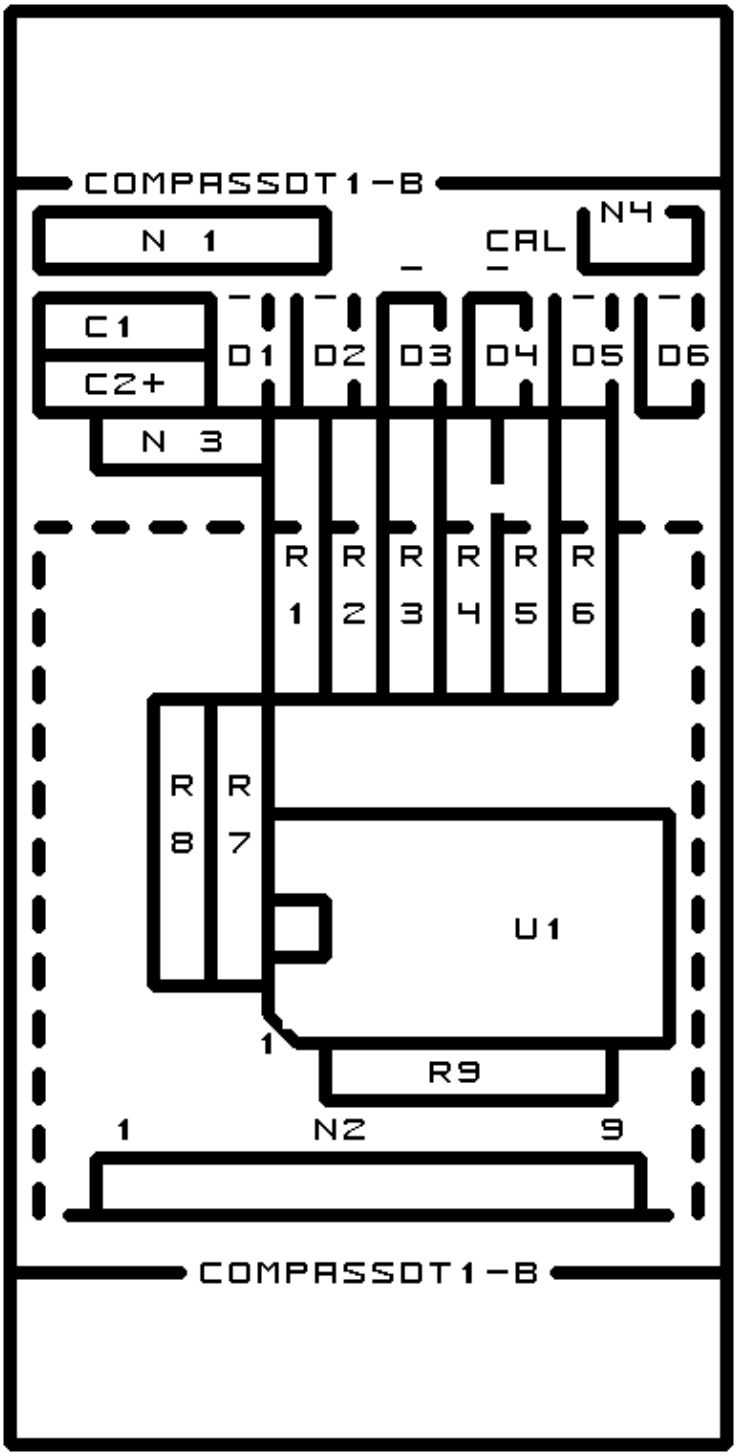
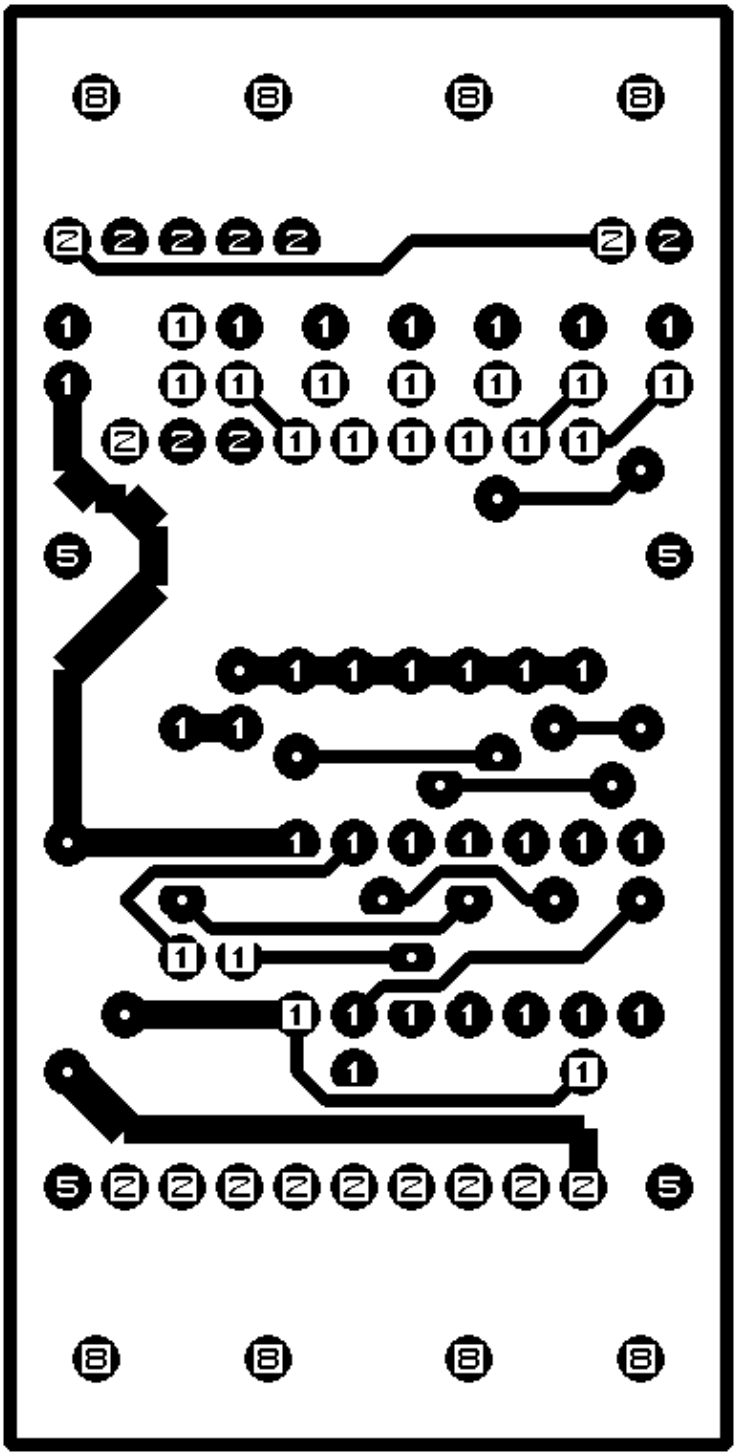
B. Appendix B: Artwork Layer



C. Appendix C: Back (Solder Side) Layer



D. Appendix D: Front (Component Side) Layer