This is the Revision C version of the Harness RoboBrick. The status of this project is finished.

Harness Robobrick (Revision C)

Table of Contents

This document is also available as a PDF document.

1. Introduction

The Harness RoboBrick is used to test a RoboBrick network. It is built using a PIC16F628 microcontroller from MicroChip. The PIC16F628 is used so that the software can easily be changed for testing purposes. Either a dumb terminal or a terminal emulator is connected to the Harness RoboBrick via a Tether RoboBrick. Communication occurs at 2400 baud.

2. Programming

The Harness commands are summarized as follows:

Ns
: Send a single byte containing *N* (where *N* is an octal number) to the RoboBrick. Do not wait for any reply bytes.

Nw
: Send a single byte containing *N* (where *N* is an octal number) to the RoboBrick. The program waits for up to 5 response bytes. If no byte is present, the byte 376 is returned. All returned bytes are printed as 3−digit octal numbers.

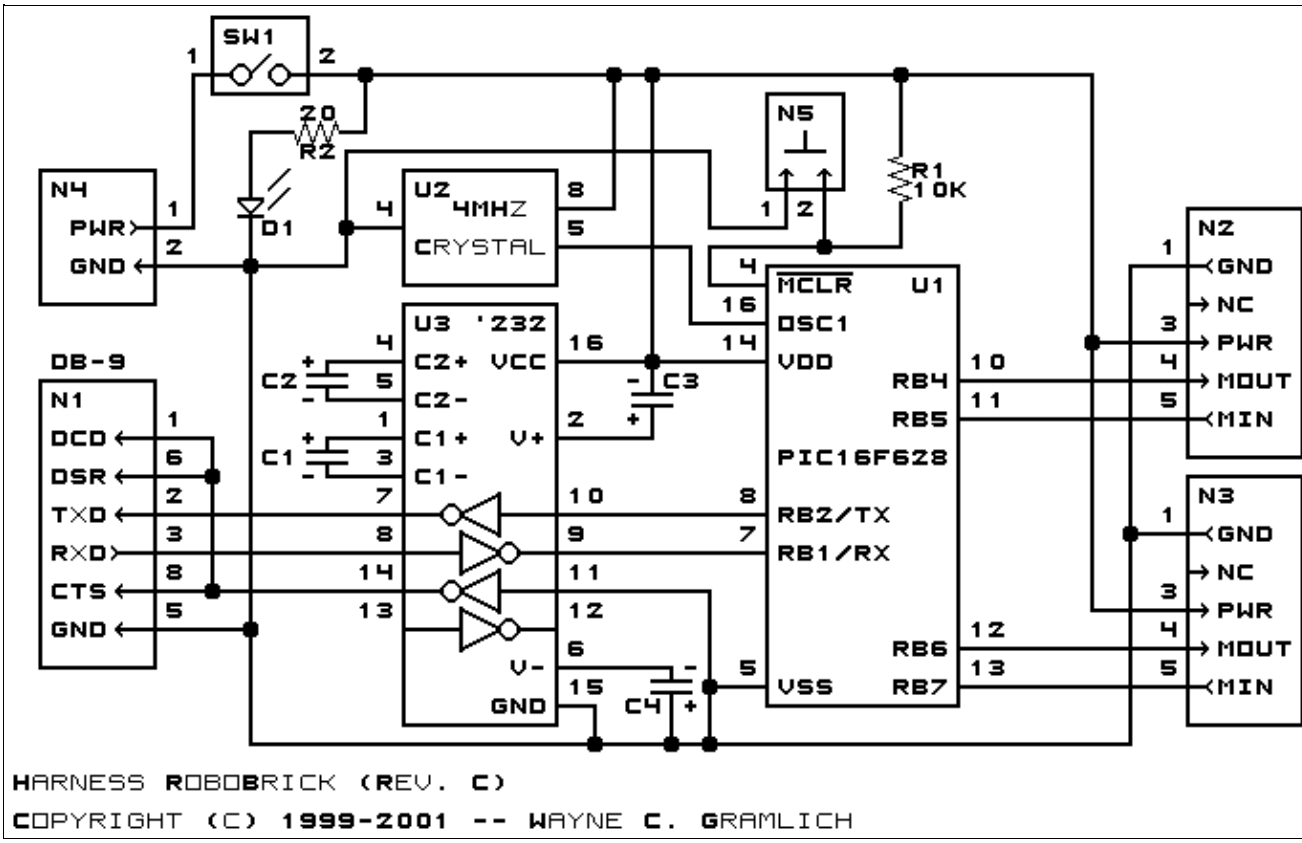
i
: Interrogate the RoboBrick to find out its identification information.

3. Hardware

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

3.1 Circuit Schematic

The schematic for the Harness RoboBrick is shown below:



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

3.2 Printed Circuit Board

The printed circuit board files are listed below:

harness_back.png
: The solder side layer.

harness_front.png
: The component side layer.

harness_artwork.png
: The artwork layer.

harness.gbl
: The RS−274X "Gerber" back (solder side) layer.

harness.gtl
: The RS−274X "Gerber" top (component side) layer.

harness.gal
: The RS−274X "Gerber" artwork layer.

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

harness.tol
: The "Excellon" NC drill rack file.

4. Software

The Harness software is available as one of:

harness.ucl
: The µCL source file.

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

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

harness.hex
: The resulting Intel® Hex file that can be fed into a PIC12C5xx programmer.

5. Issues

Any fabrication issues go here.

A. Appendix A: Parts List

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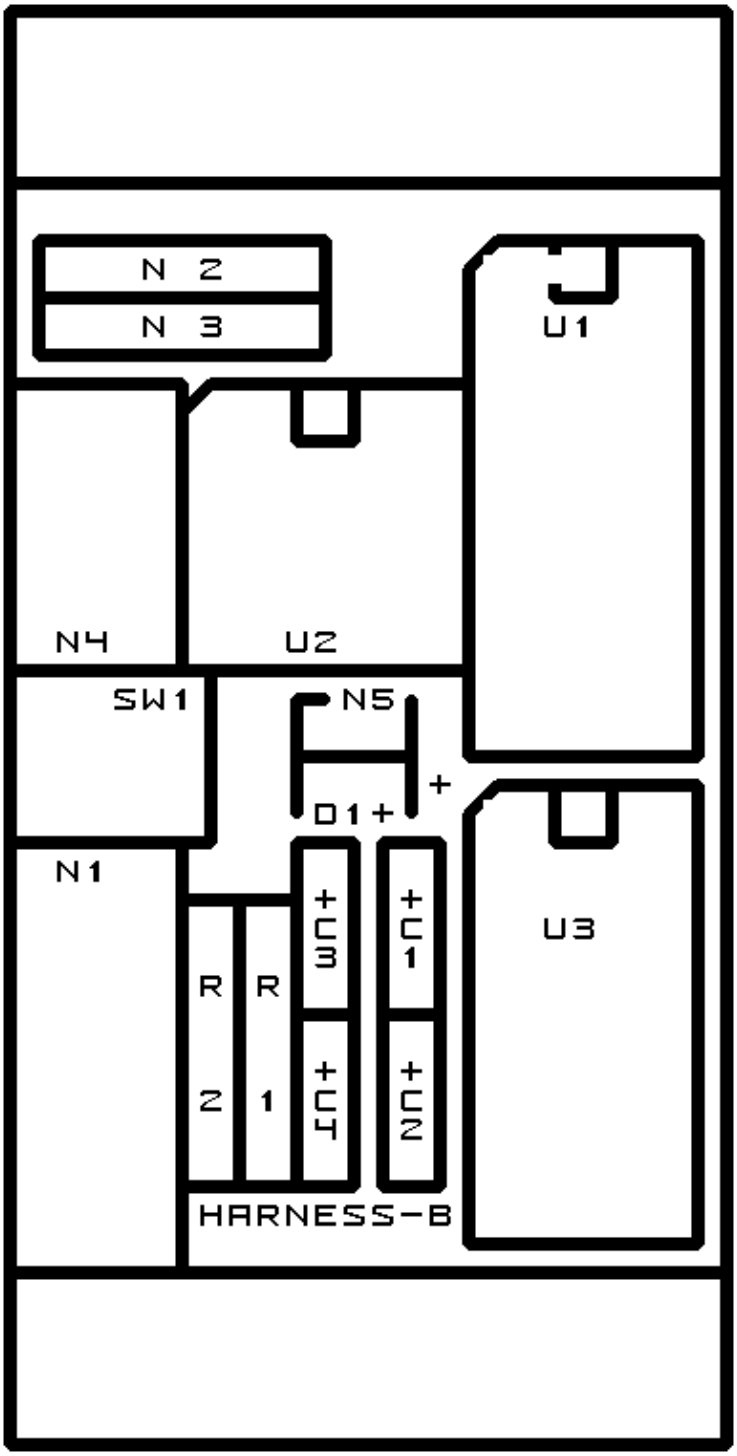
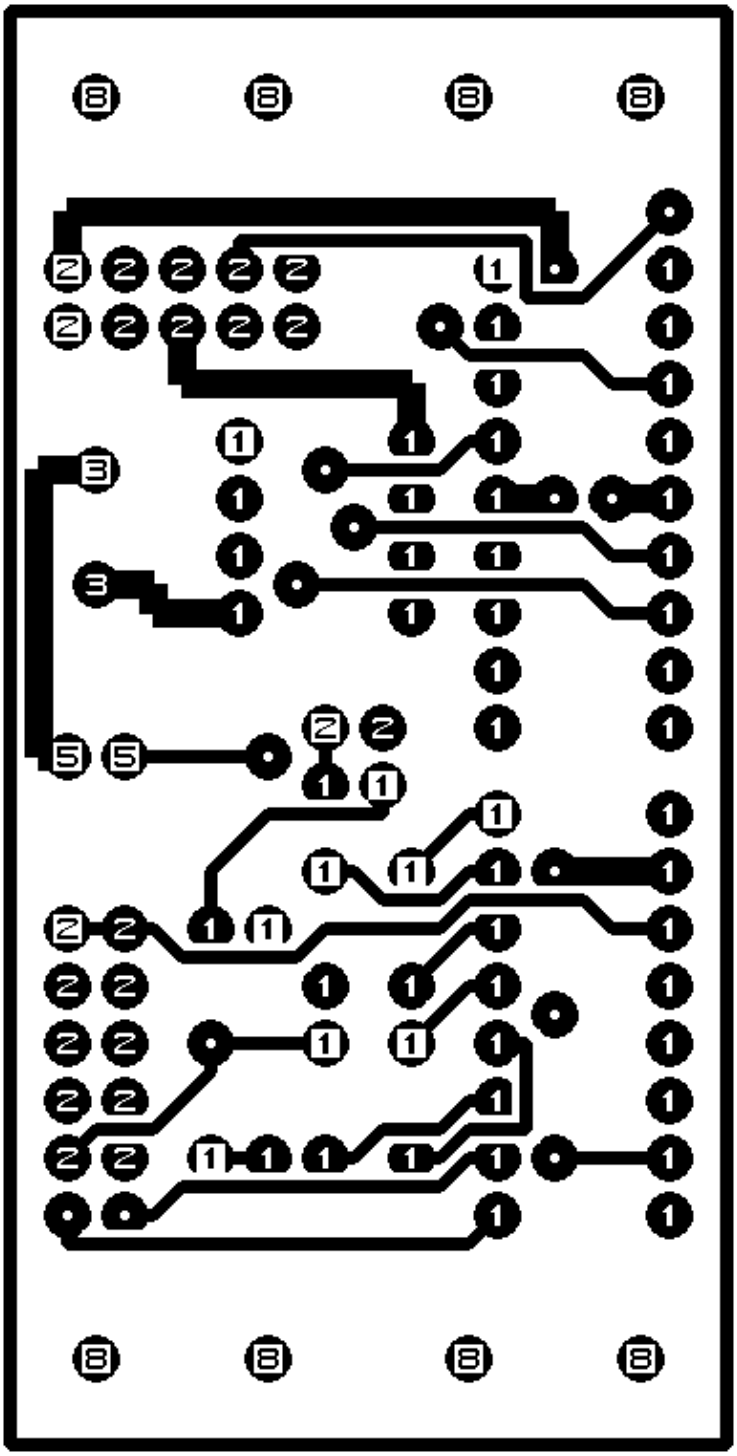
# Parts list for Harness RoboBrick (Rev. C)
#
C1−4: Capacitor100nF − 100 nF (.1 uF) Tantalum Capacitor [Jameco: 33486]
C5: Capacitor10pF − 10 pF Ceramic Capacitor [Jameco: 15333]
D1: LEDGreen − Green LED [Jameco: 34606]
N1: Header2x5.DB9 − 2x5 Header [10/80Jameco: 117196]
N2−3: Header1x5.RBMaster − 1x5 Male Header [5/40 Jameco: 160881]
N4: TerminalStrip2.Harness − 2 Junction Terminal Strip [Jameco: 189675]
N5: Header1x2.Harness − 1x2 Male Header [2/40 Jameco: 160881]
R1: Resistor10K − 10K Ohm 1/4 Watt Resistor [Jameco: 29911]
R2: Resistor220 − 220 Ohm 1/4 Watt Resistor [Jameco: 30470]
SW1: SwitchSPST − SPST Power Switch [Jameco: 72160]
U1: PIC16F628.Harness − MicroChip Microcontroller [Digikey: PIC16F628−20/P−ND]
U2: Oscillator20MHzHalf − 20 MHz Crystal Oscillator [Digikey: X220−ND]
U3: MAX232CPE − RS−232 Level converter [Jameco: 24811]
```

B. Appendix B: Artwork Layer



C. Appendix C: Back (Solder Side) Layer



D. Appendix D: Front (Component Side) Layer