

# WheelWatcher™ - WW-02

Closed loop control made easy

## Applications:

- Dead reckoning
- Odometry (how far has it gone)
- Closed-loop position, velocity, and acceleration control
- Stall detection

## Features:

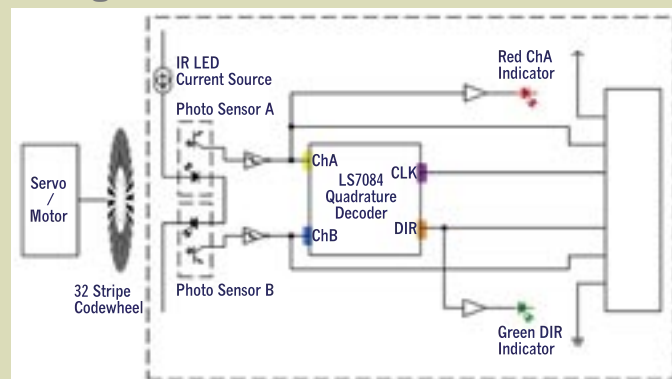
- Easy installation
- Simple interface
- Preprinted 32 stripe self-adhesive codewheel
- Hardware quadrature decode with 4x multiply for 128 clocks per rotation
- Raw quadrature
- Compatible with Solarbotics GM-2, GM-3, GM-8 and GM-9 gearhead motors (CS-100 recommended with GM-2 & GM-3)
- Works with standard injection-molded robot wheels - any color
- Code examples for common robot controllers



WheelWatcher shown with motor and wheel which are sold separately.

The WheelWatcher enables robot builders to quickly add closed-loop control to their robots. Both standard ChA/ChB raw quadrature outputs, as well as decoded Clock and Direction signals are available. The clock signal produces 25µs pulses at each transition of ChA or ChB, providing a 4x increase in resolution - 128 clocks per motor shaft rotation - while the direction signal indicates the decoded direction of rotation, making it very easy to add to any microcontroller.

## Block Diagram



# NU-BOTICS™

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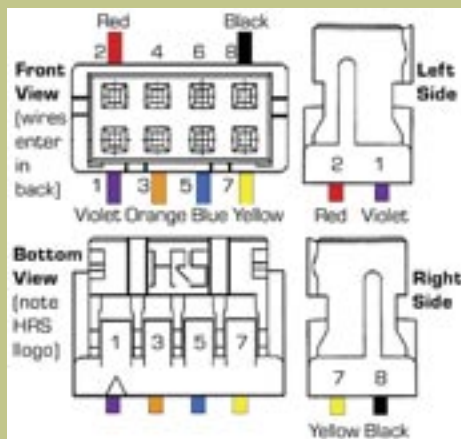
## Connector Pinout - J1: 2mm

### Decoded Quadrature:

1. Clk violet
2. Vcc red
3. Dir orange
4. Gnd

### Standard Quadrature:

5. ChB blue (opt.)
6. Vcc
7. ChA yellow (opt.)
8. Gnd black



This connector is fully compatible with the Nubotics WW-01. Early versions of the WW-01 have pin numbering that differs from the WW-02, but the signals are on the same pins. Only the silkscreen pin numbers are different.

## Compatible Motors (partial list)

### Manufacturer Models

Solarbotics GM-8, GM-9,  
GM-2, GM-3 (CS-100 recommended)

## CS-100 - Codewheel Spacer (optional)

Made of laser cut plastic with a self-adhesive backing, the CS-100 fits perfectly over the hub of standard injection molded wheels.



From left: wheel, wheel with CS-100 codewheel spacer, wheel with spacer & sticker. (White CS-100 illustrated. Actual CS-100 is clear.)

Distributed by:



- TOTALROBOTS, Surrey, UK
- Hobby Engineering, Millbrae, CA
- Zagros Robotics, St. Louis, MO

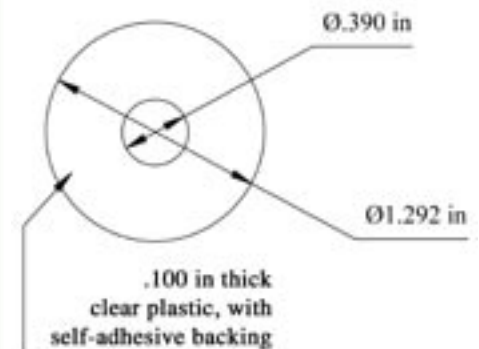


## WW-02 motor encoder

- Preassembled circuit board
- Self-adhesive codewheel
- 6" four lead color-coded cable
- Two extra wires provided for use with raw-quadrature output
- Mounting hardware
- Motor and wheel not included

## Two motor WW-02-Kit

- Two WW-02 motor encoders
- Motors and wheels not included



## CS-100 (optional)

- pre-drilled laser cut plastic codewheel spacer with adhesive backing

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