

1. Introduction

Easy Roller 300 CPR Quadrature Encoder Component for robot position control

Features

- ◆ 300CPR TTL level encoder
- ◆ Low cost, easy assembly
- ◆ All tools and wiring included
- ◆ Works with Motion Mind (PN: MOTM_1)

1.1 Description

This small two-channel encoder can be easily attached to the Easy Roller motor. When used in conjunction with a position controller, such as the Motion Mind Controller, robot position and speed control can be accomplished.

The encoder has a resolution of 300 Counts-Per-Revolution (CPR). When used with the M12V200 (the standard Easy Roller motor) the number of counts per shaft revolution is 9000.

1.2 Parts List

If you purchased an Easy Roller 300CPR Encoder your product should have been shipped with the following hardware and components. If you are missing components and you purchased the product from Solutions Cubed call Solutions Cubed immediately and request the missing components. If you purchased your product from one of our distributors please return your product to the distributor. Also please note that a single centering and spacer tool are shipped with each order.

Parts Shipped with Each Encoder

Item Number	Quantity	Part Reference	Description
1	1	ENCODER PCB	Encoder base and PCB
2	1	ENCODER COVER	Black plastic cover for encoder PCB
3	1	ENCODER DISC	300 CPR encoder disc – press fit
4	2	W1-ENC	Double-sided tape 1/16" foam washer
5	1	WIRE1-ENC	4 conductor colored wiring assembly

Additional Parts Shipped with Each Order

Item Number	Quantity	Part Reference	Description
1	1	TOOL1-ENC	Aluminum motor shaft center tool (cylinder)
2	1	TOOL2-ENC	Aluminum press fit spacer tool (disc)

2. ENC300CPR Encoder Specifications and Assembly

2.1 Encoder Electrical / Environmental Specifications

Characteristic	Value	Unit
Operating voltage	4.5-5.5	V
Operating current	15-30	mA
Operating temp.	-10 to 85	°C
Count frequency	30	KHz
Internal pull-ups	3.3	KΩ
Rear shaft speed	9000	RPM

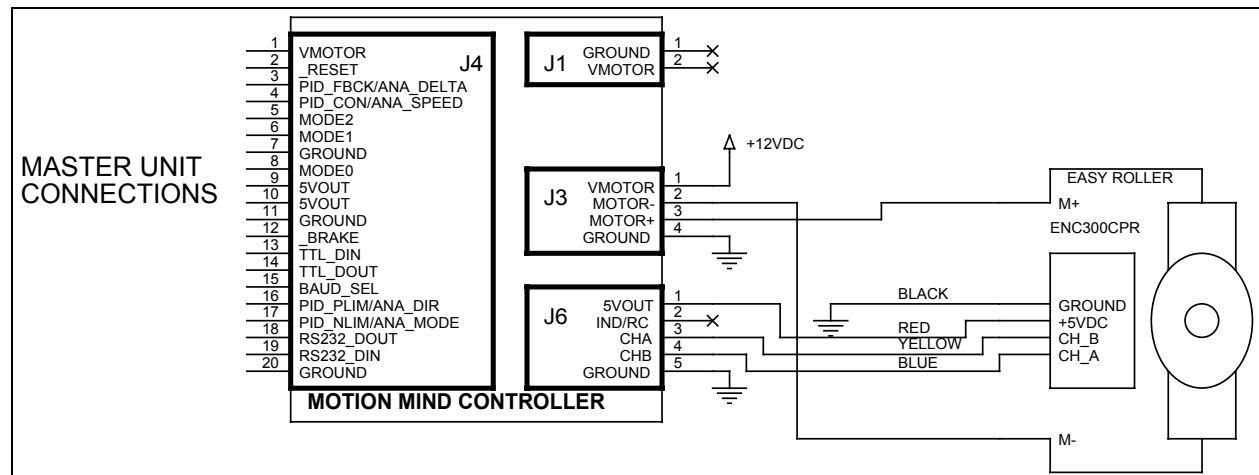
2.2 Encoder Mechanical Specifications

Characteristic	Value	Unit
Shaft size	2	mm
Shaft play	+/-0.5	mm
Shaft length	7.25-9.95	mm
Color	black	
Mounting technique	adhesive	
Radius	21.6	mm

2.3 Electrical Connections

Due to the gear configuration of the M12V200 shipped with the Easy Roller wheel kit the encoder connections, as labeled on the encoder body, should be reversed when connecting to the Motion Mind controller. These connections are shown below.

Motion Mind Connections to the ENC300CPR



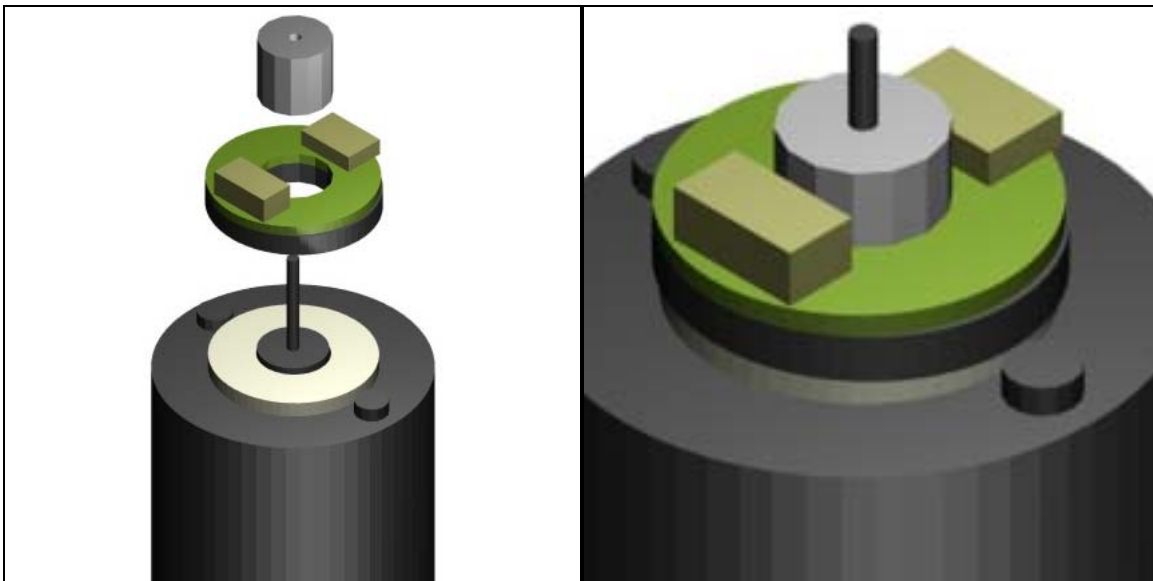
2.4 Assembly Instructions

When assembly is complete there should be no contact between the encoder wheel and the encoder cover. If there is any significant change in noise when the motor running the encoder may not be mounted correctly. When assembled the rear shaft should be centered in the hole on the encoder cover. Be sure to use the spacer tools provided when assembling the components. A second double-sided tape washer has been provided in the event that the first one gets damaged or needs replacement.

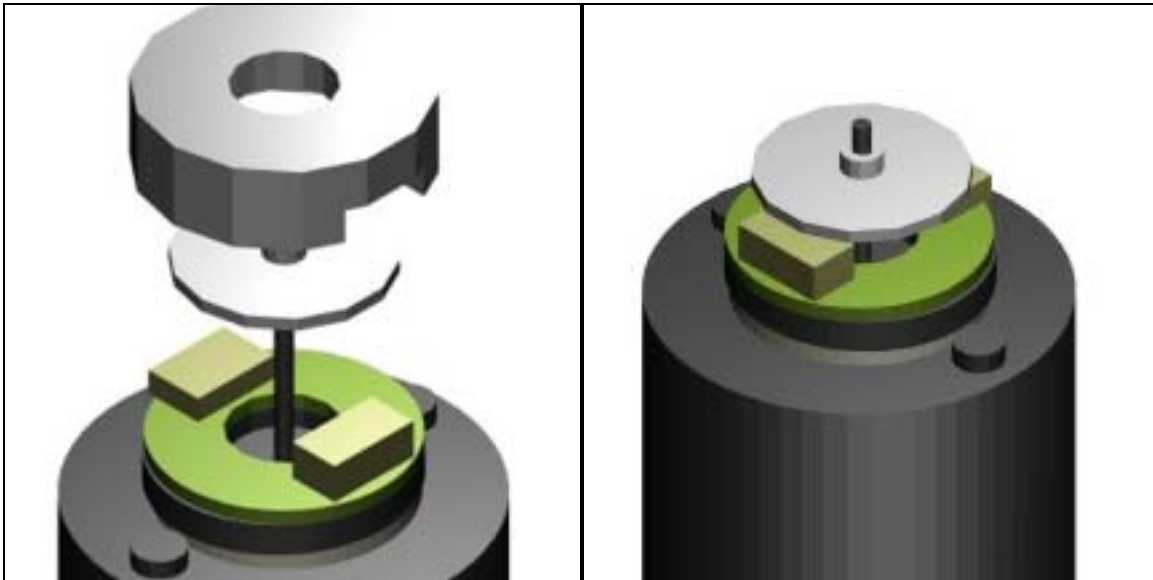
The motor leads are shown on the following diagrams. The position of the leads may not match the diagram. It is recommended that you position the encoder base so that the connector is perpendicular to the motor leads. Otherwise you may not be able to connect the wiring harness to the encoder when the unit is assembled. The orientation shown on the diagrams is the desired orientation.

STEP1: Expose the adhesive on both sides of the double-sided 1/16" foam washer, and apply the washer to the back of the motor so the motor rear shaft passes through the center of the foam washer. Expose the adhesive on the bottom of the PCB assembly by removing the paper cover.

Place the centering tool (aluminum cylinder) into the hole in the center of the PCB assembly. It won't slide all of the way through. Now, holding the centering tool and PCB assembly together, slide them onto the motor rear shaft. Slide them down as a unit until the adhesive on the bottom of the PCB assembly contacts the foam washer. Press evenly down on the PCB assembly; making sure that the centering tool keeps it centered on the motor rear shaft. The PCB assembly should be firmly attached to the bottom of the motor. Remove the centering tool.



STEP2: Make sure not to scratch or mar the encoder disc. Place the encoder disc (notched “pattern” side down) onto the rear motor shaft. Use just enough pressure to get it started on the shaft. Then place the spacer tool (the aluminum shell with cutouts for the IC and connector) over the encoder disc. Align the cutouts with the IC and connector on the PCB assembly. Press down firmly on the spacer tool to slide the encoder disc down the shaft. The spacer tool will make contact with the plastic rivets of the PCB assembly when it has reached the correct point.



STEP3: Place the plastic encoder cover over the encoder base and press the cover down until the ears on the base snap into the retaining latches on the cover. Squeeze the ears together to ensure they are snapped. Connect the keyed wiring harness to the connector exposed by the encoder cover.

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Warranty: Solutions Cubed warrants all Easy Roller Modules against defects in materials and workmanship for a period of 90 days. If you discover a defect, we will, at our option, repair or replace your product or refund your purchase price. This warranty does not cover products that have been physically abused or misused in any way.