

CP316

Rotary Pulse Generator

Terry Sturtevant

Wilfrid Laurier University

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Introduction

Introduction

- *Incremental rotary encoding*

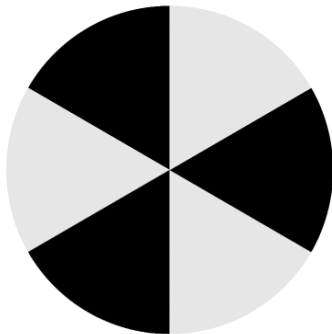
Introduction

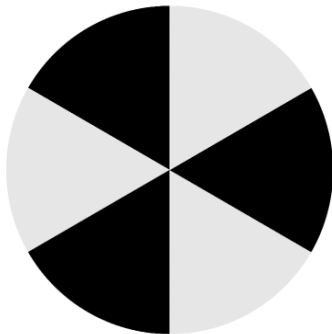
- *Incremental rotary* encoding uses PWM

Introduction

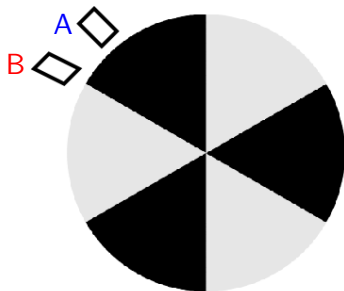
- *Incremental rotary* encoding
uses PWM

As long as you know the initial position, you can update if you can sense changes.

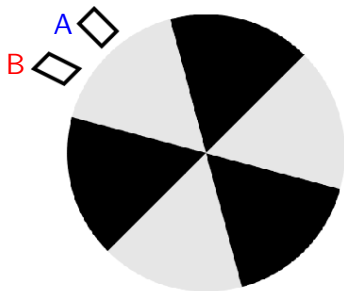




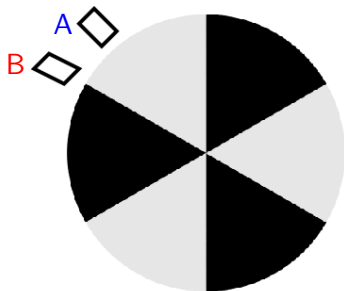
- Shaft encoder wheel
- Two sensors will allow determination of rotation *speed* and *angle*



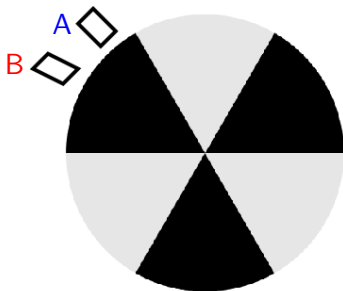
- Clockwise



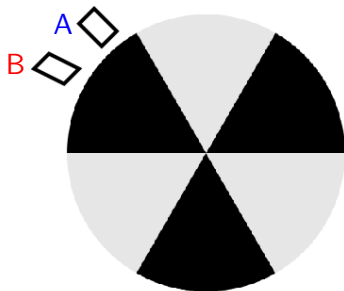
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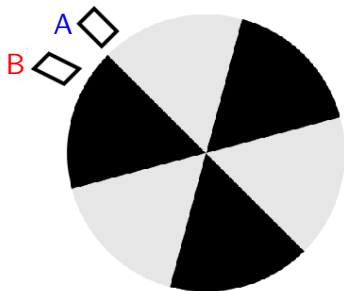
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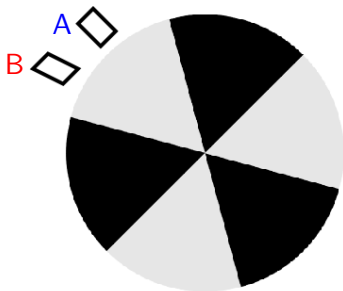
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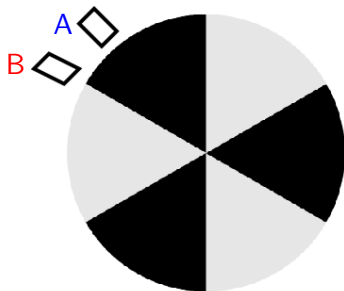
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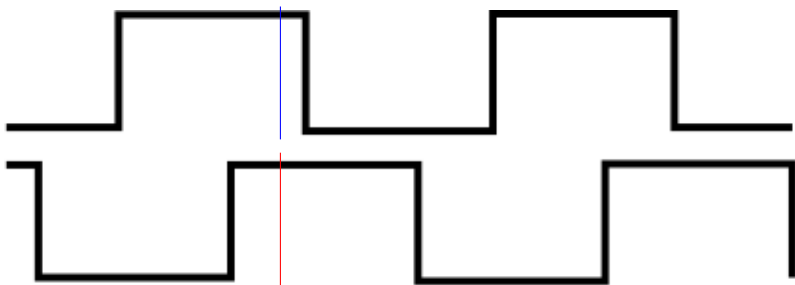
- Counter-clockwise



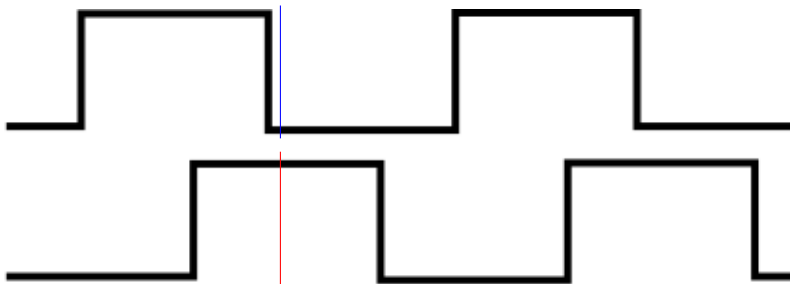
- Counter-clockwise



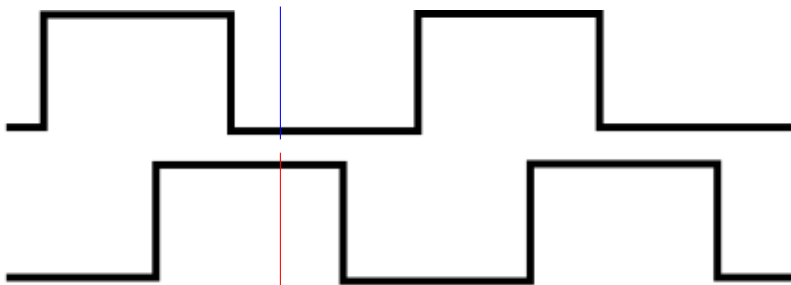
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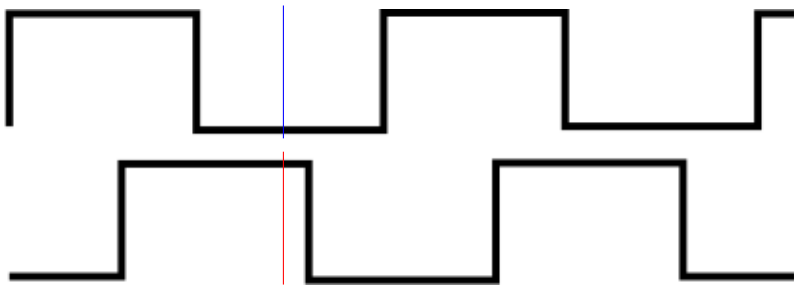
- Shaft encoder timing
- 1
- 1



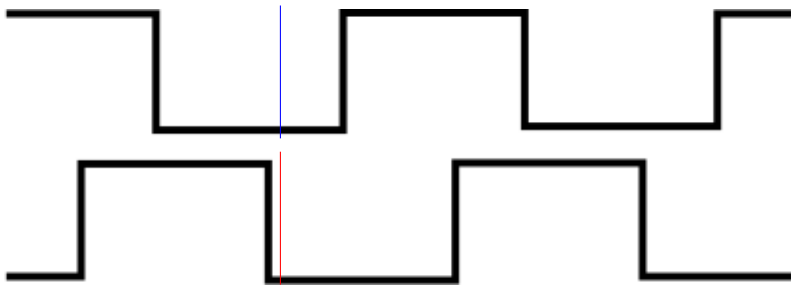
- Shaft encoder timing
- 0
- 1



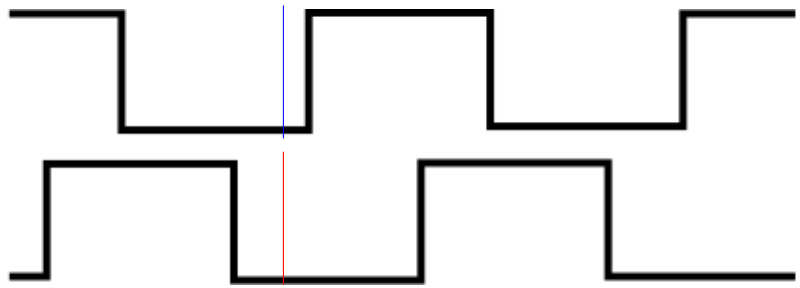
- Shaft encoder timing
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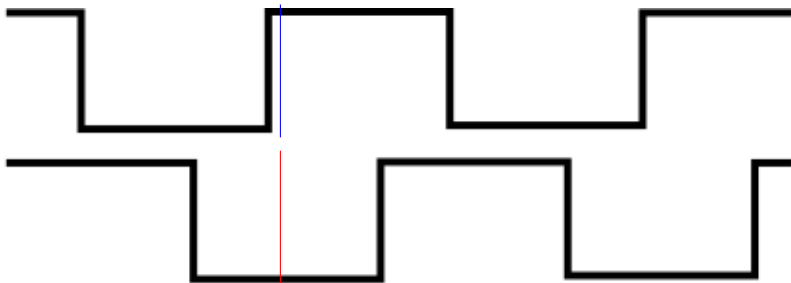
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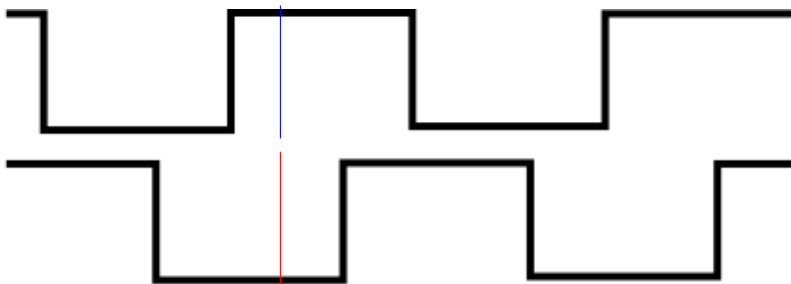
- Shaft encoder timing
- 0
- 0



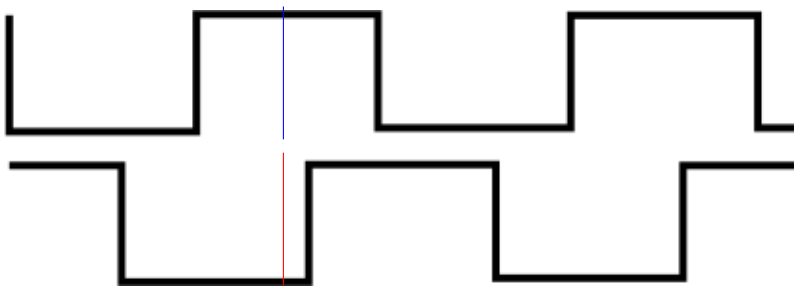
- Shaft encoder timing
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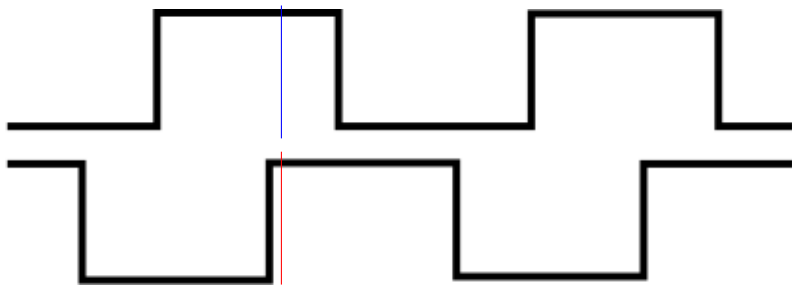
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- *Speed* of rotation from frequency of either channel

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- *Angle* of rotation from combination

RPG on QwikFlash board

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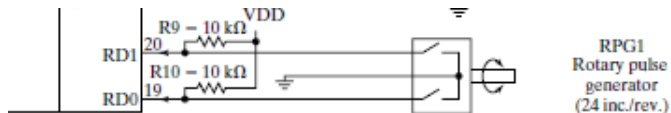
QwikFlash connections

RPG on QwikFlash board

QwikFlash connections
ramifications???

QwikFlash RPG connections

QwikFlash RPG connections



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PORT configuration

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→ macro or subroutine?

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timing considerations?

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- 3 if value has changed, determine *direction* it has moved
update CW or CCW flag as appropriate
- 4 save new value