

# FRA222 Microcontroller Interface

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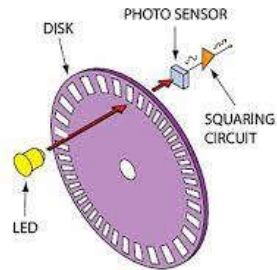
QEI

# Rotary Encoder

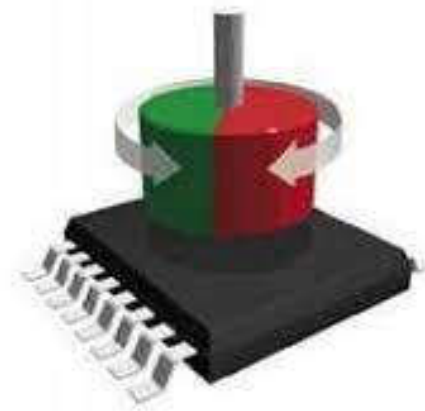
Device that converts the angular position or motion of a shaft to analog or digital output signals.



Optical



Mechanical



Encoder shaft

2-pole magnet

Interpolator

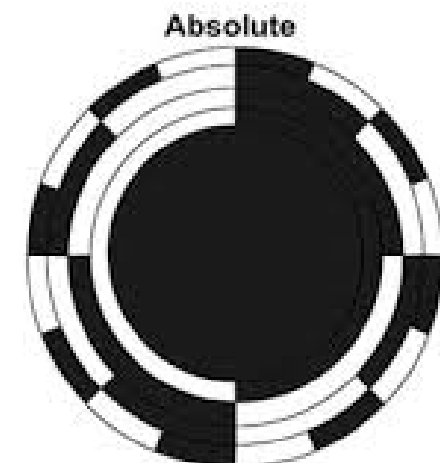
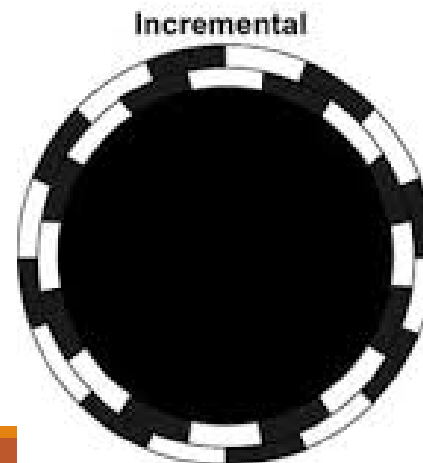
Magnetic

# Rotary Encoder

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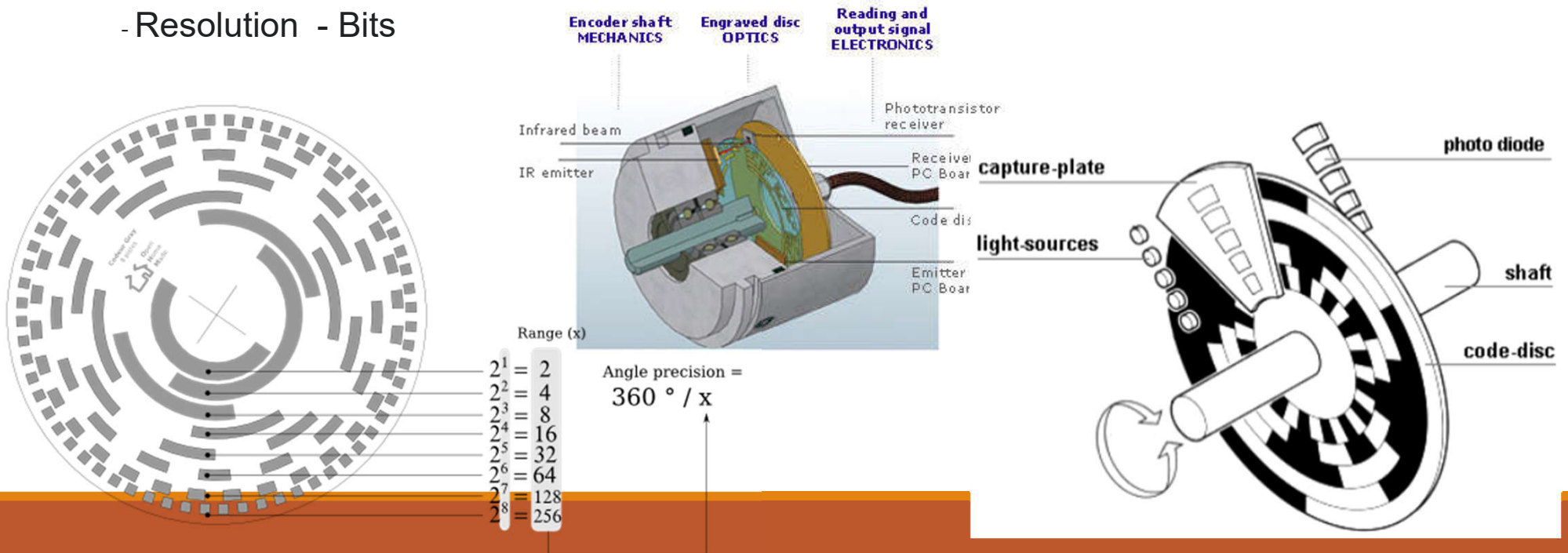


- Incremental
- Absolute



# Absolute Rotary Encoder

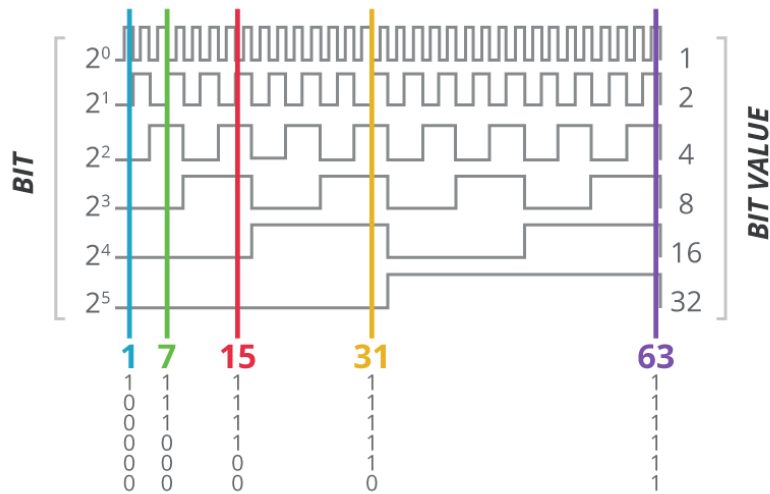
- Maintains position information when power is removed from the encoder.
- The position of the encoder is available immediately on applying power
- Resolution - Bits



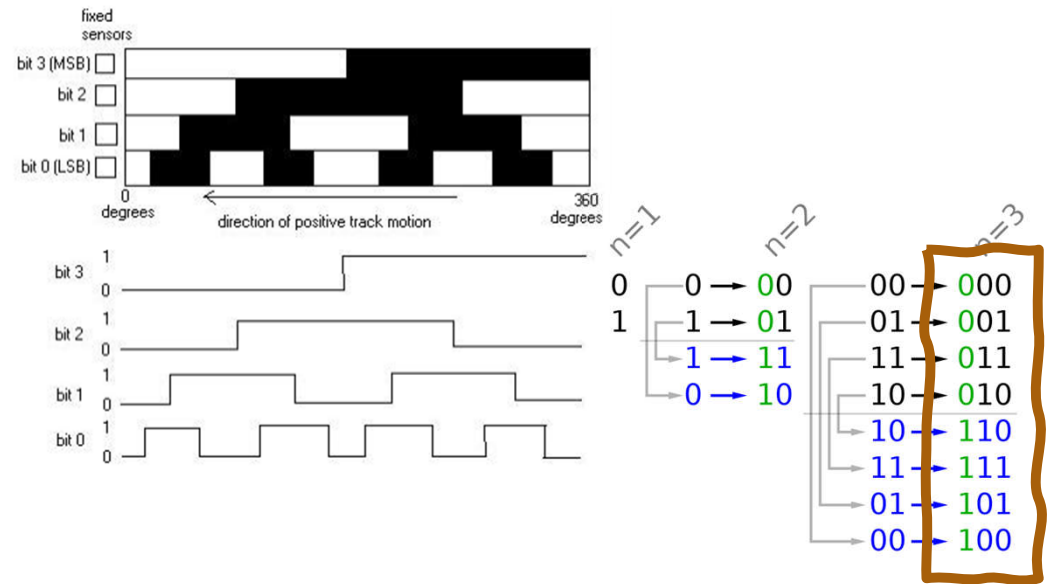
# Absolute Rotary Encoder

## Output Type

- Parallel Out



Binary



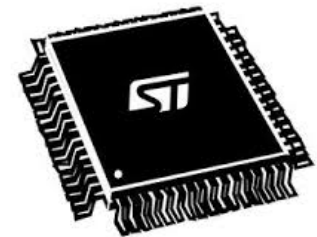
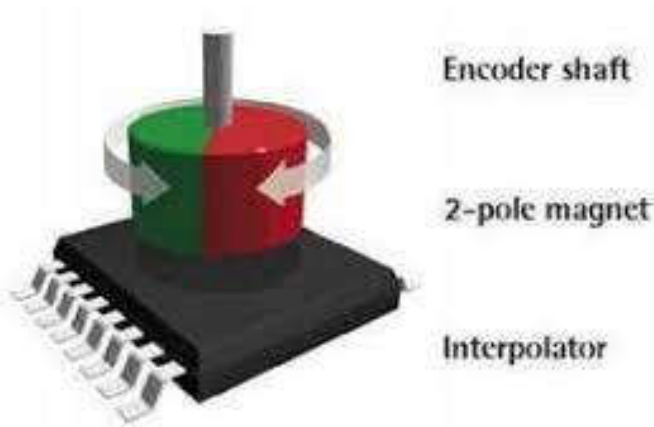
Gray Code

# Absolute Rotary Encoder

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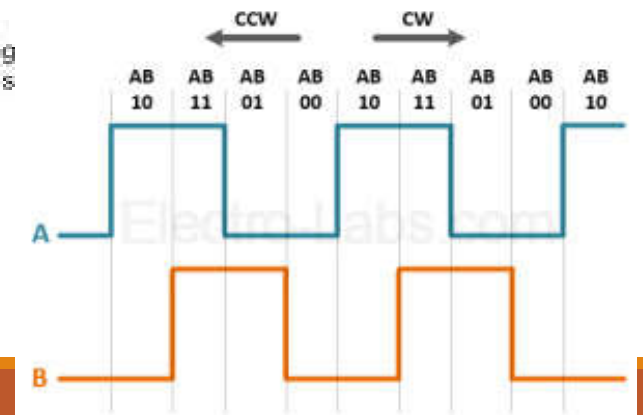
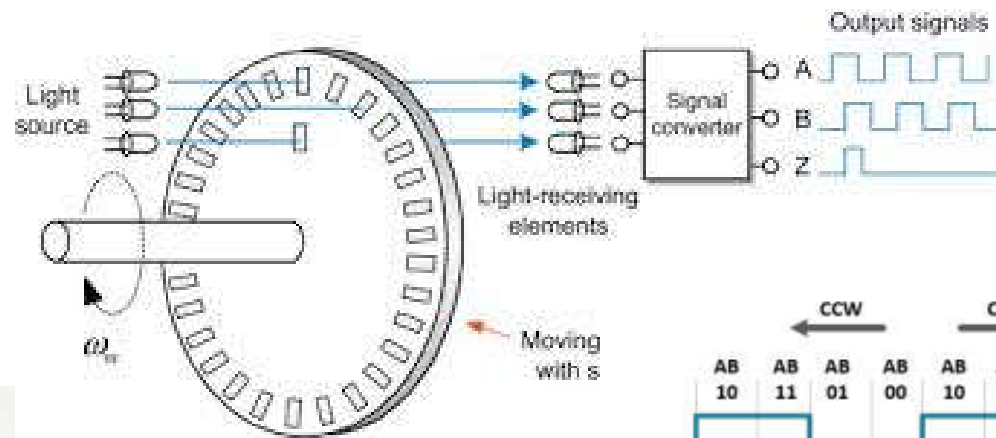
## Output Type

- Serial / Communication

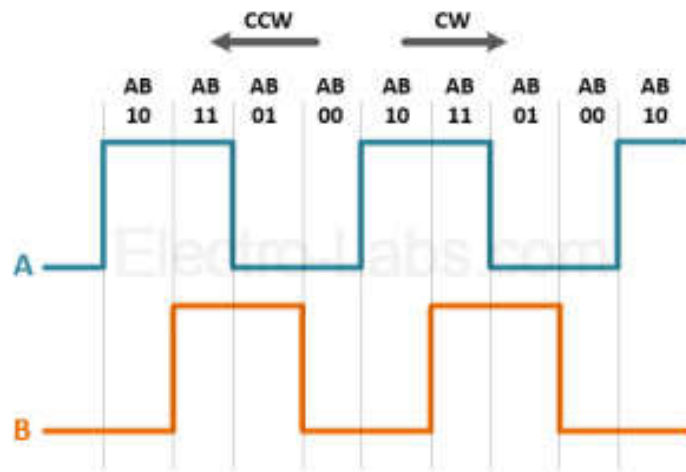


# Incremental Rotary Encoder

- **NOT** Maintains position information when power is removed from the encoder.
- The position of the encoder is relative from start point / Home set point
- Resolution - P/R

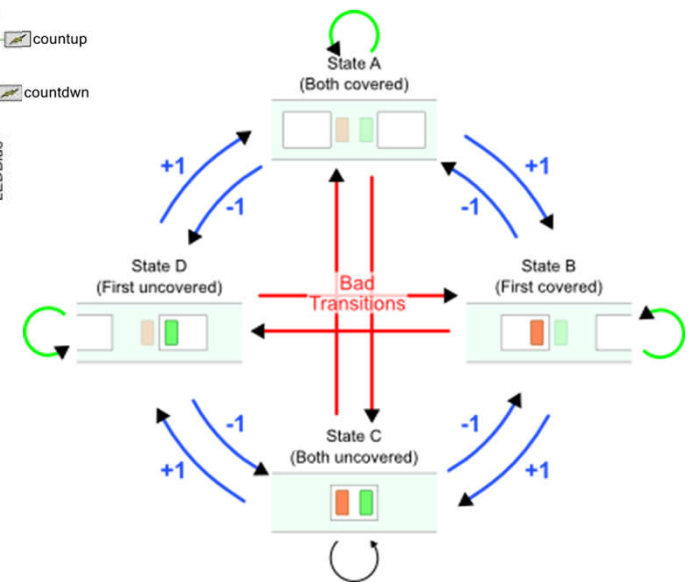
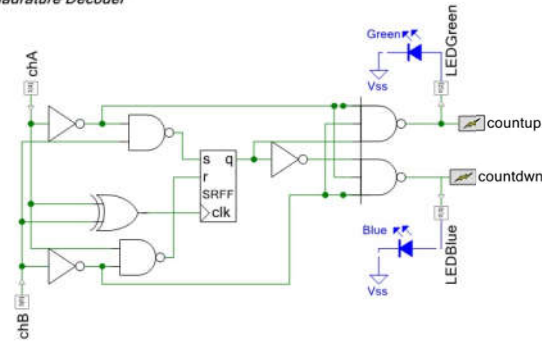


# Incremental Rotary Encoder



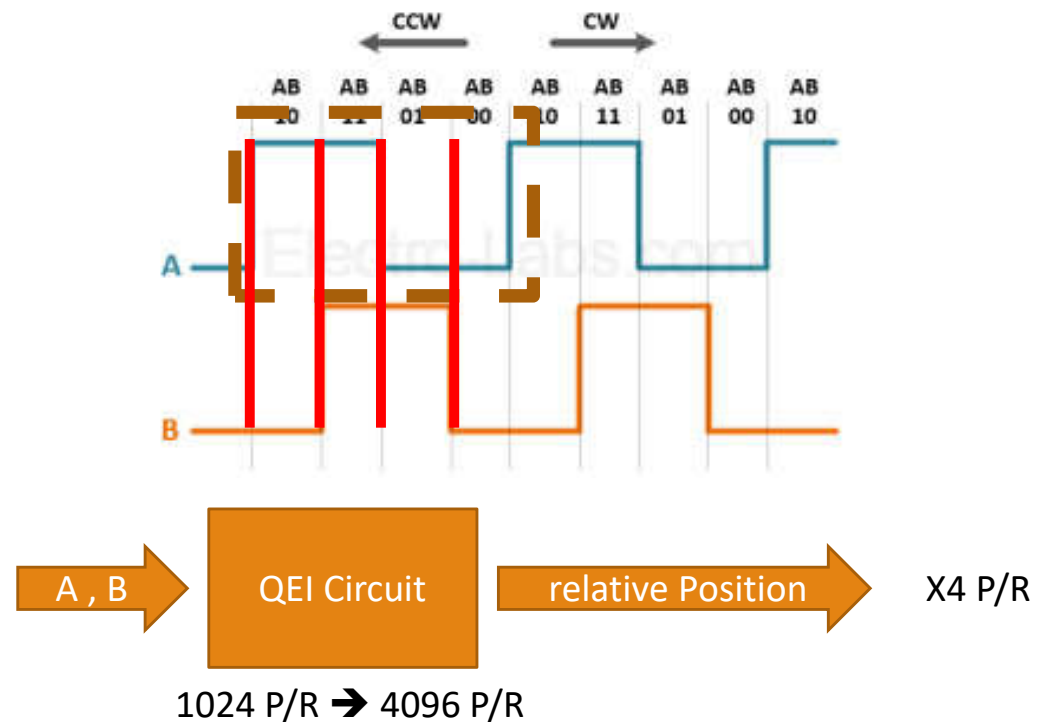
Read By Circuit  
Read By Software  
Read By Interrupt  
Read By QEI

Quadrature Decoder





# QEI - quadrature encoder interface



# QEI - quadrature encoder interface

## Technical Data

### Features

- Interfaces Encoder to Microprocessor
- 14 MHz Clock Operation
- Full 4X Decode
- High Noise Immunity: Schmitt Trigger Inputs Digital Noise Filter
- 12 or 16-Bit Binary Up/Down Counter
- Latched Outputs
- 8-Bit Tristate Interface
- 8, 12, or 16-Bit Operating Modes
- Quadrature Decoder Output Signals, Up/Down and Count
- Cascade Output Signals, Up/Down and Count
- Substantially Reduced System Software

### Applications

- Interface Quadra Incremental Enc

