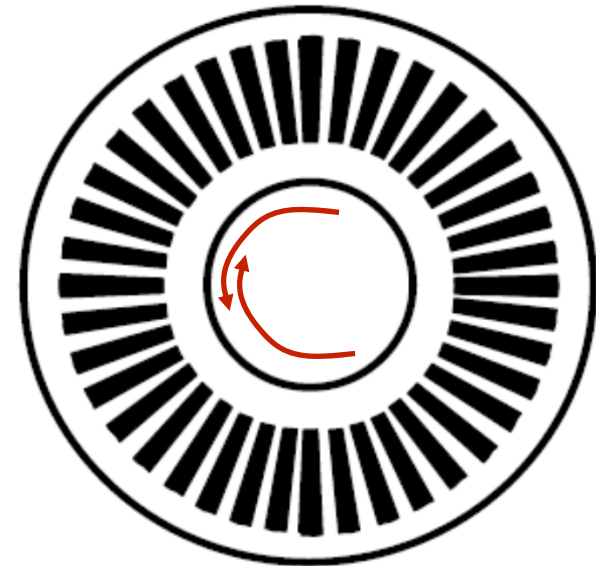
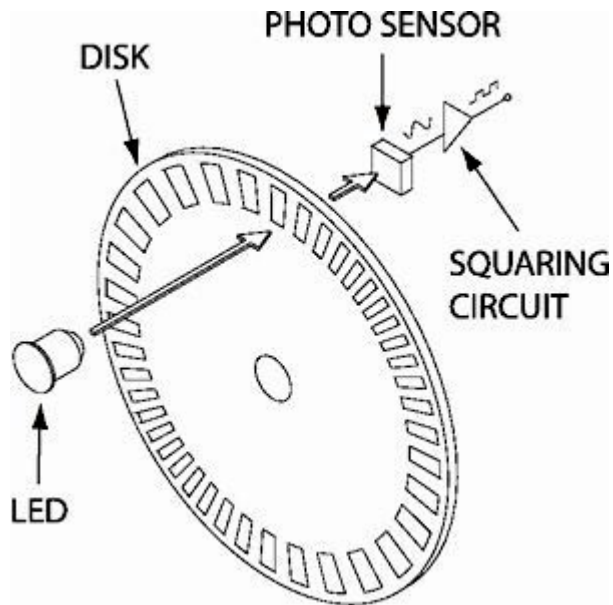


Encoders

Optical Encoders for Position

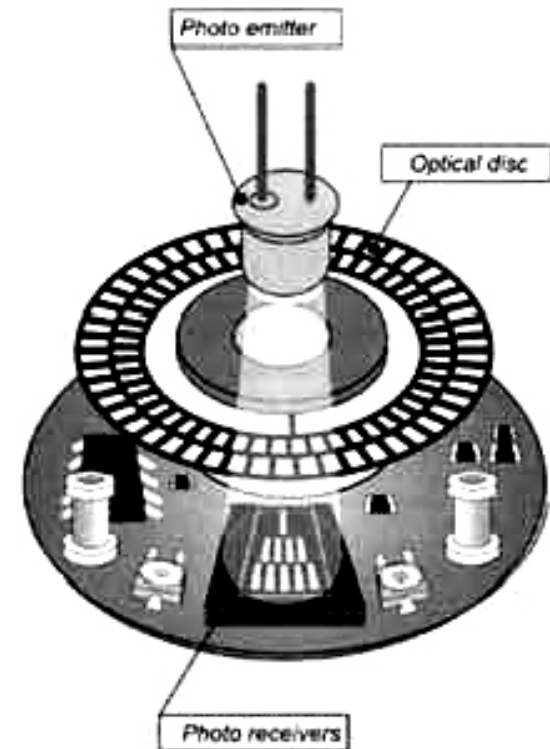
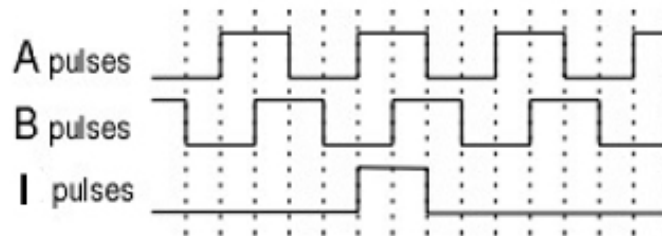
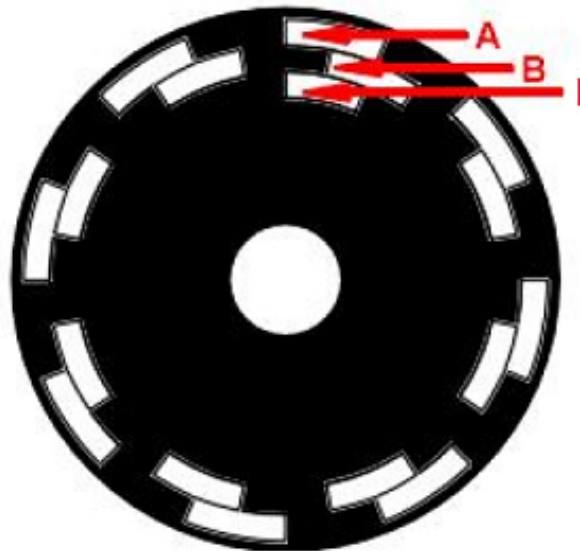
- Combines a transmissive optical sensor with a rotating mask



Optical Encoders for Position

- Quadrature incremental encoder

INCREMENTAL ENCODER DISK



Encoders

Optical Encoders for Position

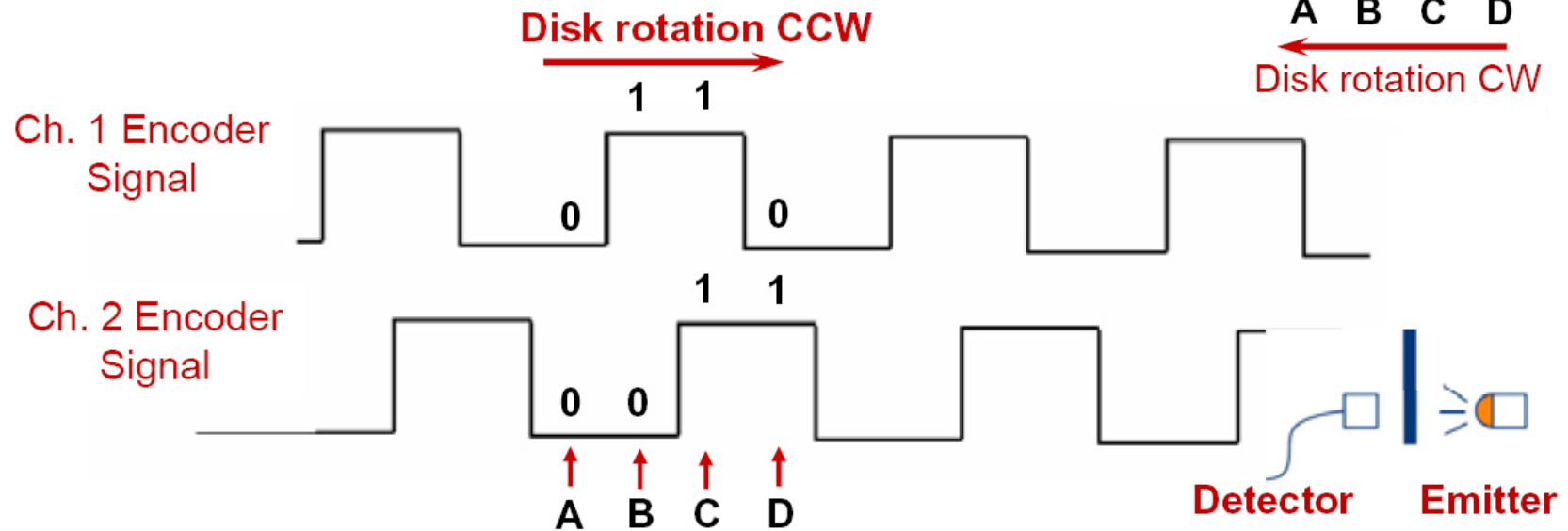
- Quadrature Encoder States

Encoder States

Disk rotation CCW →

	A	B	C	D
Ch. 1	0	1	1	0
Ch. 2	0	0	1	1

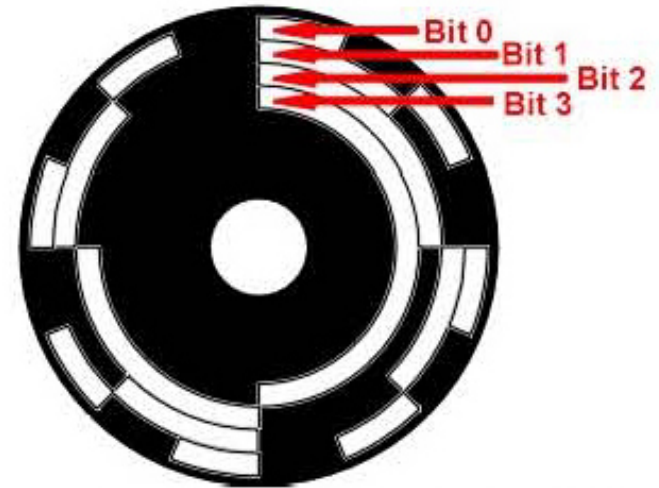
← Disk rotation CW



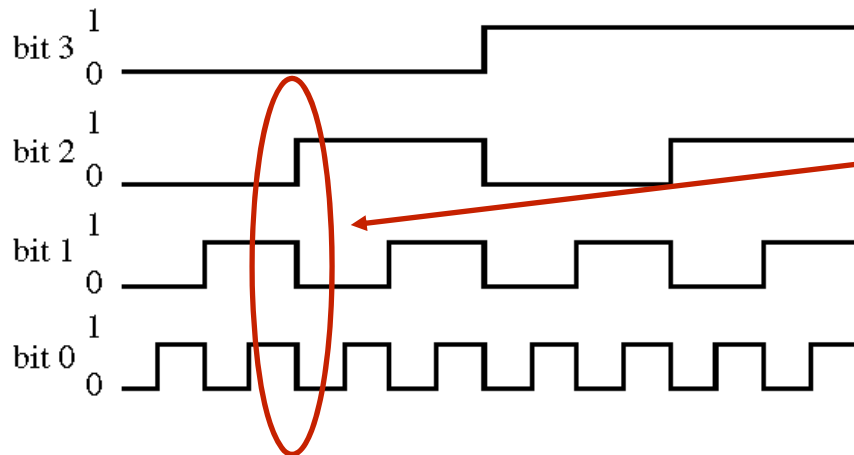
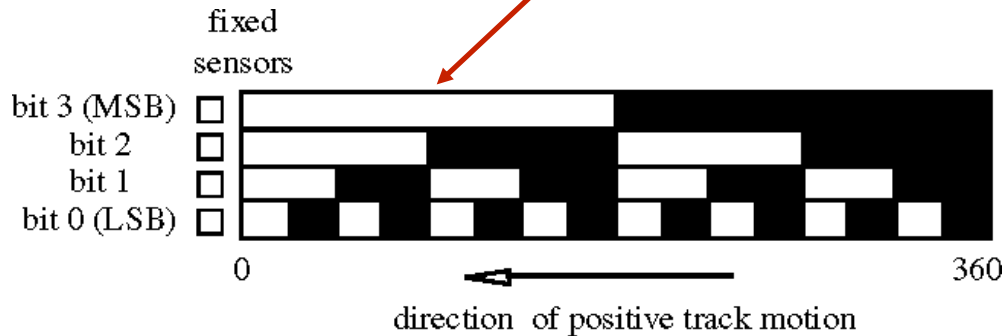
Optical Encoders for Position

- Absolute encoder

ABSOLUTE ENCODER DISK



natural binary encoding



Multiple bit transitions

Encoders

Optical Encoders for Position

- Absolute encoder

