

Encoder Automation Table

Showcasing the power of encoders.

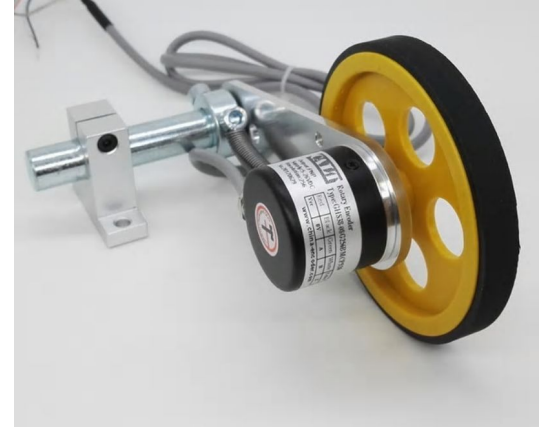
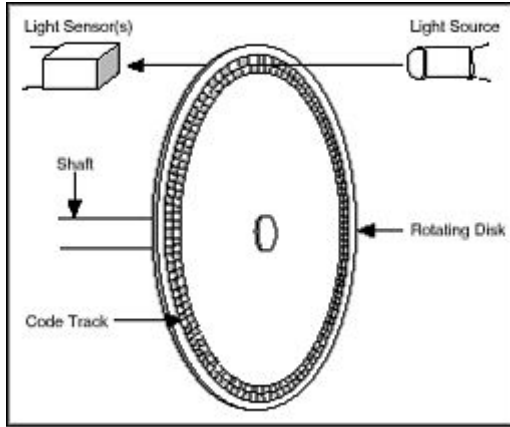
360 Designs

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Sponsor:



What's an encoder?



Encoders are extremely accurate angle measurement devices that can easily translate to distance, velocity, and acceleration.

Encoders in Action



Printing



Equipment



Food & Beverage

Project Objective

- Design and create an attractive, interactive display that educates individuals on EPC's lineup of products.
- Demonstrate the programmable encoder's functionality.
- Demonstrate the linear encoder's functionality.
- Demonstrate an industry application (“cut to length”)

Value Proposition

- The Encoder Automation Table will:
 - ◆ Showcase functionality of EPC's products
 - ◆ Attract individuals at tradeshow
 - ◆ Inform the public
 - ◆ Train new employees
- ... Thereby increasing company income and efficiency

User Experience

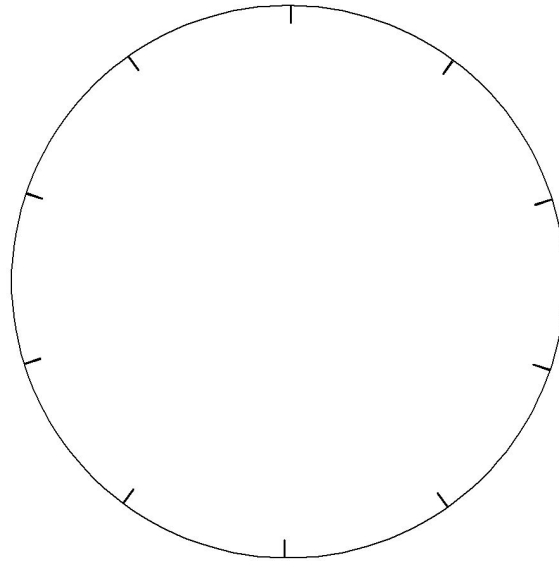
1. User engages in either Citizen or Engineer mode, within the HMI.
2. User attempts to actuate the block to a specified distance.
 - a. Success/failure is determined based on the degree of accuracy.
 - b. In citizen mode, the options for the programmable encoder will be pre-determined.
 - c. In “Engineer mode” the user will get to manually change the resolution of the programmable encoder in order to achieve the goal.
3. Upon failure, the block returns home and the user may try again.
4. Upon success, the user will experience a “random success routine”
 - a. Candy dispensed
 - b. Flashing lights
 - c. Music or sound is played

Programmable Encoder Features

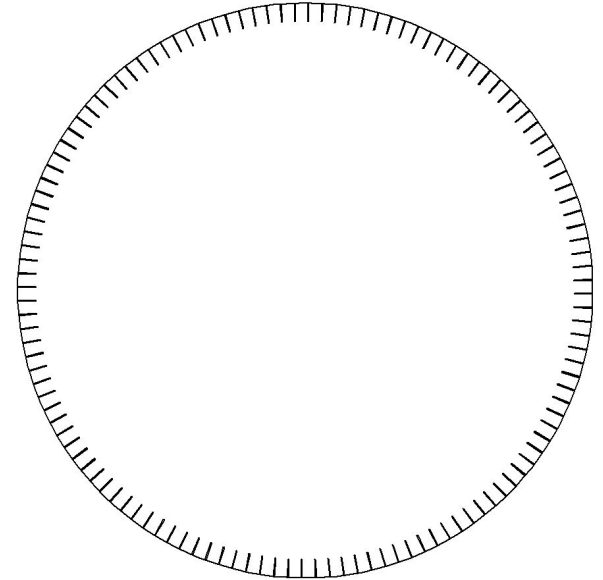
→ Resolution

- ◆ The Model 25 SP can be programmed to have a specific resolution
 - Resolution is the number of ticks/points that the encoder counts per resolution
 - Capable of the range of 1 and 65,536

Model 58TP Programmable Encoder



Lower Resolution (8)



Higher Resolution (128)

Project Learning

- Synthesizing budgets and purchasing
- Organizing multi-disciplinary tasks to provide synergy
- 3D modeling, rendering, and animation to effectively communicate design plans
- Learning a new language to program the Unitronics display
- Working with the client as demands and ideas morph

Unresolved Issues

- Reduced project scope
- Anodization timeline (correlates to downtime)
- Professional appearance (hiding wires, component housing)
- Linear actuator returning “home” after each cycle
- Difficulty getting the PLC/HMI to work with encoders and motors

Plan for the Future

→ March

- ◆ Anodizing plate
- ◆ Purchase housing(s) for wiring, relay, driver and HMI
- ◆ Test food dispensers and motors, purchase additional hardware (if needed).
- ◆ Begin programming user experience interface on the HMI/PLC

→ April

- ◆ Visit client to present prototype
- ◆ Finish programming and installation

→ May

- ◆ Design Expo - Final Prototype

How will the motion be controlled?



Unitronics HMI+PLC Unistream 10.4 Multitouch
32 bit processor
Digital and analog input/output modules

