

# Agilent HEDR-542x Miniature Reflective Optical Encoder

## Product Brief



### Introduction

Agilent's optical encoders are used in a variety of motion control applications to provide position, velocity and direction sensing.

### About the Products

The HEDR-542x is an easy-to-mount, high-performance, reliable, two-channel encoder.

The HEDR-542x offers a resolution of 200 counts per revolution, featuring typically less than 15 electrical degrees pulse width error (PWE) and less than 30 electrical degrees for combined phase and state width error.

The HEDR-542x is ideal for equipment using small and miniaturized motors, operating within the 0°C to +85°C temperature range, and operating from a 5-volt supply.

### Product Mechanism

HEDR-542x encoders translate the rotary motion of a shaft into a two-channel digital quadrature output. The light emitted from a LED is focused onto a reflective codewheel. As the shaft moves, the codewheel rotates, reflecting light from an alternating bright and dark pattern. The transitions are detected by a photodetector IC.

### Features and Benefits

- **PWE <15 degrees**  
**SWE <30 degrees**
  - Accurate system control
- **Small footprint**
  - Saves space on PCB; can be used in small motor system where space is a constraint
- **Cost effective solution**
  - Value added at low cost
- **Several mounting options are available**
  - Press fit, set screw and mounting ears to suit design and size of motors
- **Easy assembly**
  - Shortens assembly time

### Typical Applications

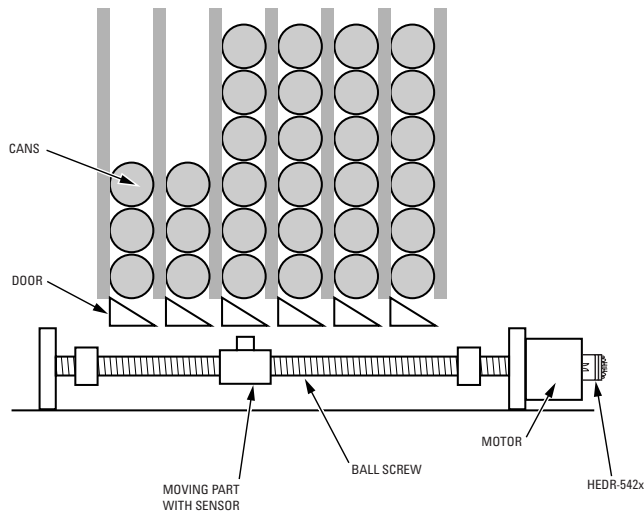
- **Vending machines**
- **Volumetric dispenser**
- **Card readers (automated teller machines)**
- **Robotics**
- **Security camera controls**
- **Paper feed control (office automation)**



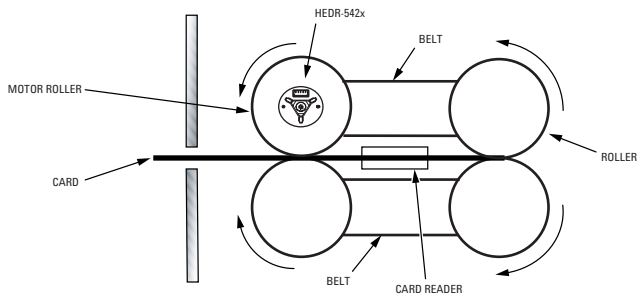
## Agilent Miniaturized Reflective Optical Kit Encoder Product Selection

Part Number	Resolution	Shaft Size	Connector	Hub
HEDR-5420-ES201	200 CPR	0.08" (2 mm)	Axial	Set screw with mounting ears
HEDR-5420-ES202	200 CPR	0.12" (3 mm)	Axial	Set screw with mounting ears
HEDR-5420-ES203	200 CPR	0.13" (3.30 mm)	Axial	Set screw with mounting ears
HEDR-5420-ES211	200 CPR	0.16" (4 mm)	Axial	Set screw with mounting ears
HEDR-5420-ES214	200 CPR	0.20" (5 mm)	Axial	Set screw with mounting ears
HEDR-5421-EP111	200 CPR	0.16" (4 mm)	Right Angle	Press fit without mounting ears

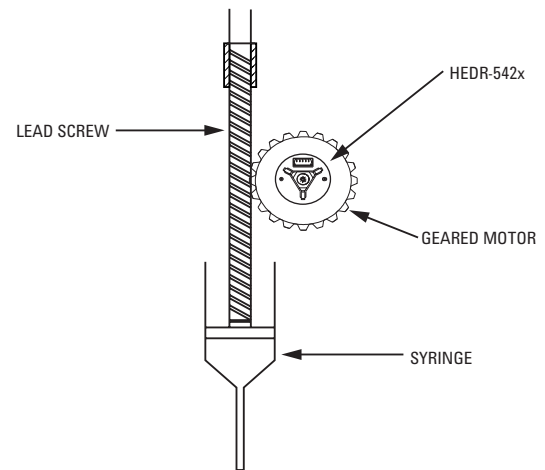
### Schematics of Typical Applications of HEDR-542x



**Figure 1. Encoder Used in a Vending Machine.**  
(drawing not to scale)



**Figure 2. Encoder Used in a Banking Autoteller Machine.**  
(drawing not to scale)



**Figure 3. Encoder Used in a Volumetric Dispenser Machine.**  
(drawing not to scale)

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