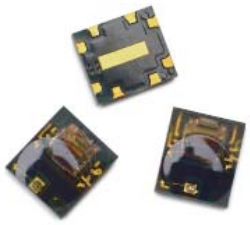
AEDR-850x

3 Channel Reflective Incremental Encoders

Data Sheet

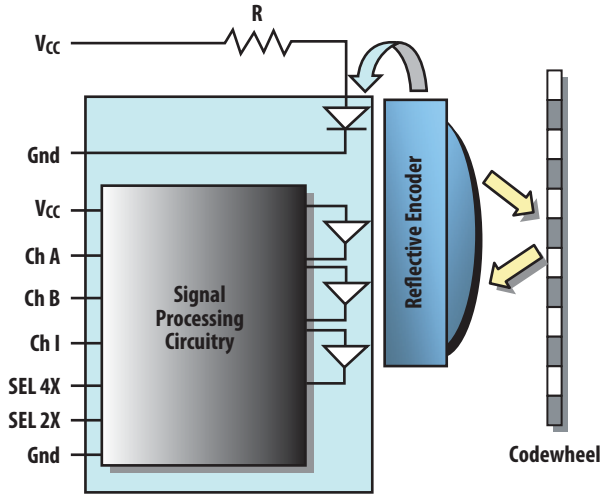


Description

The AEDR-850X encoder is the smallest 3 channels optical encoder with digital outputs in the market employing reflective technology for motion control purposes. The encoder is designed to operate over –20°C to 85°C temperature range and hence suitable for both commercial and even industrial end applications.

The encoder houses an LED light source and a photo-detecting circuitry in a single package. The small size of 3.95 mm (L) × 3.4 mm (W) × 0.9562 mm (H), allows it to be even used in a wide range of miniature commercial application where size and space is a primary concern.

The AEDR-850X encoder offers two-channel quadrature digital outputs and a third channel, index digital outputs. Being TTL compatible, the outputs of the AEDR-850X encoder can be interfaced directly with most of the signal processing circuitries. Hence the encoder provides great design in flexibility and easy integration into existing systems.



Note: Drawing not to scale.

Features

- World smallest 3 channels reflective technology encoder.
- Surface mount leadless package 3.95 mm (L) × 3.4 mm (W) × 0.9562 mm (H)
- 3 channels; two channel quadrature digital outputs for direction sensing and a third channel, Index digital output.
- Build in interpolator, factor of 1×, 2×, and 4× selectable via external pinouts
- TTL compatible
- Single 5 V supply
- –20°C to 85°C absolute operating temperature
- Encoding resolution: 294 to 304 (lines/inch)

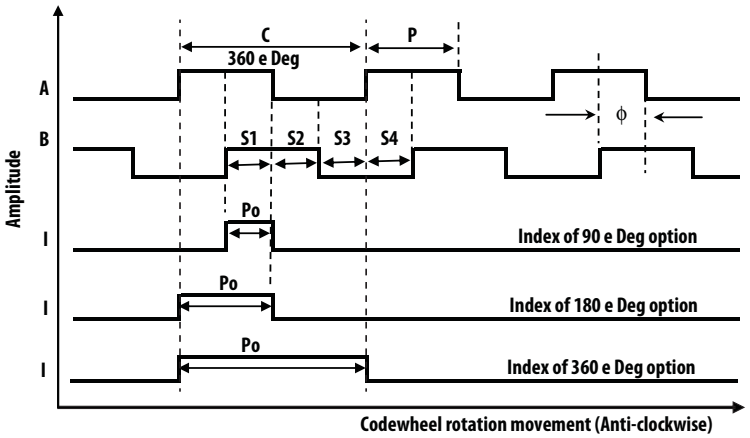
Applications

Ideal for high volume applications:

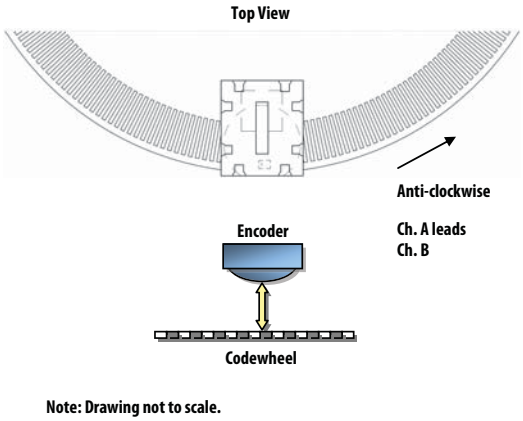
- Close loop stepper motors
- Miniature motors
- Printers
- Copiers
- Card readers
- Scanners
- Projectors
- Consumer and industrial product applications

Note: Avago Technologies encoders are not recommended for use in safety critical applications, e.g., ABS braking systems, power steering, life support systems and critical care medical equipment. Avago's products and software are not specifically designed, manufactured or authorized for sale as parts, components or assemblies for the planning, construction, maintenance or direct operation of a nuclear facility or for use in medical devices or applications. Customers are solely responsible, and waive all rights to make claims against Avago or its suppliers, for all losses, damage, expense or liability in connection with such use. Please contact your local sales representative if more clarification is needed.

Output waveform



QUADRATURE SIGNALS A, B and I



Note: Drawing not to scale.

Absolute Maximum Ratings

Storage Temperature, T_S	–40° C to 85° C
Operating Temperature, T_A	–20° C to 85° C
Supply Voltage, V_{CC}	7 V
Output Voltage, V_O	V_{CC}

Notes:
1. Exposure to extreme light intensity (such as from flashbulbs or spotlights) may cause permanent damage to the device.
2. CAUTION: It is advised that normal static precautions should be taken when handling the encoder in order to avoid damage and/or degradation induced by ESD.
3. Proper operation of the encoder cannot be guaranteed if the maximum ratings are exceeded.

Recommended Operating Conditions (based on limited prototype samples testing @ 11.38 Rop codewheel)

Parameter	Sym.	Min.	Typ.	Max.	Units	Notes
Temperature	T_A	-20	25	85	°C	
Supply Voltage	V_{CC}	4.5	5	5.5	V	Ripple < 100mVp-p
LED Current	I_{LED}		15mA		mA	See note 1
Count Frequency[2]	F		55		kHz	1 x Interpolation Factor
Radial Misalignment	E_R			±0.2	mm	
Tangential Misalignment	E_T			±0.2	mm	
Codewheel Gap	G	0.5	1.0	1.25	mm	See note 3

Notes:
1. LED Current Limiting Resistor: Recommended series resistor = 180 Ω (±1%)
2. Count frequency = velocity (rpm) x CPR / 60.
3. Avago recommends 1.0mm gap as nominal.