Features
Low Cost Linear Solution
Resolutions from 2-500 Cycles per Inch
IP65 Sealing Available
Cable Measurement 0 - 50 inches

The Linear Cable Encoder (LCE) provides a low cost alternative for obtaining accurate linear measurements. As opposed to typical rotary shaft style encoders, the LCE has a retractable stainless steel cable, allowing for numerous measuring configurations. You can place the LCE away from harsh environmental conditions, while still providing precise measurements, giving the LCE an outstanding advantage over shaft-style encoders. Installation is easy with a variety of cable exit directions, and perfect parallel alignment is no longer necessary. The heart of the LCE is the popular Cube Accu-Coder™, the original cube style encoder. The LCE provides a reliable digital pulse train in either single channel or quadrature format, with resolutions down to 0.002" per cycle. The small overall size, a variety of resolutions, and many different connector types, makes the versatility of the LCE unbeatable.

Common Applications
Robotics, Extrusion Presses, Valve Positioning, Textile Machinery, Control Gate Positioning

Model LCE Ordering Guide
Blue type indicates price adder options. Not all configuration combinations may be available. Contact Customer Service for details.

Model LCE Resolution Table
Cycles Per Inch 002 020 040 050 100 200 250 500
Resolution 0.500" 0.050" 0.025" 0.020" 0.010" 0.005" 0.004" 0.002"

Contact Customer Service for other resolutions.

Notes:
1 Line Driver not available with 5-pin M12 connector.
2 For mating connectors, cables, and cordsets see Accessories at encoder.com. For Connector Pin Configuration Diagrams, see Technical Information or see Connector Pin Configuration Diagrams at encoder.com.
3 For non-standard cable lengths, add a forward slash (/) plus cable length expressed in feet. Example: G/6=6 feet of cable.
**MODEL LCE SPECIFICATIONS**

**Electrical**
- Input Voltage: 4.75 to 28 VDC max for temperatures up to 85° C
- Input Current: 80 mA maximum with no output load
- Input Ripple: 100 mV peak-to-peak at 0 to 100 kHz
- Output Format: Incremental – Square wave with channel A leading B during linear extension
- Output Type: Open Collector- 250 mA max per channel
  - Pull-Up – Open Collector with 1.5K ohm internal resistor, 250 mA max per channel
  - Push-Pull – 20 mA max per channel
  - Line Driver – 20 mA max per channel (Meets RS 422 at 5 VDC supply)
- Index: Once per 5" cable extension or retraction
- Max Frequency: 0 to 125 kHz
- Electrical Protection: Reverse voltage and output short circuit protected. NOTE: Sustained reverse voltage may result in permanent damage.
- Quadrature: 67.5° electrical or better is typical.
- Edge Separation: 54° electrical minimum at temperatures > 99° C
- Rise Time: Less than 1 microsecond

**Mechanical**
- Full Stroke: 50" standard. Longer measuring ranges may be available, please contact Customer Service.
- Length (FSL): May be available, please contact Customer Service.
- Finish: Black powder coated aluminum
- Accuracy: ±0.10% of FSL
- Repeatability: ±0.015% of FSL
- Linear Resolution: Up to 500 cycles per inch (0.002" per cycle)
- Cable Material: 0.034" nylon coated stainless steel rope
- Cable Tension: 20 oz maximum typical
- Life (cycles): 1,000,000 predicted at zero angle cable exit
- Weight: 19 oz typical

**Environmental**
- Sealing: IP65 for Industrial LCE

**WIRING TABLE**
For EPC-supplied mating cables, refer to wiring table provided with cable.
Trim back and insulate unused wires.

<table>
<thead>
<tr>
<th>Function</th>
<th>Gland Cable Wire Color</th>
<th>5-pin M12</th>
<th>8-pin M12</th>
<th>10-pin MS</th>
<th>7-pin MS O, S, PP</th>
<th>6-pin MS O, S, PP</th>
<th>Term. Block O, S, PP</th>
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</thead>
<tbody>
<tr>
<td>Com</td>
<td>Black</td>
<td>3</td>
<td>7</td>
<td>F</td>
<td>F</td>
<td>F</td>
<td>A, F</td>
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<tr>
<td>+VDC</td>
<td>Red</td>
<td>1</td>
<td>2</td>
<td>D</td>
<td>D</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td>A</td>
<td>White</td>
<td>4</td>
<td>1</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>C</td>
</tr>
<tr>
<td>A'</td>
<td>Brown</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>D</td>
</tr>
<tr>
<td>B</td>
<td>Blue</td>
<td>2</td>
<td>4</td>
<td>B</td>
<td>B</td>
<td>E</td>
<td>E</td>
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<td>B'</td>
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<tr>
<td>Z</td>
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<td>6</td>
<td>C</td>
<td>F</td>
<td>6</td>
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<tr>
<td>Shield</td>
<td>Bare</td>
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</tr>
</tbody>
</table>

*E-Cube only.
Standard cable is 24 AWG conductors with foil and braid shield.

**MODEL LCE STANDARD HOUSING (LCE01)**

**MODEL LCE IP65 INDUSTRIAL HOUSING (LCE02)**

All dimensions are in inches with a tolerance of ±0.005" or ±0.01" unless otherwise specified.

**CABLE EXIT OPTIONS**
Optional Mounting Plate
Attaches to Standard or Industrial LCE in three different orientations. Order Accessory Item #176064-01.

**WAVEFORM DIAGRAMS**

Line Driver and Push-Pull
Open Collector and Pull-Up

NOTE: All degree references are electrical degrees. Waveform shown with optional complementary signals A, B for HV output only.