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 features a retractable stainless steel cable at a standard length of 50". Longer lengths may be available, please contact Customer Service.

NOTES:
1. Line Driver output 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 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 Resolution Table

<table>
<thead>
<tr>
<th>Cycles per inch resolution</th>
<th>0.600&quot;</th>
<th>0.500&quot;</th>
<th>0.400&quot;</th>
<th>0.300&quot;</th>
<th>0.250&quot;</th>
<th>0.200&quot;</th>
<th>0.100&quot;</th>
<th>0.050&quot;</th>
<th>0.025&quot;</th>
<th>0.010&quot;</th>
<th>0.005&quot;</th>
<th>0.004&quot;</th>
<th>0.002&quot;</th>
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<tbody>
<tr>
<td></td>
<td>002</td>
<td>020</td>
<td>040</td>
<td>050</td>
<td>100</td>
<td>200</td>
<td>250</td>
<td>500</td>
<td></td>
<td></td>
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</tbody>
</table>

Contact Customer Service for other resolutions.
MODEL LCE SPECIFICATIONS

Electrical
- Input Voltage: 4.75 to 28 VDC max for temperatures up to 85° C
- 4.75 to 24 VDC for temperatures between 85° and 100° C
- Input Current: 80 mA maximum with no output load
- Input Ripple: 100 mV peak-to-peak at 0 to 100 kHz
- Output Format: Open Collector – 250 mA max per channel
- Output Type: 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
- 1-80 CPI: Ungated
- > 80 CPI: Gated to output A
- 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 Length (FSL): 50” standard. Longer measuring ranges 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

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.
WIRING TABLE
For EPC-supplied mating cables, refer to wiring table provided with cable.
Trim back all 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 HV</th>
<th>7-pin MS O, S, PP</th>
<th>6-pin MS HV, No Index</th>
<th>6-pin MS O, S, PP</th>
<th>Term. Block HV, No index</th>
<th>Term. Block O, S, PP</th>
</tr>
</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</td>
<td>A, F</td>
<td>1</td>
<td>1, 6</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>D</td>
<td>B</td>
<td>B</td>
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<tr>
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<td>White</td>
<td>4</td>
<td>1</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>C</td>
<td>D</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>A'</td>
<td>Brown</td>
<td>--</td>
<td>3</td>
<td>H</td>
<td>C</td>
<td>--</td>
<td>D</td>
<td>--</td>
<td>4</td>
<td>--</td>
</tr>
<tr>
<td>B</td>
<td>Blue</td>
<td>2</td>
<td>4</td>
<td>B</td>
<td>B</td>
<td>B</td>
<td>E</td>
<td>E</td>
<td>5</td>
<td>5</td>
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<tr>
<td>B'</td>
<td>Violet</td>
<td>--</td>
<td>5</td>
<td>I</td>
<td>E</td>
<td>--</td>
<td>F</td>
<td>--</td>
<td>6</td>
<td>--</td>
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<tr>
<td>Z</td>
<td>Orange</td>
<td>5</td>
<td>6</td>
<td>C</td>
<td>--</td>
<td>C</td>
<td>--</td>
<td>--</td>
<td>3</td>
<td>--</td>
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<tr>
<td>Z'</td>
<td>Yellow</td>
<td>--</td>
<td>8</td>
<td>J</td>
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<tr>
<td>Case</td>
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<td>--</td>
<td>G</td>
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<tr>
<td>Shield</td>
<td>Bare*</td>
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*T-Cube only.
†Standard cable is 24 AWG conductors with foil and braid shield

WAVEFORM DIAGRAM
Line Driver and Push-Pull

Open Collector and Pull-Up

INCRENTAL SIGNALS

NOTE: ALL DEGREE REFERENCES ARE ELECTRICAL DEGREES.
Waveform shown with optional complementary signals A, B, Z for HV output only.