

# Model LCE - Linear Cable Encoder



## Features

- Low Cost Linear Solution
- Resolutions from 2 to 500 Cycles Per Inch
- IP65 Sealing Available
- 0 Inch to 50 Inch Cable Measurement

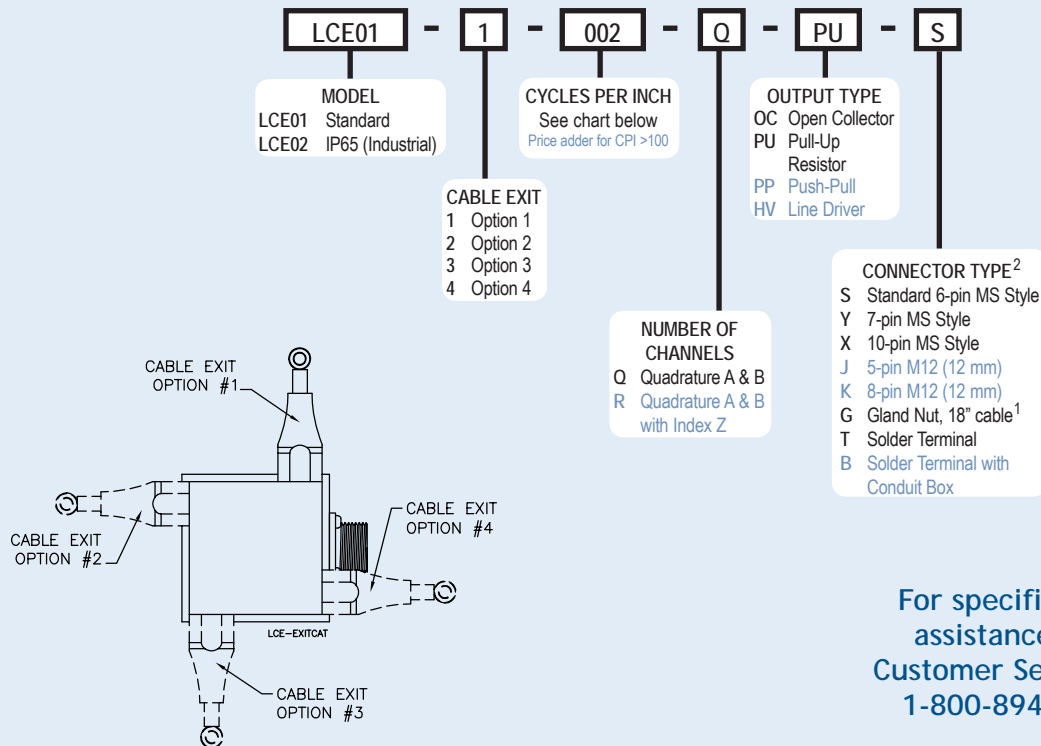
The Linear Cable Encoder (LCE) provides a low cost alternative for obtaining accurate linear measurements. As opposed to typical rotary shaft style encoders, the LCE has a retractable stainless steel cable, allowing for numerous and unusual measuring configurations. Placing the LCE away from harsh environmental conditions, while still providing precise measurements, gives the LCE an outstanding advantage over shaft style encoders. Installation is easy with a variety of cable exit directions, and perfect parallel alignment no longer necessary. The heart of the LCE is the popular E-Cube Accu-Coder™, the finest cube style encoder available. The E-Cube advantage 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.



For specification assistance call  
**Customer Service at**  
**1-800-894-0412**

## 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 For non-standard cable lengths, add a forward slash (/) plus cable length expressed in feet. Example: G/6=6 feet of cable.
- 2 For Mating Connectors, Cables, and Cordsets see Electrical Accessories on the web at Encoder site.

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## 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 .....Incremental- Square wave with channel A leading B during linear extension
- Output Type.....Open Collector- 250 mA max per channel  
Pull-Up- 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
- Freq Response.....0 to 125 kHz
- Symmetry .....180° (±18°) electrical
- Quad Phasing.....90° (±22.5°) electrical
- Rise Time.....Less than 1 microsecond

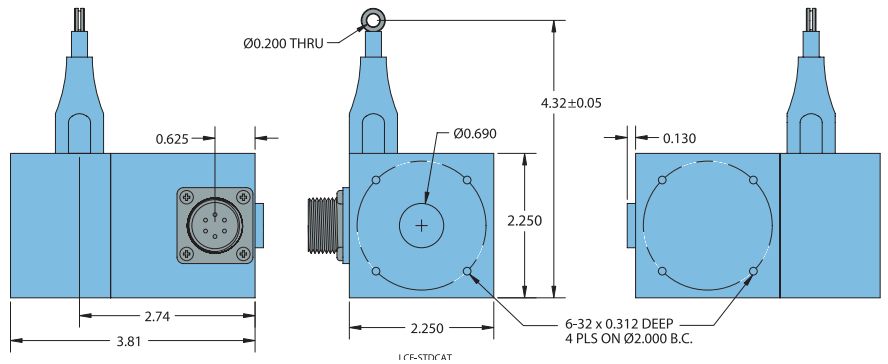
### Mechanical

- Full Stroke .....50" standard. Longer measuring ranges may be available, please contact Customer Service.
- Length (FSL) .....Black powder coated aluminum
- 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
- Electrical Conn .....6-, 7-, or 10-pin MS Style, 5-, or 8-pin M12 (12 mm), Gland with 18" cable (foil and braid shield, 24 AWG conductors), Solder Terminal, or Solder Terminal with conduit box
- Weight.....19 oz typical

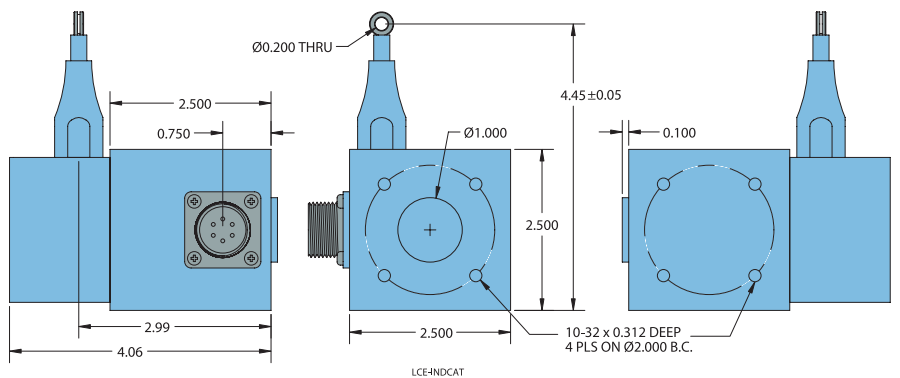
### Environmental

- Operating Temp.....0° to 85° C, or 0° to 100° C for 5-24 VDC
- Sealing.....IP65 for Industrial LCE

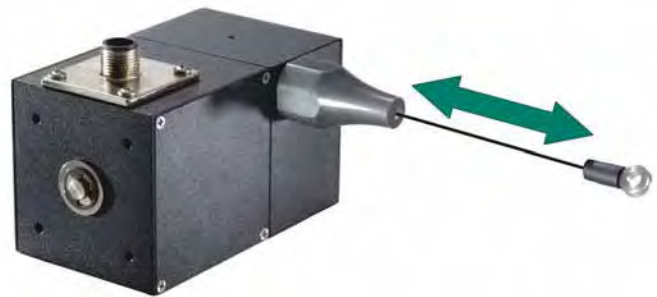
## Model LCE Standard Housing (LCE01)



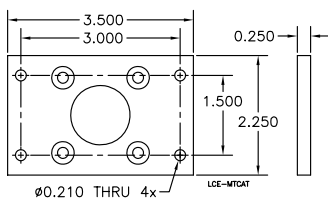
## Model LCE IP65 Industrial Housing (LCE02)



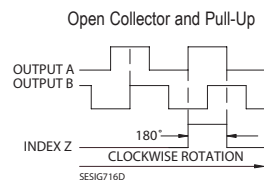
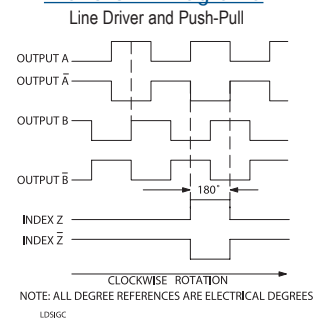
All dimensions are in inches with a tolerance of ±0.005" or ±0.01" unless otherwise specified



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



## Waveform Diagrams



## Wiring Tables

| Function | Gland Cable Wire Color | 5-pin M12 | 8-pin M12 | 10-pin MS | 7-pin MS HV | 7-pin MS O, S PP | 6-pin MS HV No Index | 6-pin MS O, S PP | Term. Block HV No Index | Term. Block O, S PP |
|----------|------------------------|-----------|-----------|-----------|-------------|------------------|----------------------|------------------|-------------------------|---------------------|
| Com      | Black                  | 3         | 7         | F         | F           | F                | A                    | A, F             | 1                       | 1, 6                |
| +VDC     | Red                    | 1         | 2         | D         | D           | D                | B                    | B                | 2                       | 2                   |
| A        | White                  | 4         | 1         | A         | A           | A                | C                    | D                | 3                       | 4                   |
| A'       | Brown                  | ---       | 3         | H         | C           | ---              | D                    | ---              | 4                       | ---                 |
| B        | Blue                   | 2         | 4         | B         | B           | B                | E                    | E                | 5                       | 5                   |
| B'       | Violet                 | ---       | 5         | I         | E           | ---              | F                    | ---              | 6                       | ---                 |
| Z        | Orange                 | 5         | 6         | C         | ---         | C                | ---                  | C                | ---                     | 3                   |
| Z'       | Yellow                 | ---       | 8         | J         | ---         | ---              | ---                  | ---              | ---                     | ---                 |
| Case     | Green <sup>1</sup>     | ---       | ---       | G         | G           | G                | ---                  | ---              | ---                     | ---                 |
| Shield   | Bare                   | ---       | ---       | ---       | ---         | ---              | ---                  | ---              | ---                     | ---                 |

<sup>1</sup>E-Cube Only

Spring 2007