

## MODEL LCE - LINEAR MEASUREMENT SOLUTION



### FEATURES

Low cost linear solution  
 Resolutions from 2-500 cycles per inch  
 IP65 Sealing available  
 Cable measurement 0 – 50 inches

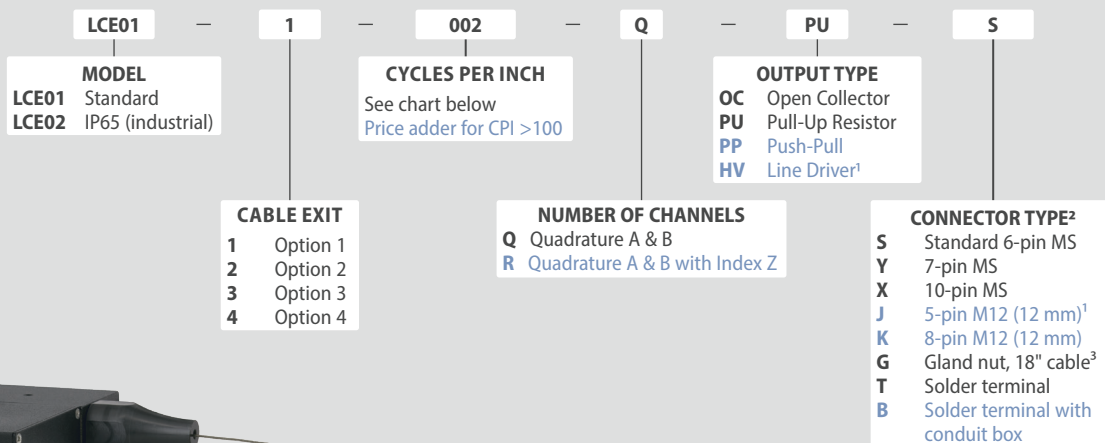
The Linear Cable Encoder (LCE) provides a low cost alternative for obtaining accurate linear measurements. As opposed to typical rotary shaft style encoders, the LCE has a retractable stainless steel cable, allowing for numerous measuring configurations. You can place the LCE away from harsh environmental 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:

- Line Driver output not available with 5-pin M12 connector.
- For mating connectors, cables, and cordsets, see Accessories at [encoder.com](http://encoder.com). For Connector Pin Configuration Diagrams, see Connector Pin Configuration Diagrams at [encoder.com](http://encoder.com).
- 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

Cycles per inch resolution	002	020	040	050	100	200	250	500
	0.500"	0.050"	0.025"	0.020"	0.010"	0.005"	0.004"	0.002"

Contact Customer Service for other resolutions.

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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 – 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

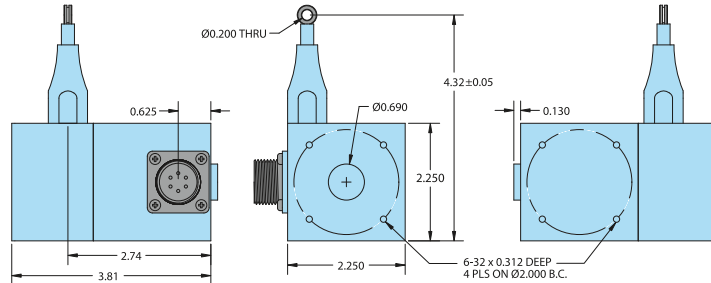
#### Mechanical

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.....	.0034" 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

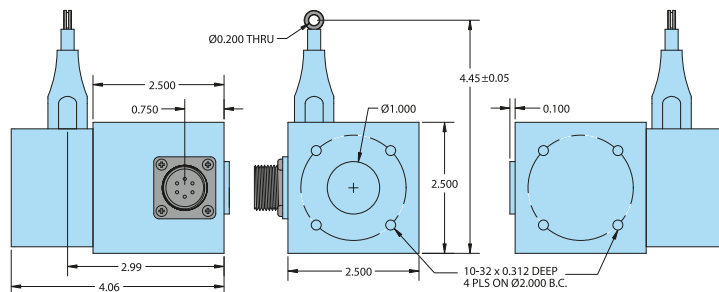
#### Environmental

Sealing.....	IP65 for Industrial LCE
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### MODEL LCE STANDARD HOUSING (LCE01)

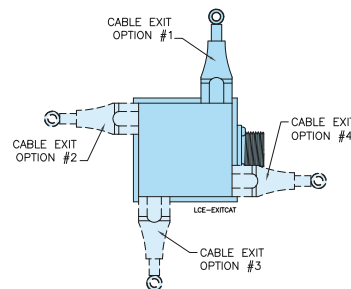


### MODEL LCE IP65 INDUSTRIAL HOUSING (LCE02)



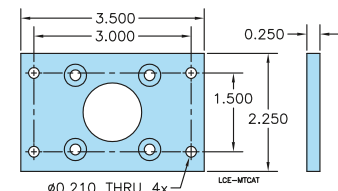
All dimensions are in inches with a tolerance of  $\pm 0.005$ " or  $\pm 0.01$ " unless otherwise specified.

### CABLE EXIT OPTIONS



### OPTIONAL MOUNTING PLATE

Attaches to Standard or Industrial LCE in three different orientations. Order Accessory Item #176064-01.



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### WIRING TABLE

For EPC-supplied mating cables, refer to wiring table provided with cable.

Trim back all unused wires.

Function	Gland Cable <sup>†</sup> 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	--	--	G	G	G	--	--	--	--
Shield	Bare*	--	--	--	--	--	--	--	--	--

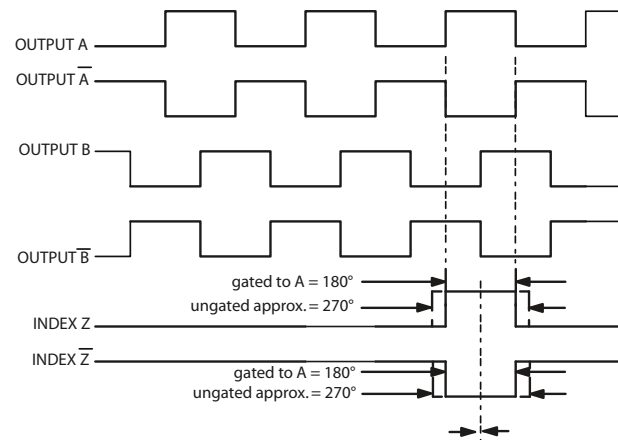
\*E-Cube only.

<sup>†</sup>Standard cable is 24 AWG conductors with foil and braid shield.

### WAVEFORM DIAGRAM

#### Line Driver and Push-Pull

##### INCREMENTAL SIGNALS



NOTE: ALL DEGREE REFERENCES ARE ELECTRICAL DEGREES.

Waveform shown with optional complementary signals  $\bar{A}$ ,  $\bar{B}$ ,  $\bar{Z}$  for HV output only.

#### Open Collector and Pull-Up

