MODEL LDL-A
Miniature
Non-Contacting
Linear Encoder Kit

- Low cost non-contacting linear encoder designed for OEM usage
- Utilizes reflective optical diffraction technology for superb bi-directional repeatability
- Designed to fit most space restrictive applications. .486 high by 1.229” long
- Available in either Metric or English Resolutions down to (5.0 Micron, .0001 inch)
- Single ended TTL compatible square wave with optional index
- Travel speeds up to 2.5 meters per second (100 inches per second)
- Up to 48” (1220mm) travel lengths
- Enhanced mounting tolerances
- Single LED light source

The model LDL-A is a miniature non-contacting high resolution incremental linear encoder. It is available with three scale options. Mini scale, Micro scale and the Micro scale mounted on a spar for simplifying the scale installation. In addition to the varies scale options the model LDL-A can also be supplied with varies lengths of PVC jacketed cable or flat ribbon cable.
**ELECTRICAL**

Resolution range: See part number table for available resolutions.
- Light source: Light Emitting Diode.
- Light sensor: Phototransistor Array.
- Excitation voltage: +5Vdc ± 5% at 45mA maximum.
- Output format: Single ended TTL compatible square wave.
- Quadrature: 90° ± 30° (at maximum conditions).
- Symmetry: 180° ± 18° (at 10 KHz output frequency).
- Rise and fall time: 1 microsecond max. into 1,000pf load capacitance. Note: Units with line driver output the rise and fall time vary with line and load capacitance.
- Zero reference width: On Micro scale – see chart below.
- Phase sense: Channel A leads channel B for left to right movement of the scale when viewing the pattern side of the scale.

**MECHANICAL**

- Housing material: Aluminum.
- Scale material glass: Soda-lime glass (Thermal expansion 4.5 PPM/°F).
- Cover material: Aluminum.
- Connector on encoder: JST # SM05B-SRSS-TB.
- Connector on cable: JST # SHR-057-S.
- Contacts on cable: JST # SSH-003T-P0.2

**ENVIRONMENTAL**

- Operating temperature: 0°C to +70°C
- Storage temperature range: -25°C TO +85°C
- Shock: 10 G for 11 millisecond duration.
- Humidity: To 98% R.H. (non-condensing).

<table>
<thead>
<tr>
<th>RESOLUTION</th>
<th>SCALE</th>
<th>SPEED</th>
<th>ZR WIDTH ±50% (MICRO SCALE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>.0001 IN.</td>
<td>2500 CPI MICRO SCALE</td>
<td>25 IN./SEC.</td>
<td>15 CYCLES</td>
</tr>
<tr>
<td>.001 IN.</td>
<td>2500 CPI MINI SCALE</td>
<td>25 IN./SEC.</td>
<td>(SEE NOTES)</td>
</tr>
<tr>
<td>.005 MM.</td>
<td>CLASS 50 CPMM SCALES</td>
<td>50 IN./SEC.</td>
<td>7 CYCLES</td>
</tr>
<tr>
<td>.010 MM.</td>
<td>25 CPMM MINI SCALES</td>
<td>100 IN./SEC.</td>
<td>4 CYCLES</td>
</tr>
</tbody>
</table>

Note: ZR width for MINI scale – add 70% to micro scale width.
### MICRO SCALE

**B36681**

- LDL A & C
- CYCLES: REF.
  - 2 = 2500 CPI (1/4W)
  - 4 = 50 CPM (1/8W)
  - 6 = 25 CPM (1/8W)

- ZR LOCATION
  - 0 = NO ZR
  - 1 = LEFT END OF TRAVEL
  - 2 = RIGHT END OF TRAVEL
  - 3 = CENTER OF TRAVEL

- MEASUREMENT LENGTH (SEE TABLE 1)

**SPECIAL LENGTHS AVAILABLE**

**CONSULT FACTORY**

**B36679**

- LDL A & C
- CYCLES: REF.
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- MEASUREMENT LENGTH (SEE TABLE 1)

**SPECIAL POINTS AVAILABLE**

**CONSULT FACTORY**

### TABLE 1

<table>
<thead>
<tr>
<th>MAX. LENGTH OF MEASUREMENT STROKE</th>
<th>MICRO SCALE</th>
</tr>
</thead>
<tbody>
<tr>
<td>WITH ZR LOCATION</td>
<td>ENGLISH</td>
</tr>
<tr>
<td>NO ZR OR CENTER OF TRAVEL</td>
<td>5.32 IN.</td>
</tr>
<tr>
<td>LEFT OR RIGHT END OF TRAVEL</td>
<td>5.02 IN.</td>
</tr>
</tbody>
</table>
MINI SCALE

B36678 - X - XXXX - XXXX

<table>
<thead>
<tr>
<th>LDL A &amp; C RESOLUTION</th>
<th>CYCLES</th>
<th>ZR LOCATION</th>
<th>MEASUREMENT LENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>.0001&quot; ............. 2</td>
<td>2500 CPI</td>
<td>0.0 = NO ZR</td>
<td>(UP TO 1200 MM OR 48&quot;)</td>
</tr>
<tr>
<td>5 MICRON ........ 4</td>
<td>50 CF/MM</td>
<td>XX.XX = INCHES</td>
<td>XX.XX = IN. FOR ENGLISH SCALES</td>
</tr>
<tr>
<td>10 MICRON ....... 6</td>
<td>25 CF/MM</td>
<td>XXX.X = MM</td>
<td>XXX.X = MM FOR METRIC SCALES</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(INCLUDE DECIMAL POINT)</td>
<td>(INCLUDE DECIMAL POINT IN P.N.)</td>
</tr>
</tbody>
</table>

CUT LENGTH = (MEASUREMENT LENGTH + .200) ± .06

Air Gap: .035 ± .005

CUT LENGTH ±.06
MEASUREMENT LENGTH
ZR LOCATION IN P.N. ±.04

0.625