**FEATURES**
Large air gap and tolerance to misalignment  
Resolutions of 1 to 1024 CPR (4096 PPR with quadrature counting)  
Optional 2-pole to 32-pole commutation  
Sealing options to IP69K  
Operating temperature range -40° to 120° C  
Easy alignment and installation

The Model 30M is a compact, incremental encoder module with advanced magnetic sensing and signal processing technology. Featuring resolutions from 1 to 1024 CPR, commutation channels, several output types and two supply voltage options, it can be configured for a wide range of industrial, commercial and consumer feedback applications. With a non-contact magnetic sensor and optional sealing up to IP69K, the Model 30M can be applied in environments where dirt, dust and liquids are present.

**COMMON APPLICATIONS**
Servo/stepper motor feedback, mobile equipment speed and steering sensing, timber processing machinery, studio lighting and stage equipment control, rotary valve position monitoring and control, solar panel positioning, vending machines, punch presses, tank level monitoring, robotics

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### MODEL 30M ORDERING GUIDE
Blue type indicates price adder options. Not all configuration combinations may be available. Contact Customer Service for details.

**MODEL**  
30M Incremental encoder module

**MAGNET**  
00 No magnet¹  
RM Ø4 mm magnet  
Over Shaft Magnet Holders w/ bore size (includes magnet)  
21 3/16", 0.1875"  
01 1/4", 0.250"  
03 5/16", 0.3125"  
02 3/8", 0.375"  
05 1/2", 0.500"  
11 5/8", 0.625"  
06 5 mm  
04 6 mm  
14 8 mm  
10 10 mm  
13 14 mm  
Press In/On Magnet Holder (includes magnet)  
48 0.250" Bore/0.125" Shaft

**COMMUTATION**  
N No commutation¹  
F 2-pole  
A 4-pole  
B 6-pole  
C 8-pole  
D 10-pole  
E 12-pole  
F 14-pole  
G 16-pole  
H 18-pole  
J 20-pole  
K 22-pole  
L 24-pole  
M 26-pole  
O 28-pole  
P 30-pole  
R 32-pole

**INPUT VOLTAGE**  
V5 5 VDC³  
V1 5 to 28 VDC

**OUTPUT TYPE**  
HV Differential Line Driver  
OC Open Collector²  
PP Push-Pull

**CHANNEL**  
R3 Quadrature A & B  
D3 Reverse Quadrature A & B with index⁴

**CONNECTOR TYPE**  
C 8-pin Molex header²  
V 16-pin Molex header³  
K 8-pin M12²  
R3 8-pin M12³

**SEALING**  
Leave blank for std option  
IP50 (standard)  
S6 IP69K²

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**NOTES:**  
¹ A high-quality magnet is required to generate a reliable signal; magnet options provided by EPC have been pre-qualified to provide a clear and reliable signal.  
² Commutation is not available with 8-pin M12 or 8-pin Molex Header.  
³ 16-pin Molex Header is only available with Commutation.  
⁴ If commutation is selected with the reverse quadrature option D3, note that the commutation signals will also be reversed - W leads V, and V leads U.  
⁵ OC Output Type and 8-pin M12 are not available with V5 Input Voltage option.  
⁶ 8-pin M12 only available in V1 Input Voltage option.  
⁷ IP69K sealing available with 8-Pin M12 Connector Type only.

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**Nominal Magnet Position**
MODEL 30M SPECIFICATIONS

Electrical
- Input Voltage: 5 VDC ±10% fixed voltage
- Input Current: 4.5 to 28 VDC (4.5 to 20 VDC over 105°C)
- Output Format: Two square waves in quadrature with channel A leading B for clockwise magnet rotation as viewed from the encoder mounting face. Index gated to A and B.
- Output Types: Open Collector, Open Collector with Differential Outputs, Differential Line Driver (Meets RS422 at 5 VDC), Push-Pull
- Max Frequency: 350 kHz
- Electrical Protection: Reverse voltage and output short circuit protected. NOTE: Sustained reverse voltage may result in permanent damage.
- Min Edge Separation: 20° electrical typical @ 25° C
- Accuracy: Typically within ±0.7° mechanical from true position. Accuracy improves at nominal air gap with minimized magnet runout, offset and endplay.

Mechanical/Environmental
- Operating Temp: -40º C to 120º C, reduced to 110º C max above 200 KHz with 20V input and 20mA/channel output
- Air Gap: 0.022” nominal recommended
- User Shaft Tolerances:
  - Axial Endplay: ±0.020” max
  - Radial Runout: 0.006” max
  - Axial Offset: 0.008” max
- Mounting Bolts: Max Ø0.200” head, 2-56 or M2.5 button, socket or pan head or 4-40 socket head
- Housing Material: High temp, toughened nylon composite
- Weight: 0.5 oz typical or less
- Humidity: 98% RH non-condensing
- Vibration: 20 g @ 10 to 2000 Hz (MIL-STD-202G Method 204D)
- Shock: 100 g @ 11 ms duration (MIL-STD-202G Method 213B)
- Sealing: IP50 standard; IP69K available with M12 connector option

Options:
- 8-PIN MOLEX HEADER OPTION (C)
- 16-PIN MOLEX HEADER OPTION (V)
- 8-PIN M12 OPTION (K)
WAVEFORM DIAGRAMS

NOTE: All degree references are electrical degrees.
Waveform shown with optional complementary signals $\bar{A}$, $\bar{B}$, $\bar{Z}$ for HV output only

If commutation is selected with the reverse quadrature option D3, note that the commutation signals will also be reversed – $W$ leads $V$, and $V$ leads $U$.

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>8-Pin M12</th>
<th>8-Pin Header</th>
<th>16-Pin Header</th>
</tr>
</thead>
<tbody>
<tr>
<td>Com</td>
<td>7</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>+VDC</td>
<td>2</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>A</td>
<td>1</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>A'</td>
<td>3</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>B</td>
<td>4</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>B'</td>
<td>5</td>
<td>7</td>
<td>11</td>
</tr>
<tr>
<td>Z</td>
<td>6</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Z'</td>
<td>8</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>U</td>
<td>--</td>
<td>--</td>
<td>2</td>
</tr>
<tr>
<td>U'</td>
<td>--</td>
<td>--</td>
<td>1</td>
</tr>
<tr>
<td>V</td>
<td>--</td>
<td>--</td>
<td>14</td>
</tr>
<tr>
<td>V'</td>
<td>--</td>
<td>--</td>
<td>13</td>
</tr>
<tr>
<td>W</td>
<td>--</td>
<td>--</td>
<td>4</td>
</tr>
<tr>
<td>W'</td>
<td>--</td>
<td>--</td>
<td>-3</td>
</tr>
</tbody>
</table>
MODEL 30M - INCREMENTAL ENCODER MODULE

INSTALLATION
Below is the suggested installation for the Model 30M. For additional installation options, please contact EPC Application Support for assistance.

OVER SHAFT MAGNET HOLDERS

<table>
<thead>
<tr>
<th>STOCK #</th>
<th>ØID (mm)</th>
<th>ØOD (mm)</th>
<th>BL (mm)</th>
<th>L (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>176595-01</td>
<td>5/16&quot;</td>
<td>0.365</td>
<td>0.575</td>
<td>0.580</td>
</tr>
<tr>
<td>176597-01</td>
<td>5mm</td>
<td>0.365</td>
<td>0.375</td>
<td>0.580</td>
</tr>
<tr>
<td>176598-01</td>
<td>6mm</td>
<td>0.490</td>
<td>0.375</td>
<td>0.580</td>
</tr>
<tr>
<td>176599-01</td>
<td>1/4&quot;</td>
<td>0.490</td>
<td>0.475</td>
<td>0.580</td>
</tr>
<tr>
<td>176600-01</td>
<td>5/16&quot;</td>
<td>0.490</td>
<td>0.475</td>
<td>0.580</td>
</tr>
<tr>
<td>176601-01</td>
<td>8mm</td>
<td>0.490</td>
<td>0.475</td>
<td>0.630</td>
</tr>
<tr>
<td>176602-01</td>
<td>3/8&quot;</td>
<td>0.615</td>
<td>0.475</td>
<td>0.630</td>
</tr>
<tr>
<td>176603-01</td>
<td>10mm</td>
<td>0.615</td>
<td>0.475</td>
<td>0.630</td>
</tr>
<tr>
<td>176604-01</td>
<td>1/2&quot;</td>
<td>0.740</td>
<td>0.750</td>
<td>0.655</td>
</tr>
<tr>
<td>176605-01</td>
<td>14mm</td>
<td>0.740</td>
<td>0.750</td>
<td>0.655</td>
</tr>
<tr>
<td>176606-01</td>
<td>5/8&quot;</td>
<td>0.865</td>
<td>0.750</td>
<td>0.655</td>
</tr>
</tbody>
</table>

PRESS IN/ON MAGNET HOLDER

Stock #176607-01

MATING CABLES / CORDSETS

<table>
<thead>
<tr>
<th>Molex Mating Cables (24 AWG Wires)</th>
<th>M12 Mating Cordsets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stock #</td>
<td>Description</td>
</tr>
<tr>
<td>075230</td>
<td>8-pin Molex Mating Connector w/ 24&quot; Cable</td>
</tr>
<tr>
<td>075232</td>
<td>16-Pin Molex Mating Connector w/ 24&quot; Cable</td>
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<tr>
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