The RMB29 encoder module is designed for direct integration to high volume OEM applications. The low cost 29 mm square PCB is provided with a connector for easy installation.

The encoder module consists of a magnetic actuator and a separate sensor board. Rotation of the magnetic actuator is sensed by a custom encoder chip mounted on the sensor board, and processed to give one sine/cosine wave per revolution.

The RMB29 can be used in a wide range of applications including motor control and industrial automation.

- 29 mm square module
- Low cost for OEM integration
- 5 V power supply version
- High speed operation to 60,000 rpm
- Analogue sine/cosine output
- Accuracy to ±0.5°
- RoHS compliant (lead free)
- Conformal coated
- RoHS compliant (lead free) - see Declaration of conformity
When N-pole marks of the magnet actuator and the PCB are aligned, sine output = mid level and cosine output = max. level.

Not supplied. See page 3 for details.

See page 4 for options.
RMB29Ex12BS66 installation drawing

- Zero pads
- Mating connector
- Magnet actuator

Dimensions:
- 29 ±0.2
- Ø3.5 ±0.1
- Ø31.0 ±0.1
- Ø20.0

Notes:
- MOLEX-43045-0810
- AM4096
- Ø31.0 ±0.1
- Magnet actuator
Data sheet
RMB29D01_05

RMB29AC – Analogue sinusoidal

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply</td>
<td>$V_{dd} = 5,\text{V} \pm 5%$</td>
</tr>
<tr>
<td>Power consumption</td>
<td>13 mA</td>
</tr>
<tr>
<td>Outputs</td>
<td>Signal amplitude: $1.1,\text{V} \pm 0.2,\text{V}$</td>
</tr>
<tr>
<td>Resolution</td>
<td>One sine/cosine wave per revolution</td>
</tr>
<tr>
<td>Accuracy</td>
<td>Typ. ±0.5°</td>
</tr>
<tr>
<td>Hysteresis</td>
<td>0.45°</td>
</tr>
<tr>
<td>Maximum speed</td>
<td>60,000 rpm</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-40 °C to +105 °C (limited by connector)</td>
</tr>
<tr>
<td></td>
<td>All other components used are specified for operation from -40 °C to +125 °C.</td>
</tr>
</tbody>
</table>

Conformal coating type - Polyurethane

Connections
Connector on board: MOLEX 43045-0810
Mating connector:
- Shell: MOLEX 43025-0800
- 8 pin crimp: MOLEX 43030-0010

RMB29Ex - Commutation outputs

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply</td>
<td>$5,\text{V} \pm 5%$</td>
</tr>
<tr>
<td>Power consumption</td>
<td>30 mA (not loaded)</td>
</tr>
<tr>
<td>Commutation outputs</td>
<td>U, V, W</td>
</tr>
<tr>
<td>Number of poles for commutation outputs</td>
<td>2, 4, 6, 8, 10, 12, 14, 16</td>
</tr>
<tr>
<td>Accuracy</td>
<td>Typ. ±0.5°</td>
</tr>
<tr>
<td>Maximum speed</td>
<td>30,000 rpm</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-40 °C to +105 °C</td>
</tr>
</tbody>
</table>

Connections
Connector on board: MOLEX 43045-0810
Mating connector (not provided):
- Shell: MOLEX 43025-0800
- 8 pin crimp: MOLEX 43030-0010

UVW outputs

<table>
<thead>
<tr>
<th>Pole</th>
<th>A</th>
<th>Period</th>
<th>Pole pairs*</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>60°</td>
<td>360°</td>
<td>one</td>
</tr>
<tr>
<td>4</td>
<td>30°</td>
<td>180°</td>
<td>two</td>
</tr>
<tr>
<td>6</td>
<td>20°</td>
<td>120°</td>
<td>three</td>
</tr>
<tr>
<td>8</td>
<td>15°</td>
<td>90°</td>
<td>four</td>
</tr>
<tr>
<td>10</td>
<td>12°</td>
<td>72°</td>
<td>five</td>
</tr>
<tr>
<td>12</td>
<td>10°</td>
<td>60°</td>
<td>six</td>
</tr>
<tr>
<td>14</td>
<td>8.57°</td>
<td>51.42°</td>
<td>seven</td>
</tr>
<tr>
<td>16</td>
<td>7.50°</td>
<td>45°</td>
<td>eight</td>
</tr>
</tbody>
</table>

* Number of pole pairs equals number of periods per revolution.
### Part numbering

<table>
<thead>
<tr>
<th>Series</th>
<th>Output type</th>
<th>Resolution</th>
<th>Shape</th>
<th>Special requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>RMB29</td>
<td>AC</td>
<td>01S</td>
<td>S</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>EA / EB / EC / ED / EE / EF / EG / EH</td>
<td>12B</td>
<td></td>
<td>66 / 6A</td>
</tr>
</tbody>
</table>

#### Output type
- **AC** - Analogue sinusoidal
- **Ex** - Commutation outputs
  - EA - one period per rotation (2 poles)
  - EB - two periods per rotation (4 poles)
  - EC - three periods per rotation (6 poles)
  - ED - four periods per rotation (8 poles)
  - EE - five periods per rotation (10 poles)
  - EF - six periods per rotation (12 poles)
  - EG - seven periods per rotation (14 poles)
  - EH - eight periods per rotation (16 poles)

#### Resolution
- For **AC**: 01S - one sine/cosine wave per revolution
- For **Ex**: 12B - 4,096 counts per revolution

#### Special requirements
- 1 - No special requirements (standard) (for **AC** only)
- 66 - Push pull UVW, no incremental (with Molex connector and conformal coating) (for **Ex** only)
- 6A - Push pull UVW, no incremental (without connector and conformal coating) (for **Ex** only)

#### Shape
- S - Square

### NOTE: Not all combinations are valid.
Data sheet
RMB29D01_05

Magnetic actuator and magnet ordering information

**Actuator for integration onto shaft**

![Actuator for integration onto shaft]

**Shaft** = Ø*h7
**Fixing:** Grub screw provided

**Part numbers:**
For resolutions up to 9 bit absolute (512 cpr incremental)
- RMA04A2A00 – Ø4 mm shaft
- RMA05A2A00 – Ø5 mm shaft
- RMA06A2A00 – Ø6 mm shaft
- RMA08A2A00 – Ø8 mm shaft

For resolutions from 10 bit absolute (600 cpr incremental) and above
- RMA04A3A00 – Ø4 mm shaft
- RMA05A3A00 – Ø5 mm shaft
- RMA06A3A00 – Ø6 mm shaft
- RMA08A3A00 – Ø8 mm shaft

**Actuator for integration into shaft**

![Actuator for integration into shaft]

**With N-pole marker**

**Hole** = Ø6G7
**Fixing:** Glue (recommended – LOCTITE 648)

**Part numbers:**
For resolutions up to 9 bit absolute (512 cpr incremental)
- RMH06A2A00

For resolutions from 10 bit absolute (800 cpr incremental) and above
- RMH06A3A00

**With N-pole marker scribed to ± 5° accuracy:**
For resolutions up to 9 bit absolute (512 cpr incremental)
- RMH06A2A02

For resolutions from 10 bit absolute (800 cpr incremental) and above
- RMH06A3A02

**Magnet for direct recessing in non-ferrous shafts**

![Magnet for direct recessing in non-ferrous shafts]

**Fixing:** Glue (recommended – LOCTITE 648)

**Part numbers:**
For resolutions up to 9 bit absolute (512 cpr incremental)
- RMM44A2A00 (individually packed) – for sample quantities only
- RMM44A2C00 (packed in tubes)

For resolutions from 10 bit absolute (800 cpr incremental) and above
- RMM44A3A00 (individually packed) – for sample quantities only
- RMM44A3C00 (packed in tubes)
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