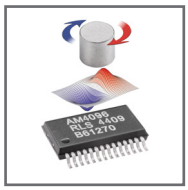
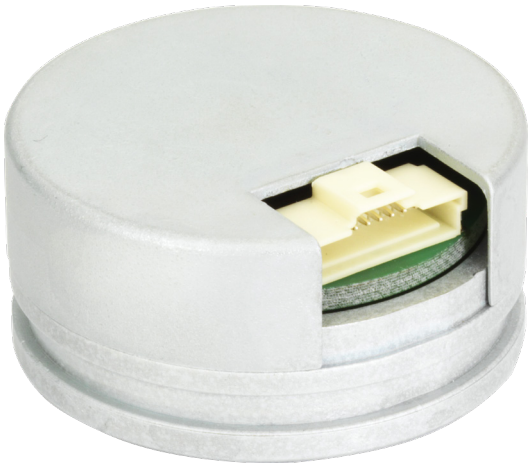
Data sheet
RMC35D01_10
Issue 10, 27th September 2021

RMC35 commutation and incremental encoder solution





The RMC35 is designed for use in motor feedback applications requiring both A, B, Z incremental and U, V, W signals.

Robust non-contact OnAxis™ sensor technology provides ultimate long term reliability and with simple installation costs of ownership are minimal.

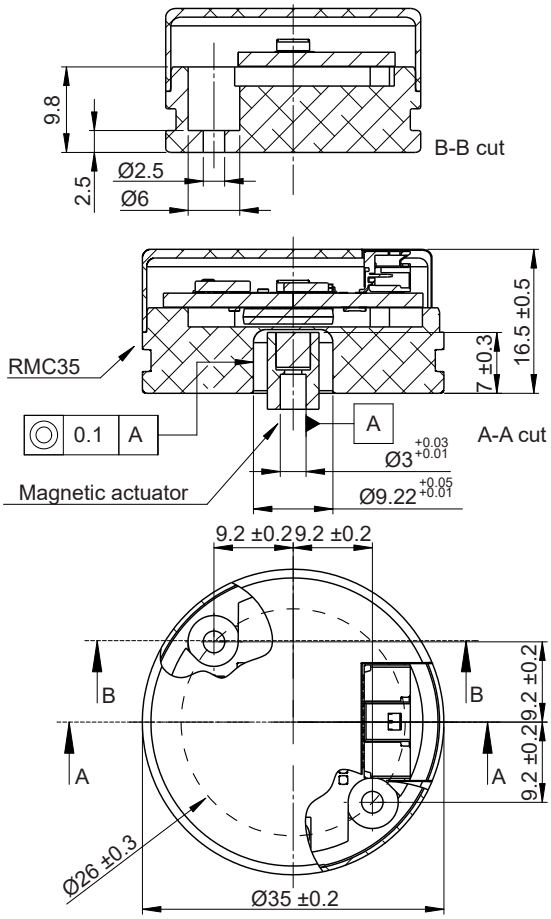
Installation is simplified with a range of magnetic actuators and mounting options for the encoder. A simple one time zero position programming then removes the need for careful adjustment of the encoder.

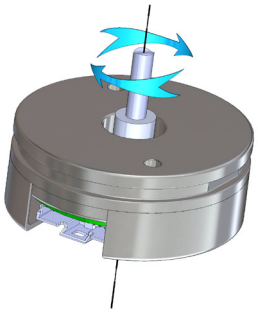
Resolutions are available from 64 to 2,048 pulses per revolution (256 to 8,192 counts per revolution with ×4 evaluation). U, V, W commutation signals are simultaneously output with 1 to 8 pole pairs (2 to 16 poles).

- **Incremental resolution from 256 cpr to 8,192 cpr**
- **Simple installation and setup**
- **U, V, W commutation signals with up to 16 poles (±24 mA output drive)**
- **Industry standard incremental outputs (RS422)**
- **Operating speed to 30,000 rpm**
- **Compact - 35 mm diameter body**
- **Non-contact, frictionless design**
- **Low inertia**
- **IP40**

Installation drawing

Dimensions and tolerances in mm





Clockwise rotation of magnetic actuator.

Connector type
Molex 501568-1107
Mating connector (Not provided)
Molex 501330-1100 (crimp terminal 501334-xxxx)

Installation procedure

1. Install the magnetic actuator

Use glue to fix the magnetic actuator to the shaft (recommended LOCTITE 648 or LOCTITE 2701). Actuator should protrude by 7 mm.

2. Install the flange with the encoder module on the mounting surface

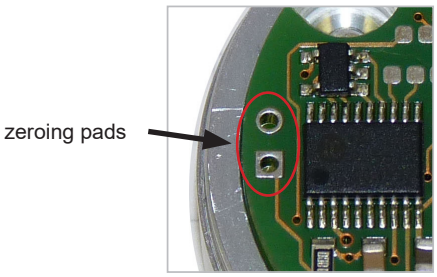
Screw the flange to the mounting surface using 2 screws (not provided).

3. Turn the power on

Plug in the mating connector and turn on the power

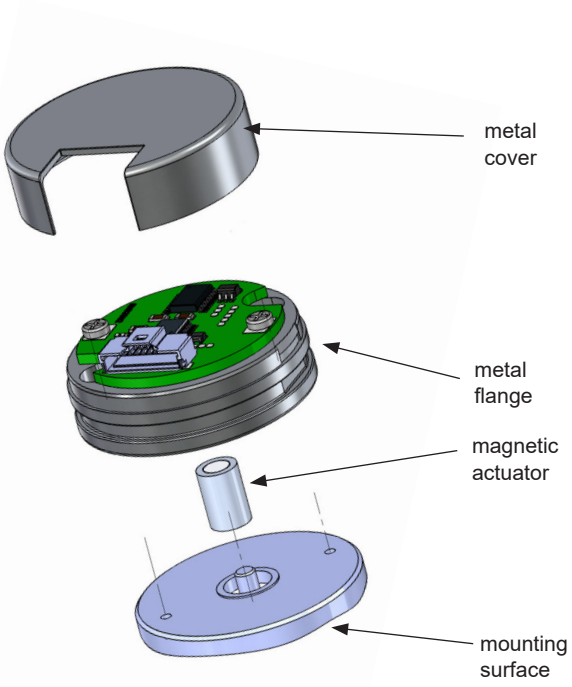
4. Zero the UVW signals

Move the motor to the required zero UVW position. Short together the two zeroing pads.



5. Cover the encoder with the metal cover

Place the metal cover over the encoder and gently press it in position. Be sure to align the opening with the connector.

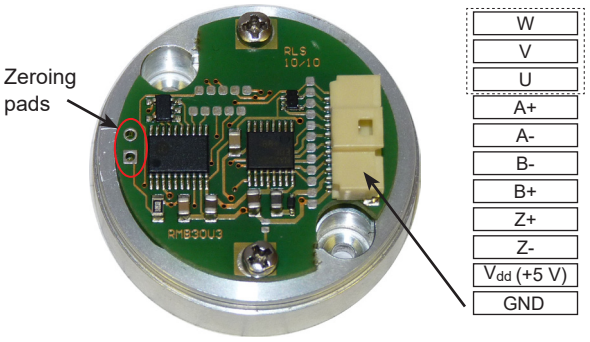


Product specification

Power supply	5 V ± 10 %
Power consumption	40 mA (not loaded)
Accuracy	±0.5°
Hysteresis	0.17° typ.
Incremental outputs	A, B, Z, A-, B-, Z- (RS422)
Incremental resolution	256, 320, 400, 500, 512, 800, 1,000, 1,024, 1,600, 2,000, 2,048, 4,096, 8,192 cpr
Commutation outputs	U, V, W (±24 mA output drive)
Number of poles for commutation outputs	2, 4, 6, 8, 10, 12, 14, 16
Operating temperature	–40 °C to +105 °C (Limited by connector. All other components used are specified for operation from -40 °C to +125 °C.)
Weight	45 g

Incremental resolution (cpr)	Maximum speed (rpm)
8,192	4,000
4,096	8,000
2,048, 2,000	16,000
1,600	20,000
All other resolutions	30,000

Connections



Please note!
For IC output pins 9, 10 and 11 are not connected.

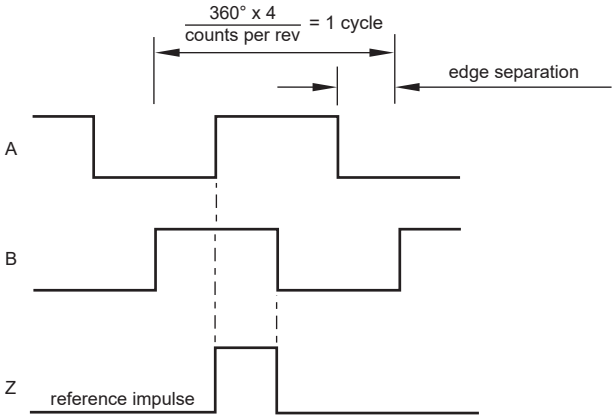
UVW outputs

Pole	A	Period	Pole pairs*
2	60°	360°	one
4	30°	180°	two
6	20°	120°	three
8	15°	90°	four
10	12°	72°	five
12	10°	60°	six
14	8.57°	51.42°	seven
16	7.50°	45°	eight

* Number of pole pairs equals number of periods per revolution.

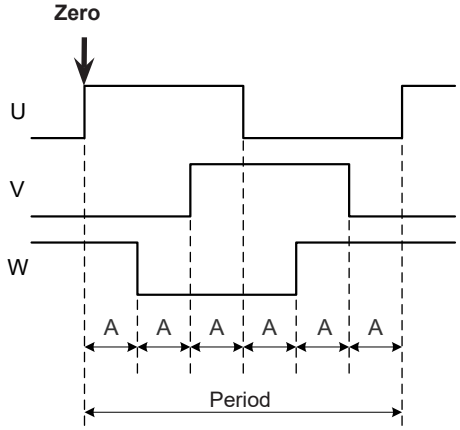
Timing diagram - Incremental

Complementary signals not shown



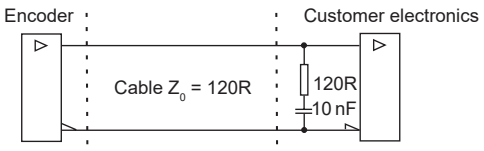
B leads A for clockwise rotation of magnet.

Timing diagram - Commutation for clockwise rotation



Recommended signal termination

For complementary signals only



Zero function

The UVW commutation outputs can be zeroed at any angle with a resolution of 0.0879 degrees. The first rising edge on the U signal will be reset at this point of zeroing. The reference impulse of the incremental signals is not changed by this procedure.

Part numbering

RMC35 UA 12B AA 10

Special requirements
10 - None (standard)

Connector type
AA - Molex 501568-1107

Output type
IC - Incremental, RS422, 5 V
Ux - Commutation single ended + incremental with line driver, 5 V

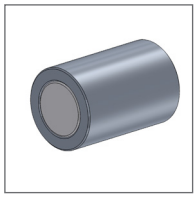
Code	Description	Nr. of poles
UA	one (1) period per revolution	2 poles
UB	two (2) periods per revolution	4 poles
UC	three (3) periods per revolution	6 poles
UD	four (4) periods per revolution	8 poles
UE	five (5) periods per revolution	10 poles
UF	six (6) periods per revolution	12 poles
UG	seven (7) periods per revolution	14 poles
UH	eight (8) periods per revolution	16 poles

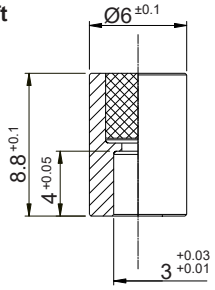
Resolution (counts per revolution)

Decimal		**Binary**	
D32 - 320	**1D0** - 1,000	**08B** - 256	**12B** - 4,096
D40 - 400	**1D6** - 1,600	**09B** - 512	**13B** - 8,192
D50 - 500	**2D0** - 2,000	**10B** - 1,024	
D80 - 800		**11B** - 2,048	

Magnetic actuator and magnet part numbering

Actuator for integration onto shaft



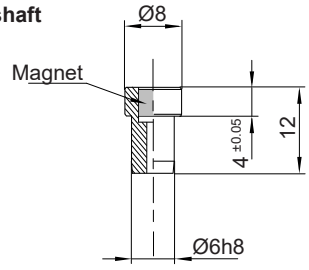


Fixing: Glue (recommended – LOCTITE 648 or LOCTITE 2701)

Part number:

For resolutions from 10 bit absolute (800 cpr incremental) and above
RMA03A3A07 – Ø3 mm shaft

Actuator for integration into shaft

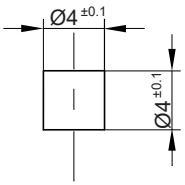


Hole = Ø6G7
Fixing: Glue (recommended – LOCTITE 648 or LOCTITE 2701)

Part numbers:

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

Magnet for direct recessing in non-ferrous shafts



Fixing: Glue (recommended – LOCTITE 648 or LOCTITE 2701)

Part numbers:

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

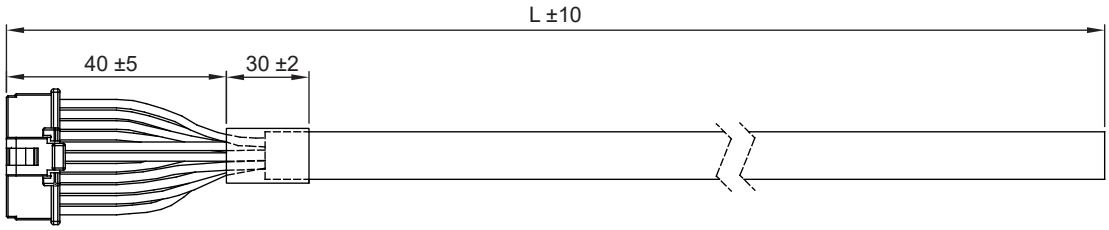
Accessories part numbering

Cable assembly for connection
of MOLEX 501330-1100, 12 core

Cable specifications

Cable specifications	LI12YC12Y
Configuration	12 × 0.14 mm²
Sheath color	Grey (RAL7032)
Rated voltage	250 V
Temperature range	Stationary –40 °C to +130 °C Moving –30 °C to +125 °C
Environmental conformation	Conform to RoHS Conform to 73/23/EWG-Guideline CE Halogen free
Chemical resistance	Largely resistant to acids, bases and usual oils. Free from lacquer damaging substances and silicone.

Dimensions



Part number	Cable length (L)
ACC001	30 cm
ACC002	50 cm
ACC003	100 cm

Pin	Wire color
1	Blue
2	Red
3	Brown
4	White
5	Green
6	Yellow
7	Grey
8	Pink
9	Black
10	Violet
11	Grey/Pink

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Document issues

Issue	Date	Page	Corrections made
1	21. 4. 2011	-	New document
2	22. 1. 2013	1,3	U, V, W specification added
3	11. 2. 2014	3	Resolution and maximum speed table added
4	24. 4. 2015	2	Changed dimensions and tolerances in installation drawing
		3	Pin out comment added for incremental output
		4	Ordering code updated with the incremental option and a new option of LOCTITE glue added
5	3. 12. 2015	1	New image
		3,4	Temperature from +85 °C to +105 °C
6	26. 3. 2018	5	Accessories part numbering added
7	20. 12. 2018	1	IP protection grade added
8	4. 2. 2019	2	Magnet tolerance in installation drawing amended
9	19. 6. 2019	5	Cable configuration amended, wire color table added
10	27. 9. 2021	2	Dimensions drawing amended