

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 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

Data sheet RMC35D01_04

Installation drawing





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.



Clockwise rotation of magnetic actuator.

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





Product specificaton

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 +85 °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

Timing diagram - Incremental

Complementary signals not shown



B leads A for clockwise rotation of magnet.

Recommended signal termination For complementary signals only



Connections



NOTE: For **IC** output pins 9, 10 and 11 are not connected.

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.

Timing diagram - Commutation for clockwise rotation



UVW outputs

Pole	Α	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.

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Data sheet RMC35D01_04

Ordering code

		RMC3	5 UA	12B
Ser	ies			
Out IC Ux	put type - Incremen - Commuta	tal, RS422, 5 V tion single ended + incremental wit	h 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	

Special requirements 10 - None (standard)

Connector type AA - Molex 501568-1107

- Resolution (counts per revolution)

10

AA

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 ordering information

Actuator for integration onto shaft





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

Actuator for integration into shaft





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

Magnet for direct recessing in non-ferrous shafts





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

Part number:

For resolutions from 10 bit absolute (800 cpr incremental) and above $\textbf{RMA03A3A07}-\ensuremath{\varnothing3}$ mm shaft

Part numbers:

For resolutions from 10 bit absolute (800 cpr incremental) and above $\ensuremath{\textbf{RMH06A3A00}}$

Part numbers:

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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Document issues

Issue	Date	Page	Corrections made	
01	21. 4. 2011	-	New document	
02	22. 1. 2013	1,3	U, V, W specification added	
03	11. 2. 2014	3	Resolution and maximum speed table added	
04	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	

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