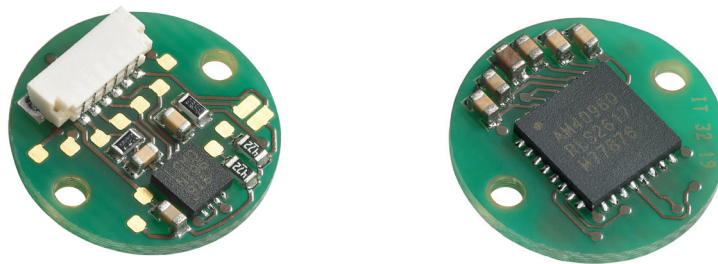


RMB14 angular magnetic encoder module



The image does not represent all variants.

The RMB14 is a compact, absolute high-speed encoder module. With a PCB diameter of only 14 mm, the module fits into miniature designs.

The encoder module consists of a magnetic actuator and a separate sensor board. The rotation of the magnetic actuator is read and processed by a custom encoder chip mounted on the sensor board to obtain the required output format. The output signals are provided in industry standard absolute and incremental formats.

The RMB14 can be used in a variety of applications including robotic grippers, marine, medical, printing, converting, industrial automation, motor control and instrumentation.

Product range

RMB14IC

Incremental with 128 to 1,024 pulses per revolution (32 to 4,096 counts per revolution with x4 evaluation).

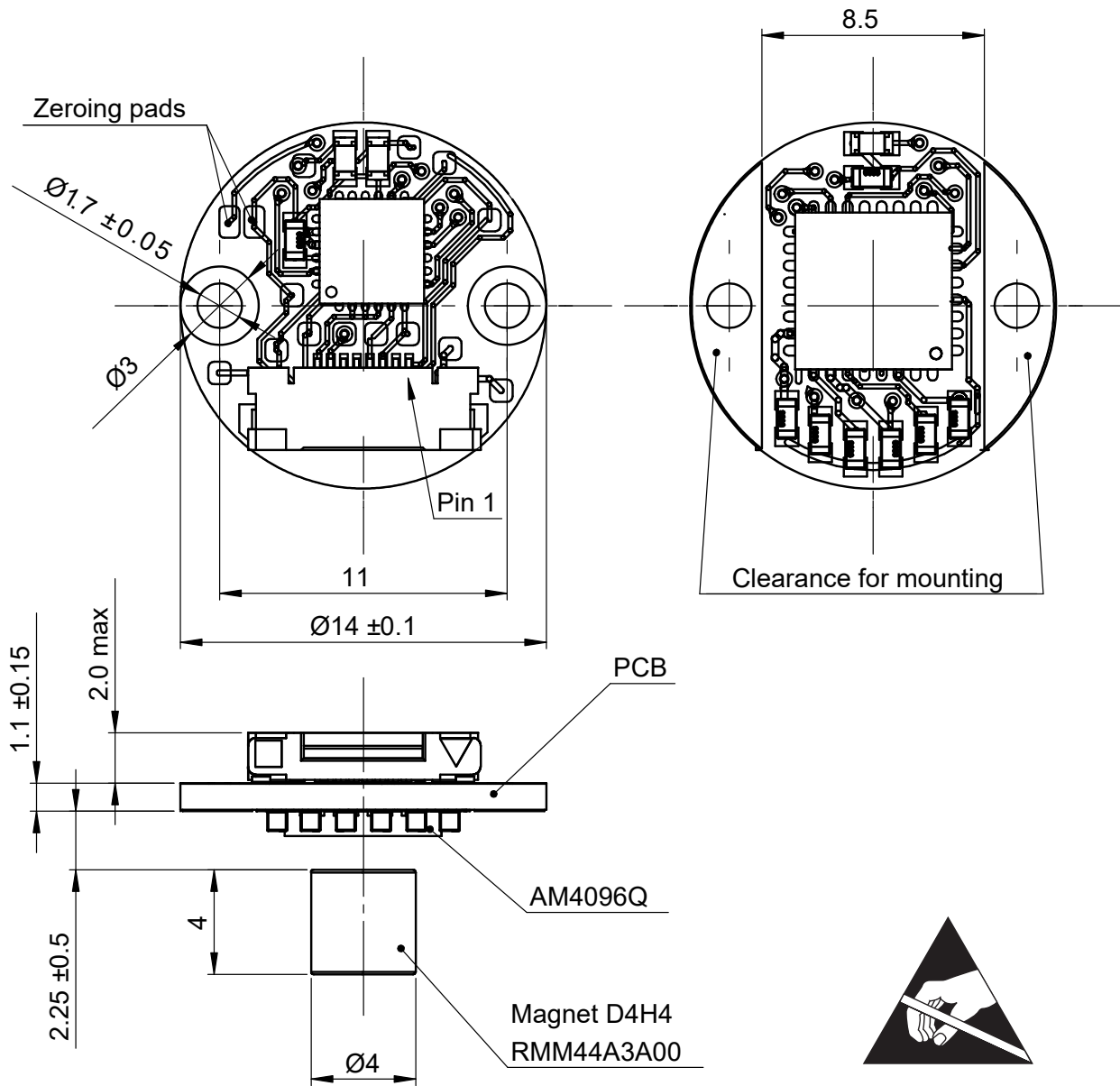
RMB14SC

Synchro serial interface (SSI) with 32 to 4,096 positions per revolution.

- 14 mm diameter circular module
- 3.3 V and 5 V power supply
- High speed operation up to 30,000 rpm
- Absolute - up to 12 bit resolution (4,096 counts per revolution)
- Industry standard absolute and incremental output formats
- Accuracy up to $\pm 0.5^\circ$
- RoHS compliant (lead free) - see Declaration of conformity

Installation drawing

Dimensions and tolerances in mm.



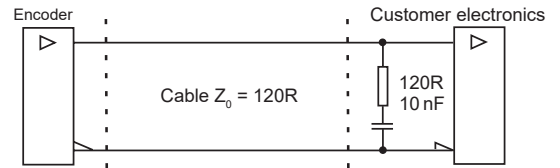
RMB14IC – Incremental output, RS422

Power supply	$V_{dd} = 3.3\text{ V or }5\text{ V } \pm 5\%$
Current consumption	Max. 35 mA
Output signals	A+, B+, Z+, A-, B- Z- (RS422)
Accuracy*	$\pm 0.5^\circ$ *
Hysteresis	0.18°
Resolutions	32, 64, 128, 256, 512, 1024, 2048, 4096 cpr
Maximum speed	30,000 rpm
Temperature	$-40\text{ }^\circ\text{C to }+85\text{ }^\circ\text{C}$ (limited by FFC connector)
Operating and storage	

* Valid for $\varnothing 4 \times 4$ mm magnets only.

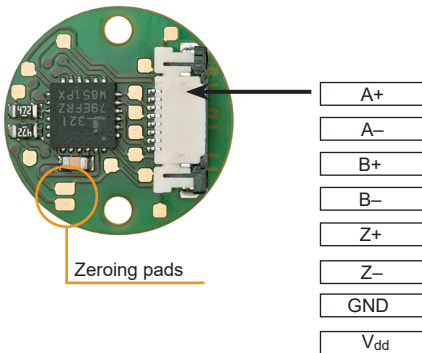
Recommended signal termination

For data output lines only



Connections

RMB14IC with FFC connector



Connector type

JST_08FKZ-SM1-1-TB

Zero position setting

Encoder zero position can be easily set by shortening the zeroing pads on the board. After locking the motor at the mechanical zero position short together the two zeroing pads.

The output angle position data can be zeroed at any angle with resolution of 0.0879° .

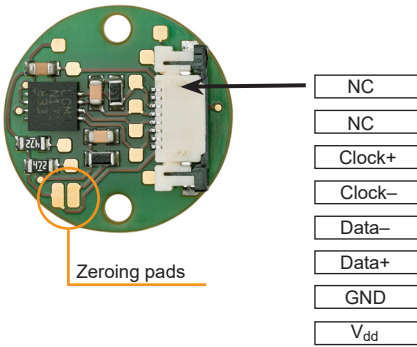
RMB14SC – Absolute binary synchro-serial (SSI), RS422

Power supply	$V_{dd} = 3.3\text{ V or }5\text{ V} \pm 5\%$
Current consumption	Max. 35 mA
Data output	Serial data (RS422)
Data input	Clock (RS422)
Accuracy	Typ. $\pm 0.5^\circ$ *
Hysteresis	0.18°
Resolutions	32, 64, 128, 256, 512, 1,024, 2,048, 4,096 cpr
Maximum speed	30,000 rpm
Temperature	-25 °C to +85 °C (limited by SMD connector) Operating and storage -40 °C to +85 °C (limited by FFC connector)

* Valid for $\varnothing 4 \times 4$ mm magnets only.

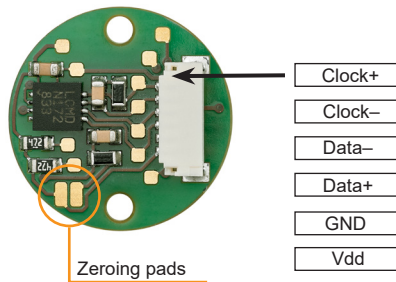
Connections

RMB14SC with FFC connector



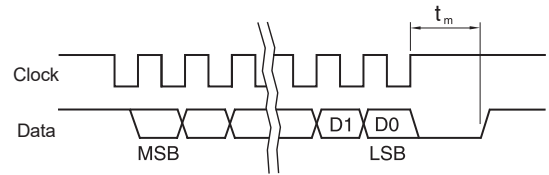
Connector type
JST_08FKZ-SM1-1-TB

RMB14SC with SMD connector



Connector type
JST SM06B-SURS-TF
Mating connector
JST 06SUR-32S (not provided)

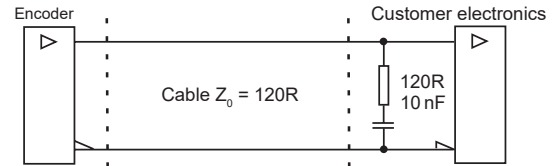
Timing diagram



Clock $\leq 1\text{ MHz}$ $20\ \mu\text{s} \leq t_m \leq 40\ \mu\text{s}$

Recommended signal termination

For data output lines only

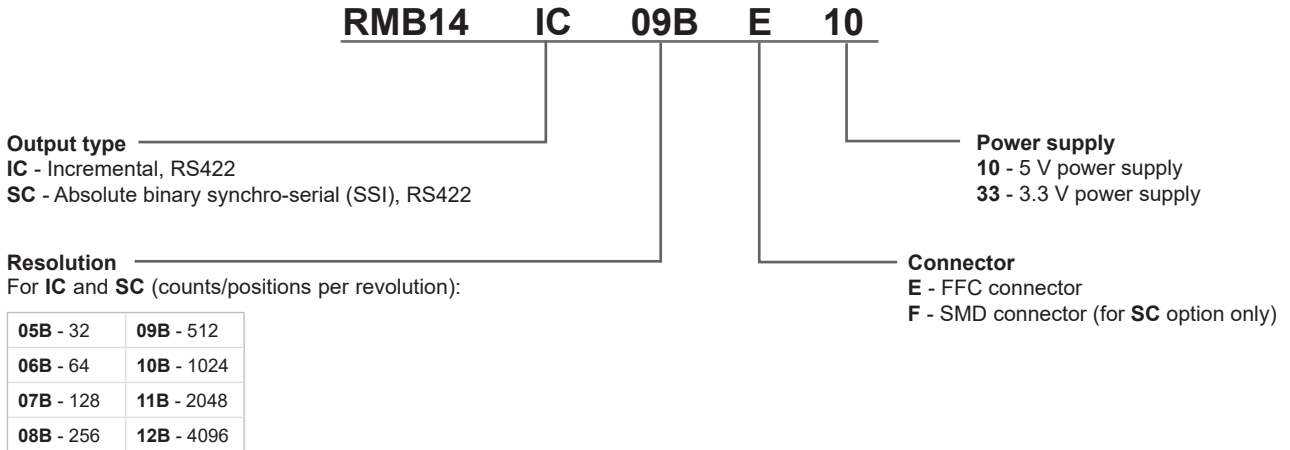


Zero position setting

Encoder zero position can be easily set by shortening the zeroing pads on the board. After locking the motor at the mechanical zero position short together the two zeroing pads.

The output angle position data can be zeroed at any angle with resolution of 0.0879° .

Part numbering



NOTE: Not all combinations are valid.

Valid combinations:

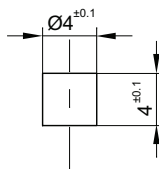
- RMB14ICxxxE10** – Incremental, RS422, circular, FFC connector, 5 V
RMB14ICxxxE33 – Incremental, RS422, circular, FFC connector, 3.3 V
- RMB14SCxxxE10** – Absolute SSI, circular, FFC connector, 5 V
RMB14SCxxxE33 – Absolute SSI, circular, FFC connector, 3.3 V
- RMB14SCxxxF10** – Absolute SSI, circular, SMD connector, 5 V
RMB14SCxxxF33 – Absolute SSI, circular, SMD connector, 3.3 V

* For sample quantities of RMB14 supplied with a magnet please add “KIT” to the end of the required RMB14 part number, eg. RMB14IC09BE10KIT.

Magnet ordering information

Magnet for direct recessing in non-ferrous shafts

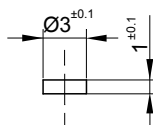
Fixing: Glue (recommended - LOCTITE 648 or LOCTITE 2701)



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)



Part number:

RMM3010A1B00

NOTE: RMM3010 magnets are only tested (not graded). Specified accuracy cannot be achieved by using magnet RMM3010.

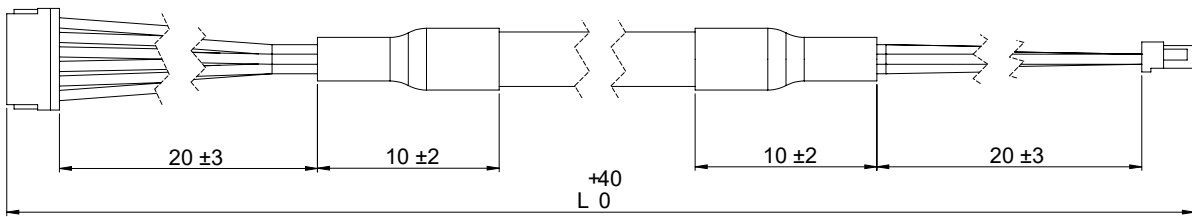
Accessories

Cables

ACC031, ACC032 (compatible with RMB14SC with SMD connector)



Part number	Cable length (L)
ACC031	1 m
ACC032	0.5 m



Dimensions and tolerances in mm.

Cable specifications	M-9693-2350-01-C
Configuration	10 × 0.0320 mm ²
Sheath color	Black
Rated voltage	30 V
Temperature range	From -40 °C to +90 °C

Pin	Wire color
1	Red
2	Blue
3	Green
4	Yellow
5	Brown
6	White

ACC037 (compatible with RMB14SC with FFC connector)

Molex Premo-Flex™ FFC Jumper, 6 Circuits, 203 mm



ACC038 (compatible with RMB14IC with FFC connector)

Molex Premo-Flex™ FFC Jumper, 8 Circuits, 203 mm



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Document issues

Issue	Date	Page	Amendments done
1	18. 10. 2019	-	New document
2	3. 2. 2020	6	Cable ordering informations added
3	24. 2. 2020	6	ACC037 and ACC038 cable options added

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