

# RM44 magnetic encoder base unit



**The RM44 is an encoder designed for integration onto electric motors or other devices for shaft position and rotational speed measurement.**

**The solid metal housing helps achieve the highest IP ratings, high EMC immunity, extended operating temperature range and the best possible shock and vibration resistance.**

Output signals are provided in industry standard absolute, incremental, analogue sinusoidal and linear voltage formats. Available are resolutions of up to 13 bit absolute SSI and/

or 8,192 counts per revolution incremental for 5 V or 24 V power supply.

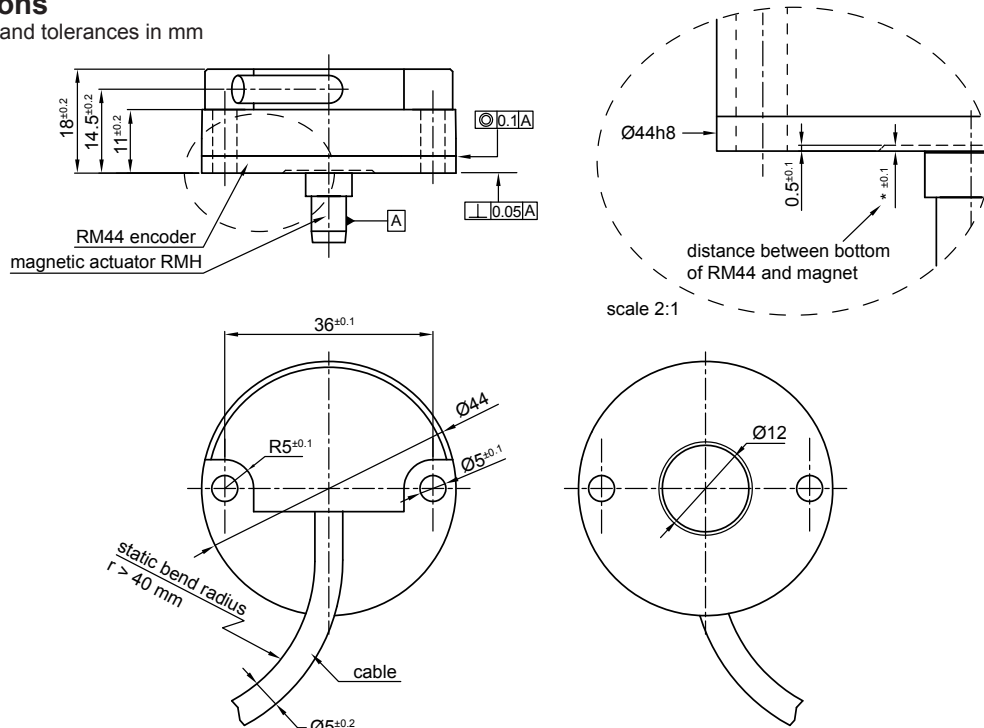
With the provided magnet a system accuracy of  $\pm 0.5^\circ$  is achievable. A range of magnetic actuators for easy integration onto or into the shaft is also offered for easy system integration.

- Easy to install – with self locating design
- Low cost for OEM integration
- Fully sealed to IP68
- High reliability from proven non-contact sensing technology
- RoHS compliant (lead free)

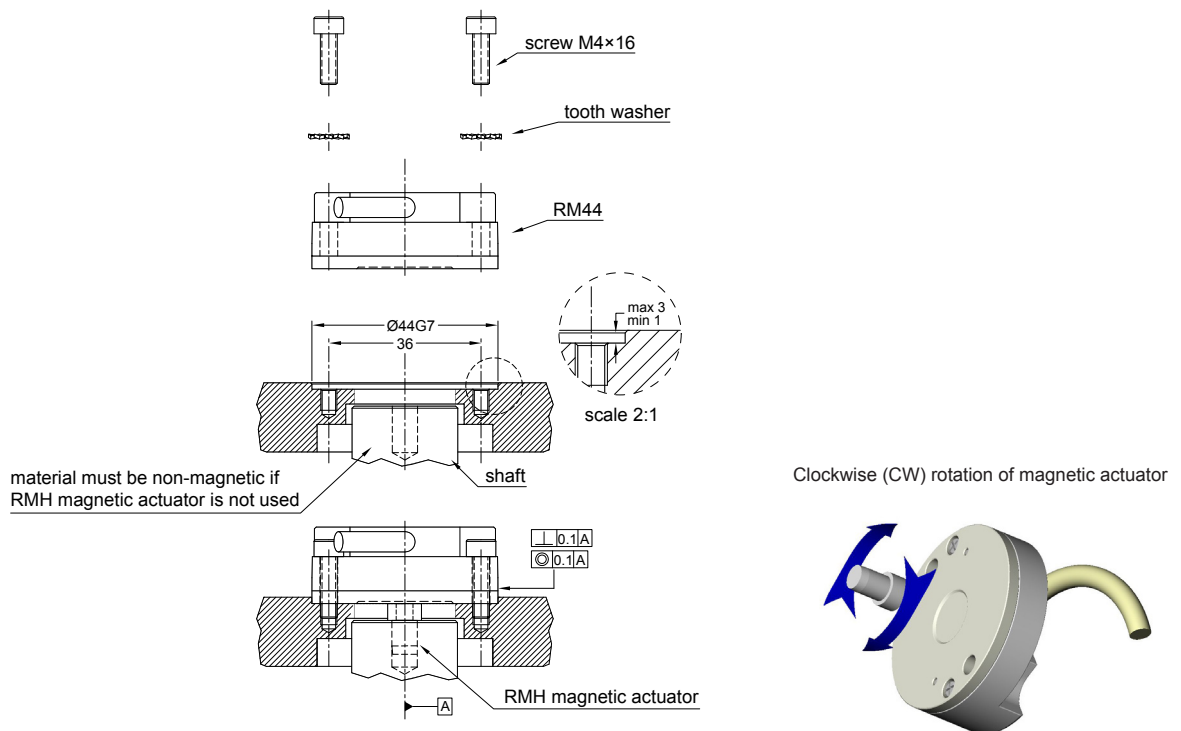
Data sheet  
**RM44D01\_05**

## Dimensions

Dimensions and tolerances in mm



## Installation drawing



## Operating and electrical specifications

|                       |                                                                                      |
|-----------------------|--------------------------------------------------------------------------------------|
| EMC interference      | EN 61000-6-2                                                                         |
| EMC immunity          | EN 61000-6-4                                                                         |
| Cable                 | Outside diameter 5 mm                                                                |
| Mass                  | Encoder unit 1 m cable (no connector) IP64 112 g, IP68 129 g. Magnetic actuator <2 g |
| Environmental sealing | IP64 (IP68 optional) EN 60529                                                        |

## Output specifications - 5 V supply

### RM44AC – Analogue sinusoidal outputs, 5 V

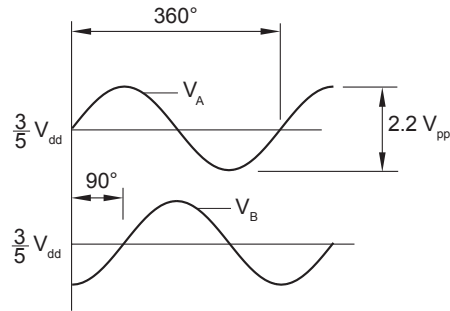
2 channels  $V_A$   $V_B$  sinusoids (90° phase shifted, single ended)

|                                  |                                                                                           |
|----------------------------------|-------------------------------------------------------------------------------------------|
| <b>Power supply</b>              | $V_{dd} = 5\text{ V} \pm 5\%$                                                             |
| <b>Power consumption</b>         | 13 mA                                                                                     |
| <b>Outputs</b>                   | Signal amplitude $2 \pm 0.2 V_{pp}$<br>Signal offset $\frac{3}{5} V_{dd} \pm 5\text{ mV}$ |
| <b>Max. output frequency</b>     | 1 kHz                                                                                     |
| <b>Max. cable length</b>         | 3 m                                                                                       |
| <b>Operating temperature</b>     | -40 °C to +125 °C (IP64)<br>-40 °C to +85 °C (IP68)                                       |
| <b>Maximum speed</b>             | 60,000 rpm                                                                                |
| <b>Internal serial impedance</b> | 720 $\Omega$                                                                              |

#### Connections

| Function | Wire colour |
|----------|-------------|
| Shield   | -           |
| $V_{dd}$ | Red         |
| GND      | Orange      |
| $V_A$    | Black       |
| $V_B$    | Brown       |

#### Timing diagram



$V_B$  leads  $V_A$  by 90° for clockwise rotation of magnetic actuator.

### RM44IE - Incremental, open collector, 5 V

Low cost alternative for ball bearing encoders

|                                          |                                                     |
|------------------------------------------|-----------------------------------------------------|
| <b>Power supply</b>                      | $V_{dd} = 5\text{ V} \pm 5\%$                       |
| <b>Power consumption</b><br>(not loaded) | 35 mA                                               |
| <b>Maximum output load</b>               | 20 mA                                               |
| <b>Output signals</b>                    | A, B, Z                                             |
| <b>Max. cable length</b>                 | 20 m                                                |
| <b>Operating temperature</b>             | -40 °C to +125 °C (IP64)<br>-40 °C to +85 °C (IP68) |

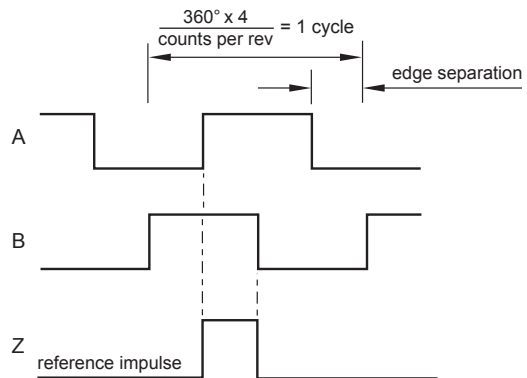
| Resolution options<br>(cpr) | Maximum<br>speed (rpm) | Accuracy*       | Hysteresis   |
|-----------------------------|------------------------|-----------------|--------------|
| 128, 256                    | 30,000                 | $\pm 0.7^\circ$ | $0.45^\circ$ |
| 320, 400, 500, 512          | 30,000                 | $\pm 0.7^\circ$ | $0.18^\circ$ |
| 800, 1,000, 1,024           | 20,000                 | $\pm 0.5^\circ$ | $0.18^\circ$ |
| 1,600, 2,000, 2,048         | 10,000                 | $\pm 0.5^\circ$ | $0.18^\circ$ |
| 4,096                       | 5,000                  | $\pm 0.5^\circ$ | $0.18^\circ$ |
| 8,192                       | 2,500                  | $\pm 0.5^\circ$ | $0.18^\circ$ |

\* Worst case within operational parameters including magnet position and temperature.

#### Connections

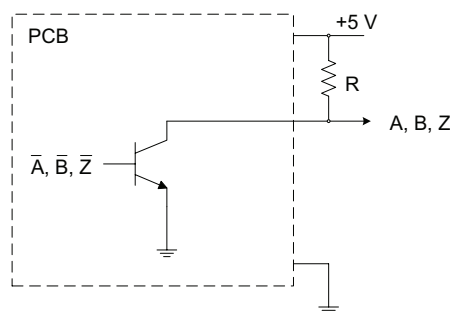
| Function | Wire colour |
|----------|-------------|
| Shield   | -           |
| $V_{dd}$ | Red         |
| GND      | Blue        |
| A        | Grey        |
| B        | Green       |
| Z        | White       |

#### Timing diagram



B leads A for clockwise rotation of magnetic actuator.

#### Recommended signal termination



## Data sheet

### RM44D01\_05

#### RM44IC - Incremental, RS422, 5 V

Alternative for optical encoders

|                              |                                                                   |
|------------------------------|-------------------------------------------------------------------|
| <b>Power supply</b>          | $V_{dd} = 5\text{ V} \pm 5\%$                                     |
| <b>Power consumption</b>     | 13 mA for 7, 8 bit resolutions<br>35 mA for all other resolutions |
| <b>Output signals</b>        | A, B, Z, A-, B-, Z- (RS422)                                       |
| <b>Max. cable length</b>     | 50 m                                                              |
| <b>Operating temperature</b> | -40 °C to +125 °C (IP64)<br>-40 °C to +85 °C (IP68)               |

| Resolution options (cpr) | Maximum speed (rpm) | Accuracy*       | Hysteresis |
|--------------------------|---------------------|-----------------|------------|
| 128, 256                 | 30,000              | $\pm 0.7^\circ$ | 0.45°      |
| 320, 400, 500, 512       | 30,000              | $\pm 0.7^\circ$ | 0.18°      |
| 800, 1,000, 1,024        | 20,000              | $\pm 0.5^\circ$ | 0.18°      |
| 1,600, 2,000, 2,048      | 10,000              | $\pm 0.5^\circ$ | 0.18°      |
| 4,096                    | 5,000               | $\pm 0.5^\circ$ | 0.18°      |
| 8,192                    | 2,500               | $\pm 0.5^\circ$ | 0.18°      |

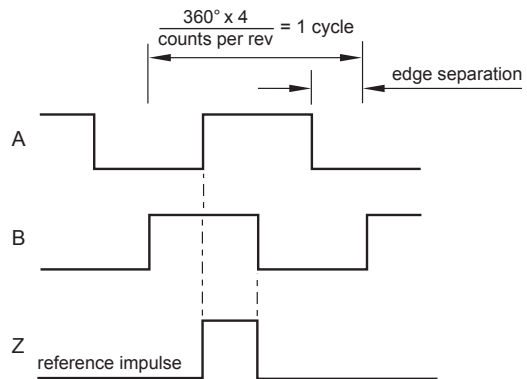
\* Worst case within operational parameters including magnet position and temperature.

#### Connections

| Pin Nr. | Function | Wire colour |
|---------|----------|-------------|
| 1       | Shield   | -           |
| 2       | Z        | White       |
| 3       | B        | Green       |
| 4       | A        | Grey        |
| 5       | $V_{dd}$ | Red         |
| 6       | Z-       | Brown       |
| 7       | B-       | Yellow      |
| 8       | A-       | Pink        |
| 9       | GND      | Blue        |

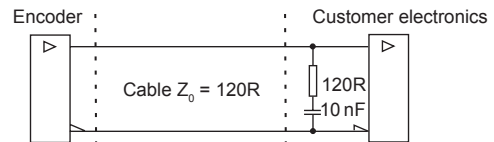
#### Timing diagram

Complementary signals not shown



B leads A for clockwise rotation of magnetic actuator.

#### Recommended signal termination



#### RM44SC - Absolute binary synchro-serial (SSI), RS422, 5 V

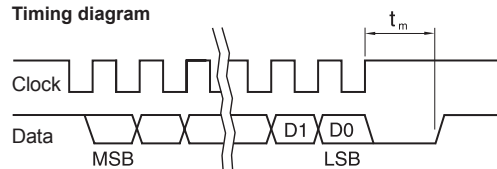
Alternative for optical encoders

|                              |                                                               |
|------------------------------|---------------------------------------------------------------|
| <b>Power supply</b>          | $V_{dd} = 5\text{ V} \pm 5\%$                                 |
| <b>Power consumption</b>     | 13 mA for 8 bit resolution<br>35 mA for all other resolutions |
| <b>SSI output code</b>       | Natural binary                                                |
| <b>Data output</b>           | Serial data (RS422)                                           |
| <b>Data input</b>            | Clock (RS422)                                                 |
| <b>Repeatability</b>         | $\leq 0.07^\circ$                                             |
| <b>Max. cable length</b>     | 100 m (at 1 MHz)                                              |
| <b>Operating temperature</b> | -40 °C to +125 °C (IP64)<br>-40 °C to +85 °C (IP68)           |

| Resolution options (ppr) | Maximum speed (rpm) | Accuracy*       | Hysteresis |
|--------------------------|---------------------|-----------------|------------|
| 256                      | 30,000              | $\pm 0.7^\circ$ | 0.45°      |
| 320, 400, 500, 512       | 30,000              | $\pm 0.7^\circ$ | 0.18°      |
| 800, 1,000, 1,024        | 20,000              | $\pm 0.5^\circ$ | 0.18°      |
| 1,600, 2,000, 2,048      | 10,000              | $\pm 0.5^\circ$ | 0.18°      |
| 4,096                    | 5,000               | $\pm 0.5^\circ$ | 0.18°      |
| 8,192                    | 2,500               | $\pm 0.5^\circ$ | 0.18°      |

\* Worst case within operational parameters including magnet position and temperature.

#### Timing diagram



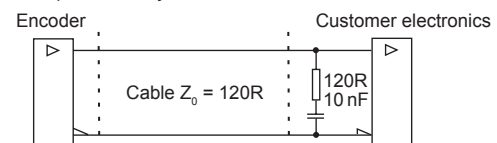
Clock  $\leq 1\text{ MHz}$   $16\text{ }\mu\text{s} \leq t_m \leq 22\text{ }\mu\text{s}$  (for 8 bit resolution)

Clock  $\leq 4\text{ MHz}$   $12.5\text{ }\mu\text{s} \leq t_m \leq 20.5\text{ }\mu\text{s}$  (for all other resolutions)

Position increases for clockwise rotation of magnetic actuator.

#### Recommended signal termination

For data output lines only



#### Connections

| Pin Nr. | Function | Wire colour |
|---------|----------|-------------|
| 1       | Shield   | -           |
| 2       | Clock    | White       |
| 3       | Clock-   | Brown       |
| 4       | NC       | -           |
| 5       | $V_{dd}$ | Red         |
| 6       | Data     | Green       |
| 7       | Data-    | Yellow      |
| 8       | NC       | -           |
| 9       | GND      | Blue        |

## RM44SI - Absolute binary synchro-serial (SSI) + Incremental, RS422, 5 V

Complex feedback device for absolute position at start up as well as during operation + incremental outputs.

Both the incremental and the SSI output always have the same fixed resolution.

|                              |                                                     |
|------------------------------|-----------------------------------------------------|
| <b>Power supply</b>          | $V_{dd} = 5\text{ V} \pm 5\%$                       |
| <b>Power consumption</b>     | 35 mA                                               |
| <b>SSI output code</b>       | Natural binary                                      |
| <b>Data output</b>           | Serial data (RS422)                                 |
| <b>Data input</b>            | Clock (RS422)                                       |
| <b>Incremental outputs</b>   | A, B, Z, A-, B-, Z- (RS422)                         |
| <b>Max. cable length</b>     | 50 m                                                |
| <b>Operating temperature</b> | -40 °C to +125 °C (IP64)<br>-40 °C to +85 °C (IP68) |

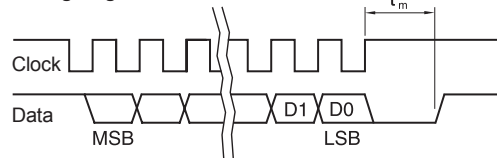
| Resolution options<br>(ppr/cpr) | Maximum<br>speed (rpm) | Accuracy*       | Hysteresis |
|---------------------------------|------------------------|-----------------|------------|
| 320, 400, 500, 512              | 30,000                 | $\pm 0.7^\circ$ | 0.18°      |
| 800, 1,000, 1,024               | 20,000                 | $\pm 0.5^\circ$ | 0.18°      |
| 1,600, 2,000, 2,048             | 10,000                 | $\pm 0.5^\circ$ | 0.18°      |
| 4,096                           | 5,000                  | $\pm 0.5^\circ$ | 0.18°      |
| 8,192                           | 2,500                  | $\pm 0.5^\circ$ | 0.18°      |

\* Worst case within operational parameters including magnet position and temperature.

### Connections

|             | Function | Wire colour |
|-------------|----------|-------------|
|             | Shield   | -           |
|             | $V_{dd}$ | Red         |
|             | GND      | Blue        |
| Incremental | A        | Grey        |
|             | A-       | Pink        |
|             | B        | Green       |
|             | B-       | Yellow      |
|             | Z        | White       |
|             | Z-       | Brown       |
| SSI         | Clock    | Black       |
|             | Clock-   | Violet      |
|             | Data     | Grey/Pink   |
|             | Data-    | Red/Blue    |

### Timing diagram - SSI



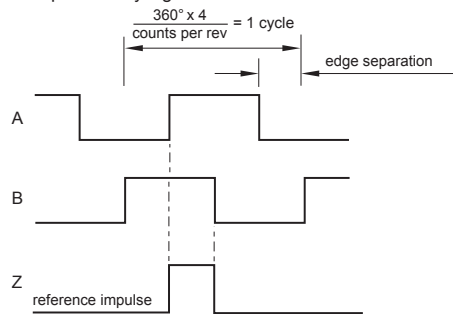
Clock  $\leq 4\text{ MHz}$

$12.5\text{ }\mu\text{s} \leq t_m \leq 20.5\text{ }\mu\text{s}$

Position increases for clockwise rotation of magnetic actuator.

### Timing diagram - Incremental

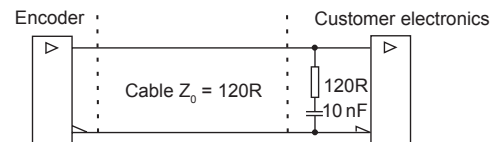
Complementary signals not shown



B leads A for CW rotation of magnetic actuator.

### Recommended signal termination

For incremental signals + SSI data output lines only



## RM44Vx - Linear voltage output, 5 V

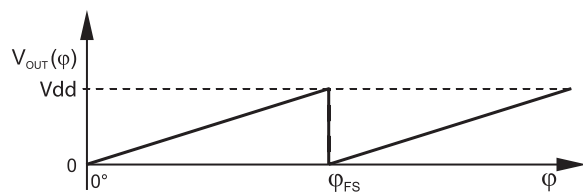
Alternative for potentiometers

|                              |                                                     |
|------------------------------|-----------------------------------------------------|
| <b>Power supply</b>          | $V_{dd} = 5\text{ V} \pm 5\%$                       |
| <b>Power consumption</b>     | 26 mA (not loaded)                                  |
| <b>Output voltage</b>        | 0 V to $V_{dd}$                                     |
| <b>Output loading</b>        | Max. 10 mA                                          |
| <b>Nonlinearity</b>          | 1 %                                                 |
| <b>Max. cable length</b>     | 20 m                                                |
| <b>Operating temperature</b> | -40 °C to +125 °C (IP64)<br>-40 °C to +85 °C (IP68) |
| <b>Maximum speed</b>         | 30,000 rpm                                          |

### Connections

| Function  | Wire colour |
|-----------|-------------|
| Shield    | -           |
| $V_{dd}$  | Red         |
| GND       | Orange      |
| $V_{OUT}$ | Black       |

### Electrical output



### Output type and electrical variant

| $\phi_{FS}$ | 360° | 180° | 90° | 45° |
|-------------|------|------|-----|-----|
| CW          | VA   | VB   | VC  | VD  |
| CCW         | VE   | VF   | VG  | VH  |

## Output specifications - 24 V supply

### RM44IA - Incremental, push-pull, 24 V

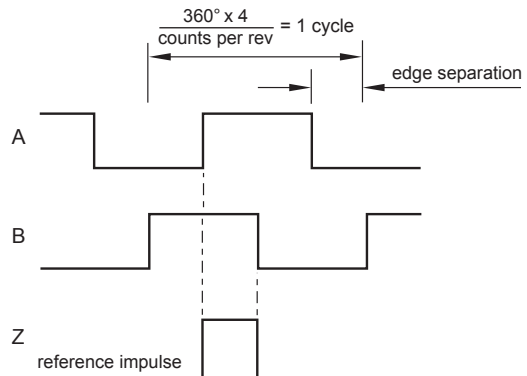
|                                       |                                                     |
|---------------------------------------|-----------------------------------------------------|
| <b>Power supply</b>                   | $V_{dd} = 8\text{ V to }26\text{ V}$                |
| <b>Power consumption</b><br>(at 24 V) | 50 mA                                               |
| <b>Max. output load</b>               | 30 mA                                               |
| <b>Output signals</b>                 | A, B, Z, A-, B-, Z- (RS422)                         |
| <b>Max. cable length</b>              | 20 m                                                |
| <b>Operating temperature</b>          | -40 °C to +125 °C (IP64)<br>-40 °C to +85 °C (IP68) |

| Resolution options<br>(cpr) | Maximum speed<br>(rpm) | Accuracy*       | Hysteresis |
|-----------------------------|------------------------|-----------------|------------|
| 320, 400, 500, 512          | 30,000                 | $\pm 0.7^\circ$ | 0.18°      |
| 800, 1,000, 1,024           | 20,000                 | $\pm 0.5^\circ$ | 0.18°      |
| 1,600, 2,000, 2,048         | 10,000                 | $\pm 0.5^\circ$ | 0.18°      |
| 4,096                       | 5,000                  | $\pm 0.5^\circ$ | 0.18°      |
| 8,192                       | 2,500                  | $\pm 0.5^\circ$ | 0.18°      |

\* Worst case within operational parameters including magnet position and temperature.

#### Timing diagram

Complementary signals not shown



B leads A for clockwise rotation of magnetic actuator.

#### Connections

| Function | Wire colour |
|----------|-------------|
| Shield   | -           |
| $V_{dd}$ | Red         |
| GND      | Blue        |
| A        | Grey        |
| A-       | Pink        |
| B        | Green       |
| B-       | Yellow      |
| Z        | White       |
| Z-       | Brown       |

### RM44IB - Incremental, open collector NPN, 24 V

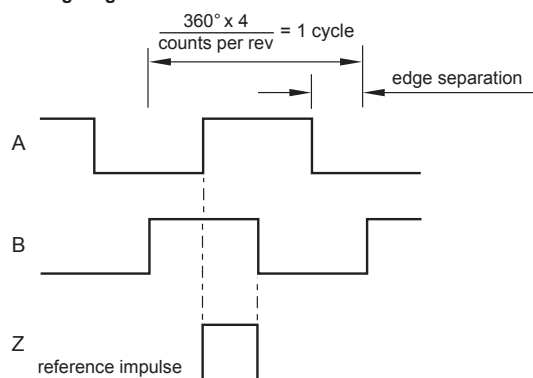
Square wave output

|                                       |                                                     |
|---------------------------------------|-----------------------------------------------------|
| <b>Power supply</b>                   | $V_{dd} = 8\text{ V to }26\text{ V}$                |
| <b>Power consumption</b><br>(at 24 V) | 50 mA                                               |
| <b>Max. output load</b>               | 20 mA                                               |
| <b>Output signals</b>                 | A, B, Z                                             |
| <b>Max. cable length</b>              | 20 m                                                |
| <b>Operating temperature</b>          | -40 °C to +125 °C (IP64)<br>-40 °C to +85 °C (IP68) |

| Resolution options<br>(cpr) | Maximum speed<br>(rpm) | Accuracy*       | Hysteresis |
|-----------------------------|------------------------|-----------------|------------|
| 128, 256                    | 30,000                 | $\pm 0.7^\circ$ | 0.45°      |
| 320, 400, 500, 512          | 30,000                 | $\pm 0.7^\circ$ | 0.18°      |
| 800, 1,000, 1,024           | 20,000                 | $\pm 0.5^\circ$ | 0.18°      |
| 1,600, 2,000, 2,048         | 10,000                 | $\pm 0.5^\circ$ | 0.18°      |
| 4,096                       | 5,000                  | $\pm 0.5^\circ$ | 0.18°      |
| 8,192                       | 2,500                  | $\pm 0.5^\circ$ | 0.18°      |

\* Worst case within operational parameters including magnet position and temperature.

#### Timing diagram



B leads A for CW rotation of magnetic actuator.

#### Connections

| Function | Wire colour |
|----------|-------------|
| Shield   | -           |
| $V_{dd}$ | Red         |
| GND      | Blue        |
| A        | Grey        |
| B        | Green       |
| Z        | White       |

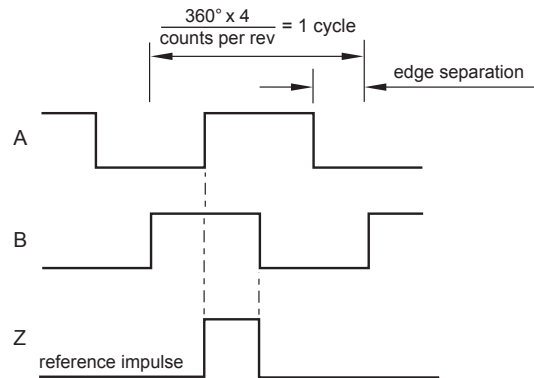
## RM44IG - Incremental, RS422 (5 V), 24 V power supply

|                                       |                                                     |
|---------------------------------------|-----------------------------------------------------|
| <b>Power supply</b>                   | $V_{dd} = 8 \text{ V to } 26 \text{ V}$             |
| <b>Power consumption</b><br>(at 24 V) | 50 mA                                               |
| <b>Max. output load</b>               | 20 mA                                               |
| <b>Output signals</b>                 | A, B, Z, A-, B-, Z-                                 |
| <b>Max. cable length</b>              | 20 m                                                |
| <b>Operating temperature</b>          | -40 °C to +125 °C (IP64)<br>-40 °C to +85 °C (IP68) |

| Resolution options<br>(cpr) | Maximum speed<br>(rpm) | Accuracy*       | Hysteresis |
|-----------------------------|------------------------|-----------------|------------|
| 128, 256                    | 30,000                 | $\pm 0.7^\circ$ | 0.45°      |
| 320, 400, 500, 512          | 30,000                 | $\pm 0.7^\circ$ | 0.18°      |
| 800, 1,000, 1,024           | 20,000                 | $\pm 0.5^\circ$ | 0.18°      |
| 1,600, 2,000, 2,048         | 10,000                 | $\pm 0.5^\circ$ | 0.18°      |
| 4,096                       | 5,000                  | $\pm 0.5^\circ$ | 0.18°      |
| 8,192                       | 2,500                  | $\pm 0.5^\circ$ | 0.18°      |

\* Worst case within operational parameters including magnet position and temperature.

### Timing diagram



B leads A for CW rotation of magnetic actuator.

### Connections

| Function | Wire colour |
|----------|-------------|
| Shield   | -           |
| $V_{dd}$ | Red         |
| GND      | Blue        |
| A        | Grey        |
| A-       | Pink        |
| B        | Green       |
| B-       | Yellow      |
| Z        | White       |
| Z-       | Brown       |

Ordering code

Encoder system = Encoder body + Magnetic actuator or flange



**RM44**   **IC**   **00**   **13B**   **10**   **F**   **2**   **E**   **10**

**Output type**

**AC** - Analogue sinusoidal, 5 V  
**IA** - Incremental, push pull, 24 V  
**IB** - Incremental, open collector NPN, 24 V  
**IC** - Incremental, RS422, 5 V  
**IE** - Incremental, open collector, 5 V  
**IG** - Incremental, RS422, 5 V, supply 24 V  
**SC** - Absolute binary synchro-serial (SSI), RS422, 5 V  
**SI** - SSI + Incremental, RS422, 5 V  
**Vx** - Linear voltage:

| Linear voltage output 0 - 5 V, supply 5 V DC |           |           |           |           |
|----------------------------------------------|-----------|-----------|-----------|-----------|
|                                              | 360°      | 180°      | 90°       | 45°       |
| Clockwise                                    | <b>VA</b> | <b>VB</b> | <b>VC</b> | <b>VD</b> |
| Counterclockwise                             | <b>VE</b> | <b>VF</b> | <b>VG</b> | <b>VH</b> |

**Special requirements**  
**10** - No special requirements (standard)  
**1M** - Cable length in meters

**Environment and material**  
**E** - IP64, standard EMC grade, Zinc alloy (standard)  
**F** - IP68, standard EMC grade, Zinc alloy

**Body style and cable exit**  
**2** - Cylindrical body, radial cable exit

**Connector options**  
**F** - Flying lead (no connector)

**Cable length**  
**10** - 1.0 meter (or 10 meters if **1M** special requirement is chosen)

**Shaft size**  
**00** - n/a

**Resolution**  
For **AC**:  
**01S** - One sine/cosine period per revolution  
For **Vx**:  
**10B** - 1024 counts or positions per revolution

For output types **IA**, **IB**, **IC**, **IE**, **IG**, **SC** and **SI**:

| Decimal   |            |            | Binary      |            |            |
|-----------|------------|------------|-------------|------------|------------|
| D32 - 320 | D80 - 800  | 2D0 - 2000 | 07B - 128*  | 10B - 1024 | 13B - 8192 |
| D40 - 400 | 1D0 - 1000 |            | 08B - 256** | 11B - 2048 |            |
| D50 - 500 | 1D6 - 1600 |            | 09B - 512   | 12B - 4096 |            |

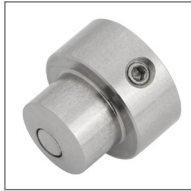
\* Only for **IB**, **IC** and **IE**.

\*\* Only for **IB**, **IC**, **IE** and **SC**.

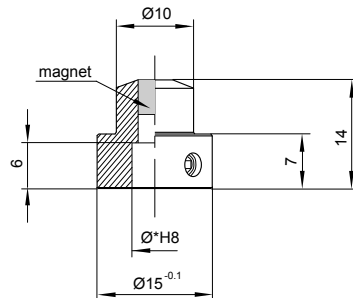
**NOTE:** Not all combinations are valid.

## Magnetic actuator and magnet ordering information

### Actuator for integration onto shaft



Shaft =  $\varnothing \times h7$   
Fixing: Grub screw provided



#### Part numbers:

For resolutions up to 9 bit absolute (512 cpr incremental)

|                                              |                                               |
|----------------------------------------------|-----------------------------------------------|
| <b>RMA04A2A00</b> – $\varnothing 4$ mm shaft | <b>RMA10A2A00</b> – $\varnothing 10$ mm shaft |
| <b>RMA05A2A00</b> – $\varnothing 5$ mm shaft | <b>RMA19A2A00</b> – $\varnothing 3/16"$ shaft |
| <b>RMA06A2A00</b> – $\varnothing 6$ mm shaft | <b>RMA25A2A00</b> – $\varnothing 1/4"$ shaft  |
| <b>RMA08A2A00</b> – $\varnothing 8$ mm shaft | <b>RMA37A2A00</b> – $\varnothing 3/8"$ shaft  |

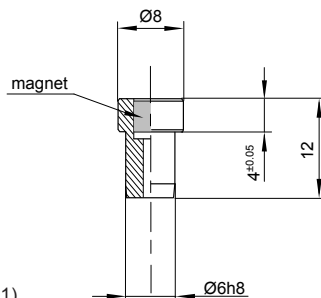
For resolutions from 10 bit absolute (800 cpr incremental) and above

|                                              |                                               |
|----------------------------------------------|-----------------------------------------------|
| <b>RMA04A3A00</b> – $\varnothing 4$ mm shaft | <b>RMA10A3A00</b> – $\varnothing 10$ mm shaft |
| <b>RMA05A3A00</b> – $\varnothing 5$ mm shaft | <b>RMA19A3A00</b> – $\varnothing 3/16"$ shaft |
| <b>RMA06A3A00</b> – $\varnothing 6$ mm shaft | <b>RMA25A3A00</b> – $\varnothing 1/4"$ shaft  |
| <b>RMA08A3A00</b> – $\varnothing 8$ mm shaft | <b>RMA37A3A00</b> – $\varnothing 3/8"$ shaft  |

### Actuator for integration into shaft



Hole =  $\varnothing 6G7$   
Fixing: Glue (recommended – LOCTITE 648 or LOCTITE 2701)



#### Part numbers:

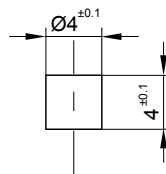
For resolutions up to 9 bit absolute (512 cpr incremental)

**RMH06A2A00**

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

**RMH06A3A00**

### 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)

## RE58 flange part numbering

Refer to RE58 datasheet for further details.



#### Part numbers:

**RE58A10** -  $\varnothing 58$  mm 10 mm shaft

**RE58B06** -  $\varnothing 58$  mm 6 mm shaft

**RE58C10** -  $\varnothing 58$  mm 10 mm shaft

All RE58 flanges are supplied with required washer and M4 screws for RM44 encoder attachment.

## Head office

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### **RLS merilna tehnika d.o.o.**

Poslovna cona Žeje pri Komendi  
Pod vrbami 2  
SI-1218 Komenda  
Slovenia

**T** +386 1 5272100

**F** +386 1 5272129

**E** mail@rls.si

**www.rls.si**

## Document issues

| Issue | Date         | Page | Amendments done                                                                                                                  |
|-------|--------------|------|----------------------------------------------------------------------------------------------------------------------------------|
| 02    | 26. 2. 2008  | -    | New layout with new images, outputs <b>V</b> and <b>IB</b> , SSI clock, vibration shock test                                     |
| 03    | 14. 1. 2009  | -    | New layout                                                                                                                       |
| 04    | 24. 11. 2010 | -    | New magnet dimensions and RE58 flange images, extended operating temperature range description and RM44AC timing diagram changed |
| 05    | 24. 4. 2015  | 2    | Installation drawing tolerance amended                                                                                           |
|       |              | 3-8  | New resolution options added to outputs <b>IB</b> and <b>IE</b> , <b>IG</b> output added                                         |
|       |              | 9    | Loctite information updated                                                                                                      |