



RM36 Magnetic encoders

The RM36 is a high-speed magnetic rotary encoder designed for use in harsh industrial environments. The non-contact two-part design removes the need for seals or bearings ensuring long-term reliability and simple installation.

The encoder comprises a magnetic actuator and a separate encoder body. Rotation of the magnetic actuator is sensed by a custom encoder chip within the body and processed to the required output.

The encoder chip processes the signals received to provide resolutions to 12 bit (4096 positions per revolution) with operational speeds to 30,000 rpm. Resolution options include binary and decimal. Output signals are provided in industry standard absolute, incremental or linear formats.

The compact encoder body is 36mm in diameter and provides dirt immunity to IP68. The RM36 can be used in a wide range of applications, including marine, medical, print, converting, industrial automation, metal working, motor control and instrumentation.

5V power supply

RM36 I - incremental with 80 to 1024 pulses per revolution (320 to 4096 counts per revolution with x3 evaluation).

RM36 S - synchro serial interface (SSI) with 320 to 4096 positions per revolution.

24V power supply

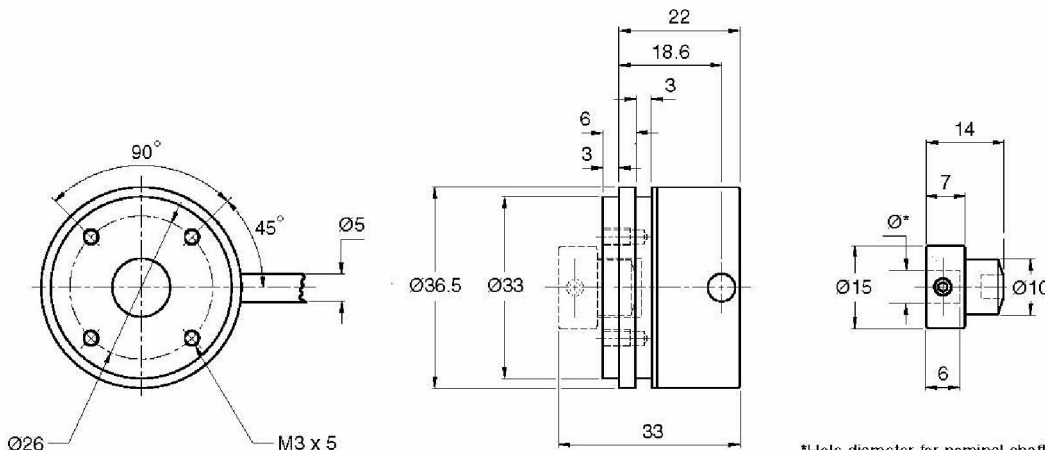
RM36 P - absolute parallel interface with 512 positions per revolution.

RM36 I - incremental with 128 pulses per revolution (512 counts per revolution with x4 evaluation).

RM36 U - linear voltage output in a range of variants

RM36 C - linear current output in a range of variants

■ Dimensions (dimensions and tolerances in mm)



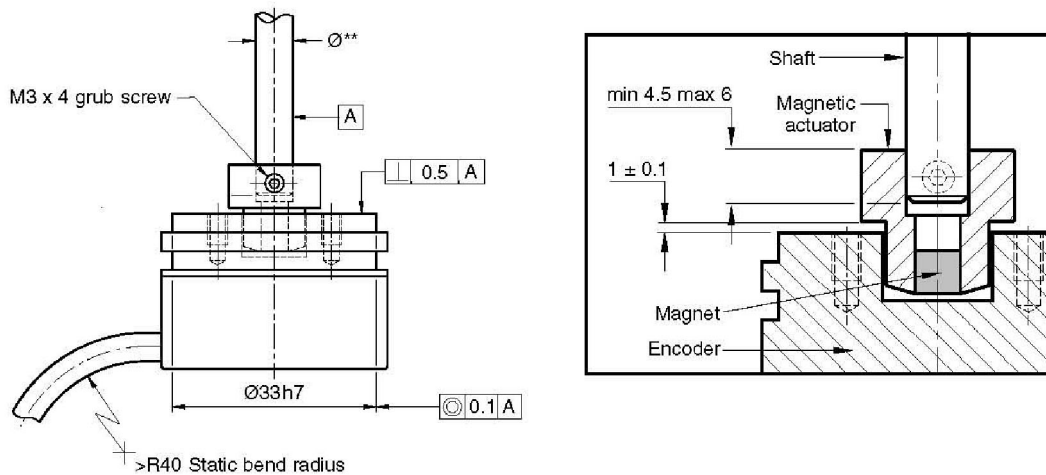
*Hole diameter for nominal shaft size.
See ordering information for available shaft sizes.



System features:

- Excellent immunity to IP68
- Non-contact, frictionless design
- High speed operation to 30,000 rpm
- 36 mm diameter body
- Industry standard absolute, incremental and linear output formats
- Binary and decimal resolution options
- Accuracy $\pm 0.3^\circ$
- Simple installation
- Low inertia

■ Installation drawing



**Nominal shaft size with tolerance h7.

■ Electrical and operating specifications

Humidity	Storage 95% maximum relative humidity (non-condensing) (IEC 61010-1) Operating 80% maximum relative humidity (non-condensing) (IEC 61010-1)
Acceleration	Operating 500 m/s ² BS EN 60068-2-7: 1993 (IEC 68-2-7:1983)
Shock non-operating	1000 m/s ² , 6 ms, ½ sine BS EN 60068-2-7: 1993 (IEC 68-2-7:1987)
Vibration operating	100 m/s ² max @ 55 to 2000 Hz BS EN 60068-2-6: 1996 (IEC 68-2-6:1995)
EMC compliance	BS EN 61326
Cable	Outside diameter 5 mm
Mass	Encoder unit 1 m cable (no connector) 85g. Magnetic actuator 12 g
Environmental sealing	IP64 (IP68 optional) BS EN 60529:1992

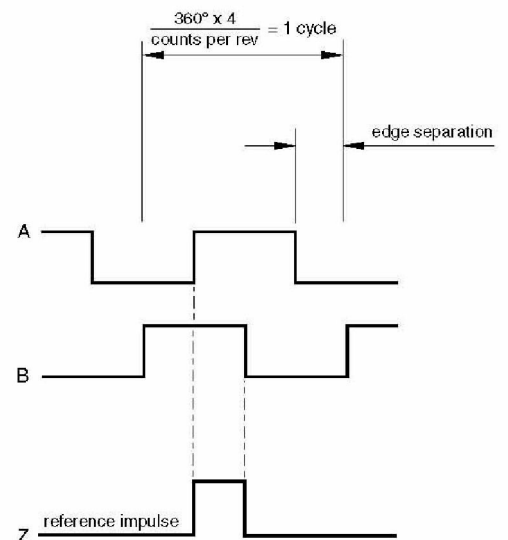
■ Output specifications - 5V supply

RM36 I - Incremental outputs

Square wave output

Power supply	5V ± 5%
Power consumption	35 mA
Output signals	A, B, Z, A-, B-, Z-
Resolution options	320, 400, 500, 512, 800, 1000, 1024, 1600, 2000, 2048, 4096 counts per revolution
Hysteresis	0.2°
Accuracy	±0.3°
Max. cable length	20 m
Connector options	9 pin D-type plug (standard) flying lead
Temperature	Operating -25°C to + 85°C Storage -40°C to + 125°C
Maximum speed	20,000 rpm (10,000 rpm - 4096 counts p. rev)
Edge separation	1µs minimum

Timing diagram



B leads A for clockwise rotation of magnetic actuator

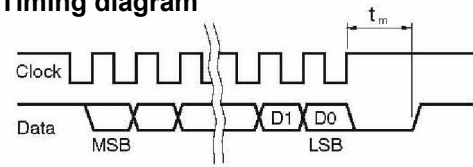


RM36 S - Binary synchro-serial interface (SSI)

Serial encoded absolute position measurement

Output code	Natural binary
Power supply	5V ± 5%
Power consumption	35 mA
Resolution options	320, 400, 500, 512, 800, 1000, 1024, 1600, 2000, 2048, 4096 positions per revolution
Hysteresis	0.2°
Accuracy	±0.3°
Repeatability	≤ 0.1 bit
Data outputs	Serial data (RS422A)
Data inputs	Clock (RS422A)
Max. cable length	100 m (at 1 Mhz)
Connector options	9 pin D-type plug (standard) flying lead
Temperature	Operating -25°C to + 85°C Storage -40°C to + 125°C
Maximum speed	20,000 rpm (18,000 rpm - 4096 counts p. rev)

Timing diagram

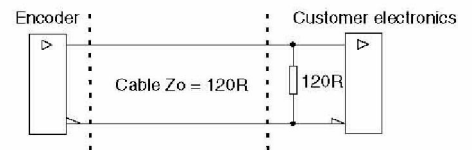


Clock = 50 kHz to 1 MHz

$t_m = 13 \mu s$ to $20 \mu s$

Recommended signal termination

(for data output lines only)



Position increases for clockwise rotation of shaft

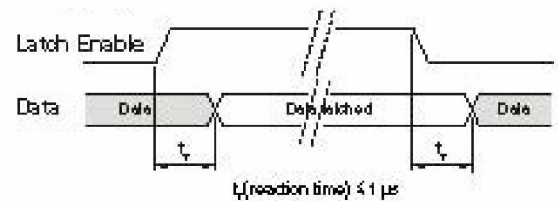
■ Output specifications - 24V supply

RM36 P - Binary parallel interface

Parallel absolute position measurement

Output code	Natural binary
Power supply	24V ± 10%
Power consumption	See table
Output voltage	$V_H > 23V$ at $I_H \leq 10mA$
Variant A	$V_L > 1V$ at $I_L < 10mA$
Resolution	9 bit (512 positions p. revolution)
Hysteresis	0.5 bit
Accuracy	± 1 bit
Output signals	D0 (LSB) - D9 (MSB)
Data inputs	LE - latch enable input signal, active high
Max. cable length	10 m
Connector options	15 pin D-type plug (standard) flying lead
Temperature	Operating -25°C to + 85°C (+70°C variant B) Storage -40°C to + 125°C

Timing diagram



Position increases for clockwise rotation of magnetic actuator

Electrical variants

Variant	Type	Power consumption	Max Load
A	Push-pull	40 mA	30mA
B	Open Collector NPN	25 mA	2mA

RM36 I - Incremental outputs

Square wave output

Power supply	24V ± 10%
Power consumption	See table
Output signals	A, B, Z, A-, B-, Z- (variant A) A, B, Z (variant B)
Resolution	128 pulses per revolution (512 counts per revolution with x4 evaluation)
Hysteresis	0.5 count (± 0.7°)
Accuracy	± 1 count (± 0.7°)
Max. cable length	20 m
Connector options	9 pin D-type plug (standard) flying lead
Temperature	Operating -25°C to + 70°C Storage -25°C to + 125°C

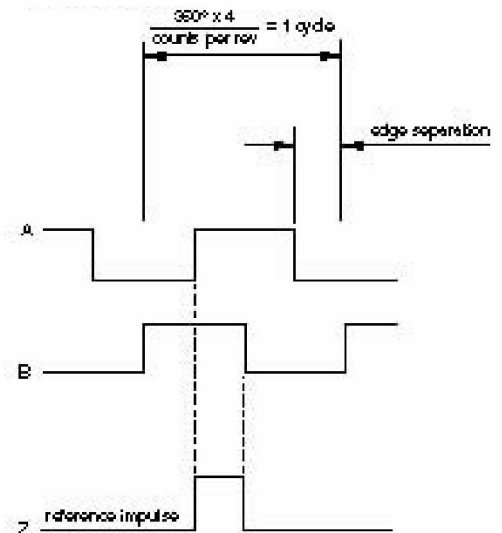
Edge separation

Variant	Ideal	Typical	Min
5,000 rpm	19.5µs	10.5µs	5µs
90,000 rpm	3.9µs	2µs	0.5µs

Electrical variants

Variant	Type	Power consumption	Max Load
A	Push-pull	40 mA	30mA
B	Open Collector NPN	25 mA	2mA

Timing diagram



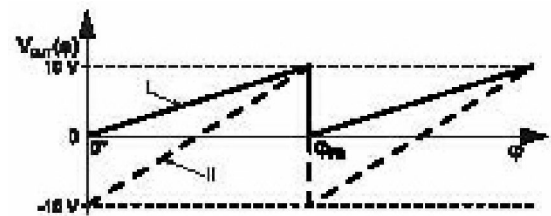
B leads A for clockwise rotation of magnetic actuator



RM36 V - Linear voltage output

Power supply	Type I: +20V to +30 V DC Type II: ±12V to ± 16 V DC
Power consumption	40 mA typical
Output voltage	Type I: 0V to 10 V DC Type II: -10V to +10 V DC
Output loading	Max 10 mA
Linearity	1%
Max. cable length	20 m
Connector options	9 pin D-type plug (standard) flying lead
Temperature	Operating -25°C to + 70°C Storage -25°C to + 125°C

Electrical output/shaft position



Voltage increases for clockwise rotation of magnetic actuator



Electrical variants

	Type I				Type II			
	360°	180°	90°	45°	360°	180°	90°	45°
ΦF8	A	B	C	D	M	N	P	Q
CW	E	F	G	H	R	S	T	V
CCW								

■ Operating and electrical specifications

Humidity (for IP64 version)	Storage 95% maximum relative humidity (non-condensing) (IEC 61010-1) Operating 80% maximum relative humidity (non-condensing) (IEC 61010-1)
Acceleration	Operating 500 m/s ² BS EN 60068-2-7: 1993 (IEC 68-2-7:1983)
Shock non-operating	1000 m/s ² , 6 ms, ½ sine BS EN 60068-2-7: 1993 (IEC 68-2-7:1987)
Vibration operating	100 m/s ² max @ 55 to 2000 Hz BS EN 60068-2-6: 1996 (IEC 68-2-6:1995)
EMC compliance	BS EN 61326
Cable	Outside diameter 5 mm
Mass	Encoder unit 1 m cable (no connector) 85g. Magnetic actuator 12 g
Environmental sealing	IP64 (IP68 optional) BS EN 60529:1992

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