ELGO ELECTRONIC

Series *RMAX1*

Magnetic Single-Turn Absolute Encoder for Angle Measurement

- Usable with round magnet type DRM-000-060-025
- Resolution of 12 bit over the entire measuring distance
- Interface: Analog 0.5 … 4.5 V or PWM f = 200 Hz
- Direct measurement at the engine shaft or the axis possible
- No abrasion due to contactless measuring principle

RMAX1 - Magnetic Single-Turn Absolute Encoder for Angle Measurement

General:

The angle measuring system RMAX1 is a combination of a sensor and a round magnet. The magnet is mounted directly on the motor shaft or axis. Therefore a very simple and quick installation is guaranteed. The RMAX1 is particularly suitable for the rotational angle measurement.

The sensor head with its high protection class is resistant against any kind of dust and dirt and wear-free. The resolution of the magnetic sensor is 12 bits resp. 4096 measuring steps over the entire measurement range. The rotary measuring system RMAX1 also offers the advantage of absolute value measurement and therefore belongs to the category of single-turn encoders.

Essential Features:

- Rotative angle measuring system
- Resolution 12 bit per revolution
- Absolute measurement
- Different interfaces available:
  analog output 0.5 ... 4.5 V or PWM output
- Direct measurement of motor shaft or axes possible
- contactless measuring principle

Round Magnet:

The round magnet has a diameter of 6 mm and a height of 2.5 mm. One of the two flat sides must be aligned to the sensor. Which one doesn't matter. Since there is no defined top side, it is irrelevant which side of the magnet is aligned to the sensor.

Note: The measuring system may only be operated with the seperate available round magnet type DRM-000-060-025.

Distance to the Magnet:

The ideal distance from the magnet to the active sensor surface of the measuring system is 1.0 mm to 3.0 mm (the magnet must have a field strength between 30 mT and 70 mT). Outside this range the accuracy cannot be guaranteed!

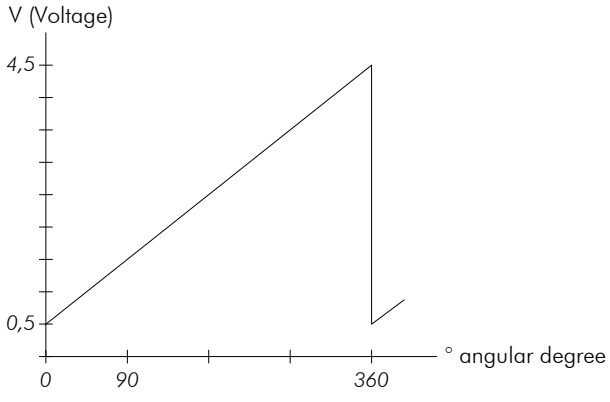
Fixing of the Magnet:

The magnet can either be glued or, for example, embedded directly in a shaft or a guide body, as long as it is made of non-magnetic steel such as stainless steel, V2A or V4A. The magnet and the bonding area must be clean and free of grease before bonding. When gluing with plastic, it is advisable to roughen it slightly beforehand with a fine sandpaper. Suitable adhesives are: LOCITIE 405 (liquid viscosity, curing in about one minute) LOCTITE 409 (gel-like viscosity, curing in about 2 minutes).

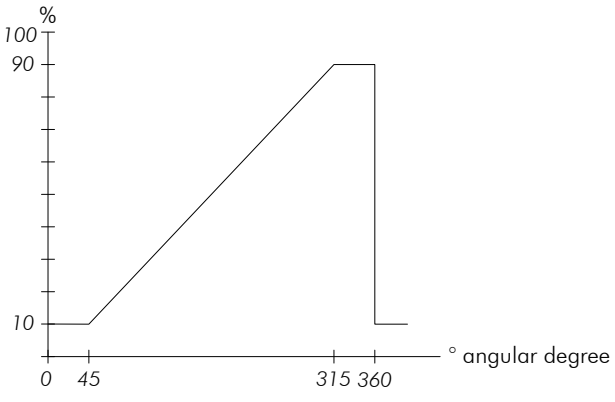
Alignment of the Magnet:

The drawing on the next page will show the correct alignment of the round magnet to the sensor. In order to guarantee a perfect function the determined position and tolerances must be exactly adhered to.

Output Diagram:



Analog output



PWM interface

RMAX1 - Magnetic Single-Turn Absolute Encoder for Angle Measurement

Technical Data:

Mechanical Data	
Measuring principle	absolute - rotative
Distance sensor - magnet	1 … 3 mm
Housing material	zinc die-cast, black
Dimensions (without cable)	L x W x H = 30 x 12.5 x 20 mm
Magnetic field strength	30 mT … 70 mT
Angle range	0 … 360° analog 0 … 270° PWM, f = 200Hz (other ranges on request)
Connection type	open cable ends (standard)
Sensor cable	1.5 m standard cable length (others on request)
Cable bending radius	min. 60 mm
Weight	approx. 40 g without cable; cable approx. 60 g per meter
Electrical Data	
Nominal voltage	+5 VDC (±100 mV)
Residual ripple	< 100 mVpp
Reverse polarity protection	without
Current consumption	analog: max. 10 mA PWM: max. 15 mA
Interfaces:	analog: 0.5 … 4.5 V PWM: f 200 Hz
Interface output protection:	no short-circuit-proof
Resolution	12 bit (4096 steps per revolution)
Conditions	
Storage temperature	−20 … +85 °C
Operation temperature	−10 … +70 °C (−25 … +85 °C on request)
Humidity	max. 95 %, non-condensing
Protection class	IP67

Type Designation:

When ordering, please use the following code:

RMAX1 - _ _ _ - _ _ . _ - _ _ _
A A A - B B . B - C C C

A Version
000 = *ELGO* standard
001 = first special version (etc.)

B Cable Length
01.5 = 1.5 m (standard length)

C Output Signal:
ANALOG = Analog output 0.5 … 4.5 V
PWM = PWM interface f = 200 Hz

Example:

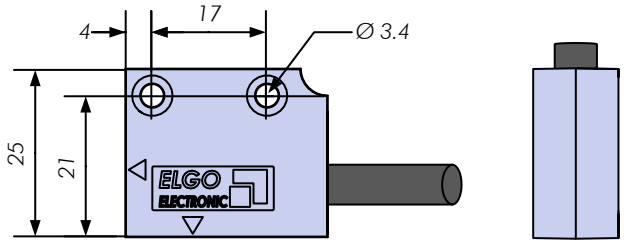
RMAX1 - 0 0 0 - 0 1. 5 - ANALOG
A A A - B B . B - C C C

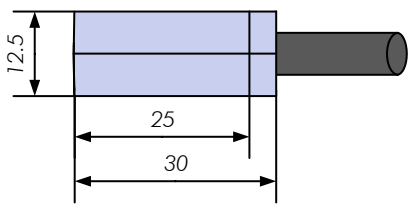
RMAX1 ELGO standard, with 1.5 m cable
and analog output 0.5 … 4.5 V

Accessories:

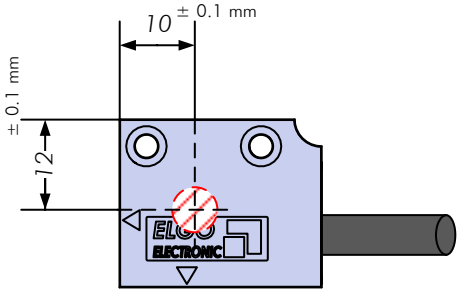
DRM-000-060-025 - round magnet ∅ = 6 mm

Dimensions:

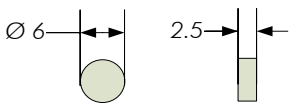




Alignment of the magnet / sensor:



Round magnet (DRM):



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