

Model SMR Series

Environmentally Resistant Linear Encoder

SMR series are the linear encoders using GMR (Giant Magneto Resistor) element. The sensor outputs A/B incremental signal according to relative movement between sensor and ferromagnetic scale of having 2mm pitch serration.

- Sensor adopts a highly-sensitive GMR element. It gives a stable output at velocity up to 15m/sec by high speed digital signal processing.
- SMR works without mechanical contact and can be used under harsh environments such as injection cylinder and die-casting machine.
- Serrated ferromagnetic scale shall be provided by customer.

Principle of operation

As described above, SMR sensor employs GMR element which shows a large change in electrical resistance according to changes of external magnetic field.

Fig.1 is a schematic view showing a full-bridge circuit consisting of 4 GMR elements. The bridge has two paired diagonal elements and sealed with resin for stable detection of external magnetic field.

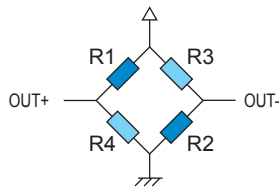


Fig.1 Full-bridge circuit with GMR elements

The GMR element is subject to constant magnetic field given by a bias magnet. When relative movement between sensor and scale occurs, the balance in bridge breaks and it generates a difference of voltage potential between median OUT+ and OUT-, where Sine/Cosine voltage change can be obtained.

Fig.2 shows an SMR block diagram, in which the built-in two pairs of GMR full-bridge are installed in order to detect 90 degree phase difference, and MR1/MR2 are placed at the distance of 1/4 pitch of scale serration.

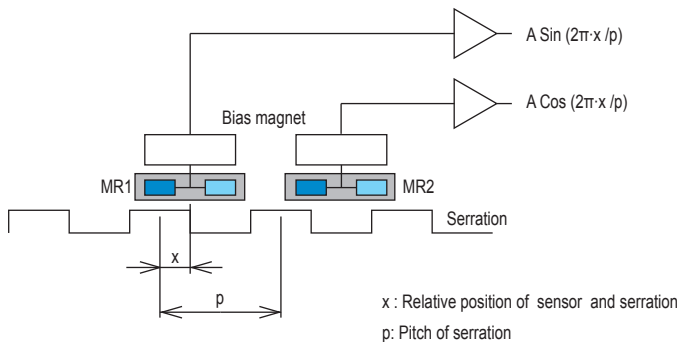
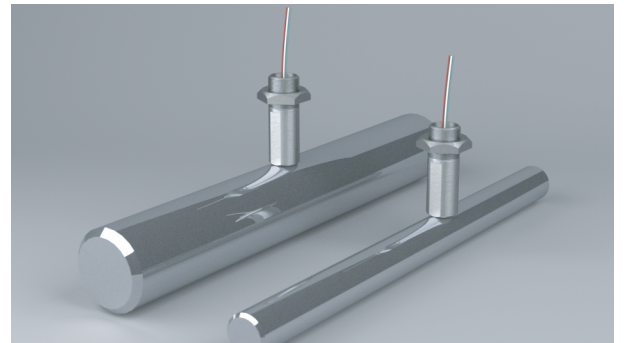


Fig.2 SMR sensor diagram



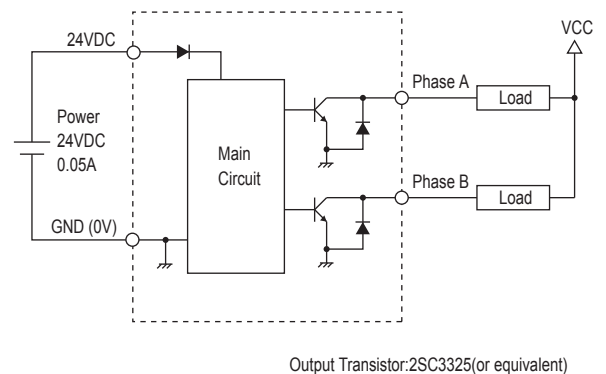
Model

SMR-70-24S

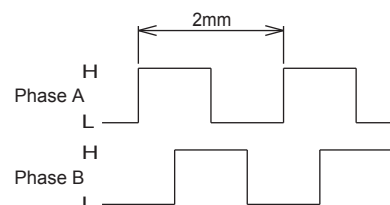
Specification

Power supply	24VDC±10% 0.05A
Resolution	0.5mm/pulse (Multiply by 4)
Output type	A/B NPN O.C. 30VDC/0.1A
Frequency	7.5kHz
Phase difference	90°±10°
Duty rate	50%±10%
Operating temp.	-20°C to 60°C
Protection	IP64

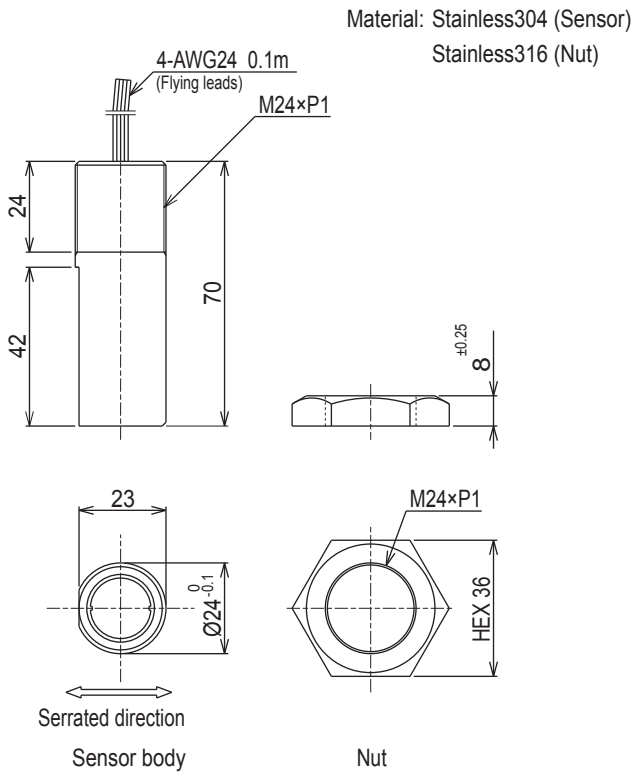
I/O circuit diagram



Output wave form



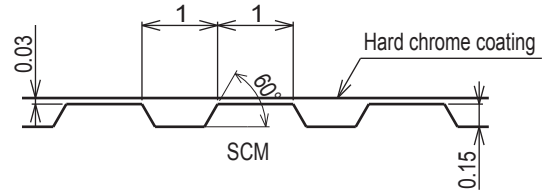
Dimensions



Connection

Name	Color	Function
24V	Red	24VDC
0V	White	GND (0V)
OUT1	Green	Phase A
OUT2	Purple	Phase B

Rod cross section (Reference)



Sensor setting conditions

Clearance (gap) between sensor and scale: less than 0.4 mm.
Sensing face of sensor must be set parallel to the face of scale.
In case of rod scale its diameter shall be larger than 30 mm.

We can customize the sensor dimensions or scale serration.
Please consult us.

It makes Technological Sense

STC SANTEST

1-60 Tsuneyoshi 1 Chome, Konohana-ku, Osaka 554-8691, Japan
TEL. +81 (6) 6465-5561 FAX. +81 (6) 6465-5921

The contents of description might be changed for improvement without prior notice.