

## Dual Differential Magneto-resistive Sensor CY-SMR-04

### Features

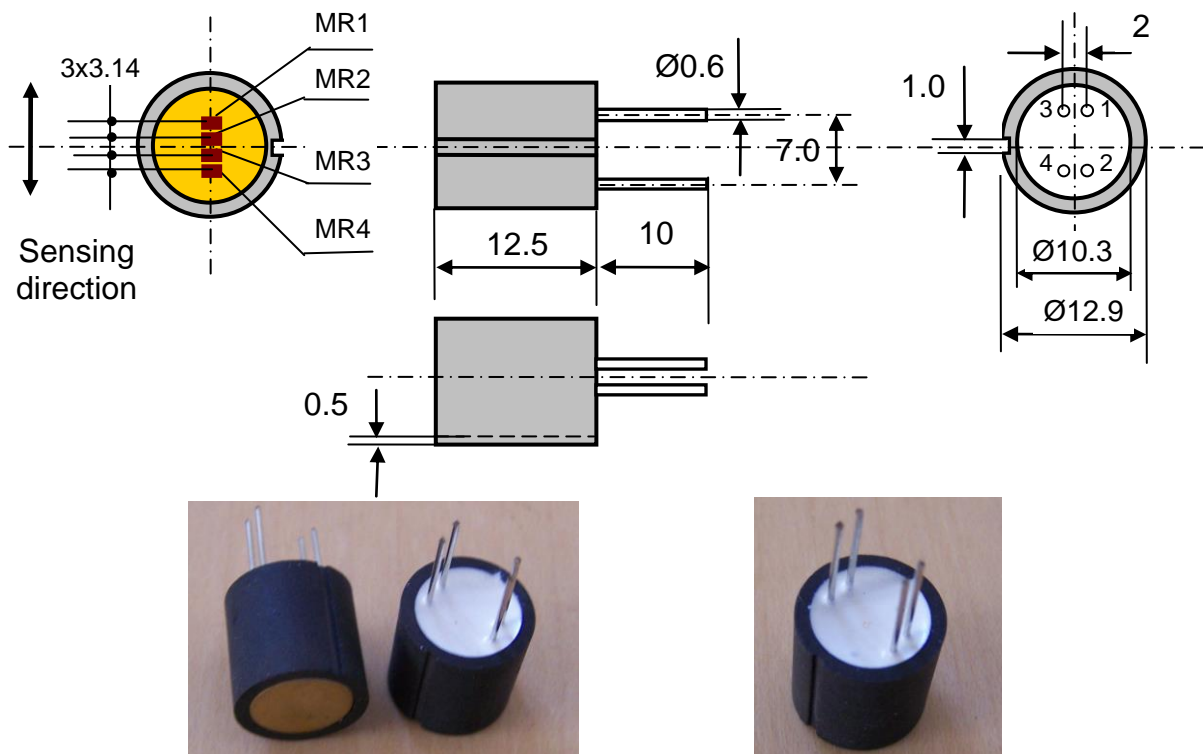
- The gear rotation direction can be detected by monitoring the phase shift direction of the two output signals A and B
- Wide sensing range, detecting frequency range 0 ~ 100kHz
- Good Signal-to-Noise ratio, high resolution, high sensitivity
- Contactless measurement, easy to use

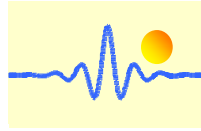
### Typical applications

- Detection of gear rotation speed and direction in factory automation equipments
- Detection of the direction of linear motion servo
- Motor controller for vehicles
- Measurement of needle position in industrial knitting machines

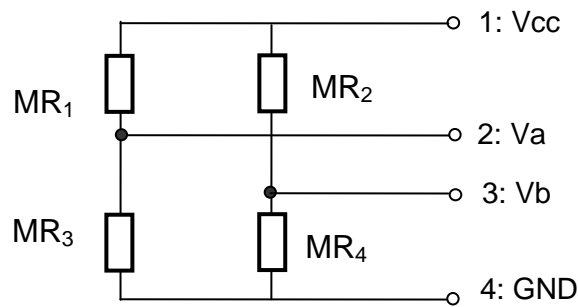
The differential magneto-resistive sensor CY-SMR-04 consists of two groups of two series coupled magneto resistors (D-type InSb/NiSb semiconductor resistors whose value can be magnetically controlled). The magneto resistors are mounted onto an insulated ferrite substrate. The sensor is encapsulated in a metallic and plastic package and has 2 output signals. The phase shift between the two output signals is 90°. A permanent magnet, which supplies a biasing magnetic field, is fixed on the base of the sensor.

### Outlines

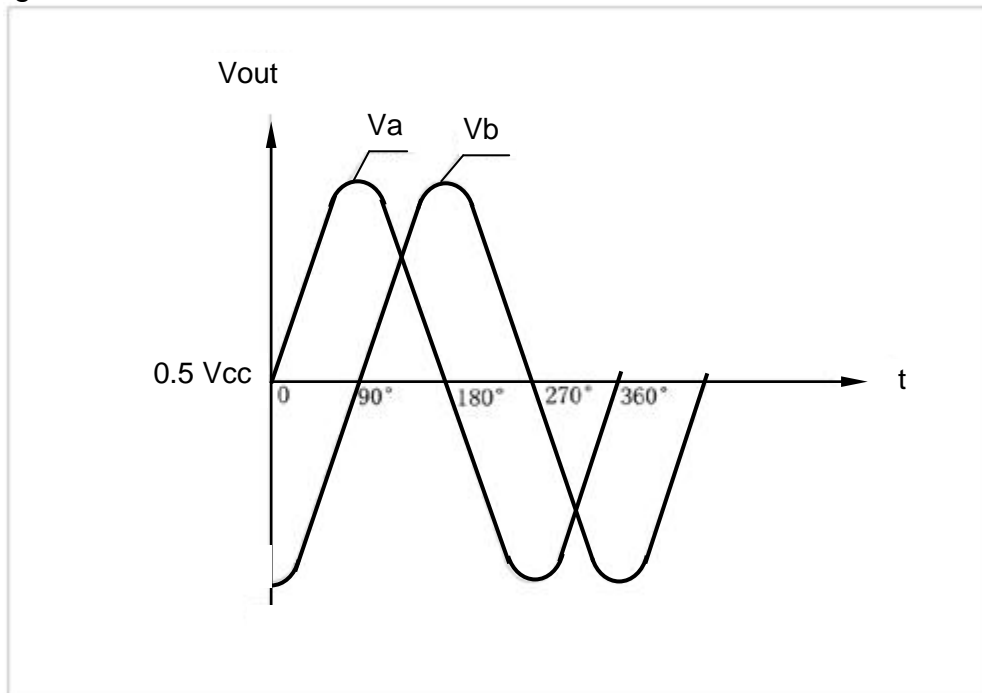




### Inner Circuit



### Output Signal Wave



### Specifications

Maximum power supply $V_{max}$	10V DC
Nominal power supply	5V DC
Total resistance $R_{14}$ ( $\delta=\infty$ , $I \leq mA$ , $t=25^\circ C$ ) $R_{14} = (MR_1+MR_3) \times (MR_2+MR_4) / (MR_1+MR_2+MR_3+MR_4)$	0.5k $\Omega$ –3k $\Omega$
Center symmetry $M=100\%$ ( $R_{1-2}-R_{2-3}$ )/ $R_{1-2}$ ( $\delta=\infty$ )	$\leq 10\%$
Open circuit output voltage $V_{out,pp}$ (at $V_{in}$ and gap $\delta=0.15mm$ )	$\geq 450mV$
Frequency range	0-100kHz
Target Gear Modulus	0.4mm
Phase difference between two output signals Va and Vb	$90^\circ \pm 10^\circ$
Operating temperature	-20 $^\circ C$ ~ +80 $^\circ C$
Storage temperature	-40 $^\circ C$ ~ +85 $^\circ C$

### Part number

Part number	Case style	Outline	Cross reference
CY-SMR-04	Cylinder	$\varnothing 12.9 \times 12.5mm$	MuRata FR05CM12AL