Model MGA-FN501MC/FS501MC High-sensitivity Digital/Analog Output Electromagnetic Guide Sensor

Model List	Detection Polarity
MGA-FN501MC	N pole
MGA-FS501MC	S pole

Application

- Automatic guided vehicles guidance

Features

- Three selectable modes: straight line, right turnout and left turnout.
- Analog output proportional to the deviation between the guide tape and the automatic guided vehicle (AGV).
- Output a signal when the automatic guided vehicle (AGV) leave the guided tape line.

Rating/Performance

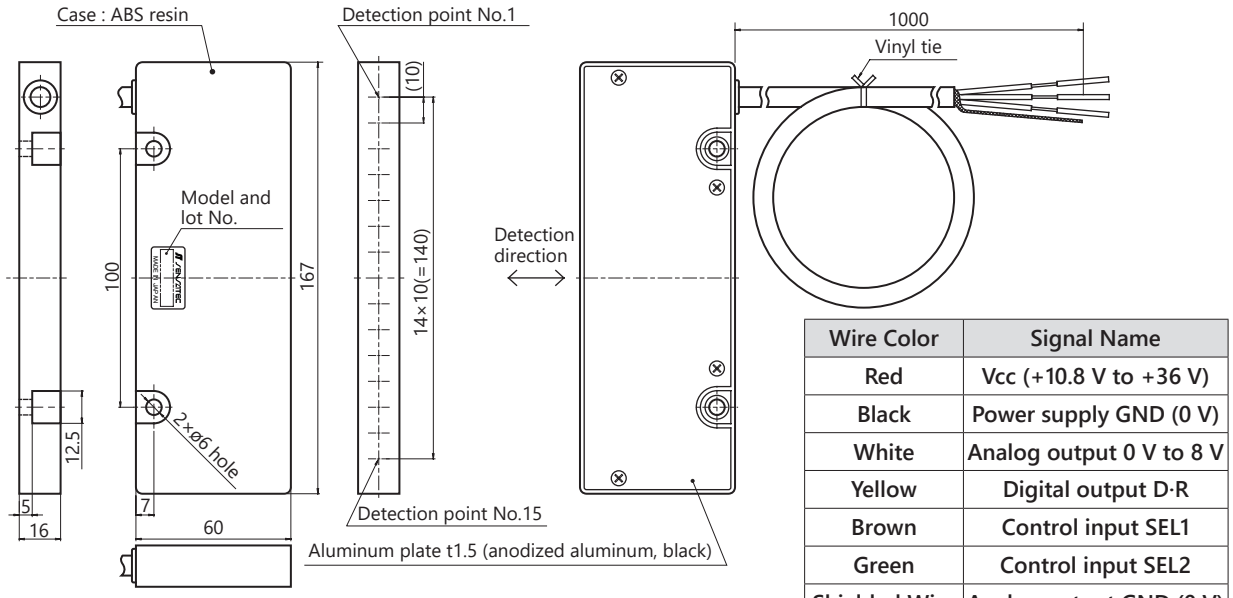
Model	MGA-FN501MC	MGA-FS501MC
Detection Surface	Front side detection	
Detection Sensitivity	500 μT ± 100 μT (Based on rubber plate magnet 30 x 30 mm and 1.5 mm in thickness)	
Detection Polarity	N pole	S pole
Reference Detection Distances	47 mm (The MG50-1 series)	
Operating Set Distance	5 to 35 mm (The MG50-1 series)	
Power Voltage	10.8 V to 36 V DC or less than, ripple 5 % or less	
Power Consumption	140 mA DC or less (At 12 V DC), 80 mA DC or less (At 24 V DC)	
Output	Analog output: 0 V to 8 V DC, output impedance 10 Ω, allowable load resistance 2 kΩ or more Digital output : NPN transistor open collector 30 V DC, 50 mA DC or less	
Output Residual Voltage	Digital output 0.5 V DC or less (Load current 50 mA DC)	
Derailment Alarm Output	"H" output when D·R, Analog output 0 V DC	
Number of Detection Points / Pitch	15 point / 10 mm	
Response Time	5 ms or less	
Hysteresis	30 μT or less (Based on rubber plate magnet 30 x 30 mm and 1.5 mm in thickness)	
Temperature Range	-10 to 60 °C (-20 to 70 °C during storage) (Without dew condensation or freezing)	
Humidity Range	95 % RH or less (95 % RH or less during storage) (Without dew condensation)	
Breakdown Voltage	500 V AC, 50/60 Hz for 1 min (Between live parts and the case)	
Insulation Resistance	100 MΩ or more, at 500 V DC megger (Between live parts and mountings)	
Vibration Resistance	Durability: 10 to 55 Hz, Double amplitude: 1.5 mm in X-, Y-, and Z-direction, each 2 hours (Device not powered)	
Shock Resistance	Durability: 500 m/s^2 (Approx. 50 G) in X-, Y-, and Z-direction, each 3 times (Device not powered)	
Ingress Protection	IP67 (When fixed so that the cable lead out is free from mechanical load or bending)	
Case Material	Case: ABS, Aluminum plate 1.5 mm in thickness (Anodized aluminum, black)	
Cable	ø7.2, 6-core (shielded strands) round cord of 0.5 mm^2 and 1 m in length (Oil resistant) and insulation 1.8 mm (Oil resistant)	

Branch Control

SEL 1	L	L	H	H
SEL 2	L	H	L	H
Mode	Straight mode	Right branch mode	Left branch mode	Disabled

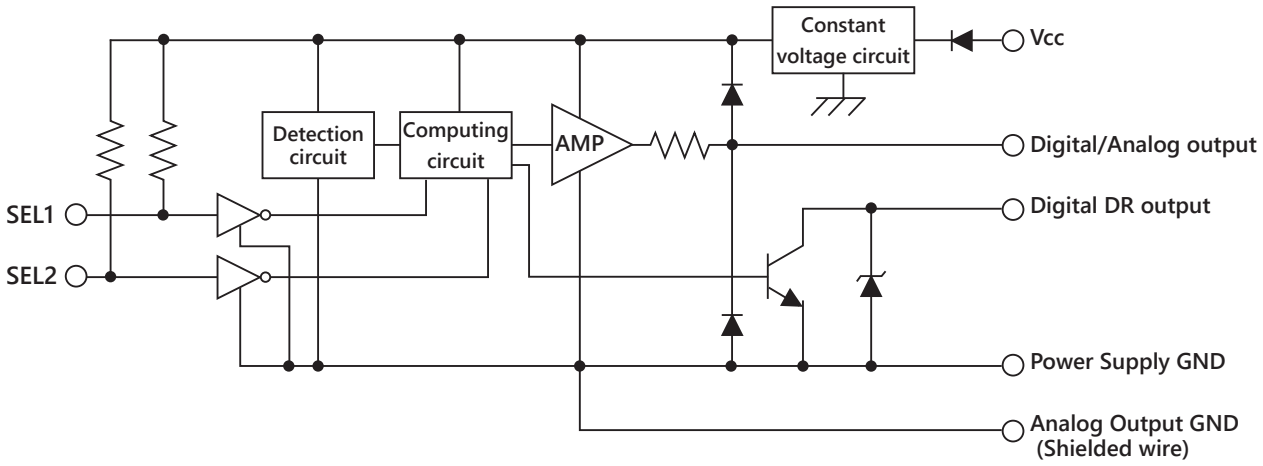
L = 0 V connection , H = Terminal open

Dimensions



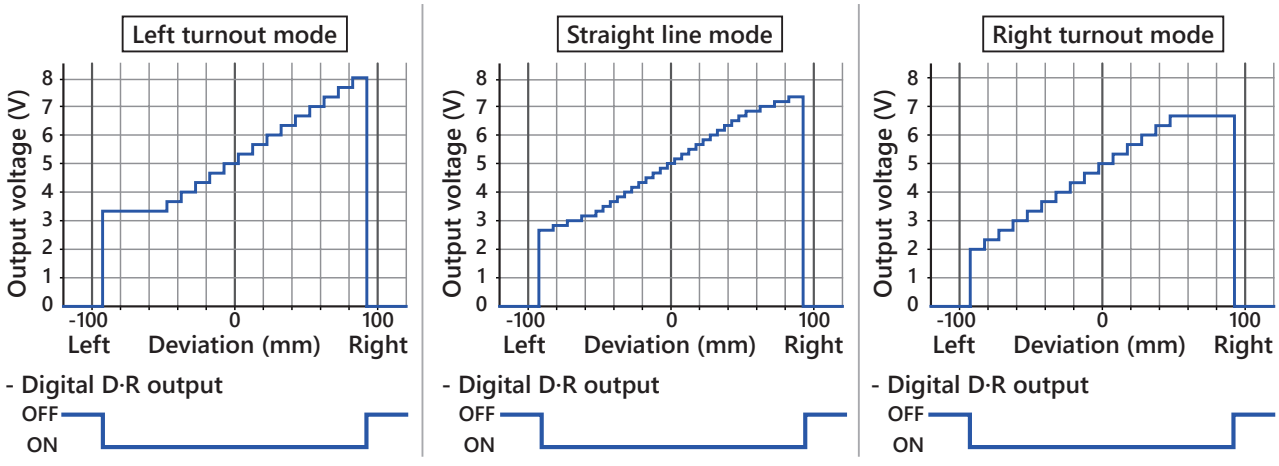
Wire Color	Signal Name
Red	Vcc (+10.8 V to +36 V)
Black	Power supply GND (0 V)
White	Analog output 0 V to 8 V
Yellow	Digital output D·R
Brown	Control input SEL1
Green	Control input SEL2
Shielded Wire	Analog output GND (0 V)

Output Circuit



Output Voltage Variation Characteristics (Typical Example)

Analog voltage output level and digital D·R output



Deviation output characteristics and gate output characteristics (with MG50 and operation distance of 30 mm)

Precautions During Use

1. For precautions, refer to “General Precautions” for electromagnetic sensor for automatic guided vehicles .

* For a detailed specification of the other, please refer to specifications.