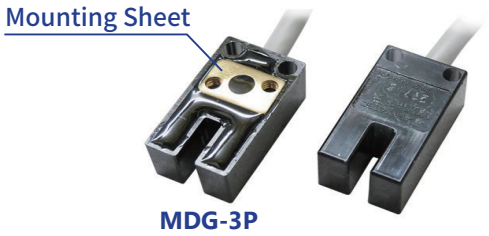
Model MDG-3 High Speed Response Groove(U) Type Inductive Sensor



MDG-3P

Model List	Operation Status	Mounting Sheet
MDG-3	Normally open	None
MDG-31	Normally closed	None
MDG-3P	Normally open	Mounting Sheet
MDG-31P	Normally closed	Mounting Sheet

Application

- Detection of coins for ATM and vending machines
- Rotational speed detection using a metal sheet gear
- Detection of tokens of amusement equipment
- High frequency pulse generation

Features

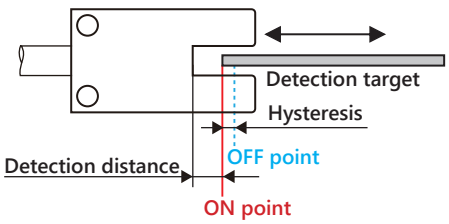
- The inductive sensor has an open collector output for simple operation.
- Detects the passage of all types of metals, tokens and coins.
- Perfect to detect the number of rotations of metal sheet slitters or gears.
- Supports high-speed detection.
- The unit is equipped with a LED display for clear indication of operation status.

Rating/Performance

Model	MDG-3	MDG-3P	MDG-31	MDG-31P
Detection Groove Width	3 mm			
Detection Distance	* 4 mm ± 1.0 mm (Detection target and the bottom of the sensor groove)			
Standard Detection Target	Aluminum sheet of 10 × 10 mm and 1 mm in thickness			
Set Distance	*2.5 mm or less			
Hysteresis	*0.5 mm or less			
Power Supply Voltage	5 V to 24 V DC (Operating voltage range : 4.5 V to 28 V DC)			
Current Consumption	10 mA DC or less			
Output	NPN transistor open collector 30 V DC, 50 mA DC or less			
Output Residual Voltage	0.4 V DC or less (Load current 50 mA DC)			
Operation Status	Normally open (ON output when detecting)		Normally closed (OFF output when detecting)	
Operation Indicator	Red LED (Lit when the output is ON)			
Response Frequency	5 kHz or more(At 1 mm away from the bottom of sensor concave groove under the condition of the detection body; Tooth thickness : 5 mm or more, Width of tooth space : 5 mm or more, Thickness : 1 mm)			
Temperature Range	-10 to 60 °C (-20 to 65 °C storage temperature range) (Without dew condensation or icing)			
Humidity Range	95 % RH or less (85 % RH storage humidity range) (Without dew condensation)			
Dielectric Strength	500 V AC for 1 minute (Between the live part and case)			
Insulation Resistance	50 MΩ or more at 500 V DC megger (Between the live part and case)			
Vibration Resistance	10 to 55 Hz, 1.5 mm double amplitude in X, Y and Z directions for 2 hours each (at power off)			
Shock Resistance	500 m/s^2 (Approx. 50 G) in X, Y and Z directions 10 times each (at power off)			
Protection	IP67			
Case Material	Polyarylate			
Cable	Cable : ø4, 3-core round cord of 0.15 mm^2 and insulation 1.1 mm and 1 m in length (Oil and heat resistant vinyl)			
Weight	Approx. 28 g	Approx. 30 g	Approx. 28 g	Approx. 30 g

*Detection distance : See Detection distance conditions on the next item.

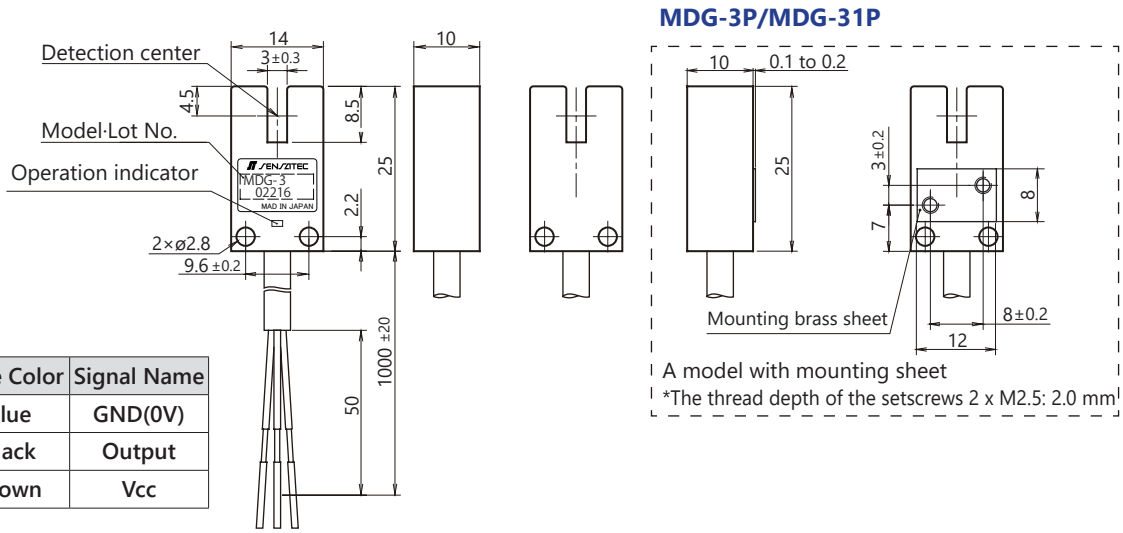
Detection Distance Conditions



- Insert the standard detection target at the center of the detection sensor groove to measure.

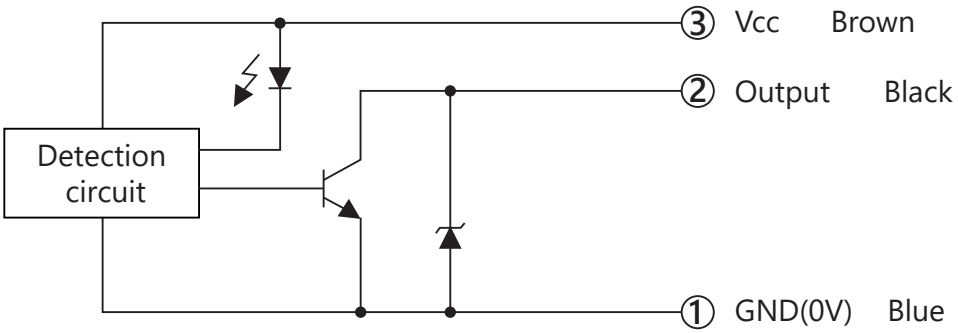
Standard detection target : Aluminum sheet of 10 × 10 mm and 1 mm in thickness
Detection distance: Distance from the sensor ON point to the groove bottom surface
Hysteresis: Distance between the ON point and the OFF point

Outline Dimensions



Wire Color	Signal Name
Blue	GND(0V)
Black	Output
Brown	Vcc

Output Circuit

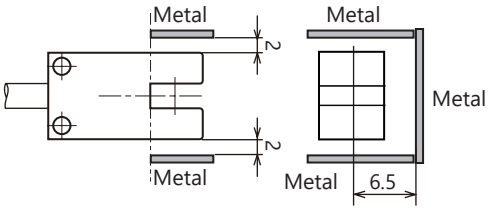


*Because there is no reverse connection protection diode built-in, pay careful attention to the polarity of the power supply.

Precautions During Use

Influence of surrounding metal

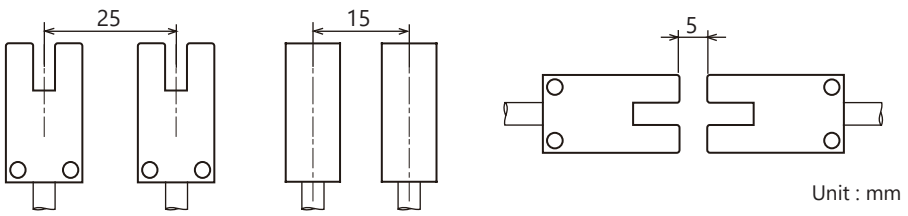
- If there are metal objects around the inductive sensor, leave at least the space indicated in the figure below between them and the sensor.
  The parts other than the detection groove can be in close contact.



Unit : mm

Mutual interference

- If you use a number of the same product, separate them at least by the distances shown in the figure below to prevent reciprocal interference.



Unit : mm

Mounting

- Always use plain washers to tighten the case and use a torque of 0.4 N·m or less.

* For other precautions, refer to “General Precautions” for inductive sensors.