Model MDS-12U High-sensitivity Inductive Sensor

Model List	Operation Status	Frequency
MDS-12U	Normally open	Standard
MDS-12UB		Different
MDS-12U1	Normally open	Standard
MDS-12U1B		Different

Application

- Magnetic metal detection
- Slot tokens detection
- Detection of pachinko balls
- Detection of coins
- Detection of tokens level
- Detection of pachinko balls level

Features

- Supplied with a harness and a connector for easy wiring.
- The indctive sensor has an open collector output for simple operation.
- External light, dirt and dust do not affect operation.
- Perfect for metal and other detections such as pachinko balls, medals and level detection with its long detection distance.

Rating / Performance

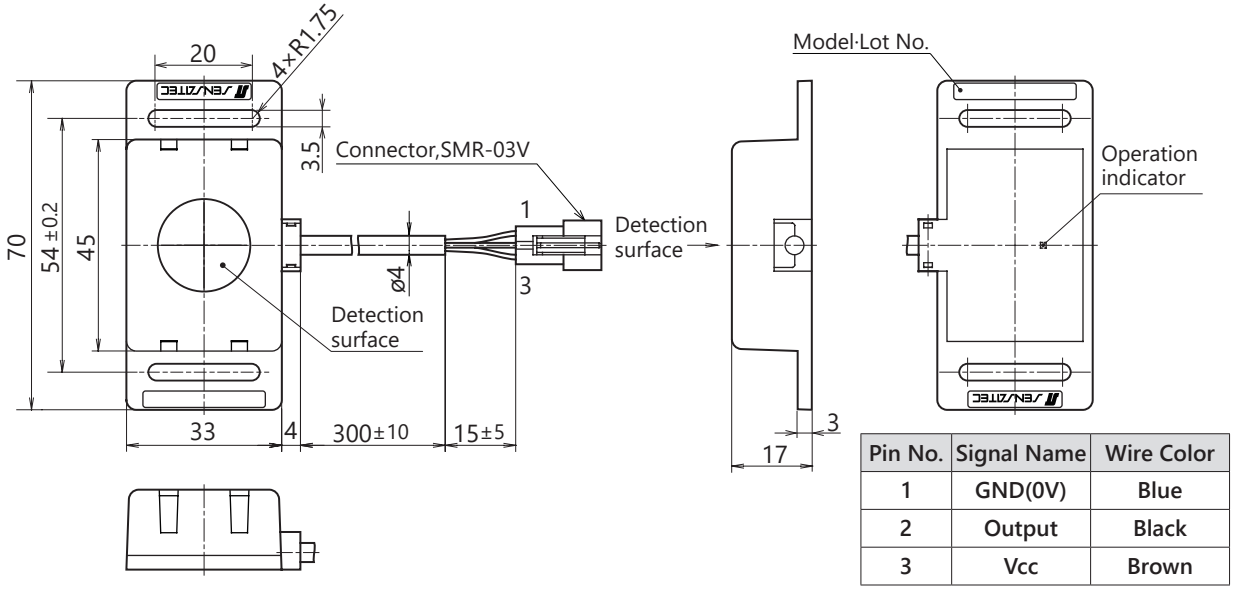
Model	MDS-12U	MDS-12U1
Detection Surface	Upper side detection	
Detection Distance	12 mm ± 10 % (With detection target of iron sheet of 50 × 50 mm and 1 mm in thickness)	
Hysteresis	15 % or less of the detection distance	
Set Distance	0 to 9.5 mm	
Power Supply Voltage	12 V to 24 V DC (Operating voltage range : 10.8 V to 26.4 V DC)	
Current Consumption	9 mA DC or less	
Output	NPN transistor open collector 30 V DC, 100 mA DC or less	
Output Residual Voltage	1 V DC or less (When load current is 100 mA DC and a 1-meter cord)	
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 ms or less	
Temperature Range	-10 to 55 °C (-25 to 70 °C storage temperature range)(Without dew condensation or icing)	
Humidity Range	35 to 85 % RH (35 to 90 % RH storage humidity range)(Without dew condensation)	
Dielectric Strength	1000 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 3 times each (at power off)	
Protection	IP50	
Case Material	ABS resin	
Cable	ø4, 3-core round cord of 0.2 mm^2 and insulation 1.1 mm and 315 mm in length (with connector)	
Connecter	SMR-03V (3-pin) (from J.S.T. Mfg. Co., Ltd.) Connection : Housing: SMP-03V, Contact: SYM-001T-P0.6 (from J.S.T. Mfg. Co., Ltd.)	
Weight	Approx. 37 g	

Typical Operating Sensitivity

Detection target	Operation distance	Detection target	Operation distance
Stainless token	8.0 mm	Golden nickel silver token	4.7 mm
Dye cast token	7.8 mm	Brass kirinsu token	4.9 mm
Bimetal token	7.4 mm	Gold plated token	4.9 mm
Nickel silver token	6.2 mm	Pachinko ball (Front side)	9.6 mm
Nickel token	4.7 mm	Pachinko ball (× 1)	5.9 mm

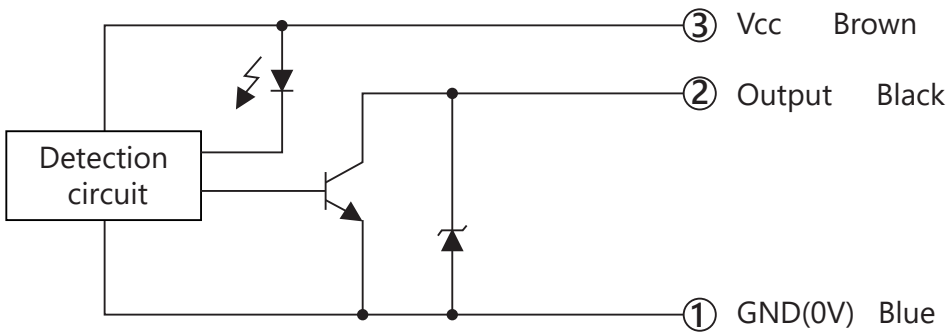
*Take 70 % of the reference values when using the sensor in real conditions.

Outline Dimensions



Pin No.	Signal Name	Wire Color
1	GND(0V)	Blue
2	Output	Black
3	Vcc	Brown

Output Circuit

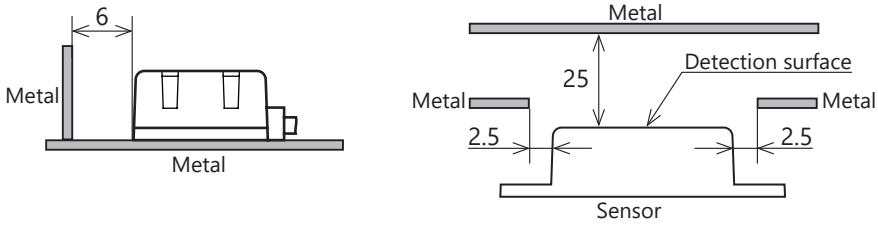


*Because there is no reverse connection protection diode built-in, pay careful attention to the polarity of the power supply.

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.

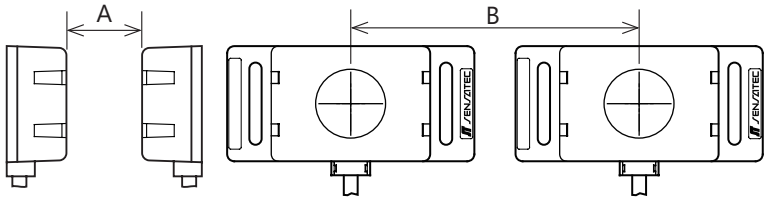


Unit : mm

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. (Sensors with a different frequency are indicated with a B after the model name.)

* When using an extension cord, always use a 3-core round isolated vinyl cord of 0.5 mm² or more and a maximum of 200 m in length. (Metallic raceway presupposed.)



	Same frequency	Different frequency
A	200 mm	90 mm
B	200 mm	45 mm

Mounting

- Tighten the case with a torque of 0.5 N·m or less. (Please attached using a flat washer always)

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