

# Model MDS-10U High-sensitivity Proximity Sensor



Model List	Operation Configuration	Frequency
MDS-10U	Normally open	Standard
MDS-10UB		Different
MDS-10U1	Normally open	Standard
MDS-10U1B		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 proximity 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

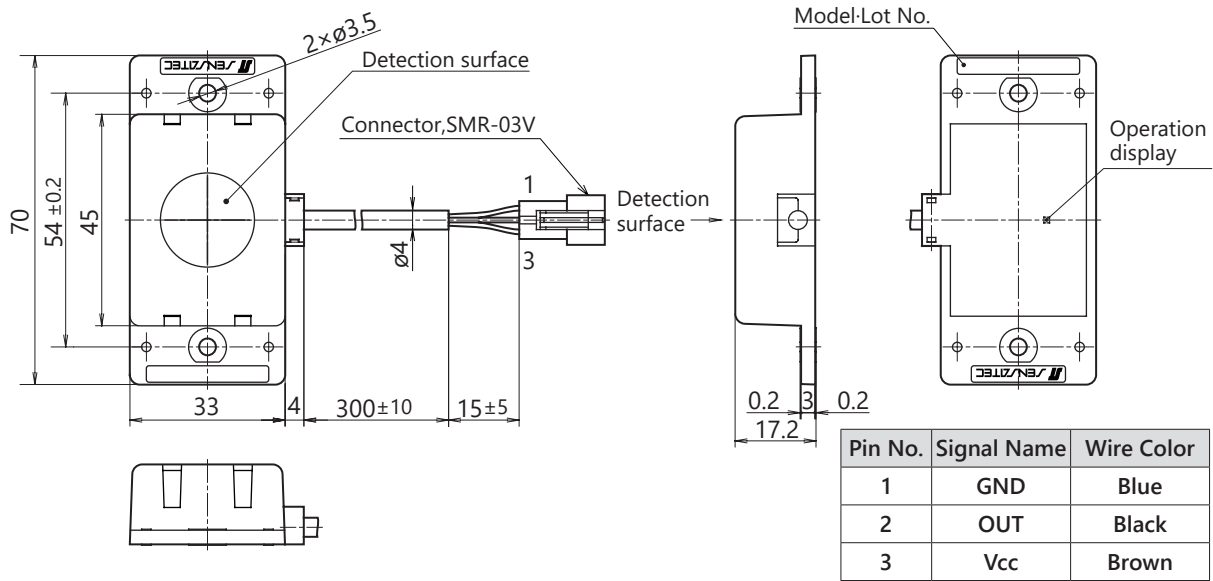
Model	MDS-10U	MDS-10U1
Detection Surface	Upper side detection	
Detection Distance	12 mm $\pm$ 10 % (With detection target of iron plate of 50 x 50 mm and 1 mm in thickness)	
Hysteresis	15 % or less of the detection distance	
Power Voltage	12 V to 24 V DC (Operating voltage range: 10.8 V to 26.4 V DC)	
Power 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 (Load current 100 mA DC)	
Operation Status	Normally open (On output with detection target)	Normally closed (Off output with detection target)
Operation Indication	Red LED (Lit when On output)	
Response Frequency	5 ms or less	
Temperature Range	-10 to 55 °C (-25 to 70 °C during storage)(Without dew condensation or freezing)	
Humidity Range	35 to 85 % RH (35 to 90 % RH during storage)(Without dew condensation)	
Breakdown Voltage	1000 V AC, 50/60 Hz for 1 min (Between live parts and the case)	
Insulation Resistance	50 M $\Omega$ or more, at 500 V DC megger (Between live parts and the case)	
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 <sup>2</sup> (Approx. 50 G) in X-, Y-, and Z-direction, each 3 times (Device not powered)	
Ingress Protection	IP50	
Case Material	ABS resin	
Cable	$\phi$ 4, 3-core round cord of 0.2 mm <sup>2</sup> and 315 mm in length (with connector)	
Connector	SMR-03V (3-pin) (from J.S.T. Mfg. Co., Ltd.) [Connections] Housing: SMP-03V, Contact: SYM-001T-P0.6 (from J.S.T. Mfg. Co., Ltd.)	
Weight	Approx. 37 g	

## Reference Operating Sensitivity

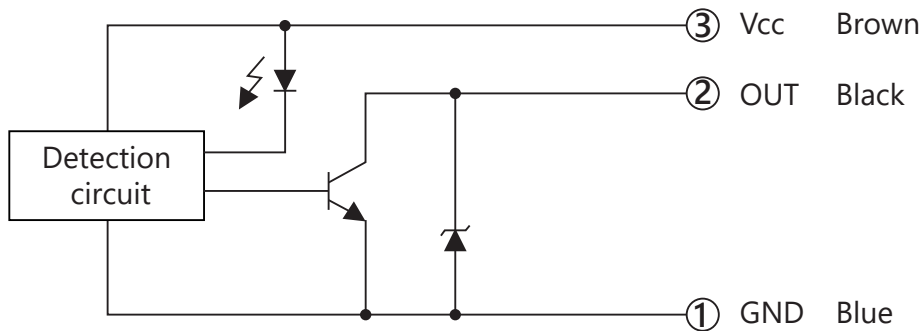
Detection target	Operation distance	Detection target	Operation distance
Stainless token	8.0 mm	Golden nickel silver token	4.7 mm
Dye cast token	7.8 mm	Brass kirinsu token	4.9 mm
Bimetal token	7.4 mm	Gold plated token	4.9 mm
Nickel silver token	6.2 mm	Pachinko ball (Front side)	9.6 mm
Nickel token	4.7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

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

## Dimensions



## Output Circuit

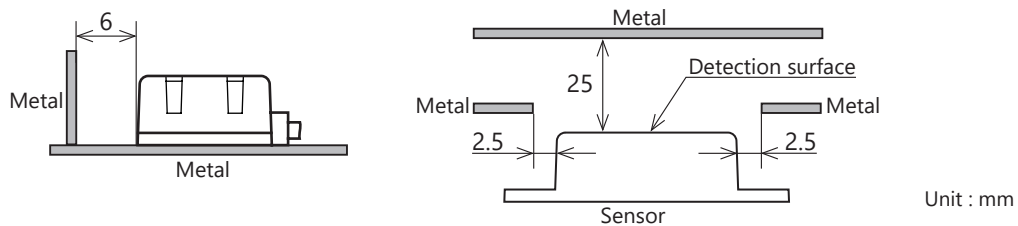


\*Because there is no reverse connection protection diode built-in, pay careful attention to the polarity of the power supply.

## Precautions During Use

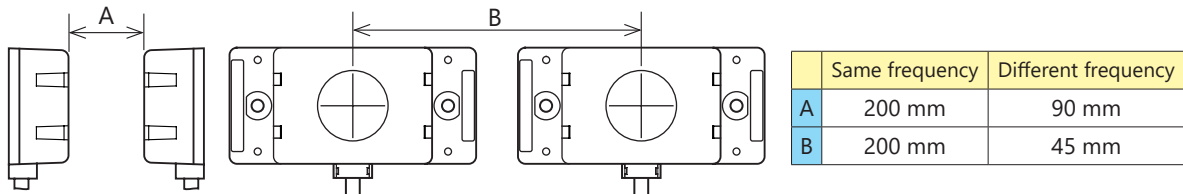
### Influence of surrounding metal

- If there are metal objects around the proximity sensor, leave at least the space indicated in the figure below between them and the sensor.



### Mutual interference

- If you use two or more 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 mm<sup>2</sup> or more and a maximum of 200 m in length. (Metallic raceway presupposed.)



## Installation

- 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 proximity sensors.