

Model **MDE-C10** Inductive Detection Sensor for All Metals



Model List	Operation Status	Frequency
MDE-C10	Normally open	Standard
MDE-C10B		Different
MDE-C101	Normally closed	Standard
MDE-C101B		Different

Application

- Detection of brass, copper or aluminum coins such as those used in ATMs
- Detection of vending machine coins and non-magnetic metal cans
- Level detection of magnetic steel balls and non-magnetic metal balls
- Detection of tokens

Features

- It is possible to extend the detection distance even for non-magnetic metals such as aluminum and copper.
- A detection distance of 8.5mm can be obtained with 1-yen coin (aluminum).
- Any metal can be detected.
- Maintenance is straightforward due to the connector type.

Rating/Performance

Model	MDE-C10	MDE-C101
Detection Surface	Upper side detection	
Detection Distance	10 mm ± 10 % (With detection target of Aluminium of 40 × 40 mm and 1 mm in thickness)	
Set Distance	8.0 mm	
Hysteresis	15 % or less of the detection distance	
Power Supply Voltage	12 V to 24 V DC (Operating voltage range : 10.8 V to 26.4 V DC)	
Current Consumption	15 mA DC or less	
Output	Nch MOSFET open drain 30 V DC, 100 mA DC or less	
Output Residual Voltage	0.5 V DC or less (100 mA DC)	
Operation Status	Normally open (ON output when detecting)	Normally closed (OFF output when detecting)
Response Frequency	400 Hz or more	
Temperature Range	-10 to 60 °C (-25 to 65 °C storage temperature range) (Without dew condensation or icing)	
Humidity Range	85 % RH or less (85% RH or less storage humidity range) (without dew condensation)	
Circuit Protection	With reverse polarity connection protection diode, With output surge absorption diode	
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 3 times each (at power off)	
Protection	IP50	
Case Material	ABS resin (Blue)	
Connector	Connector : S3B-PH-SM4-TB (3-pin) (from J.S.T. Mfg. Co., Ltd.) [Connections]Housing : PHP-3, Contact: SPH-002T-P0.5S (from J.S.T. Mfg. Co., Ltd.)	
Weight	Approx. 15 g	
Options (Sold Separately)	Connector harness : CNH-PHR03S24-300	

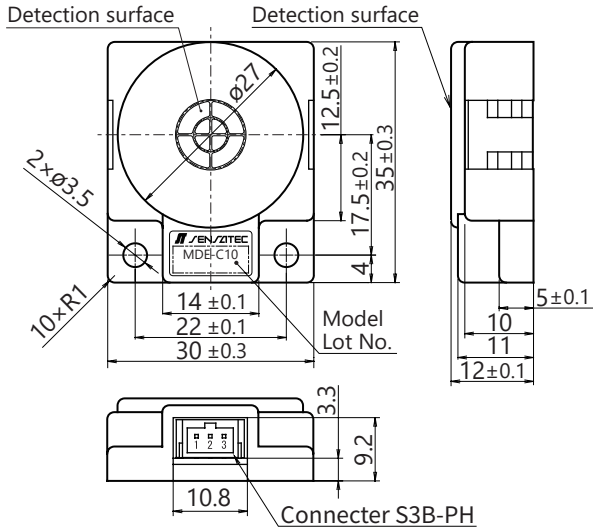
Coin Detection Distance

Coin	Typical Detection Distance (mm)
1-yen coin	7.8
5-yen coin	8.0
10-yen coin	8.1
50-yen coin	7.8
100-yen coin	7.9
500-yen coin	8.4

Detection Sistance of The Pachinko-slot Token (ø25 × t=1.6)

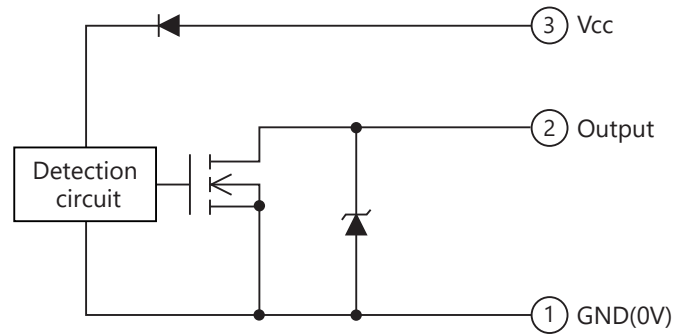
Medal	Typical Detection Distance (mm)
Stainless	8.1
Brass nickel honed	8.1
Brass honed with surface-cleaning process using sulfuric acid	8.2
Super gold	8.1
Royal gold	8.2
Nickel silver	8.1
Super silver	8.1
Hi-gold (Brass)	8.1
BS collar	8.2
SUS fine cut	8.1

Outline Dimensions



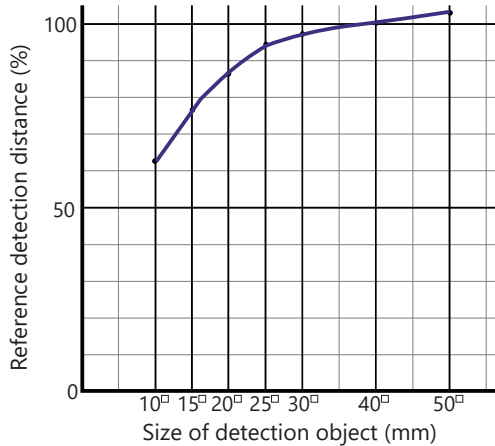
Pin No.	1	2	3
Signal Name	GND(0V)	Output	Vcc

Output Circuit



Change in Detection Distance Depending (Typical)

Change of detection distance depending on the size of the detection object



If the detection object is smaller than the standard detection object or if it is made of non-ferrous metal, the detection distance will decrease. Carry out testing to confirm suitability.

Change in detection distance depending on the detection object material

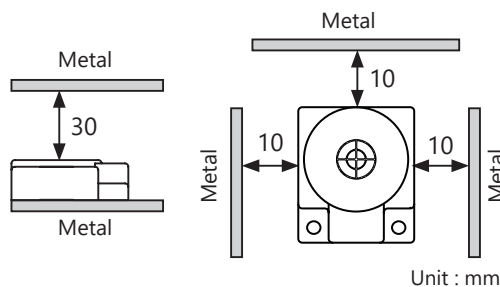
Material	Typical detection distance ratio [%]
Aluminum	100
Steel	93
Copper	100
Brass	100
SUS304	99
SUS430	88

The detection distance will change according to the detection object material; carry out testing to confirm suitability.

Precautions During Use

Influence of surrounding metal

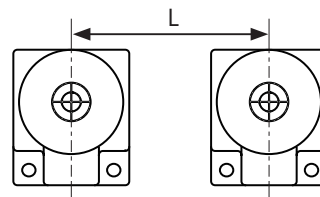
If there are metals present near the inductive sensor, keep them away from and beneath the plane of the sensor detection surface at a minimum of the values specified in the figure below.



Use the sensor carefully so as not to contact the front surface of the detection target.

Mutual interference

When a number identical sensors are used, observe the minimum values shown in the figure below to prevent mutual interference. (The different frequency model type has "B" at the end of its model designation.)



	Same Frequency	Different Frequency
L	100 mm	40 mm

Mounting

- Always use plain washers to tighten the case and use a torque of 0.5 N·m or less.
- * For other precautions, refer to "General Precautions" for inductive sensors.