Model MDE-F25U Inductive Detection Sensor For All Metals

Model List	Operation Status	Frequency
MDE-F25U	Normally open	Standard
MDE-F25UB		Different
MDE-F25U1	Normally closed	Standard
MDE-F25U1B		Different

Application

- Magnetic metal detection
- Nonmagnetic metallic object detection

Features

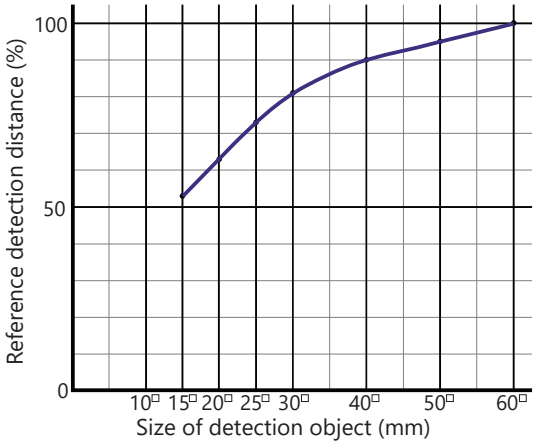
- Even with nonmagnetic materials such as aluminum, increased detection distance is now possible.
- With a molded casing, the sensor can be safely used in the presence of liquid water.
- No malfunctions can occur due to extraneous light, dust, etc.

Rating/Performance

Model	MDE-F25U	MDE-F25U1
Detection Surface	Upper side detection	
Detection Distance	25 mm ± 10 % (With detection target of Aluminium of 60 × 60 mm and 1 mm in thickness)	
Set Distance	0 to 20 mm	
Hysteresis	10 % 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 MOS FET open drain 30 V DC, 100mA 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)
Operation Indicator	Red LED (Lit when the output is ON)	
Response Frequency	200 Hz or more	
Temperature Range	-10 to 60 °C (-10 to 60 °C storage temperature range) (Without dew condensation or icing)	
Humidity Range	35 to 95 % RH (35 to 85 % RH storage humidity range)(Without dew condensation)	
Circuit Protection	With reverse polarity connection protection diode, With output surge absorption diode	
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/s² (Approx. 50 G) in X, Y and Z directions 3 times each (at power off)	
Protection	IP67	
Case Material	Polyarylate	
Cable	ø6.1, 3-core round cord of 0.5 mm² and insulation 1.9 mm and 1 m in length (Oil and heat resistant vinyl)	
Weight	Approx. 170 g	

Change in Detection Distance Depending (Reference)

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



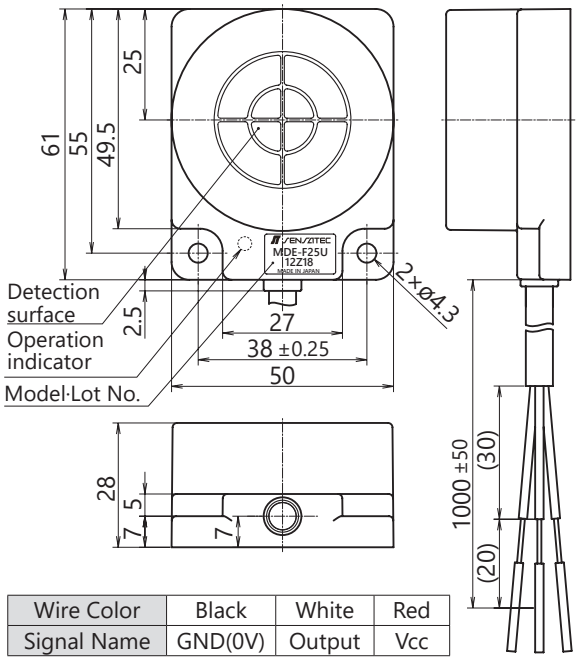
If the detection object is smaller than the standard detection object or if it is made of non-ferrous metal, the detection distance will decrease. Carry out testing to confirm suitability.

Change in detection distance depending on the detection object material

Material	Typical detection distance ratio [%]
Aluminum	100
Steel	97
Copper	99
Brass	100
SUS304	99
SUS430	94

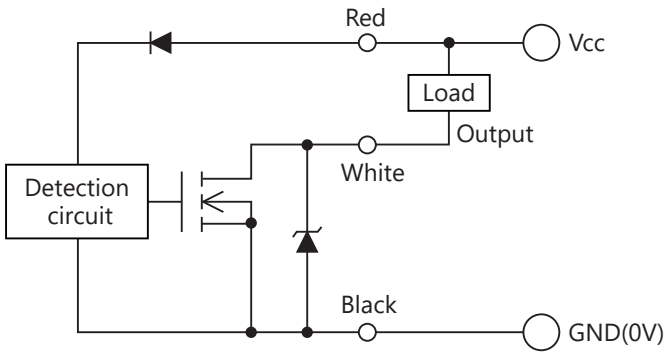
The detection distance will change according to the detection object material; carry out testing to confirm suitability.

Outline Dimensions



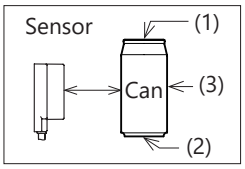
Wire Color	Black	White	Red
Signal Name	GND(0V)	Output	Vcc

Output Circuit

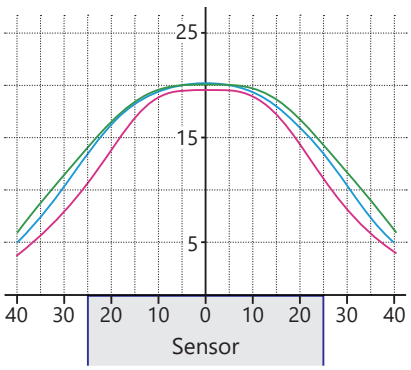


Metal Can-detection Curve Graph (Reference Value)

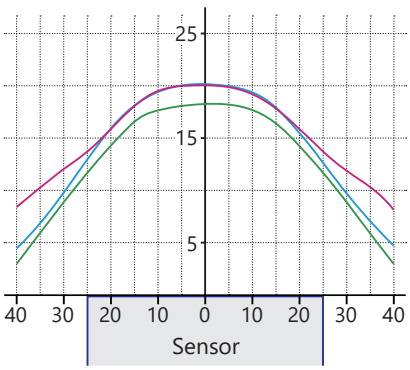
Aluminum can ø53 × 105 mm	
Aluminum can ø66 × 121mm	
Iron can ø53 × 104 mm	



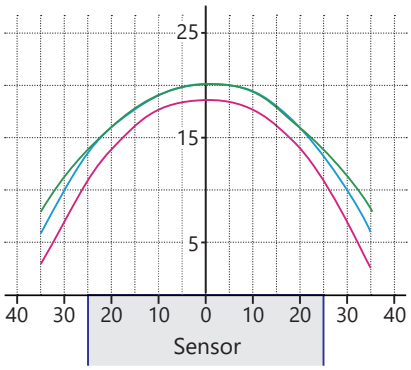
(1) Top surface of the can



(2) Bottom surface of the can



(3) Side of the can

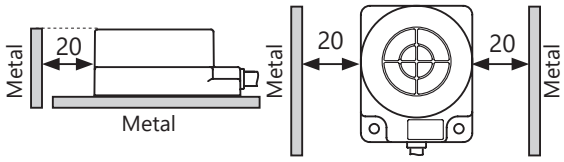


Unit : mm

Precautions During Use

Influence of surrounding metal

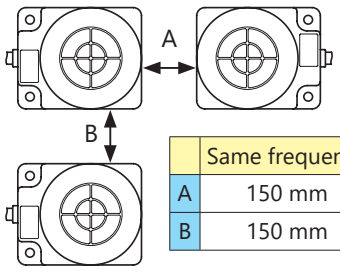
If there are metals present near the inductive sensor, keep them away from and beneath the plane of the sensor detection surface at a minimum of the values specified in the figure below.



Unit : mm

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
A	150 mm	20 mm
B	150 mm	20 mm

Mounting

- Use two M4 mounting screws, always use plain washers to tighten the case and use a torque of 1.2 N·m or less for each.

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