Model MDE-F25U Proximity Detection Sensor For All Metals

Model List	Operation Configuration	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

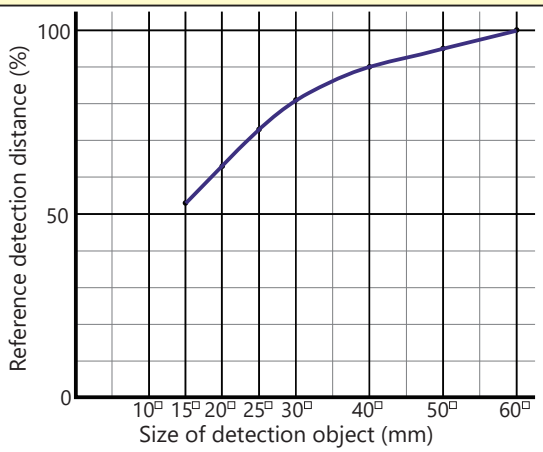
- Even with nonmagnetic materials such as aluminum, increased detection distance is now possible.
- With a molded casing, the sensor can be safely used in the presence of liquid water.
- No malfunctions can occur due to extraneous light, dust, etc.

Rating/Performance

Model	MDE-F25U	MDE-F25U1
Detection Surface	Upper side detection	
Detection Distance	25 mm ± 10 % (With detection target of Aluminium of 60 x 60 mm and 1 mm in thickness)	
Setting Distance	0 to 20 mm	
Hysteresis	10 % 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	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 with detection target)	Normally closed (Off output with detection target)
Operation Indication	Red LED (Lit when On output)	
Response Frequency	200 Hz or more	
Temperature Range	-10 to 60 °C (-10 to 60 °C during storage) (Without dew condensation or freezing)	
Humidity Range	35 to 95 % RH (35 to 85 % RH during storage)(Without dew condensation)	
Circuit Protection	With reverse polarity connection protection diode, With output surge absorption diode	
Breakdown Voltage	1000 V AC, 50/60 Hz for 1 min (Between live parts and the case)	
Insulation Resistance	50 MΩ 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^2 (Approx. 50 G) in X-, Y-, and Z-direction, each 3 times (Device not powered)	
Ingress Protection	IP67	
Case Material	Polyarylate	
Cable	ø6.1, 3-core round cord of 0.5 mm^2 and insulation 1.9 mm and 1 m in length (oil and heat resistant)	
Weight	Approx. 170 g	

Change in Detection Distance Depending (Reference)

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



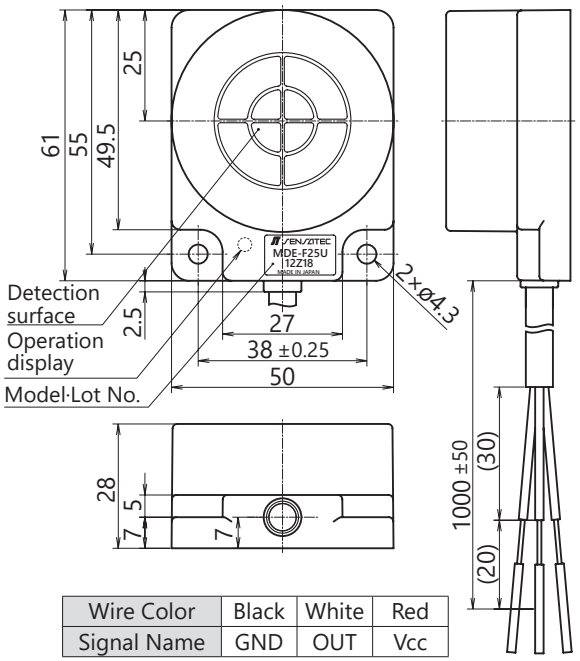
If the detection object is smaller than the standard detection object or if it is made of non-ferrous metal, the detection distance will decrease. Carry out testing to confirm suitability.

Change in detection distance depending on the detection object material

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

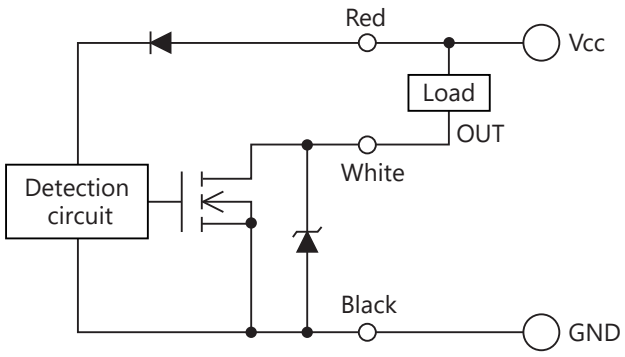
The detection distance will change according to the detection object material; carry out testing to confirm suitability.

Dimensions



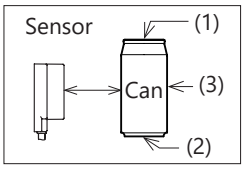
Wire Color	Black	White	Red
Signal Name	GND	OUT	Vcc

Output Circuit

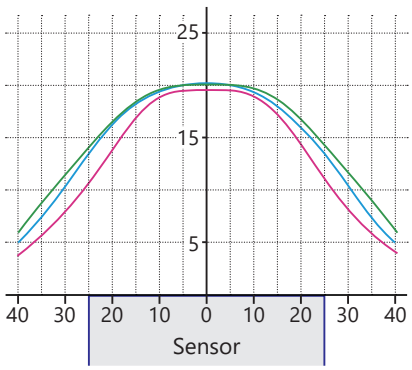


Metal Can-detection Curve Graph (Reference Value)

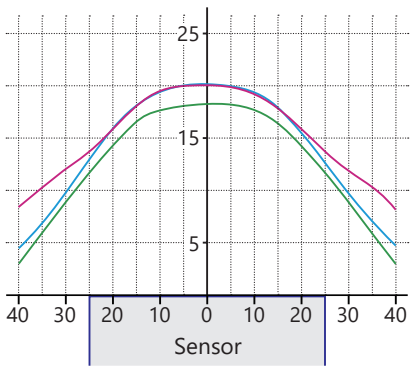
Aluminum can ø53 x 105 mm	
Aluminum can ø66 x 121mm	
Steel can ø53 x 104 mm	



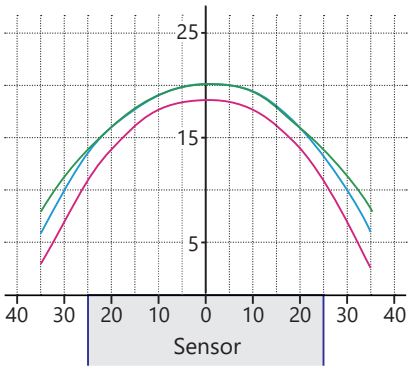
(1) Top surface of the can



(2) Bottom surface of the can



(3) Side of the can

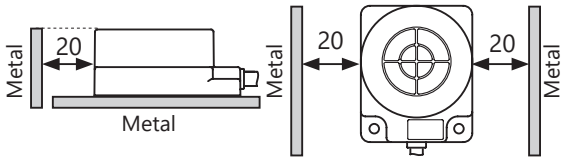


Unit : mm

Precautions During Use

Influence of surrounding metal

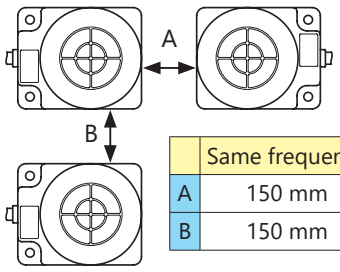
If there are metals present near the proximity sensor, keep them away from and beneath the plane of the sensor detection surface at a minimum of the values specified in the figure below.



Unit : mm

Mutual interference

When two or more 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

Installation

- Use two M4 mounting screws, and set a tightening torque of 1.2 N m or less for each.

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