

Ultra-small Nonferrous-metal Proximity Sensors ET Series



New sensing technology does not detect iron

The ET Series detects only nonferrous metals, ignoring iron.

Operating distance comparison between aluminum and other metals

Material		Detecting distance	
Nonferrous	Aluminum		Approx. 100%
	Copper		Approx. 100%
	Brass		Approx. 100%
	Zinc		Approx. 100%
	Solder		Approx. 100%
	Stainless steel		70 to 95% ¹
	Titanium		60 to 80% ¹
Ferrous	Iron		0% (not detected)

¹. The detecting distance varies depending on the sensor head model, and kind of stainless steel.

Long distance detection and compact head

Three sizes of sensor heads are available: $\varnothing 5.4$ mm $\varnothing 0.21^*$, $\varnothing 8$ mm $\varnothing 0.31^*$, and M10. Nonferrous metals such as aluminum can be detected at a long distance.

Disconnection alarm output

When the cable connection breaks or when changing the sensor head the disconnection alarm output is activated.

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www.keyence.com/ASKG



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Applications



Detecting HIC lead frames



Detecting aluminum caps on bottles



Detecting aluminum tape on a lathe dog

Specifications

Type		Shielded		
Model	Sensor head	ET-305	ET-308	ET-110
		Appearance		
	Amplifier	ET-90		
	NPN			
	Appearance			
Detecting distance		0 to 1.0 mm 0.04"	0 to 2.0 mm 0.08"	
Detectable object		Nonferrous metals		
Standard target (aluminum, t=1 mm 0.04")		5 x 5 mm 0.20"	10 x 10 mm 0.39"	
Response frequency		1 kHz	400 Hz	300 Hz
Sensitivity adjustment		15-turn trimmer		
Hysteresis adjustment		1-turn trimmer (240°), approx. 2 to 10% of detecting distance (variable)		
Operation mode		N.O./N.C. (switch-selectable)		
Temperature fluctuation		+25 to -15% max. of detecting distance at 23°C (73.4°F), within 0 to 50°C (32 to 122°F)		
Control output		100 mA max. (40 V max.), Residual voltage: 1 V max.		
Protection circuit		Reversed polarity, surge absorber		
Power supply		12 to 24 VDC±10%		
Current consumption		45 mA max.		
Enclosure rating (Sensor head)		IP67		
Ambient temperature		0 to 50°C (32 to 122°F), No freezing		
Relative humidity		35 to 85%, No condensation		
Vibration resistance		10 to 55 Hz, 1.5 mm 0.06" double amplitude in X, Y, and Z directions, 2 hours		
Weight	Sensor head (including 3-m 9.8' cable)	Approx. 50 g	Approx. 52 g	Approx. 58 g
	Amplifier (including 2-m 6.6' cable)	Approx. 80 g		

New Products

Fiberoptic Sensors

Photoelectric Sensors

Proximity Sensors

Safety Equipment

Flow/Pressure/Temperature

Measurement Sensors

Controls

Static Eliminators

Vision Systems

Marking Equipment

Code Readers

Handheld Mobile Computers

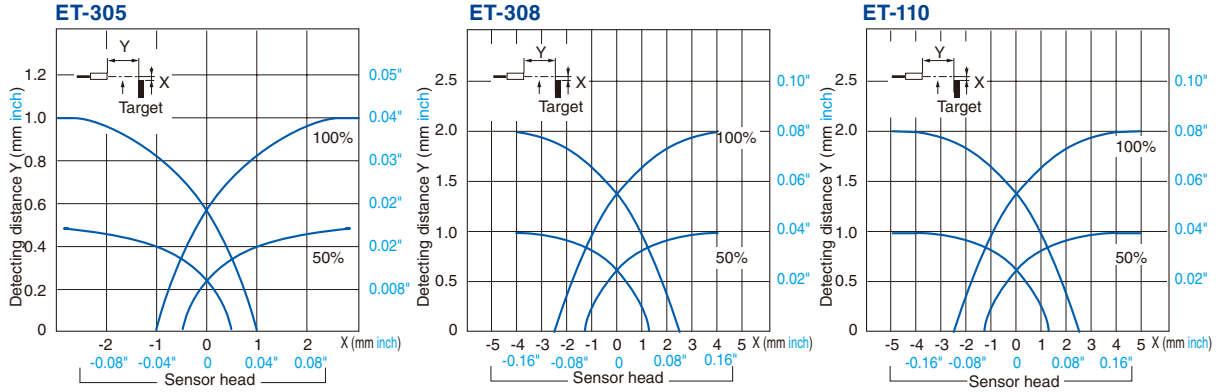
Microscopes

Projector/3D Measurement Systems



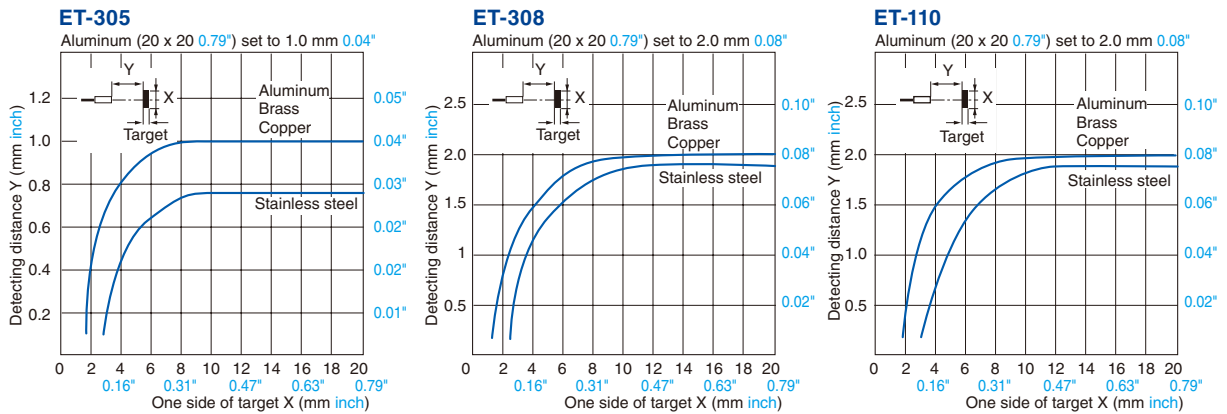
Characteristics

Detecting range (Typical)



Detecting distance vs. target size and material (Typical)

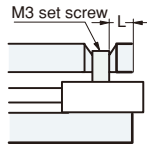
Aluminum: Al (A5052), Brass: BS (C3601), Copper: CU (C1100), Stainless steel: SUS304



Hints on Correct Use

Mounting

- Cylindrical type
Secure the sensor with a screw at a position 5 mm 0.20" or more from the tip of the head (Tightening torque: 2 N·m max.)
- Threaded type
When mounting the threaded-type sensor head, do not tighten beyond 10 N·m.



Interference

When installing 2 or more sensors of the same model face-to-face or in parallel, separate by the distance specified in the following table to prevent interference.

Model	Distance	
	Face-to-Face (mm inch min.)	Parallel (mm min.) ¹⁾
ET-305	6 0.24"	0 (Flush mount)
ET-308	10 0.39"	0 (Flush mount)
ET-110	10 0.39"	0 (Flush mount)

1. When installing 3 or more sets of sensors, please contact KEYENCE.

Target

When detecting plated metal, the sensor may detect characteristics of both the metal and plate together. Therefore actual readings may not conform to specifications.

Disconnection alarm output

If the cable connection breaks or when changing the sensor head the disconnection alarm output is activated. If the alarm output is intermittent immediately after the connections break, connect the sensor to the self-holding circuit.

Wiring

- Limit the length of the cable extension to 100 m 328.1'.
- The sensor cable (coaxial cable) must not be extended or cut.

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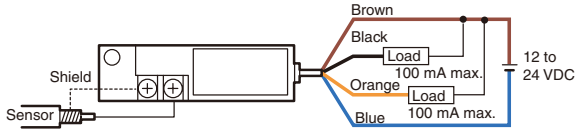
Handheld Mobile Computers

Microscopes

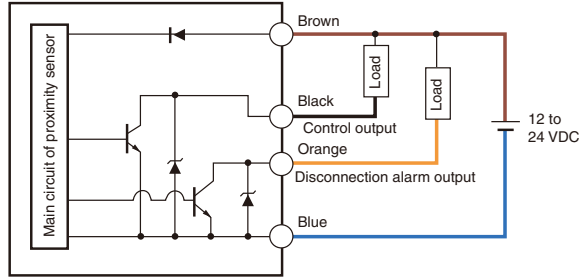
Projector/3D Measurement Systems



Connections



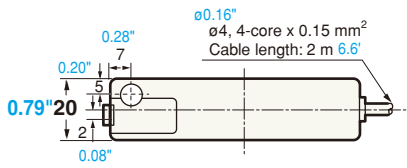
Input/Output Circuits



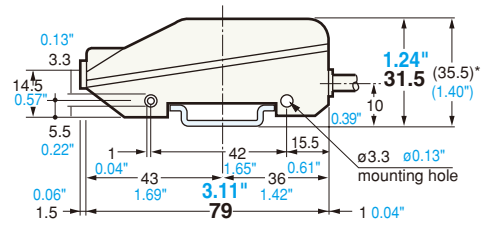
Dimensions Unit: mm inch

Amplifier

ET-90

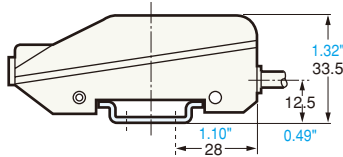


When DIN-rail is attached

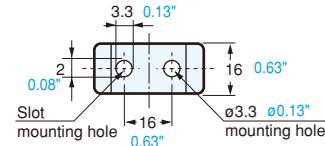


* Data in parentheses includes the DIN-rail.

When mounting bracket is attached

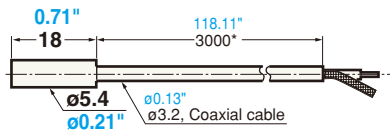


Mounting bracket (accessory)

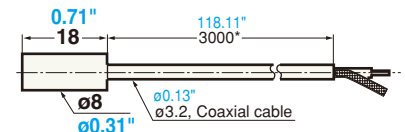


Sensor heads

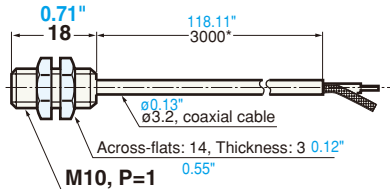
ET-305



ET-308



ET-110



* Do not extend or cut the sensor cable.

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