

GL SERIES

Related Information

- General terms and conditions..... F-3
- Selection guide P.781~
- Glossary of terms..... P.1576~
- General precautions P.1579~



panasonic.net/id/pidsx/global

* The **GL-8** type has been discontinued at the end of September, 2017.



Wide variety, high performance in surprisingly small body at low cost

VARIETIES

Close mounting

Two sensors can be mounted close together because different frequency type are available.

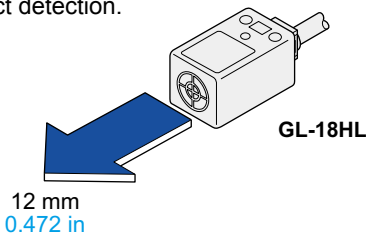
(The **GL-18HL** type can be mounted with a space of 20 mm **0.787 in** between the two sensors.)

BASIC PERFORMANCE

Long sensing range

GL-18HL type offers a long sensing range of 12 mm **0.472 in.**

Small variations in the positions of the sensing objects do not affect detection.



ENVIRONMENTAL RESISTANCE

Protection structure IP67G

GL-18H/18HL type are resistant to oil and have a protection structure IP67G.

FUNCTIONS

Operation indicator

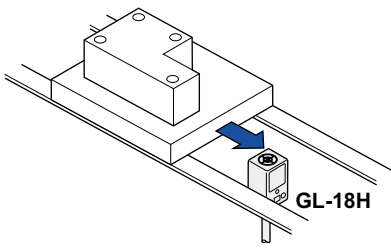
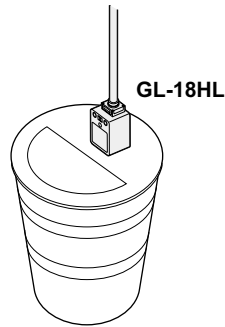
The **GL** series incorporates an operation indicator (red) for operation check.

OTHERS

Low price

The **GL** series satisfies the need for a low price inductive proximity sensor. It is recommended to large volume users for cost reduction.

- FIBER SENSORS
- LASER SENSORS
- PHOTOELECTRIC SENSORS
- MICRO PHOTOELECTRIC SENSORS
- AREA SENSORS
- SAFETY LIGHT CURTAINS / SAFETY COMPONENTS
- PRESSURE / FLOW SENSORS
- INDUCTIVE PROXIMITY SENSORS**
- PARTICULAR USE SENSORS
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- SIMPLE WIRE-SAVING UNITS
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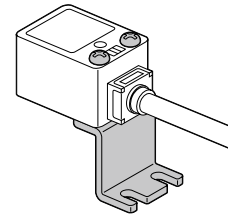
APPLICATIONS**Positioning metal pallet****Detecting aluminum lid****ORDER GUIDE****GL-18H/18HL type**

Type	Appearance (mm in)	Sensing range (Note)	Model No.	Output	Output operation
Standard Different frequency		Maximum operation distance 5 mm 0.197 in	GL-18H	NPN open-collector transistor	Normally open
		Stable sensing range 0 to 4 mm 0 to 0.157 in	GL-18HI		
			GL-18HB		Normally closed
Long sensing range Different frequency		12 mm 0.472 in	GL-18HL		Normally open
		0 to 10 mm 0 to 0.394 in	GL-18HLI		Normally closed
			GL-18HLB		

Note: The maximum operation distance stands for the maximum distance for which the sensor can detect the standard sensing object. The stable sensing range stands for the sensing range for which the sensor can stably detect the standard sensing object even if there is an ambient temperature drift and/or supply voltage fluctuation.

Accessory

- **MS-GL18HL**
(Sensor mounting bracket for **GL-18HL** type)



Two M3 (length 25 mm 0.984 in) pan head screws are attached.

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LASER SENSORS

PHOTO-ELECTRIC SENSORS

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GX-F/H**GXL****GL****GX-M**GX-U/GX-FU/
GX-N**GX**

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SPECIFICATIONS

GL-18H/18HL type

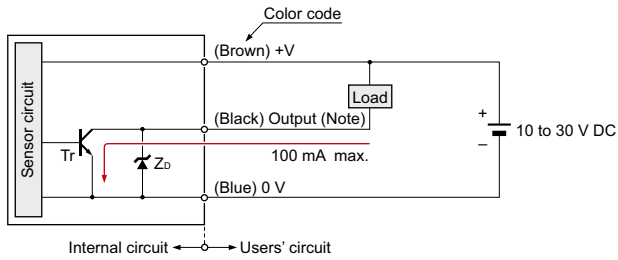
Item	Type	Standard			Long sensing range		
		GL-18H	GL-18HI	GL-18HB	GL-18HL	GL-18HLI	GL-18HLB
CE marking directive compliance		EMC Directive, RoHS Directive					
Max. operation distance (Note 2)		5 mm 0.197 in ±10 %			12 mm 0.472 in ±10 %		
Stable sensing range (Note 2)		0 to 4 mm 0 to 0.157 in			0 to 10 mm 0 to 0.394 in		
Standard sensing object		Iron sheet 25 × 25 × t 1 mm 0.984 × 0.984 × t 0.039 in			Iron sheet 40 × 40 × t 1 mm 1.575 × 1.575 × t 0.039 in		
Hysteresis		15 % or less of operation distance (with standard sensing object)					
Supply voltage		10 to 30 V DC Ripple P-P 10 % or less					
Current consumption		10 mA or less					
Output		NPN open-collector transistor • Maximum sink current: 100 mA • Applied voltage: 30 V DC or less (between output and 0 V) • Residual voltage: 1.5 V or less (at 100 mA sink current) 0.4 V or less (at 16 mA sink current)					
Utilization category		DC-12 or DC-13					
Output operation		Normally open	Normally closed	Normally open	Normally open	Normally closed	
Max. response frequency		1kHz			500Hz		
Operation indicator		Red LED (lights up when the output is ON)					
Environmental resistance	Pollution degree	3 (Industrial environment)					
	Protection	IP67 (IEC), IP67G (Note 3)					
	Ambient temperature	-25 to +70 °C -13 to +158 °F , Storage: -25 to +70 °C -13 to +158 °F					
	Ambient humidity	45 to 85 % RH, Storage: 45 to 85 % RH					
	Voltage withstandability	1,000 V AC for one min. between all supply terminals connected together and enclosure					
	Insulation resistance	50 MΩ, or more, with 250 V DC megger between all supply terminals connected together and enclosure					
	Vibration resistance	10 to 55 Hz frequency, 1.5 mm 0.059 in double amplitude in X, Y and Z directions for two hours each					
Shock resistance	1,000 m/s ² acceleration (100 G approx.) in X, Y and Z directions three times each						
Sensing range variation	Temperature characteristics	Over ambient temperature range -25 to +70 °C -13 to +158 °F : within ±10 % of sensing range at +20 °C +68 °F					
	Voltage characteristics	Within ±2 % for ±10 % fluctuation of the supply voltage					
Material		Enclosure: Polyarylate					
Cable		0.3 mm ² 3-core oil resistant cabtyre cable, 1 m 3.281 ft long					
Cable extension		Extension up to total 100 m 328.084 ft is possible with 0.3 mm ² , or more, cable.					
Weight		Net weight : 45 g approx.					
Accessory						MS-GL18HL (Sensor mounting bracket): 1 set	

- Notes: 1) Where measurement conditions have not been specified precisely, the conditions used were an ambient temperature of +23 °C **+73.4 °F**.
 2) The maximum operation distance stands for the maximum distance for which the sensor can detect the standard sensing object.
 The stable sensing range stands for the sensing range for which the sensor can stably detect the standard sensing object even if there is an ambient temperature drift and/or supply voltage fluctuation.
 3) If using the sensor in an environment where cutting oil droplets splatter, the sensor may be deteriorated due to added substances in the oil.
 Please check the resistivity of the sensor against the cutting oil you are using beforehand.

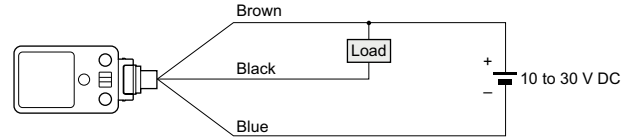
I/O CIRCUIT AND WIRING DIAGRAMS

GL-18H/18HL type

I/O circuit diagram



Wiring diagram



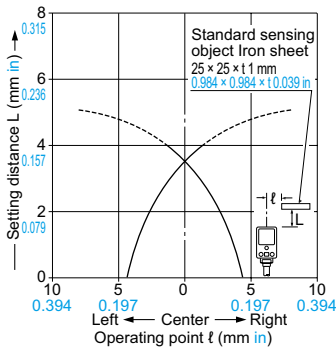
Note: Please carry out the wiring carefully since protection circuit against reverse power supply connection is not incorporated. Further, the output does not incorporate a short-circuit protection circuit. Do not connect it directly to a power supply or a capacitive load.

Symbols ... Z_d: Surge absorption zener diode
Tr: NPN output transistor

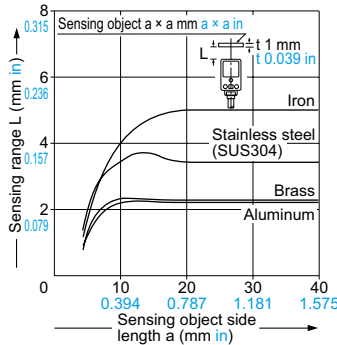
SENSING CHARACTERISTICS (TYPICAL)

GL-18H type

Sensing field



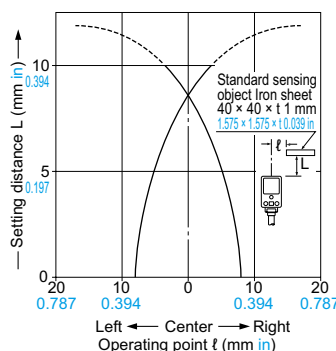
Correlation between sensing object size and sensing range



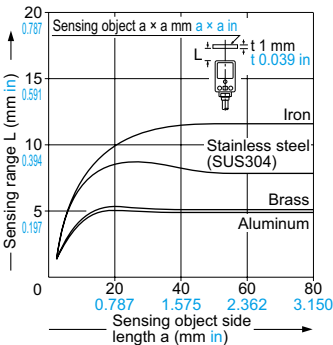
As the sensing object size becomes smaller than the standard size (iron sheet 25 × 25 × t 1 mm 0.984 × 0.984 × t 0.039 in), the sensing range shortens as shown in the left figure.

GL-18HL type

Sensing field



Correlation between sensing object size and sensing range



As the sensing object size becomes smaller than the standard size (iron sheet 40 × 40 × t 1 mm 1.575 × 1.575 × t 0.039 in), the sensing range shortens as shown in the left figure.

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PRECAUTIONS FOR PROPER USE

Refer to p.1579~ for general precautions.

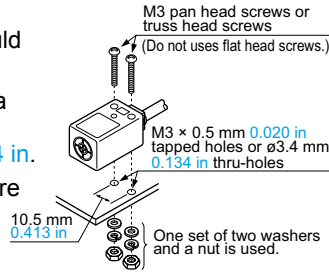


- Never use this product as a sensing device for personnel protection.
- In case of using sensing devices for personnel protection, use products which meet laws and standards, such as OSHA, ANSI or IEC etc., for personnel protection applicable in each region or country.

Mounting

GL-18H/18HL type

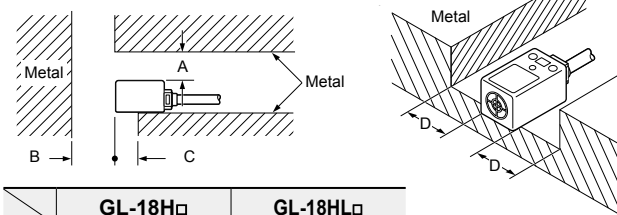
- The tightening torque should be 0.5 N·m or less.
- To mount the sensor with a nut, the thru-hole diameter should be $\varnothing 3.4$ mm $\varnothing 0.134$ in.
- Screws, nuts or washers are not supplied. Please arrange them separately.



Influence of surrounding metal

- When there is a metal near the sensor, keep the minimum separation distance specified below.

GL-18H/18HL type



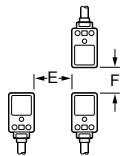
	GL-18H□	GL-18HL□
A	5 mm 0.197 in	25 mm 0.984 in
B	20 mm 0.787 in	60 mm 2.362 in
C	0 mm 0 in	20 mm 0.787 in (Note)
D	5 mm 0.197 in	30 mm 1.181 in

Note: When mounting the GL-18HL□ to an insulator or using the attached sensor mounting bracket, "C" becomes 0 mm 0 in.

Mutual interference prevention

- When two or more sensors are installed in parallel or face to face, keep the minimum separation distance specified below to avoid mutual interference.

GL-18H/18HL type



		E	F
GL-18H type	Between "I" type and non "I" type.	0 mm (Note 2) 0 in	20 mm 0.787 in
	Between two "I" types or two non "I" types.	40 mm 1.575 in	70 mm 2.756 in
GL-18HL type	Between "I" type and non "I" type.	20 mm 0.787 in	40 mm 1.575 in
	Between two "I" types or two non "I" types.	130 mm 5.118 in	200 mm 7.874 in

Notes: 1) "I" in the model No. specifies the different frequency type.
 2) Close mounting is possible for up to two sensors. When mounting three sensors or more at an equal spacing, align the model with "I" and the model without "I" alternately.
 The minimum value of dimension "E" should be as given below.
GL-18H type: 11 mm 0.433 in

Sensing range

- The sensing range is specified for the standard sensing object.
 With a non-ferrous metal, the sensing range is obtained by multiplying with the correction coefficient specified below.
 Further, the sensing range also changes if the sensing object is smaller than the standard sensing object or if the sensing object is plated.

Correction coefficient

	GL-18H type	GL-18HL type
Iron	1	1
Stainless steel (SUS304)	0.68 approx.	0.65 approx.
Brass	0.45 approx.	0.42 approx.
Aluminum	0.43 approx.	0.41 approx.

Wiring

- Please carry out the wiring carefully since protection circuit against reverse power supply connection is not incorporated.
- The output does not incorporate a short-circuit protection circuit. Do not connect it directly to a power supply or a capacitive load.
- Make sure that the power supply is off while wiring.
- Verify that the supply voltage variation is within the rating.
- If power is supplied from a commercial switching regulator, ensure that the frame ground (F.G.) terminal of the power supply is connected to an actual ground.
- In case noise generating equipment (switching regulator, inverter motor, etc.) is used in the vicinity of this sensor, connect the frame ground (F.G.) terminal of the equipment to an actual ground.
- Do not run the wires together with high-voltage lines or power lines or put them in the same raceway. This can cause malfunction due to induction.

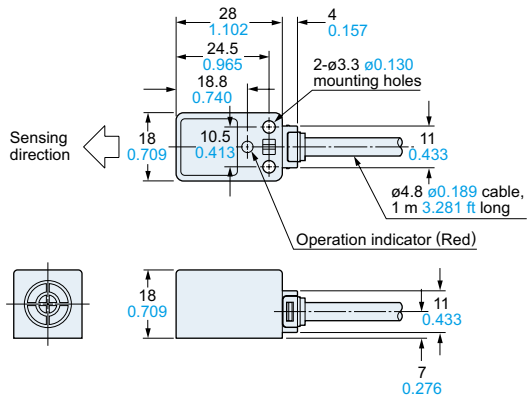
Others

- Do not use during the initial transient time (50ms) after the power supply is switched on.
- Take care that the sensor does not come in direct contact with oil, grease, or organic solvents, such as, thinner, etc.
- Make sure that the sensing end is not covered with metal dust, scrap or spatter. It will result in malfunction.

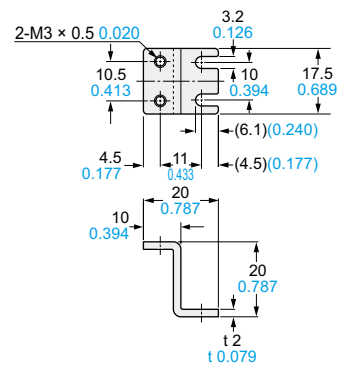
DIMENSIONS (Unit: mm in)

The CAD data can be downloaded from our website.

GL-18H□ GL-18HL□ Sensor



MS-GL18HL Sensor mounting bracket for GL-18HL type (Accessory)



Material: Aluminum

Two M3 (length 25 mm 0.984 in) pan head screws are attached.

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