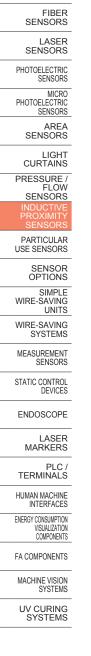
Compact & Low Price Inductive Proximity Sensor Amplifier Built-in **GL SERIES**

panasonic-electric-works.net/sunx

General terms and conditions...... F-17

Glossary of terms.....P.1386~



Selection

Amplifier Built-in

Amplifierseparated

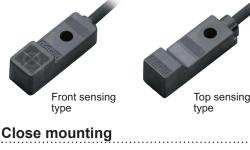
GX-F/H

GX-U/GX-FU/ GX-N

GXL

GX

Guide

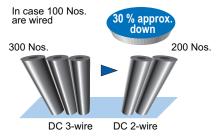


Two sensors can be mounted close together because different frequency type are available.

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

Energy-efficient and wire-saving DC 2-wire type

Its electric current consumption is just 0.8 mA or less and the wiring workload is reduced by about 30 %.



surprisingly small body at low cost

2-wire type available

Sensor selection guide P.757~

General precautions P.1405

CE

Conforming to EMC Directive

VARIETIES

Wide variation

Related Information

A wide variety of 46 models, front sensing type / top sensing type, normally open type / normally closed type, as well as, different frequency type, etc., is available.

Wide variety, high performance in

BASIC PERFORMANCE

Long sensing range

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

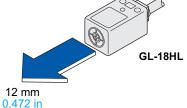
Different freq. type available

75

Oil resistant

PNP output type available

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



ENVIRONMENTAL RESISTANCE

Protection structure IP67g (JEM)

GL-18H/18HL type are resistant to oil and have a protection structure IP67g (JEM). (**GL-8U** type: IP67)

FUNCTIONS

Operation indicator

The **GL** series incorporates an operation indicator (orange, **GL-18H/18HL** type: red) for operation check.

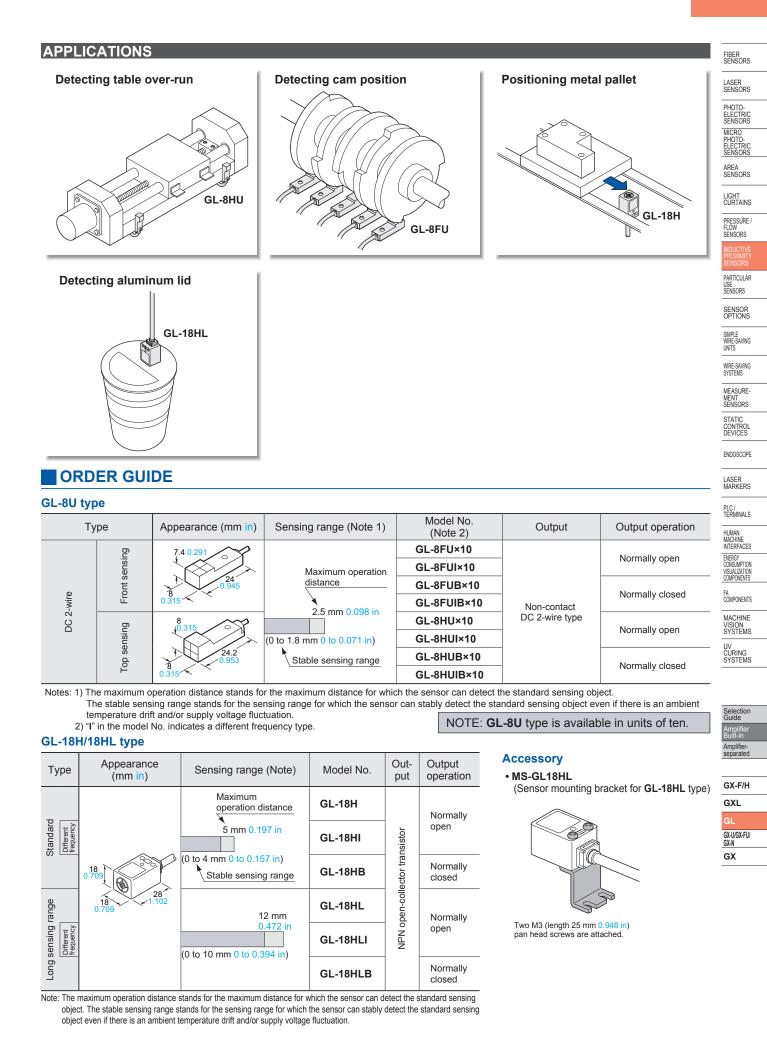
OTHERS

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.

The GL-8U type are available in units of ten.

788



FIBER SENSORS

LASER SENSORS

PHOTO-ELECTRIC SENSORS

MICRO

PHOTO-ELECTRIC SENSORS

ORDER GUIDE

5 m 16.404 ft cable length type

5 m 16.404 ft cable length type (standard: 1m 3.281 ft) is also available for **GL-8U** type (different frequency of normally open type: excluding the type with the model No. having the suffix "**IB**"). When ordering this type, suffix "-**C5**" to the model No.

(e.g.) 5 m 16.404 ft cable length type of GL-8FUB×10 is "GL-8FUB-C5×10".

NOTE: **GL-8U** type are available in units of ten.

OPTIONS

Designation	Model No.	Description	Sensor mounting bracket • MS-GL8×10
Sensor mounting bracket	MS-GL8×10	Sensor mounting bracket for GL-8U type.	
NOTE: Sens	sor mounting brac	ket (MS-GL8×10) is available in units of ten.	1 pc. each of M3 (length

12 mm 0.472 in) truss head screw, nut, spring washer and

plain washer is attached.

000

SPECIFICATIONS

GL-8U type

\bigvee	Turne	DC 2-wire type					
	Туре	Front s	ensing	Top sensing			
	Different frequency	GL-8FU×10	GL-8FUB×10	GL-8HU×10	GL-8HUB×10		
Item	Different frequency	GL-8FUI×10	GL-8FUIB×10	GL-8HUI×10	GL-8HUIB×10		
Max. o	peration distance (Note 2)		2.5 mm 0.098 in ±20 %				
Stable	sensing range (Note 2)		0 to 1.8 mm 0 to 0.071 in				
Standa	rd sensing object		Iron sheet 15 × 15 × t 1 mn	n 0.591 × 0.591 × t 0.039 in			
Hyster	esis	:	20 % or less of operation distance	ce (with standard sensing object))		
Supply	voltage		12 to 24 V DC ±10 %	Ripple P-P 10 % or less			
Curren	t consumption		0.8 mA or le	()			
Output			Non-contact DC 2-wire type • Load current: 3 to 70 mA (Note 5) • Residual voltage: 3 V or less (Note 6)				
U	tilization category		DC-12 c	r DC-13	1		
	utput operation	Normally open	Normally closed	Normally open	Normally closed		
	hort-circuit protection	Incorporated					
	esponse frequency	1kHz					
<u> </u>	ion indicator	Orange LED (lights up when the output is ON)					
	ollution degree	3 (Industrial environment)					
P	rotection	IP67 (IEC)					
A sist	mbient temperature	-25 to +70 °C -13 to +158 °F, Storage: -30 to +80 °C -22 to +176 °F					
	mbient humidity	35 to 95 % RH, Storage: 35 to 95 % RH					
enta	MC	EN 60947-5-2					
	oltage withstandability sulation resistance	1,000 V AC for one min. between all supply terminals connected together and enclosure					
·>	ibration resistance	50 MΩ, or more, with 250 V DC megger between all supply terminals connected together and enclosure 10 to 55 Hz frequency, 1.5 mm 0.059 in amplitude in X, Y and Z directions for two hours each					
	hock resistance		1 3/ 1				
Sensin		1,000 m/s ² acceleration (100 G approx.) in X, Y and Z directions for three times each Over ambient temperature range –25 to +70 °C –13 to +158 °F: within ⁺¹⁰ ₋₁₅ % of sensing range at +20 °C +68 °F					
range		Within $\pm 2\%$ for $\pm 10\%$ fluctuation of the supply voltage					
variatio	0	Enclosure: Polyalylate					
Material Cable		0.15 mm ² 2-core cabtyre cable, 1 m 3.281 ft long					
Cable extension		Extension up to total 50 m 164.042 ft is possible with 0.3 mm ² , or more, cable.					
Weight		<u>Linene</u>	Net weight : 12 g approx.				
				0.1010.000			

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) It is the leakage current when the output is in the OFF state.

4) When the ambient temperature is +60 to +70 °C +140 to +158 °F, the maximum sink current varies depending on the ambient humidity. Refer to "I/O CIRCUIT AND WIRING DIAGRAMS" for more details.

5) The maximum load current varies depending on the ambient temperature. Refer to "I/O CIRCUIT AND WIRING DIAGRAMS" for more details.

6) When the cable is extended, the residual voltage becomes larger according to the resistance of the cable.

Selection Guide Amplifier Built-in Amplifierseparated

GX-F/H GXL

GX-U/GX-FU/ GX-N GX

SPECIFICATIONS

GL-18H/18HL type

	Туре		Standard			Long sensing range	9
	rype		Different frequency			Different frequency	
tem	Model No.	GL-18H	GL-18HI	GL-18HB	GL-18HL	GL-18HLI	GL-18HLB
/lax. oper	ation distance (Note 2)		5 mm 0.197 in ±10 %			12 mm 0.472 in ±10 %	0
Stable ser	nsing range (Note 2)		0 to 4 mm 0 to 0.157 ir	ı		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	S		15 % or les	s of operation distant	ce (with standard se	nsing object)	
Supply vo	oltage			10 to 30 V DC Rip	ple P-P 10 % or less	3	
Current co	onsumption			10 mA	or less		
				-collector transistor	mA		
Output			 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) 				
			- Resid		ess (at 16 mA sink		
Utiliz	ation category			DC-12 c	or DC-13		
Outp	out operation	Norma	ally open	Normally closed	Norm	ally open	Normally closed
Max. response frequency		1kHz		500Hz			
Operation indicator		Red LED (lights up when the output is ON)					
Pollution degree		3 (Industrial environment)					
ر Prote	ection	IP67 (IEC), IP67g (JEM)					
dmA guo	ient temperature		-25 to +70 °C -13 to +158 °F, Storage: -25 to +70 °C -13 to +158 °F				
Amb	ient humidity	45 to 85 % RH, Storage: 45 to 85 % RH					
EMC	;	EN 60947-5-2					
Volta	age withstandability	1,000 V AC for one min. between all supply terminals connected together and enclosure					
Amb Amb EMC Volta Insul	lation resistance	50 MΩ,	or more, with 250 V D	C megger between al	supply terminals co	onnected together and e	enclosure
	ation resistance	10	to 55 Hz frequency, 1.	5 mm 0.059 in amplit	ude in X, Y and Z di	rections for two hours e	ach
Shoo	ck resistance		1,000 m/s ² accelerati	on (100 G approx.) in	X, Y and Z directio	ns for three times each	
Sensing ange	Temperature characteristics	Over ambie	nt temperature range –	25 to +70 °C –13 to +	-158 °F: within ±10 °	% of sensing range at +	20 °C +68 °F
ariation	Voltage characteristics		Within	±2 % for ±10 % fluct	uation of the supply	voltage	
Material		Enclosure: Polyalylate					
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.					
Neight				Net weight :	45 g approx.		
Accessory					MS-GL18	HL (Sensor mounting br	racket): 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.

Amplifierseparated

FIBER SENSORS

LASER SENSORS SIMPLE WIRE-SAVING UNITS

WIRE-SAVING SYSTEMS

MEASURE-MENT SENSORS

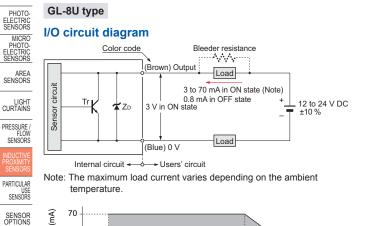
STATIC

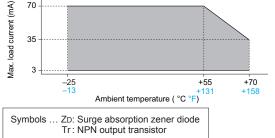
CONTROL DEVICES

ENDOSCOPE

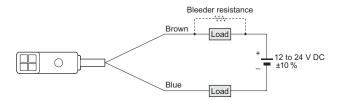
LASER MARKERS

FIBER SENSORS DC 2-wire type





Wiring diagram

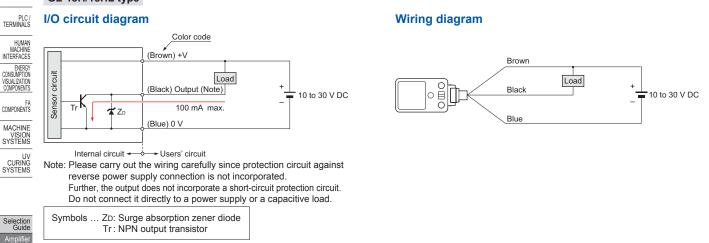


Conditions for the load –

- 1) The load should not be actuated by the leakage current (0.8 mA) in the OFF state.
- 2) The load should be actuated by (supply voltage -3 V) in the ON state. 3) The current in the ON state should be between 3 to 70 mA DC.
- [In case the current is less than 3 mA, connect a bleeder resistance in parallel to the load so that a current of 3 mA, or more, flows.

NPN output type

GL-18H/18HL type



SENSING CHARACTERISTICS (TYPICAL)

GX-F/H

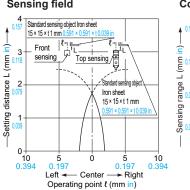
GX-U/GX-FU/ GX-N

GX

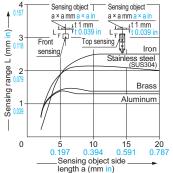
Amplifierseparated



Sensing field



Correlation between sensing object size and sensing range



As the sensing object size becomes smaller than the standard size (iron sheet $15 \times 15 \times t \ 1 \ mm$ $0.591 \times 0.591 \times t \ 0.039 \ in$), the sensing range shortens as shown in the left figure.

SENSING CHARACTERISTICS (TYPICAL)

6

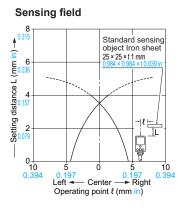
range L (mm

Sensing

2

0

GL-18H type



Correlation between sensing object size and sensing range

Iron

Brass

40

1.575

Aluminum

± + + + + + + + + + + + + t 1 mm + + t 0.039

Stainless steel (SUS304)

30

181

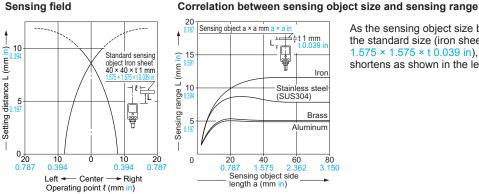
L ģ

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

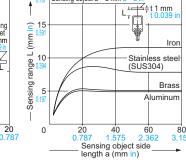
1.575 × 1.575 × t 0.039 in), the sensing range

shortens as shown in the left figure.

GL-18HL type



As the sensing object size becomes smaller than the standard size (iron sheet 40 × 40 × t 1 mm



Sensing object a × a mm

10

20

Sensing object side length a (mm in)

0.78

PRECAUTIONS FOR PROPER USE

· 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-8U type

· Make sure to mount with an M3 (length 12 mm 0.472 in or more) truss head screw with a tightening torque of 0.5 N·m or less.

/ Do not use a flat head screw or a pan head screw.



(Accessory for MS-GL8×10

M3 pan head screws or truss head screws

(Do not uses flat head screws.)

 $M3 \times 0.5$ mm 0.020 in tapped holes or ø3.4 mm 0.134 in thru-holes

One set of two washers and a nut is used.

ø2.4 mm ø0.094 in hole (Depth: 3 mm 0.118 in or more)

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 ø3.4 mm ø0.134 in.
- · Screws, nuts or washers are not supplied. Please arrange them separately. 10.5 mm

Influence of surrounding metal

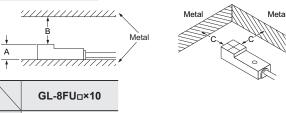
· When there is a metal near the sensor, keep the minimum separation distance specified below.

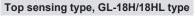
Front sensing type

А

В

С

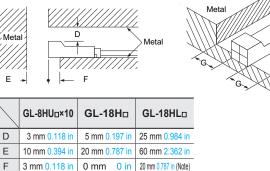




7.4 mm 0.291 in

8 mm 0.315 in

3 mm 0.118 in



G 3 mm 0.118 in 5 mm 0.197 in 30 mm 1.181 in

FA COMPONENTS MACHINE SYSTEMS

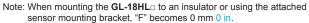
Refer to General precautions.

UV CURING SYSTEMS

Selection Guide
Amplifier Built-in
Amplifier- separated

GX-F/H GXL

GX-U/GX-FU/ GX-N GX



FIBER SENSORS

LASER SENSORS

рното ELECTRIC

MICRO PHOTO-ELECTRIC SENSORS

AREA SENSORS

LIGHT CURTAINS

PRESSURE FLOW SENSORS

PARTICULAR USE SENSORS

SENSOR OPTIONS

SIMPLE WIRE-SAVING UNITS

WIRE-SAVING SYSTEMS

MEASURE

MENT SENSORS

CONTROL

ENDOSCOPE

LASER MARKERS

PLC / TERMINALS

HUMAN MACHINE INTERFACES

ENERGY CONSUMPTION

VISUALIZATION COMPONENTS

STATIC

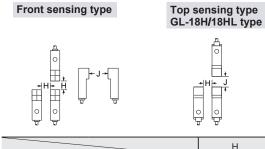
FIBER SENSORS

LASER SENSORS

PRECAUTIONS FOR PROPER USE

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.



		Н	J	
GL-8FU⊓×10	Between "I" type and non "I" type.	0 mm (Note 2) <mark>0 in</mark>	15 mm 0.591 in	
GE-OFOLATO	Between two "I" types or two non "I" types.	20 mm 0.787 in	40 mm 1.575 in	
GL-8HU□×10	Between "I" type and non "I" type.	0 mm (Note 2) <mark>0 in</mark>	15 mm 0.591 in	
GE-0H0[]×10	Between two "I" types or two non "I" types.	25 mm 0.984 in	40 mm 1.575 in	
	Between "I" type and non "I" type.	0 mm (Note 2) <mark>0 in</mark>	20 mm 0.787 in	
GL-18H type	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	
GE-TOHE type	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 "H" should be as given below.

GL-SFU_D×10: 6 mm 0.236 in

GL-8HU□×10: 8.5 mm 0.335 in

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-8U type	GL-18H type	GL-18HL type
Iron	1	1	1
Stainless steel (SUS304)	0.80 approx.	0.68 approx.	0.65 approx.
Brass	0.54 approx.	0.45 approx.	0.42 approx.
Aluminum	0.52 approx.	0.43 approx.	0.41 approx.

Wiring

- Please carry out the wiring carefully since protection circuit against reverse power supply connection is not incorporated. (Excluding GL-8U type)
- The output does not incorporate a short-circuit protection circuit. Do not connect it directly to a power supply or a capacitive load. (Excluding GL-8U type)
- 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.

Selectior Guide

Amplifie Built-i

Amplifierseparated

GX-F/H GXL

GX-U/GX-FU/ GX-N GX

FIBER SENSORS

LASER SENSORS

PHOTO-ELECTRIC SENSORS

MICRO PHOTO-ELECTRIC SENSORS

AREA SENSORS

LIGHT CURTAINS

PRESSURE / FLOW SENSORS

PARTICULAR USE SENSORS

SENSOR OPTIONS

SIMPLE WIRE-SAVING UNITS

WIRE-SAVING SYSTEMS MEASURE-MENT SENSORS

STATIC CONTROL DEVICES

ENDOSCOPE

LASER MARKERS

PLC / TERMINALS

HUMAN MACHINE INTERFACES

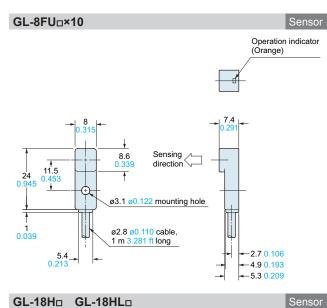
ENERGY CONSUMPTION

VISUALIZATION COMPONENTS

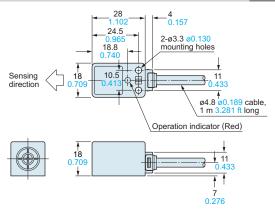
FA COMPONENTS

MACHINE VISION SYSTEMS

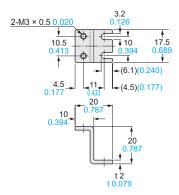
DIMENSIONS (Unit: mm in)



GL-18HD GL-18HLD



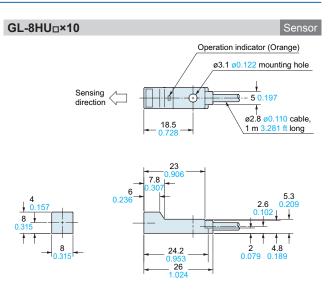
MS-GL18HL Sensor mounting bracket for GL-18HL type (Accessory)



Material: Aluminum

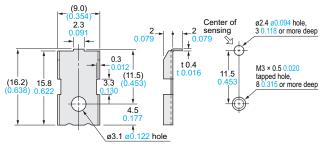
Two M3 (length 25 mm 0.984 in) pan head screws are attached.

The CAD data in the dimensions can be downloaded from our website.



MS-GL8×10 Sensor mounting bracket for **GL-8U** type (Optional)

Mounting hole dimensions



Material: Stainless steel (SUS304)

1 pc. each of M3 (length 12 mm 0.472 in) truss head screw, nut, spring washer and plain washer is attached.

UV CURING SYSTEMS
Selection Guide
Amplifier Built-in
Amplifier- separated

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