# imall

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PHOTOELECTRIC SENSORS

PARTICULAR USE SENSORS SENSOR OPTIONS SIMPLE WIRE-SAVING UNITS WIRE-SAVING SYSTEMS

MEASUREMENT SENSORS

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Selection Guide

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Amplifier-separated

GXL

GL

GX

GX-M

GX-U/GX-FU/ GX-N

PLC

LASER SENSORS

MICRO PHOTOELECTRIC SENSORS AREA SENSORS LIGHT CURTAINS / SAFETY PRESSURE / FLOW SENSORS

# Rectangular-shaped Inductive Proximity Sensor Amplifier Built-in SERIES



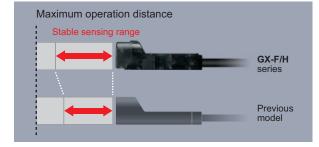
## Industry No. 1\* in stable sensing



\* Based on research conducted by Panasonic Industrial Devices SUNX as of November 2012 among equivalent rectangular inductive sensors.

## Can be installed with ample space

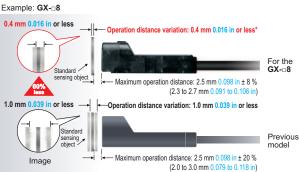
This sensor has the longest stable sensing range among the same level of rectangular inductive proximity sensors in the industry. It is easy to install the sensor.



## Variation at the maximum operation distance is within ±8 %

Thorough adjustment and control of sensing sensitivity greatly reduces individual sensor differences and variations.

The work of adjusting sensor positions when using multiple sensors and when sensors have been replaced is much easier.

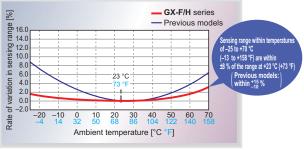


	Maximum	Stable sensing range			
Туре	operation distance	GX-F/H series	Previous model		
GX-⊡6	1.6 mm 0.063 in	0 to 1.3 mm 0.051 in	0 to 1.2 mm 0.047 in		
GX-⊡8	2.5 mm 0.098 in	0 to 2.1 mm 0.083 in	0 to 1.8 mm 0.709 in		
GX-⊔12	4.0 mm 0.157 in	0 to 3.3 mm 0.130 in	0 to 3.0 mm 0.118 in		
GX-□15	5.0 mm 0.197 in	0 to 4.2 mm 0.165 in	0 to 4.0 mm 0.157 in		
Long sensing range	8.0 mm 0.315 in	0 to 6.7 mm 0.264 in	0 to 6.4 mm 0.252 in		

\* With standard sensing object

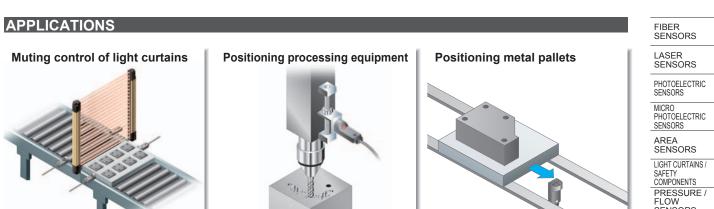
## Temperature characteristics vary within ±8 %

Components such as the sensor coil and core and product design have been totally revised to provide excellent temperature characteristics. Stable sensing can be obtained regardless of the time of day or the yearly season.



\* Typical

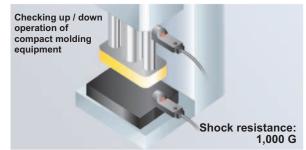
\* Not including temperature characteristics



## ENVIRONMENTAL RESISTANCE

## 10 times the durability! (Compared to previous models)

The new integrated construction method used provides shock resistance of 10,000 m/s<sup>2</sup> (approx. 1,000 G in X, Y and Z directions for three times each), and vibration resistance clears durability tests of between 10 and 500 Hz (3 mm 0.118 in amplitude in X, Y and Z directions for 2 hours each). In addition, resistance to impulse noise is approx. three times greater than for previous models.



## Highly resistant to water or oil! **IP68G\*** protective construction

The new integrated construction method used improves environmental resistance performance.

The IP68G prevents damage to the sensor by stopping water and oil getting inside.

\* For details, refer to the "SPECIFICATIONS (p.812~)".



# Sensing presence of metallic objects on a part feeder Vibration resistance: 500 Hz

## **FUNCTIONS**

### Indicators are easy to see over a wide field of view

A prism with a wide field of view has been developed. This has greatly improved the visibility of the operation indicators. GX-H









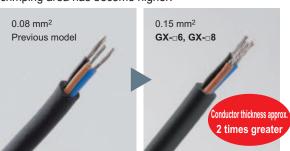
GX-F/H
GXL
GL
GX-M
GX-U/GX-FU/ GX-N
GX

## MOUNTING

Tightening strength increased with no damage! (excluding GX-D6)

A metal sleeve has been inserted. It prevents the sensor from being damaged by tightening too much.





SENSORS

PARTICULAR USE SENSORS

SENSOR OPTIONS SIMPLE WIRE-SAVING UNITS WIRE-SAVING

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MACHINE VISION SYSTEMS

UV CURING SYSTEMS

Selection Guide Amplifie Built-in Amplifierseparated

## Conductor thickness doubled to make wiring much easier! (GX-06/08 only)

The conductor's thickness was doubled for the  $GX-\Box 6/\Box 8$ . This makes it easier to handle and perform crimping work on the cables. In addition, the tensile strength of the crimping area has become higher.

**ORDER GUIDE** 

LASER SENSORS	GX	-6 ty	уре												
PHOTO- ELECTRIC SENSORS MICRO	Туре		Appearance (mm in)	Sensing range (Note 1)	Model No. (Note 2)	Output	Output operation								
PHOTO- ELECTRIC SENSORS		þ	~/7		GX-F6A		Nemellu en er								
AREA SENSORS		Front sensing			GX-F6AI		Normally open								
LIGHT CURTAINS /	Ħ	ont s	6 0.236 24.5 0.965		GX-F6B		Normally closed								
SAFETY COMPONENTS	outpu	Putpt	Ē	Ē	Ē	Ē	ц,	Free	Ē	Ē	6 0.236		GX-F6BI	NPN open-collector	Normally closed
PRESSURE / FLOW SENSORS	NPN output	p	$\sim n$		GX-H6A	transistor	Normally open								
	2	sensing		Maximum	GX-H6AI										
INDUCTIVE PROXIMITY SENSORS		Top s	25	operation distance	GX-H6B		Normally closed								
PARTICULAR USE SENSORS			6 0.236	1.6 mm 0.063 in	GX-H6BI		Normany Closed								
		ng	$\sim$	(0 to 1.3 mm 0 to 0.051 in)	GX-F6A-P	-	Normally open								
SENSOR OPTIONS		sensing	6 0.236		GX-F6AI-P										
SIMPLE WIRE-SAVING UNITS	Ŧ	Front s	24.5	Stable sensing range	GX-F6B-P		Normally closed								
	outpi	ц	6 0.236		GX-F6BI-P	PNP open-collector									
WIRE-SAVING SYSTEMS	PNP output	þ	$\sim 1$		GX-H6A-P	transistor	Normally open								
MEASURE- MENT SENSORS	ц.	sensing			GX-H6AI-P										
SENSORS STATIC ELECTRICITY PREVENTION	pp se				GX-H6B-P		Normally closed								
PREVENTION			6 0.236		GX-H6BI-P										

Notes: 1) 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. 2) " I " in the model No. indicates a different frequency type.

#### GX-8 type

CONSUMPTION							·	
CONSUMPTION VISUALIZATION COMPONENTS FA COMPONENTS	Туре		Appearance (mm in)	Sensing range (Note 1)	Model No. (Note 2)	Output	Output operation	
MACHINE		бL	~~~		GX-F8A		Normally anon	
MACHINE VISION SYSTEMS		7.4 0.291 8 0.315	7.4 0.291		GX-F8AI		Normally open	
UV CURING SYSTEMS	ŧ		8 0.315 0.906		GX-F8B		No It is to a state	
	outpu		0.0.0		GX-F8BI	NPN open-collector	Normally closed	
	NPN output	bi bi		GX-H8A	transistor	N		
	z	sensing		Maximum	GX-H8AI		Normally open	
	Top sei	op se	8.2 0.323	operation distance	GX-H8B		Marca II ala sa d	
Selection Guide		Ĕ	8 0.315	2.5 mm 0.098 in	GX-H8BI		Normally closed	
Amplifier Built-in		b		(0 to 2.1 mm 0 to 0.083 in)	GX-F8A-P		No	
Amplifier- separated		sensing	7.4 0.291		GX-F8AI-P		Normally open	
	Ŧ	Front s	8 0.315 0.906	Stable sensing range	GX-F8B-P	PNP open-collector		
GX-F/H	NP output	Fro	0.313		GX-F8BI-P		Normally closed	
GXL	NP 0	0	~		GX-H8A-P	transistor		
GL GX-M	A	sensing			GX-H8AI-P		Normally open	
GX-U/GX-FU/		p ser	8.2 0.323		GX-H8B-P			
GX-N GX		Top	8 0.315		GX-H8BI-P		Normally closed	

Notes: 1) 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.

2) "I" in the model No. indicates a different frequency type.

## ORDER GUIDE

GX-12 type

Тур	e	Appearance (mm in)	Appearance (mm in)     Sensing range (Note 1)     Model No. (Note 2)		Output	Output operation	
	ē			GX-F12A		Normally open	
	sensing	7.1 0.280 12 0.472 27.8 1.094		GX-F12AI		Normally Open	
· · ·	NPN output			GX-F12B		Normally closed	
outpr				GX-F12BI	NPN open-collector	Normally closed	
D D			GX-H12A transistor	transistor	Normally open		
z   .	Top sensing	12 0.472 27.4 12 0.472 1.079	Maximum	GX-H12AI			
			operation distance	GX-H12B		Normally closed	
			4.0 mm 0.157 in	GX-H12BI		Normally closed	
	g	7.1 0.280	(0 to 3.3 mm 0 to 0.130 in)	30 in) GX-F12A-P		Normally open	
	sensing		\ \	GX-F12AI-P		Normally open	
· · · ·	Front s	27.8	Stable sensing range	GX-F12B-P		Normally closed	
outpr	Ĕ	0.472		GX-F12BI-P	PNP open-collector	Normally closed	
PNP output	D			GX-H12A-P	transistor	Nemer	
-  .	sensing	12 0.472	27.4 GX-I			Normally open	
	Top se	27.4				Normally aloand	
P		12 0.472		GX-H12BI-P		Normally closed	

Notes: 1) 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.

2) " I " in the model No. indicates a different frequency type.

#### GX-15 type

Ту	/pe	Appearance (mm in)	Sensing range (Note 1)	Model No. (Note 2)	Output	Output operation	- CONSUMPT VISUALIZAT COMPONEN FA COMPONEN	
	p			GX-F15A		Normally open	MACHIN	
	sensing	8 0.315		GX-F15AI			VISION SYSTEN	
÷	NPN output       Top sensing     Front s	31.5		GX-F15B		Normally closed	UV CURING SYSTEN	
outpu		15 0.591		GX-F15BI	NPN open-collector			
PN		16.5 0.650 29.5 15 0.591 1.161		GX-H15A	transistor	Normally open	-	
z			Maximum	GX-H15AI				
			operation distance	GX-H15B		Normally closed	-	
			5.Ó mm 0.197 in	GX-H15BI			Selectio Guide	
	БĽ			(0 to 4.2 mm 0 to 0.165 in)	GX-F15A-P		Normally on an	- Amplifie Built-in Amplifier
	sensing	8 0.315		GX-F15AI-P		Normally open	separate	
÷	Front s	31.5	Stable sensing range	GX-F15B-P		Newsellsselesed	01	
outpu	Ē	15 0.591		GX-F15BI-P	PNP open-collector transistor	Normally closed	GX-F/I	
PNP output	D		_	GX-H15A-P		Newsells	GL	
с.	sensing	16.5 0.650		GX-H15AI-P		Normally open	GX-M	
	Top ser	29.5		GX-H15B-P		Normally closed	GX-U/GX-FI GX-N	
		15 0.591 1.161		GX-H15BI-P		Normally closed	GX	

Notes: 1) 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.

2) " I " in the model No. indicates a different frequency type.

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PHOTO-ELECTRIC SENSORS MICRO PHOTO-ELECTRIC SENSORS

FIBER SENSORS

LASER SENSORS

AREA SENSORS LIGHT CURTAINS / SAFETY COMPONENTS

PRESSURE / FLOW SENSORS

PARTICULAR USE SENSORS

SENSOR OPTIONS

SIMPLE WIRE-SAVING UNITS WIRE-SAVING SYSTEMS

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ENERGY

LASER SENSORS

## **ORDER GUIDE**

#### GX-15 (Long sensing range) type

PHOTO- ELECTRIC SENSORS MICRO	Туре		e Appearance (mm in) Sensing range (Note 1)		Model No. (Note 2)	Output	Output operation				
MICRO PHOTO- ELECTRIC SENSORS		p			GX-FL15A		Nervell				
AREA SENSORS		Front sensing	8 0.315		GX-FL15AI		Normally open				
	ヨー		31.5		GX-FL15B		Nemellusiaesel				
LIGHT CURTAINS / SAFETY COMPONENTS	outpu		Fre	Ę	15 0.591		GX-FL15BI	NPN open-collector	Normally closed		
PRESSURE / FLOW SENSORS	NPN output	D		GX-HL15A	transistor	Normally open					
	sensi	ensin	ensin	ensin	ensir	16.5 0.650	Maximum	GX-HL15AI		Normally open	
INDUCTIVE PROXIMITY SENSORS		Top se	29.5	8.0 mm 0.315 in	GX-HL15B		Normally closed				
PARTICULAR		μĒ	15 0.591		GX-HL15BI		Normally closed				
SENSORS		bu	$\sim$	(0 to 6.7 mm 0 to 0.264 in)	GX-FL15A-P		Normally open				
SENSOR OPTIONS		sensing	8 0.315		GX-FL15AI-P		Normally open				
SIMPLE WIRE-SAVING	ŧ	Front s	ont se	31.5	Stable sensing range	GX-FL15B-P		Normally closed			
UNITS	output	ш	15 0.591		GX-FL15BI-P	PNP open-collector	Normally closed				
WIRE-SAVING SYSTEMS	PNP (	D			GX-HL15A-P	transistor	Normally open				
MEASURE- MENT SENSORS	sensi	Top sensing	op sensing	16.5 0.650		GX-HL15AI-P		Normally open			
				29.5		GX-HL15B-P		Normally closed			
STATIC ELECTRICITY PREVENTION DEVICES		F	15 0.591 1.161		GX-HL15BI-P						

Notes: 1) 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.

2) "I" in the model No. indicates a different frequency type.

#### 5 m 16.404 ft cable length type, flexible cable type

5 m 16.404 ft cable length type (standard: 1 m 3.281 ft) and flexible cable (excluding 5 m 16.404 ft cable length type) are available. However, long sensing range type is not available. When ordering 5 m 16.404 ft cable length type, suffix "-C5" to the model No. When ordering flexible cable type, suffix "-R" to the model No.

(e.g.) 5 m 16.404 ft cable length type of GX-F15AI-P is "GX-F15AI-P-C5". Flexible cable type of GX-F15AI-P is "GX-F15AI-P-R".

## **OPTIONS**

SYSTEMS	Designation	Model No.	Des	cription	Sensor mou · MS-GX6-1
		MS-GX6-1	Mounting bracket for <b>GX-6</b> ty Sensors can be mounted close		
Selection Guide	Sensor	MS-GL6-1	Mounting brackets for GX-6 t	· MS-GL6-1	
, and the second second	mounting bracket	MS-GL6-2	Sensor mounting brackets for possible.	<	
		MS-GXL8-4	Mounting bracket for GX-8 typ	· MS-GL6-2	
		MS-GXL15	Mounting bracket for GX-15 ty		
GX-F/H	Aluminum	MS-A15F	For <b>GX-FL15</b> □( <b>-P</b> )	Mounting example when mounted onto a steel or	· MS-GXL8-4
GXL	sheet	MS-A15H	For GX-HL15□(-P)	stainless steel plate	MO-OALO-4
GL GX-M GX-U/GX-FU/ GX-N GX	Mounting sleeve	<b>MS-GX8-1×10</b> 10 pcs. per set	Mounting sleeve for <b>GX-8</b> typ, Screw, nut, bracket of <b>GXL-5</b> the bracket into the mounting 3-wire type <b>GXL-8</b> series (disc		

## sor mounting bracket -GX6-1 Screw is not



· MS-GXL15

Screw is not attached.

> Screw is not attached.

attached.

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

Screw is not

attached.

#### **Aluminum sheet**





## SPECIFICATIONS

#### GX-6 type

	Туре	NPN	output	PNP o	utput	
		GX-F6A(I)	GX-F6B(I)	GX-F6A(I)-P	GX-F6B(I)-P	
Item	Front sensing Top sensing	GX-H6A(I)	GX-H6B(I)	GX-H6A(I)-P	GX-H6B(I)-P	
	ation distance (Note 3)			063 in ± 8 %	( )	
Stable ser	nsing range (Note 3)	ote 3) 0 to 1.3 mm 0 to 0.051 in				
Standard s	sensing object		Iron sheet 12 × 12 × t 1 mr	n 0.472 × 0.472 × t 0.039 in		
Hysteresis	3		20 % or less of operation distant	ce (with standard sensing object)		
Repeatabi	ility	Along	sensing axis, perpendicular to s	ensing axis: 0.04 mm 0.0016 in o	r less	
Supply vol	Itage		12 to 24 V DC <sup>+10</sup> 15 %	Ripple P-P 10 % or less		
Current co	onsumption		15 mA	or less		
Output			0 mA   PNP open-collector transistor     0 mA   • Maximum source current: 100 mA     or less (between output and 0 V)   • Applied voltage: 30 V DC or less (between output and +V)     ess (at 100 mA sink current)   • Residual voltage: 2 V or less (at 100 mA source current)			
Utiliz	zation category		· · · · · · · · · · · · · · · · · · ·	12 or DC-13		
Output operation		Normally closed	Normally closed	Normally closed	Normally closed	
Max. resp	onse frequency		400	) Hz		
Operation	indicator		Orange LED (lights up	when the output is ON)		
Pollu	ution degree		3 (Industrial	environment)		
م Prote	ection		IP68 (IEC), IP	68G (Note 4, 5)		
dmA gtauc	ient temperature	-2	25 to +70 °C -13 to +158 °F, Stor	rage: -40 to +85 °C -40 to +185	°F	
Amb	ient humidity		35 to 85 % RH, Sto	rage: 35 to 95 % RH		
SM3 ENC	2		EN 60	947-5-2		
Amb Amb EMC Volta Insul	age withstandability	1,000 V AC	for one min. between all supply	terminals connected together and	l enclosure	
Insul	lation resistance	50 MΩ, or more, wi	ith 500 V DC megger between al	I supply terminals connected toge	ther and enclosure	
	ation resistance	10 to 500 Hz freque	ncy, 3 mm 0.118 in amplitude (M	lax. 20 G) in X, Y and Z directions	for two hours each	
Shoo	ck resistance	10,000 m/s	<sup>2</sup> acceleration (1,000 G approx.)	in X, Y and Z directions for three	times each	
Sensing range	Temperature characteristics	Over ambient temperat	6	+158 °F: Within ± 8 % of sensing r	ange at +23 °C +73 °F	
variation	Voltage characteristics		Within $\pm 2$ % for $^{+10}_{-15}$ % fluct	uation of the supply voltage		
Material			Enclosure: PBT, Ind	icator part: Polyester		
Cable		0.15	mm <sup>2</sup> 3-core oil, heat and cold res	sistant cabtyre cable, 1 m 3.281 ft	long	
Cable exte	ension	Extens	ion up to total 100 m 328.084 ft i	s possible with 0.3 mm <sup>2</sup> , or more,	cable.	
Net weigh	t		15 g a	approx.		

Notes: 1) Where measurement conditions have not been specified precisely, the conditions used were an ambient temperature of +23 °C +73 °F.

2) " I " in the model No. indicates a different frequency type.

3) 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.

4) Panasonic Industrial Devices SUNX's IP68 test method

(1) Immerse at 0 m below 0 °C +32 °F water surface and leave for 30 min. Then, immerse at 0 m below +70 °C +158 °F water surface and leave for 30 min. (2) Regard the heat shock test in (1) as one cycle and perform 20 cycles.

③ Leave in water at a depth of 1 m 3.281 ft in water for 500 hours.

④ After tests ① to ③, insulation resistance, voltage withstandability, current consumption, and sensing range must meet the standard values.
5) 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.

Selection Guide Amplifier Built-in Amplifierseparated

FIBER SENSORS

LASER SENSORS

LASER SENSORS

### SPECIFICATIONS

#### GX-8 type

PHOTO- ELECTRIC SENSORS	$\frown$	<u> </u>	Туре	NPN	output	PNP	output			
MICRO		NO.	Eront sensing	GX-F8A(I)	GX-F8B(I)	GX-F8A(I)-P	GX-F8B(I)-P			
PHOTO- ELECTRIC SENSORS	Item	Model 1	Top sensing	GX-H8A(I)	GX-H8B(I)	GX-H8A(I)-P	GX-H8B(I)-P			
AREA SENSORS	Max.	operatior	n distance (Note 3)		2.5 mm 0.0	98 in ± 8 %				
LIGHT CURTAINS / SAFETY	Stabl	e sensin	g range (Note 3)		0 to 2.1 mm	0 to 0.083 in				
COMPONENTS	Stan	dard sen	sing object		Iron sheet 15 × 15 × t 1 mn	ו 0.591 × 0.591 × t 0.039 in				
PRESSURE / FLOW SENSORS	Hyste	eresis			20 % or less of operation distant	ce (with standard sensing object)				
	Repe	atability		Along	Along sensing axis, perpendicular to sensing axis: 0.04 mm 0.0016 in or less					
INDUCTIVE PROXIMITY SENSORS	Supp	ly voltag	e		12 to 24 V DC <sup>+10</sup> <sub>-15</sub> %	Ripple P-P 10 % or less				
PARTICULAR USE SENSORS	Curre	ent consu	umption		15 mA	or less				
SENSOR OPTIONS SIMPLE	Output			NPN open-collector transistor • Maximum sink current: 100 • Applied voltage: 30 V DC o	) mA r less (between output and 0 V)	PNP open-collector transistor • Maximum source current: • Applied voltage: 30 V DC of	100 mA or less (between output and +V)			
WIRE-SAVING UNITS				Residual voltage: 2 V or less	ss (at 100 mA sink current)	Residual voltage: 2 V or le	ss (at 100 mA source current)			
WIRE-SAVING SYSTEMS		Utilizatio	on category		DC-12 c	or DC-13				
		Output c	operation	Normally open	Normally closed	Normally open	Normally closed			
MEASURE- MENT SENSORS	Max. response frequency				500 Hz					
STATIC ELECTRICITY PREVENTION	Oper	ation ind	icator	Orange LED (lights up when the output is ON)						
DEVICES		Pollution	n degree	3 (Industrial environment)						
LASER MARKERS	e	Protectio	on	IP68 (IEC), IP68G (Note 4, 5)						
PLC	Environmental resistance	Ambient	temperature	-2	5 to +70 °C –13 to +158 °F, Stor	age: -40 to +85 °C -40 to +185	°F			
HUMAN	resi	Ambient	humidity		35 to 85 % RH, Storage: 35 to 95 % RH					
MACHINE INTERFACES ENERGY	ental	EMC			EN 609	947-5-2				
CONSUMPTION VISUALIZATION COMPONENTS	uno	Voltage	withstandability	1,000 V AC	for one min. between all supply	terminals connected together an	d enclosure			
FA	Envir	Insulatio	on resistance	50 MΩ, or more, wit	th 500 V DC megger between all	supply terminals connected tog	ether and enclosure			
COMPONENTS		Vibration	n resistance	10 to 500 Hz frequer	ncy, 3 mm 0.118 in amplitude (M	ax. 20 G) in X, Y and Z direction	s for two hours each			
MACHINE VISION SYSTEMS		Shock re	esistance	10,000 m/s <sup>2</sup>	<sup>2</sup> acceleration (1,000 G approx.)	in X, Y and Z directions for three	times each			
UV	Sens range		mperature characteristics	Over ambient temperate	-	158 °F: Within ± 8 % of sensing	range at +23 °C +73 °F			
CURING SYSTEMS	varia		oltage characteristics		Within $\pm 2$ % for $^{+10}_{-15}$ % fluct	uation of the supply voltage				
	Mate	rial			Enclosure: PBT, Ind	cator part: Polyester				
	Cable	e		0.15 r	mm <sup>2</sup> 3-core oil, heat and cold res	istant cabtyre cable, 1 m 3.281 f	t long			
	Cable	e extensi	on	Extensi	on up to total 100 m 328.084 ft i	s possible with 0.3 mm <sup>2</sup> , or more	, cable.			
Selection Guide	Net v	veight			Front sensing type: 15 g approx.	, Top sensing type: 20 g approx.				
Guide	Notes	: 1) Whe	re measurement o	conditions have not been specifie	d precisely, the conditions used	were an ambient temperature of	+23 °C +73 °F.			

Notes: 1) Where measurement conditions have not been specified precisely, the conditions used were an ambient temperature of +23 °C +73 °F. 2) "I" in the model No. indicates a different frequency type.

3) 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.

4) Panasonic Industrial Devices SUNX's IP68 test method

① Immerse at 0 m below 0 °C +32 °F water surface and leave for 30 min. Then, immerse at 0 m below +70 °C +158 °F water surface and leave for 30 min.  $\widecheck{2}$  Regard the heat shock test in 1 as one cycle and perform 20 cycles.

③ Leave in water at a depth of 1 m 3.281 ft in water for 500 hours.

4 After tests ① to ③, insulation resistance, voltage withstandability, current consumption, and sensing ranges must meet the standard values.

5) If using the sensor in an environment where cutting oil droplets splatter, the sensor may deteriorate due to added substances in the oil.

Please check the resistivity of the sensor against the cutting oil you are using beforehand.

GΧ

Amplifie Built-ir

Amplifier-separated

## SPECIFICATIONS

#### GX-12 type

	Туре	NDN	output	PNP o	utout		
	20 Front sensing	GX-F12A(I)	GX-F12B(I)	GX-F12A(I)-P	GX-F12B(I)-P		
Item	Top sensing	GX-H12A(I)	GX-H12B(I)	GX-H12A(I)-P	GX-H12B(I)-P		
Max. opera	ation distance (Note 3)		4.0 mm 0.1	157 in ± 8 %	( )		
Stable ser	nsing range (Note 3)	g range (Note 3) 0 to 3.3 mm 0 to 0.130 in					
Standard	sensing object		Iron sheet 20 × 20 × t 1 mr	n 0.787 × 0.787 × t 0.039 in			
Hysteresis	5	20 % or less of operation distance (with standard sensing object)					
Repeatab	ility	Along	sensing axis, perpendicular to s	ensing axis: 0.04 mm 0.0016 in o	r less		
Supply vo	Itage		12 to 24 V DC <sup>+10</sup> 15 %	Ripple P-P 10 % or less			
Current co	onsumption		15 mA	or less			
Output	NPN open-collector transistor     PNP open-collector transistor       • Maximum sink current: 100 mA     • Maximum source current: 100 mA       • Applied voltage: 30 V DC or less (between output and 0 V)     • Applied voltage: 2 V or less (at 100 mA sink current)       • Residual voltage: 2 V or less (at 100 mA sink current)     • Residual voltage: 2 V or less (at 100 mA source current)				r less (between output and +V)		
Utiliz	zation category		· · · · · ·	• Residual voltage: 2 v or less (at 100 mA source curren			
	out operation	Normally open	Normally closed	Normally open	Normally closed		
Max. resp	onse frequency						
Operation	indicator		Orange LED (lights up	when the output is ON)			
Pollu	ution degree		3 (Industrial	environment)			
	ection		IP68 (IEC), IP	68G (Note 4, 5)			
dmA gtano	pient temperature	–25 to +70 °C –13 to +158 °F, Storage: –40 to +85 °C –40 to +185 °F					
Amb	ient humidity		35 to 85 % RH, Sto	rage: 35 to 95 % RH			
EMC	2		EN 60	947-5-2			
Amb Amb EMC Volta Insul	age withstandability	1,000 V AC	for one min. between all supply	terminals connected together and	l enclosure		
Insu	lation resistance	50 MΩ, or more, wi	th 500 V DC megger between al	I supply terminals connected toge	ther and enclosure		
	ation resistance	10 to 500 Hz freque	ncy, 3 mm 0.118 in amplitude (M	lax. 20 G) in X, Y and Z directions	for two hours each		
Shoo	ck resistance	10,000 m/s	<sup>2</sup> acceleration (1,000 G approx.)	in X, Y and Z directions for three	times each		
Sensing range	Temperature characteristics	Over ambient temperat	ture range –25 to +70 °C –13 to	+158 °F: Within ±8 % of sensing r	ange at +23 °C +73 °F		
variation	Voltage characteristics		Within $\pm 2$ % for $^{+10}_{-15}$ % fluct	uation of the supply voltage			
Material			Enclosure: PBT, Ind	licator part: Polyester			
Cable		0.15	0.15 mm <sup>2</sup> 3-core oil, heat and cold resistant cabtyre cable, 1 m 3.281 ft long				
Cable exte	ension	Extens	ion up to total 100 m <u>328.084</u> ft i	is possible with 0.3 mm <sup>2</sup> , or more,	cable.		
Net weigh	t		Front sensing type: 20 g approx.	, Top sensing type: 20 g approx			

Notes: 1) Where measurement conditions have not been specified precisely, the conditions used were an ambient temperature of +23 °C +73 °F.

2) " I " in the model No. indicates a different frequency type.

3) 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.

4) Panasonic Industrial Devices SUNX's IP68 test method

① Immerse at 0 m below 0 °C +32 °F water surface and leave for 30 min. Then, immerse at 0 m below +70 °C +158 °F water surface and leave for 30 min. Regard the heat shock test in ① as one cycle and perform 20 cycles.
Leave in water at a depth of 1 m 3.281 ft in water for 500 hours.

(4) After tests (1) to (3), insulation resistance, voltage withstandability, current consumption, and sensing ranges must meet the standard values. 5) If using the sensor in an environment where cutting oil droplets splatter, the sensor may deteriorate due to added substances in the oil.

Please check the resistivity of the sensor against the cutting oil you are using beforehand.

Selection Guide Amplifie separate

FIBER SENSORS

LASER SENSORS

LASER SENSORS

### SPECIFICATIONS

#### GX-15 type

PHOTO- ELECTRIC SENSORS	$\frown$		Type		NPN	output			PNP	output	
MICRO			Туре			Long sens	sing range			Long sens	sing range
PHOTO- ELECTRIC SENSORS			Front sensing	GX-F15A(I)	GX-F15B(I)	GX-FL15A(I)	GX-FL15B(I)	GX-F15A(I)-P	GX-F15B(I)-P	GX-FL15A(I)-P	GX-FL15B(I)-P
AREA SENSORS	Item	ו קא	Top sensing	GX-H15A(I)	GX-H15B(I)	GX-HL15A(I)	GX-HL15B(I)	GX-H15A(I)-P	GX-H15B(I)-P	GX-HL15A(I)-P	GX-HL15B(I)-P
	Max.	operati	ion distance (Note 3)	5.0 mm 0.1	97 in ± 8 %	8.0 mm 0.315 ir	± 8 % (Note 4)	5.0 mm 0.1	97 in ± 8 %	8.0 mm 0.315 ir	± 8 % (Note 4)
LIGHT CURTAINS/ SAFETY COMPONENTS	Stab	le sens	ing range (Note 3)	0 to 4.2 mm 0 to 0.165 in 0 to 6.7 mm 0 to 0.264 in (Note 4)		0 to 4.2 mm	0 to 0.165 in	0 to 6.7 mm 0 to 0.264 in (Note 4)			
PRESSURE / FLOW SENSORS	Stan	dard se	ensing object	Iron sheet 20 × 20 × t 1 mm     Iron sheet 30 × 30 × t 1 mm       0.7874 × 0.7874 × t 0.039 in     1.181 × 1.181 × t 0.039 in		Iron sheet 20 × 20 × t 1 mm 0.7874 × 0.7874 × t 0.039 in		Iron sheet 30 1.181 × 1.18			
INDUCTIVE PROXIMITY SENSORS	Hyst	eresis		20 % or less of operation distance (with standard sensing object)							
PARTICULAR USE SENSORS -	Repe	eatabilit	ty	Along sensing axis, perpendicular to sensing axis: 0.04 mm 0.0016 in or less							
	Supp	oly volta	age			12 to 24	4 V DC <sup>+10</sup> % I	Ripple P-P 10 %	or less		
SENSOR OPTIONS	Current consumption		sumption				15 mA	or less			
SIMPLE WIRE-SAVING UNITS			NPN open-colle • Maximum	ector transistor sink current: 100	) mA		PNP open-collector transistor • Maximum source current: 100 mA				
WIRE-SAVING SYSTEMS	Output		Applied voltage: 30 V DC or less (between output and 0 V) Residual voltage: 2 V or less (at 100 mA sink current) Applied voltage: 2 V					oltage: 30 V DC	or less (between	• • •	
MEASURE- MENT SENSORS	Utilization category		tion category	DC-12 or DC-13							
STATIC ELECTRICITY PREVENTION DEVICES			t operation	Normally open	Normally closed	Normally open		1	Normally closed	Normally open	Normally closed
PREVENTION DEVICES	Max	. respor	nse frequency	250	Hz	150 Hz	(Note 5)	250	) Hz	150 Hz	(Note 5)
LASER MARKERS	Ope	ration ir	ndicator	Orange LED (lights up when the output is ON)							
PLC		Polluti	on degree	3 (Industrial environment)							
		Protec	tion	IP68 (IEC), IP68G (Note 6, 7)							
HUMAN MACHINE INTERFACES	ance	Ambie	ent temperature	-25 to +70 °C -13 to +158 °F, Storage: -40 to +85 °C -40 to +185 °F							
ENERGY CONSUMPTION	esist	Ambie	ent humidity			35 t	o 85 % RH, Stor	rage: 35 to 95 %	RH		
CONSUMPTION VISUALIZATION COMPONENTS	ntal r	EMC					EN 609	947-5-2			
FA COMPONENTS	Environmental resistance	Voltag	e withstandability		1,000 V AC	for one min. bet	ween all supply	terminals conne	cted together an	d enclosure	
MACHINE VISION SYSTEMS	nviro	Insula	tion resistance	50	MΩ, or more, wi	th 500 V DC me	gger between all	I supply terminal	s connected tog	ether and enclos	ure
SYSTEMS	ш	Vibrati	ion resistance	10 to	500 Hz frequer	ncy, 3 mm <mark>0.118</mark>	in amplitude (M	1ax. 20 G) in X, `	Y and Z directior	ns for two hours e	each
CURING SYSTEMS		Shock	resistance		10,000 m/s <sup>2</sup>	<sup>2</sup> acceleration (1	,000 G approx.)	in X, Y and Z dir	ections for three	times each	
	Sens		Temperature characteristics	Over ar	nbient temperati	ure range –25 to	+70 °C –13 to +	<mark>⊦158</mark> °F: Within ±	8 % of sensing	range at +23 °C	+73 °F
	rang varia		Voltage characteristics			Within ±2 9	% for <sup>+10</sup> <sub>-15</sub> % fluctu	uation of the sup	ply voltage		
	Mate	erial				Enc	osure: PBT, Indi	icator part: Polye	ester		
Selection	Cable				0.15 ו	mm <sup>2</sup> 3-core oil, h	eat and cold res	sistant cabtyre ca	able, 1 m 3.281 f	ft long	

ш	Vibration resistance		10 to 500 Hz frequency, 3 mm 0.118 in amplitude (Max. 20 G) in X, Y and Z directions for two hours each		
	Shoc	k resistance	10,000 m/s <sup>2</sup> acceleration (1,000 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 ± 8 % of sensing range at +23 °C +73 °F		
	ange ariation Voltage characteristics Within ±2 % for $^{+10}_{-15}$ % fluctuation of the supply voltage		Within $\pm 2$ % for $^{+10}_{-15}$ % fluctuation of the supply voltage		
Material			Enclosure: PBT, Indicator part: Polyester		
Cable			0.15 mm <sup>2</sup> 3-core oil, heat and cold resistant cabtyre cable, 1 m 3.281 ft long		
Cable extension		nsion	Extension up to total 100 m 328.084 ft is possible with 0.3 mm <sup>2</sup> , or more, cable.		
Net weight			20 g approx.		

Notes: 1) Where measurement conditions have not been specified precisely, the conditions used were an ambient temperature of +23 °C +73 °F.

2) " I " in the model No. indicates a different frequency type.

3) 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.

4) This is the numerical value which the sensor mount onto an insulant plate. When mounted onto a steel or stainless steel plate, insert the optional aluminum sheet between the sensor and the plate.

5) This is the numerical value which the sensor mount onto an insulant plate. When mounted onto a metallic plate, max. response frequency will decrease. 6) Panasonic Industrial Devices SUNX's IP68 test method

① Immerse at 0 m below 0 °C +32 °F water surface and leave for 30 min. Then, immerse at 0 m below +70 °C +158 °F water surface and leave for 30 min. 2 Regard the heat shock test in 1 as one cycle and perform 20 cycles.

③ Leave in water at a depth of 1 m 3.281 ft in water for 500 hours.

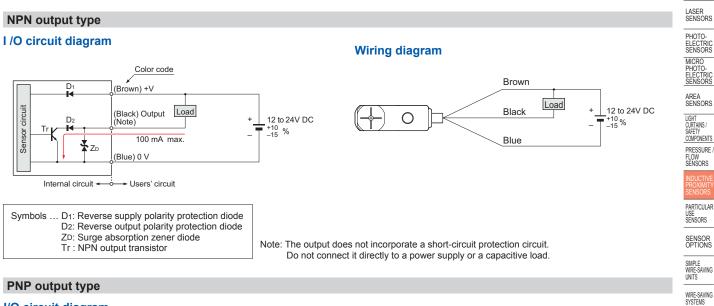
(4) After tests (1) to (3), insulation resistance, voltage withstandability, current consumption, and sensing range must meet the standard values.

7) 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.

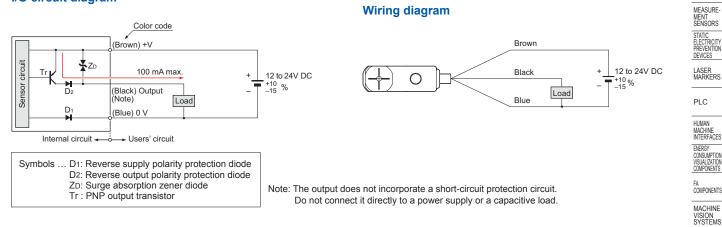
GX-N

GX

## I/O CIRCUIT DIAGRAMS



#### I/O circuit diagram



FIBER SENSORS

UV CURING SYSTEMS

Selection Guide

Amplifier separate

GXL GL GX-M GX-U(GX-FU/ GX-N GX

## SENSING CHARACTERISTICS (TYPICAL)

## GX-6 type Sensing field

817

FIBER SENSORS

#### Correlation between sensing object size and sensing range

Iron

Aluminur

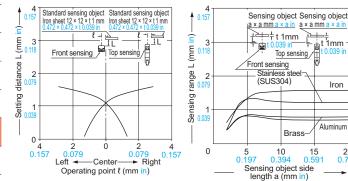
20

0.78

Brass-

15 0.591

10 0.39/

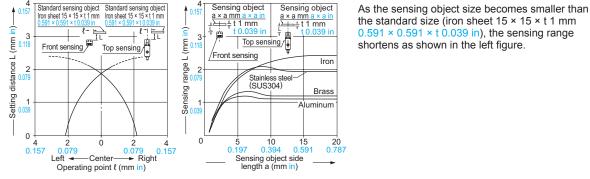


As the sensing object size becomes smaller than the standard size (iron sheet 12 × 12 × t 1 mm  $0.472 \times 0.472 \times t \ 0.039$  in), the sensing range shortens as shown in the left figure.

#### GX-8 type

Sensing field

#### Correlation between sensing object size and sensing range



20 0.78

ġ

#### GX-12 type

#### Sensing field

#### د 0.315 Standard sensing object Standard sensing object Iron sheet 20 × 20 × t 1 mm Iron sheet 20 × 20 × t 1 mm Sensing object a × a mm a × a in Setting distance L (mm in)-6 Front sensing 6 Top sensing range L (mm 南 Front sensing 4 157 4 57 Sensing Selection Guide 2 079 2 Amplifier Built-in 0↓ 10 35 Amplifier 5 197 ò 5 0 10 separated 10 0.197 0.394 → Right 0 -Center-Left Sensing object side length a (mm in) Operating point { (mm in)

#### Correlation between sensing object size and sensing range

Sensing object a × a mm a × a in

Stainless stee (SUS304)

Iron

Brass

Aluminum

30

Top sensing

As the sensing object size becomes smaller than the standard size (iron sheet 20 × 20 × t 1 mm  $0.787 \times 0.787 \times t \ 0.039$  in), the sensing range shortens as shown in the left figure.

#### GX-15 type

GXL

GL

GX-N

GX

GX-M GX-U/GX-FU/

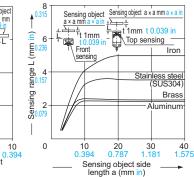
#### Sensing field

#### Standard sehsing object Iron sheet 20 × 20 × t 1 mm 0.787 × 0.787 × t 0.039 in Standard sensing object Iron sheet 20 × 20 × t 1 mm 0.787 × 0.787 × t 0.039 in t 0.0. Front ×<u>tu...</u> | ℓ =1 ≝== \_\_: ↓ L Setting distance L (mm in) Front sensing range L (mm in) Top sensing 6 6 4 157 4 157 Sensing I 2 2 0 Ó 0 10 5 0.197 ( → Right 10 5 0.197 10 0.394 0.39 0.3 -Center-Left -Operating point { (mm in)

#### Correlation between sensing object size and sensing range

40

1.575



As the sensing object size becomes smaller than the standard size (iron sheet 20 × 20 × t 1 mm  $0.787 \times 0.787 \times t \ 0.039$  in), the sensing range shortens as shown in the left figure.

As the sensing object size becomes smaller than

the standard size (iron sheet 30 × 30 × t 1 mm

 $1.181 \times 1.181 \times t \ 0.039$  in), the sensing range

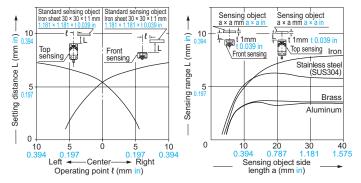
shortens as shown in the left figure.

## SENSING CHARACTERISTICS (TYPICAL)

#### GX-15 (Long sensing range) type

#### Sensing field

#### Correlation between sensing object size and sensing range



## 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

#### GX-6 type

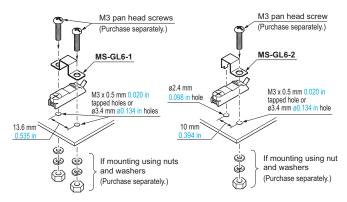
· Use the optional sensor mounting bracket when installing.

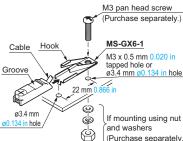
#### <When using MS-GX6-1 (recommended)>

- · To mount the sensor with a nut, the mounting hole diameter should be ø3.4 mm ø0.134 in.
- ① Insert the sensor into the bracket as shown on the right.
- 2 Push the sensor until the bracket hook is lodged in the groove on the upper portion of the sensor.
- ③ Fix the bracket in place with M3 pan head screw.

#### <When using MS-GL6-1 / MS-GL6-2>

· To mount the sensor with a nut, the mounting hole diameter should be ø3.4 mm ø0.134 in.





(Purchase separately.)

· When installing the long sensing range type on iron or stainless steel plate, put the optional aluminum sheet in between the sensor and the plate.

Refer to p.1485~ for general precautions.

## GX-8 type

 Make sure to use a M3 (length: 12 mm 0.472 in or more) truss head screw. The tightening torque should be 0.7 N·m or less. Do not use a flat head screw or a pan head screw.

#### GX-12 type

- The tightening torque should be 0.7 N·m or less.
- · To mount the sensor with a nut, the mounting hole diameter should be ø3.4 mm Ø0.134 in. Further, the hole in which the boss is inserted should be ø2.5 mm Ø0.098 in and 3 mm 0.118 in, or more, deep.

#### GX-15 type

 The tightening torque should be 1 N·m or less. · To mount the sensor with a nut, the mounting hole diameter should be ø3.4 mm ø0.134 in.

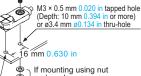


M3 (length 12 mm 0.472 in) truss h screw (Accessory for MS-GXL8-4)

MS-GXL8-4 (Accessory)

M3 × 0.5 mm 0.020 in tapped hole

n) truss head



(Purchase separately.) ø2.5 mm ø0.098 in hole (Depth: 3 mm 0.118 in or more)

screws.

NIII

•

9 mm

M3 pap head screws or

Do not use flat head

M3 x 0.5 mm 0.020 in

ø3.4 mm ø0.134 in holes

If mounting using nuts

(Purchase separately.)

(Sensor mounting bracket)

tapped holes or

and washers

MS-GXL15

truss head screws

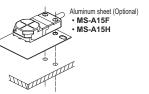


GXL

## GL

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





FIBER SENSORS

LASER SENSORS

рното

ELECTRIC

MICRO PHOTO-ELECTRIC SENSORS

AREA SENSORS

LIGHT CURTAINS / SAFETY

COMPONENTS

PRESSURE

FLOW SENSORS

PARTICULAR USE SENSORS

SENSOR OPTIONS

SIMPLE WIRE-SAVING UNITS

WIRE-SAVING SYSTEMS

MEASURE-

MENT SENSORS

STATIC ELECTRICITY PREVENTION

LASER MARKERS

DEVICES

PLC

HUMAN

ENERG CONSUMPTIO VISUALIZATIO COMPONENTS

MACHINE INTERFACES

FA COMPONENTS

MACHINE

VISION SYSTEMS

UV CURING SYSTEMS

LASER SENSORS

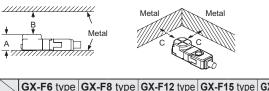
PHOTO

## **PRECAUTIONS FOR PROPER USE**

#### Influence of surrounding metal

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

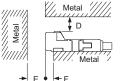
#### Front sensing type

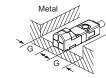


$\searrow$	GX-F6 type	GX-F8 type	GX-F12 type	GX-F15 type	GX-FL15 type	
А	6 mm 0.236 in (Note 1)	7.4 mm 0.291 in	7.1 mm 0.280 in	8 mm 0.315 in	8 mm 0.315 in (Note 2)	
В	8 mm 0.315 in	8 mm 0.315 in	20 mm 0.787 in	20 mm 0.787 in	30 mm 1.181 in	
С	3 mm 0.118 in	3 mm 0.118 in	7 mm 0.276 in	7 mm 0.276 in	10 mm 0.394 in	

- Notes: 1) When using MS-GX6-1 (recommended mounting bracket), the distance "A" including the thickness of mounting bracket will be 6.4 mm 0
  - 2) The GXL-FL15 type should be mounted on an insulator. To mount it on an iron or stainless steel, use the enclosed aluminum sheet.

#### Top sensing type





$\overline{\ }$	GX-H6 type	GX-H8 type	GX-H12 type	GX-H15 type	GX-HL15 type
D	3 mm 0.118 in	4 mm 0.157 in	7 mm 0.276 in	6 mm 0.236 in	12 mm 0.472 in
E	10 mm 0.394 in	10 mm 0.394 in	20 mm 0.787 in		
F	2 mm 0.079 in	3 mm 0.118 in	3 mm 0.118 in	0 mm 0 in	10 mm 0.394 in (Note)
G	2 mm 0.079 in	3 mm 0.118 in	3 mm 0.118 in	3 mm 0.118 in	10 mm 0.394 in

Note: When GX-HL15 type is mounted on an insulator or seated on the enclosed aluminum sheet, the distance "F" can be zero.

#### **Mutual interference prevention**

Between "I" type and non "I" type

Between two "I" types

or two non "I" types

· 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

0 mm

Note 2

13 mm

J

15 mm

25 mm

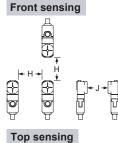
Selection Guide	GX-F6 GX-H6 type
Amplifier Built-in Amplifier- separated	GX-F8 GX-H8 type
GX-F/H GXL	GX-F12 GX-H12 type
GL GX-M	GX-F18 GX-H18 type

GX-U/GX-FU/

GX-N

GX

	GX-F8 GX-H8	Between "I" type and non "I" type	0 mm (Note 2)	15 mm 0.591 in
	type	Between two "I" types or two non "I" types	20 mm 0.787 in	35 mm 1.378 in
	GX-F12 GX-H12	Between "I" type and non "I" type	0 mm (Note 2)	25 mm 0.984 in
	type	Between two "I" types or two non "I" types	25 mm 0.984 in	50 mm 1.969 in
	GX-F15 GX-H15 type	Between "I" type and non "I" type	0 mm (Note 2)	25 mm 0.984 in
		Between two "I" types or two non "I" types	45 mm 1.772 in	70 mm 2.756 in
	GX-FL15 GX-HL15 type	Between "I" type and non "I" type	0 mm (Note 2)	25 mm 0.984 in
		Between two "I" types or two non "I" types	110 mm 3.059 in	170 mm <mark>6.693 in</mark>





0

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. GX-F6 / H6 type: 3.5mm 0.138 GX-F8 / H8 type: 6mm 0.236 in

GX-F12 / H12 type: 6.5mm 0.256 in

GX-F15 / H15 type: 15mm 0.591 in GX-FL15 / HL15 type: 47.5mm 1.870 in

#### Refer to p.1485~ for general precautions.

#### 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**

Model No. Metal	GX-F6 GX-H6 type	GX-F8 GX-H8 type	GX-F12 GX-H12 type	GX-F15 GX-H15 type	GX-FL15 type	GX-HL15 type
Iron	1	1	1	1	1	1
Stainless steel (SUS304)	0.76 approx.	0.76 approx.	0.79 approx.	0.68 approx.	0.70 approx.	0.76 approx.
Brass	0.50 approx.	0.50 approx.	0.56 approx.	0.47 approx.	0.45 approx.	0.50 approx.
Aluminum	0.48 approx.	0.48 approx.	0.53 approx.	0.45 approx.	0.43 approx.	0.48 approx.

#### Wiring

 The output does not incorporate a short-circuit protection circuit. Do not connect it directly to a power supply or a capacitive load.

#### **Others**

• Do not use during the initial transient time (50 ms) after the power supply is switched on.

LASER SENSORS

PHOTO-ELECTRIC SENSORS

MICRO PHOTO-ELECTRIC SENSORS

AREA SENSORS

LIGHT CURTAINS / SAFETY COMPONENTS

PRESSURE

FLOW

PARTICULAR USE SENSORS

SENSOR OPTIONS

SIMPLE WIRE-SAVING UNITS

WIRE-SAVING SYSTEMS

MEASURE-MENT SENSORS

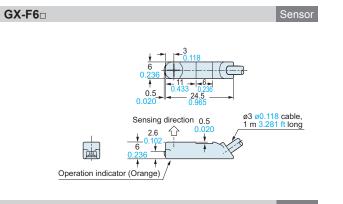
STATIC ELECTRICITY PREVENTION

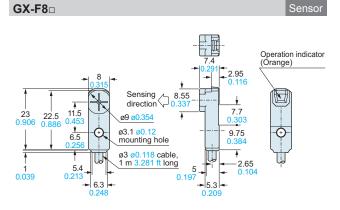
LASER MARKERS

DEVICES

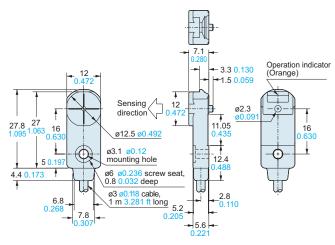
PLC

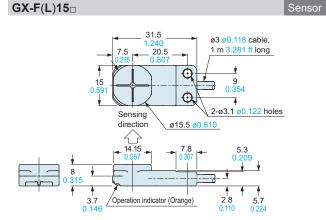


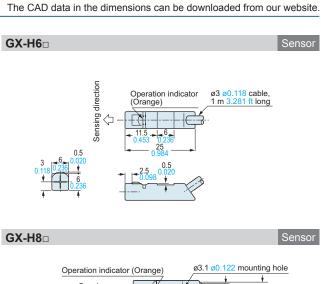


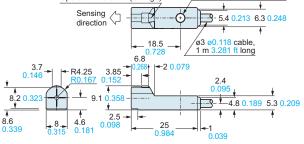


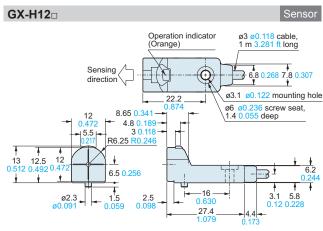










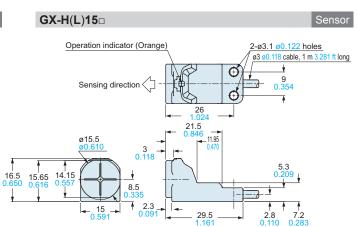


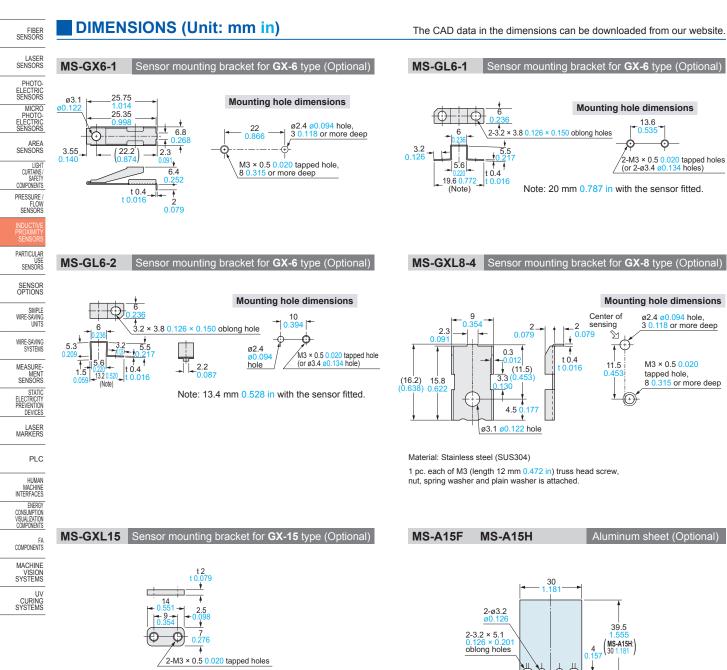




## GXL GL GX-M







Material: SPCC

Selection Guide

Amplifier Built-in

Amplifier separated

GXL GL GX-M GX-U/GX-FU/ GX-N GX

39.5 2-3.2 × 5.1 (MS-A15H:) oblong holes 4 ŧ 9 t = 0.3 0.012 1.9 0.075 21 1.9 0.075

30

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

2-3.2 × 3.8 0.126 × 0.150 oblong holes

6

236 0

5.5

2. 0.079

0.3

0.012

(11.5) 3.3 (0.453

4.5

ø3.1 ø0.122 hole

MS-A15H

2-ø3.2

t 0.4

0.016

 $\bigcirc$ 

6

5.6

(Note)

g

19.6 0

Sensor mounting bracket for **GX-6** type (Optional)

Note: 20 mm 0.787 in with the sensor fitted.

Center of

N

11.5

(Ŧ)

sensing

2 Se 0.079

t 0.4

0.016

Mounting hole dimensions

13.6

2-M3 × 0.5 0.020 tapped holes (or 2-ø3.4 ø0.134 holes)

Mounting hole dimensions

ø2.4 ø0.094 hole, 3 0.118 or more deep

M3 × 0.5 0.020

8 0.315 or more deep

tapped hole,

Aluminum sheet (Optional)