MACHINE VISION

UV CURING SYSTEMS

SYSTEMS

Selection Guide

Amplifier Built-in

Amplifier-separated

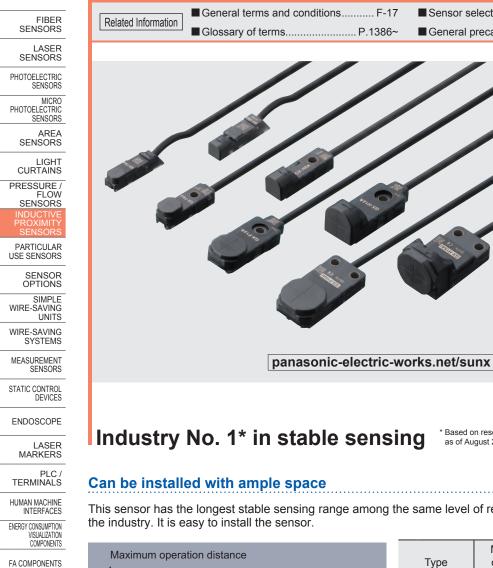
GXL

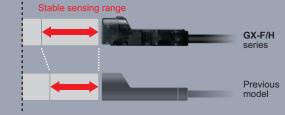
GL

GX

GX-U/GX-FU/ GX-N

Rectangular-shaped Inductive Proximity Sensor Amplifier Built-in SERIES

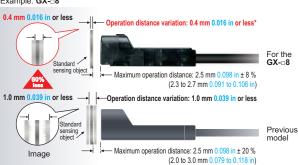




Variation at the maximum operation distance is within ±8 %

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.

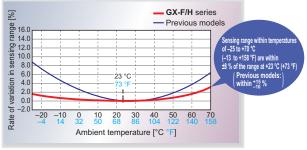


Stable sensing range Maximum Туре operation GX-F/H Previous model distance series GX-D6 0 to 1.3 mm 0.051 in 0 to 1.2 mm 0.047 in 1.6 mm 0.063 in GX-D8 2.5 mm 0.098 in 0 to 2.1 mm 0.083 in 0 to 1.8 mm 0.709 in GX-012 4.0 mm 0.157 in 0 to 3.3 mm 0.130 in 0 to 3.0 mm 0.118 in GX-015 5 0 mm 0 197 in 0 to 4 2 mm 0 165 in 0 to 4 0 mm 0 157 in Long sensing 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 and product desig vide excellent terr Stable sensir ne time of day or the ye



* Typical

Example: GX-08

* Not including temperature characteristics

| such as the sensor coil and core a |
|--------------------------------------|
| gn have been totally revised to prov |
| perature characteristics. |
| ng can be obtained regardless of th |
| arly season. |
| |
| CX F/II series |



* Based on research conducted by Panasonic Electric Works SUNX as of August 2010 among equivalent rectangular inductive sensors.

Sensor selection guide P.757~

General precautions P.1405

CE

Conforming to EMC Directive

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.

PARTICULAR USE SENSORS

SENSOR OPTIONS

SIMPLE WIRE-SAVING UNITS

WIRE-SAVING

STATIC CONTROL DEVICES

ENDOSCOPE

LASER MARKERS

PLC / TERMINALS

HUMAN MACHINE INTERFACES

ENERGY CONSUMPTION VISUALIZATION

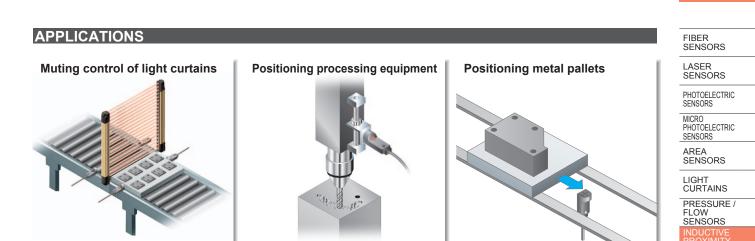
FA COMPONENTS

MACHINE VISION SYSTEMS

UV CURING SYSTEMS

COMPONENTS

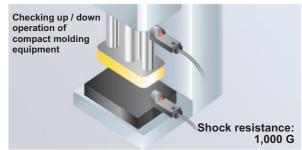
SYSTEMS MEASUREMENT SENSORS



ENVIRONMENTAL RESISTANCE

10 times the durability! (Compared to previous models)

The new integrated construction method used provides shock resistance of 10,000 m/s² (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.



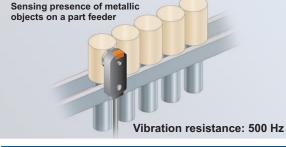
Highly resistant to water or oil! IP68g* protective construction

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".





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. $GX-H_{\Box}$









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

MOUNTING

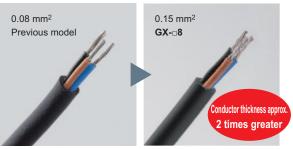
Tightening strength increased with no damage! (excluding GX-□6)

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



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

The conductor's thickness was doubled for the **GX-** \square **6**/ \square **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 type | | | | | | | | |
|--|--------------------|---------------|--------------------|-----------------------------|-----------------------|--------------------|------------------|-----------------|--|
| PHOTO- ELECTRIC SENSORS MICRO | Туре | | Appearance (mm in) | Sensing range (Note 1) | Model No. (Note 2) | Output | Output operation | | |
| MICRO PHOTO- ELECTRIC SENSORS | | Б | ~/7 | | GX-F6A | | Nerrollinerer | | |
| AREA | | Front sensing | | | GX-F6AI | | Normally open | | |
| | Ħ | ont s | ont s | 6 0.236 | | GX-F6B | | Normally closed | |
| LIGHT CURTAINS | outpu | Ē | 6 0.236 | | GX-F6BI | NPN open-collector | | | |
| PRESSURE / FLOW SENSORS | NPN output | b | \sim | | GX-H6A | transistor | Normally open | | |
| | 2 | sensing | | Maximum | GX-H6AI | | | | |
| INDUCTIVE PROXIMITY SENSORS | | op s | Top s | 6 0.236 | operation distance | GX-H6B | _ | Normally closed | |
| PARTICULAR USE SENSORS | | - | 6 0.236 | 1.6 mm 0.063 in | GX-H6BI | | | | |
| | | bu | \sim | (0 to 1.3 mm 0 to 0.051 in) | GX-F6A-P | _ | Normally open | | |
| SENSOR | | sensing | 6 0.236 × | | GX-F6AI-P | _ | | | |
| SIMPLE WIRE-SAVING UNITS | t | Front : | 24.5 | Stable sensing range | GX-F6B-P | _ | Normally closed | | |
| | output | Ē | 6 0.236 | _ | GX-F6BI-P | PNP open-collector | | | |
| WIRE-SAVING SYSTEMS | PNP | БЦ | \sim | | GX-H6A-P | transistor | Normally open | | |
| MEASURE- MENT SENSORS | PNI Top sensing | | 6 0.236 | | GX-H6AI-P | | | | |
| STATIC | | | 25 | | GX-H6B-P | | Normally closed | | |
| CONTROL DEVICES | | | 6 0.236 🔨 0.984 | | 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

| MACHINE | | | | | | | | | | | | | |
|--|------------|-------------|---|---------------------------------------|-----------------------|--------------------|--|---------|---------------|-----------------------------|---------------|--|--|
| INTERFACES ENERGY CONSUMPTION VISUALIZATION COMPONENTS | Туре | | Appearance (mm in) Sensing range (Note 1) | | Model No. (Note 2) | Output | Output operation | | | | | | |
| | | b | - 4 | | GX-F8A | | Name | | | | | | |
| FA COMPONENTS | | sensing | 7.4 0.291 | | GX-F8AI | | Normally open | | | | | | |
| MACHINE VISION SYSTEMS | t | Front se | 8 0.315 0.906 | | GX-F8B | | | | | | | | |
| | utpu | Fre | 0.313 | | GX-F8BI | NPN open-collector | Normally closed | | | | | | |
| UV CURING SYSTEMS | NPN output | Top sensing | ~ | | GX-H8A | transistor | | | | | | | |
| | z | | nsinç | nsin | insin | ensin | t and the second s | Maximum | GX-H8AI | | Normally open | | |
| | | | 8.2 0.323 8.0 315 8.0 315 0.984 | operation distance 2.5 mm 0.098 in | GX-H8B | | | | | | | | |
| Selection Guide | | Ĭ | 8 0.315 | | GX-H8BI | | Normally closed | | | | | | |
| Amplifier Built-in | | ensing | ensing | sensing | Ð | b | Ð | b | ~ | (0 to 2.1 mm 0 to 0.083 in) | GX-F8A-P | | |
| Amplifier- separated | | | | | 7.4 0.291 | | GX-F8AI-P | - | Normally open | | | | |
| | t | Front se | 8 0.315 0.906 | Stable sensing range | GX-F8B-P | - | | | | | | | |
| GX-F/H | output | Fro | 0.315 | | GX-F8BI-P | PNP open-collector | Normally closed | | | | | | |
| GXL | PNP 0 | 5 | ~ | | GX-H8A-P | transistor | | | | | | | |
| GL GX-U/GX-FU/ | A | sensing | | | GX-H8AI-P | | Normally open | | | | | | |
| GX-N GX | | p se | 8.2 0.323 | | GX-H8B-P | | | | | | | | |
| | | Top | 8 0.315 0.984 | | 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.

GX-12 type

| | type | | | | | GENOONO |
|-------------|--------------------|---|--|--|--|---|
| /pe | Appearance (mm in) | Sensing range (Note 1) | Model No. (Note 2) | Output | Output operation | PHOTO- ELECTRIC SENSORS MICRO |
| D | \sim | | GX-F12A | | | MICRO PHOTO- ELECTRIC SENSORS |
| ensin | 710280 | | GX-F12AI | - | Normally open | AREA SENSORS |
| onts | 27.8 | | GX-F12B | | Normally closed | |
| L L L | 0.472 | | GX-F12BI | NPN open-collector | Normally closed | LIGHT CURTAINS |
| b | | | GX-H12A | transistor | Normally open | PRESSURE / FLOW SENSORS |
| ensir | 12 0.472 | Maximum | GX-H12AI | | | |
| op s(| 27.4 | F | GX-H12B | | Normally closed | INDUCTIVE PROXIMITY SENSORS |
| F | 12 0.472 | 4.0 mm 0.157 in | GX-H12BI | | | PARTICULAR USE SENSORS |
| bu | | (0 to 3.3 mm 0 to 0.130 in) | GX-F12A-P | | Normally open | SENSOR |
| ensi | 7.1 0.280 | | GX-F12AI-P | | | |
| onts | 12 27.8 | Stable sensing range | GX-F12B-P | _ | Normally closed | SIMPLE WIRE-SAVING UNITS |
| Ē | 0.472 - 1.094 | _ | GX-F12BI-P | PNP open-collector | | WIRE-SAVING |
| b | | | GX-H12A-P | transistor | Normally open | SYSTEMS |
| ensir | 12 0.472 | | GX-H12AI-P | | | MEASURE- MENT SENSORS |
| op s | 27.4 | | GX-H12B-P | | Normally closed | STATIC CONTROL DEVICES |
| | 12 0.472 | | GX-H12BI-P | | | DEVICES |
| | | Appearance (mm in) Duisues 7.1 0.280 12 27.8 0.472 1.094 buisues 12 0.472 12 0.472 27.4 12 0.472 27.4 10.280 27.4 12 0.472 27.4 10.79 12 0.472 12 0.472 27.8 0.472 1.094 12 0.472 1.094 12 0.472 1.094 12 0.472 1.094 | Appearance (mm in) Sensing range (Note 1) Disues tool 7.1 0.280 27.8 12 0.472 1.094 Maximum operation distance 12 0.472 27.4 1.094 Disues tool 12 0.472 27.4 12 0.472 27.8 0.00000000000000000000000000000000000 | Appearance (mm in) Sensing range (Note 1) Model No. (Note 2) 0 7.1 0.280 GX-F12A 12 12 27.8 0.472 1.094 12 0.472< | Appearance (mm in) Sensing range (Note 1) Model No. (Note 2) Output 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 <td>Appearance (mm in) Sensing range (Note 1) Model No. (Note 2) Output Output operation 00 7.10,280 27.8 0.472 7.10,940 0.472 Normally open 12,0,472 7.10,940 Maximum operation distance 4.0 mm 0.157 in Maximum operation distance 4.0 mm 0.157 in GX-F12BI GX-H12AI Normally closed 01 7.10,280 7.10,280 0 to 3.3 mm 0 to 0.130 in) GX-F12B-P GX-F12B-P Normally closed 01 12,0,472 1.094 0 to 0.130 in) GX-F12B-P GX-F12B-P Normally closed 01 12,0,472 7.10,280 7.10,280 Normally closed Normally closed 01 12,0,472 7.10,280 0 to 0.130 in) GX-F12A-P GX-F12B-P Normally closed 01 12,0,472 7.10,40 7.10,40 7.10,40 Normally closed 12,0,472 7.10,40 7.10,40 6X-F12B-P PNP open-collector Normally closed 12,0,472 7.10,40 7.10,40 7.10,40 7.10,40 7.10,40 Normally closed 12,0,472 10,472 7.10,40 7.10,40 7.10,40 7.10,40 7.10,40</td> | Appearance (mm in) Sensing range (Note 1) Model No. (Note 2) Output Output operation 00 7.10,280 27.8 0.472 7.10,940 0.472 Normally open 12,0,472 7.10,940 Maximum operation distance 4.0 mm 0.157 in Maximum operation distance 4.0 mm 0.157 in GX-F12BI GX-H12AI Normally closed 01 7.10,280 7.10,280 0 to 3.3 mm 0 to 0.130 in) GX-F12B-P GX-F12B-P Normally closed 01 12,0,472 1.094 0 to 0.130 in) GX-F12B-P GX-F12B-P Normally closed 01 12,0,472 7.10,280 7.10,280 Normally closed Normally closed 01 12,0,472 7.10,280 0 to 0.130 in) GX-F12A-P GX-F12B-P Normally closed 01 12,0,472 7.10,40 7.10,40 7.10,40 Normally closed 12,0,472 7.10,40 7.10,40 6X-F12B-P PNP open-collector Normally closed 12,0,472 7.10,40 7.10,40 7.10,40 7.10,40 7.10,40 Normally closed 12,0,472 10,472 7.10,40 7.10,40 7.10,40 7.10,40 7.10,40 |

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 | ENERGY CONSUMPTI VISUALIZATI COMPONEN |
|------------|---------|--------------------|-----------------------------|-----------------------|--------------------|------------------|--|
| | Ъ | \sim | | GX-F15A | | Normally open | FA COMPONE |
| | sensing | 8 0.315 | | GX-F15AI | | Normally open | |
| Ŧ | Front s | 31.5 | | GX-F15B | | Normally aloand | MACHIN VISION SYSTEI |
| NPN output | Ĕ | 15 0.591 | | GX-F15BI | NPN open-collector | Normally closed | |
| PN | b | | | GX-H15A | transistor | Normally open | SYSTE |
| Z | sensing | 16.5 0.650 | Maximum | GX-H15AI | | | |
| | Top se | 29.5 | operation distance | GX-H15B | | Normally closed | |
| | Ĕ | 15 0.591 1.161 | 5.Ó mm 0.197 in | GX-H15BI | | Normally closed | Selecti Guide |
| | p | | (0 to 4.2 mm 0 to 0.165 in) | GX-F15A-P | | Nerrall | - Amplifie Built-in Amplifie |
| | sensing | 8 0.315 | | GX-F15AI-P | | Normally open | separate |
| t. | Front s | 31.5 | Stable sensing range | GX-F15B-P | | | |
| utpu | Erc | 15 0.591 | | GX-F15BI-P | PNP open-collector | Normally closed | GX-F/ |
| PNP output | 5 | | | GX-H15A-P | transistor | Nerrall | GL |
| 9 | sensing | 16.5 0.650 | | GX-H15AI-P | 1 | Normally open | GX-U/GX-F |
| | Top se | 29.5 | | GX-H15B-P | - | | GX-N GX |
| | Ĕ | 15 0.591 1.161 | | GX-H15BI-P | 1 | 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.

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FIBER SENSORS

LASER SENSORS

ENDOSCOPE

LASER SENSORS

PHOTO-ELECTRIC SENSORS MICRO PHOTO-ELECTRIC SENSORS AREA SENSORS

LIGHT PRESSURE / SENSORS

PARTICULAR USE SENSOR OPTIONS

SIMPLE WIRE-SAVING UNITS

WIRE-SAVING SYSTEMS MEASURE-MENT SENSORS

STATIC CONTROL DEVICES

ENDOSCOPE

LASER MARKERS

PLC / TERMINALS

HUMAN MACHINE INTERFACES

ENERGY VISUALIZATION COMPONENTS

COMPONENTS

GX-U/GX-FU/ GX-N

GX

ORDER GUIDE

GX-15 (Long sensing range) type

| Ту | pe | Appearance (mm in) | Sensing range (Note 1) | Model No. (Note 2) | Output | Output operation | |
|------------|---------------|--------------------|----------------------------|-----------------------|--------------------|------------------|--|
| | ng | \sim | | GX-FL15A | | Normally open | |
| | ensi | 8 0.315 | | GX-FL15AI | | | |
| Ŧ | Front sensing | 31.5 | | GX-FL15B | | Normally closed | |
| NPN output | Ē | 15 0.591 | | GX-FL15BI | NPN open-collector | Normally closed | |
| N | D | | | GX-HL15A | transistor | Normally open | |
| z | sensing | 16.5 0.650 | Maximum | GX-HL15AI | | | |
| | Top se | 29.5 | operation distance | GX-HL15B | | Normally closed | |
| | Ĕ | 15 0.591 | 8.0 mm 0.315 in | GX-HL15BI | | | |
| | βĽ | | 0 to 6.7 mm 0 to 0.264 in) | GX-FL15A-P | | Normally open | |
| | sensing | 8 0.315 | | GX-FL15AI-P | _ | | |
| t | Front s | 31.5 | Stable sensing range | GX-FL15B-P | | No | |
| output | ц Е | 15 0.591 | | GX-FL15BI-P | PNP open-collector | Normally closed | |
| PNP 0 | 6 | | | GX-HL15A-P | transistor | N | |
| Pl | sensing | 16.5 0.650 | | GX-HL15AI-P | | Normally open | |
| | pp se | 29.5 | | GX-HL15B-P | | | |
| | Top | 15 0.591 | | GX-HL15BI-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.

5 m 16.404 ft cable length type, flexible cable type

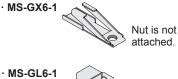
5 m 16.404 ft cable length type (standard: 1 m 3.281 ft) and flexible cable (excluding 5 m 16.404 ft cable length type) are available. However, long sensing range type is not available. When ordering 5 m 16.404 ft cable length type, suffix "-**C5**" to the model No. When ordering flexible cable type,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

| MACHINE | | 3 | | | | |
|--------------------------------|---------------------|-----------|---|---|--|--|
| VISION SYSTEMS | | | - | | | |
| UV CURING SYSTEMS | Designation | Model No. | Desc | ription | | |
| Selection | Sensor | MS-GX6-1 | Mounting bracket for GX-6 type (recommended). Sensors can be mounted closely together for space-saving. | | | |
| Guide Amplifier Built-in | | MS-GL6-1 | Mounting brackets for GX-6 type | | | |
| Amplifier- | mounting bracket | MS-GL6-2 | Sensor mounting brackets for GL-6 can be used. Interchange is possible. | | | |
| separated | MS-GXL8-4 | | Mounting bracket for GX-8 type | | | |
| GX-F/H | | MS-GXL15 | Mounting bracket for GX-15 type | | | |
| GXL | Aluminum | MS-A15F | For GX-FL15 □(-P) | Mounting example when | | |
| GL | sheet | MS-A15H | For GX-HL15 □(-P) | mounted onto a steel or stainless steel plate | | |

Sensor mounting bracket









· MS-GXL8-4

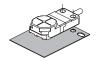
1pc. each of M3 (length: 12 mm 0.472 in) truss head screw, nut, spring washer and plain washer is attached.



· MS-GXL15

Aluminum sheet

· MS-A15F · MS-A15H



· MS-GL6-2



SPECIFICATIONS

GX-6 type

| | Туре | NPN | output | PNP o | utput | | |
|--|-----------------------------|---|--|--|---|--|--|
| | Pront sensing | GX-F6A(I) | GX-F6B(I) | GX-F6A(I)-P | GX-F6B(I)-P | | |
| Item | Top sensing | GX-H6A(I) | GX-H6B(I) | GX-H6A(I)-P | GX-H6B(I)-P | | |
| Max. oper | ration distance (Note 3) | | 1.6 mm 0.0 | 063 in ± 8 % | | | |
| Stable se | nsing range (Note 3) | | 0 to 1.3 mm | 0 to 0.051 in | | | |
| Standard | sensing object | | Iron sheet 12 × 12 × t 1 mr | n 0.472 × 0.472 × t 0.039 in | | | |
| Hysteresi | s | | 20 % or less of operation distant | ce (with standard sensing object) | | | |
| Repeatab | bility | Along | | ensing axis: 0.04 mm 0.0016 in o | r less | | |
| Supply vo | oltage | | 12 to 24 V DC ⁺¹⁰ 15 % | Ripple P-P 10 % or less | | | |
| Current c | onsumption | | 15 mA | or less | | | |
| Output | | NPN open-collector transistor • Maximum sink current: 100 | | PNP open-collector transistor • Maximum source current: 1 | | | |
| | | Applied voltage: 30 V DC o Residual voltage: 2 V or les | r less (between output and 0 V) ss (at 100 mA sink current) | | r less (between output and +V) is (at 100 mA source current) | | |
| Utili | zation category | | DC-12 c | or DC-13 | | | |
| Out | put operation | Normally closed | Normally closed | Normally closed | Normally closed | | |
| Max. resp | oonse frequency | 400 Hz | | | | | |
| Operation | n indicator | Orange LED (lights up when the output is ON) | | | | | |
| Poll | ution degree | 3 (Industrial environment) | | | | | |
| | tection | IP68 (IEC), IP68g (JEM) (Note 4, 5) | | | | | |
| Amt | pient temperature | -25 to +70 °C -13 to +158 °F, Storage: -40 to +85 °C -40 to +185 °F | | | | | |
| Amb | pient humidity | 35 to 85 % RH, Storage: 35 to 95 % RH | | | | | |
| The second secon | C | | EN 60947-5-2 | | | | |
| E Volt | age withstandability | 1,000 V AC | for one min. between all supply | terminals connected together and | l enclosure | | |
| Insu | lation resistance | 50 M Ω , or more, with 500 V DC megger between all supply terminals connected together and enclosure | | | | | |
| | ation resistance | 10 to 500 Hz frequer | ncy, 3 mm 0.118 in amplitude (N | lax. 20 G) in X, Y and Z directions | for two hours each | | |
| Sho | ck resistance | 10,000 m/s ² | acceleration (1,000 G approx.) | in X, Y and Z directions for three | times each | | |
| Sensing range | Temperature characteristics | Over ambient temperate | | +158 °F: Within ± 8 % of sensing r | ange at +23 °C +73 °F | | |
| variation | Voltage characteristics | | Within ± 2 % for $^{+10}_{-15}$ % fluct | uation of the supply voltage | | | |
| Material | | | Enclosure: PBT, Ind | icator part: Polyester | | | |
| Cable | | 0.15 ו | mm ² 3-core oil, heat and cold res | sistant cabtyre cable, 1 m 3.281 ft | long | | |
| Cable ext | tension | Extensi | on up to total 100 m 328.084 ft i | s possible with 0.3 mm ² , or more, | cable. | | |
| Net weight | | | 15 g a | ipprox. | | | |

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 Electric Works 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.

(a) 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.

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

FIBER SENSORS

LASER SENSORS

LASER SENSORS

Amplifier

separated

SPECIFICATIONS

GX-8 type

| PHOTO- ELECTRIC SENSORS | \sim | | Туре | NPN | output | PNP | output | | | |
|--|--------------------------|-----------|-----------------------------|---|--|---|---|--|--|--|
| MICRO | | | Front sensing | GX-F8A(I) | GX-F8B(I) | GX-F8A(I)-P | GX-F8B(I)-P | | | |
| PHOTO- ELECTRIC SENSORS | Item | | Top sensing | GX-H8A(I) | GX-H8B(I) | GX-H8A(I)-P | GX-H8B(I)-P | | | |
| AREA SENSORS | Max. | operati | on distance (Note 3) | | 2.5 mm 0.098 in ± 8 % | | | | | |
| LIGHT | Stab | le sens | ing range (Note 3) | | 0 to 2.1 mm 0 to 0.083 in | | | | | |
| | Stan | dard se | ensing object | | Iron sheet 15 × 15 × t 1 mm | 1 0.591 × 0.591 × t 0.039 in | | | | |
| RESSURE / FLOW SENSORS | Hyst | eresis | | | 20 % or less of operation distance | e (with standard sensing object) | | | | |
| NDUCTIVE ROXIMITY SENSORS | Rep | eatabilit | y | Along | sensing axis, perpendicular to se | ensing axis: 0.04 mm 0.0016 in o | or less | | | |
| ARTICULAR | Sup | oly volta | age | | 12 to 24 V DC ⁺¹⁰ ₋₁₅ % F | Ripple P-P 10 % or less | | | | |
| USE SENSORS | Curr | ent con | sumption | | 15 mA | or less | | | | |
| SENSOR OPTIONS | Outp | out | | NPN open-collector transistor • Maximum sink current: 100 • Applied voltage: 30 V DC of |) mA or 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) | | | |
| VIRE-SAVING UNITS | | | | Residual voltage: 2 V or leader | | | ss (at 100 mA source current) | | | |
| IRE-SAVING SYSTEMS | | Utiliza | tion category | | DC-12 o | r DC-13 | | | | |
| EASURE- MENT SENSORS | | Outpu | t operation | Normally open | Normally closed | Normally open | Normally closed | | | |
| STATIC | Max | respor | nse frequency | 500 Hz | | | | | | |
| ONTROL | Ope | ration ir | ndicator | Orange LED (lights up when the output is ON) | | | | | | |
| DOSCOPE | | | on degree | | 3 (Industrial environment) | | | | | |
| LASER | e | Protec | tion | IP68 (IEC), IP68g (JEM) (Note 4, 5) | | | | | | |
| LASER IARKERS | istan | | nt temperature | -25 to +70 °C -13 to +158 °F, Storage: -40 to +85 °C -40 to +185 °F | | | | | | |
| PLC / ERMINALS | Environmental resistance | | nt humidity | 35 to 85 % RH, Storage: 35 to 95 % RH | | | | | | |
| HUMAN MACHINE | Jenta | EMC | | EN 60947-5-2 | | | | | | |
| TERFACES | ironn | | e withstandability | | for one min. between all supply | | | | | |
| INSUMPTION SUALIZATION OMPONENTS | Env | | tion resistance | | th 500 V DC megger between all | | | | | |
| FA | | | on resistance | | ncy, 3 mm 0.118 in amplitude (M ² acceleration (1,000 G approx.) | · · | | | | |
| ACHINE | Sens | | Temperature characteristics | | ure range –25 to +70 °C –13 to + | | | | | |
| VISION | rang varia | e - | Voltage characteristics | | Within ±2 % for $^{+10}_{-15}$ % fluctu | 0 | | | | |
| UV CURING SYSTEMS | Mate | | | | Enclosure: PBT, Indi | | | | | |
| | Cabl | е | | 0.15 1 | mm ² 3-core oil, heat and cold res | istant cabtyre cable, 1 m 3.281 f | t long | | | |
| | Cabl | e exten | sion | Extensi | ion up to total 100 m 328.084 ft is | s possible with 0.3 mm ² , or more | , cable. | | | |
| election Guide | Net | weight | | | Front sensing type: 15 g approx. | Top sensing type: 20 g approx. | | | | |
| Amplifier Built-in | Notes | s: 1) Wł | nere measurement o | onditions have not been specifie | d 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 Electric Works 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 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.

GX

SPECIFICATIONS

GX-12 type

| | Туре | NPN | output | PNP | output | | |
|------------------------------|-----------------------------|---|--|--|--|--|--|
| | Pront 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. oper | ration distance (Note 3) | | 4.0 mm 0.1 | 57 in ± 8 % | | | |
| Stable se | nsing 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 | | | |
| Hysteresi | S | | 20 % or less of operation distan | ce (with standard sensing object) | | | |
| Repeatab | bility | Along | 3 ,1 1 | ensing axis: 0.04 mm 0.0016 in o | or less | | |
| Supply vo | oltage | | 12 to 24 V DC ⁺¹⁰ ₋₁₅ % | Ripple P-P 10 % or less | | | |
| Current c | onsumption | | 15 mA | or less | | | |
| Output | | NPN open-collector transistor • Maximum sink current: 100 | | PNP open-collector transistor • Maximum source current: | | | |
| output | | Applied voltage: 30 V DC o Residual voltage: 2 V or lest | r less (between output and 0 V) ss (at 100 mA sink current) | | or less (between output and +V) ss (at 100 mA source current) | | |
| Utili | zation category | | DC-12 or DC-13 | | | | |
| Out | put operation | Normally open | Normally closed | Normally open | Normally closed | | |
| Max. resp | oonse frequency | 500 Hz | | | | | |
| Operatior | n indicator | Orange LED (lights up when the output is ON) | | | | | |
| Poll | ution degree | 3 (Industrial environment) | | | | | |
| e Prot | tection | IP68 (IEC), IP68g (JEM) (Note 4, 5) | | | | | |
| Amt | pient temperature | -25 to +70 °C -13 to +158 °F, Storage: -40 to +85 °C -40 to +185 °F | | | | | |
| Amt | pient humidity | 35 to 85 % RH, Storage: 35 to 95 % RH | | | | | |
| EM0 | C | | EN 60 | 947-5-2 | | | |
| Amt Environmental resistance | age withstandability | 1,000 V AC | for one min. between all supply | terminals connected together an | d enclosure | | |
| Insu | lation resistance | 50 M Ω , or more, with 500 V DC megger between all supply terminals connected together and enclosure | | | | | |
| | ation resistance | 10 to 500 Hz frequer | ncy, 3 mm 0.118 in amplitude (M | lax. 20 G) in X, Y and Z direction | s for two hours each | | |
| Sho | ck resistance | 10,000 m/s ² | ² acceleration (1,000 G approx.) | in X, Y and Z directions for three | times each | | |
| Sensing range | Temperature characteristics | Over ambient temperat | ure range –25 to +70 °C –13 to | +158 °F: Within ±8 % of sensing | range at +23 °C +73 °F | | |
| variation | Voltage characteristics | | Within ± 2 % for $^{+10}_{-15}$ % fluct | uation of the supply voltage | | | |
| Material | | | Enclosure: PBT, Ind | icator part: Polyester | | | |
| Cable | | 0.15 r | mm ² 3-core oil, heat and cold rea | sistant cabtyre cable, 1 m 3.281 f | t long | | |
| Cable ext | tension | Extensi | on up to total 100 m 328.084 ft i | s possible with 0.3 mm ² , or more | , cable. | | |
| Net weigh | nt | | 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 Electric Works 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 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.

768

FIBER SENSORS

LASER SENSORS

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

GX

LASER SENSORS

SPECIFICATIONS

GX-15 type

| PHOTO- ELECTRIC SENSORS | ſ |
|--|------------|
| MICRO PHOTO- ELECTRIC SENSORS | |
| AREA SENSORS | Ite |
| LIGHT CURTAINS | M |
| PRESSURE / FLOW SENSORS | S |
| INDUCTIVE PROXIMITY | S |
| PARTICULAR | Н |
| PARTICULAR USE SENSORS | R |
| SENSOR OPTIONS | S |
| SIMPLE WIRE-SAVING UNITS | |
| WIRE-SAVING SYSTEMS | 0 |
| MEASURE- MENT SENSORS | |
| STATIC CONTROL DEVICES | |
| ENDOSCOPE | М 0 |
| LASER MARKERS | |
| PLC / TERMINALS | 0000 |
| HUMAN MACHINE INTERFACES | Lociotanoo |
| ENERGY CONSUMPTION VISUALIZATION COMPONENTS | lotoom o |
| FA | |
| MACHINE VISION SYSTEMS | |
| UV CURING SYSTEMS | S ra |
| | |

| Туре | | | NPN | output | | | PNP | output | | |
|--------------------------|-----------------------------------|-----------------------------|---|---|------------------------------|---------------------------------|--------------------------------|----------------------------------|--------------------------------|-------------------|
| | $\langle \rangle$ | Туре | | | Long sens | sing range | | | Long sens | sing range |
| | | Pront 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 |
| Item | ı \ | 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. | . operat | tion distance (Note 3) | 5.0 mm 0.1 | 97 in ± 8 % | 8.0 mm 0.315 ii | n ± 8 % (Note 4) | 5.0 mm 0.197 in ± 8 % | | 8.0 mm 0.315 in ± 8 % (Note 4) | |
| Stab | ole sens | sing 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) |
| Stan | ndard s | ensing object | | × 20 × t 1 mm 74 × t 0.039 in | | × 30 × t 1 mm 1 × t 0.039 in | | × 20 × t 1 mm 74 × t 0.039 in | Iron sheet 30 1.181 × 1.18 | |
| Hyst | teresis | | | | 20 % or less of o | operation distant | ce (with standard | sensing object) |) | |
| Rep | eatabili | ity | | Along | sensing axis, pe | erpendicular to s | ensing axis: 0.04 | 4 mm 0.0016 in (| or less | |
| Sup | ply volt | age | | | 12 to 24 | 4 V DC ⁺¹⁰ % | Ripple P-P 10 % | or less | | |
| Curr | ent cor | nsumption | | | | 15 mA | or less | | | |
| Outp | Output | | Maximum Applied vo | PN open-collector transistor • Maximum sink current: 100 mA • Applied voltage: 30 V DC or less (between output and 0 V) • Residual voltage: 2 V or less (at 100 mA sink current) PNP open-collector transistor • Maximum source current: 100 mA • Applied voltage: 30 V DC or less (between • Residual voltage: 2 V or less (at 100 mA sink current) | | | | | | |
| | Utiliza | ation category | | DC-12 or DC-13 | | | | | | |
| | Outpu | ut operation | Normally open | Normally closed | Normally open | Normally closed | Normally open | Normally closed | Normally open | Normally closed |
| Max | . respo | nse frequency | 250 Hz 150 Hz (Note | | (Note 5) | 250 Hz | | 150 Hz (Note 5) | | |
| Ope | ration i | ndicator | Orange LED (lights up when the output is ON) | | | | | | | |
| | Pollut | ion degree | 3 (Industrial environment) | | | | | | | |
| Ð | Prote | ction | IP68 (IEC), IP68g (JEM) (Note 6, 7) | | | | | | | |
| tanc | Ambie | ent temperature | -25 to +70 °C -13 to +158 °F, Storage: -40 to +85 °C -40 to +185 °F | | | | | | | |
| Environmental resistance | Ambie | ent humidity | 35 to 85 % RH, Storage: 35 to 95 % RH | | | | | | | |
| ental | EMC | | | EN 60947-5-2 | | | | | | |
| nme | Volta | ge withstandability | | 1,000 V AC | for one min. bet | ween all supply | terminals conne | cted together an | d enclosure | |
| invire | Insula | ation resistance | 50 | MΩ, or more, wi | th 500 V DC me | gger between al | I supply terminal | s connected tog | ether and enclos | ure |
| ш | Vibrat | tion resistance | 10 to | o 500 Hz frequer | ncy, 3 mm <mark>0.118</mark> | in amplitude (M | /lax. 20 G) in X, ` | Y and Z directior | s for two hours | each |
| | Shoc | <pre>c resistance</pre> | | 10,000 m/s ² | ² acceleration (1 | ,000 G approx.) | in X, Y and Z dir | ections for three | times each | |
| Sens | • | Temperature characteristics | Over a | mbient temperati | ure range –25 to | +70 °C –13 to + | <mark>⊦158</mark> °F: Within ± | 8 % of sensing | range at +23 °C | +73 °F |
| | variation Voltage characteristics | | Within ± 2 % for $^{+10}_{-15}$ % fluctuation of the supply voltage | | | | | | | |
| Mate | erial | | Enclosure: PBT, Indicator part: Polyester | | | | | | | |
| Cab | le | | 0.15 mm ² 3-core oil, heat and cold resistant cabtyre cable, 1 m 3.281 ft long | | | | | | | |
| Cab | le exte | nsion | | Extensi | on up to total 10 | 00 m 328.084 ft i | s possible with 0 | .3 mm ² , or more | , cable. | |
| Net | weight | | | | | 20 g a | ipprox. | | | |
| | | | | | | | | | | |

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 Electric Works 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.

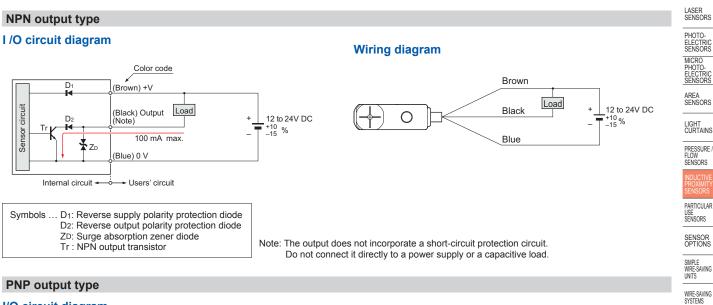
(4) After tests (1) to (3), insulation resistance, voltage withstandability, current consumption, and sensing range must meet the standard values.

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.

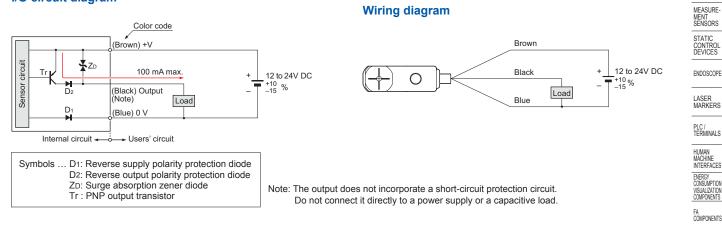
Selection Guide

Amplifier

I/O CIRCUIT DIAGRAMS



I/O circuit diagram



FIBER SENSORS

MACHINE VISION SYSTEMS

UV CURING SYSTEMS

Selection Guide

Amplifier separate

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

LASER SENSORS

LIGHT

SENSING CHARACTERISTICS (TYPICAL)

GX-6 type Sensing field

Correlation between sensing object size and sensing range

Iron

Aluminur

20

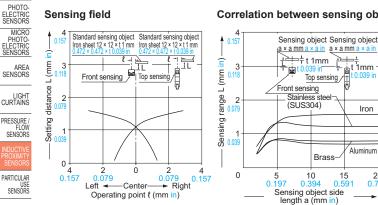
0.78

Correlation between sensing object size and sensing range

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

4 0.157

3 118

2)79

0

4

0.157

distance L (mm i

-Setting 1

Sensing field

Standard sensing object Iron sheet 15 × 15 × t 1 mm

Front sensing

2 079

Left

Ò

-Center-Operating point *l* (mm in)

2 0.079

Right

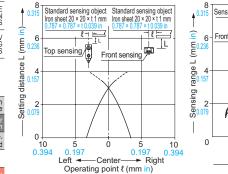
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Standard sensing object Iron sheet 15 × 15 × t 1 mm 0.591 × 0.591 × t 0.039 in Sensina object Sensing object a × a mm a × a → + t 1 mm <u>a × a mm a × a</u> theta ± 1 mm 0.591 × 0.591 ∧ 0.000 ange L (mm in) ġ D.039 in 3 /Front sensing Iron 2 Stainless steel (SUS304) Sensing I Brass Aluminum 0 10 0.39 15 0.591 20 0.787 4 5 0.197 0.157 Sensing object side length a (mm in)

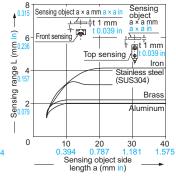
As the sensing object size becomes smaller than the standard size (iron sheet 15 × 15 × t 1 mm $0.591 \times 0.591 \times t \ 0.039$ in), the sensing range shortens as shown in the left figure.

GX-12 type

Sensing field



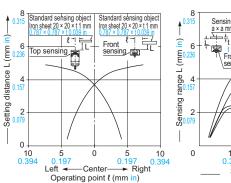
Correlation between sensing object size and sensing range



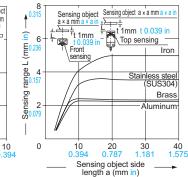
As the sensing object size becomes smaller than the standard size (iron sheet 20 × 20 × t 1 mm $0.787 \times 0.787 \times t \ 0.039$ in), the sensing range shortens as shown in the left figure.

GX-15 type

Sensing field



Correlation between sensing object size and sensing range



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.

GXL

GL

GX

GX-U/GX-FU/ GX-N

As the sensing object size becomes smaller than

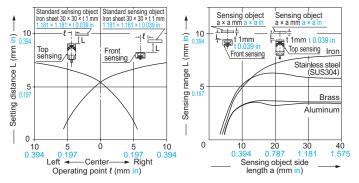
shortens as shown in the left figure.

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

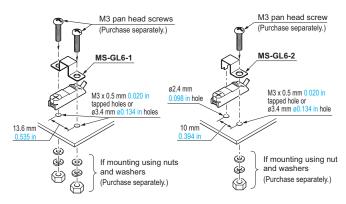
· Use the optional sensor mounting bracket when installing.

<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.



M3 pan head screw (Purchase separately.) MS-GX6-1 Cable Hooł M3 x 0.5 mm 0.020 in tapped hole or ø3.4 mm ø0.134 in hole Groove ė. ø 22 mm (تى ø3.4 mm If mounting using nut ٩ 34 in hole and washers (a)

(Purchase separately.)

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.
- · 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.

the standard size (iron sheet 30 × 30 × t 1 mm $1.181 \times 1.181 \times t \ 0.039$ in), the sensing range LIGHT CURTAINS PRESSURE FLOW SENSORS PARTICULAR USE SENSORS SENSOR OPTIONS Refer to General precautions. SIMPLE WIRE-SAVING UNITS M3 (length 12 mm 0.47 truss head screw (Accessory for MS-GXL8-4) MS-GXL8-4 (Accessory) M3 × 0.5 mm 0.020 in tapped hole (Depth: 8 mm 0.315 in or more) or ø3.4 mm ø0.134 in thru-hole 11.5 mm 0.453 in ٢ If mounting using nut and washers (Accessories for MS-GXL8-4) P ø2.4 mm ø0.098 in hole (Depth: 3 mm 0.315 in or more) M3 (length 12 mm 0.472 in or more) pan head screw (Purchase separately.) VISUALIZATION COMPONENTS M3 × 0.5 mm 0.020 in tapped hole (Depth: 10 mm 0.394 in or more) or ø3.4 mm ø0.134 in thru-hole 16 mm 0.630 in

If mounting using nut and washers
 (Purchase separately.) ø2.5 mm ø0.098 in hole (Depth: 3 mm 0.118 in or more)

screws

<u>I</u>

 \mathcal{I}^{\uparrow}

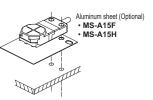
ē

9 mm



GL

If mounting using nuts and washers 南 (Purchase separately.) MS-GXL15 (Sensor mounting bracket)



FIBER SENSORS

LASER SENSORS рното ELECTRIC

MICRO PHOTO-ELECTRIC SENSORS

AREA SENSORS

WIRE-SAVING SYSTEMS

MEASURE-MENT SENSORS

STATIC CONTROL

ENDOSCOPE

LASER MARKERS

PLC / TERMINALS

HUMAN MACHINE INTERFACES ENERGY CONSUMPTION

FA COMPONENTS MACHINE

SYSTEMS UV CURING SYSTEMS

Selectio Guide

GX-U/GX-FU GX-N GX

LASER SENSORS

PHOTO-ELECTRIC SENSORS

MICRO

PHOTO-ELECTRIC SENSORS

AREA SENSORS

LIGHT PRESSURE FL OW SENSORS

PARTICULAR USE SENSOR OPTIONS

SIMPLE WIRE-SAVING UNITS

WIRE-SAVING SYSTEMS

MEASURE-MENT SENSORS

STATIC

CONTROL DEVICES

ENDOSCOPE

LASER MARKERS

PLC / TERMINALS

HUMAN MACHINE INTERFACES ENERGY VISUALIZATION COMPONENTS

COMPONENTS

MACHINE

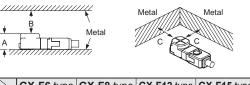
VISION SYSTEMS

PRECAUTIONS FOR PROPER USE

Influence of surrounding metal

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

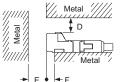
Front sensing type

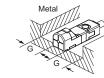


| \geq | GX-F6 type | GX-F8 type | GX-F12 type | GX-F15 type | GX-FL15 type |
|--------|---------------------------|-----------------|-----------------|----------------|---------------------------|
| А | 6 mm 0.236 in (Note 1) | 7.4 mm 0.291 in | 7.1 mm 0.280 in | 8 mm 0.315 in | 8 mm 0.315 in (Note 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
 - 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





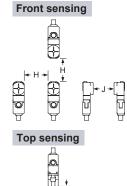
| \nearrow | GX-H6 type | GX-H8 type | GX-H12 type | GX-H15 type | GX-HL15 type |
|------------|----------------|----------------|----------------|----------------|--------------------------|
| D | 3 mm 0.118 in | 4 mm 0.157 in | 7 mm 0.276 in | 6 mm 0.236 in | 12 mm 0.472 in |
| Е | 10 mm 0.394 in | 10 mm 0.394 in | 20 mm 0.787 in | 20 mm 0.787 in | 30 mm 1.181 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

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

| UV CURING SYSTEMS | below to avoid mutual interferen | | | | |
|--|--------------------------------------|---|--------------------|---------------------------------|--|
| | | Н | J | | |
| | GX-F6 GX-H6 type | Between "I" type and non "I" type | 0 mm (Note 2) | 15 mm 0.591 ir | |
| Selection Guide | | Between two "I" types or two non "I" types | 13 mm 0.512 in | 25 mm <mark>0.984 ir</mark> | |
| Amplifier Built-in | GX-F8 GX-H8 | Between "I" type and non "I" type | 0 mm (Note 2) | 15 mm 0.591 ir | |
| Amplifier- separated | type | Between two "I" types or two non "I" types | 20 mm 0.787 in | 35 mm 1.378 ir | |
| | GX-F12 | Between "I" type and non "I" type | 0 mm (Note 2) | 25 mm 0.984 ir | |
| GX-F/H GXL | GX-H12 type | Between two "I" types or two non "I" types | 25 mm 0.984 in | 50 mm 1.969 ir | |
| GL | GX-F15 GX-H15 | Between "I" type and non "I" type | 0 mm (Note 2) | 25 mm 0.984 ir | |
| GX-U/GX-FU/ GX-N | type | Between two "I" types or two non "I" types | 45 mm 1.772 in | 70 mm 2.756 ir | |
| GX | GX-FL15 GX-HL15 | Between "I" type and non "I" type | 0 mm (Note 2) | 25 mm 0.984 ir | |
| | type | Between two "I" types or two non "I" types | 110 mm 3.059 in | 170 mm <mark>6.693 ir</mark> | |
| Natas, 4) (117 in the model Natas if a | | | | | |



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 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

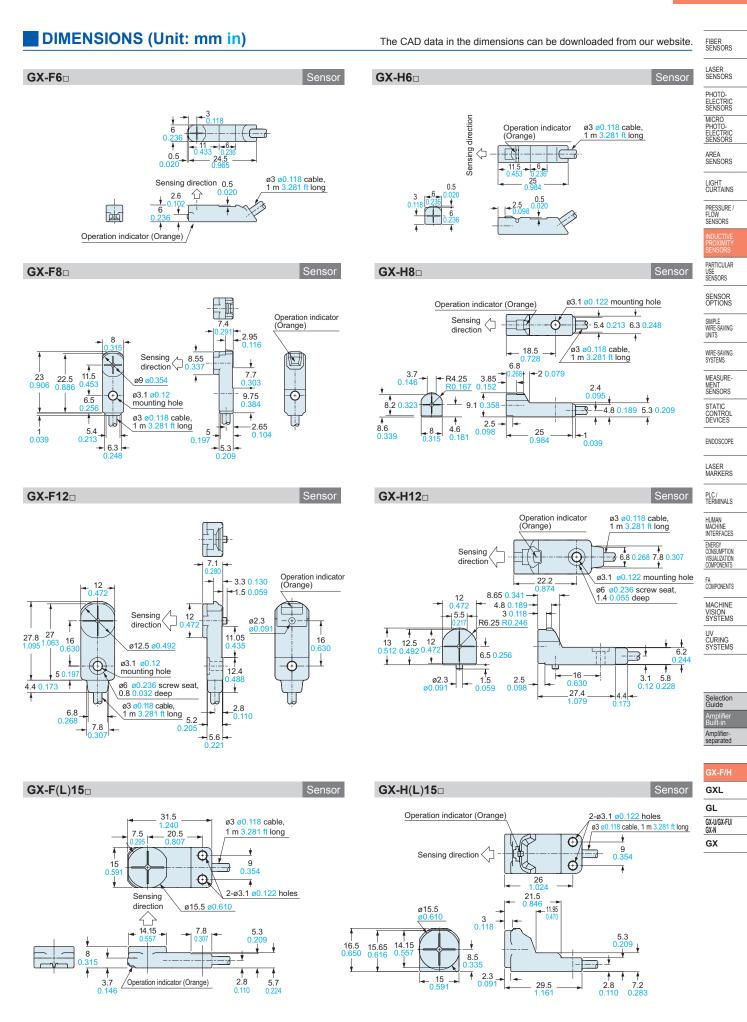
| Model No. Metal | GX-F6 GX-H6 type | GX-F8 GX-H8 type | GX-F12 GX-H12 type | GX-F15 GX-H15 type | GX-FL15 type | GX-HL15 type |
|--------------------------|------------------------|------------------------|--------------------------|--------------------------|-----------------|-----------------|
| 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.

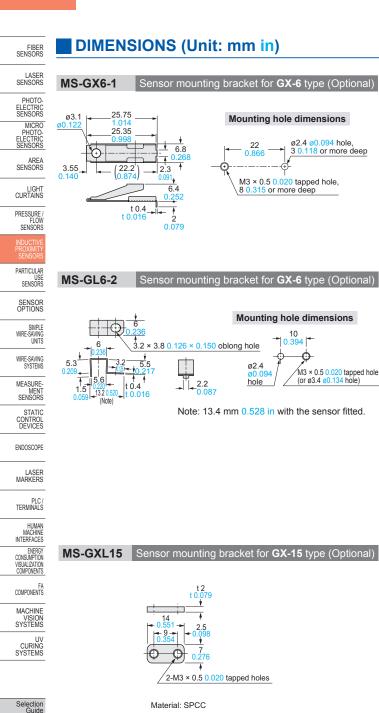
Others

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



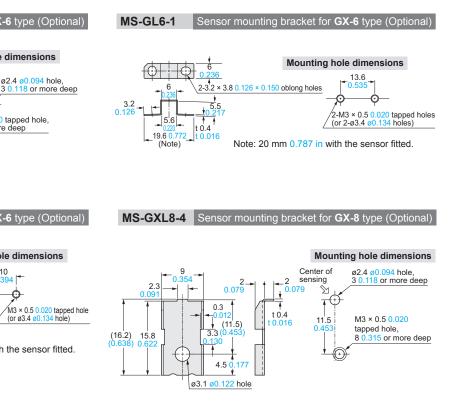
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Material: SPCC

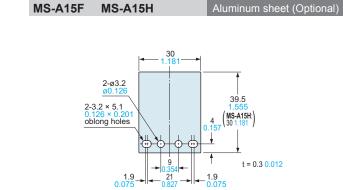
The CAD data in the dimensions can be downloaded from our website.



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.



775

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

MEMO

