LASER SENSORS

PHOTOELECTRIC SENSORS PHOTOELECTRIC SENSORS AREA SENSORS SAFETY COMPONENTS PRESSURE / FLOW SENSORS

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

MEASUREMENT SENSORS

> STATIC CONTROL DEVICES LASER MARKERS

> > PLC

ENERGY MANAGEMENT SOLUTIONS

HUMAN MACHINE INTERFACES

FA COMPONENTS

MACHINE VISION SYSTEMS

UV CURING SYSTEMS

> Selection Guide

Amplifier Built-in

Amplifierseparated Other

Products

GXL

GL

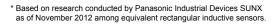
GX

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

Rectangular-shaped Inductive Proximity Sensor Amplifier Built-in **GX-F/H SERIES**

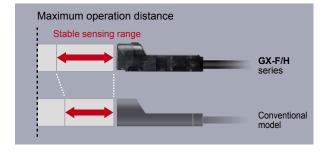


Industry No. 1* in stable sensing



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.

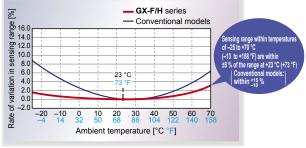
Example: GX-08 0.4 mm 0.016 in or less Operation distance variation: 0.4 mm 0.016 in or less For the GX-D8 sensing object -- Maximum operation distance: 2.5 mm 0.098 in ± 8 % (2.3 to 2.7 mm 0.091 to 0.106 in) -Operation distance variation: 1.0 mm 0.039 in or less 1.0 mm n or less Standard Conventional model Maximum operation distance: 2.5 mm 0.098 in ± 20 % Image (2.0 to 3.0 mm 0.079 to 0.118 in) * Not including temperature characteristics

| | Maximum | Stable sensing range | | | |
|-----------------------|-----------------------|----------------------|----------------------|--|--|
| Туре | operation distance | GX-F/H series | Conventional 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 | | |

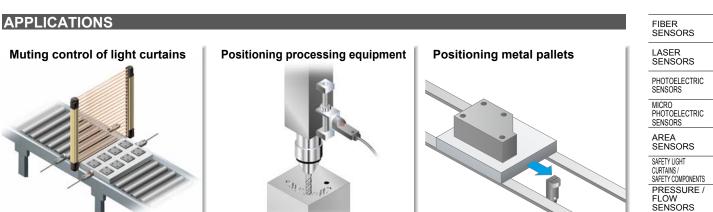
* With standard sensing object

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.



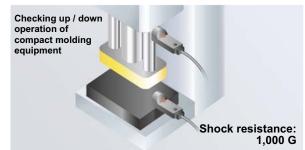
* Typical



ENVIRONMENTAL RESISTANCE

10 times the durability! (Compared to conventional 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 double amplitude in X, Y and Z directions for 2 hours each). In addition, resistance to impulse noise is approx. three times greater than for conventional 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.790~)".



Indicators are easy to see over a wide field of view

FUNCTIONS

Sensing presence of metallic

objects on a part feeder

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

Vibration resistance: 500 Hz





MOUNTING

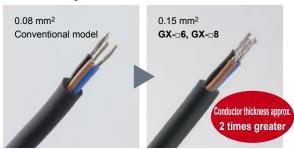
Tightening strength increased with no damage! (excluding GX-D6)

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



Conductor thickness doubled to make wiring much easier! (GX-D6 / GX-D8 only)

The conductor's thickness was doubled for the GX-□6 / GX-□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.



SENSORS

PARTICULAR USE SENSORS

SENSOR OPTIONS SIMPLE WIRE-SAVING UNITS WIRE-SAVING

SYSTEMS

MEASUREMENT SENSORS STATIC CONTROL

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UV CURING SYSTEMS

Selection Guide Amplifier Built-in Amplifier-Other Products

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

ORDER GUIDE

| LASER SENSORS | GX | -6 ty | уре | | | | | |
|--|---------|-----------------|--------------------------|-----------------------------|-----------------------|--------------------|------------------|--|
| PHOTO- ELECTRIC SENSORS MICRO | Ту | ре | Appearance (mm in) | Sensing range (Note 1) | Model No. (Note 2) | Output | Output operation | |
| MICRO PHOTO- ELECTRIC SENSORS | | þ | ~/7 | | GX-F6A | | Nemelle en er | |
| AREA SENSORS | | Front sensing | | | GX-F6AI | | Normally open | |
| SAFETYLIGHT | Ŧ | onts | 6 0.236 24.5 0.965 | | GX-F6B | | Normally closed | |
| CURTAINS / SAFETY COMPONENTS | output | 6 0.236 C 0.965 | | GX-F6BI | NPN open-collector | Normally closed | | |
| PRESSURE / FLOW SENSORS | NPN | þ | | | GX-H6A | transistor | Normally open | |
| | 2 | sensing | | Maximum | GX-H6AI | | | |
| INDUCTIVE PROXIMITY SENSORS | | 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 | eusi | | GX-F6AI-P | | | |
| SIMPLE WIRE-SAVING UNITS | ŧ | Front s | 6 0.236 | Stable sensing range | GX-F6B-P | | Normally closed | |
| | output | Ē | 6 0.236 | | GX-F6BI-P | PNP open-collector | | |
| WIRE-SAVING SYSTEMS | PNP (| þ | ~ 1 | | GX-H6A-P | transistor | Normally open | |
| MEASURE- MENT SENSORS | P Susin | | | GX-H6AI-P | | | | |
| | | Top s(| 6 0.236 | | GX-H6B-P | | Normally closed | |
| STATIC CONTROL DEVICES | | | 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

| MANAGEMENT SOLUTIONS FA COMPONENTS | Туре | | Appearance (mm in) | Sensing range (Note 1) | Model No. (Note 2) | Output | Output operation | | |
|---|------------|---------------|--------------------|--|-----------------------|--------------------|------------------|---------------|--|
| MACHINE VISION SYSTEMS | | bu | \sim | | GX-F8A | | Normally open | | |
| | | Front sensing | 7.4 0.291 | | GX-F8AI | | | | |
| UV CURING SYSTEMS | Ŧ | | 8 0.315 0.906 | | GX-F8B | | Normally closed | | |
| | NPN output | | | | GX-F8BI | NPN open-collector | Normally closed | | |
| | PN | g | | | GX-H8A | transistor | Normally on an | | |
| | z | ensin | sensing | | Maximum | GX-H8AI | | Normally open | |
| Selection Guide | | Top se | 8.2 0.323 | 2.5 mm 0.098 in (0 to 2.1 mm 0 to 0.083 in) | GX-H8B | | Normally alogad | | |
| Amplifier Built-in | | Ĕ | 8 0.315 | | GX-H8BI | | Normally closed | | |
| Amplifier- separated | | sensing | - 4 | | GX-F8A-P | | Nemelle | | |
| Other Products | | | ensin | 7.4 0.291 | Γ. Υ | GX-F8AI-P | | Normally open | |
| | t | Front s | 8 0.315 | Stable sensing range | GX-F8B-P | PNP open-collector | No | | |
| GX-F/H | output | Free | 0.010 | | GX-F8BI-P | | Normally closed | | |
| GXL | PNP c | 5 | ~ | | GX-H8A-P | transistor | | | |
| GL GX-M | Ę | sensing | | | GX-H8AI-P | | Normally open | | |
| GX-U/GX-FU/ | | Top se | 8.2 0.323 | | GX-H8B-P | | | | |
| GX-N GX | | T | 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.

| GX | -12 | type | | | | | LASER SENSORS |
|--------|-------------------------------|------------------------|-----------------------------|-----------------------|--------------------|------------------|---|
| Ту | /pe | Appearance (mm in) | Sensing range (Note 1) | Model No. (Note 2) | Output | Output operation | PHOTO- ELECTRIC SENSORS MICRO |
| | sensing | | | GX-F12A | | Normally open | MICRO PHOTO- ELECTRIC SENSORS |
| | | 7.1 0.280 | | GX-F12AI | | Normally open | AREA SENSORS |
| ŧ | Front s | 12 27.8 | GX-F12B | | Normally closed | SAFETY LIGHT | |
| outpu | NPN output Top sensing Fro | 0.472 | | GX-F12BI | NPN open-collector | Normally closed | SAFETY COMPONENTS |
| N | | | | GX-H12A | transistor | Normally open | PRESSURE / FLOW |
| z | | 12 0.472 | Maximum | Maximum GX-H12AI | | SENSORS | |
| | | 27.4 12 0.472 1.079 | operation distance | GX-H12B | | Normally closed | INDUCTIVE PROXIMITY SENSORS |
| | Ĕ | | 4.0 mm 0.157 in | GX-H12BI | | | PARTICULAR |
| | βL | | (0 to 3.3 mm 0 to 0.130 in) | GX-F12A-P | | Normally anon | - SENSORS |
| | sensing | 7.1 0.280 | | GX-F12AI-P | | Normally open | SENSOR OPTIONS |
| Ŧ | Front s | 27.8 | Stable sensing range | GX-F12B-P | | Normally alogad | SIMPLE WIRE-SAVING |
| output | ц Ц | 0.472 | | GX-F12BI-P | PNP open-collector | Normally closed | UNITS |
| PNP 0 | 6 | | | GX-H12A-P | transistor | | WIRE-SAVING SYSTEMS |
| ٩. | PN Top sensing | 12 0.472 | | | - | Normally open | MEASURE- MENT SENSORS |
| | | 27.4 | | GX-H12B-P | | Normally alaged | |
| | Ĕ | 12 0.472 | | GX-H12BI-P | 1 | Normally closed | STATIC CONTROL DEVICES |

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

| GX | -15 1 | уре | | | | | ENERGY MANAGEMENT |
|------------|--------------------------------|---------------------------------|-----------------------------|---|--------------------|------------------|-------------------------|
| Ту | pe | Appearance (mm in) | Sensing range (Note 1) | Sensing range (Note 1) Model No. (Note 2) Output | | Output operation | FA COMPONENTS |
| | þ | | | GX-F15A | | Namalkianan | MACHINE |
| | ensir | 8 0.315 | | GX-F15AI | - | Normally open | VISION SYSTEMS |
| ŧ | Front sensing | 31.5 | | GX-F15B | - | Normally closed | UV CURING SYSTEMS |
| outpr | NPN output Top sensing Froi | 15 0.591 | | GX-F15BI | NPN open-collector | | |
| PN | | 16.5 0.650 15 0.591 1.161 | | GX-H15A | transistor | Normally open | - |
| z | | | Maximum | GX-H15AI | | | |
| | | | operation distance | GX-H15B | - | Normally closed | Selection Guide |
| | | | 5.Ó mm 0.197 in | GX-H15BI | | Normally closed | Amplifier Built-in |
| | БĽ | 8 0.315 | (0 to 4.2 mm 0 to 0.165 in) | GX-F15A-P | _ | Normally open | Amplifier- separated |
| | sensing | | | GX-F15AI-P | | | Other Products |
| Ŧ | Front s | 31.5 | Stable sensing range | GX-F15B-P | | Normally aloged | - |
| outpu | Ъ | 15 0.591 | | GX-F15BI-P | PNP open-collector | Normally closed | GX-F/H |
| PNP output | 6 | | | GX-H15A-P | transistor | Normally open | GXL GL |
| ٩. | PN Top sensing | 16.5 0.650 | | GX-H15AI-P | | | GX-M |
| | | 29.5 | | GX-H15B-P | | Nermally sleeped | GX-U/GX-FU/ |
| | | 15 0.591 | 1.161 | | 1 | Normally closed | GX-N 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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PLC

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FA COMPONENTS

MACHINE VISION SYSTEMS

ORDER GUIDE

GX-15 (Long sensing range) type

| | | | (| - | | | | | | | |
|--|---|---------------|--|-----------------|-----------------------|--------------------|------------------|----------------------|------------|---------------|-----------------|
| PHOTO- ELECTRIC SENSORS MICRO | Туре | | Appearance (mm in) Sensing range (Note 1) | | Model No. (Note 2) | Output | Output operation | | | | |
| PHOTO- ELECTRIC SENSORS | | | GX-FL15A | | | | | | | | |
| AREA SENSORS | | ensir | 8 0.315 | | GX-FL15AI | | Normally open | | | | |
| | Ŧ | Front sensing | 31.5 | | GX-FL15B | | Nermally deced | | | | |
| SAFETY LIGHT CURTAINS / SAFETY COMPONENTS | outpu | Fre | 15 0.591 | | GX-FL15BI | NPN open-collector | Normally closed | | | | |
| PRESSURE / FLOW | NPN | | GX-HL15A | transistor | | | | | | | |
| SENSORS | | ensin | ensin | ensin | ensin | 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 | | Ĕ | 15 0.591 1.161 | | GX-HL15BI | | Normally closed | | | | |
| SENSORS | | Front sensing | (0 to 6.7 mm 0 to 0.264 in) (0 to 6.7 mm 0 to 0.264 in) GX-FL15A-P GX-FL15A-P | GX-FL15A-P | | Normally open | | | | | |
| SENSOR OPTIONS | | | | ĺ` ∖ | GX-FL15AI-P | | Normally open | | | | |
| SIMPLE WIRE-SAVING | ŧ | | ont s | ont se | ont se | ont se | 31.5 | Stable sensing range | GX-FL15B-P | - | Normally aloand |
| UNITS | output | ц | 15 0.591 | | GX-FL15BI-P | PNP open-collector | Normally closed | | | | |
| WIRE-SAVING SYSTEMS | PNP 0 | g | | | GX-HL15A-P | transistor | Normally open | | | | |
| MEASURE- MENT SENSORS | E i | sensing | 16.5 0.650 | | GX-HL15AI-P |] | Normally open | | | | |
| | | Top se | 29.5 | | GX-HL15B-P | | Normally closed | | | | |
| STATIC CONTROL DEVICES | | Ť | 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, bending-resistant cable type

5 m 16.404 ft cable length type (standard: 1 m 3.281 ft) and bending-resistant 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 bending-resistant 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". Bending-resistant cable type of GX-F15AI-P is "GX-F15AI-P-R".

OPTIONS

| Designation | Model No. | Description | | | | |
|-------------------------------|--|---|--|--|--|--|
| | MS-GX6-1 | Mounting bracket for GX-6 type (recommended). Sensors can be mounted closely together for space-saving. | | | | |
| Sensor mounting bracket | MS-GL6-1 | Mounting brackets for GX-6 type Sensor mounting brackets for GL-6 can be used. Interchange is possible. | | | | |
| | MS-GL6-2 | | | | | |
| | MS-GXL8-4 | Mounting bracket for GX-8 type | | | | |
| | MS-GXL15 | Mounting bracket for GX-15 type | | | | |
| Aluminum | MS-A15F | For GX-FL15 □(- P) | Mounting example when mounted onto a steel or | | | |
| sheet | MS-A15H | For GX-HL15 □(-P) | stainless steel plate | | | |
| Mounting sleeve | MS-GX8-1×10 10 pcs. per set | Mounting sleeve for GX-8 type Screw, nut, bracket of GXL-8 series can be used by inserting the bracket into the mounting hole of GX-8 type when replacing 3-wire type GXL-8 series (discontinued model) with GX-8 type. | | | | |
| | Sensor mounting bracket Aluminum sheet Mounting | Sensor mounting bracketMS-GX6-1MS-GL6-1 MS-GL6-2MS-GL6-2MS-GXL8-4 MS-GXL15MS-GXL15Aluminum sheetMS-A15FMS-A15HMS-A15HMountingMS-GX8-1×10 | MS-GX6-1 Mounting bracket for GX-6 typ Sensors can be mounted close MS-GL6-1 Mounting brackets for GX-6 typ Sensor mounting brackets for GX-6 typ MS-GL6-2 MS-GL6-2 Mounting bracket for GX-8 type MS-GXL15 MS-GXL15 Mounting bracket for GX-15 typ MS-A15F For GX-FL15□(-P) MS-A15F MS-GX8-1×10 Mounting sleeve for GX-8 type Screw, nut, bracket of GXL-8 the bracket into the mounting h | | | |

nsor mounting bracket IS-GX6-1 Screw is not attached. IS-GL6-1 Screw is not

IS-GL6-2

S-GXL8-4

· MS-GXL15

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

attached.

Screw is not attached.

Screw is not

attached.

Aluminum sheet

· MS-A15F · MS-A15H



SPECIFICATIONS

GX-6 type

| | Туре | NDN | output | DNID | output | | |
|--|-----------------------------|---|---|--|---|--|--|
| 2 R Front sensi | | 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 | | |
| | ing directive compliance | (-) | | RoHS Directive | | | |
| Max. operation distance (Note 3) 1.6 mm 0.063 in ± 8 % | | | | | | | |
| Stable s | ensing range (Note 3) | | 0 to 1.3 mm | 0 to 0.051 in | | | |
| Standard | d sensing object | | Iron sheet 12 × 12 × t 1 mm | n 0.472 × 0.472 × t 0.039 in | | | |
| Hysteres | sis | | 20 % or less of operation distance | ce (with standard sensing objec | t) | | |
| Repeata | bility | Alon | g sensing axis, perpendicular to | sensing axis: 0.04 mm 0.002 in | or less | | |
| Supply v | voltage | | 12 to 24 V DC ⁺¹⁰ 15 % | Ripple P-P 10 % or less | | | |
| Current | consumption | | 15 mA | or less | | | |
| Output | | NPN open-collector transistor • Maximum sink current: 10 • Applied voltage: 30 V DC | 0 mA or less (between output and 0 V) | PNP open-collector transistor • Maximum source current: • Applied voltage: 30 V DC | 100 mA or less (between output and +V) | | |
| | | Residual voltage: 2 V or less (at 100 mA sink current) Residual voltage: 2 V or less (at 100 mA source current) | | | | | |
| | lization category | | | -12 or DC-13 | | | |
| | tput operation | Normally open | Normally closed | Normally open | Normally closed | | |
| | ponse frequency | | |) Hz | | | |
| · | on indicator | | | when the output is ON) | | | |
| | Ilution degree | 3 (Industrial environment) IP68 (IEC), IP68G (Note 4, 5) | | | | | |
| | bient temperature | | | | | | |
| resis | bient humidity | -25 to +70 °C -13 to +158 °F, Storage: -40 to +85 °C -40 to +185 °F 35 to 85 % RH, Storage: 35 to 95 % RH | | | | | |
| ental | Itage withstandability | 1 000 V A0 | · · · · | | nd enclosure | | |
| | ulation resistance | 1,000 V AC for one min. between all supply terminals connected together and enclosure 50 MΩ, or more, with 500 V DC megger between all supply terminals connected together and enclosure | | | | | |
| Vib | pration resistance | 10 to 500 Hz frequency, 3 mm 0.118 in double amplitude (Max. 20 G) in X, Y and Z directions for two hours each | | | | | |
| | ock resistance | | n/s ² acceleration (1,000 G approx | | | | |
| Sensing | Temperature characteristics | Over ambient tempera | ture range –25 to +70 °C –13 to + | 158 °F: Within ± 8 % of sensing | g range at +23 °C +73 °F | | |
| range variation | Voltage characteristics | Within ± 2 % for $^{+10}_{-15}$ % fluctuation of the supply voltage | | | | | |
| Material | | Enclosure: PBT, Indicator part: Polyester | | | | | |
| Cable | | 0.15 mm ² 3-core oil, heat and cold resistant cabtyre cable, 1 m 3.281 ft long | | | | | |
| Cable ex | ktension | Extens | sion up to total 100 m <u>328.084</u> ft i | s possible with 0.3 mm ² , or mor | e, cable. | | |
| Net weig | pht | | 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 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.

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 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-separated Other Product:



FIBER SENSORS

LASER SENSORS

LASER SENSORS

Amplifier-separated

Other Products

SPECIFICATIONS

GX-8 type

| PHOTO- ELECTRIC SENSORS | $ \subset $ | | Туре | NPN | output | PNP o | output | | |
|-----------------------------------|--------------------------|-----------|-----------------------------|--|---|---|--|--|--|
| MICRO | | | Front sensing | GX-F8A(I) | GX-F8B(I) | GX-F8A(I)-P | GX-F8B(I)-P | | |
| PHOTO- ELECTRIC SENSORS | Iten | | Top sensing | GX-H8A(I) | GX-H8B(I) | GX-H8A(I)-P | GX-H8B(I)-P | | |
| AREA SENSORS | CE r | narking o | directive compliance | | EMC Directive, | RoHS Directive | | | |
| SAFETY LIGHT CURTAINS / | Max | operatio | on distance (Note 3) | | 2.5 mm 0.098 in ± 8 % | | | | |
| COMPONENTS | Stat | le sensi | ing range (Note 3) | | 0 to 2.1 mm | 0 to 0.083 in | | | |
| PRESSURE / FLOW SENSORS | Star | dard se | nsing object | | Iron sheet 15 × 15 × t 1 mn | n 0.591 × 0.591 × t 0.039 in | | | |
| | Hysteresis | | | | 20 % or less of operation distance | ce (with standard sensing object) | | | |
| INDUCTIVE PROXIMITY SENSORS | Rep | eatabilit | у | Along | sensing axis, perpendicular to s | sensing axis: 0.04 mm 0.002 in o | r less | | |
| PARTICULAR USE SENSORS | Sup | oly volta | ige | | 12 to 24 V DC ⁺¹⁰ ₋₁₅ % I | Ripple P-P 10 % or less | | | |
| SENSOR | Current consumption | | | | 15 mA | or less | | | |
| SIMPLE WIRE-SAVING UNITS | Output | | | NPN open-collector transistor • Maximum sink current: 100 • Applied voltage: 30 V DC o • Residual voltage: 2 V or le: | or less (between output and 0 V) | | 100 mA or less (between output and +V) ss (at 100 mA source current) | | |
| WIRE-SAVING SYSTEMS | | | | | · · · | | | | |
| MEASURE- MENT SENSORS | Utilization category | | | | DC-12 or DC-13 | | | | |
| | | | operation | Normally open | Normally closed | Normally open | Normally closed | | |
| STATIC CONTROL DEVICES | | | ise frequency | | |) Hz | | | |
| LASER MARKERS | Ope | ration in | | Orange LED (lights up when the output is ON) | | | | | |
| | Φ | | on degree | 3 (Industrial environment) IP68 (IEC), IP68G (Note 4, 5) | | | | | |
| PLC | tance | Protec | | | | (, , , , | ٥ ٢ | | |
| HUMAN MACHINE INTERFACES | resis | | nt temperature | -2 | · · · · · · · · · · · · · · · · · · · | age: -40 to +85 °C -40 to +185 | r | | |
| | ntal | | nt humidity | 1 000 1/ 40 | 35 to 85 % RH, Stor | | | | |
| ENERGY MANAGEMENT SOLUTIONS | nme | | e withstandability | | | terminals connected together an | | | |
| FA COMPONENTS | Environmental resistance | | ion resistance | | | supply terminals connected toge | | | |
| MACHINE | ш | | resistance | | · · · · · · · · · · · · · · · · · · · | e (Max. 20 G) in X, Y and Z direc | | | |
| VISION SYSTEMS | Sen | . [| Temperature characteristics | | | -158 °F: Within ± 8 % of sensing | | | |
| UV CURING SYSTEMS | rang | e – | | | Within $\pm 2\%$ for $^{+10}_{-15}\%$ fluct | | | | |
| 3131EMS | Mate | | Voltage characteristics | | | icator part: Polyester | | | |
| | Cab | | | 0.15 | · · · · · | sistant cabtyre cable, 1 m 3.281 f | tlong | | |
| | | le exten | sion | | | s possible with 0.3 mm ² , or more | | | |
| Selection Guide | | weight | | | · · | • | - | | |
| Amplifier Built-in | | | | Front sensing type: 15 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. $\widecheck{2}$ 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 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 GΧ

SPECIFICATIONS

GX-12 type

| \sim | 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 | | |
| CE mar | king directive compliance | | EMC Directive, | RoHS Directive | • | | |
| Max. op | peration distance (Note 3) | | 4.0 mm 0.1 | 57 in ± 8 % | | | |
| Stable | sensing range (Note 3) | | 0 to 3.3 mm | 0 to 0.130 in | | | |
| Standa | rd sensing object | | Iron sheet 20 × 20 × t 1 mm | n 0.787 × 0.787 × t 0.039 in | | | |
| Hystere | esis | | 20 % or less of operation distance | ce (with standard sensing object |) | | |
| Repeat | ability | Alon | g sensing axis, perpendicular to s | | or less | | |
| Supply | voltage | | 12 to 24 V DC ⁺¹⁰ ₋₁₅ % I | Ripple P-P 10 % or less | | | |
| Current | t consumption | | 15 mA | or less | | | |
| Output | | | PNP open-collector transistor Maximum sink current: 100 mA Applied voltage: 30 V DC or less (between output and 0 V) PNP open-collector transistor Maximum source 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) Residual voltage: 2 V or less (at 100 mA source cur | | | | | |
| U | tilization category | | DC-12 or DC-13 | | | | |
| 0 | utput operation | Normally open | Normally closed | Normally open | Normally closed | | |
| /lax. re | sponse frequency | | 500 | Hz | | | |
| Operati | on indicator | Orange LED (lights up when the output is ON) | | | | | |
| | ollution degree | 3 (Industrial environment) | | | | | |
| P auce | rotection | IP68 (IEC), IP68G (Note 4, 5) | | | | | |
| A | mbient temperature | -25 to +70 °C -13 to +158 °F, Storage: -40 to +85 °C -40 to +185 °F | | | | | |
| A | mbient humidity | 35 to 85 % RH, Storage: 35 to 95 % RH | | | | | |
| | oltage withstandability | 1,000 V AC for one min. between all supply terminals connected together and enclosure | | | | | |
| | sulation resistance | 50 M Ω , or more, with 500 V DC megger between all supply terminals connected together and enclosure | | | | | |
| | ibration resistance | . , | r, 3 mm 0.118 in double amplitude | | | | |
| | hock resistance | | n/s ² acceleration (1,000 G approx. | | | | |
| Sensing range | 9 Temperature characteristics | Over ambient tempera | ture range -25 to +70 °C -13 to + | | range at +23 °C +73 °F | | |
| variatio | - | Within ± 2 % for $^{+10}_{-15}$ % fluctuation of the supply voltage | | | | | |
| Materia | 1 | Enclosure: PBT, Indicator part: Polyester | | | | | |
| Cable | | 0.15 mm ² 3-core oil, heat and cold resistant cabtyre cable, 1 m 3.281 ft long | | | | | |
| Cable e | extension | Extens | sion up to total 100 m 328.084 ft is | s possible with 0.3 mm ² , or more | e, cable. | | |
| Net we | ight | | 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 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-separated Other Product:

FIBER SENSORS

LASER SENSORS

LASER SENSORS

SPECIFICATIONS

GX-15 type

| PHOTO- ELECTRIC SENSORS | \wedge | | Turne | | NPN | output | | | PNP | output | |
|--|--------------------------|---------------------|-------------------------------|---|--|---------------------------------|---|--------------------|---------------------------------------|--------------------|-----------------|
| MICRO | | $\langle \ \rangle$ | Туре | | | Long sen: | 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 | Iten | ו \ <u>ז</u> | 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 |
| | CE r | narking | directive compliance | | EMC Directive, | | RoHS Directive | | | | |
| SAFETY LIGHT CURTAINS / SAFETY COMPONENTS | Max | . operati | ion distance (Note 3) | 5.0 mm 0.1 | 5.0 mm 0.197 in ± 8 % 8.0 mm 0.315 in ± 8 % (Note 4) | | 5.0 mm 0.197 in ± 8 % | | 8.0 mm 0.315 ir | ± 8 % (Note 4) | |
| PRESSURE / FLOW SENSORS | Stat | le sens | ing range (Note 3) | 0 to 4.2 mm | m 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) | |
| INDUCTIVE PROXIMITY SENSORS | Standard sensing object | | Iron sheet 20 0.787× 0.787 | | | × 30 × t 1 mm 1 × t 0.039 in | Iron sheet 20 × 20 × t 1 mm 0.787 × 0.787 × t 0.039 in | | Iron sheet 30 1.181 × 1.18 | | |
| PARTICULAR USE SENSORS | Hys | teresis | | | | 20 % or less of | operation distand | ce (with standard | sensing object |) | |
| | Repeatability | | | | Along | g sensing axis, p | erpendicular to s | sensing axis: 0.0 | 4 mm 0.002 in o | or less | |
| SENSOR OPTIONS | Supply voltage | | | | | 12 to 2 | 4 V DC ⁺¹⁰ ₋₁₅ % | Ripple P-P 10 % | or less | | |
| SIMPLE WIRE-SAVING UNITS | Current consumption | | | | | | 15 mA | or less | | | |
| WIRE-SAVING SYSTEMS | Output | | Maximum | IPN open-collector transistor • Maximum sink current: 100 mA • Applied voltage: 30 V DC or less (between output and 0 V) • Applied voltage: 30 V DC or less (between output and 0 V) | | | | source current: | rent: 100 mA | | |
| MEASURE- MENT SENSORS | | | | oltage: 2 V or le | | | | • | or less (between ess (at 100 mA so | • • • | |
| STATIC CONTROL DEVICES | | Utiliza | tion category | DC-12 or DC-13 | | | | | | | |
| | | Outpu | t operation | Normally open | Normally closed | Normally open | Normally closed | Normally open | Normally closed | Normally open | Normally closed |
| LASER MARKERS | Max | . respoi | nse frequency | 250 | Hz | 150 Hz | (Note 5) | 250 |) Hz | 150 Hz | (Note 5) |
| PLC | Ope | ration ir | ndicator | Orange LED (lights up when the output is ON) | | | | | | | |
| HUMAN | | Polluti | on degree | 3 (Industrial environment) | | | | | | | |
| MACHINE | nce | Protec | tion | | | | IP68 (IEC), IP6 | 68G (Note 6, 7) | | | |
| ENERGY MANAGEMENT | sista | Ambie | ent temperature | | -2 | 5 to +70 °C –13 | to +158 °F, Stor | rage: -40 to +85 | °C -40 to +185 | °F | |
| SOLUTIONS | al re | Ambie | ent humidity | | | 35 1 | o 85 % RH, Sto | rage: 35 to 95 % | RH | | |
| COMPONENTS | ment | Voltag | e withstandability | | 1,000 V AC | for one min. be | ween all supply | terminals conne | cted together an | d enclosure | |
| MACHINE VISION SYSTEMS | Environmental resistance | Insula | tion resistance | 50 | MΩ, or more, wi | th 500 V DC me | gger between al | I supply terminal | s connected tog | ether and enclos | ure |
| LIV | En | Vibrat | ion resistance | 10 to 50 | 0 Hz frequency, | 3 mm 0.118 in o | louble amplitude | e (Max. 20 G) in | X, Y and Z direc | ctions for two hou | irs each |
| CURING SYSTEMS | | Shock | resistance | | 10,000 m/ | s ² acceleration (| 1,000 G approx | .) in X, Y and Z d | lirections three t | imes each | |
| | Sen | | Temperature characteristics | Over ar | mbient temperati | ure range –25 to | +70 °C –13 to + | +158 °F: Within ± | 8 % of sensing | range at +23 °C | +73 °F |
| | rang varia | ation | Voltage characteristics | | | Within ±2 9 | % for ⁺¹⁰ % fluct | uation of the sup | ply voltage | | |
| Selection | Mate | erial | | | | Enc | losure: PBT, Ind | icator part: Polye | ester | | |
| Guide | Cab | le | | | 0.15 ו | mm ² 3-core oil, h | neat and cold res | sistant cabtyre ca | able, 1 m 3.281 f | ft long | |
| Amplifier Built-in Amplifier- | Cab | le exter | ision | | Extensi | ion up to total 10 | 00 m 328.084 ft i | s possible with 0 | .3 mm ² , or more | , cable. | |
| separated Other | Net | weight | | | | | 20 g a | approx. | | | |
| Products | Note | s: 1) W | here measurement c | onditions have n | ot been specifie | d precisely, the | conditions used | were an ambient | t 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) This is the numerical value which the sensor mount onto an insulator. 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 insulator. When mounted onto a metallic plate, max. response frequency will decrease. 6) Panasonic Industrial Devices SUNX's IP68 test method

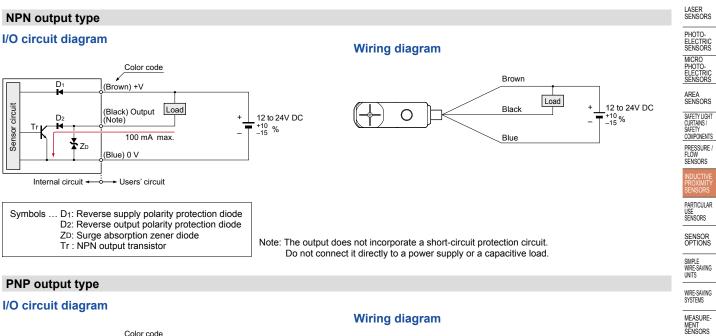
① Immerse at 0 m below 0 °C +32 °F water surface and leave for 30 min. Then, immerse at 0 m below +70 °C +158 °F water surface and leave for 30 min. 2 Regard the heat shock test in 1 as one cycle and perform 20 cycles.

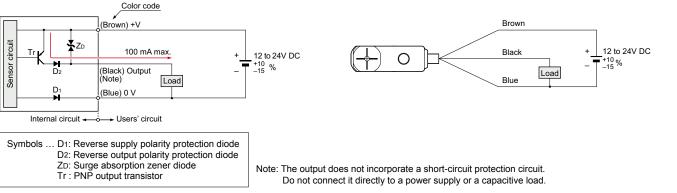
③ Leave in water at a depth of 1 m 3.281 ft in water for 500 hours.

(4) After tests (1) to (3), insulation resistance, voltage withstandability, current consumption, and sensing ranges 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.

I/O CIRCUIT DIAGRAMS





FIBER SENSORS

STATIC CONTROL DEVICES

LASER MARKERS

HUMAN MACHINE INTERFACES

ENERGY MANAGEMENT SOLUTIONS

FA COMPONENTS

MACHINE VISION SYSTEMS UV CURING SYSTEMS

Selection Guide

Amplifier separate Other Products

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

PLC

LASER SENSORS

PRESSURE / FLOW

SENSING CHARACTERISTICS (TYPICAL)

GX-6 type Sensing field

Correlation between sensing object size and sensing range

Iron

Aluminu

20

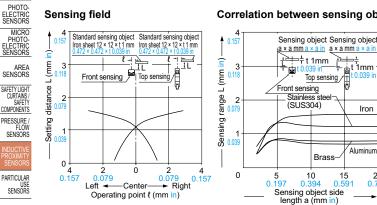
0.78

Correlation between sensing object size and sensing range

Brass-

15 0.591

10 0.39/



Standard sensing object Iron sheet 15 × 15 × t 1 mm 0.591 × 0.591 × t 0.039 in

0.591 × 0.591 × 10.000

2 0.079

+ Right

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

슽

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)

2ħ

Sensing object <u>a × a mm a × a in</u> <u>+</u> t 1 mm t 0 039 in Sensina object a × a mm a × a → + t 1 mm range L (mm in) ģ, Top sensing 3 /Front sensing Iron 2 Stainless steel (SUS304) Sensing I Brass Aluminum 0 10 0.394 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

د 10.315€ Standard sensing object Standard sensing object Iron sheet 20 × 20 × t1 mm Iron sheet 20 × 20 × t1 mm Setting distance L (mm in) 6 6 Top sensing range L (mm 南 Front sensing 4 Sensing 2 079 2 0↓ 10 35 5 197 ò 5 0 10 0.197 0.394 → Right Left -Center Operating point { (mm in)

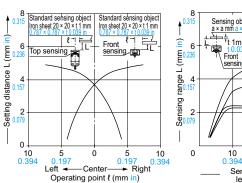
Correlation between sensing object size and sensing range

Sensing object a × a mm a × a in Sensing object a × a mm a × a in <u>+</u>4 + t 1 mm ŗ, t <u>10.039</u> in t <u>1</u> mm t <u>1</u> mm <u>Top sensing</u> t <u>10.039</u> in <u>t mt</u> <u>1</u> mm Front sensing Iron Stainless stee (SUS304) Brass Aluminum 10 20 0.78 30 40 0 1.181 1.575 Sensing object side length a (mm in)

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

Sensing object Sensing object a x a mm a x a im a x a mm a x a in the transformed to the Top sensing Iron Stainless stee (SUS304) Brass Aluminum 30 1.181 40 1.575 20 0.787 Sensing object side length a (mm in)

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-N

GX

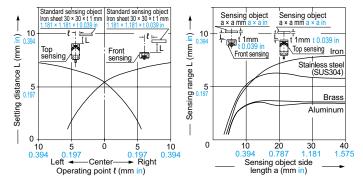
GX-M GX-U/GX-FU/

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.

> Cable Hoo

Groove

É

ø2.4 mm

0.094 in hole

(Depth: 3 mm

0.118 in or more)

Mounting

GX-6 type

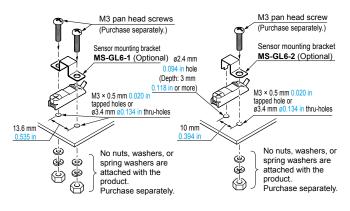
· Use the optional sensor mounting bracket when installing.

<When using MS-GX6-1 (Optional / 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 (Optional) / MS-GL6-2 (Optional)>

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



Refer to p.1579~ for general precautions.

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.

GX-8 type

<When using MS-GXL8-4 (Optional)>

 Make sure to use a M3 (length: 12 mm 0.472 in or more) truss head screw (accessory for MS-GXL8-4). 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

M3 pan head screw

(Purchase separately.)

Sensor mounting bracket **MS-GX6-1** (Optional)

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

No nuts, washers, or

spring washers are

product. Purchase separately.

attached with the

22 mm

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- 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 torgue 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.



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FIBER SENSORS

LASER SENSORS

PHOTO-

ELECTRIC MICRO PHOTO-ELECTRIC SENSORS

AREA SENSORS

SAFETY LIGH

CURTAINS / SAFETY COMPONENTS

PRESSURE FLOW SENSORS

PARTICULAR

USE SENSORS

SENSOR OPTIONS

SIMPLE WIRE-SAVING UNITS

WIRE-SAVING SYSTEMS

MEASURE

MENT SENSORS

STATIC

CONTROL

VISION SYSTEMS UV CURING SYSTEMS

No nuts, washers, or spring washers are attached with the product. Purchase separately. ø2.5 mm ø0.098 in hole (Depth: 3 mm 0.118 in or more)

M3 pan head screws or

Do not use flat head

M3 × 0.5 mm 0.020 ir

tapped holes or ø3.4 mm

134 in thru-holes

truss head screws

screws

XIIII

働

9 mm . 9 In. 0.354 in 0.354 in 0.354 in 0.354 in



GXL

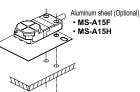
GL GX-M GX-U/GX-FU GX-N

GX No nuts, washers, or spring wash

MS-GXL15 (Sensor mounting bracket)

are attached with the product.

Purchase separately,



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

Sensor mounting bracket MS-GXL8-4 (Optional) M3 × 0.5 mm 0.020 n tapped hole (Depth: 8 mm 0.315 in or more) or ø3.4 mm ø0.134 in thru-hole

 $\times 115 \text{ mm} 0.453 \text{ in}$ The nut, washer, and spring washer are attached with the MS-GXL8-4.

ø2 4 mm ø0 094 in hole

(Depth: 3 mm 0.118 in or more)

16 mm 0.630 in

¢

M3 (length 12 mm 0.472 in or more) pan head screw pan head screw (Purchase separately.)

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

Selectio Guide Amplifi Built-in

PRECAUTIONS FOR PROPER USE FIBER SENSORS LASER SENSORS

PHOTO-ELECTRIC SENSORS

MICRO

PHOTO-ELECTRIC SENSORS

AREA SENSORS

SAFETY LIGH CURTAINS SAFET

COMPONENTS PRESSURE SENSORS

PARTICULAR USE SENSOR OPTIONS

SIMPLE WIRE-SAVING UNITS

WIRE-SAVING SYSTEMS

MEASURE

MENT

STATIC

CONTROL DEVICES

LASER MARKERS

MACHINE VISION SYSTEMS

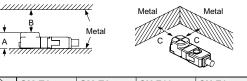
CURING SYSTEMS

PLC HUMAN MACHINE ENERGY MANAGEMEN SOLUTIONS FA COMPONENTS

Influence of surrounding metal

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

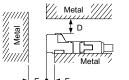
Front sensing type

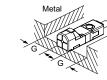


| \geq | GX-F6 type GX-F8 type GX-F12 t | | GX-F12 type | GX-F15 type | GX-FL15 type | |
|--------|--------------------------------|-----------------|-----------------|----------------|---------------------------|--|
| А | 6 mm 0.236 in (Note 1) | 7.4 mm 0.291 in | 7.1 mm 0.280 in | 8 mm 0.315 in | 8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





| | \geq | 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

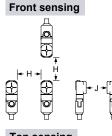
· When two or more sensors are installed in parallel or face to face, keep the minimum separation distance specified below to avoid mutual interference.

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| Selection Guide |
|-------------------------|
| Amplifier Built-in |
| Amplifier- separated |
| Other Products |
| |
| GX-F/H |
| GXL |

| GX-F6 | Between "I" type | 0 mm | 15 mm |
|---------|---|--------------------|----------|
| GX-H6 | and non "I" type | (Note 2) | 0.591 in |
| type | Between two "I" types | 13 mm | 25 mm |
| | or two non "I" types | 0.512 in | 0.984 in |
| GX-F8 | Between "I" type | 0 mm | 15 mm |
| GX-H8 | and non "I" type | (Note 2) | 0.591 in |
| type | Between two "I" types | 20 mm | 35 mm |
| | or two non "I" types | 0.787 in | 1.378 in |
| GX-F12 | Between "I" type | 0 mm | 25 mm |
| GX-H12 | and non "I" type | (Note 2) | 0.984 in |
| type | Between two "I" types | 25 mm | 50 mm |
| | or two non "I" types | 0.984 in | 1.969 in |
| GX-F15 | Between "I" type | 0 mm | 25 mm |
| GX-H15 | and non "I" type | (Note 2) | 0.984 in |
| type | Between two "I" types | 45 mm | 70 mm |
| | or two non "I" types | 1.772 in | 2.756 in |
| GX-FL15 | Between "I" type | 0 mm | 25 mm |
| GX-HL15 | and non "I" type | (Note 2) | 0.984 in |
| type | Between two "I" types or two non "I" types | 110 mm 3.059 in | |





Notes: 1) "I" in the model No. specifies the different frequency type.

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

GX-F12/H12 type: 6.5 mm 0.256 in

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

Sensing range

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

Correction coefficient

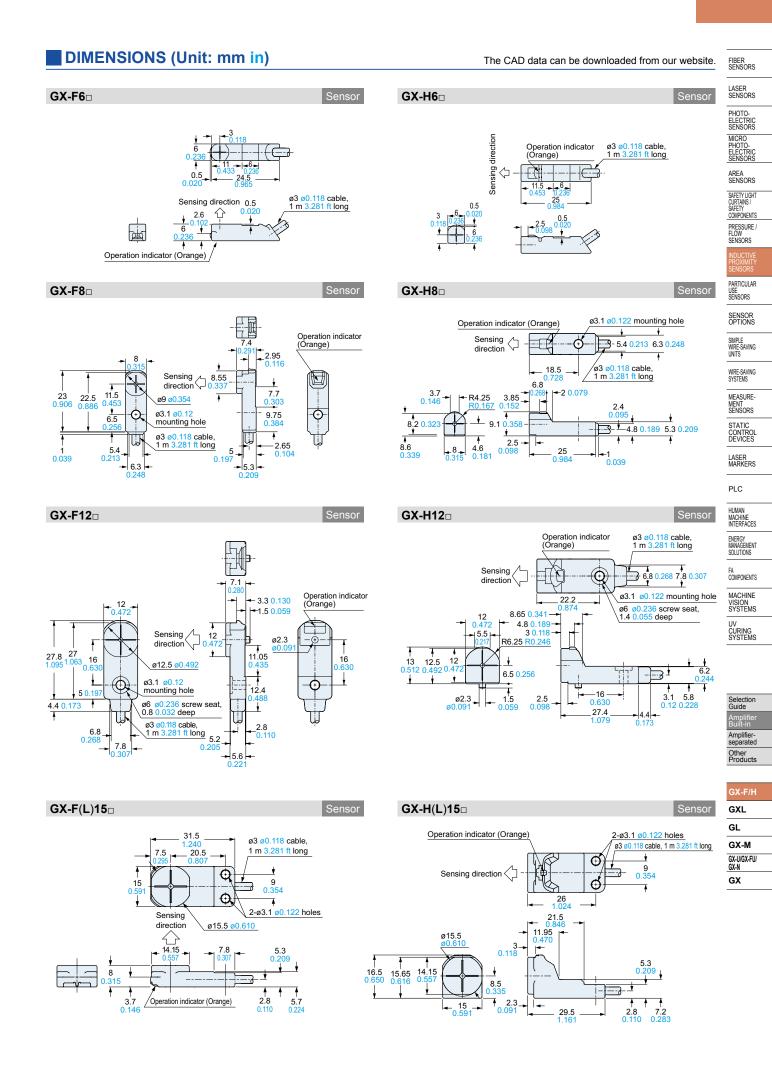
| Model No. Metal | GX-F6 GX-H6 type | GX-F8 GX-H8 type | GX-F12 GX-H12 type | GX-F15 GX-H15 type | GX-FL15 type | GX-HL15 type |
|--------------------------|------------------------|------------------------|--------------------------|--------------------------|-----------------|-----------------|
|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



Mounting hole dimensions

M3 × 0.5 0.020 tapped hole,

Mounting hole dimensions

10 0.394

ø

M3 × 0.5 0.020 tapped hole (or ø3.4 ø0.134 thru-hole)

8 0.315 or more deep (or ø3.4 ø0.134 thru-hole)

22

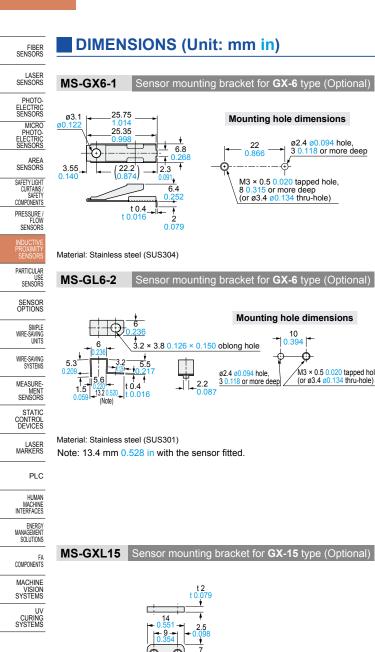
0.866

ø2.4 ø0.094 hole

3 0.118 or more de

0.087

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



Mounting hole dimensions ſÐ-2-3.2 × 3.8 0.126 × 0.150 oblong holes 6 5.5

13.6 0.535 2-M3 × 0.5 0.020 tapped holes (or 2-ø3.4 ø0.134 thru-holes)

The CAD data can be downloaded from our website.

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

Material: Stainless steel (SUS301) Note: 20 mm 0.787 in with the sensor fitted.

t 0.4

MS-GL6-1

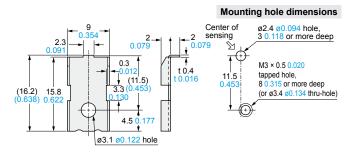
5.6

19.6 0

(Note)

3.2 0.126

MS-GXL8-4 Sensor mounting bracket for **GX-8** type (Optional)



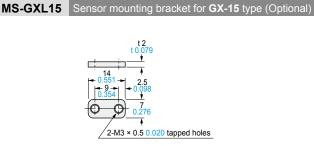
Material: Stainless steel (SUS304)

MS-A15F

1 pc. each of M3 (length 12 mm 0.472 in) truss head screw,

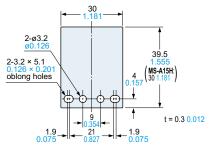
nut, spring washer and plain washer is attached.

MS-A15H



Material: Cold rolled carbon steel (SPCC)

Aluminum sheet (Optional)



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

MEMO

