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

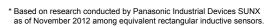
GX

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

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

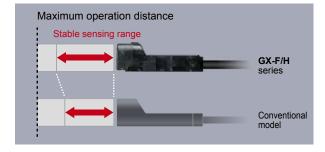


Industry No. 1* in stable sensing



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.

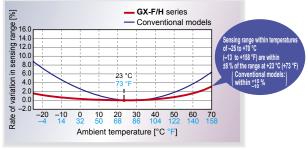
Example: GX-08 0.4 mm 0.016 in or less Operation distance variation: 0.4 mm 0.016 in or less For the GX-D8 sensing object - Maximum operation distance: 2.5 mm 0.098 in ± 8 % (2.3 to 2.7 mm 0.091 to 0.106 in) -Operation distance variation: 1.0 mm 0.039 in or less 1.0 mm n or less Standard Conventional 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 | | |

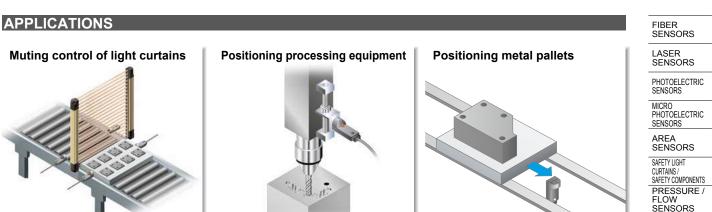
* With standard sensing object

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.



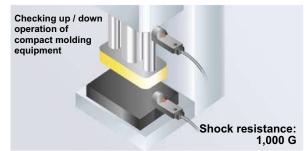
* Typical



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~)".



Vibration resistance: 500 Hz **FUNCTIONS**

Sensing presence of metallic

objects on a part feeder

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





MOUNTING

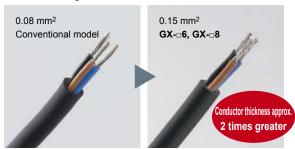
Tightening strength increased with no damage! (excluding GX-D6)

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-06 / GX-08 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 DEVICES

LASER MARKERS

PLC

HUMAN MACHINE INTERFACES ENERGY MANAGEMENT SOLUTIONS

FA COMPONENTS

MACHINE VISION SYSTEMS

UV CURING SYSTEMS

Selection Guide Amplifier Built-in Amplifier-Other Products

| 0 | GX-F/H |
|---|---------------------|
| C | GXL |
| C | GL |
| C | GX-M |
| | GX-U/GX-FU/ GX-N |
| 0 | GX |

ORDER GUIDE

| LASER SENSORS | GX | -6 ty | уре | | | | | | | | |
|--|--------|---------------|--------------------------|-----------------------------|-----------------------|--------------------|------------------|--|-----------|---|--|
| PHOTO- ELECTRIC SENSORS MICRO | Ту | pe | Appearance (mm in) | Sensing range (Note 1) | Model No. (Note 2) | Output | Output operation | | | | |
| PHOTO- ELECTRIC SENSORS | | þ | ~/? | | GX-F6A | | Namallu an an | | | | |
| AREA SENSORS | | Front sensing | | | GX-F6AI |] | Normally open | | | | |
| SAFETY LIGHT | Ŧ | ont s | 6 0.236 24.5 0.965 | | GX-F6B | | Normally closed | | | | |
| CURTAINS / SAFETY COMPONENTS | output | Ē | 6 0.236 | | GX-F6BI | NPN open-collector | | | | | |
| PRESSURE / FLOW SENSORS | NPN | þ | \sim | | 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 | | (0 to 1.3 mm 0 to 0.051 in) | GX-F6A-P | - | Normally open | | | | |
| SENSOR OPTIONS | | ensi | ensi | sensi | sensing | sensi | 6 0.236 | | GX-F6AI-P | _ | |
| SIMPLE WIRE-SAVING UNITS | Ħ | 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 | Б | ~ 1 | | GX-H6A-P | transistor | Normally open | | | | |
| MEASURE- MENT SENSORS | | sensing | 6 0.236 | | GX-H6AI-P | - | | | | | |
| STATIC | | Top s | 25 | | GX-H6B-P | | Normally closed | | | | |
| 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 | | 6 | | | GX-F8A | | Normally open | | |
| | | sensing | 7.4 0.291 | - | GX-F8AI | | Normally open | | |
| UV CURING SYSTEMS | NPN output | Front s | 8 0.315 | | GX-F8B | | Normally aloged | | |
| | | Buist 1 | ц | | | GX-F8BI | NPN open-collector | Normally closed | |
| | PN | | | GX-H8A | transistor | Normally on an | | | |
| | z | | | Maximum operation distance 2.5 mm 0.098 in (0 to 2.1 mm 0 to 0.083 in) | GX-H8AI | | Normally open | | |
| Selection Guide | | Top se | 8.2 0.323 | | GX-H8B | | Normally algood | | |
| Amplifier Built-in | | Ĕ | 8 0.315 | | GX-H8BI | | Normally closed | | |
| Amplifier- separated | | ont sensing | ~~~ | | GX-F8A-P | | Normally anon | | |
| Other Products | | | 7.4 0.291 | ĺ ∖ | GX-F8AI-P | | Normally open | | |
| | ŧ | | Front s | ont se | ont se | 8 0.315 0.906 | Stable sensing range | GX-F8B-P | |
| GX-F/H | output | Ъ | | | GX-F8BI-P | PNP open-collector | Normally closed | | |
| GXL GL | PNP o | B | | | GX-H8A-P | transistor | | | |
| GX-M | ٩ | sensing | | | GX-H8AI-P | | Normally open | | |
| GX-U/GX-FU/ | | Top ser | 8.2 0.323 | | GX-H8B-P | | Nemelle | | |
| GX-N GX | | ч | 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 |
| | ٥ | | | GX-F12A | | Normally open | MICRO PHOTO- ELECTRIC SENSORS |
| | sensing | 7.1 0.280 12 0.472 27.8 1.094 | | GX-F12AI | NPN open-collector | Normally open | AREA SENSORS |
| ŧ | Front s | | | GX-F12B | | Normally closed | SAFETY LIGHT |
| outpu | NPN output sensing Froi | | | GX-F12BI | | Normally closed | SAFETY COMPONENTS |
| N | | | | GX-H12A | transistor | Normally open | PRESSURE / FLOW |
| z | | 12 0.472 | Maximum | GX-H12AI | | | SENSORS |
| | Top se | 27.4 12 0.472 | 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 | _ | Namally an an | SENSORS |
| | sensing | 7.1 0.280 | | GX-F12AI-P | | Normally open | SENSOR OPTIONS |
| Ŧ | Front s | 27.8 | Stable sensing range | GX-F12B-P | | Newsellsselesed | 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 | 12 0.472 | | GX-H12AI-P | 1 | Normally open | MEASURE- MENT SENSORS |
| | Top se | 27.4 | | GX-H12B-P | | Nermelluseless | |
| | μ | 12 0.472 | | GX-H12BI-P | | 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 | ре | Appearance (mm in) | Sensing range (Note 1) | Model No. (Note 2) | Output | Output operation | FA COMPONENTS |
| | þ | \sim | | GX-F15A | | Namalkianan | MACHINE |
| | ensir | 8 0.315 | | GX-F15AI | - | Normally open | VISION SYSTEMS |
| ŧ | NPN output sensing Front sensing | 3 0.315 31.5 15 0.591 1.240 | | GX-F15B | | Normally closed | UV CURING SYSTEMS |
| outpr | | | | GX-F15BI | NPN open-collector | | |
| N | | 16.5 0.650 | | GX-H15A | transistor | Normally open | - |
| z | | | Maximum | GX-H15AI | - | | |
| | bs dc | 29.5 | operation distance | GX-H15B | | Normally closed | Selection Guide |
| | Top | 15 0.591 1.161 | 5.0 mm 0.197 in | GX-H15BI | | | Amplifier Built-in |
| | бL | | (0 to 4.2 mm 0 to 0.165 in) | GX-F15A-P | - | Normally open | Amplifier- separated |
| | sensing | 8 0.315 | | GX-F15AI-P | | | Other Products |
| ÷ | Front s | 31.5 | Stable sensing range | GX-F15B-P | | Normally alaged | 01/ 5/11 |
| PNP output | Ē | 15 0.591 | | GX-F15BI-P | PNP open-collector | Normally closed | GX-F/H GXL |
| NP | b | | _ | GX-H15A-P | transistor | | GL |
| ٩ | PN | 16.5 0.650 | | GX-H15AI-P | | Normally open | GX-M |
| | Top se | 29.5 | | GX-H15B-P | | Normally aloged | GX-U/GX-FU/ |
| | Ĕ | 15 0.591 1.161 | | GX-H15BI-P | | 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.

FIBER SENSORS

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LASER SENSORS

PHOTO ELECTRI SENSOR MIC

ORDER GUIDE

GX-15 (Long sensing range) type

| Ту | /pe | Appearance (mm in) | Sensing range (Note 1) | Model No. (Note 2) | Output | Output operation | |
|------------|---------------|--------------------|---|-----------------------|--------------------|------------------|--|
| | БĽ | | | GX-FL15A | | Normally open | |
| | ensii | 8 0.315 | | GX-FL15AI | | Normally open | |
| N out | Front sensing | | | GX-FL15B | | Normally alogad | |
| | ЪЧ | 15 0.591 | | GX-FL15BI | NPN open-collector | Normally closed | |
| | b | 16.5 0.650 | | GX-HL15A | transistor | Normally open | |
| z | sensing | | Maximum | GX-HL15AI | | | |
| | Top se | 29.5 | operation distance ✓ | GX-HL15B | | Normally closed | |
| | Ĕ | 15 0.591 1.161 | 8.0 mm 0.315 in | GX-HL15BI | | Normally closed | |
| | βĹ | | (0 to 6.7 mm 0 to 0.264 in) GX-FL15A-P | | | Name II and a | |
| | Front sensing | 8 0.315 | Γ. Υ | GX-FL15AI-P | | Normally open | |
| ÷ | onts | 31.5 | Stable sensing range | GX-FL15B-P |] | Nermally deser | |
| outpu | Ц Ц | 15 0.591 | | GX-FL15BI-P | PNP open-collector | Normally closed | |
| PNP output | D | | | GX-HL15A-P | transistor | Normally on an | |
| д. | sensing | 16.5 0.650 | 6.5 0.650 GX-HL1 | | | Normally open | |
| | Top se | 29.5 | | GX-HL15B-P | | Normally aloogd | |
| μĔ | | 15 0.591 1.161 | | 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

| STEMS | Designation | Model No. | Description | | | | | |
|--|-------------------------------|--------------------------------|---|---|--|--|--|--|
| election Guide | | MS-GX6-1 | Mounting bracket for GX-6 type (recommended). Sensors can be mounted closely together for space-saving. Mounting brackets for GX-6 type Sensor mounting brackets for GL-6 can be used. Interchange is possible. | | | | | |
| nplifier Built-in | Sensor mounting bracket | MS-GL6-1 | | | | | | |
| ipinioi . | | MS-GL6-2 | | | | | | |
| | | MS-GXL8-4 | Mounting bracket for GX-8 type | 9 | | | | |
| | | MS-GXL15 | Mounting bracket for GX-15 type | | | | | |
| =/H | 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 | | | | |
| GL (-M ^{X-FU/} <u>GX-N</u> GX | 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 inser the bracket into the mounting hole of GX-8 type when replar 3-wire type GXL-8 series (discontinued model) with GX-8 ty | | | | | |

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

IS-GL6-2

S-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

attached.

Screw is not attached.

Screw is not

attached.



· MS-A15F

· MS-A15H

Aluminum sheet

SPECIFICATIONS

GX-6 type

| | - | | outout | סואס | output | | | |
|------------------|---------------------------------|---|---|--|---|--|--|--|
| \backslash | Type ਤੋਂ ਨ੍ਹਾਂ Front sensing | GX-F6A(I) | GX-F6B(I) | GX-F6A(I)-P | GX-F6B(I)-P | | | |
| Item | Vote From sensing | GX-H6A(I) | GX-F6B(I) GX-H6B(I) | GX-H6A(I)-P | GX-F6B(I)-P | | | |
| | rective compliance | GX-HGA(I) | | RoHS Directive | GX-HOD(I)-I | | | |
| | ration distance (Note 3) | | | 063 in ± 8 % | | | | |
| Stable se | ensing range (Note 3) | | 0 to 1.3 mm | 0 to 0.051 in | | | | |
| Standard | sensing object | | Iron sheet 12 × 12 × t 1 mn | n 0.472 × 0.472 × t 0.039 in | | | | |
| Hysteres | is | | 20 % or less of operation distant | ce (with standard sensing objec | t) | | | |
| Repeatal | oility | Alon | g sensing axis, perpendicular to s | sensing axis: 0.04 mm 0.002 in | or less | | | |
| Supply ve | oltage | | 12 to 24 V DC ⁺¹⁰ 15 % | Ripple P-P 10 % or less | | | | |
| Current c | 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 le | ess (at 100 mA sink current) | Residual voltage: 2 V or I | ess (at 100 mA source current) | | | |
| Utili | zation category | | DC-12 or DC-13 | | | | | |
| | put operation | Normally open | Normally closed | Normally open | Normally closed | | | |
| | oonse frequency | | |) Hz | | | | |
| · · | n indicator | Orange LED (lights up when the output is ON) | | | | | | |
| | lution degree | 3 (Industrial environment) | | | | | | |
| Pro | tection | IP68 (IEC), IP68G (Note 4, 5) | | | | | | |
| Am esist | bient temperature | −25 to +70 °C −13 to +158 °F, Storage: −40 to +85 °C −40 to +185 °F | | | | | | |
| Am 12 | bient humidity | | · · · · | rage: 35 to 95 % RH | | | | |
| | tage withstandability | | C for one min. between all supply | | | | | |
| | ulation resistance | | ith 500 V DC megger between al | | - | | | |
| _ | ration resistance | . , | r, 3 mm 0.118 in double amplitude | · · · · | | | | |
| | ock resistance | | n/s ² acceleration (1,000 G approx | | | | | |
| Sensing range | Temperature characteristics | Over ambient temperat | ture range –25 to +70 °C –13 to + | | g range at +23 °C +73 °F | | | |
| variation | Voltage characteristics | | | uation of the supply voltage | | | | |
| Material | | | | icator part: Polyester | | | | |
| Cable | | | mm ² 3-core oil, heat and cold res | | Ū. | | | |
| Cable ex | tension | Extens | sion up to total 100 m 328.084 ft i | s possible with 0.3 mm ² , or mor | e, cable. | | | |
| Net weig | ht | | 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 | output | | | |
| MICRO | | | Eront 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 | marking | directive compliance | | EMC Directive, | RoHS Directive | | | | |
| SAFETY LIGHT CURTAINS / | Мах | . operat | ion distance (Note 3) | | 2.5 mm 0.098 in ± 8 % | | | | | |
| SAFETY COMPONENTS | Stable sensing range (Note 3) | | | | 0 to 2.1 mm | 0 to 0.083 in | | | | |
| RESSURE / FLOW SENSORS | Standard sensing object | | | | Iron sheet 15 × 15 × t 1 mr | n 0.591 × 0.591 × t 0.039 in | | | | |
| NDUCTIVE | Hys | teresis | | | 20 % or less of operation distant | ce (with standard sensing object) | | | | |
| SENSORS | Rep | eatabili | ty | Along | sensing axis, perpendicular to | sensing axis: 0.04 mm 0.002 in o | r less | | | |
| ARTICULAR USE SENSORS | Sup | ply volta | age | | 12 to 24 V DC ⁺¹⁰ ₋₁₅ % | Ripple P-P 10 % or less | | | | |
| | Current consumption | | | | 15 mA | or less | | | | |
| SENSOR DPTIONS SIMPLE IRE-SAVING UNITS | Out | Output | | NPN 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 output and +V • Residual voltage: 2 V or less (at 100 mA source current) | | | | |
| RE-SAVING SYSTEMS | | | | | · · · | pr DC-13 | | | | |
| EASURE- MENT ENSORS | Utilization category Output operation | | | Normally open | Normally closed | Normally open | Normally closed | | | |
| STATIC NTROL EVICES | Max | · · | nse frequency | | |) Hz | , | | | |
| EVICES | Ope | ration i | ndicator | Orange LED (lights up when the output is ON) | | | | | | |
| LASER ARKERS | | Polluti | ion degree | 3 (Industrial environment) | | | | | | |
| PLC | e | Protec | ction | | IP68 (IEC), IP6 | 68G (Note 4, 5) | | | | |
| | sistar | Ambie | ent temperature | -2 | -25 to +70 °C -13 to +158 °F, Storage: -40 to +85 °C -40 to +185 °F | | | | | |
| HUMAN MACHINE ERFACES | Environmental resistance | Ambie | ent humidity | 35 to 85 % RH, Storage: 35 to 95 % RH | | | | | | |
| ENERGY | nent | Voltag | ge withstandability | 1,000 V AC | for one min. between all supply | terminals connected together an | d enclosure | | | |
| OLUTIONS | /ironr | Insula | tion resistance | 50 MΩ, or more, wit | th 500 V DC megger between al | I supply terminals connected tog | ether and enclosure | | | |
| MPONENTS | En | Vibrat | ion resistance | 10 to 500 Hz frequency, | 3 mm 0.118 in double amplitude | e (Max. 20 G) in X, Y and Z direc | tions for two hours each | | | |
| ACHINE VISION STEMS | | Shock | resistance | 10,000 m/ | /s ² acceleration (1,000 G approx |) in X, Y and Z directions three ti | mes each | | | |
| LIV | Sen rang | sing | Temperature characteristics | Over ambient temperate | ure range –25 to +70 °C –13 to + | 158 °F: Within ± 8 % of sensing | range at +23 °C +73 °F | | | |
| CURING STEMS | | ation | Voltage characteristics | | Within ± 2 % for $^{+10}_{-15}$ % fluct | uation of the supply voltage | | | | |
| | Mat | erial | | | Enclosure: PBT, Ind | icator part: Polyester | | | | |
| | Cab | le | | 0.15 r | mm ² 3-core oil, heat and cold res | sistant cabtyre cable, 1 m 3.281 f | t long | | | |
| election | Cab | le exter | nsion | Extensi | ion up to total 100 m 328.084 ft i | s possible with 0.3 mm ² , or more | , cable. | | | |
| Guide mplifier Built-in | Net | weight | | | Front sensing type: 15 g approx. | , Top sensing type: 20 g approx. | | | | |
| Built-In | Note | s [.] 1) W | here measurement of | nditions have not been specified precisely, the conditions used were an ambient temperature of $\pm 23 ^{\circ}\text{C}$ $\pm 73 ^{\circ}\text{F}$ | | | | | | |

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

3) The maximum operation distance stands for the maximum distance for which the sensor can detect the standard sensing object.

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

4) Panasonic Industrial Devices SUNX's IP68 test method

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

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

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

5) If using the sensor in an environment where cutting oil droplets splatter, the sensor may 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 | | | |
|--------------------------|--|-----------------------------|---|---|---|--------------------------|--|--|--|
| | | Eront sensing | GX-F12A(I) | GX-F12B(I) | GX-F12A(I)-P | GX-F12B(I)-P | | | |
| Item | 1 \ | Top sensing | GX-H12A(I) | GX-H12B(I) | GX-H12A(I)-P | GX-H12B(I)-P | | | |
| CE m | arking | directive compliance | | EMC Directive, | RoHS Directive | | | | |
| Max. | operat | ion distance (Note 3) | | 4.0 mm 0.1 | 57 in ± 8 % | | | | |
| Stabl | e sens | sing range (Note 3) | | 0 to 3.3 mm | 0 to 0.130 in | | | | |
| Stand | dard se | ensing object | | Iron sheet 20 × 20 × t 1 mm | 0.787 × 0.787 × t 0.039 in | | | | |
| Hyste | eresis | | | 20 % or less of operation distance | e (with standard sensing object) | 1 | | | |
| Repe | eatabili | ty | Along | sensing axis, perpendicular to s | | r less | | | |
| Supp | ly volt | age | | 12 to 24 V DC ⁺¹⁰ ₋₁₅ % | Ripple P-P 10 % or less | | | | |
| Curre | ent cor | nsumption | | 15 mA | or less | | | | |
| Output | | | NPN open-collector transistor • Maximum sink current: 100 • Applied voltage: 30 V DC c • Residual voltage: 2 V or le | r 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 + Residual voltage: 2 V or less (at 100 mA source current) | | | | |
| ſ | Utiliza | tion category | | DC-12 or DC-13 | | | | | |
| | Outpu | it operation | Normally open | Normally closed | Normally open | Normally closed | | | |
| Max. | respo | nse frequency | | 500 | Hz | | | | |
| Opera | ation i | ndicator | | Orange LED (lights up | when the output is ON) | | | | |
| | Pollut | ion degree | 3 (Industrial environment) | | | | | | |
| nce | Prote | ction | IP68 (IEC), IP68G (Note 4, 5) | | | | | | |
| sista | Ambie | ent temperature | -25 to +70 °C -13 to +158 °F, Storage: -40 to +85 °C -40 to +185 °F | | | | | | |
| alre | Ambie | ent humidity | 35 to 85 % RH, Storage: 35 to 95 % RH | | | | | | |
| Environmental resistance | Voltag | ge withstandability | 1,000 V AC | for one min. between all supply | terminals connected together an | d enclosure | | | |
| viron | Insula | tion resistance | 50 MΩ, or more, wi | 50 M Ω , or more, with 500 V DC megger between all supply terminals connected together and enclosure | | | | | |
| ш | Vibrat | ion resistance | 10 to 500 Hz frequency, | 3 mm 0.118 in double amplitude | e (Max. 20 G) in X, Y and Z direc | tions for two hours each | | | |
| | Shock | resistance | 10,000 m/ | s ² acceleration (1,000 G approx. |) in X, Y and Z directions three t | mes each | | | |
| Sens 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 | | | |
| variat | | Voltage characteristics | | Within ± 2 % for $^{+10}_{-15}$ % fluctu | uation of the supply voltage | | | | |
| Mate | rial | | | Enclosure: PBT, Indi | cator part: Polyester | | | | |
| Cable | е | | 0.15 | mm ² 3-core oil, heat and cold res | istant cabtyre cable, 1 m 3.281 f | t long | | | |
| Cable | e exter | nsion | Extens | ion up to total 100 m 328.084 ft is | s possible with 0.3 mm ² , or more | , cable. | | | |
| Net w | t weight 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 | | Tures | | NPN | output | | | PNP | output | | |
|--------------------------------------|--------------------------|----------|-----------------------------|--|--|---------------------------------------|---|--------------------|-------------------------------|--------------------|-------------------|--|
| MICRO | | | Туре | | | Long sens | sing range | | | Long sens | ing 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 | 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 | |
| SAFETY LIGHT CURTAINS / SAFETY | CE r | narking | directive compliance | | | | EMC Directive, | RoHS Directive | | | | |
| COMPONENTS | Max | operat | ion distance (Note 3) | 5.0 mm 0.1 | 97 in ± 8 % | 8.0 mm 0.315 ir | 1 ± 8 % (Note 4) | 5.0 mm 0.1 | 97 in ± 8 % | 8.0 mm 0.315 in | ± 8 % (Note 4) | |
| PRESSURE / FLOW SENSORS | Stat | le sens | sing range (Note 3) | 0 to 4.2 mm | 0 to 0.165 in | 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 | Star | dard se | ensing object | | Iron sheet 20 × 20 × t1 mm Iron sheet 30 × 30 × t1 mm Iron sheet 20 × 20 × t1 m 0.787 × 0.787 × t0.039 in 1.181 × 1.181 × t0.039 in 0.787 × 0.787 × t0.039 | | | | Iron sheet 30 1.181 × 1.18 | | | |
| PARTICULAR USE SENSORS | Hyst | eresis | | | 20 % or less of operation distance (with standard sensing object) | | | | | | | |
| | Rep | eatabili | ty | | Along | g sensing axis, p | erpendicular to s | sensing axis: 0.0 | 4 mm 0.002 in c | or less | | |
| SENSOR | Sup | oly volt | age | | | 12 to 24 | 4 V DC ⁺¹⁰ ₋₁₅ % | Ripple P-P 10 % | or less | | | |
| SIMPLE WIRE-SAVING UNITS | Curr | ent cor | sumption | | | | 15 mA | or less | | | | |
| WIRE-SAVING SYSTEMS | Output | | Maximum | NPN open-collector transistor • Maximum sink current: 100 mA | | | PNP open-collector transistor • Maximum source current: 100 mA | | | | | |
| MEASURE- MENT SENSORS | | | | Applied voltage: 30 V DC or less (between output and 0 V) Residual voltage: 2 V or less (at 100 mA sink current) Applied voltage: 2 V or less (at 100 mA sink current) | | | | • | • • • | | | |
| STATIC CONTROL DEVICES | Utilization 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 | . respo | nse frequency | 250 | Hz | 150 Hz | (Note 5) | 250 | Hz | 150 Hz | (Note 5) | |
| PLC | Ope | ration i | ndicator | Orange LED (lights up when the output is ON) | | | | | | | | |
| HUMAN | | Pollut | ion degree | 3 (Industrial environment) | | | | | | | | |
| MACHINE INTERFACES | nce | Protec | ction | | | | IP68 (IEC), IP6 | 68G (Note 6, 7) | | | | |
| ENERGY MANAGEMENT | sista | Ambie | ent temperature | | -2 | 5 to +70 °C –13 | to +158 °F, Stor | age: -40 to +85 | °C -40 to +185 | °F | | |
| SOLUTIONS | al re | Ambie | ent humidity | | | 35 t | o 85 % RH, Sto | rage: 35 to 95 % | RH | | | |
| COMPONENTS | nent | Voltag | ge withstandability | | 1,000 V AC | for one min. bet | 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 | l supply terminal | s connected tog | ether and enclos | ure | |
| UV | Eŋ | Vibrat | ion resistance | 10 to 50 | 0 Hz frequency, | 3 mm 0.118 in c | louble amplitude | e (Max. 20 G) in | X, Y and Z dired | 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 c | 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 | | 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 | е | | | 0.15 ו | mm² 3-core oil, h | eat and cold res | sistant cabtyre ca | able, 1 m 3.281 f | ft long | | |
| Amplifier Built-in Amplifier- | Cab | e exter | nsion | | 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 | ipprox. | | | | |
| Products | Note | s: 1) W | here measurement of | conditions have r | ot been specifie | d precisely, the | conditions used | were an ambien | 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

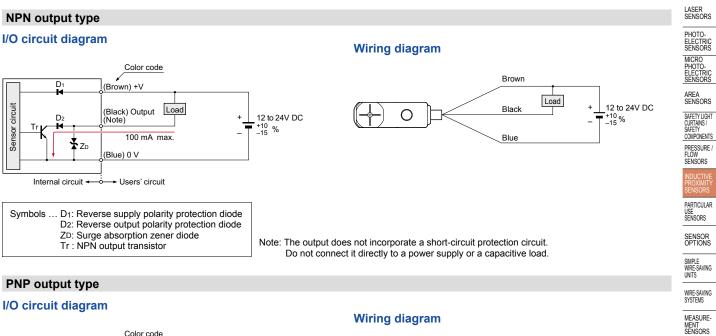
① Immerse at 0 m below 0 °C +32 °F water surface and leave for 30 min. Then, immerse at 0 m below +70 °C +158 °F water surface and leave for 30 min. 2 Regard the heat shock test in 1 as one cycle and perform 20 cycles.

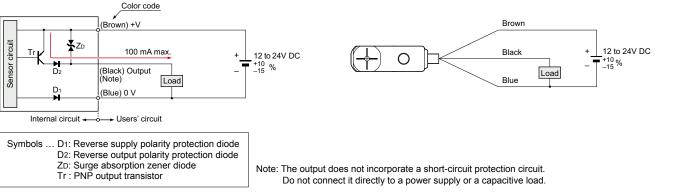
③ Leave in water at a depth of 1 m 3.281 ft in water for 500 hours.

(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

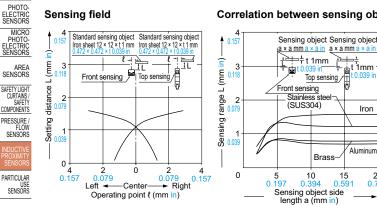
0.78

Correlation between sensing object size and sensing range

Brass-

15 0.591

10 0.39/



Standard sensing object Iron sheet 15 × 15 × t1 mm 0.591 × 0.591 × t0 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)

<u>+</u>4 + t 1 mm

20 0.78

Sensing object side length a (mm in)

ŗ,

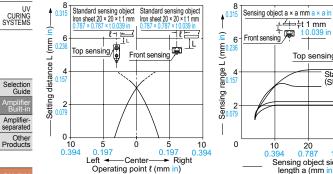
10

0

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

Sensing object a × a mm a × a in

Stainless stee (SUS304)

Iron

Brass

Aluminum

30

1.181

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

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

GX-15 type

GXL

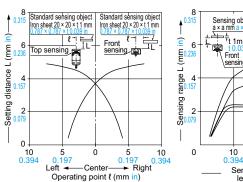
GL

GX-N

GX

GX-M GX-U/GX-FU/

Sensing field



Correlation between sensing object size and sensing range

40

1.575

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.

PARTICULAR USE SENSOR OPTIONS SIMPLE WIRE-SAVING UNITS WIRE-SAVING SYSTEMS MEASURE-MENT SENSORS STATIC CONTROL DEVICES LASER MARKERS PLC HUMAN MACHINE ENERGY MANAGEMENT SOLUTIONS FA COMPONENTS MACHINE VISION SYSTEMS CURING

As the sensing object size becomes smaller than

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

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

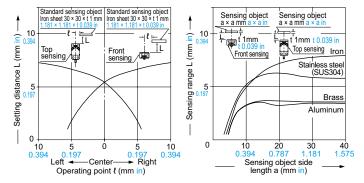
shortens as shown in the left figure.

SENSING CHARACTERISTICS (TYPICAL)

GX-15 (Long sensing range) type

Sensing field

Correlation between sensing object size and sensing range



PRECAUTIONS FOR PROPER USE

· Never use this product as a sensing device for personnel protection.

 In case of using sensing devices for personnel protection, use products which meet laws and standards, such as OSHA, ANSI or IEC etc., for personnel protection applicable in each region or country.

> Cable Hoo

Groove

É

ø2.4 mm

0.094 in hole

(Depth: 3 mm

0.118 in or more)

Mounting

GX-6 type

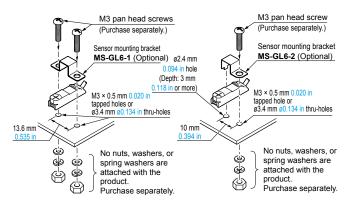
· Use the optional sensor mounting bracket when installing.

<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.

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

٩

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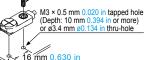
Þ

- 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.

SIMPLE WIRE-SAVING UNITS WIRE-SAVING SYSTEMS MEASURE MENT SENSORS M3 (length 12 mm 0.472 in) truss head screw (Accessory for MS-GXL8-4) STATIC Sensor mounting bracket CONTROL MS-GXL8-4 (Optional) M3 × 0.5 mm 0.020 n tapped hole LASER MARKERS (Depth: 8 mm 0.315 in or more) or ø3.4 mm ø0.134 in thru-hole < 11 5 mm 0 453 in The nut, washer, and spring washer are attached with the MS-GXL8-4. PLC HUMAN MACHINE INTERFACES ø2 4 mm ø0 094 in hole (Depth: 3 mm 0.118 in or more) ENERGY MANAGEMENT SOLUTIONS M3 (length 12 mm 0.472 in or more) pan head screw FA COMPONENTS pan head screw (Purchase separately.) MACHINE



| | No nuts, washers, or spring washer are attached with the product. Purchase separately. |
|---------|--|
| Ø2.5 mm | n ø0.098 in hole 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



Selection Guide

VISION SYSTEMS

UV CURING SYSTEMS

GXL

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

GX No nuts, washers, or spring wash are attached with the product. Purchase separately,



MS-GXL15

796

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

FIBER SENSORS LASER SENSORS PHOTO-ELECTRIC SENSORS

MICRO

PHOTO-ELECTRIC SENSORS

AREA SENSORS

SAFETY LIGH CURTAINS SAFETY

COMPONENTS PRESSURE FL OW SENSORS

PARTICULAR USE SENSOR OPTIONS

SIMPLE WIRE-SAVING UNITS

WIRE-SAVING SYSTEMS

MEASURE-MENT SENSORS

STATIC

CONTROL DEVICES

LASER MARKERS

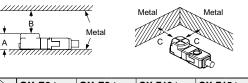
MACHINE VISION SYSTEMS

CURING SYSTEMS

PLC HUMAN MACHINE ENERG SOLUTIONS FA COMPONENTS · When there is a metal near the sensor, keep the minimum separation distance specified below.

PRECAUTIONS FOR PROPER USE

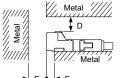
Front sensing type

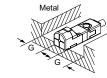


| \geq | GX-F6 type | GX-F8 type | GX-F12 type | GX-F15 type | GX-FL15 type |
|--------|---------------------------|-----------------|-----------------|----------------|---------------------------|
| А | 6 mm 0.236 in (Note 1) | 7.4 mm 0.291 in | 7.1 mm 0.280 in | 8 mm 0.315 in | 8 mm 0.315 in (Note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





| | 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

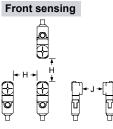
• When two or more sensors are installed in parallel or face to face, keep the minimum separation distance specified below to avoid mutual interference.

H J

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

GX

| | | 0 | | |
|--|---|-------------------|-------------------|--|
| 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 GX-H8 type | Between "I" type and non "I" type | 0 mm (Note 2) | 15 mm 0.591 in | |
| | Between two "I" types or two non "I" types | 20 mm 0.787 in | 35 mm 1.378 in | |
| GX-F12 GX-H12 type | Between "I" type and non "I" type | 0 mm (Note 2) | 25 mm 0.984 in | |
| | Between two "I" types or two non "I" types | 25 mm 0.984 in | 50 mm 1.969 in | |
| GX-F15 | Between "I" type | 0 mm | 25 mm | |
| | and non "I" type | (Note 2) | 0.984 in | |
| GX-H15 | Between two "I" types | 45 mm | 70 mm | |
| type | or two non "I" types | 1.772 in | 2.756 in | |
| GX-FL15 | Between "I" type | 0 mm | 25 mm | |
| | and non "I" type | (Note 2) | 0.984 in | |
| GX-HL15 | Between two "I" types | 110 mm | 170 mm | |
| type | or two non "I" types | 3.059 in | 6.693 in | |
| Notes: 1) "I" in the model No. specifies | | | | |



Top sensing lo



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: 3.5 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

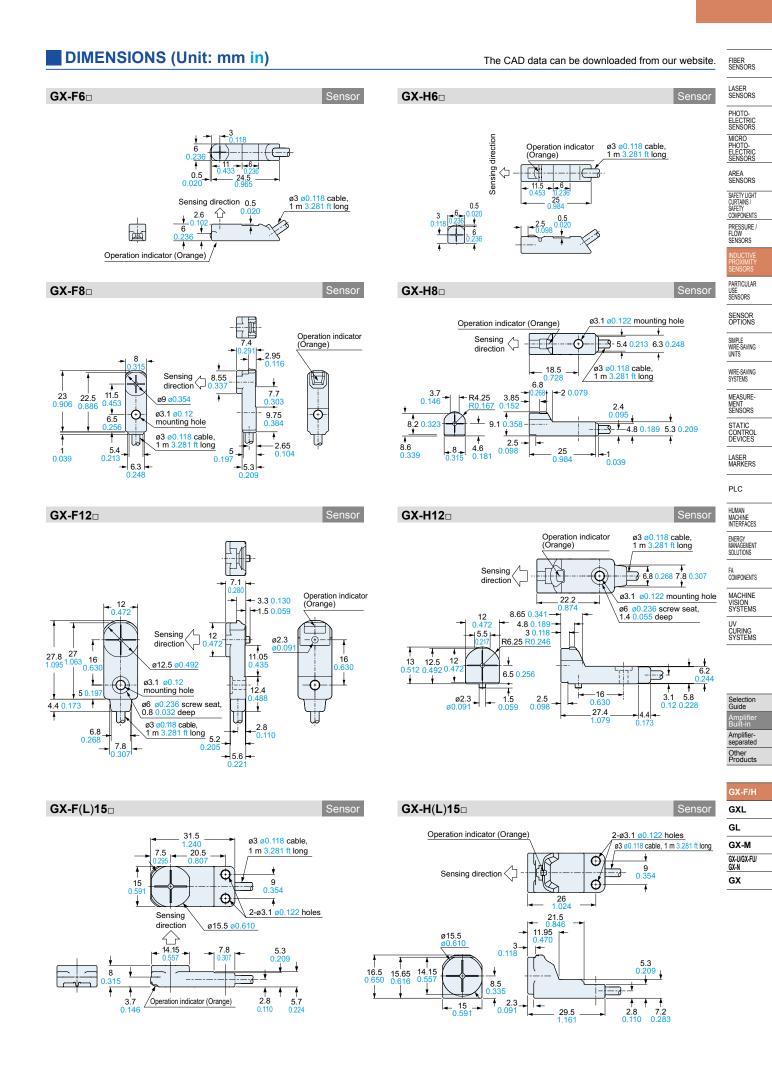
| Model No. Metal | GX-F6 GX-H6 type | GX-F8 GX-H8 type | GX-F12 GX-H12 type | GX-F15 GX-H15 type | GX-FL15 type | GX-HL15 type |
|--------------------------|------------------------|------------------------|--------------------------|--------------------------|-----------------|-----------------|
|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

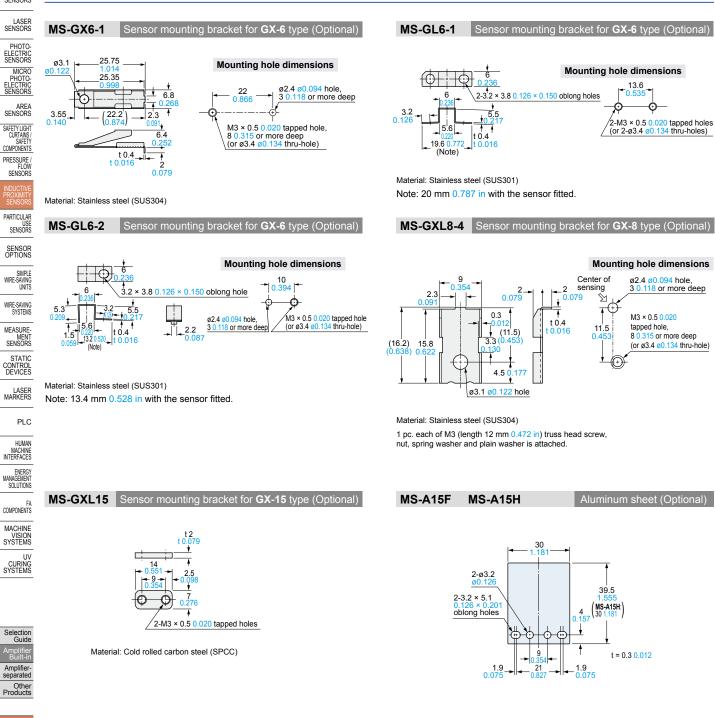
Wiring

 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.





The CAD data can be downloaded from our website.

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

MEMO

