

GX SERIES

Related Information

■ General terms and conditions..... F-3

■ Selection guide P.781~

■ Glossary of terms..... P.1576~

■ General precautions P.1579~


panasonic.net/id/pidsx/global

 Recognition
 (Excluding GX-4S□ and
 5 m cable length type)
Bending-resistant
cable type availableMetal embedding
possible

Robust enclosure and bending-resistant cable types are also available

VARIETIES

Miniature

GX-3S□

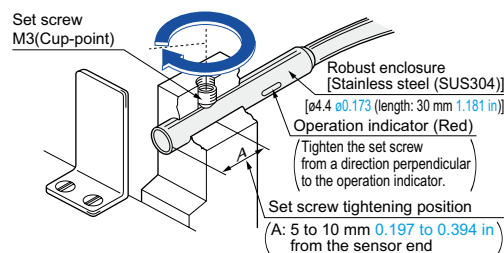
GX-3S□ is an amplifier built-in inductive proximity sensor having a diameter of just $\varnothing 3.8$ mm $\varnothing 0.150$ in.



Robust housing

GX-4S□

The **GX-4S□** uses a robust stainless steel enclosure. The tightening torque can be 0.58 N·m or less. (2 times compared with conventional models)

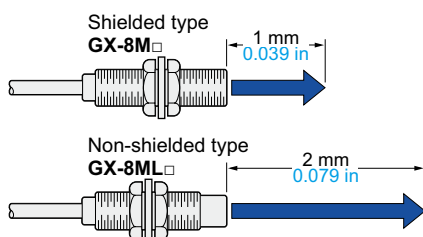
Tightening torque: **0.58 N·m or less**

BASIC PERFORMANCE

Long sensing range

GX-8ML□

The non-shielded type (**GX-8ML□**) has twice the sensing range of the shielded type (**GX-8M□**), although having the same size. Hence, it allows margin against sensing distance variations.

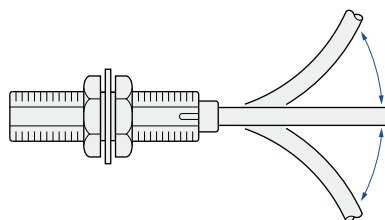


ENVIRONMENTAL RESISTANCE

Ten times greater bending durability (Compared with conventional models)

GX-□-R

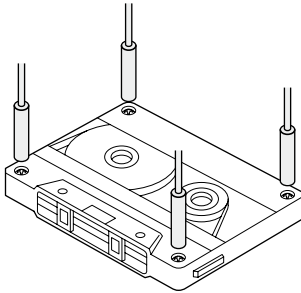
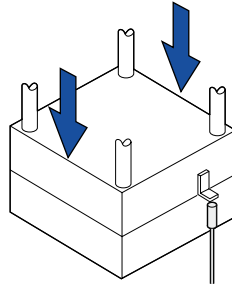
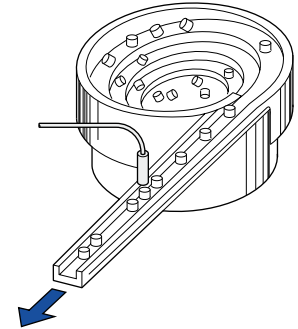
The bending durability of the cable to repeated bending has been increased tenfold by using special alloy cores for the cable.



| |
|---|
| FIBER SENSORS |
| LASER SENSORS |
| PHOTOELECTRIC SENSORS |
| MICRO PHOTOELECTRIC SENSORS |
| AREA SENSORS |
| SAFETY LIGHT CURTAINS / SAFETY COMPONENTS |
| PRESSURE / FLOW SENSORS |
| INDUCTIVE PROXIMITY 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-separated |
| Other Products |

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

APPLICATIONS**Sensing screws on cassette****Sensing the punch of a die****Counting parts****ORDER GUIDE**

| Type | Appearance (mm in) | Sensing range (Note) | Model No. | Supply voltage | Output | Output operation | | |
|--|-----------------------|--|--|------------------------|-------------------------------------|---------------------|---------------|-----------------|
| Shielded type | Non-threaded type | <p>Maximum operation distance 0.8 mm 0.031 in (0 to 0.6 mm 0 to 0.024 in) Stable sensing range</p> | GX-3S | 12 to 24 V DC ±10 % | NPN open-collector transistor | Normally open | | |
| | | GX-3SB | Normally closed | | | | | |
| | | <p>0.8 mm 0.031 in (0 to 0.6 mm 0 to 0.024 in)</p> | GX-4S | | | Normally open | | |
| | | GX-4SB | Normally closed | | | | | |
| | Threaded type | <p>1 mm 0.039 in (0 to 0.8 mm 0 to 0.031 in)</p> | GX-5S | 10 to 30 V DC | | Normally open | | |
| | | | GX-5SB | | | Normally closed | | |
| | | <p>0.8 mm 0.031 in (0 to 0.6 mm 0 to 0.024 in)</p> | GX-5M | 12 to 24 V DC ±10 % | | Normally open | | |
| | | | GX-5MB | | | Normally closed | | |
| | | | <p>1 mm 0.039 in (0 to 0.8 mm 0 to 0.031 in)</p> | | | GX-8M | 10 to 30 V DC | Normally open |
| | | | | | | GX-8MB | | Normally closed |
| <p>2 mm 0.079 in (0 to 1.6 mm 0 to 0.063 in)</p> | GX-8ML | Normally open | | | | | | |
| | GX-8MLB | Normally closed | | | | | | |

Note: 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.

FIBER
SENSORSLASER
SENSORSPHOTO-
ELECTRIC
SENSORSMICRO
PHOTO-
ELECTRIC
SENSORSAREA
SENSORSSAFETY LIGHT
CURTAINS /
SAFETY
COMPONENTSPRESSURE /
FLOW
SENSORSINDUCTIVE
PROXIMITY
SENSORSPARTICULAR
USE
SENSORSSENSOR
OPTIONSSIMPLE
WIRE-SAVING
UNITSWIRE-SAVING
SYSTEMSMEASURE-
MENT
SENSORSSTATIC
CONTROL
DEVICESLASER
MARKERS

PLC

HUMAN
MACHINE
INTERFACESENERGY
MANAGEMENT
SOLUTIONSFA
COMPONENTSMACHINE
VISION
SYSTEMSUV
CURING
SYSTEMSSelection
GuideAmplifier
Built-inAmplifier-
separatedOther
Products**GX-F/H****GXL****GL****GX-M**GX-U/GX-FU/
GX-N**GX**

ORDER GUIDE

Bending-resistant cable type

Bending-resistant cable type is also available for shielded type.
When ordering this type, suffix “-R” to the model No.
(e.g.) Bending-resistant cable type of **GX-3S** is “**GX-3S-R**”.

5 m 16.404 ft cable length type

5 m 16.404 ft cable length type (standard: 3 m 9.843 ft) is also available. (excluding **GX-4SB**)
When ordering this type, suffix “-C5” to the model No.
(e.g.) 5 m 16.404 ft cable length type of **GX-3S** is “**GX-3S-C5**”.

Refer to table below for 5 m 16.404 ft cable length type of bending-resistant cable type sensor.

• Table of model Nos.

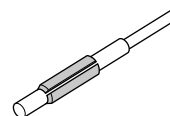
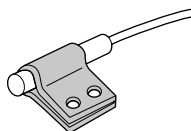
| Type | | Standard | Bending-resistant cable of 5 m 16.404 ft cable length type |
|------------------|-------------------|---------------|---|
| Shielded type | Non-threaded type | GX-3S | GX-3S-R-C5 |
| | | GX-3SB | GX-3SB-R-C5 |
| | | GX-4S | GX-4S-R-C5 |
| | | GX-4SB | — |
| | | GX-5S | GX-5S-R-C5 |
| | | GX-5SB | — |
| | Threaded type | GX-5M | GX-5M-R-C5 |
| | | GX-5MB | — |
| | | GX-8M | GX-8M-R-C5 |
| | | GX-8MB | GX-8MB-R-C5 |

Accessories

- **MS-SS3** (Sensor mounting bracket for **GX-3S** type)
- **MS-SS3-2** (C bracket for **GX-3S** type)
- **MS-SS5** (Sensor mounting bracket for **GX-5S** type)

- **MS-SS3**
- **MS-SS5**

- **MS-SS3-2**



By using the C bracket, the applicable tightening force can be doubled.

SPECIFICATIONS**Non-threaded type**

| Type | | Shielded type | | | | | | | | | | | | | |
|----------------------------------|-----------------------------|--|--|--|--|--|--|--|--|---|--|--|-----------------|---------------|-----------------|
| | | Bending-resistant cable | | | | Bending-resistant cable | | | | Bending-resistant cable | | | | | |
| Item | Model No. | GX-3S | GX-3SB | GX-3S-R | GX-3SB-R | GX-4S | GX-4SB | GX-4S-R | GX-4SB-R | GX-5S | GX-5SB | GX-5S-R | GX-5SB-R | | |
| CE marking directive compliance | | EMC Directive, RoHS Directive | | | | | | | | | | | | | |
| Max. operation distance (Note 2) | | 0.8 mm 0.031 in ±15 % | | | | | | | | | 1 mm 0.039 in ±15 % | | | | |
| Stable sensing range (Note 2) | | 0 to 0.6 mm 0 to 0.024 in | | | | | | | | | 0 to 0.8 mm 0 to 0.031 in | | | | |
| Standard sensing object | | Iron sheet 5 × 5 × t 1 mm 0.197 × 0.197 × t 0.039 in | | | | | | | | | Iron sheet 6 × 6 × t 1 mm 0.236 × 0.236 × t 0.039 in | | | | |
| Hysteresis | | 15 % or less of operation distance (with standard sensing object) | | | | | | | | | | | | | |
| Repeatability | | 20 μm 0.787 mil or less | | | | | | | | | 8 μm 0.315 mil or less | | | | |
| Supply voltage | | 12 to 24 V DC ±10 % Ripple P-P 10 % or less | | | | | | | | | 10 to 30 V DC Ripple P-P 10 % or less | | | | |
| Current consumption | | 15 mA or less | | | | | | | | | | | | | |
| Output | | NPN open-collector transistor • Maximum sink current: 50 mA • Applied voltage: 30 V DC or less (between output and 0 V) • Residual voltage: 0.4 V or less (at 50 mA sink current) | | | | | | | | | NPN open-collector transistor • Maximum sink current: 200 mA (Note 3) • Applied voltage: 30 V DC or less (between output and 0 V) • Residual voltage: 1.5 V or less (at 200 mA sink current) 0.4 V or less (at 50 mA sink current) | | | | |
| | | Utilization category | | DC-12 or DC-13 | | | | | | | | | | | |
| | | Output operation | | Normally open | Normally closed | Normally open | Normally closed | Normally open | Normally closed | Normally open | Normally closed | Normally open | Normally closed | Normally open | Normally closed |
| | | Short-circuit protection | | ————— | | | | | | | | | Incorporated | | |
| Max. response frequency | | 1 kHz | | | | | | | | | 1.5 kHz | | | | |
| Operation indicator | | Red LED (lights up when the output is ON) | | | | | | | | | | | | | |
| Environmental resistance | Pollution degree | | 3 (Industrial environment) | | | | | | | | | | | | |
| | Protection | | IP67 (IEC) | | | | | | | | | | | | |
| | Ambient temperature | | −25 to +70 °C −13 to +158 °F , Storage: −25 to +80 °C −13 to +176 °F | | | | | | | | | | | | |
| | Ambient humidity | | 35 to 95 % RH, Storage: 35 to 95 % RH | | | | | | | | | 35 to 85 % RH, Storage: 35 to 95 % RH | | | |
| | Voltage withstandability | | 500 V AC for one min. between all supply terminals connected together and enclosure | | | | | | | | | | | | |
| | Insulation resistance | | 5 MΩ, or more, with 250 V DC megger 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 | | | |
| | Vibration resistance | | 10 to 55 Hz frequency, 1.5 mm 0.059 in double amplitude in X, Y and Z directions for two hours each | | | | | | | | | | | | |
| | Shock resistance | | 200 m/s ² acceleration (20 G approx.) in X, Y and Z directions ten times each | | | | | | | | | 300 m/s ² acceleration (30 G approx.) in X, Y and Z directions ten times each | | | |
| Sensing range variation | Temperature characteristics | Over ambient temperature range −25 to +70 °C −13 to +158 °F : Within ±20 % of sensing range at +20 °C +68 °F | | | | | | | | | Over ambient temperature range −25 to +70 °C −13 to +158 °F : Within ±15 % of sensing range at +20 °C +68 °F | | | | |
| | Voltage characteristics | Within ±2 % for ±10 % fluctuation of the supply voltage | | | | | | | | | Within ±2.5 % for ±15 % fluctuation of the supply voltage | | | | |
| Material | | Enclosure: Stainless steel (SUS304), Resin part: TPX | | | | | | | | | Enclosure: Brass (Nickel plated) Resin part: ABS | | | | |
| Cable | | 0.08 mm ² 3-core oil, heat and cold resistant cabtyre cable, 3 m 9.843 ft long | 0.1 mm ² 3-core bending, oil and heat resistant cabtyre cable, 3 m 9.843 ft long | 0.08 mm ² 3-core oil, heat and cold resistant cabtyre cable, 3 m 9.843 ft long | 0.1 mm ² 3-core bending, oil and heat resistant cabtyre cable, 3 m 9.843 ft long | 0.14 mm ² 3-core oil, heat and cold resistant cabtyre cable, 3 m 9.843 ft long | 0.1 mm ² 3-core bending, oil and heat resistant cabtyre cable, 3 m 9.843 ft long | 0.14 mm ² 3-core oil, heat and cold resistant cabtyre cable, 3 m 9.843 ft long | 0.1 mm ² 3-core bending, oil and heat resistant cabtyre cable, 3 m 9.843 ft long | 0.15 mm ² 3-core bending, oil and heat resistant cabtyre cable, 3 m 9.843 ft long | | | | | |
| Cable extension | | Extension up to total 100 m 328.084 ft is possible with 0.3 mm ² , or more, cable. | | | | | | | | | | | | | |
| Weight | | Net weight: 30 g approx. | | | | | | | | | Net weight: 55 g approx. | | | | |
| Accessories | | MS-SS3 (Sensor mounting bracket): 1 pc. MS-SS3-2 (C bracket): 1 pc. | | | | | ————— | | | MS-SS5 (Sensor mounting bracket): 1 pc. | | | | | |

Notes: 1) Where measurement conditions have not been specified precisely, the conditions used were an ambient temperature of +23 °C **+73.4 °F**.

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

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

3) The maximum sink current varies depending on the ambient temperature. Refer to "I/O CIRCUIT AND WIRING DIAGRAMS (p.846)" for details.

FIBER
SENSORSLASER
SENSORSPHOTO-
ELECTRIC
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COMPONENTSPRESSURE /
FLOW
SENSORSINDUCTIVE
PROXIMITY
SENSORSPARTICULAR
USE
SENSORSSENSOR
OPTIONSSIMPLE
WIRE-SAVING
UNITSWIRE-SAVING
SYSTEMSMEASURE-
MENT
SENSORSSTATIC
CONTROL
DEVICESLASER
MARKERS

PLC

HUMAN
MACHINE
INTERFACESENERGY
MANAGEMENT
SOLUTIONSFA
COMPONENTSMACHINE
VISION
SYSTEMSUV
CURING
SYSTEMSSelection
GuideAmplifier
Built-inAmplifier-
separatedOther
Products**GX-F/H****GXL****GL****GX-M****GX-U/GX-FU/
GX-N****GX**

SPECIFICATIONS

Threaded type

| Type | | Shielded type | | | | | | | | Non-shielded type | | | |
|----------------------------------|-----------------------------|--|---|---|-----------------|--|--|--|-----------------|--|--|---------------|-----------------|
| | | Bending-resistant cable | | | | Bending-resistant cable | | | | | | | |
| Item | Model No. | GX-5M | GX-5MB | GX-5M-R | GX-5MB-R | GX-8M | GX-8MB | GX-8M-R | GX-8MB-R | GX-8ML | GX-8MLB | | |
| CE marking directive compliance | | EMC Directive, RoHS Directive | | | | | | | | | | | |
| Max. operation distance (Note 2) | | 0.8 mm 0.031 in ±15 % | | | | 1 mm 0.039 in ±15 % | | | | 2 mm 0.079 in ±15 % | | | |
| Stable sensing range (Note 2) | | 0 to 0.6 mm 0 to 0.024 in | | | | 0 to 0.8 mm 0 to 0.031 in | | | | 0 to 1.6 mm 0 to 0.063 in | | | |
| Standard sensing object | | Iron sheet 5 × 5 × t 1 mm 0.197 × 0.197 × t 0.039 in | | | | Iron sheet 8 × 8 × t 1 mm 0.315 × 0.315 × t 0.039 in | | | | Iron sheet 12 × 12 × t 1 mm 0.472 × 0.472 × t 0.039 in | | | |
| Hysteresis | | 15 % or less of operation distance (with standard sensing object) | | | | 10 % or less of operation distance (with standard sensing object) | | | | | | | |
| Repeatability | | 20 μm 0.787 mil or less | | | | 8 μm 0.315 mil or less | | | | 40 μm 1.575 mil or less | | | |
| Supply voltage | | 12 to 24 V DC ±10 % Ripple P-P 10 % or less | | | | 10 to 30 V DC Ripple P-P 10 % or less | | | | | | | |
| Current consumption | | 15 mA or less | | | | | | | | | | | |
| Output | | NPN open-collector transistor <ul style="list-style-type: none">Maximum sink current: 50 mAApplied voltage: 30 V DC or less (between output and 0V)Residual voltage: 0.4 V or less (at 50 mA sink current) | | | | NPN open-collector transistor <ul style="list-style-type: none">Maximum sink current: 200 mA (Note 3)Applied voltage: 30 V DC or less (between output and 0 V)Residual voltage: 1.5 V or less (at 200 mA sink current) 0.4 V or less (at 50 mA sink current) | | | | | | | |
| | | Utilization category | | DC-12 or DC-13 | | | | | | | | | |
| | | Output operation | | Normally open | Normally closed | Normally open | Normally closed | Normally open | Normally closed | Normally open | Normally closed | Normally open | Normally closed |
| | | Short-circuit protection | | ————— | | | | Incorporated | | | | | |
| Max. response frequency | | 1 kHz | | | | | | | | 500 Hz | | | |
| Operation indicator | | Red LED (lights up when the output is ON) | | | | | | | | | | | |
| Environmental resistance | Pollution degree | | 3 (Industrial environment) | | | | | | | | | | |
| | Protection | | IP67 (IEC) | | | | | | | | | | |
| | Ambient temperature | | – 25 to +70 °C –13 to +158 °F, Storage: – 25 to +80 °C – 13 to +176 °F | | | | | | | | | | |
| | Ambient humidity | | 35 to 95 % RH, Storage: 35 to 95 % RH | | | | 35 to 85 % RH, Storage: 35 to 95 % RH | | | | | | |
| | Voltage withstandability | | 500 V AC for one min. between all supply terminals connected together and enclosure | | | | | | | | | | |
| | Insulation resistance | | 5 MΩ, or more, with 250 V DC megger 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 | | | | | | |
| | Vibration resistance | | 10 to 55 Hz frequency, 1.5 mm 0.059 in double amplitude in X, Y and Z directions for two hours each | | | | | | | | | | |
| | Shock resistance | | 200 m/s ² acceleration (20 G approx.) in X, Y and Z directions ten times each | | | | 300 m/s ² acceleration (30 G approx.) in X, Y and Z directions ten times each | | | | 300 m/s ² acceleration (30 G approx.) in X, Y and Z directions three times each | | |
| Sensing range variation | Temperature characteristics | Over ambient temperature range – 25 to +70 °C –13 to +158 °F: Within ±20 % of sensing range at +20 °C +68 °F | | | | Over ambient temperature range –25 to +70 °C –13 to +158 °F: Within ⁺¹⁵ _{–10} % of sensing range at +20 °C +68 °F | | | | | | | |
| | Voltage characteristics | Within ±2 % for ±10 % fluctuation of the supply voltage | | | | Within ±2.5 % for ±15 % fluctuation of the supply voltage | | | | | | | |
| Material | | Enclosure: Brass (Nickel plated) Resin part: TPX | | | | Enclosure: Brass (Nickel plated) Resin part: ABS | | | | | | | |
| Cable | | 0.08 mm ² 3-core oil, heat and cold resistant cabtyre cable, 3 m 9.843 ft long | | 0.1 mm ² 3-core bending, oil and heat resistant cabtyre cable, 3 m 9.843 ft long | | 0.14 mm ² 3-core oil, heat and cold resistant cabtyre cable, 3 m 9.843 ft long | | 0.15 mm ² 3-core bending, oil and heat resistant cabtyre cable, 3 m 9.843 ft long | | 0.14 mm ² 3-core, oil, heat and cold resistant cabtyre cable, 3 m 9.843 ft long | | | |
| Cable extension | | Extension up to total 100 m 328.084 ft is possible with 0.3 mm ² , or more, cable. | | | | | | | | Extension up to total 100 m 328.084 ft is possible with 0.14 mm ² , or more, cable. | | | |
| Weight (Note 4) | | Net weight: 30 g approx. | | | | Net weight: 60 g approx. | | | | | | | |
| Accessories | | Nut: 2 pcs. Toothed lock washer: 1 pc. | | Nut: 2 pcs. Toothed lock washer: 2 pcs. | | Nut: 2 pcs. Toothed lock washer: 1 pc. | | Nut: 2 pcs. Toothed lock washer: 2 pcs. | | Nut: 2 pcs. Toothed lock washer: 1 pc. | | | |

Notes: 1) Where measurement conditions have not been specified precisely, the conditions used were an ambient temperature of +23 °C **+73.4 °F**.

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

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

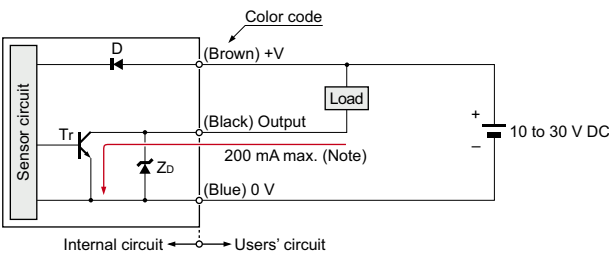
3) The maximum sink current varies depending on the ambient temperature. Refer to "I/O CIRCUIT AND WIRING DIAGRAMS (p.846)" for details.

4) The given weight of the threaded type includes the weight of nuts and toothed lock washers.

I/O CIRCUIT AND WIRING DIAGRAMS

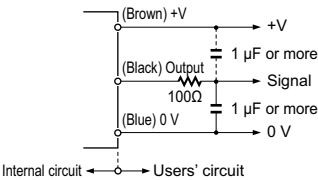
GX-5S□ GX-8M□ GX-8ML□

I/O circuit diagram



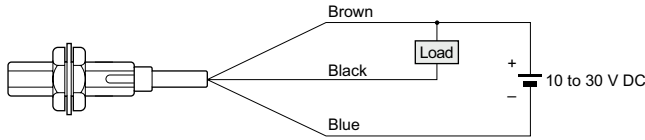
Symbols ... D : Reverse supply polarity protection diode
Zd: Surge absorption zener diode
Tr : NPN output transistor

- If a capacitor of 1 μ F or more is connected between 0 V and output or between +V and output, connect a 100 Ω resistor in series as shown below.

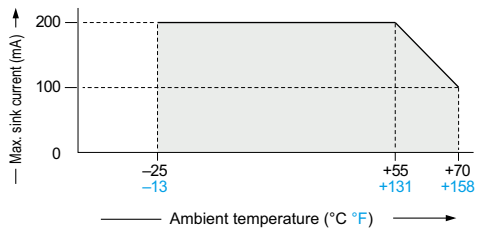


Without the resistor, the short-circuit protection is activated by the charge or discharge current of the capacitor, so that it results in delaying the response whenever the sensor switches. The connected resistor solves this problem.

Wiring diagram

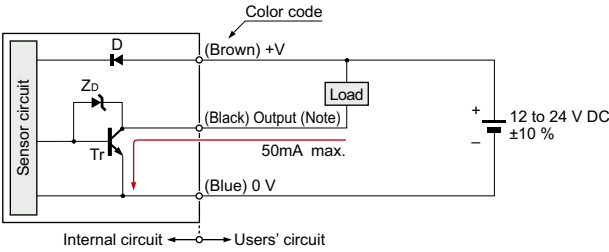


Note: The maximum sink current varies depending on the ambient temperature.



GX-3S□ GX-4S□ GX-5M□

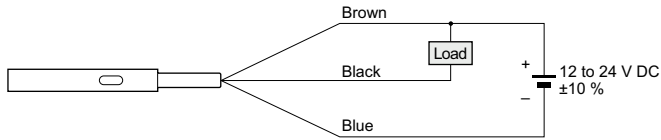
I/O circuit diagram



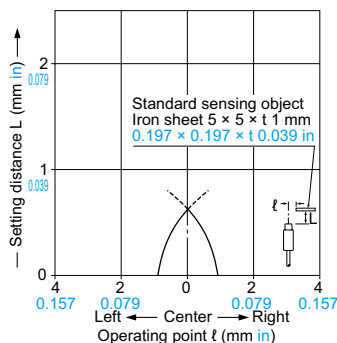
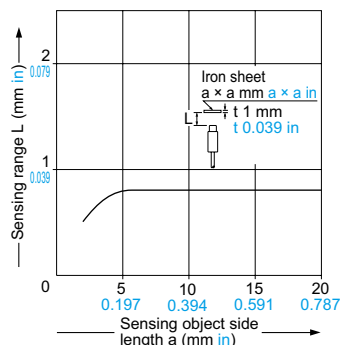
Note: **GX-3S□**, **GX-4S□** and **GX-5M□** do not incorporate a short-circuit protection circuit at the output. Do not connect them directly to a power supply or a capacitive load.

Symbols ... D : Reverse supply polarity protection diode
Zd: Surge absorption zener diode
Tr : NPN output transistor

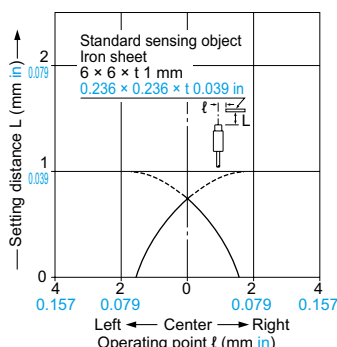
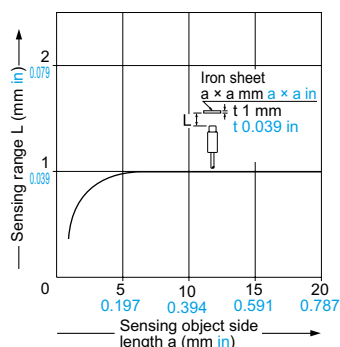
Wiring diagram



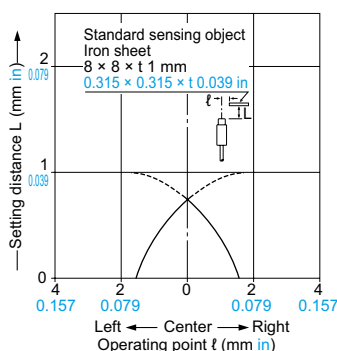
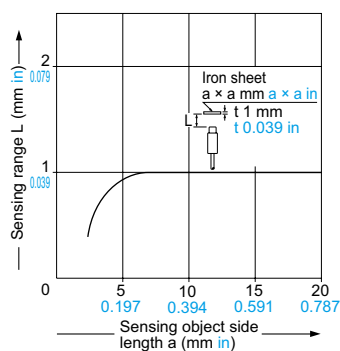
| |
|---|
| FIBER SENSORS |
| LASER SENSORS |
| PHOTO-ELECTRIC SENSORS |
| MICRO PHOTO-ELECTRIC SENSORS |
| AREA SENSORS |
| SAFETY LIGHT CURTAINS / SAFETY COMPONENTS |
| PRESSURE / FLOW SENSORS |
| INDUCTIVE PROXIMITY SENSORS |
| PARTICULAR USE SENSORS |
| SENSOR OPTIONS |
| SIMPLE WIRE-SAVING UNITS |
| WIRE-SAVING SYSTEMS |
| MEASURE-MENT 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-separated |
| Other Products |
| GX-F/H |
| GXL |
| GL |
| GX-M |
| GX-U/GX-FU/GX-N |
| GX |

SENSING CHARACTERISTICS (TYPICAL)**GX-3S□ GX-4S□ GX-5M□****Sensing field****Correlation between sensing object size and sensing range**

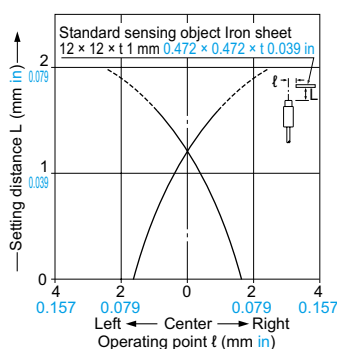
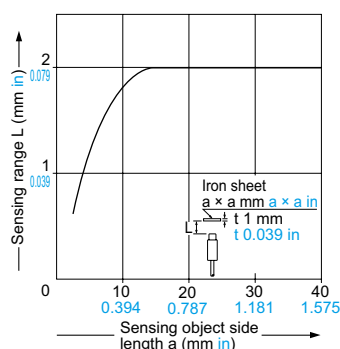
As the sensing object size becomes smaller than the standard size (iron sheet $5 \times 5 \times t \text{ 1 mm } 0.197 \times 0.197 \times t \text{ 0.039 in}$), the sensing range shortens as shown in the left figure.

GX-5S□**Sensing field****Correlation between sensing object size and sensing range**

As the sensing object size becomes smaller than the standard size (iron sheet $6 \times 6 \times t \text{ 1 mm } 0.236 \times 0.236 \times t \text{ 0.039 in}$), the sensing range shortens as shown in the left figure.

GX-8M□**Sensing field****Correlation between sensing object size and sensing range**

As the sensing object size becomes smaller than the standard size (iron sheet $8 \times 8 \times t \text{ 1 mm } 0.315 \times 0.315 \times t \text{ 0.039 in}$), the sensing range shortens as shown in the left figure.

GX-8ML□**Sensing field****Correlation between sensing object size and sensing range**

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

PRECAUTIONS FOR PROPER USE

Refer to p.1579~ for general precautions.

FIBER
SENSORSLASER
SENSORSPHOTO-
ELECTRIC
SENSORSMICRO
PHOTO-
ELECTRIC
SENSORSAREA
SENSORSSAFETY LIGHT
CURTAINS /
SAFETY
COMPONENTSPRESSURE /
FLOW
SENSORSINDUCTIVE
PROXIMITY
SENSORSPARTICULAR
USE
SENSORSSENSOR
OPTIONSSIMPLE
WIRE-SAVING
UNITSWIRE-SAVING
SYSTEMSMEASURE-
MENT
SENSORSSTATIC
CONTROL
DEVICESLASER
MARKERS

PLC

HUMAN
MACHINE
INTERFACESENERGY
MANAGEMENT
SOLUTIONSFA
COMPONENTSMACHINE
VISION
SYSTEMSUV
CURING
SYSTEMSSelection
GuideAmplifier
Built-inAmplifier-
separatedOther
Products**GX-F/H****GXL****GL****GX-M****GX-U/GX-FU/
GX-N****GX**

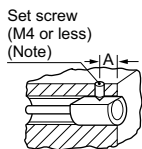
- Never use this product as a sensing device for personnel protection.
- In case of using sensing devices for personnel protection, use products which meet laws and standards, such as OSHA, ANSI or IEC etc., for personnel protection applicable in each region or country.

Mounting

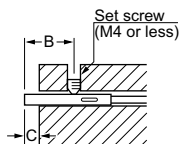
- The tightening torque should be as given below.

Mounting with set screw**<Shielded of threaded type>**

- Tighten the set screw on the flat surface of the sensor without applying excessive force. Make sure to use a set screw with a cup-point end.

Note: To fasten **GX-5M□**, use a M3 or less set screw.

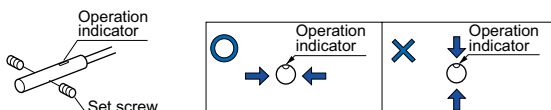
| Model No. | Set screw tightening position A (mm in) | Tightening torque |
|---------------|---|-------------------|
| GX-5M□ | 5 to 10 0.197 to 0.394 | 0.29 N·m |
| GX-8M□ | 8 to 22 0.315 to 0.866 | 0.29 N·m |

<Non-threaded type and non-shielded of threaded type>

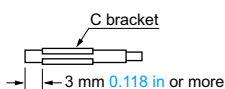
| Model No. | B (mm in) | C (mm in) | Tightening torque |
|----------------|--------------------------------|-----------------|-------------------|
| GX-3S□ | 5 to 10 0.197 to 0.394 | 3 0.118 | 0.29 N·m |
| | When using the C bracket | | 0.58 N·m |
| GX-4S□ | 5 to 10 0.197 to 0.394 | 3 0.118 | 0.58 N·m |
| GX-5S□ | 8 to 20 0.315 to 0.787 | 5 0.197 | 0.29 N·m |
| GX-8ML□ | 13 to 22 0.517 to 0.866 | 10 0.394 | 0.29 N·m |

Note: The protrusion should be kept C (mm in) or more to avoid reduction of sensing range.

- To fasten **GX-3S□** and **GX-4S□**, use a M3 or less set screw and tighten it from a direction perpendicular to the operation indicator.



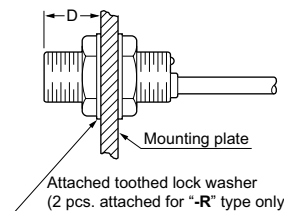
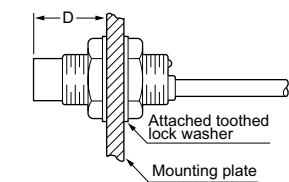
- When using the C bracket, place it on the sensor at a distance of 3 mm **0.118 in** or more from the sensor end.



- To fasten the non-shielded threaded type, tighten the set screw on the flat surface of the sensor.

Mounting with nut

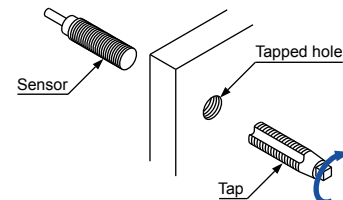
- Note that the maximum tightening torque differs according to the location of the nuts.

<Shielded of threaded type>**<Non-shielded of threaded type>**

| Model No. | D (mm in) | Tightening torque |
|----------------|-------------------------------|-------------------|
| GX-5M□ | 2 to 3 0.079 to 0.118 | 0.49 N·m |
| | 3 0.118 or more | 1.47 N·m |
| GX-8M□ | 3 to 11 0.118 to 0.433 | 1.47 N·m |
| | 11 0.433 or more | 3.43 N·m |
| GX-8ML□ | 9 to 11 0.345 to 0.433 | 0.98 N·m |
| | 11 0.433 or more | 3.43 N·m |

Note: Mount such that the nuts do not protrude from the threaded portion.

- The root truncation of the threads with **GX-8M□** and **GX-8ML□** is shallow owing to strengthening of the sensors against tightening. When tapped hole on equipment to fix the sensors, the prepared hole must be $\varnothing 7.2$ mm **$\varnothing 0.283$ in** or more.



PRECAUTIONS FOR PROPER USE

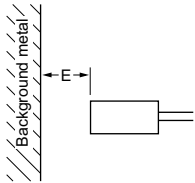
Refer to p.1579~ for general precautions.

Distance from surrounding metal

- As metal around the sensor may affect the sensing performance, pay attention to the following points.

Influence of surrounding metal

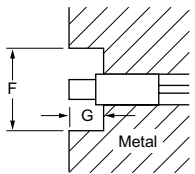
- The surrounding metal will affect the sensing performance. Keep the minimum distance specified in the table below.



| Model No. | E (mm in) |
|----------------|----------------|
| GX-3S□ | 3 0.118 |
| GX-4S□ | 3 0.118 |
| GX-5S□ | 4 0.157 |
| GX-5M□ | 3 0.118 |
| GX-8M□ | 4 0.157 |
| GX-8ML□ | 8 0.315 |

Embedding of the sensor in metal

- Sensing range may decrease if the sensor is completely embedded in metal. Especially for the non-threaded type and the non-shielded type, keep the minimum distance specified in the table below.

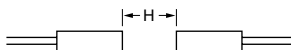


| Model No. | F (mm in) | G (mm in) |
|----------------|---------------------|-----------------|
| GX-3S□ | ø12 ø0.472 | 3 0.118 |
| GX-4S□ | ø12 ø0.472 | 3 0.118 |
| GX-5S□ | ø15.4 ø0.606 | 5 0.197 |
| GX-8ML□ | ø30 ø1.181 | 10 0.394 |

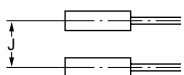
Mutual interference

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

Face to face mounting



Parallel mounting



| Model No. | H (mm in) | J (mm in) |
|----------------|-----------------|-----------------|
| GX-3S□ | 16 0.630 | 16 0.630 |
| GX-4S□ | 16 0.630 | 16 0.630 |
| GX-5S□ | 20 0.787 | 15 0.591 |
| GX-5M□ | 10 0.394 | 10 0.394 |
| GX-8M□ | 20 0.787 | 15 0.591 |
| GX-8ML□ | 50 1.969 | 30 1.181 |

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. | GX-3S□ GX-4S□ | GX-5M□ | GX-5S□ GX-8M□ GX-8ML□ |
|--------------------------|--------------------------|---------------|--------------------------------------|
| Metal | | | |
| Iron | 1 | 1 | 1 |
| Stainless steel (SUS304) | 0.65 approx. | 0.83 approx. | 0.7 approx. |
| Brass | 0.36 approx. | 0.61 approx. | 0.4 approx. |
| Aluminum | 0.30 approx. | 0.58 approx. | 0.35 approx. |

Others

- Do not use during the initial transient time (10 ms) after the power supply is switched on.
- Make sure that stress by forcible bend or pulling is not applied directly to the sensor cable joint.
- GX-3S□**, **GX-4S□** and **GX-5M□** do not incorporate a short-circuit protection circuit at the output. Do not connect them directly to a power supply or a capacitive load.

FIBER

SENSORS

LASER

SENSORS

PHOTO-

ELECTRIC

SENSORS

MICRO

PHOTO-

ELECTRIC

SENSORS

AREA

SENSORS

SAFETY LIGHT

CURTAINS /

SAFETY

COMPONENTS

PRESSURE /

FLOW

SENSORS

INDUCTIVE

PROXIMITY

SENSORS

PARTICULAR

USE

SENSORS

SENSOR

OPTIONS

SIMPLE

WIRE-SAVING

UNITS

WIRE-SAVING

SYSTEMS

MEASURE-

MENT

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-

separated

Other

Products

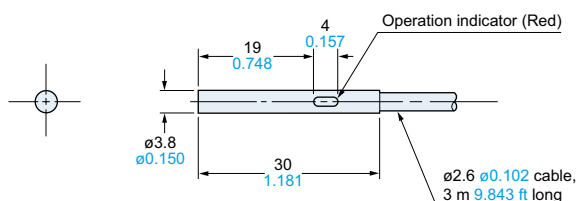
GX-F/H**GXL****GL****GX-M****GX-U/GX-FU/****GX-N****GX**

DIMENSIONS (Unit: mm in)

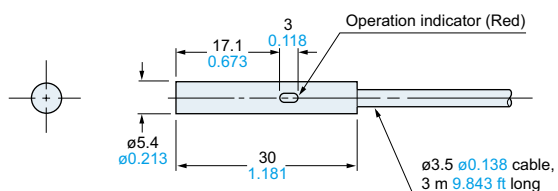
The CAD data can be downloaded from our website.

GX-3S□

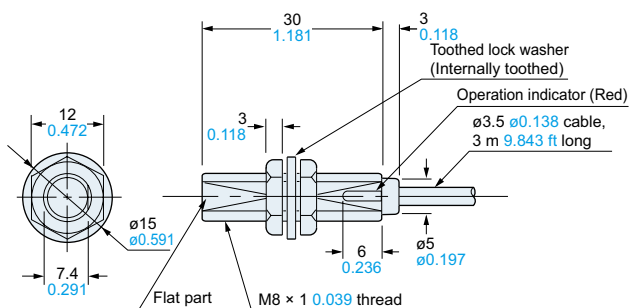
Sensor

**GX-5S□**

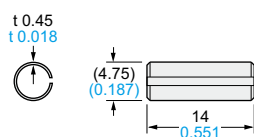
Sensor

**GX-8M□**

Sensor

**MS-SS3-2**

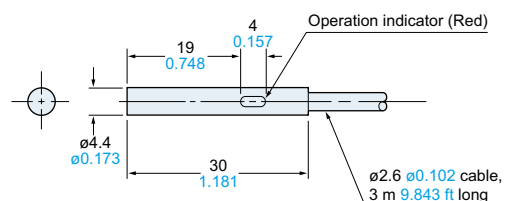
C bracket for GX-3S□ (Accessory for GX-3S□)



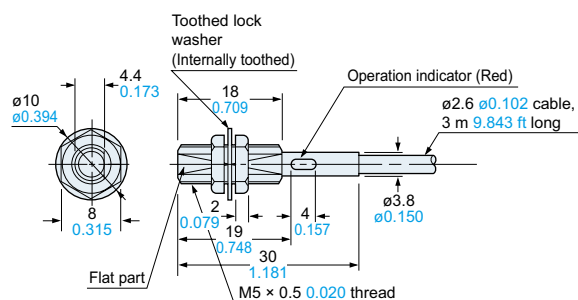
Note: By using the C bracket, the applicable tightening force can be doubled.

GX-4S□

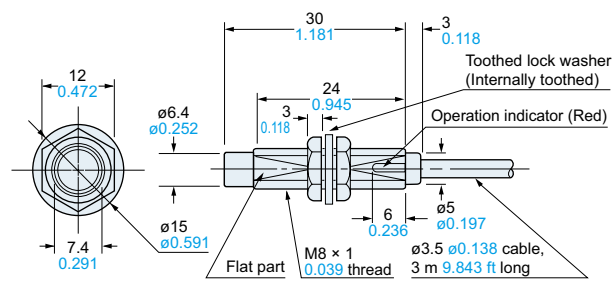
Sensor

**GX-5M□**

Sensor

**GX-8ML□**

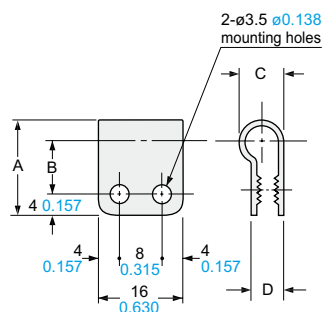
Sensor

**MS-SS3**

Sensor mounting bracket for GX-3S□ (Accessory for GX-3S□)

MS-SS5

Sensor mounting bracket for GX-5S□ (Accessory for GX-5S□)



Material: Nylon 66

| Model No. | MS-SS3 | MS-SS5 |
|----------------------|-----------|-----------|
| Symbols | | |
| A | 16 0.630 | 18 0.709 |
| B | 9 0.354 | 10 0.394 |
| C | 6.3 0.248 | 8.3 0.327 |
| D | 4.9 0.193 | 6.1 0.240 |
| Applicable model No. | GX-3S□ | GX-5S□ |

FIBER SENSORS

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Amplifier-separated

Other Products

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GXL

GL

GX-M

GX-U/GX-FU/

GX-N

GX