INSTRUCTION Panasonic MANUAL

Small Inductive Proximity Sensor **GX** Series

MJE-GX1J No.0041-24V

Thank you very much for purchasing Panasonic products. Please read this Instruction Manual carefully and thoroughly for the correct and optimum use of this product. Kindly keep this manual in a convenient place for quick reference.

WARNING

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

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

1 SPECIFICATIONS

Turna	Shielded type					Non-shielded type
I V Type	Non-threaded type		•	Threaded type		Threaded type
Model No. Normally closed	GX-3S	GX-4S	GX-5S	GX-5M	GX-8M	GX-8ML
Item (Note 1) Normally open	GX-3SB	GX-4SB	GX-5SB	GX-5MB	GX-8MB	GX-8MLB
Max. operation distance (Note 2)	0.8mm±	:15%	1mm±15%	0.8mm±15%	1mm±15%	2mm±15%
Stable sensing range (Note 2)	0 to 0.6	mm	0 to 0.8mm	0 to 0.6mm	0 to 0.8mm	0 to 1.6mm
Standard sensing object	Iron sheet 5 ×	5×t1mm	Iron sheet 6 × 6 × t1mm	Iron sheet 5×5×t1mm	Iron sheet 8×8×t1mm	Iron sheet 12×12×t1mm
Supply voltage	12 to 24V DC±10% Ripple P-P 10% or less		10 to 30V DC Ripple P-P 10% or less	12 to 24V DC±10% Ripple P-P 10% or less	10 to 30V DC Ripple P-P 10% or less	
Current consumption			15mA	or less		
Output	<gx-3s□, gx-4s□,="" gx-5m□=""> <gx-5s□, gx-8ml□="" gx-8m□,=""> NPN open-collector transistor NPN open-collector transistor · Maximum sink current: 50mA · Maximum sink current: 200mA (Note 3) · Applied voltage: 30V DC or less (between output and 0V) · Applied voltage: 0.4V or less (at 50mA sink current) · Residual voltage: 0.4V or less (at 50mA sink current) · Residual voltage: 1.5V or less (at 50mA sink current)</gx-5s□,></gx-3s□,>			Note 3) ween output and 0V) 200mA sink current) 50mA sink current)		
Short-circuit protection	_	Incorporated		—	Incorp	orated
Max. response frequency	1kHz		1.5kHz	1k	Hz	500Hz
Operation indicator	Red LED (lights up when the output is ON)					
Protection			IP67	(IEC)		
Ambient temperature	-25 to +70°C, Storage: -25 to +80°C					
Ambient humidity	35 to 95% RH, Stor	age: 35 to 95% RH	35 to 85% RH Storage: 35 to 95% RH	35 to 95% RH Storage: 35 to 95% RH	35 to 85% RH, Sto	rage: 35 to 95% RH
Material	Enclosure: Stainle Resin part: TPX	ss steel (SUS304)	Enclosure: Brass (Nickel plated) Resin part: ABS	Enclosure: Brass (Nickel plated) Resin part: TPX	Enclosure: Bras Resin part: ABS	s (Nickel plated)
Cable	0.08mm ² 3-core oil, heat and cold resistant cabtyre cable, 3m long 0.14mm ² 3-core oil, heat and cold resistant cabtyre cable, 3m long 0.14mm ² 3-core oil, heat and cold resistant cabtyre cable, 3m long 0.14mm ²		0.14mm ² 3-core resistant cabtyre	oil, heat and cold cable, 3m long		
Weight (Note 4)	30g approx.		55g approx.	30g approx.	60g a	pprox.
Accessories	MS-SS3 (Sensor mounting bracket): 1 pc. MS-SS3-2 (C bracket): 1 pc.		MS-SS5 (Sensor mounting bracket): 1 pc.	Nut: 2 pcs	., Toothed lock wa	sher: 1 pc.

Notes: 1) The model No. with '-R' stands for the flexible cable type

(e.g.) As for the flexible cable type of GX-3SB 'GX-3SB-R' The model No. with suffix '-C5' stands for the 5m cable length type

- (e.g.) As for the 5m cable length type of GX-3SB 'GX-3SB-C5' 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 I/O CIRCUIT DIAGRAMS'.
 4) The weight of the threaded type includes the weight of two nuts and one toothed lock washer.

2 CAUTIONS

- This product has been developed / produced for industrial use only.
- Make sure that the power supply is off while wirina
- Take care that wrong wiring will damage the sensor.
- Verify that the supply voltage variation is within the rating.
- If power is supplied from a commercial switching regulator, ensure that the frame ground (F.G.) terminal of the power supply is connected to an actual ground.
- In case noise generating equipment (switching regulator, inverter motor, etc.) is used in the vicinity of this product, connect the frame ground (F.G.) terminal of the equipment to an actual ground.
- Do not run the wires together with high-voltage lines or power lines or put them in the same raceway. This can cause malfunction due to induction.
- Extension up to total 100m is possible with a 0.3mm², or more (GX-8ML : 0.14mm², or more), cable.

- Do not use during the initial transient time (10ms) after the power supply is switched on.
- GX-3S□, GX-4S□ and GX-5M□ do not incorporate a short-circuit protection at the
- output. Do not connect them directly to a power supply or a capacitive load.
- Take care that the sensor does not come in contact with water, oil, grease, organic solvents, such as, thinner etc., or strong acid, and alkaline.
- Make sure that the sensing end is not covered with metal dust, scrap or spatter. It will result in malfunction.
- Make sure that stress by forcible bend or pulling is not applied to the sensor cable joint.
- Since the cable end is not waterproof, do not use the sensor in the application where water may seep in from the cable end.
- 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. Risk of sensor damage if the set screw is tightened from the operation indicator side. Exercise caution.



3 I/O CIRCUIT DIAGRAMS







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

● GX-5S□, GX-8M□, GX-8ML□





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



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

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



Internal circuit

4 MOUNTING

When mounting the sensor, if tightening torque exceeding the soecified is applued, the sensor may be damaged.

The tightening torque should be under the value given below.

Mounting with a set screw

<Shielded 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.

Set screw (M4 Note: To fasten GX-5M□, use a M3 or or less) (Note) less set screw.

	Model No.	Set screw tightening position A (mm)	Tightening torque
Frank)	GX-5M□	5 to 10	0.29N·m
	GX-8M□	8 to 22	0.29N·m

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

Set screw
(M4)
* B→
C //////

Tightening R Model No. (mm (mm) torque GX-3S□ 0.29N·m 5 to 10 When using 3 0.58N·m the C bracke 0.58N·m GX-4S□ 5 to 10 3 GX-5S 8 to 20 5 0.29N·m GX-8ML□ 13 to 22 10 0.29N·m

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

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

C bracket

- 3mm or more

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

Mounting with nut

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

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



Mounting plate

Model No.	Dimension D	Tightening torque
	2 to 3mm	0.49N · m
GX-SIVI	3mm or more	1.47N · m
GX-8M□	3 to 11mm	1.47N · m
	11mm or more	3.43N · m
GX-8ML□	9 to 11mm	0.98N·m
	11mm or more	3.43N ⋅ m

11mm or more Note: Mount such that the nuts do not protrude from the threaded portion

Caution with GX-8M and GX-8ML

The root truncation of the threads is shallow owing to strengthening of the sensors against tiahtenina.

When tapping holes on equipment to fix the sensors, the prepared holes must be ϕ 7.2mm or more with GX-8M and GX-8ML



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.

· `]		
, ital	Model No.	E (mm)
Ϋ́Ε̈́,	GX-3S	3
`₽, + E+	GX-4S□	3
	GX-5S□	4
`X`]	GX-5M□	3
∑ B ∫	GX-8M□	4
	GX-8ML□	8

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.



/ / /			
44	Model No.	F (mm)	G (mm)
	GX-3S□	φ12	3
77,	GX-4S□	φ12	3
etal /	GX-5S	φ15.4	5
///	GX-8ML□	φ30	10

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.

Model No.

GX-3S□

GX-4S□

GX-5S□

GX-5M□

GX-8M□

GX-8ML

H (mm) J (mm)

16

16

15

10

15

30

16

16

20

10

20

50

Face to face mounting			
< →			
Parallel mounting			
) †			

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.

Correction coefficient

Model No. Metal	GX-3S⊟ GX-4S⊡	GX-5S□ GX-8M□ GX-8ML□	GX-5M□
Iron	1	1	1
Stainless steel (SUS304)	0.65 approx.	0.70 approx.	0.83 approx.
Brass	0.36 approx.	0.40 approx.	0.61 approx.
Aluminum	0.30 approx.	0.35 approx.	0.58 approx.

Note: The sensing range also changes if the sensing object is plated

5 INTENDED PRODUCTS FOR **CE MARKING**

- The models listed under "1 SPECI-CE FICATIONS" come with CE Marking. As for all other models, please contact our office.
- Contact for CE

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