

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



Rectangular-shaped Inductive Proximity Sensor Amplifier Built-in

GX-F/H SERIES





UK





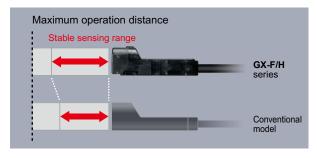


Industry No. 1* in stable sensing

* Based on research conducted by Panasonic Industry as of among equivalent rectangular inductive sensors.

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.



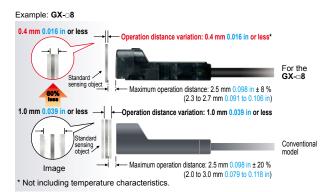
	Maximum	Stable sen	sing range	
Туре	operation distance	GX-F/H series	Conventional model	
GX-□6	1.6 mm 0.063 in	0 to 1.3 mm 0.051 in	0 to 1.2 mm 0.047 in	
GX-□8	2.5 mm 0.098 in	0 to 2.1 mm 0.083 in	0 to 1.8 mm 0.709 in	
GX-□12	4.0 mm 0.157 in	0 to 3.3 mm 0.130 in	0 to 3.0 mm 0.118 in	
GX-□15	5.0 mm 0.197 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

Variation at the maximum operation distance is within ±8 %

Thorough adjustment and control of sensing sensitivity greatly reduces individual sensor differences and variations

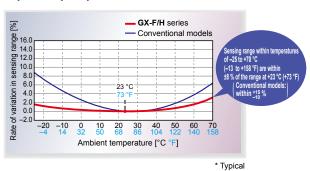
The work of adjusting sensor positions when using multiple sensors and when sensors have been replaced is much easier.



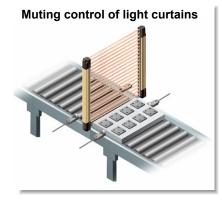
Temperature characteristics vary within ±8 %

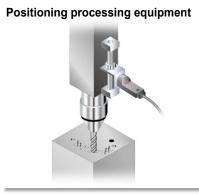
Components such as the sensor coil and core and product design have been totally revised to provide excellent temperature characteristics.

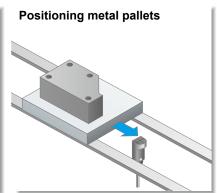
Stable sensing can be obtained regardless of the time of day or the yearly season.



APPLICATIONS



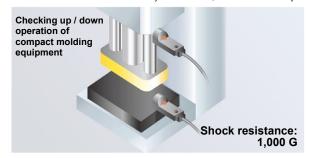




ENVIRONMENTAL RESISTANCE

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.7~)".



Sensing presence of metallic objects on a part feeder Vibration resistance: 500 Hz

FUNCTIONS

Indicators are easy to see over a wide field of view

A prism with a wide field of view has been developed. This has greatly improved the visibility of the operation indicators. ${\bf GX-H}_{\square}$



MOUNTING

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

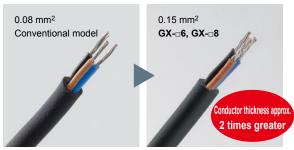
A metal sleeve has been inserted.

It prevents the sensor from being damaged by tightening too much.



Conductor thickness doubled to make wiring much easier! (GX-06 / 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.



ORDER GUIDE

GX-6 type

Ту	pe	Appearance (mm in)	Sensing range (Note 1)	Model No. (Note 2)	Output	Output operation	
	ng	~/\)		GX-F6A		Normally open	
	ensi			GX-F6AI		Normally open	
=	put Front sensing	6 0.236		GX-F6B		Normally closed	
outpu	ᇤ	6 0.236		GX-F6BI	NPN open-collector		
NPN output	б	^/>		GX-H6A	transistor	Normally open	
Z	sensing	6 0.236 25 6 0.236 0.984	Maximum	GX-H6AI			
	Top se		operation distance	GX-H6B		Normally closed	
	ĭ		1.6 mm 0.063 in	GX-H6BI			
	βL	· />	(0 to 1.3 mm 0 to 0.051 in) GX-F6A-P GX-F6AI-P	GX-F6A-P		Name all control	
	ensir	1		GX-F6AI-P		Normally open	
	Front sensing	6 0.236	Stable sensing range	GX-F6B-P	PNP open-collector		
PNP output	Fre	6 0.236 0.965		GX-F6BI-P		Normally closed	
A P	Б	/>		GX-H6A-P	transistor		
₫.	sensing			GX-H6AI-P		Normally open	
	Top se	6 0.236		GX-H6B-P			
	Ĭ	6 0.236 0.984		GX-H6BI-P	1	Normally closed	

Notes: 1) The maximum operation distance stands for the maximum distance for which the sensor can detect the standard sensing object.

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

2) "I" in the model No. indicates a different frequency type.

GX-8 type

Ту	/ре	Appearance (mm in)	Sensing range (Note 1) Model No. (Note 2)		Output	Output operation	
	ng	~		GX-F8A		Normally open	
	sensing	7.4 0.291		GX-F8AI			
=	Fronts	8 0.315 0.906		GX-F8B		Normally closed	
outpr	Ē			GX-F8BI	NPN open-collector		
NPN output	g	~ 🔿		GX-H8A	transistor	Normally open	
Z	sensing		Maximum	GX-H8AI			
	Top se	8.2 0.323	operation distance	GX-H8B		Normally closed	
	Ĕ	8 0.315	2.5 mm 0.098 in	GX-H8BI			
	βL		0 to 2.1 mm 0 to 0.083 in)	GX-F8A-P		Normally open	
	sensing	7.4 0.291		GX-F8AI-P			
=	Front s	8 0.315 0.906	Stable sensing range	GX-F8B-P		Navmally along	
PNP output	ᄩ	0.000		GX-F8BI-P	PNP open-collector	Normally closed	
P _O	g	. 🔿		GX-H8A-P	transistor	NI	
Δ.	sensing			GX-H8AI-P		Normally open	
	Top se	8.2 0.323		GX-H8B-P		,	
	ř	8 0.315 0.984		GX-H8BI-P		Normally closed	

Notes: 1) The maximum operation distance stands for the maximum distance for which the sensor can detect the standard sensing object.

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

2) "I" in the model No. indicates a different frequency type.

ORDER GUIDE

GX-12 type

Ту	/ре	Appearance (mm in)	Sensing range (Note 1)	Model No. (Note 2)	Output	Output operation	
	ng			GX-F12A		Normally open	
	sensing	7.1 0.280		GX-F12AI		Normany open	
=	Front s	27.8		GX-F12B		Normally closed	
NPN output	ᇤ	0.472		GX-F12BI	NPN open-collector		
A N	g			GX-H12A	transistor	Normally on an	
Z	sensing	12 0.472 12 0.472 27.4 1.079	Maximum	GX-H12AI		Normally open	
	Top se		operation distance	GX-H12B		Normally closed	
	<u> </u>		4.0 mm 0.157 in	GX-H12BI			
	ρ	(0 to 3.3 mm 0 to 0.130 in) GX-F12A-P	GX-F12A-P		N W		
	sensing	7.1 0.280		GX-F12AI-P		Normally open	
ᆂ	Front s	27.8	Stable sensing range GX-F12I GX-F12I GX-F12I GX-H12.	GX-F12B-P	PNP open-collector transistor	Name allocated	
PNP output	F.	0.472		GX-F12BI-P		Normally closed	
P P	6	. ~		GX-H12A-P			
PN	nsin	12 0.472		GX-H12AI-P		Normally open	
	Top se	27.4		GX-H12B-P		Name allocated	
	Ĕ	12 0.472		GX-H12BI-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) " $\boldsymbol{\mathsf{I}}$ " in the model No. indicates a different frequency type.

GX-15 type

Ту	/ре	Appearance (mm in)	Sensing range (Note 1)	Model No. (Note 2)	Output	Output operation	
	ng			GX-F15A		Normally open	
	sensing	8 0.315		GX-F15AI		Normany open	
=	Fronts	31.5		GX-F15B		Normally closed	
NPN output	F	15 0.591		GX-F15BI	NPN open-collector		
M	g			GX-H15A	transistor	Normally open	
2	sensing	16.5 0.650	Maximum	GX-H15AI			
	Top se	29.5	operation distance	GX-H15B		Normally closed	
	ř	15 0.591 1.161	5.0 mm 0.197 in	GX-H15BI			
	βι	(0 to 4.2 mm 0 to 0.165 in) GX-F15A-P	GX-F15A-P		Normally open		
	sensing	8 0.315		GX-F15AI-P		Normally open	
=	Front s	31.5	Stable sensing range	GX-F15B-P		Name allocate and	
PNP output	<u> </u>	15 0.591 1.240		GX-F15BI-P	PNP open-collector	Normally closed	
A P	g	`		GX-H15A-P	transistor		
Δ.	sensing	16.5 0.650		GX-H15AI-P	1	Normally open	
	Top se	29.5		GX-H15B-P		Name allocated	
	ĭ	15 0.591 1.161		GX-H15BI-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.

ORDER GUIDE

GX-15 (Long sensing range) type

Ту	/ре	Appearance (mm in)	Sensing range (Note 1)	Model No. (Note 2)	Output	Output operation
	ng			GX-FL15A		Normally open
	sensing	8 0.315		GX-FL15AI		Normally open
=	Fronts	31.5		GX-FL15B		Normally along
outpu	ᄩ	15 0.591		GX-FL15BI	NPN open-collector	Normally closed
NPN output	б	16.5 0.650		GX-HL15A	transistor	Normally open
Z	sensing		Maximum operation distance 8.0 mm 0.315 in (0 to 6.7 mm 0 to 0.264 in)	GX-HL15AI		
	Top se	29.5		GX-HL15B		Normally closed
	Ĕ	15 0.591 1.161		GX-HL15BI		
	βL	8 0.315		GX-FL15A-P		Normally open
	sensing		<u> </u>	GX-FL15AI-P		
	Front s	31.5	Stable sensing range	GX-FL15B-P	PNP open-collector	
output	F	15 0.591		GX-FL15BI-P		Normally closed
PNP o	Б	`		GX-HL15A-P	transistor	
₫.	sensing	16.5 0.650		GX-HL15AI-P		Normally open
	b se	29.5		GX-HL15B-P		
	Тор	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

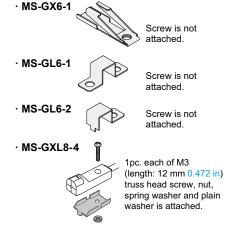
5 m 16.404 ft cable length type (standard: 1 m 3.281 ft) and bending-resistant cable (excluding 5 m 16.404 ft cable length type) are available. However, long sensing range type is not available. When ordering 5 m 16.404 ft cable length type, suffix "-C5" to the model No. When ordering bending-resistant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

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

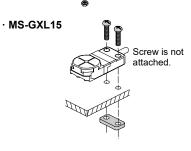
Sensor mounting bracket



Aluminum sheet

- · MS-A15F
- MS-A15H





GX-6 type

Туре			NPN (output	PNP	output			
No. (2 Front sensing ltem Vol. (2 Front sensing Top sensing ltem Vol. (2 Front sensing V		Front sensing	GX-F6A(I)	GX-F6B(I)	GX-F6A(I)-P	GX-F6B(I)-P			
Item	1 \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	Top sensing	GX-H6A(I)	GX-H6B(I)	GX-H6A(I)-P	GX-H6B(I)-P			
Appli	icable r	egulations	CE Marking (EMC	CE Marking (EMC Directive, RoHS Directive), UKCA Marking (EMC Regulations, RoHS Regulations)					
Max.	. operat	tion distance (Note 3)		1.6 mm 0.0	063 in ± 8 %				
Stab	le sens	sing range (Note 3)		0 to 1.3 mm	0 to 0.051 in				
Stan	dard s	ensing object		Iron sheet 12 × 12 × t 1 mr	m 0.472 × 0.472 × t 0.039 in				
Hyst	eresis			20 % or less of operation distance	ce (with standard sensing object)			
Repe	eatabili	ity	Along	g sensing axis, perpendicular to	sensing axis: 0.04 mm 0.002 in o	or less			
Supp	oly volt	age		12 to 24 V DC ⁺¹⁰ ₋₁₅ %	Ripple P-P 10 % or less				
Curr	ent cor	nsumption		15 mA	or less				
Output			Applied voltage: 30 V DC c	N 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 (at 100 mA sink current)		or less (between output and +V)			
	Utiliza	ation category	DC-12 or DC-13						
	Outpu	ut operation	Normally open	Normally closed	Normally open	Normally closed			
Max	. respo	nse frequency	400 Hz						
Ope	ration i	indicator	Orange LED (lights up when the output is ON)						
	Pollut	tion degree	3 (Industrial environment)						
nce	Prote	ction		IP68 (IEC), IP6	68G (Note 4, 5)				
Environmental resistance	Ambie	ent temperature	-2	5 to +70 °C –13 to +158 °F, Stor	rage: -40 to +85 °C -40 to +185	°F			
Te Te	Ambie	ent humidity		35 to 85 % RH, Sto	rage: 35 to 95 % RH				
meni	Volta	ge withstandability	1,000 V AC	for one min. between all supply	terminals connected together ar	d enclosure			
viron	Insula	ation resistance	50 MΩ, or more, wi	th 500 V DC megger between al	I supply terminals connected tog	ether and enclosure			
Ë	Vibrat	tion 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	k resistance	10,000 m/	/s² acceleration (1,000 G approx	.) in X, Y and Z directions three t	imes each			
Sens		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			
varia		Voltage characteristics	Within ± 2 % for $^{+10}_{-15}$ % fluctuation of the supply voltage						
Mate	erial			Enclosure: PBT, Indicator pa	art: Polycarbonate / Polyester				
Cabl	le		0.15 ו	mm² 3-core oil, heat and cold res	sistant cabtyre cable, 1 m 3.281	ft long			
Cabl	le exte	nsion	Extension up to total 100 m 328.084 ft is possible with 0.3 mm², or more, cable.						
Net	weight			15 g a	approx.	.00.00 .70.05			

- 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 Industry's IP68 test method
 - ① Immerse at 0 m below 0 °C +32 °F water surface and leave for 30 min. Then, immerse at 0 m below +70 °C +158 °F water surface and leave for 30 min. ② Regard the heat shock test in ① as one cycle and perform 20 cycles.

 - 3 Leave in water at a depth of 1 m 3.281 ft in water for 500 hours.
 - (4) After tests (1) to (3), insulation resistance, voltage withstandability, current consumption, and sensing ranges must meet the standard values.
 - 5) If using the sensor in an environment where cutting oil droplets splatter, the sensor may 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-8 type

Туре			NPN (output	PNP (output			
	\	Front sensing	GX-F8A(I)	GX-F8B(I)	GX-F8A(I)-P	GX-F8B(I)-P			
Item		Top sensing	GX-H8A(I)	GX-H8B(I)	GX-H8A(I)-P	GX-H8B(I)-P			
Appli	cable r	egulations	CE Marking (EMC	CE Marking (EMC Directive, RoHS Directive), UKCA Marking (EMC Regulations, RoHS Regulations)					
Max.	operat	ion distance (Note 3)		2.5 mm 0.0	98 in ± 8 %				
Stab	le sens	sing range (Note 3)		0 to 2.1 mm	0 to 0.083 in				
Stan	dard se	ensing object		Iron sheet 15 × 15 × t 1 mn	n 0.591 × 0.591 × t 0.039 in				
Hyst	eresis			20 % or less of operation distance	ce (with standard sensing object)				
Repe	eatabili	ty	Along	sensing axis, perpendicular to s	sensing axis: 0.04 mm 0.002 in o	r less			
Supp	oly volta	age		12 to 24 V DC ⁺¹⁰ ₋₁₅ % I	Ripple P-P 10 % or less				
Curre	ent cor	sumption		15 mA	or less				
Output			NPN open-collector transistor • Maximum sink current: 100 • Applied voltage: 30 V DC o • Residual voltage: 2 V or les	r less (between output and 0 V)	, , ,				
	Utiliza	tion category	DC-12 or DC-13						
	Outpu	t operation	Normally open	Normally closed	Normally open	Normally closed			
Max.	respo	nse frequency	500 Hz						
Oper	ation i	ndicator	Orange LED (lights up when the output is ON)						
	Polluti	ion degree	3 (Industrial environment)						
nce	Protec	ction	IP68 (IEC), IP68G (Note 4, 5)						
Environmental resistance	Ambie	ent temperature	-2	5 to +70 °C –13 to +158 °F, Stor	age: -40 to +85 °C -40 to +185	°F			
tal re	Ambie	ent humidity		35 to 85 % RH, Stor	rage: 35 to 95 % RH				
men	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, wit	th 500 V DC megger between all	supply terminals connected tog	ether and enclosure			
Ē	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		Temperature characteristics	Over ambient temperati	ure range –25 to +70 °C –13 to +	+158 °F: Within ± 8 % of sensing	range at +23 °C +73 °F			
varia		Voltage characteristics	Within ± 2 % for $^{+10}_{-15}$ % fluctuation of the supply voltage						
Mate	rial			Enclosure: PBT, Indicator pa	art: Polycarbonate / Polyester				
Cabl	е		0.15 r	mm² 3-core oil, heat and cold res	sistant cabtyre cable, 1 m 3.281 f	t long			
Cabl	e exter	nsion	Extensi	on up to total 100 m 328.084 ft is	s possible with 0.3 mm ² , or more	, cable.			
Net v	veight		1	Front sensing type: 15 g approx.	, Top sensing type: 20 g approx.				
Notos	. 1) \//	hara magaurament a	anditions have not been enecifie	d precisely the conditions used	ware an ambient temperature of	+22 °C +72 °E			

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 Industry's IP68 test method

 ① Immerse at 0 m below 0 °C +32 °F water surface and leave for 30 min. Then, immerse at 0 m below +70 °C +158 °F water surface and leave for 30 min.
 - ② Regard the heat shock test in ① as one cycle and perform 20 cycles.
 - 3 Leave in water at a depth of 1 m 3.281 ft in water for 500 hours.
 - 4 After tests ① to ③, insulation resistance, voltage withstandability, current consumption, and sensing ranges must meet the standard values.
- 5) If using the sensor in an environment where cutting oil droplets splatter, the sensor may 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-12 type

Туре			NPN	output	PNP	output			
Signal Front sensing		Front sensing	GX-F12A(I)	GX-F12B(I)	GX-F12A(I)-P	GX-F12B(I)-P			
Iter	n \sections	Top sensing	GX-H12A(I)	GX-H12B(I)	GX-H12A(I)-P	GX-H12B(I)-P			
Appl	icable regula	tions	CE Marking (EMC	CE Marking (EMC Directive, RoHS Directive), UKCA Marking (EMC Regulations, RoHS Regulations)					
Max.	operation di	istance (Note 3)		4.0 mm 0.1	57 in ± 8 %				
Stab	le sensing r	ange (Note 3)		0 to 3.3 mm	0 to 0.130 in				
Stan	dard sensin	g object		Iron sheet 20 × 20 × t 1 mm	n 0.787 × 0.787 × t 0.039 in				
Hyst	eresis			20 % or less of operation distant	ce (with standard sensing object))			
Rep	eatability		Alono	g sensing axis, perpendicular to s	sensing axis: 0.04 mm 0.002 in c	or less			
Supp	ply voltage			12 to 24 V DC ⁺¹⁰ %	Ripple P-P 10 % or less				
Curr	ent consum	ption		15 mA	or less				
Output			'' "	·		or less (between output and +V)			
	Utilization of	category	DC-12 or DC-13						
	Output ope	eration	Normally open	Normally closed	Normally open	Normally closed			
Max	. response fi	requency	500 Hz						
Ope	ration indica	tor	Orange LED (lights up when the output is ON)						
	Pollution de	egree	3 (Industrial environment)						
nce	Protection		IP68 (IEC), IP68G (Note 4, 5)						
Environmental resistance	Ambient te	mperature	-2	5 to +70 °C –13 to +158 °F, Stor	age: -40 to +85 °C -40 to +185	°F			
al re	Ambient hu	umidity		35 to 85 % RH, Stor	rage: 35 to 95 % RH				
men	Voltage wit	thstandability	1,000 V AC	for one min. between all supply	terminals connected together ar	d enclosure			
iron	Insulation r	resistance	50 MΩ, or more, wi	th 500 V DC megger between al	supply terminals connected tog	ether and enclosure			
Ë	Vibration re	esistance	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 resis	stance	10,000 m	/s² acceleration (1,000 G approx	.) in X, Y and Z directions three t	imes each			
Sens	0	erature characteristics	Over ambient temperat	ture range –25 to +70 °C –13 to	+158 °F: Within ±8 % of sensing	range at +23 °C +73 °F			
varia		ge characteristics	Within ±2 % for $^{+10}_{-15}$ % fluctuation of the supply voltage						
Mate	erial			Enclosure: PBT, Indicator pa	art: Polycarbonate / Polyester				
Cabl	le		0.15	0.15 mm ² 3-core oil, heat and cold resistant cabtyre cable, 1 m 3.281 ft long					
Cabl	le extension		Extens	ion up to total 100 m 328.084 ft i	s possible with 0.3 mm ² , or more	e, cable.			
Net	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 Industry'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.

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

 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-15 type

		T		NPN (output			PNP	output	
		Туре			Long sens	sing range			Long sens	sing range
\	29	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
Item	Mode	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
Applio	able reg	ulations	С	E Marking (EMC	Directive, RoHS	S Directive), UK	CA Marking (EM	C Regulations, F	RoHS Regulation	s)
Max. operation distance (Note 3)			5.0 mm 0.1	97 in ± 8 %	8.0 mm 0.315 ir	± 8 % (Note 4)	5.0 mm 0.1	97 in ± 8 %	8.0 mm 0.315 ir	± 8 % (Note 4)
Stabl	e sensin	g range (Note 3)	0 to 4.2 mm	0 to 0.165 in	0 to 6.7 mm 0 to	0.264 in (Note 4)	0 to 4.2 mm	0 to 0.165 in	0 to 6.7 mm 0 to	0.264 in (Note 4)
Stand	dard sen	sing object	_	× 20 × t 1 mm 7 × t 0.039 in		× 30 × t 1 mm 1 × t 0.039 in	-	× 20 × t 1 mm 7 × t 0.039 in	Iron sheet 30 1.181 × 1.18	
Hyste	eresis				20 % or less of o	operation distan	ce (with standard	sensing object)	
Repe	atability			Along	sensing axis, p	erpendicular to	sensing axis: 0.0	4 mm 0.002 in o	r less	
Supp	ly voltag	е			12 to 24	4 V DC ⁺¹⁰ ₋₁₅ %	Ripple P-P 10 %	or less		
Curre	ent consi	umption				15 mA	or less			
Output			 Applied vo 	sink current: 100 ltage: 30 V DC o	· · ·				. ,	
	Utilizatio	on category	DC-12 or DC-13							
	Output	peration	Normally open	Normally closed	Normally open	Normally closed	Normally open	Normally closed	Normally open	Normally closed
Max.	respons	e frequency	250) Hz	150 Hz	(Note 5)	250 Hz 150 Hz (Note 5)			
Opera	ation ind	icator	Orange LED (lights up when the output is ON)							
	Pollutio	n degree	3 (Industrial environment)							
nce	Protecti	on	IP68 (IEC), IP68G (Note 6, 7)							
Environmental resistance	Ambien	temperature		-25 to +70 °C -13 to +158 °F, Storage: -40 to +85 °C -40 to +185 °F						
talre	Ambien	humidity			35 t	to 85 % RH, Sto	rage: 35 to 95 %	RH		
men	Voltage	withstandability		1,000 V AC	for one min. bet	ween all supply	terminals conne	cted together an	d enclosure	
viron	Insulatio	n resistance	50	MΩ, or more, wi	th 500 V DC meg	gger between al	l supply terminal	s connected tog	ether and enclos	ure
ᇤ	Vibratio	n resistance	10 to 50	0 Hz frequency,	3 mm 0.118 in c	louble amplitude	e (Max. 20 G) in	X, Y and Z direc	ctions for two hou	ırs each
	Shock r	esistance		10,000 m/	's2 acceleration (1,000 G approx	.) in X, Y and Z o	lirections three t	imes each	
Sens		mperature characteristics	Over a	mbient temperati					range at +23 °C	+73 °F
variat		oltage characteristics	Within ± 2 % for $^{+10}_{-15}$ % fluctuation of the supply voltage							
Mate	rial				Enclosure: F	BT, Indicator pa	art: Polycarbonat	e / Polyester		
Cable)			0.15 ו	mm² 3-core oil, h	neat and cold res	sistant cabtyre ca	able, 1 m 3.281 f	ft long	
Cable	extens	on		Extensi	ion up to total 10	00 m 328.084 ft i	s possible with 0	.3 mm ² , or more	, cable.	
Net w	eight.					20 g a	approx.			

Notes: 1) Where measurement conditions have not been specified precisely, the conditions used were an ambient temperature of +23 °C +73 °F.

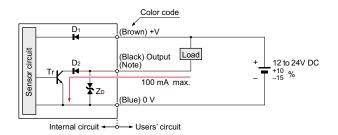
- 2) "I" in the model No. indicates a different frequency type.
- 3) The maximum operation distance stands for the maximum distance for which the sensor can detect the standard sensing object.

 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) 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 Industry'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.

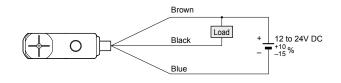
I/O CIRCUIT DIAGRAMS

NPN output type

I/O circuit diagram



Wiring diagram



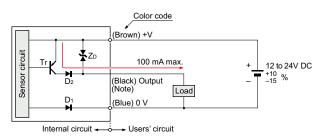
Symbols ... D₁: Reverse supply polarity protection diode D₂: Reverse output polarity protection diode

ZD: Surge absorption zener diode
Tr : NPN output transistor

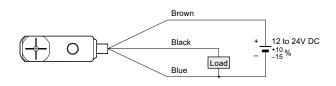
Note: The output does not incorporate a short-circuit protection circuit. Do not connect it directly to a power supply or a capacitive load.

PNP output type

I/O circuit diagram



Wiring diagram



Symbols ... D1: Reverse supply polarity protection diode D2: Reverse output polarity protection diode ZD: Surge absorption zener diode Tr : PNP output transistor

Note: The output does not incorporate a short-circuit protection circuit. Do not connect it directly to a power supply or a capacitive load.