GX-N SERIES

DC 3-wire Cylindrical Inductive Proximity Sensor Amplifier Built-in



High performance and environmental resistance at low price

Robust in tightening

The tightening torque has been improved to approx. four times greater than that of conventional models because of its thick case. As the sensor can be securely tightened, it does not get loose due to vibration or shock.



Visible operation indicator

The operation indicator (orange) is easily observable from any direction since it is housed in the transparent tail section, which lights up brightly.



Long sensing range

The **GX-N** series features 1.6 times longer sensing range than conventional models. Setting with enough margin is possible.

GX-N12ML(B)



Cost effective

It combines high reliability with cost effectiveness.

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APPLICATIONS

Detecting traveling aluminum pallets Co

Controlling depth of drilling

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Detecting workpiece in robot hand





ORDER GUIDE

Туре	Appearance (mm in)	Sensing range (Note)	Model No.	Output	Output operation
	Maximum operation distance GX-N12M Image: Maximum operation distance GX-N12M Image: Maximum operation distance GX-N12M Image: Maximum operation distance GX-N12MB Image: Maximum operation distance GX-N18MB Image: Maximum operation distance Image: Maximum operation Image: Maximum op		Normally open		
	M12 40.5 1.594	(0 to 2.4 mm 0 to 0.094 in) Stable sensing range	GX-N12MB		Normally closed
Shielded type	1-00F	7 mm 0.276 in	GX-N18M		Normally open
Shield	41.5 1.634	(0 to 5.6 mm 0 to 0.220 in)	GX-N18MB		Normally closed
		10 mm 0.394 in	GX-N30M		Normally open
	M30 44.5 1.752	(0 to 8 mm 0 to 0.315 in)	GX-N30MB		Normally closed
	M12	8 mm 0.315 in	GX-N12ML		Normally open
Ø	40.5	(0 to 6.4 mm 0 to 0.252 in)	GX-N12MLB		Normally closed
Von-shielded type	- M	15 mm 0.591 in	GX-N18ML		Normally open
Jon-shie	M18 41.5 1.634	(0 to 12 mm 0 to 0.472 in)	GX-N18MLB		Normally closed
2		22 mm 0.866 in	GX-N30ML		Normally open
	M30 44.5 1.752	(0 to 17.6 mm 0 to 0.693 in)	GX-N30MLB		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.

GX-N

ORDER GUIDE

5 m 16.404 ft cable length type

5 m 16.404 ft cable length type (standard: 2 m 6.562 ft) is also available.

Table of Model Nos.

Туре	Standard	5 m 16.404 ft cable length type
	GX-N12M	GX-N12M-C5
е	GX-N12MB	GX-N12MB-C5
ed tyl	GX-N18M	GX-N18M-C5
Shielded type	GX-N18MB	GX-N18MB-C5
ې ک	GX-N30M	GX-N30M-C5
	GX-N30MB	GX-N30MB-C5
	GX-N12ML	GX-N12ML-C5
type	GX-N12MLB	GX-N12MLB-C5
ded	GX-N18ML	GX-N18ML-C5
shiel	GX-N18MLB	GX-N18MLB-C5
Von-shielded type	GX-N30ML	GX-N30ML-C5
	GX-N30MLB	GX-N30MLB-C5

OPTIONS

Designation	Model No.	C	Description	Prot ∙MS ∙MS
	MS-H12	For GX-N12M(B)	It protects the sensing sur-	۰MS
Protection cover	MS-H18	For GX-N18M(B)	face from welding sparks	
	MS-H30	For GX-N30M(B)	(spatter), etc.	

tion cover

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SPECIFICATIONS

\checkmark		Туре			Shield	ed type					Non-shie	lded type	•	
Item	n	Model No.	GX-N12M G	3X-N12MB	GX-N18M	GX-N18MB	GX-N30M	GX-N30MB	GX-N12ML	GX-N12MLB	GX-N18ML	GX-N18MLB	GX-N30ML	GX-N30MLB
Max	. operatic	on distance (Note 1)	3 mm 0.118 i											
Stat	ole sensi	ing range (Note 1)	0 to 2.4 mm 0	to 0.094 in	0 to 5.6 mm	0 to 0.220 in	0 to 8 mm () to 0.315 in	0 to 6.4 mm	0 to 0.252 in	0 to 12 mm	0 to 0.472 in	0 to 17.6 mn	n 0 to 0.693 in
Star	ndard ser	ensing object	Iron sheet 12 X											
Hyst	teresis						20 % (or less of o	peration di	stance				
Sup	oply voltag	ge				1:	2 to 24 V D	C +10 %	Ripple P-P	10 % or le	SS			
Curr	rent cons	sumption						10 mA	or less					
Outp	put					• Maxi • Appl	en-collector imum sink o lied voltage: idual voltage	current: 10 : 30 V DC (je: 1.5 V or	or less (bet	0 mA sink	current))		
	Output (operation	Normally open N	formally closed	Normally open	Normally closed	Normally open	Normally closed	Normally open	Normally closed	Normally open	Normally closed	Normally open	Normally closed
	Short-ci	ircuit protection						Incorp	orated					
Max	. respon	nse frequency	450 H	Hz	300	0 Hz	300	0 Hz	350) Hz	100) Hz	10	0 Hz
Ope	eration inc	dicator				C	Drange LED) (lights up	when the o	output is O	N)			
	Protectio	on						P67 (IEC),	IP67g (JEN	(N				
nce	Ambien	it temperature			— 25 t	.o + 70 °C	-13 to $+7$	158 °F, Sto	rage: - 30	to + 80 °C	— 22 to +	- 176 °F		
Environmental resistance	Ambient	it humidity					45 to 85 '	% RH, Sto	orage: 35 to	95 % RH				
alre	Noise in	nmunity				Power lin	ne: 240 Vp,	, 0.5 <i>μ</i> s pu	Ise width (with noise s	simulator)			
ment	Voltage	withstandability		1	1,000 V AC	for one mi	in. between	all supply	terminals of	connected	together ar	nd enclosu	re	
/iron	Insulatio	on resistance		50 MΩ, c	or more, wi	th 250 V D	C megger b	between al	I supply ter	minals cor	nnected tog	ether and	enclosure	
Ш	Vibratio	n resistance		10 1	to 55 Hz fre	equency, 1	.5 mm 0.05	59 in amplit	ude in X, Y	' and Z dire	ections for t	two hours e	each	
	Shock r	resistance			1,000 m/s	² accelera	tion (100 G	approx.) ir	n X, Y and I	Z direction:	s for three t	times each	1	
Sens	sing range	Temperature characteristics	Over arr	bient terr	nperature ra	ange – 25	5 to + 70 °C	; — 13 to +	- 158 °F: W	/ithin \pm 10	% of sensir	ng range a	t + 20 °C	+68 °F
variat	ion	Voltage characteristics				Within	\pm 2 % for =	\pm 10 % fluc	ctuation of	the supply	voltage			
Mate	erial				Enclo	osure: Bras	ss (Nickel p	plated), Ser	nsing part:	Nylon, Indi	cator part:	Nylon		
Cab	le				0.3 m	nm ² 3-core	e oil, heat ar	nd cold res	istant cabt	yre cable, 2	2 m 6.562 f	it long		
Cab	ole extens	sion			Extensi	ion up to tc	otal 100 m 3	328.084 ft i	s possible	with 0.3 m	m², or more	e, cable.		
Weig	ight (Note	e 2)	65 g ap	prox.	110 g ;	approx.	240 g	approx.	65 g a	approx.	110 g a	approx.	240 g	approx.
Acco	essories						Nut: 2 pr	cs., Toothe	d lock was	her: 1 pc.				

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) The given weight includes the weight of two nuts and one toothed lock washer.

I/O CIRCUIT AND WIRING DIAGRAMS

I/O circuit diagram



Note: If a capacitive load is directly connected to the output, malfunction may occur.

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

Wiring diagram



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N-X9



Brass Aluminun

80 3.15

60

740 sunX

10

Left ◄

Ó

- Center -

Operating point ℓ (mm in)

10

+ Right

20

0

20

40

Sensing object side length a (mm in)

0∔ 20 7{

0.787

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Amplifier Built-in

N-XĐ

SENSING CHARACTERISTICS (TYPICAL)

GX-N18ML GX-N18MLB



Correlation between sensing object size and sensing range

Iron

As the sensing object size becomes smaller than the standard size (iron sheet $50\!\times\!50\!\times\!t$ 1 mm $1.969 \times 1.969 \times t$ 0.039 in), the sensing range shortens as shown in the left figure.

GX-N30ML GX-N30MLB

Sensing field

Setting distance L (mm in)-



Correlation between sensing object size and sensing range

80

3.150

Iron Stainless steel (SUS304) Brass Aluminum nsing object a imes a mm a ⊳∔t1mm Q 20 40 60 80 1.5 3.150 Sensing object side length a (mm in)

As the sensing object size becomes smaller than the standard size (iron sheet $70 \times 70 \times t$ 1 mm $2.756 \times 2.756 \times t$ 0.039 in), the sensing range shortens as shown in the left figure.



PRECAUTIONS FOR PROPER USE



intended or designed to protect life and prevent body injury or property damage from dangerous parts of machinery. It is a normal object detection sensor.



This product is not a safety sensor. Its use is not

Mounting

. The tightening torque should be as given below.

Shielded type



	· · · · ·	0 0 1
GX-N12M(B)	3.5 to 13.5 0.138 to 0.531	10 N·m
	13.5 0.531 or more	20 N·m
GX-N18M(B)	4 to 18 0.157 to 0.709	45 N·m
	18 0.709 or more	80 N·m
GX-N30M(B)	5 to 21 0.197 to 0.827	80 N∙m
GX-INSUM(B)	21 0.827 or more	180 N·m
GX-N12ML(B)	15 0.591 or more	20 N·m
GX-N18ML(B)	25 0.984 or more	80 N·m
GX-N30ML(B)	30 1.181 or more	180 N·m

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

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.	B (mm in)
meta/	GX-N12M(B)	8 0.315
	GX-N18M(B)	20 0.787
	GX-N30M(B)	40 1.575
	GX-N12ML(B)	22 0.866
	GX-N18ML(B)	45 1.772
	GX-N30ML(B)	75 2.953

Embedding of the sensor in metal

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

	Model No.	C (mm in)	D (mm in)
	GX-N12ML(B)	φ50 φ1.969	15 0.591
	GX-N18ML(B)	φ75 φ2.953	25 0.984
Metal	GX-N30ML(B)	φ105 φ4.134	30 1.181

Note: With the non-shielded type, the sensing range may vary depending on the position of the nuts.

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.



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-N12M(B)	GX-N18M(B)	GX-N30M(B)	GX-N12ML(B)	GX-N18ML(B)	GX-N30ML(B)
Iron	1	1	1	1	1	1
Stainless steel (SUS304)	0.77 approx.	0.73 approx.	0.70 approx.	0.66 approx.	0.68 approx.	0.65 approx.
Brass	0.52 approx.	0.50 approx.	0.45 approx.	0.44 approx.	0.46 approx.	0.44 approx.
Aluminum	0.51 approx.	0.48 approx.	0.44 approx.	0.43 approx.	0.44 approx.	0.43 approx.

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

Protection cover (Optional)

· It protects the sensing surface from welding sparks (spatter), etc.

Mounting method



Note: Mount the protection cover so that there is no gap between it and the sensing surface.

Others

- · Do not use during the initial transient time (50 ms) after the power supply is switched on.
- When the sensor is mounted on a moving base, stress should not be applied to the sensor cable joint.



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DIMENSIONS (Unit: mm in) The CAD data in the dimensions can be downloaded from the SUNX website: http://www.sunx.co.jp/

Symbol Model No.	А	В	С	Applicable model No.
MS-H12	5 0.197	φ11.5 φ0.453	φ14 φ0.551	GX-N12M(B)
MS-H18	6 0.236	φ17.5 φ0.689	φ20 φ0.787	GX-N18M(B)
MS-H30	8 0.315	φ29.4 φ1.157	φ33 φ1.299	GX-N30M(B)

		Amp			
Amp	Amp	Amp			
Am	Am	Am			
		Am			
		An			
		An			
		A			
		A			
<.		4			

Material: Fluorine resin