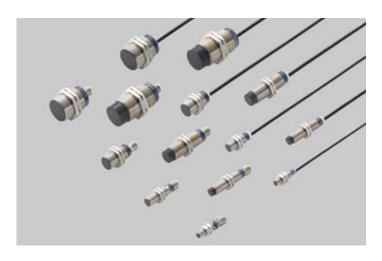
Cylindrical Inductive Proximity Sensor

GX-M SERIES







Features

Wide product range

Types: DC 3-wire shielded type
DC 3-wire non-shielded type
DC 2-wire standard type

DC 2-wire long range type

Size: M8, M12, M18, M30

Connector: 2 m cable length type

M12 plug-in connector type M12 pigtaild type (DC 2-wire

M8 type only)

• Strong resistance IP68 (GX-M8_□: IP67)

ORDER GUIDE

DC 3-wire type (2 m cable length type)

		A	Octobra and Alleha 4 O	Mod	del No.	Output	
13	/pe	Appearance	Sensing range (Note 1,2)	NPN output	PNP output	operation	
	M8	ω	Max. operation distance: 1.5 mm 0.06 in	GX-M8A	GX-M8A-P	Normally open	
	Σ		(Stable sensing range 0 to 1.2 mm 0.05 in)	GX-M8B	GX-M8B-P	Normally closed	
	M12		Max. operation distance: 2 mm 0.08 in	GX-M12A	GX-M12A-P	Normally open	
Shielded	Σ		(Stable sensing range 0 to 1.6 mm 0.06 in)	GX-M12B	GX-M12B-P	Normally closed	
Shie	M18		Max. operation distance: 5 mm 0.20 in	GX-M18A	GX-M18A-P	Normally open	
	È		(Stable sensing range 0 to 4 mm 0.16 in)	GX-M18B	GX-M18B-P	Normally closed	
	M30	Ex.) GX-M12 □	Max. operation distance: 10 mm 0.39 in	GX-M30A	GX-M30A-P	Normally open	
	Ĭ	Lx.) GX-W12	(Stable sensing range 0 to 8 mm 0.32 in)	GX-M30B	GX-M30B-P	Normally closed	
	M12		Max. operation distance: 7 mm 0.28 in	GX-MK12A	GX-MK12A-P	Normally open	
p	È		(Stable sensing range 0 to 5.6 mm 0.22 in)	GX-MK12B	GX-MK12B-P	Normally closed	
ielde	M18		Max. operation distance: 12 mm 0.47 in	GX-MK18A	GX-MK18A-P	Normally open	
Non-shielded	È		(Stable sensing range 0 to 9.6 mm 0.38 in)	GX-MK18B	GX-MK18B-P	Normally closed	
ž	90		Max. operation distance: 22 mm 0.87 in	GX-MK30A	GX-MK30A-P	Normally open	
	M30	Ex.) GX-MK12 □	(Stable sensing range 0 to 17.6 mm 0.69 in)	GX-MK30B	GX-MK30B-P	Normally closed	

Notes: 1) It is the value in state where the circumference of a detection side has a metal object.

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.

ORDER GUIDE

DC 2-wire type (2 m cable length type)

Туре		Appearance	Sensing range (Note 1,2)	Model No.	Output operation
	8 8		Max. operation distance: 1.5 mm 0.06 in	GX-M8A-U	Normally open
	Σ	Σ ————————————————————————————————————	(Stable sensing range 0 to 1.2 mm 0.05 in)	GX-M8B-U	Normally closed
	2	Max. operation distance: 2 mm 0.08 in	GX-M12A-U	Normally open	
Standard	M 1	M30 M18 M	(Stable sensing range 0 to 1.6 mm 0.06 in)	GX-M12B-U	Normally closed
Stan	8		Max. operation distance: 5 mm 0.20 in	GX-M18A-U	Normally open
	Σ		(Stable sensing range 0 to 4 mm 0.16 in)	GX-M18B-U	Normally closed
	30		Max. operation distance: 10 mm 0.39 in	GX-M30A-U	Normally open
	Ž		(Stable sensing range 0 to 8 mm 0.32 in)	GX-M30B-U	Normally closed
	M8		Max. operation distance: 2.5 mm 0.10 in	GX-ML8A-U	Normally open
	Σ		(Stable sensing range 0 to 2 mm 0.08 in)		Normally closed
d)	M12	Ex.) GX-M12□-U	Max. operation distance: 4 mm 0.16 in	GX-ML12A-U	Normally open
rang	Σ		(Stable sensing range 0 to 3.2 mm 0.13 in)	GX-ML12B-U	Normally closed
Long range	8		Max. operation distance: 8 mm 0.32 in	GX-ML18A-U	Normally open
	Σ 1		(Stable sensing range 0 to 6.4 mm 0.25 in)	GX-ML18B-U	Normally closed
	M30		Max. operation distance: 15 mm 0.59 in	GX-ML30A-U	Normally open
	Ž		(Stable sensing range 0 to 12 mm 0.47 in)	GX-ML30B-U	Normally closed

Notes: 1) It is the value in state where the circumference of a detection side has a metal object.

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.

M12 plug-in connector type (except for GX-M8-U and GX-ML8-U)

M12 plug-in connector type is also available.

When ordering this type, "-Z" for the M12 plug-in connector type to the model No. (e.g.) M12 plug-in connector type of **GX-M8A-P** is "**GX-M8A-P-Z**".



M12 pigtailed type (for GX-M8-U and GX-ML8-U only)

M12 pigtailed type is also available.

When ordering this type, "-J" for the M12 pigtailed type to the model No. (e.g.) M12 pigtailed type of **GX-M8A-U** is "**GX-M8A-U-J**".

Mating cable (2 cables are required for the thru-beam type.)

Туре		Model No.	Desci	ription				
g-in ′pe	Ctraight	CN-24C-C2	Length: 2 m 6.56 ft	Clamping ring :				
For M12 plug-in connector type	Straight	CN-24C-C5	Length: 5 m 16.40 ft	ø14mm 0.55 in				
r M1	Clb o.u.	CN-24CL-C2		Length: 2 m 6.56 ft	Cable outer :			
요 8	LIDOW	CN-24CL-C5	Length: 5 m 16.40 ft	ø5.3mm 0.21 in				

Mating cable

Straight type







SPECIFICATIONS

DC 3-wire type

		Туре		Shielde	ed type		N	Non-shielded typ	e		
		Normally closed	GX-M8A _□	GX-M12A _□	GX-18A _□	GX-M30A _□	GX-MK12A _□	GX-MK18A _□	GX-MK30A _□		
Item	1	Normally closed	GX-M8B _□	GX-M12B _□	GX-18B _□	GX-M30B _□	GX-MK12B _□	GX-MK18B _□	GX-MK30B _□		
Max.	operati	on distance (Note 2,3)	1.5 mm 0.06 in ±10 %	2 mm 0.08 in ±10 %	5 mm 0.20 in ±10 %	10 mm 0.39 in ±10 %	7 mm 0.28 in ±10 %	12 mm 0.47 in ±10 %	22 mm 0.87 in ±10 %		
Stable sensing range (Note 2,3)		sing range (Note 2,3)	0 to 1.2 mm 0 to 0.05 in	0 to 1.6 mm 0 to 0.06 in	0 to 4 mm 0 to 0.16 in	0 to 8 mm 0 to 0.32 in	0 to 5.6 mm 0 to 0.22 in	0 to 9.6 mm 0 to 0.38 in	0 to 17.6 mm 0 to 0.69 in		
Standard sensing object			Iron sheet 8 × 8 × t 1 mm 0.32 × 0.32 × t 0.04 in	Iron sheet 12 × 12 × t 1 mm 0.47 × 0.47 × t 0.04 in	Iron sheet 18 × 18 × t 1mm 0.71 × 0.71 × t 0.04 in	Iron sheet 30 × 30 × t 1 mm 1.18 × 1.18 × t 0.04 in	Iron sheet 24 × 24 × t 1 mm 0.94 × 0.94 × t 0.04 in	Iron sheet 24 × 24 × t 1 mm 0.94 × 0.94 × t 0.04 in	Iron sheet 45 × 45 × t 1 mm 1.77 × 1.77 × t 0.04 in		
Hyste	eresis ((Note 2)		15 %	or less of operation	on distance (with s	tandard sensing of	oject)			
Repe	eatabili	ty (Note 2)			Along sensing ax	is: 5 % or less of o	peration distance				
Supp	oly volta	age			12 to 24 V DC	±10 % Ripple P-	P 10 % or less				
Curre	ent con	sumption (Note 4)				10 mA or less					
Output Output				output and + V)							
	Utiliza	tion category		DC-12 or DC-13							
	Short-	circuit protection	Incorporated								
Max.	respoi	nse frequency	5 kHz	5 kHz	2 kHz	1 kHz	2.5 kHz	1 kHz	0.5 kHz		
Oper	ration ir	ndicator	Yellow LED (lights up when the output is ON)								
	Polluti	on degree	3 (industrial enviroment)								
nce	Protec	ction	IP67 (IEC)	IP69K (DIN),	IP68 (IEC) (2 m c	able length type or	nly) , IP67 (IEC) (M	112 plug-in connec	tor type only)		
Environmental resistance	Ambie	ent temperature	-25 to +70 °C -13 to +158 °F, Storage: -40 to +85 °C -40 to +185 °F								
a e	Ambie	ent humidity		50 % RH or less (at +70 °C +158 °F)							
ment	EMC					EN 60947-5-2					
iron	Voltag	e withstandability		500 V AC for or	ne min. between al	I supply terminals	connected togethe	r and enclosure			
E	Vibrat	ion resistance		10 to 55 Hz freque	ency, 0.5 mm 0.02	in amplitude in X,	Y and Z directions	for 1.5 hours each			
	Shock	resistance		294 m/s ² acc	eleration (30 G ap	prox.) in X, Y and 2	Z directions for thre	ee times each			
Sens (Note		nge variation	Within ±10 % fluctuation of sensing range at +23 °C +73 °F and rated voltage in the range of allowable temperature and supply voltage								
Mate	erial				Enclosure: Brass	(Nickel plated), S	ensing part: PPS				
Cable ((except fo	r M12 plug-in connector type)		0.44 mm	n² (0.15 mm² for G	X-M8 □) 3-core cab	tyre cable, 2 m 6.5	56 ft long			
Cable	e exter	nsion		Extension	up to total 10 m 32	2.80 ft is possible w	rith 0.34 mm², or m	nore, cable.			
Net w	veight	2 m cable length type	40 g approx.	70 g approx.	90 g approx.	150 g approx.	75 g approx.	100 g approx.	180 g approx.		
(Note	5)	M12 plug-in connector type	15 g approx.	20 g approx.	45 g approx.	110 g approx.	25 g approx.	55 g approx.	140 g approx.		
Acce	essories	5				Nut: 2 pcs.					

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

²⁾ It is the value in state where the circumference of a detection side has a metal object.

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) It is the leakage current when the output is in the OFF state.
5) The weight includes the weight of two nuts.

SPECIFICATIONS

DC 2-wire type

Туре				Standa	ird type		Long range type			
	\ :	Normally open	GX-M8A-U(-J)	GX-M12A-U(-Z)	GX-M18A-U(-Z)	GX-M30A-U(-Z)	GX-ML8A-U(-J)	GX-ML12A-U(-Z)	GX-ML18A-U(-Z)	GX-ML30A-U(-Z)
Item		Normally closed	GX-M8B-U(-J)	GX-M12B-U(-Z)	GX-M18B-U(-Z)	GX-M30B-U(-Z)	GX-ML8B-U(-J)	GX-ML12B-U(-Z)	GX-ML18B-U(-Z)	GX-ML30B-U(-Z)
Max. operation distance (Note 2,3)		1.5 mm 0.06 in ±10 %	2 mm 0.08 in ±10 %	5 mm 0.20 in ±10 %	10 mm 0.39 in ±10 %	2.5 mm 0.10 in ±10 %	4 mm 0.16 in ±10 %	8 mm 0.32 in ±10 %	15 mm 0.59 in ±10 %	
Stabl	e sensir	ng range (Note 2,3)	0 to 1.2 mm 0 to 0.05 in	0 to 1.6 mm 0 to 0.06 in	0 to 4 mm 0 to 0.09 in	0 to 8 mm 0 to 0.22 in	0 to 2 mm 0 to 0.08 in	0 to 3.2 mm 0 to 0.13 in	0 to 6.4 mm 0 to 0.25 in	0 to 12 mm 0 to 0.47 in
Stand	dard ser	nsing object	Iron sheet 8 × 8 × t 1 mm 0.32 × 0.32 × t 0.04 in	Iron sheet 12 × 12 × t 1 mm 0.47 × 0.47 × t 0.04 in	Iron sheet 18 × 18 × t 1mm 0.71 × 0.71 × t 0.04 in	Iron sheet 30 × 30 × t 1 mm 1.18 × 1.18 × t 0.04 in	Iron sheet 8 × 8 × t 1 mm 0.32 × 0.32 × t 0.04 in	Iron sheet 12 × 12 × t 1 mm 0.47 × 0.47 × t 0.04 in	Iron sheet 18 × 18 × t 1 mm 0.71 × 0.71 × t 0.04 in	Iron sheet 30 × 30 × t 1 mm 1.18 × 1.18 × t 0.04 in
Hyste	eresis (N	Note 2)			15 % or less of o	peration distance	ce (with standard	sensing object)	
Repe	atability	(Note 2)			Along sens	sing axis: 5 % or	less of operation	n distance		
Supp	ly voltaç	ge			12 to 24	4 V DC ±10 %	Ripple P-P 10 %	or less		
Curre	ent cons	umption (Note 4)				0.5 mA	or less			
Outp	ut				• Loa	contact DC 2-wi d current: 1.5 to sidual voltage: 4.		e 5)		
	Utilizati	on category		DC-12 or DC-13						
	Short-c	ircuit protection	Incorporated							
Max.	respons	se frequency	1 kHz	1 kHz	1.2 kHz	1.3 kHz	1.1 kHz	1.3 kHz	1.5 kHz	0.8 kHz
Oper	ation ind	dicator	Yellow LED (lights up when the output is ON)							
	Pollutio	n degree	3 (Industrial environment)							
nce	Protecti	ion	IP67 (IEC) IP69K (DIN), IP68 (IEC) (2 m cable length type only) , IP67 (IEC) (M12 plug-in connector type only)							
Environmental resistance	Ambien	t temperature	–25 to +70 °C −13 to +158 °F, Storage: –40 to +85 °C –40 to +185 °F							
al re	Ambien	t humidity	50 % RH or less (at +70 °C +158 °F)							
ment	EMC		EN 60947-5-2							
/iron	Voltage	withstandability	500 V AC for one min. between all supply terminals connected together and enclosure							
E	Vibratio	n resistance		10 to 55 Hz frequency, 0.5 mm 0.02 in amplitude in X, Y and Z directions for 1.5 hours each						
	Shock r	resistance		294 m/s ²	acceleration (30	O G approx.) in λ	K, Y and Z direct	ions for three tin	nes each	
Sens (Note		ge variation			uation of sensing ture and supply		C +73 °F and ra	ted voltage in th	e range of	
Mate	rial				Enclosure	: Brass (Nickel p	olated), Sensing	part: PPS		
Cable (except for N	//12 plug-in connector type)		0.44	mm² [0.15 mm² 1	for GX-M(L)8□-U	2-core cabtyre	cable, 2 m 6.56 ft	long	
Cable	e extens	sion		Extens	sion up to total 1	0 m 32.80 ft is p	ossible with 0.3	4 mm², or more,	cable.	
Net w	eight	2 m cable length type	40 g approx.	70 g approx.	90 g approx.	150 g approx.	40 g approx.	70 g approx.	90 g approx.	150 g approx.
	′	M12 pigtailed(-J type) / W12 plug-in connector type	20 g approx.	20 g approx.	45 g approx.	110 g approx.	20 g approx.	20 g approx.	45 g approx.	110 g approx.
(Note		W12 plug III confliction type	Accessories Nut: 2 pcs.							

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

2) It is the value in state where the circumference of a detection side has a metal object.

6) The weight includes the weight of two nuts.

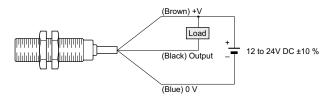
²⁾ It's the value in state where the challenge for a detection side has a metal object.
3) The maximum operation distance stands for the maximum distance for which the sensor can detect the standard sensing object.
The stable sensing range stands for the sensing range for which the sensor can stably detect the standard sensing object even if there is an ambient temperature drift and/or supply voltage fluctuation.
4) It is the leakage current when the output is in the OFF state.
5) When the cable is extended, the residual voltage becomes larger.
6) The weight includes the weight of two puts.

WIRING DIAGRAMS

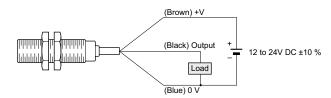
DC 3-wire type

Wiring diagram

NPN output type



PNP output type



Connector pin position

M12 connector

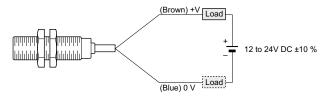


- Normally Open
- 1:+V 2: Not connected
- 3:0V
- 4 : Output
- Normally Closed 1:+V 2:Output

- 3:0 V 4: Not connected

DC 2-wire type

Wiring diagram



Connector pin position

M12 connector



- Normally Open (except for GX-M8□-U-J and GX-ML8□-U-J)
- 1 : Not connected 2 : Not connected 3 : +V
- 4:0V
- Normally Open (GX-M8□-U-J and GX-ML8□-U-J only)

 - 2: Not connected
- 3 : Not connected 4 : 0 V

- Normally Closed

- 1:+V 2:0 V 3: Not connected 4: Not connected

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.

Mounting

 The tightening torque should be under the value given below.



		Tightening torque			
Model No.	Sensor size	Sensor	Connector (Note)		
	M8	5 N·m	2 N·m		
GX-M⊓	M12	6 N·m	2 N·m		
GA-IVI	M18	15 N·m	2 N·m		
	M30	40 N·m	2 N·m		
GX-M(L)8□-U-J	M8	5 N·m	1.5 N·m		

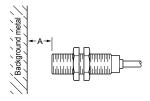
Note: Connector is equipped with -Z type or -J type.

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.

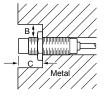


Typo	A (mm in)					
Туре	M8	M12	M18	M30		
DC 3-wire shielded type	3	4	10	20		
	0.12	0.16	0.39	0.79		
DC 3-wire non-shielded type	-	21 0.83	36 1.42	66 2.60		
DC 2-wire standard type	4.5	6	15	30		
	0.18	0.23	0.59	1.18		
DC 2-wire long range type	8	12	25	45		
	0.32	0.47	0.98	1.77		

Embedding of the sensor in metal

 Sensing range may decrease if the sensor is completely embedded in metal. Especially for the nonshielded type, keep the minimum distance specified in the right table.

Sensor size	B (mm in)	C (mm in)		
M12	12 0.47	12 0.47		
M18	18 0.71	18 0.71		
M30	30 1.18	30 1.18		



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.

Face to face mounting	Parallel mounting
-D-	

Type	D (mm in)				E (mm in)			
туре	M8	M12	M18	M30	M8	M12	M18	M30
DC 3-wire shielded type	18	24	60	120	3	4	10	20
	0.71	0.94	2.36	4.72	0.12	0.16	0.39	0.77
DC 3-wire non-shielded type	-	84 3.30	144 5.67	264 10.39	-	48 1.89	72 2.83	120 4.72
DC 2-wire standard type	18	24	60	120	3	4	10	20
	0.71	0.94	2.36	4.72	0.12	0.16	0.39	0.77
DC 2-wire long range type	30	50	100	180	5	8	16	30
	1.18	1.97	3.93	7.09	0.20	0.32	0.63	1.18

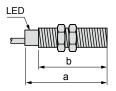
Wiring

- Make sure that the power supply is off while wiring.
- 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.
- Ensure that an isolation transformer is utilized for the DC power supply. If an autotransformer is utilized, the main body or power supply may be damaged.
- If the used power supply generates a surge, connect a surge absorber to the power supply to absorb the surge.
- 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.
- Damage or burnout may result in case of short circuit of load or miswiring.
- Make a cable length as short as possible to lessen noise pickup.

Others

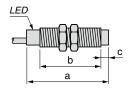
- Our products have been developed / produced for industrial use only.
- Avoid using a product where there is excessive vapor, dust or corrosive gas, or in a place where it could be exposed directly to water or chemicals.
- Take care that the sensor does not come in direct contact with water, oil, grease or organic solvents, such as, thinner, etc.
- Do not use in an environment containing infammable or explosive gases.
- Never disassemble or modify the product.

DIMENSIONS (Unit: mm in)

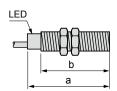


DC 3-wire type

	2000 3,60							
Sensors		2 m cable leng	gth type (mm in)	M12 plug-in co	M12 plug-in connector type (mm in)			
Shielded type		а	b	а	b			
M8	GX-M8□	33 1.30	25 0.98	45 1.77	24 0.94			
M12	GX-M12□	35 1.38	25 0.98	50 1.97	30 1.18			
M18	GX-M18□	39 1.54	28 1.10	50 1.97	28 1.10			
M30	GX-M30□	43 1.69	32 1.26	55 2.17	32 1.26			



Sensors		2 m cable len	igth type (mm	in)	M12 plug-in connector type (mm in)			
Non-shielded type		а	b	С	а	b	С	
M12	GX-MK12□	55 2.17	42 1.65	5 0.20	66 2.60	42 1.65	5 0.20	
M18	GX-MK18□	60 2.36	44 1.73	8 0.32	72 2.83	44 1.73	8 0.32	
M30	GX-MK30□	63 2.48	41 1.61	13 0.51	74 2.91	41 1.61	13 0.51	



DC 2-wire type

Sensors		2 m cable length type (mm in)		M12 plug-in connector type (mm in) (M8 size: M12 pigtailed type)	
Standard type, Long range type		а	b	а	b
M8	GX-M(L)8□-U (-J)	33 1.30	25 0.98	-	24 0.94
M12	GX-M(L)12□-U (-Z)	35 1.38	25 0.98	50 1.97	30 1.18
M18	GX-M(L)18□-U (-Z)	39 1.54	28 1.10	50 1.97	28 1.10
M30	GX-M(L)30□-U (-Z)	43 1.69	32 1.26	55 2.17	32 1.26

Disclaimer

The applications described in the catalog are all intended for examples only.

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