

GP-X SERIES

Related Information

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SUNX website <http://www.sunx.com>

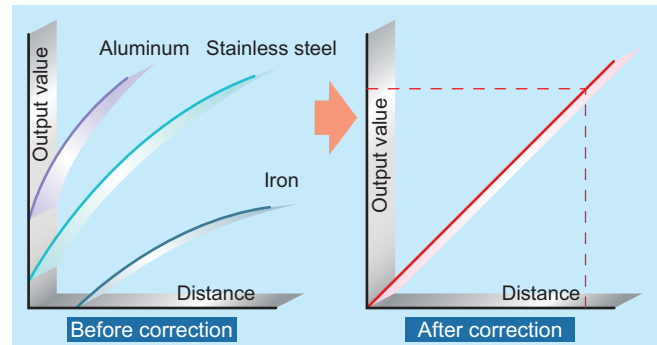
CE
Conforming to
EMC Directive

High-speed sampling and high resolution. The new choice for even more variegated data collection and processing.

They perform with a $\pm 0.3\%$ F.S. linearity for stainless steel and iron

Because they perform with a $\pm 0.3\%$ F.S. linearity, they can be used for sensing stainless steel and iron enabling precise measurements not affected by the work's material. Specifications corresponding to each material (stainless steel, iron, aluminum) has already been inputted in the controller enabling the easy selection of the setting that is most suitable for the particular material used.

Optimal correction of the output feature



We've realized a $25\ \mu\text{s}$ (40,000 times/sec.) ultra high sampling speed

With a $25\ \mu\text{s}$ ultra high sampling speed, the GP-X series won't miss even high speed work displacements.

These devices boast a 0.07% F.S./ $^{\circ}\text{C}$ temperature characteristics

By combining the sensor head with the controller, we've realized 0.07% F.S./ $^{\circ}\text{C}$. They are highly resistant to ambient temperature changes enabling stable micro-displacement measurements.

They possess a 0.02% F.S. resolution for highly accurate measurement

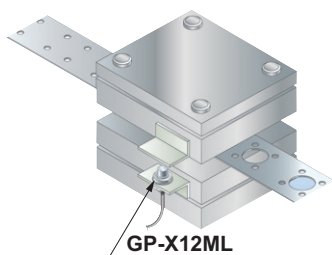
With high resolution, 0.02% F.S. (Note), they can perform high-accuracy measurements of micro-displacements. In particular, the sensor head GP-X3SE for $0.8\ \text{mm}$ $0.049\ \text{in}$ sensing can differentiate ultra micro displacement of $0.32\ \mu\text{m}$ $0.013\ \text{mil}$ (Average number of samples: 64).

Note: GP-XC3SE and GP-XC5SE

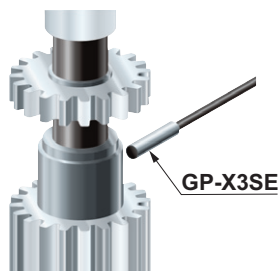
Resolution: 0.04% F.S.

APPLICATIONS

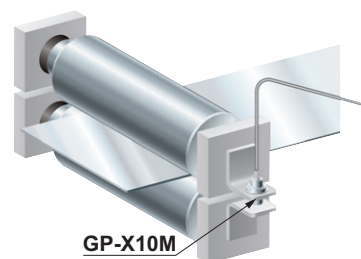
Stroke end sensing



Eccentricity sensing



Height sensing



ENVIRONMENTAL RESISTANCE / VARIETY

IP67g sensor head variation

6 types of sensor heads from the ultra compact $\varnothing 3.8$ mm $\varnothing 0.150$ in cylindrical type to the long range sensing type $\varnothing 22$ mm $\varnothing 0.866$ in are available. All sensor heads are oil-proof as per IP67g (JEM) enabling safe, stable performance even under harsh environments.

Model	Sensing range	Appearance
GP-X22KL	0 to 10 mm 0 to 0.394 in	$\varnothing 22$ mm $\varnothing 0.866$ in / M12
GP-X12ML	0 to 5 mm 0 to 0.197 in	M12
GP-X10M	0 to 2 mm 0 to 0.079 in	M10
GP-X3SE	0 to 0.8 mm 0 to 0.031 in	$\varnothing 3.8$ mm $\varnothing 0.150$ in
GP-X5SE	0 to 1 mm 0 to 0.039 in	$\varnothing 5.4$ mm $\varnothing 0.213$ in
GP-X8S	0 to 2 mm 0 to 0.079 in	$\varnothing 8$ mm $\varnothing 0.315$ in

Controller
NPN output type, PNP output type
DIN $\square 48$ mm $\square 1.890$ in size

MOUNTING / MAINTENANCE

Sensor heads with superior workability and maintainability

Replacement of sensor heads possible

As a result of damage or other mishap rendering maintenance necessary, you can replace only the sensor head leaving the controller as it is.

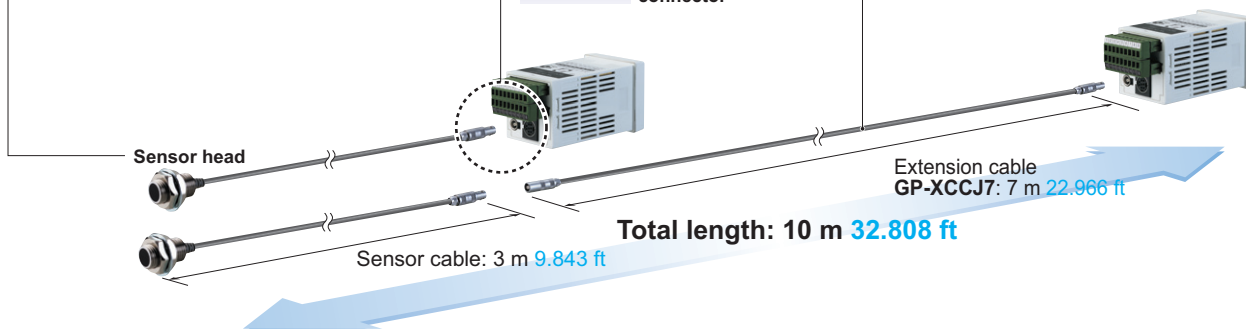
One-touch connector hook up

The sensor head and the controller connection is a simple one-touch connector type.



Sensor head extensions possible

Between the sensor head and the controller, a GP-XCCJ7 extension cable (optional) can be used up to a 10 m 32.808 ft total length.



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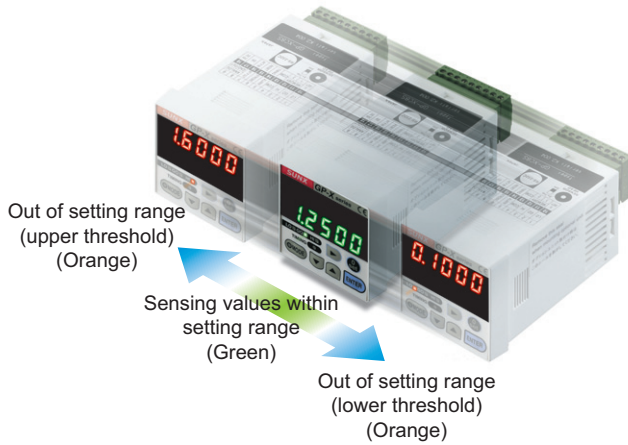
- Selection Guide
- Laser Displacement
- HL-C2
- HL-C1
- LM10
- Magnetic Displacement
- GP-X**
- GP-A
- Collimated Beam Sensors
- HL-T1
- LA-300
- LA
- Other Products

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FUNCTIONS

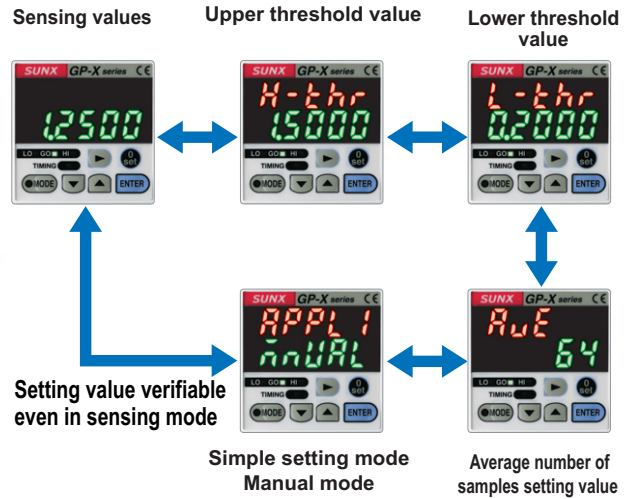
The 5-digit, dual, 2-color digital display offers great visibility

If the measurement results fall within the setting range (GO), they will appear on the lower digital display in green. If they are out of range (HI, LO), they will be displayed in the upper digital display in orange. The display position and color change allows for accurate visibility even for momentary changes.



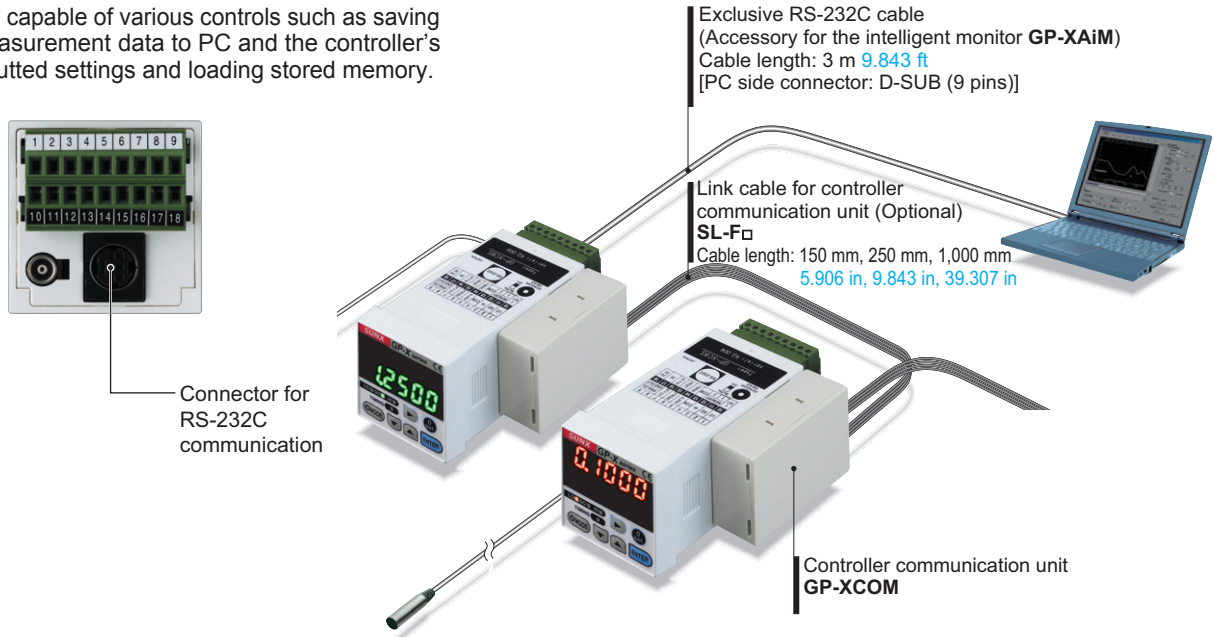
Digital input display enabling easy setting

Its dual digital display enables numerical setting while verifying setting items for each mode. Even when sensing, it enables the verification of the main settings.



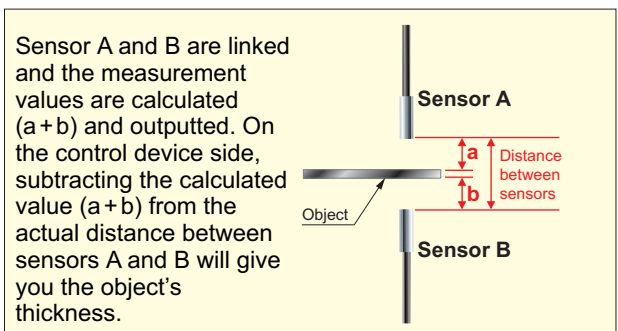
The RS-232C communication connector is standard equipment

It is capable of various controls such as saving measurement data to PC and the controller's inputted settings and loading stored memory.



Enables sensors data comparisons and calculations

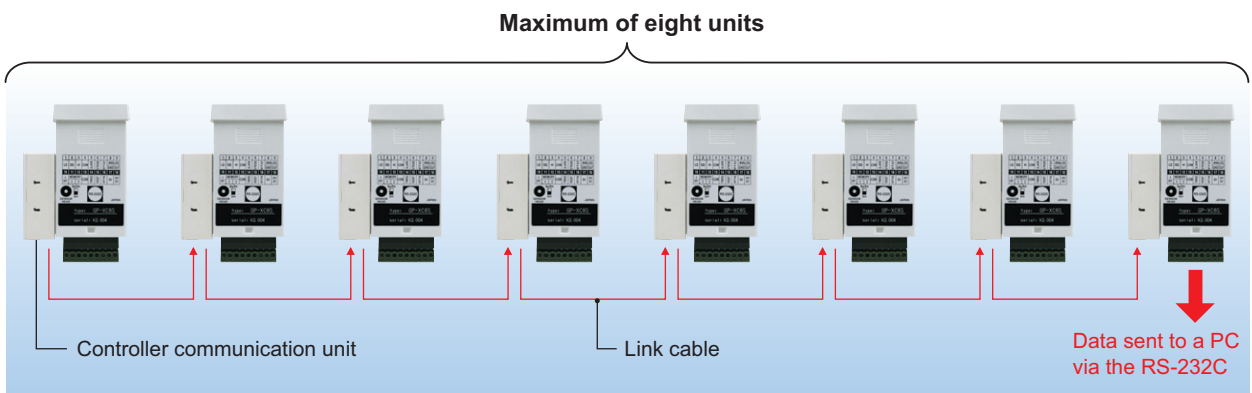
3-value judgment output for calculating measurement data conformity and calculation results between 2 interconnected controllers is rendered possible. The calculation function equipment renders digital panel controllers unnecessary.



OPTIONS

Datalink between sensors possible

The controller communication unit **GP-XCOM** (optional) can be linked to up to 8 controllers and load via just one RS-232C cable each controller settings and measurement data to a PC.



An intelligent monitor (GP-XAiM) optimal for collecting and analyzing measurement data is also available

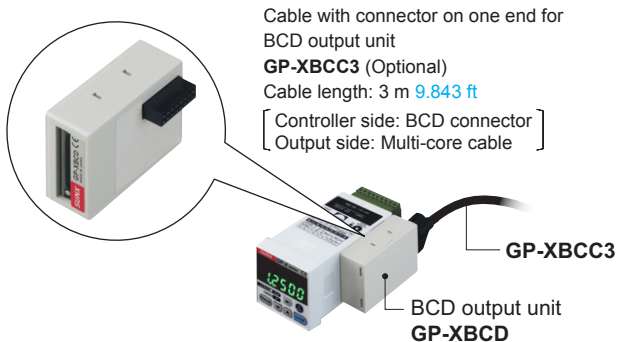
An intelligent monitor capable of the settings for each measurement conditions and waveform display monitoring. It can perform waveform monitoring, which could until now only be done by the oscilloscope, as well as the simple loading and saving onto a PC of settings for each condition and function. (Exclusive RC-232C cable is attached.)



BCD output unit GP-XBCD (Optional)

20 kHz high-speed data output

The measurement data can be processed quickly in the PLC. (Sampling rate: 20 kHz)



4 types of measurement modes available

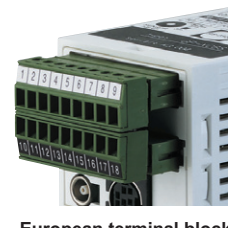
Measurement modes compatible to the most widely used applications are available. Because of this, inputting setting values can be done with ease. Please select the most appropriate mode to suit your specific application.

Mutual interference prevention function

The sensor head can be made interference prevention by linking up to 8 controllers via an interference prevention output cable and shifting the oscillation timing. This enables precise measurements to be obtained even in cases where many sensor heads are crowded in the same area.

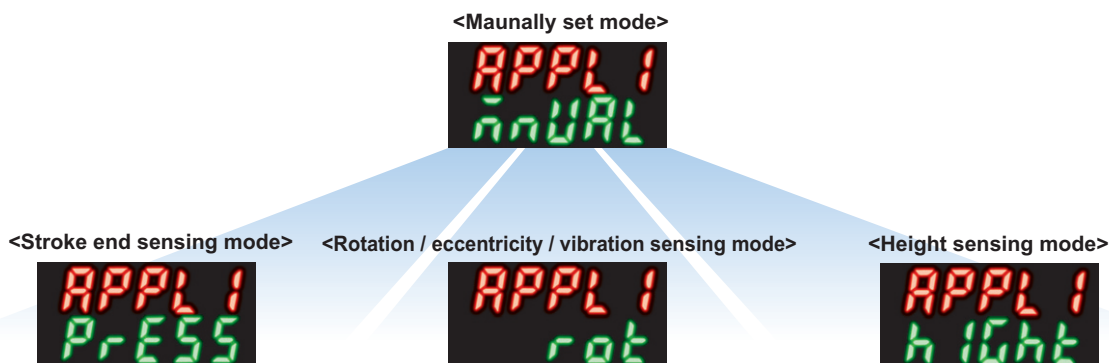
Removable type terminal block

It is equipped with a removable type European terminal block very convenient during assembly, when dividing the equipment into segments or when performing maintenance. It also features an reverse insertion prevention construction.



4 types of selectable memory functions

The setting data can be processed in 4 types of memory when measuring. This function enables either the changing of the workpiece, the sensing of multiple products or sensing after product changeover to be done smoothly.



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LM10
Magnetic Displacement
GP-X
GP-A
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LA-300
LA
Other Products

ORDER GUIDE

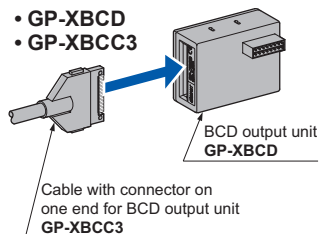
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Type	Appearance (mm in)		Sensing range	Set Model No. (Sensor head model No.)	Comparative output
	Sensor heads	Controller			
Non-threaded type sensor head			0 to 0.8 mm 0 to 0.031 in	GP-XC3SE (GP-X3SE)	NPN open-collector transistor
			0 to 1 mm 0 to 0.039 in	GP-XC5SE (GP-X5SE)	NPN open-collector transistor
			0 to 2 mm 0 to 0.079 in	GP-XC8S (GP-X8S)	NPN open-collector transistor
Threaded type sensor head			0 to 2 mm 0 to 0.079 in	GP-XC10M (GP-X10M)	NPN open-collector transistor
			0 to 5 mm 0 to 0.197 in	GP-XC12ML (GP-X12ML)	NPN open-collector transistor
			0 to 10 mm 0 to 0.394 in	GP-XC22KL (GP-X22KL)	NPN open-collector transistor
			GP-XC22KL-P (GP-X22KL-P)	PNP open-collector transistor	

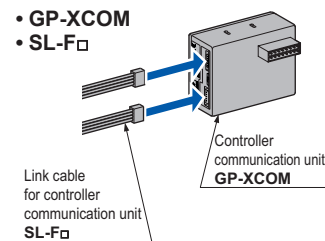
OPTIONS

Designation	Model No.	Description	
BCD output unit	GP-XBCD	This unit outputs measurement values in BCD data format at a high speed. • Sampling frequency: 20 kHz	
Cable with connector on one end for BCD output unit	GP-XBCC3	Length: 3 m 9.843 ft	Cable for BCD data output unit • 26-core cable with connector on one end
Controller communication unit	GP-XCOM	Up to 8 controllers can be linked	
Link cable for controller communication unit	SL-F150	Length: 150 mm 5.906 in	This cable links the controller communication units. Select as per the cable length.
	SL-F250	Length: 250 mm 9.843 in	
	SL-F1000	Length: 1,000 mm 39.370 in	
Intelligent monitor	GP-XAiM	Monitoring settings for each measurement condition and measurement waveforms is enabled by way of a PC. • One exclusive RS-232C cable (3 m 9.843 ft length) is attached.	
Extension cable for sensor head	GP-XCCJ7	Length: 7 m 22.966 ft	This cable with connector is for extensions between the sensor head and controller.
Sensor head mounting bracket	MS-SS3	Mounting bracket for GP-X3SE	
	MS-SS5	Mounting bracket for GP-X5SE	
	MS-SS8	Mounting bracket for GP-X8S	

BCD output unit
Cable with connector on one end for BCD output unit



Controller communication unit
Link cable for controller communication unit



Intelligent monitor

- **GP-XAiM**



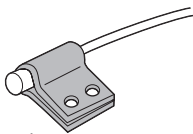
Extension cable for sensor head

- **GP-XCCJ7**



Sensor head mounting bracket

- **MS-SS□**



The sensor head can be easily fixed.

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- LA**
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SPECIFICATIONS

Controllers

Item	Type	NPN output	PNP output
	Set model No.	GP-XC□	GP-XC□-P
Supply voltage		24 V DC ± 10 % Ripple P-P 10 % or less	
Current consumption		150 mA or less	
Resolution (Note 2)		GP-XC3SE / GP-XC5SE: 0.04 % F.S. (64 times average processing) GP-XC8S / GP-XC10M / GP-XC12ML / GP-XC22KL: 0.02 % F.S. (64 times average processing)	
Sampling frequency		40 kHz (25 μs)	
Linearity (Note 2)		Within ±0.3 % F.S.	
Temperature characteristics (Note 3)		0.07 % F.S./°C or less	
Analog voltage outputs		Output voltage: -5 to +5 V (Note 4), Output impedance: 100 Ω approx.	
Response time		75 μs (maximum speed)	
Comparative outputs (HI, GO, LO)		NPN open-collector transistor <ul style="list-style-type: none"> • Maximum sink current: 100 mA • Applied voltage: 30 V DC or less (between comparative output and 0 V) • Residual voltage: 1.6 V or less (at 100 mA sink current) 0.4 V or less (at 16 mA sink current) 	PNP open-collector transistor <ul style="list-style-type: none"> • Maximum source current: 100 mA • Applied voltage: 30 V DC or less (between comparative output and +V) • Residual voltage: 1.6 V or less (at 100 mA source current) 0.4 V or less (at 16 mA source current)
Utilization category		DC-12 or DC-13	
Output number		HI / GO / LO 3 value output	
Output operation		HI : ON when measured value > the upper limit value GO : ON when upper limit value ≥ measured value ≥ lower limit value LO : ON when lower limit value > measured value	
Short-circuit protection		Incorporated	
External input		Photo-coupler input <ul style="list-style-type: none"> • Input current: 9 mA or less • Operating voltage: ON voltage 17 V or more (between +24 V and input) OFF voltage 4 V or less (between +24 V and input) • Input impedance: 5 kΩ approx. 	Photo-coupler input <ul style="list-style-type: none"> • Input current: 9 mA or less • Operating voltage: ON voltage 17 V or more (between 0 V and input) OFF voltage 4 V or less (between 0 V and input) • Input impedance: 5 kΩ approx.
Serial I/O		RS-232C	
Zero-set setting method		Push button setting / External input setting	
Indicators	MODE	Orange LED (lights up when in mode status)	
	HI	Orange LED (lights up when the upper limit value is exceeded)	
	GO	Green LED (lights up when within the upper and lower limit value)	
	LO	Orange LED (lights up when less than the lower limit value)	
	TIMING	Green LED (lights up as per the external or internal trigger timing)	
Upper level digital display part		5 digit orange LED (display of numerical values out of upper and lower limit value)	
Lower level digital display part		5 digit green LED (display of numerical values within the upper and lower limit value)	
Environmental resistance	Pollution degree	3 (Industrial environment)	
	Ambient temperature	0 to +50 °C +32 to +122 °F (No dew condensation), Storage: 0 to +50 °C +32 to +122 °F	
	Ambient humidity	35 to 85 % RH, Storage: 35 to 85 % RH	
	EMC	EN 61000-6-2, EN 61000-6-4	
	Vibration resistance	10 to 55 Hz frequency, 0.75 mm 0.030 in amplitude in X, Y and Z directions for two hours each	
	Shock resistance	100 m/s ² acceleration (10 G approx.) in X, Y and Z directions for five times each	
Material		Enclosure: Polycarbonate	
Weight		Net weight: 120 g approx.	
Accessory		ATA4811 (Controller mounting frame): 1 set	

Notes: 1) Where measurement conditions have not been specified precisely, the conditions used were an ambient temperature of +20 °C **+68 °F**.

2) This value was obtained at a constant +25 °C **+77 °F**.

3) This value represents 20 to 60 % of the maximum sensing distance when combining the sensor head and controller.

4) Adjusted to a 0 to +5 V factory setting.

SPECIFICATIONS

Sensor heads

Item	Type Model No.	Non-threaded type			Threaded type		
		For 0.8 mm 0.031 in sensing	For 1 mm 0.039 in sensing	For 2 mm 0.079 in sensing	For 2 mm 0.079 in sensing	For 5 mm 0.197 in sensing	For 10 mm 0.394 in sensing
		GP-X3SE	GP-X5SE	GP-X8S	GP-X10M	GP-X12ML	GP-X22KL
Sensing range (Note 2)		0 to 0.8 mm 0 to 0.031 in	0 to 1 mm 0 to 0.039 in	0 to 2 mm 0 to 0.079 in	0 to 2 mm 0 to 0.079 in	0 to 5 mm 0 to 0.197 in	0 to 10 mm 0 to 0.394 in
Standard sensing object		Stainless steel (SUS304) / Iron sheet [Cold rolled carbon steel (SPCC)] 60 × 60 × t 1 mm 2.362 × 2.362 × t 0.039 in					
Temperature characteristics (Note 3)		0.07 % F.S./°C or less					
Environmental resistance	Pollution degree	3 (Industrial environment)					
	Protection	IP67 (IEC), IP67g (JEM) (Refer to p.1010 for details of standards.)					
	Ambient temperature	-10 to +55 °C +14 to +131 °F , Storage: -20 to +70 °C -4 to +158 °F					
	Ambient humidity	35 to 85 % RH, Storage: 35 to 85 % RH					
	Voltage withstandability	250 V AC for one min. between all supply terminals connected together and enclosure					
	Insulation resistance	20 MΩ, or more, with 250 V DC megger between all supply terminals connected together and enclosure					
	Vibration resistance	10 to 150 Hz frequency, 0.75 mm 0.030 in amplitude in X, Y and Z directions for two hours each					
	Shock resistance	500 m/s ² acceleration (50 G approx.) in X, Y and Z directions for five times each					
Material	Enclosure	Stainless steel (SUS303)			Brass (Nickel plated)		
	Cable protector	PP					
	Sensing part	ABS	PAR	ABS	PA		
Cable		High frequency coaxial cable with connector, 3 m 9.843 ft long (Note 4)					
Cable extension		Extension up to total 10 m 32.808 ft is possible with the optional cable.					
Net Weight (Note 5)		40 g approx.	40 g approx.	40 g approx.	50 g approx.	45 g approx.	80 g approx.
Accessories		—————			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 +20 °C **+68 °F**.
 2) The sensing range is specified for the standard sensing object.
 3) This value represents 20 to 60 % of the maximum sensing distance when combining the sensor head and the controller.
 4) For the flexible cable type, please contact our office.
 5) The given weight of the threaded type sensor head is the value including the weight of the nuts and the toothed lock washer.

BCD output unit

Item	Model No. GP-XBCD
Current consumption	20 mA or less
Outputs (5 digits BCD, Polarity indication, VALID)	N-channel MOSFET open drain <ul style="list-style-type: none"> • Maximum sink current: 50 mA • Applied voltage: 30 V DC or less (between output and GND) • Residual voltage: 1 V or less (at 50 mA sink current)
Hold input	Non-voltage contact or NPN open-collector transistor input <ul style="list-style-type: none"> • Low: 0 to 1 V • High: Open
Material	Enclosure: ABS
Weight	Net weight: 30 g approx.
Accessory	Mounting bracket [Stainless steel (SUS304)]: 1 pc.

Note: Connects to the control device with **GP-XBCC3** cable with connector on one end for BCD output unit (3 m **9.843 ft** cable length, optional).

Controller communication unit

Item	Model No. GP-XCOM
Current consumption	5 mA or less
Material	Enclosure: ABS
Weight	Net weight: 20 g approx.
Accessory	Mounting bracket [Stainless steel (SUS304)]: 1 pc.

Note: Each **GP-XCOM** is connected using a link cable for controller communication units (**SL-F□**, optional).
 When **GP-XCOM** is used, controllers cannot communicate if their software versions are not compatible (Ver. 1.06 or earlier version with Ver 2.00 or later version).
 Check the software version and use the correct combination.

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Magnetic Displacement

GP-X**GP-A**

Collimated Beam Sensors

HL-T1**LA-300****LA**

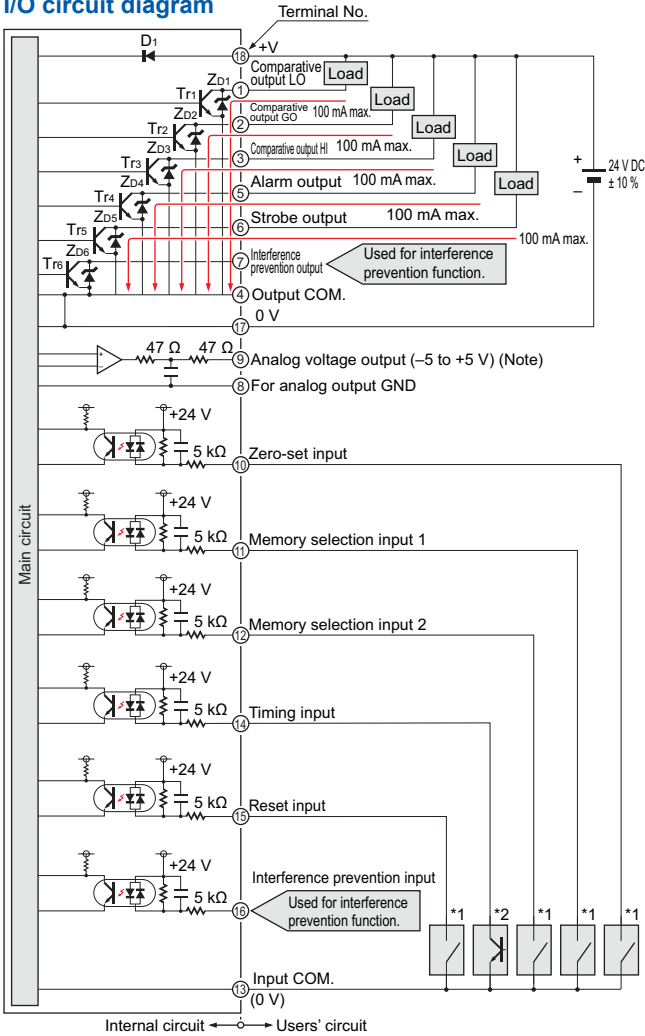
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I/O CIRCUIT AND WIRING DIAGRAMS

NPN output type controller

I/O circuit diagram



Note: Devices connected to the analog voltage output must have an input impedance set at 1 MΩ or more.

Symbols ... D1: Reverse supply polarity protection diode
ZD1 to ZD6: Surge absorption zener diode
Tr1 to Tr6: NPN output transistor

* 1

Non-voltage contact or NPN open-collector transistor

• Zero-set input, reset input, memory selection input
Low (0 to 4 V): Effective
High (+V or open): Ineffective

* 2

NPN open-collector transistor

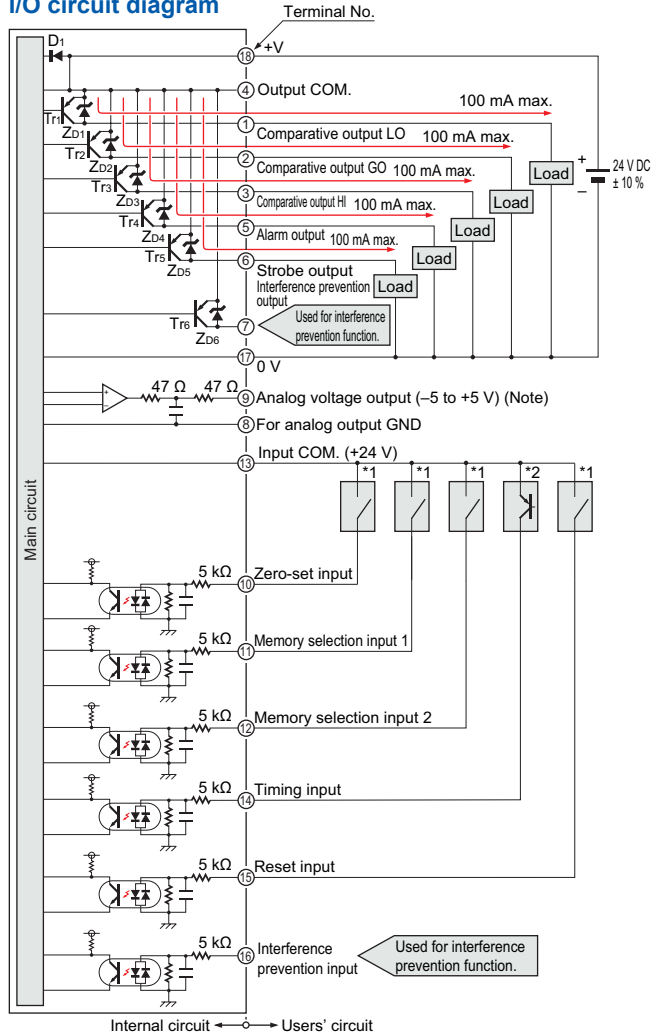
• Timing input
Low (0 to 4 V): Effective
High (+V or open): Ineffective

Memory selection input

Memory No.	Memory selection 1	Memory selection 2
0	High	High
1	Low	High
2	High	Low
3	Low	Low

PNP output type controller

I/O circuit diagram



Note: Devices connected to the analog voltage output must have an input impedance set at 1 MΩ or more.

Symbols ... D1: Reverse supply polarity protection diode
ZD1 to ZD6: Surge absorption zener diode
Tr1 to Tr6: PNP output transistor

* 1

Non-voltage contact or PNP open-collector transistor

• Zero-set input, reset input, memory selection input
Low (0 V or open): Ineffective
High (+17 or +24 V): Effective

* 2

PNP open-collector transistor

• Timing input
Low (0 V or open): Ineffective
High (+17 to +24 V): Effective

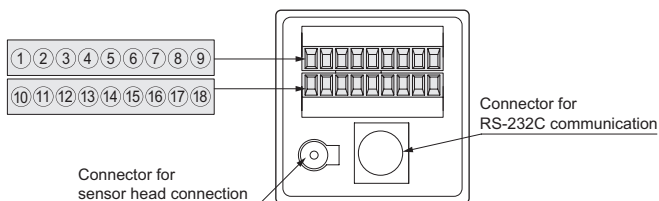
Memory selection input

Memory No.	Memory selection 1	Memory selection 2
0	Low	Low
1	High	Low
2	Low	High
3	High	High

I/O CIRCUIT AND WIRING DIAGRAMS

Controller

Terminal arrangement



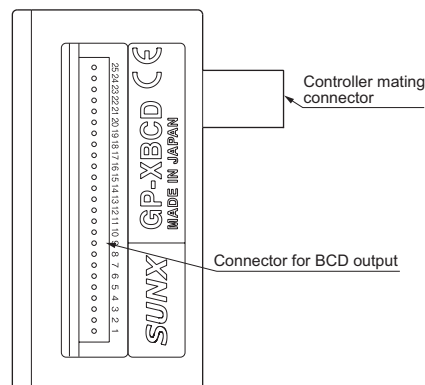
Terminal No.	Description
①	Comparative output LO
②	Comparative output GO
③	Comparative output HI
④	Output COM.
⑤	Alarm output
⑥	Strobe output
⑦	Interference prevention output
⑧	For analog output GND
⑨	Analog output

Terminal No.	Description
⑩	Zero-set input
⑪	Memory selection input 1
⑫	Memory selection input 2
⑬	Input COM.
⑭	Timing input
⑮	Reset input
⑯	Interference prevention input
⑰	0 V
⑱	+V

BCD output unit

Connector pin position and cable color

Connector pin No.	Cable		Signal	Description	
	Sheath color	ID mark			
①	Orange	Red: 1	A0	1 ×	Measurement value to the 10 ⁰ digit
②	Orange	Black: 1	B0	2 ×	
③	Gray	Red: 1	C0	4 ×	
④	Gray	Black: 1	D0	8 ×	
⑤	White	Red: 1	A1	1 ×	Measurement value to the 10 ¹ digit
⑥	White	Black: 1	B1	2 ×	
⑦	Yellow	Red: 1	C1	4 ×	
⑧	Yellow	Black: 1	D1	8 ×	
⑨	Pink	Red: 1	A2	1 ×	Measurement value to the 10 ² digit
⑩	Pink	Black: 1	B2	2 ×	
⑪	Orange	Red: 2	C2	4 ×	
⑫	Orange	Black: 2	D2	8 ×	
⑬	Gray	Red: 2	A3	1 ×	Measurement value to the 10 ³ digit
⑭	Gray	Black: 2	B3	2 ×	
⑮	White	Red: 2	C3	4 ×	
⑯	White	Black: 2	D3	8 ×	
⑰	Yellow	Red: 2	A4	1 ×	Measurement value to the 10 ⁴ digit
⑱	Yellow	Black: 2	B4	2 ×	
⑲	Pink	Red: 2	C4	4 ×	
⑳	Pink	Black: 2	D4	8 ×	
㉑	Orange	Red: 3	POLE	Polarity signal output	High (OFF): +, Low (ON): -
㉒	Orange	Black: 3	VALID	VALID output	Low (ON) when the data output is enabled
㉓	Gray	Red: 3	HOLD	Hold input	This input is to maintain the external data output. The data output is maintained during low (ON).
㉔	Gray	Black: 3	GND	Ground	————
㉕	White	Red: 3	GND	Ground	————
—	White	Black: 3	————	Not connected	Not used



Note: The shield wire is connected externally at 0 V.

FIBER SENSORS
LASER SENSORS
PHOTO-ELECTRIC SENSORS
MICRO PHOTO-ELECTRIC SENSORS
AREA SENSORS
SAFETY COMPONENTS
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PARTICULAR USE SENSORS
SENSOR OPTIONS
WIRE- SAVING SYSTEMS
MEASURE- MENT SENSORS
STATIC CONTROL DEVICES
LASER MARKERS

Selection Guide
Laser Displacement
HL-C2
HL-C1
LM10
Magnetic Displacement
GP-X
GP-A
Collimated Beam Sensors
HL-T1
LA-300
LA
Other Products

PRECAUTIONS FOR PROPER USE

Refer to p.1027 for general precautions.



- 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.

- The sensor head and the controller are adjusted in order to conform to the default specification linearity.
- In the event of replacing sensor heads, input the sensor head's characteristic code and conduct 3-point correction (calibration).
- Should you use an extension cable, turn the sensor head cable length selection switch located on the back of the controller to "3 m + 7 m 9.843 ft + 22.966 ft". Then reintroduce the power supply and conduct 3-point correction (calibration).

Conditions in use for CE conformity

- This product is CE compliant and complies with EMC directives. EN 61000-6-2 is the applicable standard that covers immunities relating to use of this product, but in order to comply with this standard, the following conditions must be satisfied.

Conditions

- The controller should be connected less than 10 m 32.808 ft from the power supply.
- The signal line to connect with the controller should be less than 30 m 98.425 ft.
- A ferrite clamp must be mounted within 10 mm 0.394 in from connector fitted onto the **GP-XBCC3** cable with connector on one end for BCD output units.

Linearity in case of disc-shaped or cylindrical objects

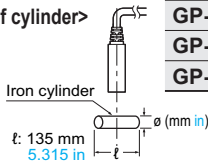
- In case the sensing object is disc-shaped or cylindrical, the linearity varies with the sensing object size. In the event the sensing object is larger than the sizes indicated in the table below, the linearity specification (within ±0.3 % F.S.) is satisfied by performing zero-adjustment and span adjustment when in contact using the scaling function.

<In case of disc>



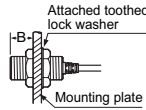
Sensor head	Disc diameter ø (mm in)	Cylinder diameter ø (mm in)
GP-X3SE	6 0.236	16 0.630
GP-X5SE	8 0.315	16 0.630
GP-X8S	12 0.472	50 1.969
GP-X10M	12 0.472	50 1.969
GP-X12ML	25 0.984	55 2.165
GP-X22KL	30 1.181	165 6.496

<In case of cylinder>

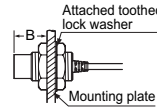


Mounting with nut

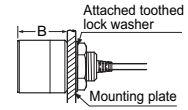
<GP-X10M>



<GP-X12ML>



<GP-X22KL>



Model No.	B (mm in)	Tightening torque
GP-X10M	7 0.276 or more	9.8 N·m or less
GP-X12ML	14 0.551 or more	20 N·m or less
GP-X22KL	20 0.787 or more (Note 1)	20 N·m or less

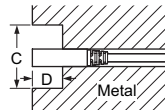
- Notes: 1) Without nut. If a nut is installed, the dimension will be 23.5 mm 0.926 in or more.
2) Mount such that the nuts do not protrude from the threaded portion.

Distance from surrounding metal

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

<Embedding of the sensor head in metal>

- Since the analog output may change if the sensor head is completely embedded in metal, keep the minimum distance specified in the table below.

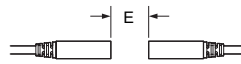


Sensor head	C (mm in)	D (mm in)
GP-X3SE	ø10 ø0.394	3 0.118
GP-X5SE		
GP-X8S		
GP-X10M		
GP-X12ML	ø50 ø1.969	14 0.551
GP-X22KL	ø50 ø1.969	20 0.787

Mutual interference

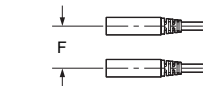
- If several sensor heads are mounted close together, some specifications may not be satisfied. Therefore, proceed with the interference prevention function enabled. The interference prevention function eliminates interference among sensors by alternating sensor oscillations. Contact our office for details about time charts etc.
If not using the interference prevention function, leave a distance more than the values given below.

<Face to face mounting>



Sensor head	E (mm in)	F (mm in)
GP-X3SE	15 0.591	9 0.354
GP-X5SE	30 1.181	11 0.433
GP-X8S	40 1.575	15 0.591
GP-X10M	40 1.575	15 0.591
GP-X12ML	170 6.693	50 1.969
GP-X22KL	200 7.874	200 7.874

<Parallel mounting>

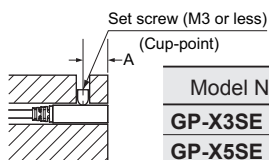


Mounting sensor head

- The tightening torque should be under the value given below.

Mounting with set screw

- Make sure to use an M3 or smaller set screw having a cup-point.



Model No.	A (mm in)	Tightening torque
GP-X3SE	4 to 16 0.157 to 0.630	0.10 N·m or less
GP-X5SE	5 to 16 0.197 to 0.630	0.44 N·m or less
GP-X8S		0.58 N·m or less

Correction coefficient

Sensor head	GP-X3SE	GP-X10M
	GP-X5SE	GP-X12ML
Metal		GP-X8S
		GP-X22KL
Stainless steel (SUS304), Iron	1	
Aluminum	0.5 approx.	

PRECAUTIONS FOR PROPER USE

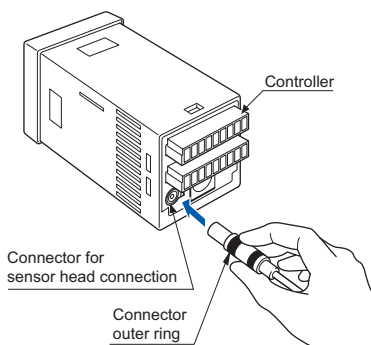
Refer to p.1027 for general precautions.

Connection of sensor head and controller

- Make sure that the power supply is off while connecting the sensor head to the controller.

Connection

- Hold the sensor head's connector by the outer ring and insert it into the connector provided on the controller for sensor head connection. Insert till you hear a click sound.

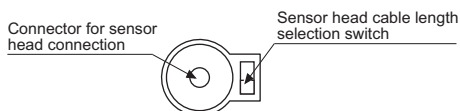


Removing

- When removing, hold the connector outer ring and pull it straight out.

Cable extension for sensor head

- When using a sensor head extension cable, turn the sensor head cable length selection switch side to the controller's sensor head connector to "3 m + 7 m 9.843 ft + 22.966 ft" with the power supply is off. After switching, reintroduce the power supply.

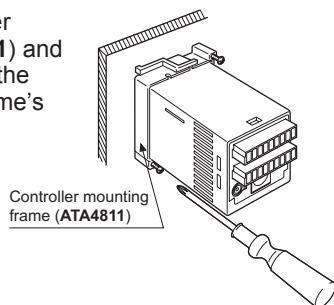


UP side : Standard (3 m 9.843 ft) + extension (7 m 22.966 ft)
 DOWN side : Standard (3 m 9.843 ft) (factory shipment setting)

- The coaxial connector for the extension cable is connected to the 0 V power supply. If installing to a metal plate or similar, insulate the connector from the surrounding metal.

Mounting controller

- Use the attached controller mounting frame (ATA4811) and mount the controller onto the panel by fastening the frame's screws.



- Refer to the "DIMENSIONS" (p.879) for the panel cut-out dimensions.
- The mountable panel thickness is 1 to 5 mm 0.039 to 0.197 in. However, if using a controller communication unit or BCD output unit, make the panel thickness between 1 and 2.5 mm 0.039 and 0.098 in.

Wiring

- Make sure that the power supply is off while wiring.
- Take care that wrong wiring will damage the sensor head or the controller.
- 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 the sensor head or the controller, 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.
- Make sure to use an isolation transformer for the power supply. If an auto-transformer (single winding transformer) is used, this product or the power supply may get damaged.
- In case a surge is generated in the used power supply, connect a surge absorber to the supply and absorb the surge.
- The analog voltage output does not incorporate a short-circuit protection circuit. Do not directly connect a power supply or a capacitive load.
- Make sure that stress by forcible bend or pulling is not applied directly to the sensor cable joint.
- If using separate power supplies for multiple controllers, use the same +V or 0 V supply for all.

Others

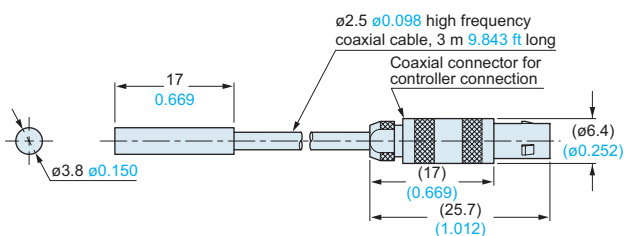
- After turning on the power, wait 15 min. or more [20 min. for the GP-XC3SE(-P) and GP-XC5SE(-P)] before using the product. The power supply circuit is not stable immediately after the power is turned on, and this may cause measurement values to be distorted. In addition, note that there will also be a muting period of approx. 2 sec.
- This sensor is suitable for indoor use only.
- Avoid dust, dirt, and steam.
- Take care that the product does not come in direct contact with water, oil, grease, or organic solvents, such as, thinner, etc.

- FIBER SENSORS
- LASER SENSORS
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- MICRO PHOTO-ELECTRIC SENSORS
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- PRESSURE SENSORS
- INDUCTIVE PROXIMITY SENSORS
- PARTICULAR USE SENSORS
- SENSOR OPTIONS
- WIRE- SAVING SYSTEMS
- MEASURE- MENT SENSORS
- STATIC CONTROL DEVICES
- LASER MARKERS

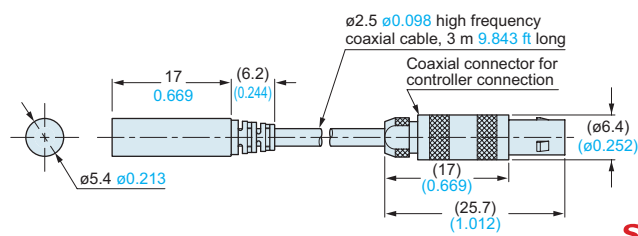
- Selection Guide
- Laser Displacement
- HL-C2
- HL-C1
- LM10
- Magnetic Displacement
- GP-X**
- GP-A
- Collimated Beam Sensors
- HL-T1
- LA-300
- LA
- Other Products

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

GP-X3SE Sensor head



GP-X5SE Sensor head

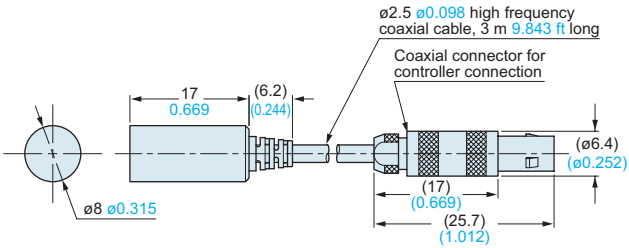


DIMENSIONS (Unit: mm in)

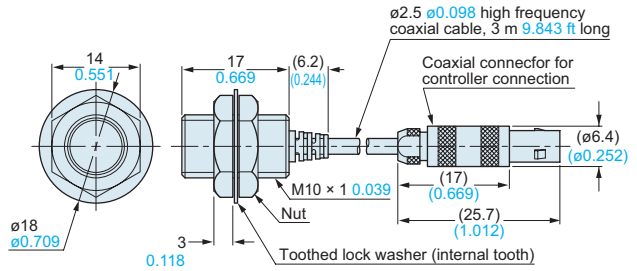
The CAD data in the dimensions can be downloaded from the SUNX website: <http://www.sunx.co.com>

- FIBER SENSORS
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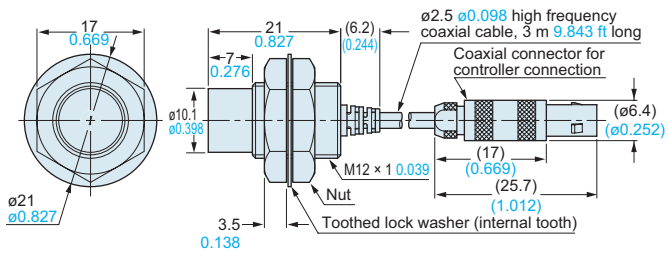
GP-X8S Sensor head



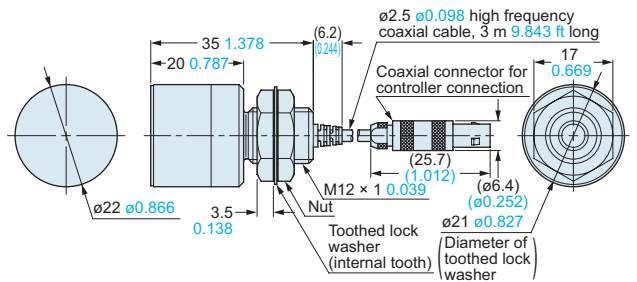
GP-X10M Sensor head



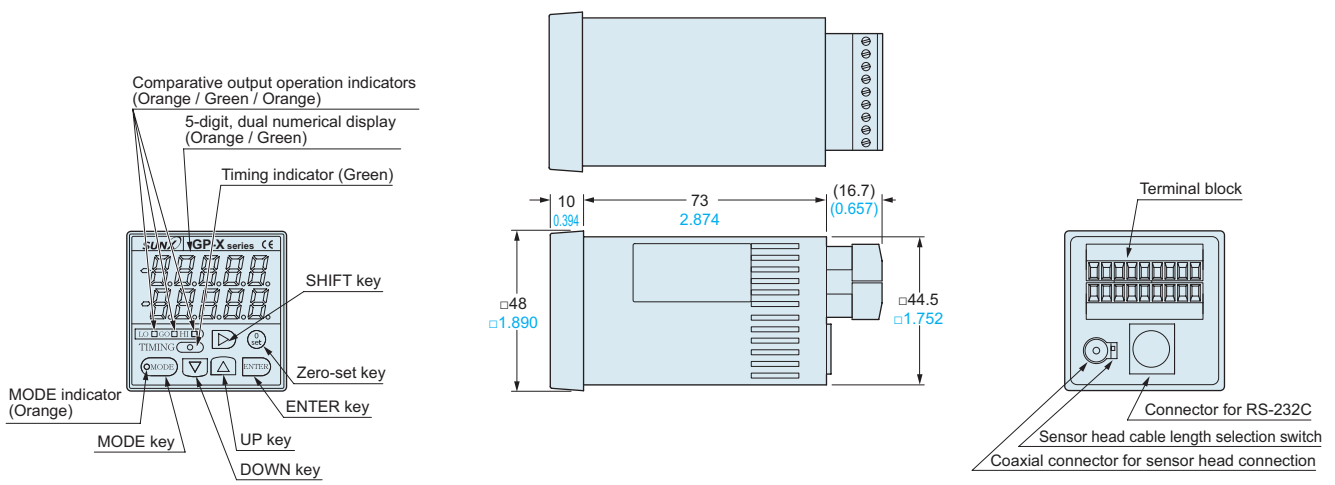
GP-X12ML Sensor head



GP-X22KL Sensor head

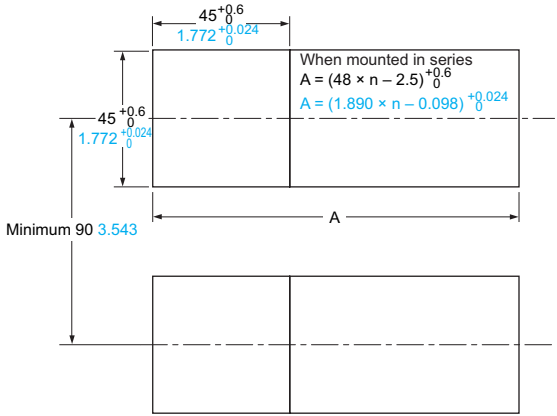


Controller



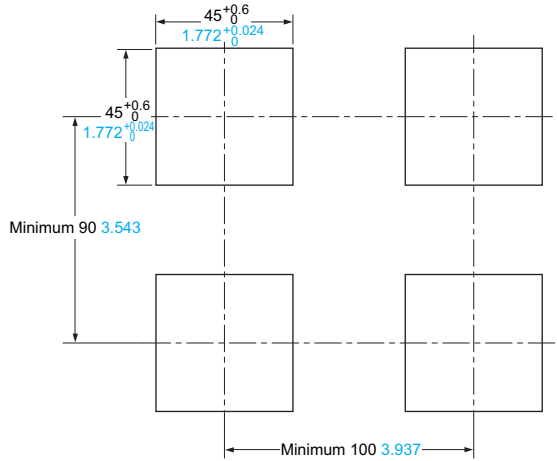
Panel cut-out dimensions

<When BCD output unit / controller communication unit not mounted>



Note: The panel thickness should be 1 to 5 mm 0.039 to 0.197 in.

<When BCD output unit / controller communication unit mounted>



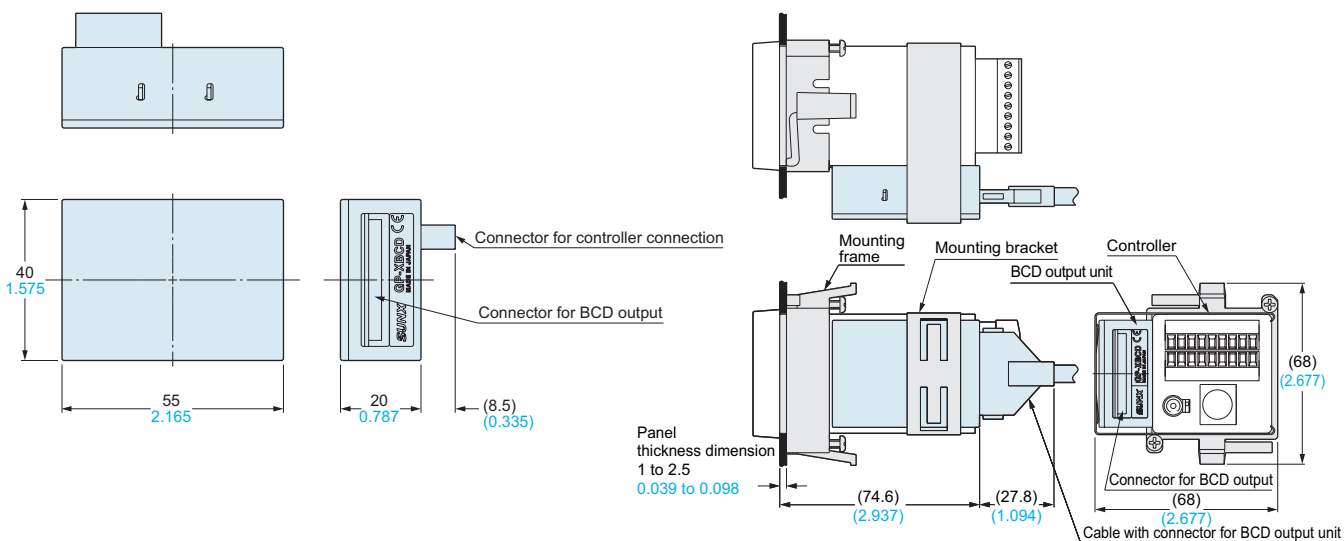
Note: The panel thickness should be 1 to 2.5 mm 0.039 to 0.098 in.

- Selection Guide
- Laser Displacement
- HL-C2
- HL-C1
- LM10
- Magnetic Displacement
- GP-X
- GP-A
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- LA
- Other Products

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

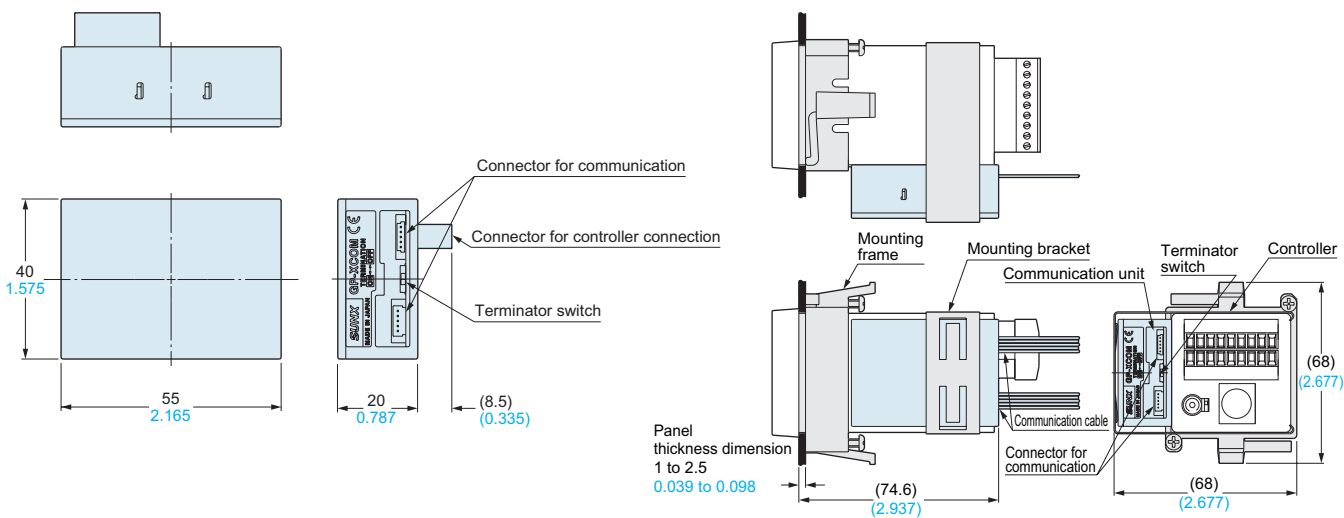
GP-XBCD BCD output unit (Optional)

Assembly dimensions with controller

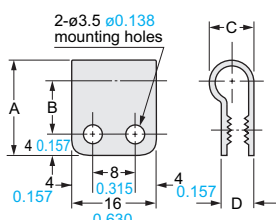


GP-XCOM Controller communication unit (Optional)

Assembly dimensions with controller



MS-SS3 MS-SS5 MS-SS8 Sensor head mounting bracket (Optional)



Material: Nylon 66

Model No.	MS-SS3	MS-SS5	MS-SS8
Symbol			
A	16 0.630	18 0.709	20 0.787
B	9 0.354	10 0.394	11 0.433
C	6.3 0.248	8.3 0.327	10.3 0.406
D	4.9 0.193	6.1 0.240	6.5 0.256
Applicable sensor head model No.	GP-X3SE	GP-X5SE	GP-X8S

FIBER SENSORS

LASER SENSORS

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MICRO PHOTO-ELECTRIC SENSORS

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LA

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