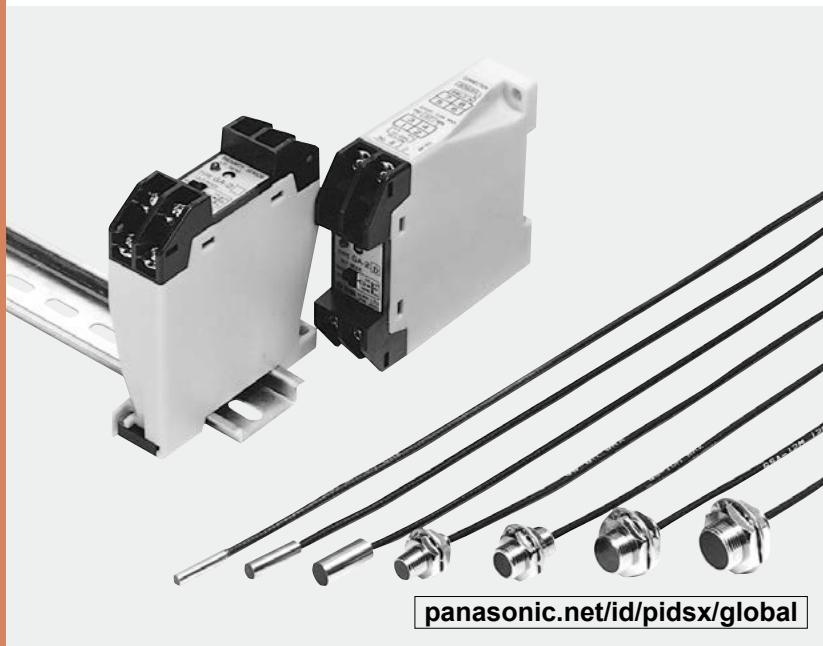


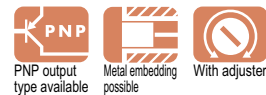
GS SERIES GA SERIES

Related Information

- General terms and conditions..... F-3
- Selection guide P.781~
- Glossary of terms..... P.1576~
- General precautions P.1579~



panasonic.net/id/pidsx/global



Large selection

ORDER GUIDE

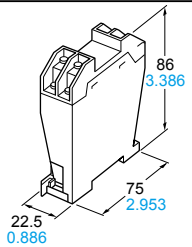
Sensor heads

Type	Appearance (mm in)	Sensing range (Note)	Model No.
Non-threaded type			GS-3S
			GS-5S
			GS-8S
Threaded type			GS-8M
			GS-10M
			GS-12M
			GS-14M
Front sensing type			GS-14T

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.

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- INDUCTIVE PROXIMITY SENSORS**
- PARTICULAR USE SENSORS
- SENSOR OPTIONS
- SIMPLE WIRE-SAVING UNITS
- WIRE-SAVING SYSTEMS
- MEASUREMENT SENSORS
- STATIC CONTROL DEVICES
- LASER MARKERS
- PLC
- HUMAN MACHINE INTERFACES
- ENERGY MANAGEMENT SOLUTIONS
- FA COMPONENTS
- MACHINE VISION SYSTEMS
- UV CURING SYSTEMS
- Selection Guide
- Amplifier Built-in
- Amplifier-separated
- Other Products
- GS/GA**

ORDER GUIDE**Amplifiers**

Appearance (mm in)	Model No.	Supply voltage	Output
	GA-2	90-260 V AC	AC non-contact (Photo-thyristor)
	GA-2R		Relay contact 1a
	GA-2D	10 to 28 V DC	NPN, PNP (2 outputs)

• Be sure to use the sensor head with the amplifier as a set.

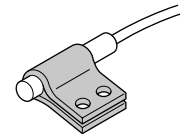
OPTIONS

Designation	Model No.	Description
Sensor head mounting bracket	MS-SS3	Mounting bracket for GS-3S
	MS-SS5	Mounting bracket for GS-5S
	MS-SS8	Mounting bracket for GS-8S

Sensor head mounting bracket

- **MS-SS**□

The sensor head can be easily fixed.

**SPECIFICATIONS****Sensor heads**

Type		Non-threaded type			Threaded type				Front sensing type
		GS-3S	GS-5S	GS-8S	GS-8M	GS-10M	GS-12M	GS-14M	
Item	Model No.								
Applicable amplifiers		GA-2, GA-2R, GA-2D							
Max. operation distance (Note 2)		2 mm 0.079 in	3 mm 0.118 in	4 mm 0.157 in	3.5 mm 0.138 in	4 mm 0.157 in	6 mm 0.236 in	8 mm 0.315 in	8 mm 0.315 in
Stable sensing range (Note 2)		0 to 0.8 mm 0 to 0.031 in	0 to 1mm 0 to 0.039 in	0 to 2 mm 0 to 0.079 in	0 to 1.5 mm 0 to 0.059 in	0 to 2 mm 0 to 0.079 in	0 to 3 mm 0 to 0.118 in	0 to 5 mm 0 to 0.197 in	0 to 5 mm 0 to 0.197 in
Standard sensing object		Iron sheet 18 × 18 × t 1 mm 0.709 × 0.709 × t 0.039 in							
Hysteresis		50 μm 1.969 mil or less					60 μm 2.362 mil or less	70 μm 2.756 mil or less	
Repeatability (Note 3)		2 μm 0.079 mil or less	2.5 μm 0.098 mil or less	5 μm 0.197 mil or less	3 μm 0.118 mil or less	5 μm 0.197 mil or less			
Environmental resistance	Protection	IP67 (IEC)							
	Ambient temperature	-10 to +60 °C 14 to +140 °F , Storage: -10 to +60 °C 14 to +140 °F							
	Ambient humidity	35 to 95 % RH, Storage: 35 to 95 % RH							
	Vibration resistance	10 to 55 Hz frequency, 1.5 mm 0.059 in double 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 three times each							
Material		Enclosure: Stainless steel [threaded type sensor head: Brass (Nickel plated)], Resin part: PVC							
Cable		Oil-resistant high frequency coaxial cable, 3 m 9.843 ft long (intrinsic impedance: 50Ω) (Note 4)							
Cable extension		Extension up to total 8 m 26.247 ft is possible with an equivalent cable (Note 4)							
Net weight (Note 5)		35 g approx.	36 g approx.	37 g approx.	44 g approx.	45 g approx.	50 g approx.	53 g approx.	46 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 +23 °C **+73.4 °F**.

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

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

3) The repeatability is given for the stable sensing range. (along sensing axis, perpendicular to sensing axis)

4) If the cable of the sensor head is cut or extended, the sensing range and the hysteresis change.

5) The weight of the threaded type includes the weight of two nuts and one toothed lock washer.

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AREA SENSORS

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PRESSURE / FLOW SENSORS

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PARTICULAR USE SENSORS

SENSOR OPTIONS

SIMPLE WIRE-SAVING UNITS

WIRE-SAVING SYSTEMS

MEASUREMENT SENSORS

STATIC CONTROL DEVICES

LASER MARKERS

PLC

HUMAN MACHINE INTERFACES

ENERGY MANAGEMENT SOLUTIONS

FA COMPONENTS

MACHINE VISION SYSTEMS

UV CURING SYSTEMS

Selection Guide

Amplifier Built-in

Amplifier-separated

Other Products

GS/GA

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MEASUREMENT SENSORS
STATIC CONTROL DEVICES
LASER MARKERS
PLC
HUMAN MACHINE INTERFACES
ENERGY MANAGEMENT SOLUTIONS
FA COMPONENTS
MACHINE VISION SYSTEMS
UV CURING SYSTEMS
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Amplifier Built-in
Amplifier-separated
Other Products

SPECIFICATIONS

The CAD data can be downloaded from our website.

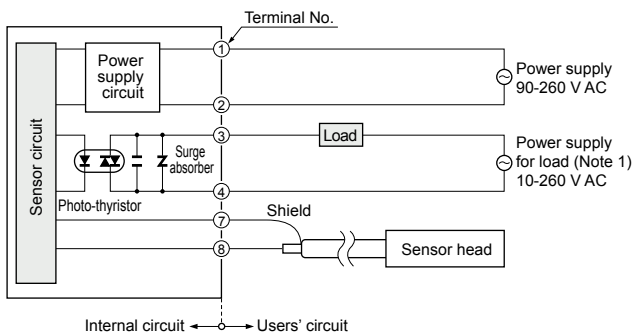
Amplifiers

Item	Type	AC supply type		DC supply type
	Model No.	GA-2	GA-2R	GA-2D
Supply voltage		90-260 V AC		10 to 28 V DC
Power / current consumption		2.5 VA approx.	9 VA approx.	20 mA approx.
Output	AC non-contact (Photo-thyristor) • Switching capacity: 260 V AC 2 to 100 mA	Relay contact 1a • Switching capacity: 250 V AC 2 A (resistive load) • Rated load life: 500,000 or more switching operations		NPN open-collector transistor • Maximum sink current: 200 mA • Applied voltage: 30 V DC or less (between output and 0 V) • Residual voltage: 1.5 V or less (at 200 mA sink current) 0.4 V or less (at 16 mA sink current) • Short-circuit protection PNP open-collector transistor • Maximum source current: 200 mA • Residual voltage: 1.5 V or less (at 200 mA source current) • Short-circuit protection
Output operation	Selectable either Normally open or Normally closed			
Response time	10 ms or less		1 ms or less	
Operation indicator	Red LED (lights up when the output is ON)			
Sensitivity adjuster	15-turn potentiometer			
Ambient temperature	-10 to +60 °C -14 to +140 °F (No dew condensation or icing allowed), Storage: -10 to +60 °C -14 to +140 °F			
Ambient humidity	35 to 85 % RH, Storage: 35 to 85 % RH			
Material	Cover: ABS, Terminal part: PBT			
Net weight	130 g approx.	150 g approx.	75 g approx.	
Accessory	Adjusting screwdriver: 1 pc.			

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

I/O CIRCUIT DIAGRAMS

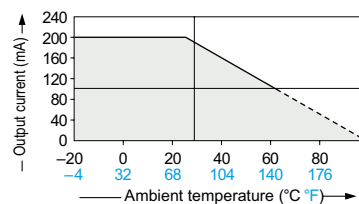
GA-2



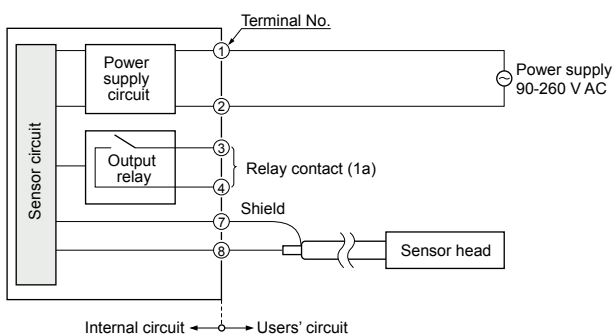
Note: The sensor is damaged if connected with no load.

Table of output current and temperature characteristic

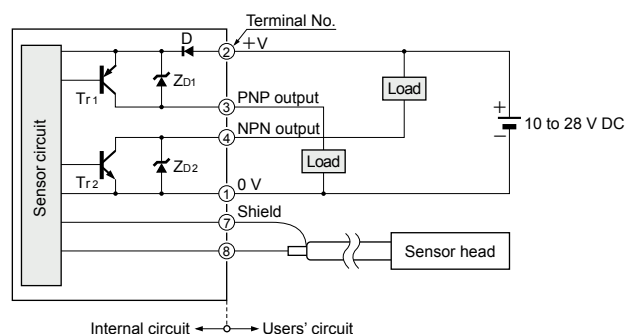
The output current to be used should be less than the values shown on the table below depending on the maximum ambient temperature.



GA-2R



GA-2D

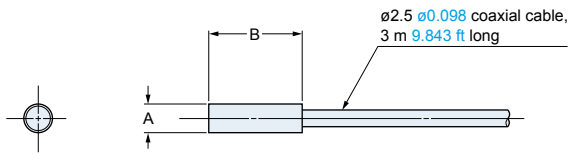


Symbols ... D: Reverse supply polarity protection diode
ZD1, ZD2: Surge absorption zener diode
Tr1: PNP output transistor
Tr2: NPN output transistor

DIMENSIONS (Unit: mm in)

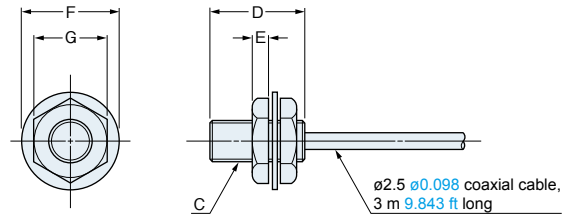
The CAD data can be downloaded from our website.

GS-3S GS-5S GS-8S Sensor head



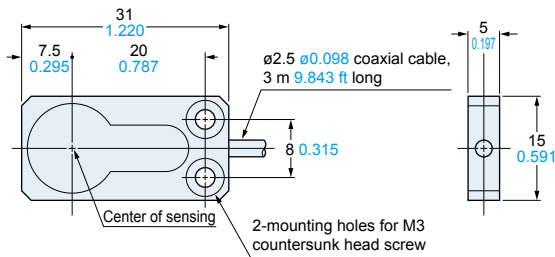
Model No.	Symbols	A	B
GS-3S		ø3.8 ø0.150	18 0.709
GS-5S		ø5.4 ø0.213	
GS-8S		ø8 ø0.315	

GS-8M GS-10M GS-12M GS-14M Sensor head

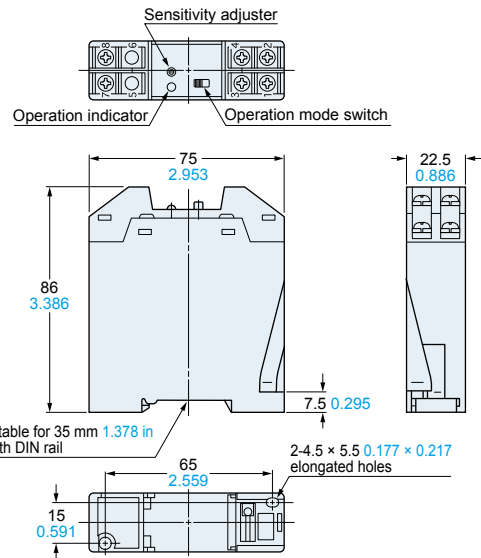


Model No.	Symbols	C	D	E	F	G
GS-8M		M8 × 1 0.039	18 0.709	3 0.118	ø15 ø0.591	12 0.472
GS-10M		M10 × 1 0.039			ø18 ø0.709	14 0.551
GS-12M		M12 × 1 0.039	18 0.709	3.5 0.138	ø21 ø0.827	17 0.669
GS-14M		M14 × 1 0.039			ø23 ø0.906	19 0.748

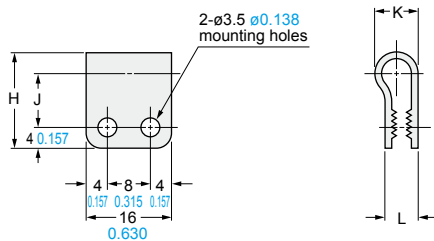
GS-14T Sensor head



GA-2 GA-2R GA-2D Amplifier



MS-SS3 MS-SS5 MS-SS8 Sensor head mounting bracket for non-threaded type (Optional)



Material: Nylon 66

Model No.	MS-SS3	MS-SS5	MS-SS8
Symbols			
H	16 0.630	18 0.709	20 0.787
J	9 0.354	10 0.394	11 0.433
K	6.3 0.248	8.3 0.327	10.3 0.406
L	4.9 0.193	6.1 0.240	6.5 0.256
Applicable sensor head model No.	GS-3S	GS-5S	GS-8S

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