

Thank you very much for purchasing Panasonic products. Read this Instruction Manual carefully and thoroughly for the correct and optimum use of this product. Kindly keep this manual in a convenient place for quick reference.

WARNING

- Never use this product as a device for personnel protection.
- When using devices for personnel protection, use products that meet the laws and standards for personnel protection that apply in each region or country, such as OSHA, ANSI and IEC.

This document provides a brief summary of mounting and other related information. For detailed information, refer "our web site (<https://panasonic.net/id/pidsx/global>)".

1 STANDARDS AND REGULATIONS

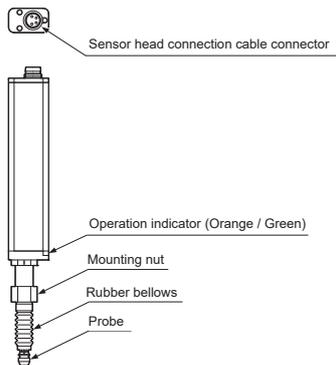
- This product conforms to the standards and regulations below.
<European Directives>
EMC Directive



2 CONTENTS OF PACKAGE

- Sensor head 1 pc.
- Mounting nut 1 pc.
- Sensor head fastening wrench 1 pc.
- Rubber bellows (HG-S□R only) 1 pc.
- Instruction Manual (English / Japanese, Chinese / Korean) 2 pcs.
- General Information for Safety, Compliance, and Instructions(23 languages) 1 pc.

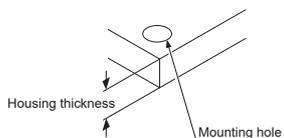
3 DESCRIPTION OF PARTS



4 MOUNTING

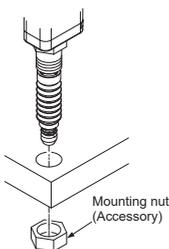
- When tightening the mounting nut, take care not to damage the rubber bellows.
- If the rubber bellows is deformed, a load will occur when the spindle operates and damage may result.
- Note that the mounting direction of the provided mounting nut differs according to the thickness of the housing.

1. Open a hole in the housing in which the sensor head will be mounted.

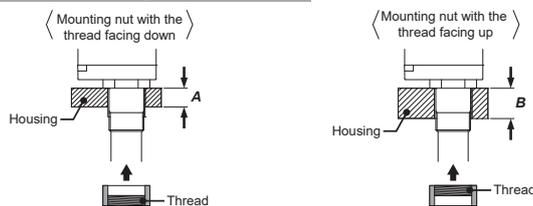


	Mounting hole	Housing thickness
HG-S1010 (R) 、 HG-S1110 (R)	ø8H7(+0.015/0)mm	6.5~12.5mm
HG-S1032	ø12H7(+0.018/0)mm	6.5~10.5mm
HG-S1050		6.5~12.5mm

2. Insert the sensor head into the hole you opened in the housing, and fasten lightly with the provided mounting nut.



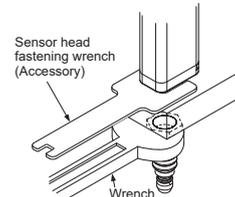
Installation of mounting nut attachment



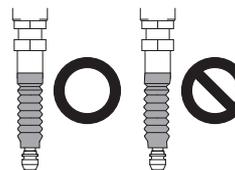
	Housing thickness	
	A	B
HG-S1010 (R) 、 HG-S1110 (R)	6.5~10mm	10~12.5mm
HG-S1032	6.5~8.5mm	8.5~10.5mm
HG-S1050		8.5~12.5mm

3. Fasten the sensor head.

When fastening the sensor head, tighten the mounting nut with a wrench while holding the sensor head in place with the sensor head fastening wrench as shown at right. Tighten to a torque of 12.5N·m or less (HG-S1032 / HG-S1050: 15N·m or less).



4. Make sure that the rubber bellows has not become deformed as shown at right. If the rubber bellows is deformed, restore the normal shape by rotating the bellows or otherwise.

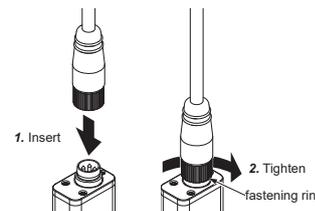


Connecting the sensor head connection cable

- When attaching the connector, make sure it is firmly tightened. If loose, the connector may come off and cause an error.
- When disconnecting, always make sure that the fastening ring has been completely loosened before pulling out the cable. Risk of damage if you pull the cable with excessive force (15N or more) with the fastening ring tightened.

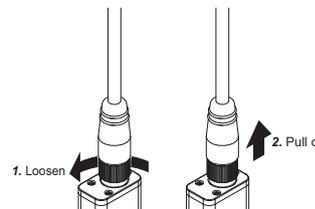
How to connect

1. Insert the sensor head connection cable into the connector for the sensor head connection cable on the sensor head.
2. Turn the fastening ring on the sensor head connector in the direction shown to firmly tighten the ring.



How to remove

1. Turn the fastening ring on the sensor head connector in the direction shown to loosen the ring.
2. Grasp the connector and pull up to remove the cable.



5 SPECIFICATIONS

Type	10mm type			
	General purpose		High precision	
	Standard type	Low measuring force type	Standard type	Low measuring force type
Model No.	HG-S1010	HG-S1010R	HG-S1110	HG-S1110R
Position detection method	Optical absolute linear encoder method			
Measurement range	10mm			
Stroke	10.5mm or more			
Measuring force (Note 1) (Note 2)	Downward mount	1.65N or less 1.10N (Note 3)	0.35N or less 0.30N (Note 3)	1.65N or less 1.10N (Note 3)
	Upward mount	1.35N or less 0.85N (Note 3)	—	1.35N or less 0.85N (Note 3)
	Side mount	1.50N or less 0.95N (Note 3)	0.25N or less 0.20N (Note 3)	1.50N or less 0.95N (Note 3)
Resolution	0.5µm		0.1µm	
Sampling cycle	1ms			
Indication accuracy (P-P)	Full range	2.0µm or less		1.0µm or less
	Limited range	1.0µm or less (any 60µm)		0.5µm or less (any 60µm)
Hot swap function	Incorporated			
Protective structure	IP67 (IEC) (Note 4)	—	IP67 (IEC) (Note 4)	—
Ambient temperature	-10 to +55°C (No dew condensation or icing allowed), Storage: -20 to +60°C			
Ambient humidity	35 to 85% RH, Storage: 35 to 85% RH			
Mechanical life (Note5)	100 million times or more (reference value)			
Tip deviation amount	35µm (typical value)			
Grounding method	Capacitor grounding			
Material	Body: Zinc, Holder: Stainless steel, Spindle: Tool steel, Probe: Ceramic, Rubber bellows: NBR (black)			
Weight (main unit only)	Approx. 80g			

Notes: 1) Measured at an ambient temperature of +20°C, unless otherwise specified.
2) HG-S-R is standard state without the rubber bellows.
3) Typical value near center of measurement.
4) Excludes damage and deterioration to the rubber bellows due to external causes.
5) Typical value in a clean environment in which there is no contact with liquids such as water or oil, and no settling of particulate matter.

Type	32mm type		50mm type	
	General purpose Standard type			
Model No.	HG-S1032		HG-S1050 (Note 1)	
Position detection method	Optical absolute linear encoder method			
Measurement range	32mm		50mm	
Stroke	32.5mm or more		50.5mm or more	
Measuring force (Note 2)	Downward mount	2.97N or less 1.90N (Note 3)	3.80N or less 1.90N (Note 3)	
	Upward mount	2.09N or less 1.19N (Note 3)	3.20N or less 1.40N (Note 3)	
	Side mount	2.53N or less 1.50N (Note 3)	3.40N or less 1.70N (Note 3)	
Resolution	0.5µm			
Sampling cycle	1ms			
Indication accuracy (P-P)	Full range	3.0µm or less	3.5µm or less	
	Limited range	2.0µm or less (any 60µm)	-	
Hot swap function	Incorporated			
Protective structure	IP67 (IEC) (Note 4)			
Ambient temperature	-10 to +55°C (No dew condensation or icing allowed), Storage: -20 to +60°C			
Ambient humidity	35 to 85% RH, Storage: 35 to 85% RH			
Mechanical life (Note 5)	30 million times or more (reference value)		10 million times or more (reference value)	
Tip deviation amount	40µm (typical value)			
Grounding method	Capacitor grounding			
Material	Body: Aluminium, Holder: Free-cutting steel, Spindle: Tool steel, Probe: Ceramic, Rubber bellows: NBR (black)			
Weight (main unit only)	Approx. 150g		Approx. 180g	

Notes: 1) Connect to an HG-SC series controller manufactured in February 2019 or later.
2) Measured at an ambient temperature of +20°C, unless otherwise specified.
3) Typical value near center of measurement.
4) Excludes damage and deterioration to the rubber bellows due to external causes.
5) Typical value in a clean environment in which there is no contact with liquids such as water or oil, and no setting of particulate matter.

6 CAUTIONS

The special sensor head **HG-S□** is designed to be used with the controller **HG-SC□**. If used with other than the special sensor head option, the specifications will not be met and product malfunctioning or damage may occur.

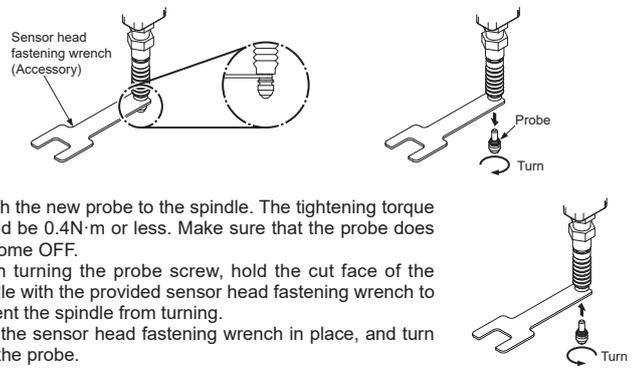
- This device has been developed / produced for industrial use only.
- Do not use this product outside the range of the specifications. Risk of an accident and product damage. There is also a risk of a noticeable reduction of service life.
- Deviations may occur in the measured value at the bottom dead point. Do not use the bottom dead point as a standard.
- Do not wire in parallel with a high-voltage line or power line, or run through the same conduit. Risk malfunctioning due to induction.
- Verify that the supply voltage fluctuations are 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.
- Do not use during the initial transient time after the power supply is switched ON.
- Do not apply stress such as excessive bending or pulling to the extracted part of a cable.
- When attaching the sensor head connection cable to this product, do not apply force to the product.
- Only one joint (optional) can be installed to one sensor head.
- If the Low measuring force type (**HG-S1010R/HG-S1110R**) is mounted in a lateral position and used with a roller-type probe (**HG-SS40U**, optional), the joint (optional) cannot be used.
- This product is suitable for indoor use only.
- Avoid dust, dirt, and steam.
- Do not use this sensor in places where it may come in contact with corrosive gas, etc.
- Ensure that the product does not come into contact with organic solvents such as thinner.
- Ensure that the product does not come into contact with strong acid or alkaline.
- Ensure that the product does not come into contact with oil or grease.
- This product cannot be used in an environment containing flammable or explosive gases.
- Performance may not be satisfactory in a strong electromagnetic field.
- This product is a precision device. Do not drop or otherwise subject to shock. Risk of product damage.
- Do not allow excessive horizontal force to be applied to the spindle. This may cause reduced accuracy and durability.
- The standard rubber bellows is a consumable part. Replace it regularly as a preventive maintenance. The rubber bellows can deteriorate quickly depending on usage environment. If it deteriorates, it generates cracks and other problems, causing dust and water to enter and resulting in a malfunction.
- Never remove the standard rubber bellows except for replacement.
- Risk of product damage due to infiltration by dust, water, or other contaminants.
- When the product becomes unusable or unneeded, dispose of the product appropriately as industrial waste.
- Never attempt to disassemble, repair, or modify the product.

7 MAINTENANCE

How to replace the probe

- Always secure the spindle to prevent rotation before replacing the probe. Risk of product damage if an excessive torque (0.2N·m or more) is applied to the spindle.
- If the rubber bellows is damaged or deformed during probe replacement, the specifications of the protective structure may not be satisfied.

1. Turn the probe screw in the direction of the arrow and remove the probe from the spindle. When turning the probe screw, hold the cut face of the spindle with the provided sensor head fastening wrench to prevent the spindle from turning. Hold the sensor head fastening wrench in place, and turn only the probe.



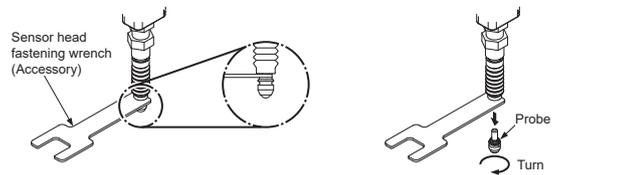
2. Attach the new probe to the spindle. The tightening torque should be 0.4N·m or less. Make sure that the probe does not come OFF. When turning the probe screw, hold the cut face of the spindle with the provided sensor head fastening wrench to prevent the spindle from turning. Hold the sensor head fastening wrench in place, and turn only the probe.

3. After attaching the probe, wipe the spindle with absolute alcohol to remove any dirt.

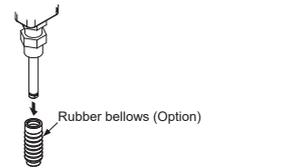
How to replace the rubber bellows

- When replacing the rubber bellows, take care that no dirt or other contaminants get on the spindle. Risk of malfunctioning. If any dirt gets on the spindle, wipe clean with absolute alcohol. Do not allow the rubber bellows to become twisted during attachment.
- Note that the measuring force will vary depending on the attachment state of the rubber bellows.
- If the rubber bellows is deformed, a load will occur when the spindle operates and damage may result.

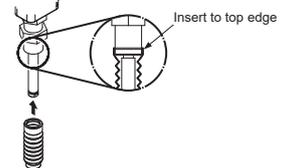
1. Turn the probe screw in the direction of the arrow and remove the probe from the spindle. When turning the probe screw, hold the cut face of the spindle with the provided sensor head fastening wrench to prevent the spindle from turning. Hold the sensor head fastening wrench in place, and turn only the probe.



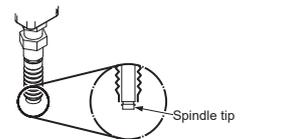
2. Remove the rubber bellows from the spindle.



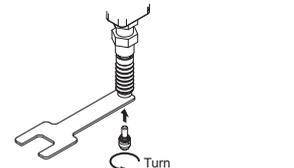
3. Fit the new rubber bellows onto the spindle. Insert to the top edge of the spindle as shown at right.



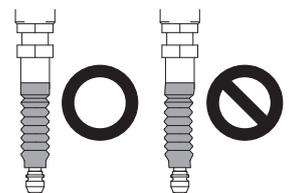
4. Push the rubber bellows up with your finger until the tip of the spindle is exposed as shown at right.



5. Attach the probe to the spindle. The tightening torque should be 0.4N·m or less. Make sure that the probe does not come OFF. When turning the probe screw, hold the cut face of the spindle with the provided sensor head fastening wrench to prevent the spindle from turning. Hold the sensor head fastening wrench in place, and turn only the probe.



6. Make sure that the rubber bellows has not become deformed as shown at right. If the rubber bellows is deformed, restore the normal shape by rotating the bellows or otherwise.



Panasonic Corporation

Panasonic Industrial Devices SUNX Co., Ltd.

<https://panasonic.net/id/pidsx/global>

Please visit our website for inquiries and about our sales network.

PRINTED IN JAPAN

© Panasonic Industrial Devices SUNX Co., Ltd. 2020