Panasonic

Contact-Type

Digital Displacement Sensor Head

10 mm 0.394 in type: General purpose **HG-S1010(R)**

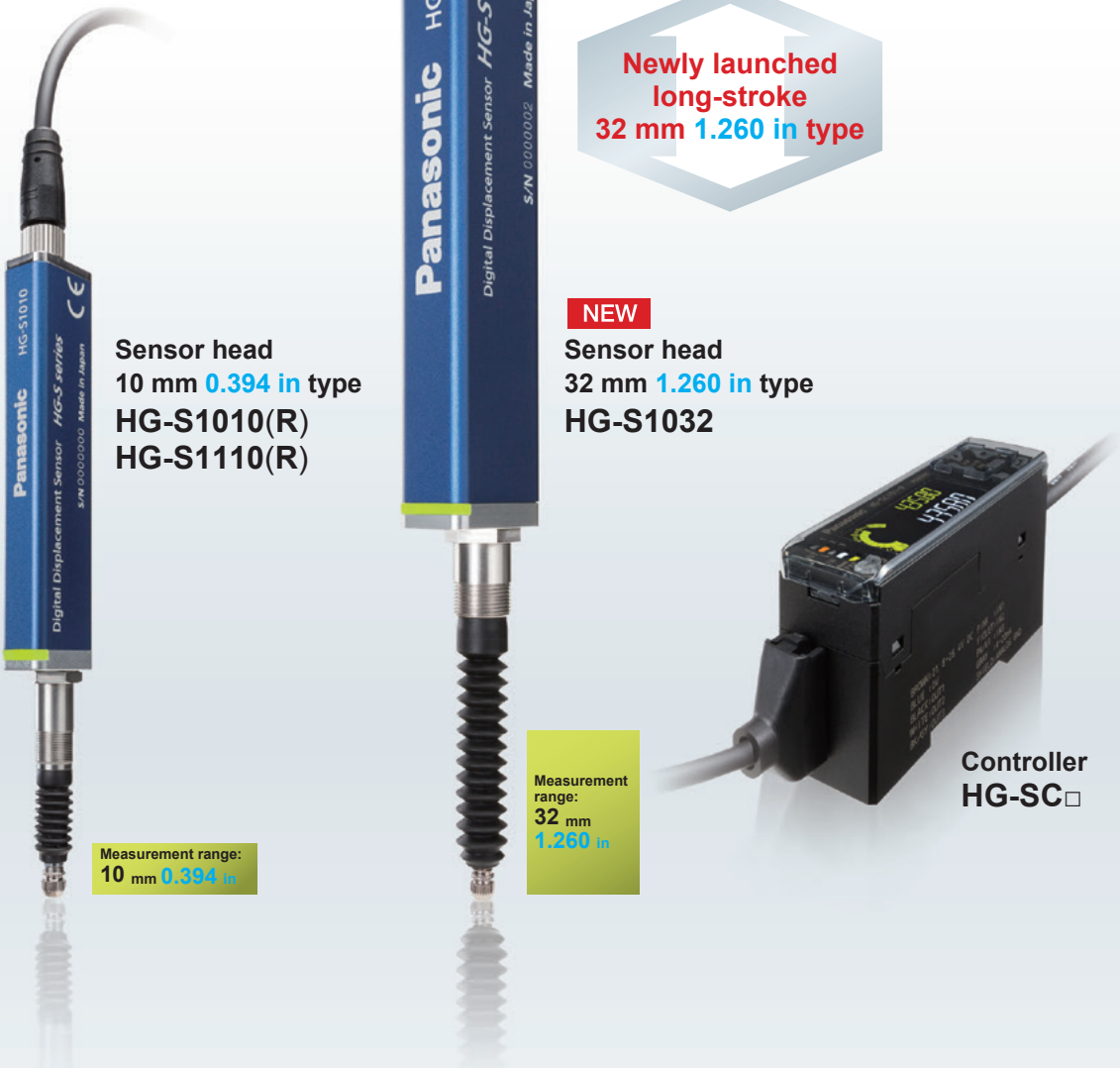
10 mm 0.394 in type: High precision **HG-S1110(R)**

NEW 32 mm 1.260 in type: General purpose **HG-S1032**

CE

Robust and slim body contributes to a longer service life

The optical absolute method eliminates “value skipping” and “unset zero point”!



Newly launched long-stroke 32 mm 1.260 in type

Sensor head
10 mm 0.394 in type
HG-S1010(R)
HG-S1110(R)

Measurement range: 10 mm 0.394 in

NEW

Sensor head
32 mm 1.260 in type
HG-S1032

Measurement range: 32 mm 1.260 in

Controller
HG-SC□

Robust and slim body contributes to a longer service life

The optical absolute method eliminates “value skipping” and “unset zero point”!

Robust and slim body

Plain bearings with 2-point support structure

A new structure supports the spindle with upper and lower plain bearings to significantly increase rigidity. Unlike ball bearings, these bearings efficiently disperse lateral loads on the spindle, significantly reducing the risk of breakage.

Metal guide whirl-stop structure

Spindle whirl-stop is accomplished by means of a metal guide requiring a several µm level assembly precision. Unlike a plastic guide, the risk of measurement error and glass scale breakage caused by deformation, wear, and other deterioration is significantly reduced.

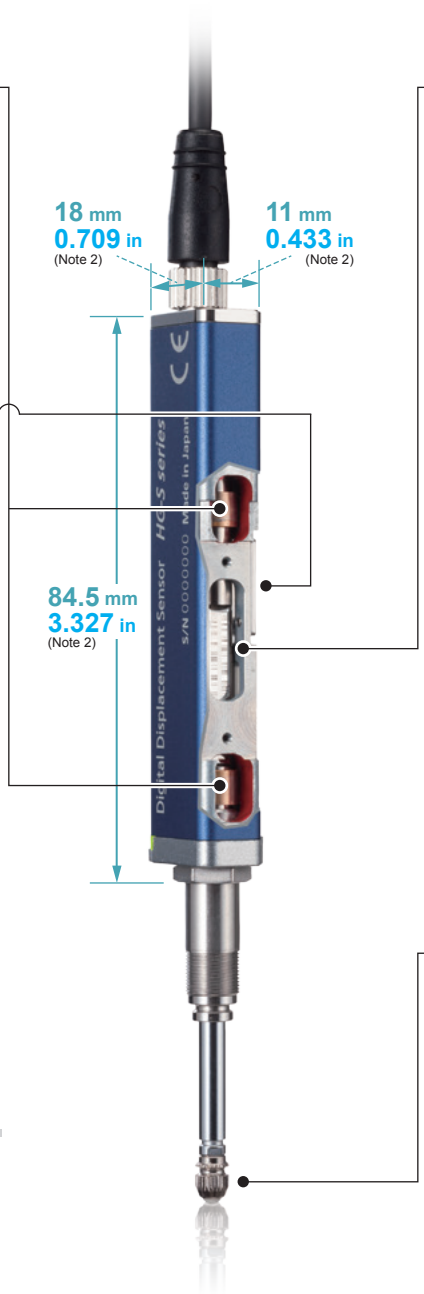
Durability to withstand more than 200 million horizontal and 200 million vertical sliding operations (reference value) (Note 1)

Bending-resistant cable

A bending-resistant cable provides peace of mind even when the sensor is installed on a movable tool.

Hot-swappable

The sensor head can be replaced without turning OFF the instrument power.



Slim body

Box type with an ultra-slim 11 mm 0.433 in width. Lightweight as well. (Note 2)

Optical absolute method

No “value skipping” or “unset zero point”

Displacement is measured by reading a glass scale with a different slit pattern at each reading position using a high-resolution sensor. This eliminates “value skipping” even when measuring at high speed, and there is no concern of “unset zero point”.

Class-top accuracy

High precision sensor head [HG-S1110(R)]

Resolution	Indication accuracy
0.1 µm 0.004 mil	Full range: 1.0 µm 0.039 mil or less Narrow range: 0.5 µm 0.020 mil or less

Resolution No. 1* in class

Indication accuracy No. 1* in class

* As of January 2017, according to our survey.

Tip deviation amount of 35 µm 1.378 mil or less

[Less than 40 µm 1.574 mil on the **HG-S1032**]

Tip deviation, which impairs measurement accuracy, is minimized.
The precision with which the **HG-S** series is assembled makes this possible.

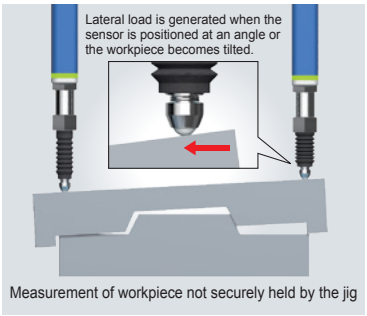
Notes: 1) Value on the **HG-S1010 / HG-S1110**.
2) Value on the **HG-S1010(R) / HG-S1110(R)**.

Resistance to lateral load

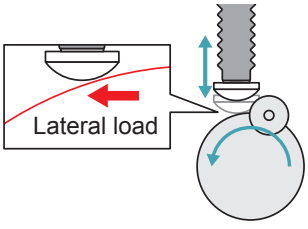
Withstands more than 200 million sliding operations under application of lateral load (reference value) (Note 3)

Lateral load resistance No. 1* in class

* As of January 2017, according to our survey.



Lateral load resistance test (Note 4)



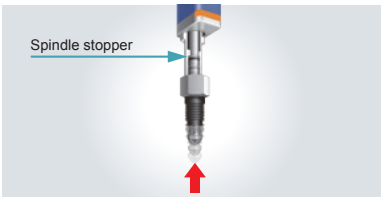
Resistant to upward thrust impact

Spindle stopper installed at the lower section

Even if unexpected upward thrust occurs, the lower part of the spindle blocks the impact. Damage to the internal structure, including the glass scale, is minimized.

Vibration / impact resistance No. 1* in class

* As of January 2017, according to our survey.



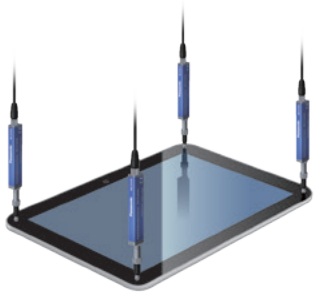
3) Value on the **HG-S1010 / HG-S1110**.
4) Button-type probe for evaluation purposes was installed on the test sample for the lateral load resistance test.

Applications

Coupling assembly inspection

Transmission parts height measurement

Tablet surface flatness measurement



SPECIFICATIONS

For specifications other than those of the sensor head, refer to the **HG-S** series catalog or our website.

Item \ Type		10 mm 0.394 in type				32 mm 1.260 in type
		General purpose		High precision		General purpose
	Model No.	Standard **HG-S1010**	Low measuring force **HG-S1010R**	Standard **HG-S1110**	Low measuring force **HG-S1110R**	Standard **HG-S1032**
Applicable CE marking directives		EMC Directive, RoHS Directive				
Compatible controller		**HG-SC101**(**-P**), **HG-SC111**(**-P**), **HG-SC112**(**-P**), **HG-SC113**				
Position detection method		Optical absolute linear encoder method				
Measurement range		10 mm 0.394 in				32 mm 1.260 in
Stroke		10.5 mm 0.413 in or more				32.5 mm 1.280 in or more
Measuring force (Note 1, 2)	Downward mount	1.65 N or less 1.10 N (Note 3)	0.35 N or less 0.30 N (Note 3)	1.65 N or less 1.10 N (Note 3)	0.35 N or less 0.30 N (Note 3)	2.97 N or less 1.90 N (Note 3)
	Upward mount	1.35 N or less 0.85 N (Note 3)	—	1.35 N or less 0.85 N (Note 3)	—	2.09 N or less 1.19 N (Note 3)
	Side mount	1.50 N or less 0.95 N (Note 3)	0.25 N or less 0.20 N (Note 3)	1.50 N or less 0.95 N (Note 3)	0.25 N or less 0.20 N (Note 3)	2.53 N or less 1.50 N (Note 3)
Resolution		0.5 µm 0.020 mil		0.1 µm 0.004 mil		0.5 µm 0.020 mil
Sampling period		1 ms				
Indication accuracy (P-P) (Note 1)		Full range: 2.0 µm 0.079 mil or less Narrow range: 1.0 µm 0.039 mil or less (any 60 µm 2.362 mil)		Full range: 1.0 µm 0.039 mil or less Narrow range: 0.5 µm 0.020 mil or less (any 60 µm 2.362 mil)		Full range: 3.0 µm 0.118 mil or less Narrow range: 2.0 µm 0.079 mil or less (any 60 µm 2.362 mil)
Tip deviation amount		35 µm 1.378 mil (typical)				40 µm 1.575 mil (typical)
Hot swap function		Incorporated				
Operation indicator		2-color LED (Orange / Green)				
Environmental resistance	Protective structure	IP67 (IEC) (Note 4)	—	IP67 (IEC) (Note 4)	—	IP67 (IEC) (Note 4)
	Ambient temperature	-10 to +55 °C +14 to +131 °F (No condensation or icing), Storage: -20 to +60 °C -4 to +140 °F				
	Ambient humidity	35 to 85 % RH, Storage: 35 to 85 % RH				
	Insulation resistance	100 MΩ or more at 250 V DC				
	Vibration resistance	10 to 500 Hz frequency (**HG-S1032**: 10 to 150 Hz frequency), 3 mm 0.118 in double amplitude (Maximum acceleration 196 m/s^2) in X, Y and Z directions for two hours each				
	Shock resistance	1,960 m/s^2 acceleration in X, Y and Z directions three times each				
Mechanical life (Note 5)		100 million times or more (typical)				30 million times or more (typical)
Mounting nut tightening strength		12.5 N·m				15 N·m
Probe tightening torque		0.1 to 0.4 N·m (no force applied to main unit)				
Grounding method		Capacitor grounding				
Material		Body: Zinc (**HG-S1032**: Aluminum), Holder: Stainless steel, Spindle: Tool steel (**HG-S1032**: Free-cutting steel), Probe (Note 6): Ceramic, Rubber bellows: NBR (black)				
Weight		Main unit weight: 80 g approx.				Main unit weight: 150 g approx.
Accessories		Standard type (**HG-S1010** / **HG-S1110** / **HG-S1032**): Sensor head fastening wrench 1 pc., Mounting nut 1 pc. Low measuring force type (**HG-S1010R** / **HG-S1110R**): Sensor head fastening wrench 1 pc., Mounting nut 1 pc., Rubber bellows 1 pc.				

Notes: 1) Measured at an ambient temperature of +20 °C +68 °F.
2) In the case of low measurement force type (**HG-S1010R** / **HG-S1110R**), measurements were obtained with products in standard configuration without rubber bellows.
3) Typical value near center of measurement.
4) Excludes damage and deterioration to rubber bellows due to external causes.
5) Typical value in a clean environment with no contact with dust or liquids such as water and oil.
6) The probes (optional) are also available.

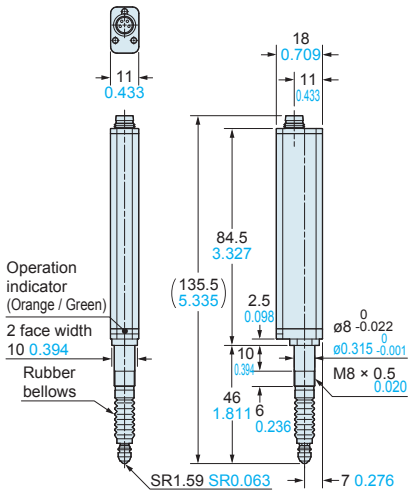
DIMENSIONS (Units: mm in)

For dimensions other than those of the sensor head, refer to the **HG-S** series catalog or our website.
The CAD data can be downloaded from our website.

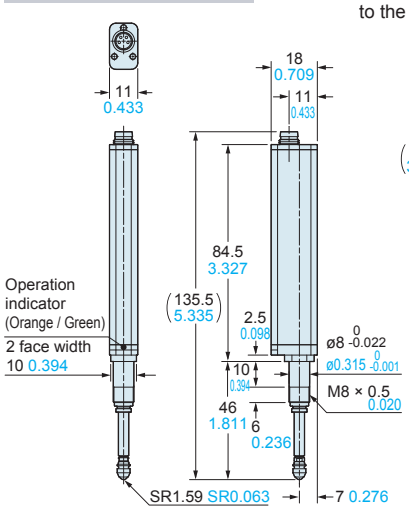
HG-S1010(R) HG-S1110(R)

Sensor head

Standard type
HG-S1010 / HG-S1110

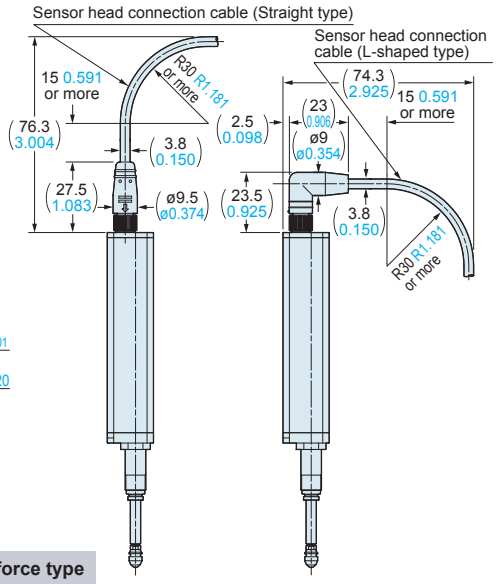


Low measuring force type
HG-S1010R / HG-S1110R



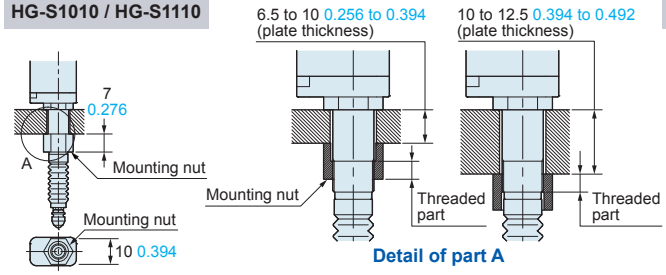
Installation of sensor head connection cable

The diagrams show the sensor head connection cable connected to the low measurement force type.

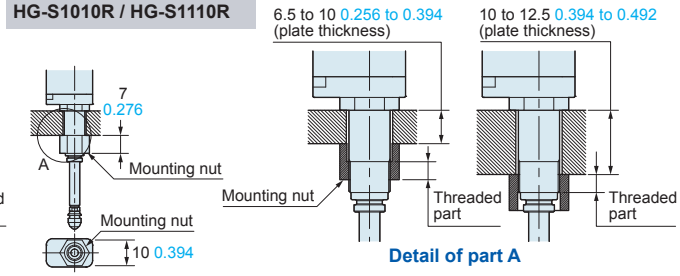


Installation of mounting nut attachment

Standard type
HG-S1010 / HG-S1110

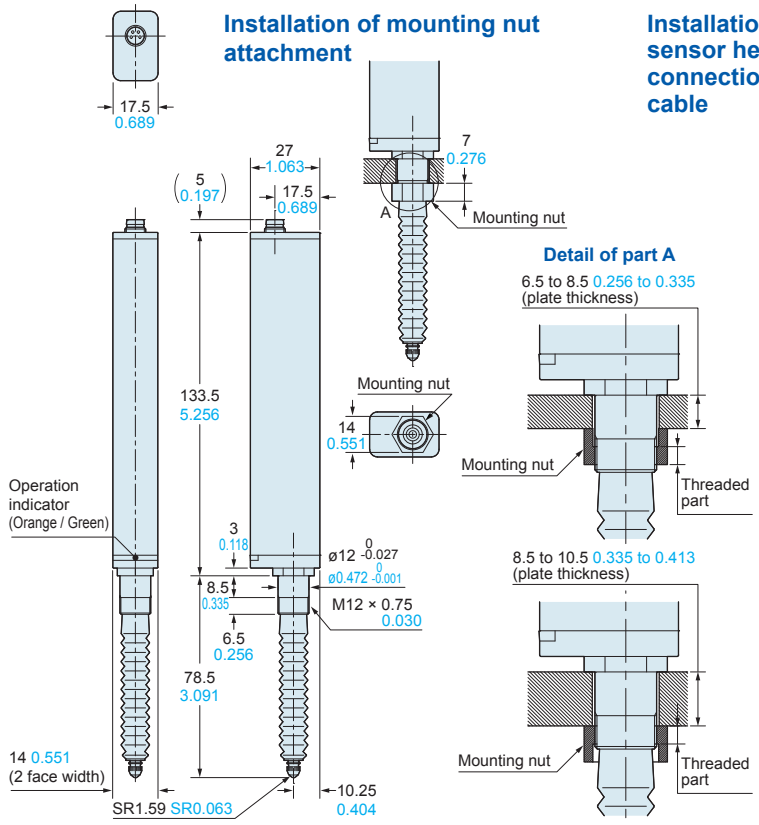


Low measuring force type
HG-S1010R / HG-S1110R



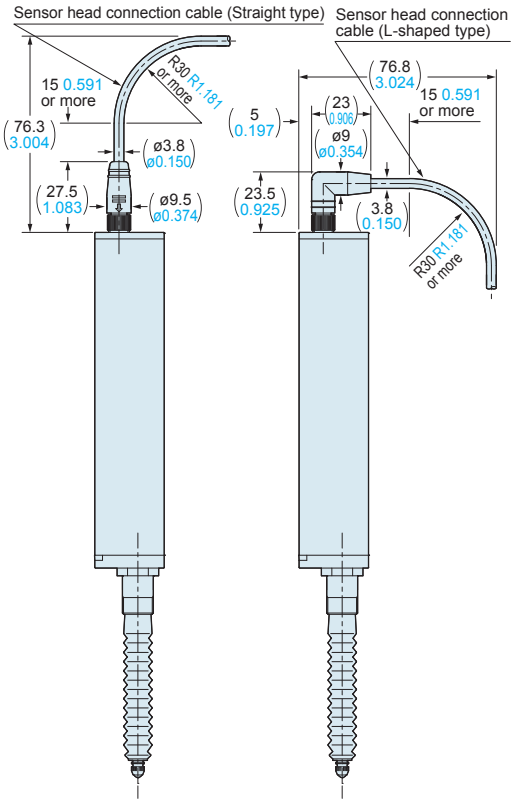
HG-S1032

Sensor head



Installation of mounting nut attachment

Installation of sensor head connection cable



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