

Linear Gauge Sensor Instructions Manual	
GS-4713	(Resolution: 10 μm)
GS-4730	(Resolution: 10 μm)
GS-4813	(Resolution: 1 μm)
GS-4830	(Resolution: 1 μm)

This instructions manual describes how to use GS-4713/4730 (hereinafter, referred to as GS-4700 Series) and GS-4813/4830 (hereinafter, referred to as GS-4800 Series) Linear Gauge Sensors and also gives maintenance procedures, specifications and precautions.

Be sure to read through this manual before using the product.

Some of the precautions included in this manual, unless observed, may lead to damage to the product. Ono Sokki assumes no warranty or liability for any results arising from operations without observing the described instructions.

Keep this manual in a safe place after reading it.

■Omission of Issuance of Certificate

This product has been tested under strict conditions for normal operation before shipment. Please note that the issuance of certificate is omitted.

■Warranty

- This product is covered by a warranty for a period of one year from the date of purchase. Failures, if any, will be repaired for free of charge.
- Even during the warranty period, the following failures will be handled on a fee basis.
 - Failures or damages occurring through misuse, misoperation, or modification
 - Failures or damages occurring during transportation after purchase
 - Failures or damages occurring through natural calamities (fires, earthquakes, flooding, and lightning), environmental disruption, or abnormal voltage
 - Replenishment of expendable supplies, spare parts, and accessories
- For any questions such as those about repair after expiration of the warranty period, contact the dealer from which you purchased the product or the Ono Sokki sales office nearby.

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Overview and Features

● **Overview**

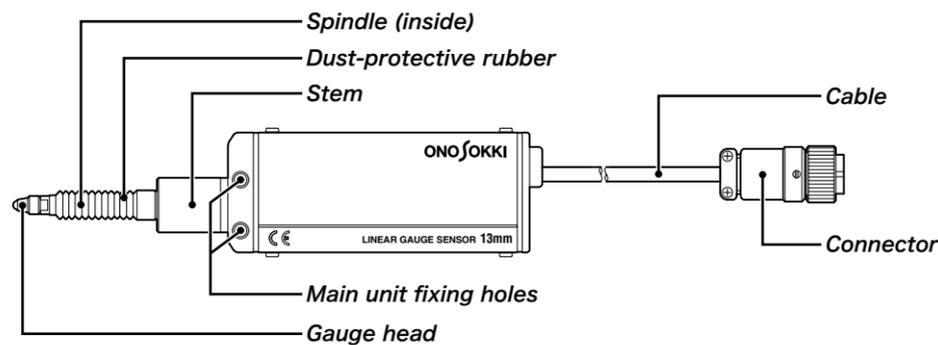
GS-4700/4800 Series Linear Gauge Sensor is a detector that directly converts spindle displacement into electric signal using a displacement transducer of linear scale type.

● **Features**

- IP66G protection structure tolerant to dust and wet
- High durability against sliding for 15 million times (accomplished in our endurance test)
- Electric circuit connectable to sequencer
- Measurement automatable with optional air lifter

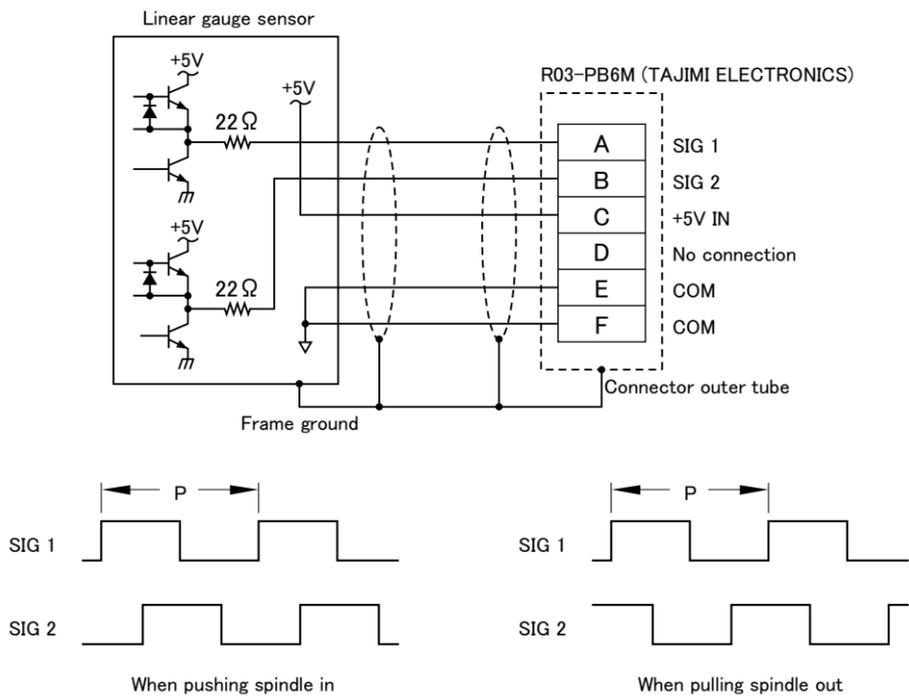
CAUTION This symbol is used to indicate precautions that, unless observed, may lead to injury to the operator or damage to the product.

Part Names



Output Connector Pin Assignments and Output Circuit

The figure below shows the GS-4700/4800 Series Linear Gauge Sensor connector pin assignments, output circuit and phase relationships of output signals SIG1/SIG2 during spindle action. One pitch of output signal is equivalent to 40 μm for GS-4700 Series and 4 μm for GS-4800 Series.



CAUTION Precautions for Use



- GS-4700/4800 Series Linear Gauge Sensor is a precision instrument. Be careful not to let it fall or give strong vibration or shock to it.
- Do not disassemble GS-4700/4800 Series Linear Gauge Sensor. Foreign substances, dust or liquid taken inside the instrument may cause failures. In addition, it will void IP66G warranty.
- Do not pull cables of GS-4700/4800 Series Linear Gauge Sensor with force of 20N or more.
- When fixing GS-4700/4800 Series Linear Gauge Sensor at its stem, use a collar, etc.; do not directly press screws, etc. against it.

- Do not rapidly release the spindle of GS-4700/4800 Series Linear Gauge Sensor from its depressed position or do not make measurement in such a way. It may cause degradation of the sensor accuracy or damage to the internal mechanism. For measurement requiring releasing of the spindle, the allowable range of release is 1mm or less from the object to be measured. Be sure to observe it.
- Do not tighten the stem of GS-4700/4800 Series Linear Gauge Sensor with an excessive force. It may give adverse influence to movement of the spindle or reduce the sensor life. (For details, see "Mounting to Fixing Device.")
- Do not give lateral force (0.3N or more) to the spindle of GS-4700/4800 Series Linear Gauge Sensor. It may give adverse influence to movement of the spindle or reduce the sensor life.

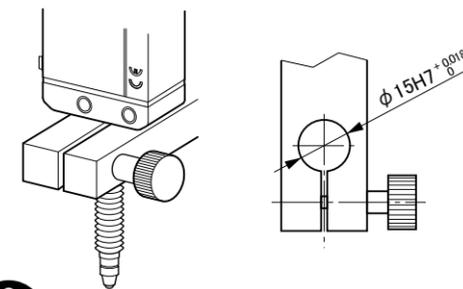
- When replacing the gauge head of GS-4700/4800 Series Linear Gauge Sensor, take care not to give twisting force exceeding 0.3Nom to the spindle. (For details, see "Replacing Gauge Head.")
- Do not use GS-4700/4800 Series Linear Gauge Sensor in environment with corrosive and/or flammable gas.
- Though GS-4700/4800 Series Linear Gauge Sensor is applied with protective measures equivalent to IP66G, take further protective measures such as placing a cover to avoid direct exposure of the sensor to water or dust.

Mounting to Fixing Device

Mount GS-4700/4800 Series Linear Gauge Sensor to the fixing device so that the spindle moving direction coincides with the length (displacement) direction of the object to be measured (see the figure below).

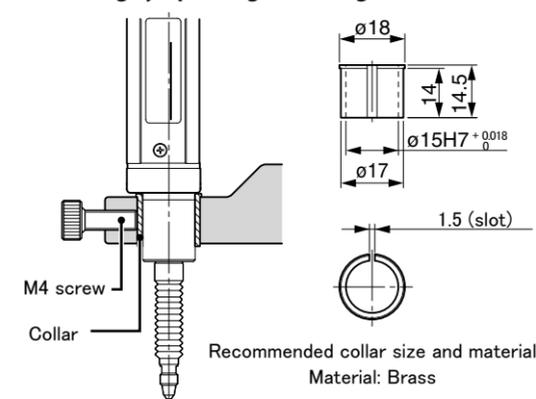
Before mounting, be sure to confirm the mounting location (see Outline Dimensional Drawing).

[Mounting by squeezing stem]



Recommended tightening torque: 0.4 to 0.5 N·m

[Mounting by squeezing stem using collar]



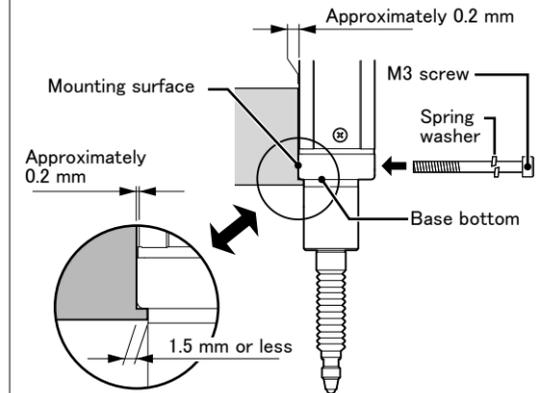
Recommended screw: M4
Recommended tightening torque: 0.4 to 0.5 N·m

When squeezing the stem, note the following:

- ① After mounting, check movement of the spindle.
- ② If the spindle does not move smoothly, it is tightened excessively. Retighten the stem with less torque. Note that, with too little torque, the stem is not secured disabling accurate measurement (do not fix the stem by directly pushing with a screw).
- ③ If the spindle moves smoothly after tightening the stem, it is tightened appropriately.

[Mounting using the fixing holes on the main unit]
When the sensor is mounted, there is a gap of approximately 0.2mm between the sensor top and the mounting surface.

Never try to eliminate this gap by pressing with brackets, etc.



The mounting surface and base bottom of the sensor are made parallel and rectangular with the stem, respectively. Rectangular mounting can be accomplished easier by forming L-shaped lower end of the fixing jig.



M3 screw (male screw)	Fixing jig (female screw)	Tightening torque (N·m)
Iron	Iron	0.7
Iron	Aluminum	0.52

Mount a rigid sensor fixing jig so that the spindle is rectangular with the object to be measured.

The recommended mounting angle is 0.15° (squareness 260 μm/100mm) or less.

The linear gauge sensor obliquely mounted will cause a lateral force to be applied to the spindle, resulting in failures.

Measurement

* Procedures for measuring with GS-4700/4800 Series Linear Gauge Sensor are as described below.

- ① Connect a gauge counter to the linear gauge sensor.
- ② Holding the gauge head with fingers, slowly move the spindle for measurement (move the spindle close to the measurement object until the gap is 1mm or less and then let the spindle fall).

The spindle stopper inside the sensor is made of rubber. Therefore, it should not be used as the reference point for measurement. Use the point where the spindle is pushed in 0.2mm or more as the reference point.

