Digital Linear Gauge Sensors

GS-4700/4800 series
GS-6700/6800 series

Conforming to protection class IP66G (GS-4700/4800 series) and IP64 (GS-6700/6800 series), the GS-4700/4800 and GS-6700/6800 series sensors are designed to be used in harsh environments.
A resolution of either 1 μm or 10 μm can be selected in accordance with the measurement application.
All models are compatible with our DG-4000 series of digital gauge counters which have comparator, offset, peak hold, multiplying, and other functions depending on the model.

ONOSOKKI

Digital Linear Gauge Sensors

GS-4700/4800/6700/6800 series

A selection of eight models suitable for installation in production lines with environments subject to dust, water splashes or/and oil splashes.

Features

- Conforming to environmental protection class IP64 or IP66G.
- Various optional parts.
- Compatible with DG-4000 series.
- Compact and small body with high accuracy.
- High cost performance.

Structure Conforms to the IP64/66G Protection Class

The IP64/66G International Protection number code indicates the protection class with respect to the penetration of dust, water, and oil.

IP6X indicates that the enclosure is dust-tight, with no ingress of dust.

IPX4 indicates that the enclosure is protected against drops of water and splashing water. Water splashed against the enclosure from any direction shall have no harmful effect.

IPX6 indicates that the enclosure is protected against heavy seas, or powerful jets of water. With no ingress of water jets from any direction.

IPXXG indicates that the enclosure is protected against oil drops and oil splashes. Oil splashed against the enclosure from any direction shall have no harmful effect.

Compatible digital counters

DG-4120
BCD output

DG-4140
Comparator output
(BCD, Color backlight)

DG-4190
Comparator output
(Analog, Color backlight)

DG-4240
Comparator output
(Upper & Lower)

DG-4280
Comparator output
(4-preset)

A Brief Explanation of Terms

Display Accuracy

This is the measurement error inherent in a linear gauge sensor. The error (the amount of difference from the actual value) is measured at each specified measurement value, and, when the overall length of the spindle movement is considered, the sum of the absolute values of the maximum error in the positive direction and of the maximum error in the negative direction becomes the display accuracy of that gauge sensor (see Fig. 1).
Measurement of the accuracy is performed by making comparisons with a reference displacement meter. The difference between the reading value at the time that the lowest order digit of the target sensor changed and the value of the reference displacement meter is taken as the error. This is the reason why the display accuracy of a sensor with a resolution of 10μm is lower than that of a sensor with a resolution of 3μm. (see Fig. 2).

Fig. 1

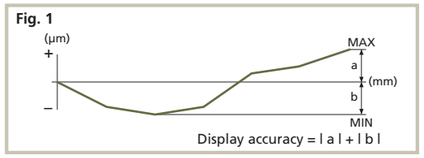
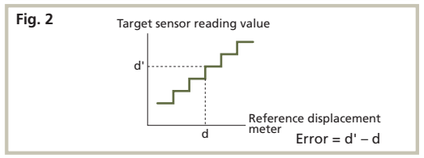


Fig. 2



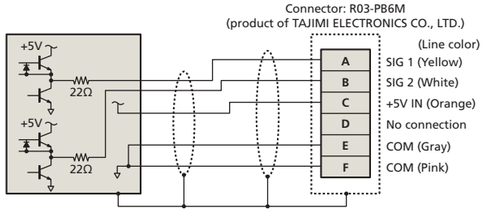
Measurement force

The force used to hold down the workpiece is called the measurement force. Since our gauge sensors feature an internal spring-return mechanism for the spindle, the measurement force is the force measured at the maximum extension limit. The force unit is expressed as N (Newton). The measurement force can be changed by replacing the spring. Please specify your requirements when placing your order.
Please note that depending on the modification, there may be times when the attachment does not return completely if it is facing upwards or sideways. Likewise, you will need to consult us if modification to a fixed value (see*1 below) is required.

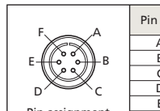
*1: If, for example, modification to a fixed value for a linear gauge sensor with a measurement range of 13mm was made, the measurement force for the amount moved within the 0 to 13mm range becomes a fixed value (variation of ±10gf).

Output signal circuit

GS-4713/4730/4813/4830/6713/6730/6813/6830



Signal connector R03-PB6M



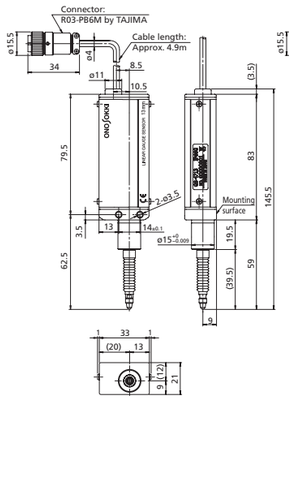
Pin assignment

Pin No.	Signal name	Line color
A	SIG1	Yellow
B	SIG2	White
C	+5V IN	Orange
D	NC	Not connected
E	COM	Gray
F	COM	Pink

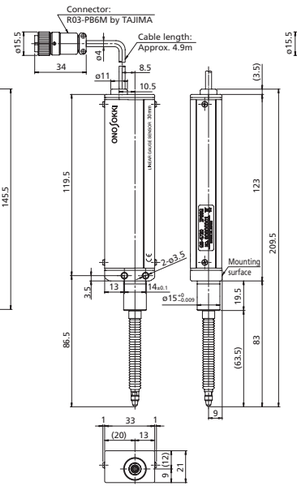
* At Ono Sokki, we recommend the use of a linear gauge sensor together with a digital gauge counter. If you plan to use a linear gauge sensor without an Ono Sokki digital gauge counter, please refer to the specifications in the user's manual for the sensor and/or other materials to design your own.

Outer Dimensions

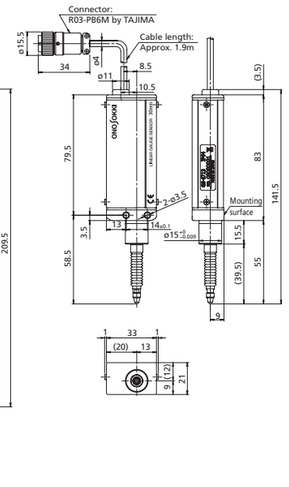
GS-4713/4813



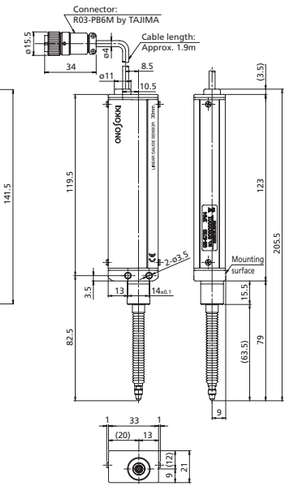
GS-4730/4830



GS-6713/6813



GS-6730/6830

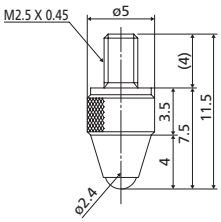
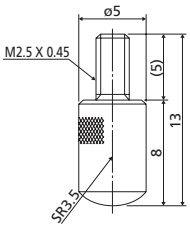
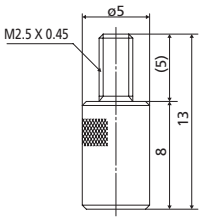
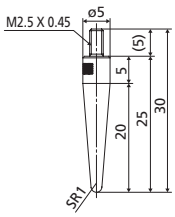
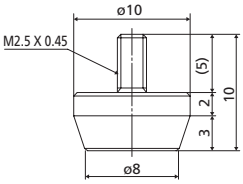
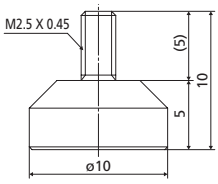
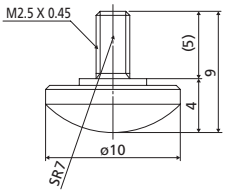
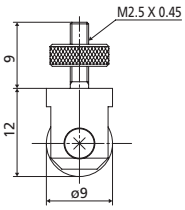
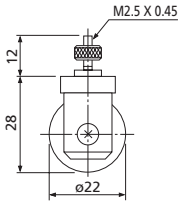
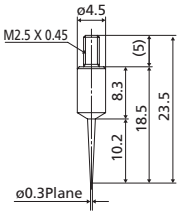
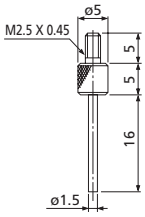
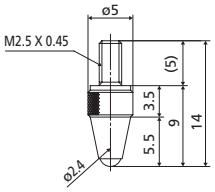


Specification

Item \ Model name	GS-4713	GS-4730	GS-4813	GS-4830	GS-6713	GS-6730	GS-6813	GS-6830
Measurement range	13mm	30mm	13mm	30mm	13mm	30mm	13mm	30mm
Resolution	10μm		1μm		10μm		1μm	
Accuracy (at +20˚C)	3μm		2μm	3μm	3μm	3μm	2μm	3μm
Maximum spindle velocity *1	1 (4) m/s		0.3 (1.2) m/s		1 (4) m/s		0.3 (1.2) m/s	
Measurement force *2 (downward)	2.0N or less	2.4N or less	2.0N or less	2.4N or less	1.7N or less	2.0N or less	1.7N or less	2.0N or less
Number of sliding times (proven in our endurance test)	15 million or more				5 million or more			
Protection class (excluding connector section)	IP66G				IP64			
Stem diameter	$\varnothing 15^{+0}_{-0.009}$ mm							
Power requirement	4.5 to 5.5VDC							
Power consumption (when 5VDC)	120mA or less							
Signal output (when 5VDC)	Two-phase square wave, Phase difference: 90°± 20°, Output voltage Hi: 4.5V or more Lo: 0.4V or less							
Output impedance	Approx. 22Ω							
Vibration resistance (when the power is off)*3	196m/s² in each of three axial directions (for 75 minutes each) 10 cycles of 10 to 150Hz sweep				147m/s² in each of three axial directions (for 75 minutes each) 10 cycles of 10 to 150Hz sweep			
Shock resistance (when the power is off)*3	1960m/s² in each direction for each of three axes, three times for each of ±X, Y and Z directions, sine half-wave, pulse duration 6ms				1470m/s² in each direction for each of three axes, three times for each of ±X, Y and Z directions, sine half-wave, pulse duration 6ms			
Operating temperature range	0 to +40ºC							
Storage temperature range	-10 to +55ºC							
Cable length	Approx. 5m				Approx. 1.9 m			
Weight (including cable and connector)	Approx. 325g	Approx. 385g	Approx. 325g	Approx. 385g	Approx. 250g	Approx.310g	Approx. 250g	Approx. 310g

*1: When used with Ono Sokki's digital gauge counter. The values within parentheses ( ) are the maximum spindle velocity used with the DG-4140/4190/5100.
*2: An attachment may not return completely if it is facing upwards.
*3: Vibration / shock resistance values described in above are not guaranteed during measurement operation.
• Disconnected or modified signal cable is not applicable to CE marking.

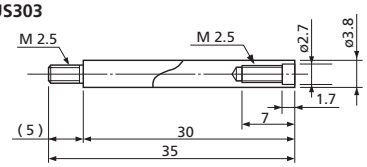
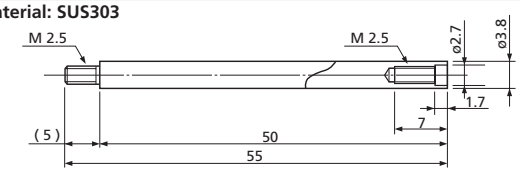
Contact tip

Model name	AA-0200	AA-0210	AA-0220 *1	AA-0230
Outer dimensions	 Tip ball material: Steel ball	 Material: SKS3	 Material: SKS3	 Material: SKS3
Model name	**AA-0240 *1**	**AA-0250 *1**	**AA-0260**	**AA-827 *2**
Outer dimensions	 Material: SKS3	 Material: SKS3	 Material: SKS3	 Roller width: 4mm Material: SUj2
Model name	**AA-828 *2**	**AA-0320**	**AA-921 *1**	**AA-0400**
Outer dimensions	 Roller width: 7mm Material: SUj2	 Material: SKS3	 Material: SKS3	 Tip ball material: Ruby

*1 When affixing a flat gauge head such as the AA-0220/0240/0250/921 to a gauge with a measurement resolution of 0.05μm/1μm, adjustment of the degree of parallelization to match that of the surface of the measurement stand is required. In this case, the gauge head and stand must be purchased as a pair (additional cost required).

*2 When affixing a roller gauge head such as the AA-827/828 to a gauge with a measurement resolution of 1μm, there may be times when the precision specification cannot be achieved. The AA-827/828 uses a bearing, but as the gap cannot be eliminated, an error of approximately 10μm may appear.

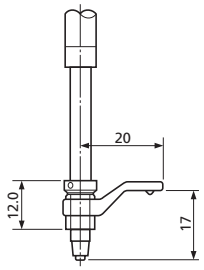
Extension spindle

Model name	AA-844	AA-845
Outer dimensions	**Material: SUS303** 	**Material: SUS303** 

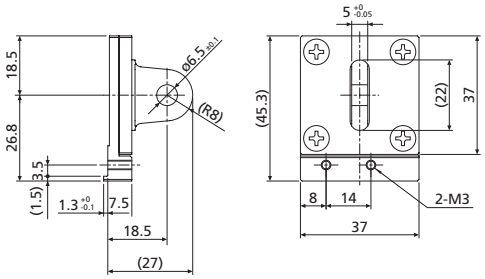
Others

Part Name	Model Name
Finger lifter	AA-969
Lug back	AA-3310
Extension cable	AA-8801 (5m) AA-8802 (10m) AA-8803 (20m) AA-8804 (30m)
Gauge stand	ST-0230

AA-969



AA-3310



ONO SOKKI

• Outer appearance and specifications are subject to change without prior notice.

URL: http://www.onosokki.co.jp/English/english.htm

U.S.A
Ono Sokki Technology Inc.
2171 Executive Drive, Suite 400
Addison, IL. 60101, U.S.A
Phone : +1-630-627-9700
Fax : +1-630-627-0004
E-mail : info@onosokki.net
http://www.onosokki.net

THAILAND
Ono Sokki (Thailand) Co., Ltd.
29/67 Moo 5 Tivanon Road, Pakkred,
Nonthaburi 11120, Thailand
Phone : +66-2-964-3884
Fax : +66-2-964-3887
E-mail : osth_sales@onosokki.co.jp

P.R.CHINA
Ono Sokki Beijing Office
Beijing Jing Guang Center 3510
Hu Jia Lou, Chao Yang Qu
Beijing 100020, P.R.China
Phone : +86-10-6597-3113
Fax : +86-10-6597-3114
E-mail : onosokki@bbn.cn

WORLDWIDE
Ono Sokki Co., Ltd.
3-9-3 Shin-Yokohama, Kohoku-ku,
Yokohama 222-8507, Japan
Phone : +81-45-476-9712
Fax : +81-45-470-7244
E-mail : overseas@onosokki.co.jp

CAT. NO. 040906-013 (SK) 107