

BGS-HL series

*FASTUS is a product brand of Optex FA.

High resolution BGS laser sensor

Minimum detectable height difference = 0.08 mm
(BGS-HL05**)

Built-in controller
4 Digit display

Stable detection
regardless object color

SUS housing
for Foods and
beverage industry



Aluminum housing
for general purpose



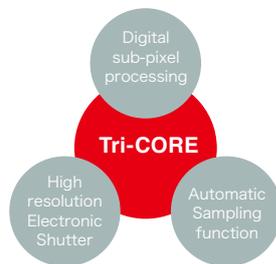
Super precision BGS sensor detects 0.08mm height difference (BGS-HL05**)

FASTUS BGS-HL Series achieves precise height difference detection regardless of Object color and material.

This is accomplished by utilizing original "TRI-CORE" Technology found in our high-end displacement sensors.

This Technology enables the highest level of performance in the industry at an economical price.

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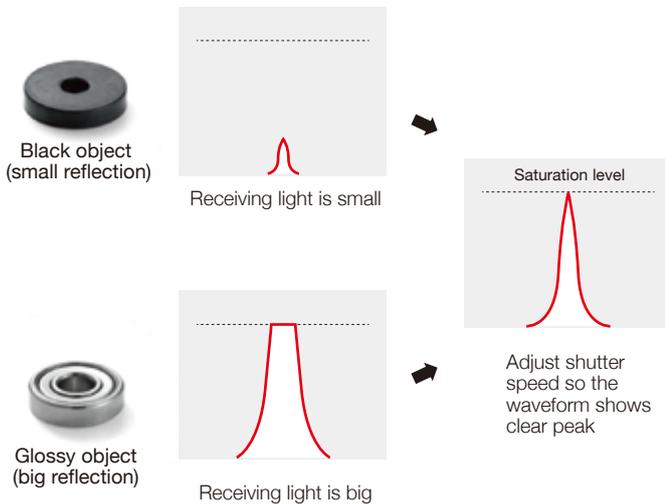


■ Features

High resolution electronic shutter

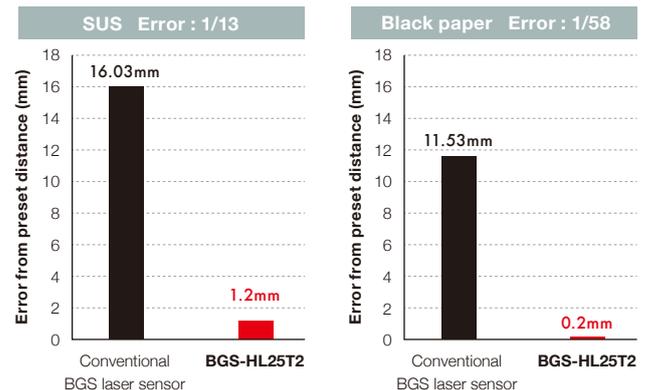
Thanks to an automatic shutter speed adjustment function, the BGS-HL series has the advantage of accurately detecting Black non-reflective surfaces as well as shiny reflective surfaces.

The Automatic shutter speed adjustment function minimizes the error caused by differences in reflectivity of object color and material.



Material response is improved incredibly

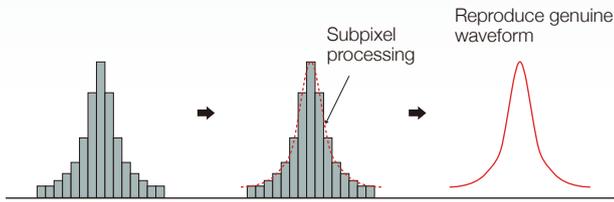
The error of BGS-HL25T2 is improved to 1/13 (SUS) and 1/58 (Black paper) compared with conventional BGS laser sensor.



* White ceramic base at 250mm.

Digital subpixel processing

Subpixel processing divides one pixel into sub pixels and enables accurate detection of peak.

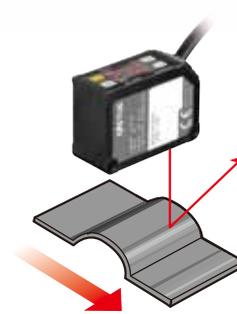


	BGS-HL05	BGS-HL25
Minimum detectable height difference	0.08mm	0.8mm

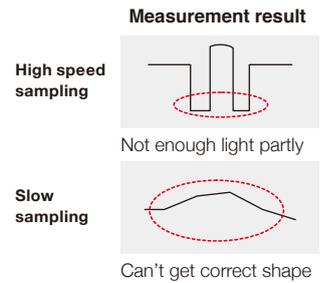
Condition : Hysteresis setting : 0.02 (BGS-HL05**), 0.2 (BGS-HL25**) Other condition to be referred notes on the specifications sheet

Automatic sampling function

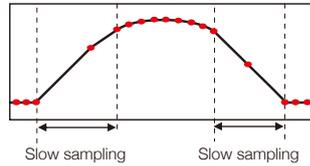
In addition to standard feedback, received light to laser power, BGS-HL has Automatic Sampling function which enables stable detection of metal surface and also black material by adjusting sampling speed.



Sampling speed is fixed



Automatic Sampling



It can get correct shape by changing sampling speed

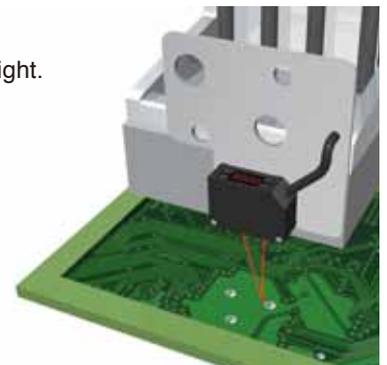
Easy to see digital panel

- 4 Digit display in small case
- Easy setup by 4 buttons
- Functions are like high-end



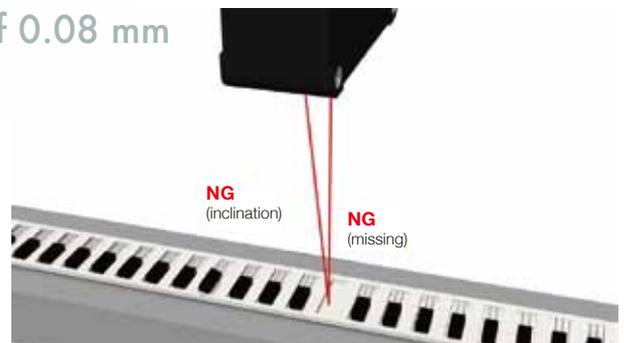
Ideal for robot mounting

Ideal for mounting on robot cylinder thanks to compact dimensions and the light weight. IP67 water tightness is also secured.

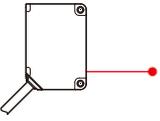
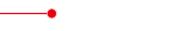
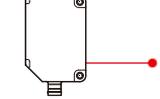


The minimum detectable height difference of 0.08 mm (BGS-HL05**)

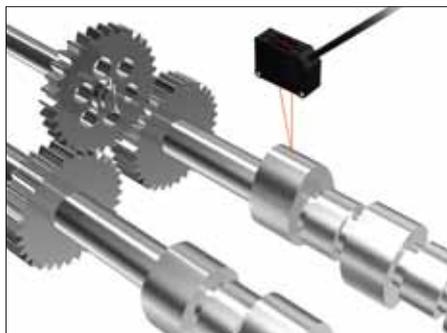
Perfect for applications that require sensing the height difference of very thin parts, inclination, and overlap (seam) detection.



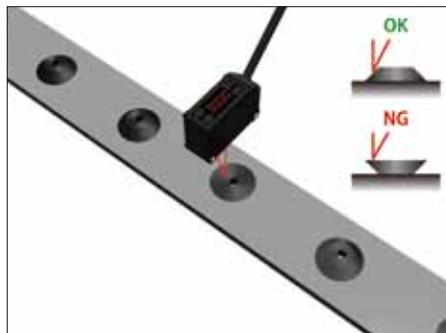
Lineup

Type	Sensing distance	Repeatability	Laser class	Line up	
				Aluminum housing	SUS housing
 Cable type	 20~50mm	0.01mm	(IEC/JIS) Class1 (FDA) Class II	BGS-HL05T	BGS-HLM05T
	 50~250mm	0.1mm	(IEC/JIS) Class1 (FDA) Class II	BGS-HL25T	BGS-HLM25T
	 50~250mm	0.1mm	(IEC/JIS) Class2 (FDA) Class II	BGS-HL25T2	BGS-HLM25T2
 M8 Connector type	 20~50mm	0.01mm	(IEC/JIS) Class1 (FDA) Class II	BGS-HL05TC	BGS-HLM05TC
	 50~250mm	0.1mm	(IEC/JIS) Class1 (FDA) Class II	BGS-HL25TC	BGS-HLM25TC
	 50~250mm	0.1mm	(IEC/JIS) Class2 (FDA) Class II	BGS-HL25TC2	BGS-HLM25TC2

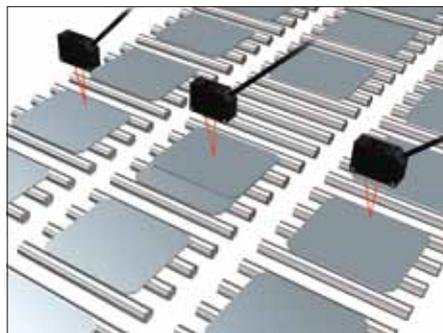
Application



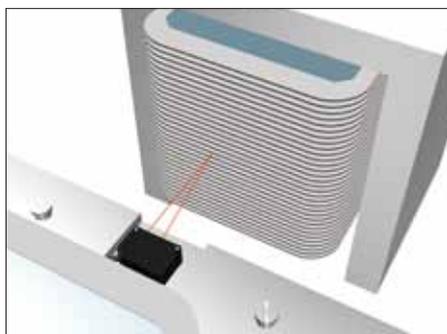
Checking Camshaft position



Checking face of black rubber parts



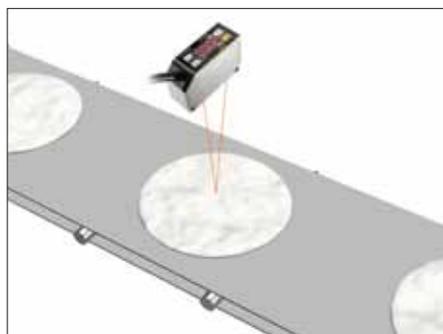
Detecting wafers piling



Detecting edge of wafer frame

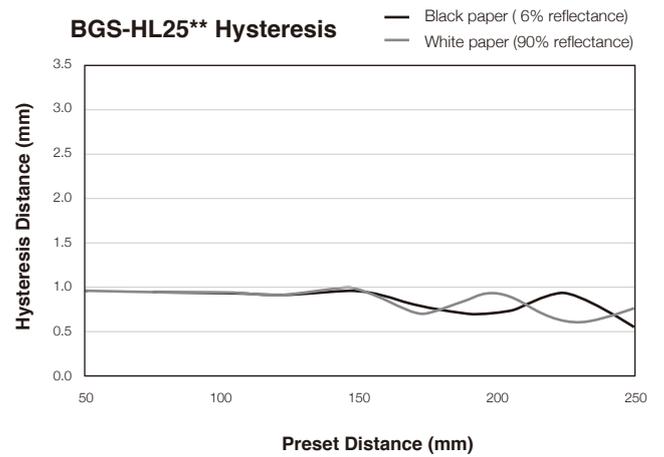
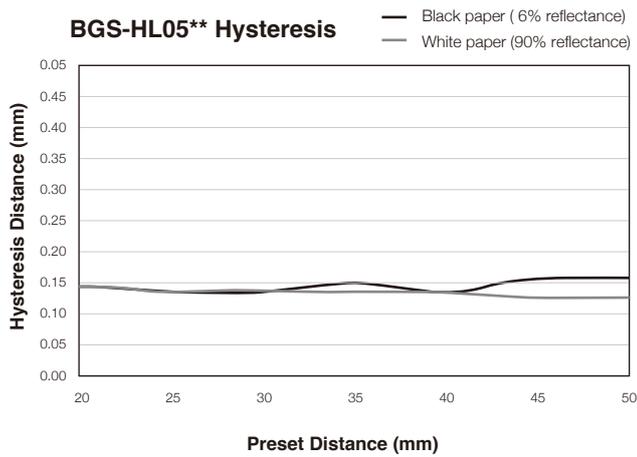


Detecting juice packages with various colors



Detecting thin pizza dough

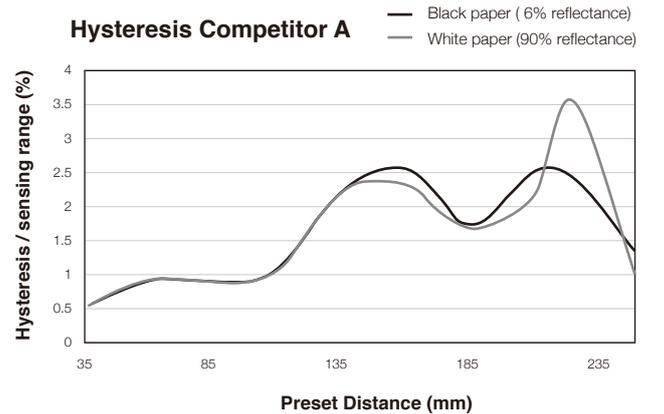
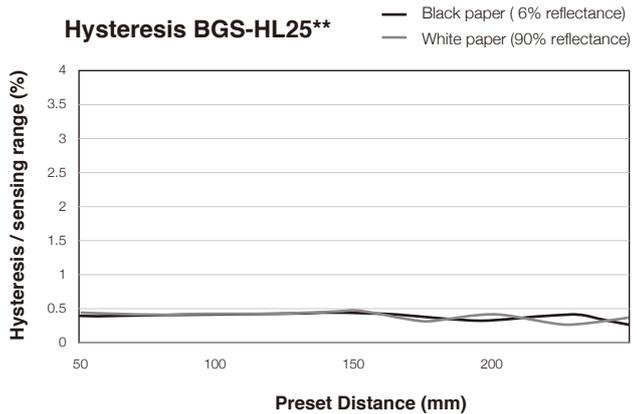
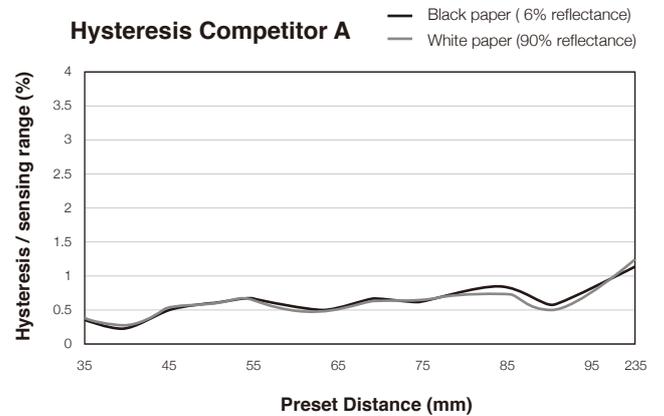
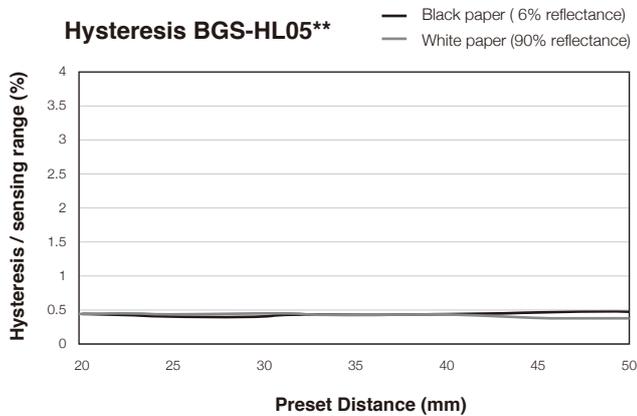
■ Hysteresis



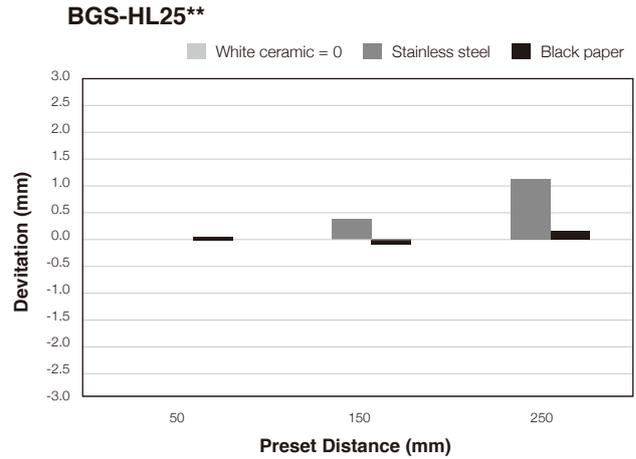
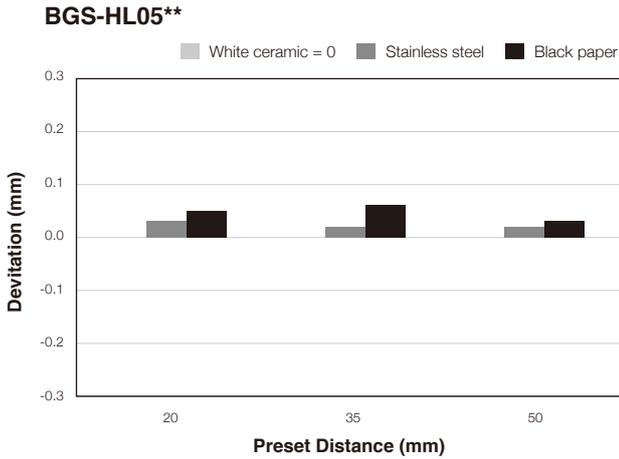
The graphs show hysteresis at each sensing distance.
 Default hysteresis setup : 0.15mm (BGS-HL05**), 1.0mm (BGS-HL25**)
 Hysteresis of Black paper / White paper is small enough to neglect.

■ Hysteresis Comparison with Competitor "A"

BGS-HL series is much better than the competitor "A".



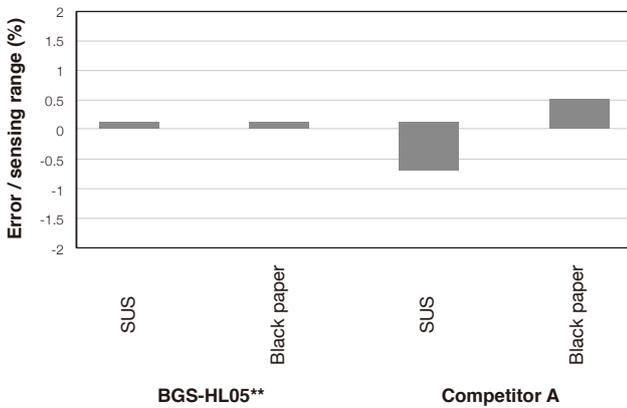
Material response



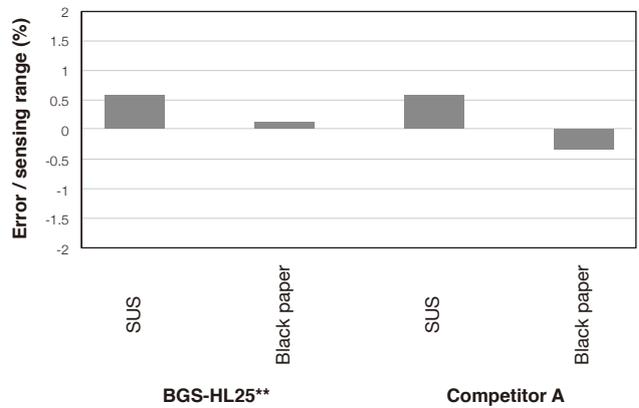
Material response Comparison with Competitor "A"

BGS-HL series has smaller error than the competitor "A".

Error rate at maximum sensing distance (base = white ceramic)

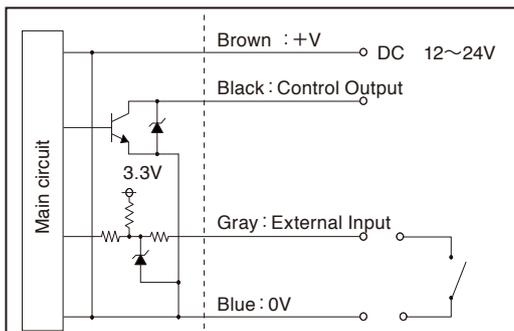


Error rate at maximum sensing distance (base = white ceramic)

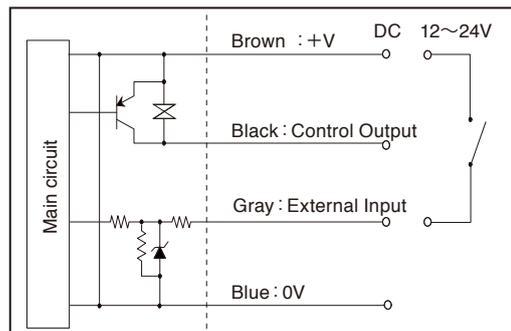


Circuit diagram

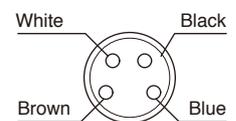
NPN mode



PNP mode

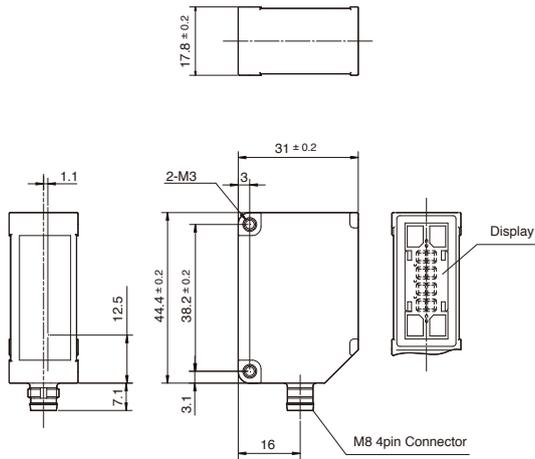


Connector pin configuration (M8 connector type)

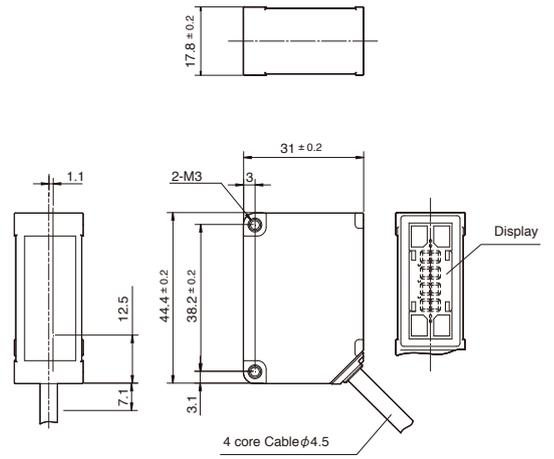


■ Dimensions

M8 connector type



Cable type



(unit : mm)

■ Options

Cable

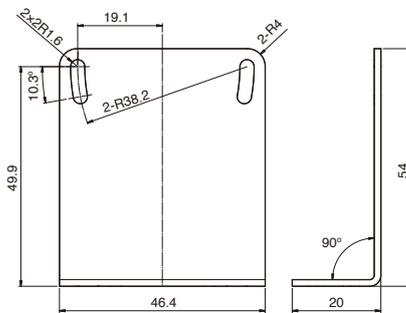
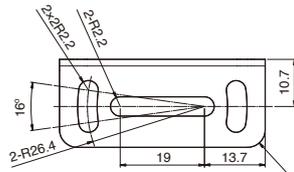


JCN-S(2m)
JCN-5S(5m)
JCN-10S(10m)

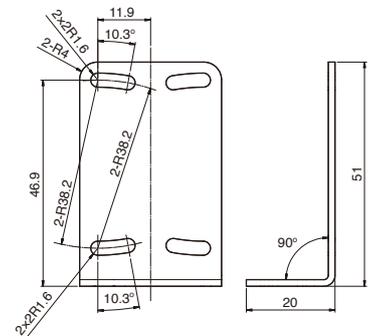
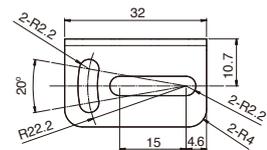


JCN-L(2m)
JCN-5L(5m)
JCN-10L(10m)

Bracket



BEF-OD1-A
(for connector type)



BEF-OD1-B
(for cable type)

(unit : mm)

■ Specifications

Part number	Cable type	Aluminum housing	BGS-HL05T	BGS-HL25T	BGS-HL25T2
		SUS housing	BGS-HLM05T	BGS-HLM25T	BGS-HLM25T2
	Connector type	Aluminum housing	BGS-HL05TC	BGS-HL25TC	BGS-HL25TC2
		SUS housing	BGS-HLM05TC	BGS-HLM25TC	BGS-HLM25TC2
Sensing distance *1		20~50mm		50~250mm	
Repeatability *2		0.01mm		0.1mm	
Minimum detectable height difference *3		0.08mm		0.8mm	
Light source		Red laser diode (wavelength 655nm)			
Laser class		IEC / JIS		Max. output : 390 μW	
		FDA		Max. output : 1mW	
		Class 1		Class 2	
		Class II			
Spot size *4		φ0.8mm		φ1mm	
Response time		Default : 1.5~7.5ms		Default : 3~15ms	
Hysteresis		0~22.49mm (default:0.15mm)		0~149.9mm (default:1mm)	
Indicator		Laser indicator : Green / Output indicator : Orange / Mode indicator : Red			
Digital display		7 segment 4 digit LED display			
Adjusting sensing distance		Teaching / Manual			
External input		Laser OFF, Teaching, Sample & Hold, One shot			
Control output		NPN/PNP max.100mA/DC24V (Residual voltage 1.8 V max.)			
Operating mode		Light ON/Dark ON selectable by setting			
Timer		OFF / On delay / Off delay / One shot (0~9999ms)			
Power supply / Current consumption		DC12~24V including 10% ripple (p-p) / 40mA max.			
Protection circuit		Reverse connection protection, Overcurrent protection			
Protection category		IP67			
Operating Temp. / Humid.		-10 ~ 50°C / 35 ~ 85% RH without freezing or condensation			
Storage Temp. / Humid.		-20 ~ 60°C / 35 ~ 85% RH			
Ambient illuminance		Incandescent lamp: 5,000 lx max.			
Vibration resistance		10 ~ 55Hz, Double amplitude 1.5mm, X,Y,Z for 2 hours			
Shock resistance		500m/s ² (approx. 50G) X,Y,Z 3 times each			
Material		Case : <Aluminum type> Aluminum / <SUS type> SUS, Front lens : PPSU, Display : PET			
Weight		Cable type : Approx. 90g, Connector type : 30g			
Bundled accessories		Mounting bracket : BEF-OD1-B (for cable type) / BEF-OD1-A (for connector type), M3 screw* 2pieces			

The specifications are based on the condition unless otherwise designated: Ambient temperature: 23°C, Supply voltage: 24VDC, Sampling period: 500μs, Averaging: 512, Measuring distance: Center of the range, Testing object: White ceramic

*1 Display shows 0.00~30.00 (BGS-HL05**) / 0.0~200.0 (BGS-HL25**).

When "shift function" is ON, display shows 0 at the teaching position.

The display is available to show number in the range as follows.

-7.50~37.5 (BGS-HL05**), -50.0~250.0 (BGS-HL25**)

*2 Sampling period : 1000 μs

*3 Hysteresis setting : 0.02 (BGS-HL05**), 0.2 (BGS-HL25**)

*4 Defined with center strength 1/e²(13.5%) at the center. There may be leak light other than the specified spot size.

The sensor may be affected when there is a highly reflective object close to the detection area.

Attention: Not to be Used for Personnel Protection.

Never use these products as sensing devices for personnel protection. Doing so could lead to serious injury or death.

These sensors do not include the self-checking redundant circuitry necessary to allow their use in personnel safety applications.

A sensor failure or malfunction can cause either an energized or de-energized sensor output condition.

Please consult our distributors about safety products which meet OSHA, ANSI and IEC standards for personnel protection.

- Specifications are subject to change without prior notice.
- Specifications and technical information not mentioned here are written in Instruction Manual. Or visit our website for details.
- All the warnings and cautions to know prior to use are given in Instruction Manual.



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