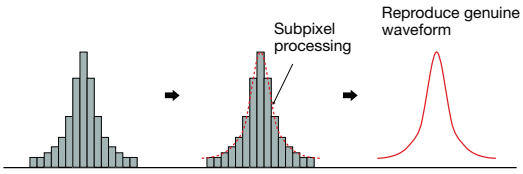
Got Questions? Tough Application? Send Us a Sample and We'll Test It!

High-resolution C-MOS laser type BGS-HL, BGS-HDL series

Digital subpixel processing

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

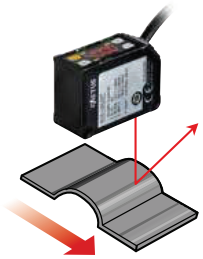


	BGS-HL05□□ BGS-HDL05□□	BGS-HL25□□ BGS-HDL25□□
Minimum detectable height difference	0.08 mm	0.8 mm

Condition : Hysteresis setting : 0.02 (BGS-HL05□□/BGS-HDL05□□), 0.2 (BGS-HL25□□/BGS-HDL25□□)
Other condition to be referred notes on the specifications sheet

Automatic sampling function

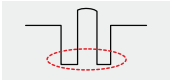
In addition to standard feedback, received light to laser power, BGS-HL/-HDL has Automatic Sampling function which enables stable detection of metal surface and also black material by adjusting sampling speed.



Sampling speed is fixed

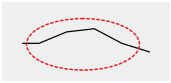
Measurement result

High speed sampling



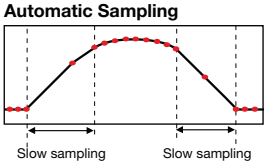
Not enough light partly

Slow sampling



Can't get correct shape

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
· High-end functionality

BGS-HL series

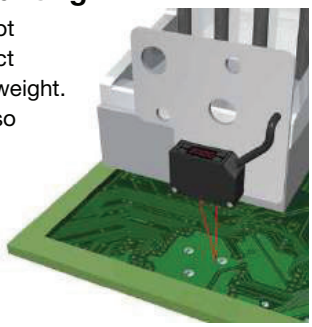


BGS-HDL series



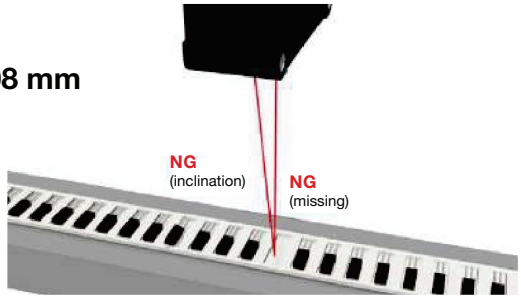
Ideal for robot mounting

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



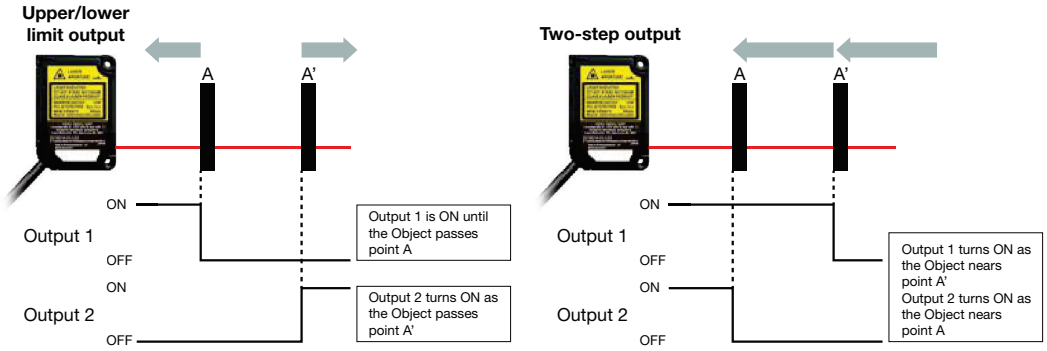
The minimum detectable height difference of 0.08 mm (BGS-HL05□□/BGS-HDL05□□)

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



Introducing the dual-output BGS-HDL - the newest addition to Optex FA's best-in-class lineup of height difference sensors

The newly added BGS-HDL model is equipped with two control outputs.
With support for upper and lower limit output or two-step output,
applications that call for two sensors can now be covered with just a single sensor.



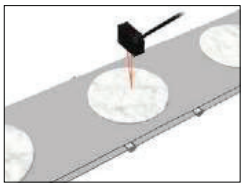
Two selectable distance display patterns (BGS-HDL function)

The digital panel for displaying distance on the sensor can be set to either Background mode (bcGd) or Target mode (trGt). Select the display mode that makes seeing changes in distance easiest according to the application.

Background mode



Displays the distance to the background as zero and displays the displacement amount from zero as a reference.



Used mainly for detection of the object on a conveyor.

DISPLAY EXAMPLES

Reset the Distance to the background and displays as zero



With the 5 mm tall object



*Device used: BGS-HDL05T

Target mode



Displays the distance to where the spot light hits.



Used when there is no background or installed horizontally for the object detection.

DISPLAY EXAMPLES

With a distance of 100 mm to the object



With a distance of 250 mm to background

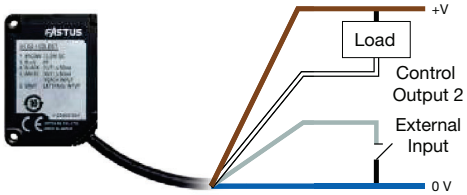


*Device used: BGS-HDL25T2

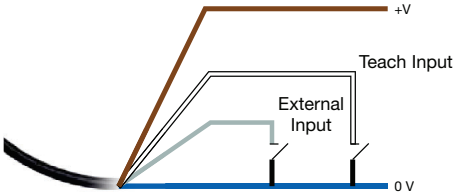
Switchable between Output 2 and Teach Input (BGS-HDL function)

For BGS-HDL, it is possible to choose from Output 2 or Teach Input by changing the setting and wiring connection (White wire).
With this function, it enables dual input operations such as “Laser OFF” or “Sample & Hold”, in addition to Teaching at the same time.

< Output 2 : Connection diagram >



< Teach Input : Connection diagram >



* The factory setting is Teach Input.
* The gray-External Input can be assigned to one of the following functions: Laser OFF, Laser ON, Teaching, Sample & Hold, or One-shot.
* The above wiring example is for output set to NPN.

High-resolution C-MOS laser type BGS-HL, BGS-HDL series

Specifications

Type	Case	1-output type		2-output type	
Sensing distance		20 to 50 mm (display: 0.00 to 30.00[*1])	50 to 250 mm (display: 0.0 to 200.0[*1])	20 to 50 mm (display: 20.00 to 50.00)	50 to 250 mm (display: 50.0 to 250.0)
Cable type	Aluminum	**BGS-HL05T**	**BGS-HL25T BGS-HL25T2**	**BGS-HDL05T**	**BGS-HDL25T2**
	SUS	**BGS-HLM05T**	**BGS-HLM25T BGS-HLM25T2**	–	–
M8 Connector type	Aluminum	**BGS-HL05TC**	**BGS-HL25TC BGS-HL25TC2**	–	–
	SUS	**BGS-HLM05TC**	**BGS-HLM25TC BGS-HLM25TC2**	–	–
M12 Connector type	Aluminum	–	–	**BGS-HDL05TM12**	**BGS-HDL25TM122**
Repeat accuracy		0.01 mm (display: 0.01)	0.1 mm (display: 0.1[*2])	0.01 mm (display: 0.01)	0.1 mm (display: 0.1[*2])
Minimum detectable height difference[*3]		0.08 mm	0.8 mm	0.08 mm	0.8 mm
Temperature drift (typical value)		±0.04% / °C F.S.	±0.08% / °C F.S.	±0.04% / °C F.S.	±0.08% / °C F.S.
Light source		Red laser Diode (wave length 655 nm)			
		Output: 390 µW Max.	Output: 1 mW Max.	Output: 390 µW Max.	Output: 1 mW Max.
Spot size[*4]		ø0.8 mm	ø1 mm	ø0.8 mm	ø1 mm
Response time[*5]		1.5 ms Min.			
Hysteresis[*6]		0 to 22.49 mm Adjustable	0 to 149.9 mm Adjustable	0 to 22.49 mm Adjustable	0 to 149.9 mm Adjustable
Distance adjustment		Teaching / Manual (Selectable from: 1-point / 2-point / Zone)		Teaching / Manual	
Indicator		Laser emission indicator: Green / Output indicator: Orange / Mode indicator: Red		Laser emission indicator: Green / Output 1, 2 indicator: Orange	
Digital display		7-segment 4-digit LED display			
External input		Selectable from: Laser OFF, Teaching, Sample & Hold, One-shot		Selectable from: Laser OFF, Laser ON, Teaching, Sample & Hold, One-shot	
Control output		Open collector (NPN / PNP selectable), 100 mA Max. / 24 VDC (Residual voltage 1.8 V Max.)		Open collector (NPN / PNP selectable), 50 mA Max. / 24 VDC (Residual voltage 1.8 V Max.)	
Operating mode		Selectable by setting from: Light ON / Dark ON		Selectable by setting from: Light ON / Dark ON/Zone/FGS	
Timer		Selectable from: OFF/On delay / Off delay / One-shot (0 to 9999 ms, 1 ms step)			
Power supply		12 to 24 VDC including 10% ripple (p-p)			
Current consumption[*7]		40 mA Max.			
Connection type		Cable type: 2 m, ø4.5 mm, M8 Connector type: 4pin		Cable type: 2 m, ø4.5 mm M12 Connector type: 5pin with 300 mm cable	
Applicable regulations	EMC	2014 / 30 / EU			
	RoHS	2011 / 65 / EU,MIIT Order No.32			
	Safety	21 CFR 1040.10 and 1040.11 except for deviations pursuant to laser notice No.50			
Applicable standards		EN 60947-5-2:2007 / A1:2012 IEC 60825-1:2007			
Ambient Temp./Humid.		-10 to +50°C / 35 to 85% RH (no condensation)		-10 to +45°C / 35 to 85% RH (no condensation)	
Storage Temp./Humid.		-20 to +60°C / 35 to 85% RH			
Ambient illuminance		Incandescent lamp: 5,000 lx max.			
Vibration resistance		10 to 55 Hz, Double amplitude 1.5 mm, X,Y,Z for 2 Hours			
Shock resistance		500m/s² (approx. 50G) X,Y,Z 3 times each			
Protection circuit		Reverse connection protection, Over current protection			
Degree of protection		IP67			
Material		Case : <Alminum type> Aluminum / <SUS type> SUS, Front lens: PPSU, Display: PET, Cable: Oil resistant PVC			
Weight		Cable type: Approx. 90g, M8 Connector type: Approx. 30g		Cable type: Approx. 100g, M12 Connector type: Approx. 60g	
Included 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: 24°C , Supply voltage: 24 VDC, Sampling period: 500 µs,
Averaging: 512, Measuring distance: Center of the range,
Testing object: White ceramic

*1. When "shift function" is ON, display shows 0 at the teaching position.
The number on the display can be as follows.
-7.50 to 37.5 (BGS-HL05**), -50.0 to 250.0 (BGS-HL25**)
*2 Sampling period: 1000 µs
*3 Hysteresis setting: 0.02 mm (BGS-H(D)L05**), 0.2 mm (BGS-H(D)L25**)
*4 Defined with center strength $1/e^2$ (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.
*5 Default value: 1.5 to 7 ms (BGS-H(D)L05**), 3 to 14 ms (BGS-H(D)L25**)
*6 Default value: 0.15 mm (BGS-H(D)L05**), 1 mm (BGS-H(D)L25**)
*7 Except output current of control output

Laser class (IEC/JIS/FDA*)

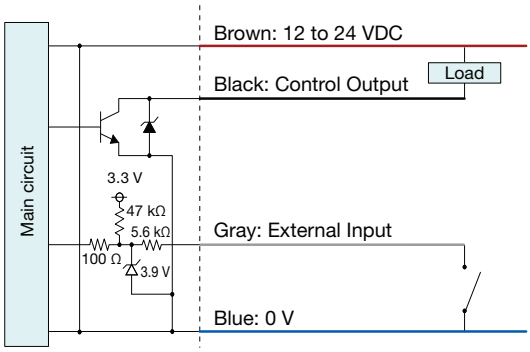
CLASS 1	CLASS 2
BGS-HL05T	BGS-HL25T2
BGS-HLM05T	BGS-HLM25T2
BGS-HL05TC	BGS-HL25TC2
BGS-HLM05TC	BGS-HLM25TC2
BGS-HL25T	BGS-HDL25T2
BGS-HLM25T	BGS-HDL25TM122
BGS-HL25TC	
BGS-HLM25TC	
BGS-HDL05T	
BGS-HDL05TM12	

* These products are Classified as CLASS 1 or CLASS 2 by IEC 60825-1 according to Laser Notice No.50, FDA Guidance Document.

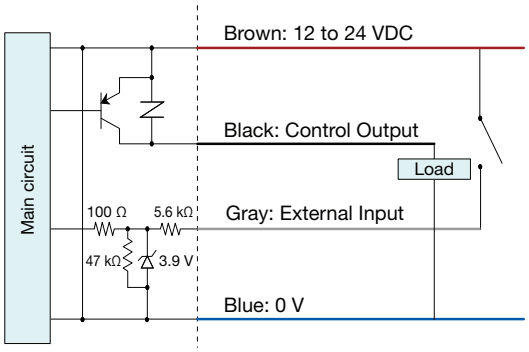
I/O circuit diagram

BGS-HL series

NPN mode

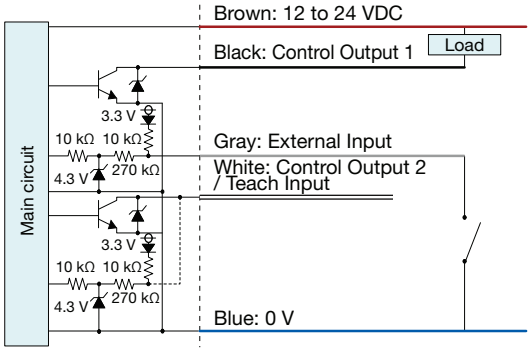


PNP mode

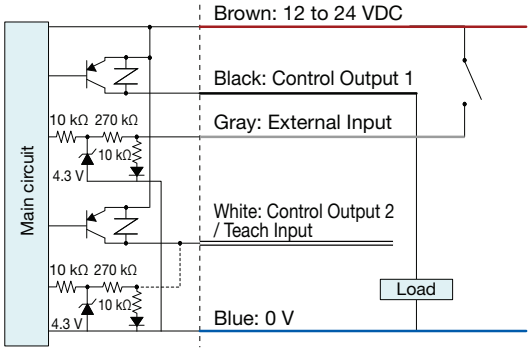


BGS-HDL series

NPN mode

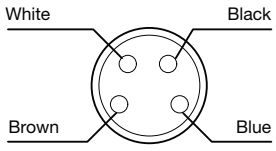


PNP mode

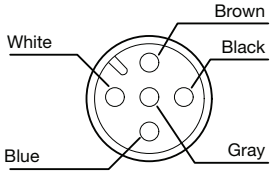


Connector pin configuration (sensor side)

M8 connector type (BGS-HL series)



M12 connector type (BGS-HDL series)



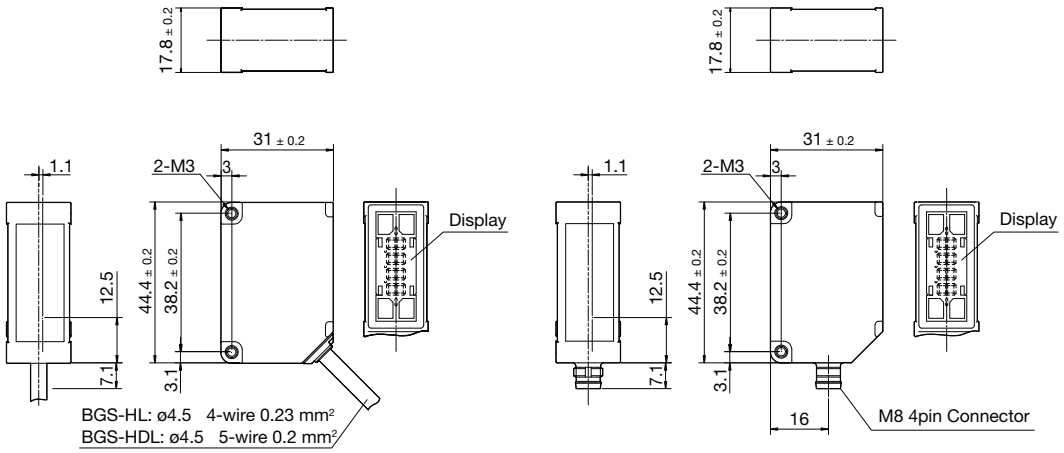
Dimensions

Sensor

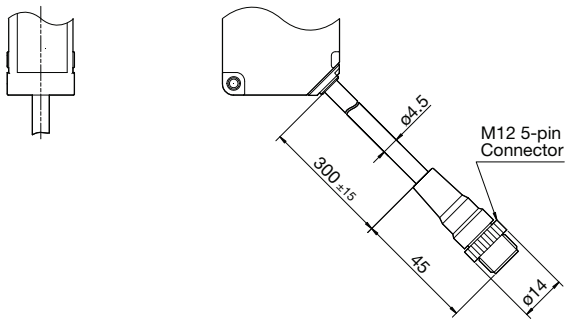
■ Cable type (BGS-HL/-HDL series)

■ M8 connector type (BGS-HL series)

(Unit: mm)



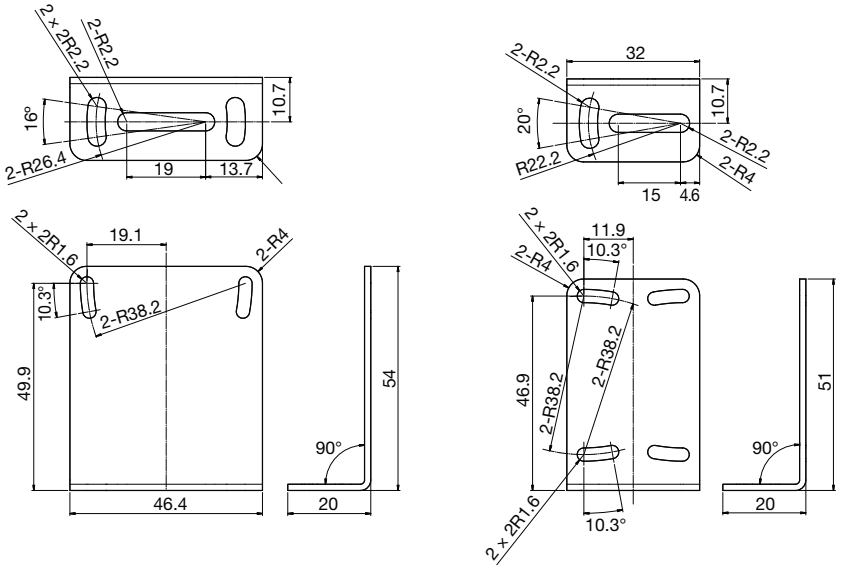
■ M12 connector type (BGS-HDL series)



Bracket

■ BEF-OD1-A (for M8 connector type)

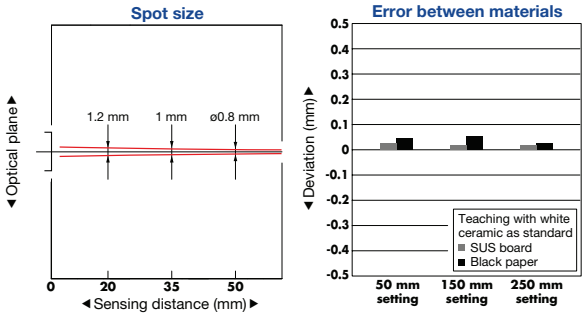
■ BEF-OD1-B (for cable type, M12 connector type)



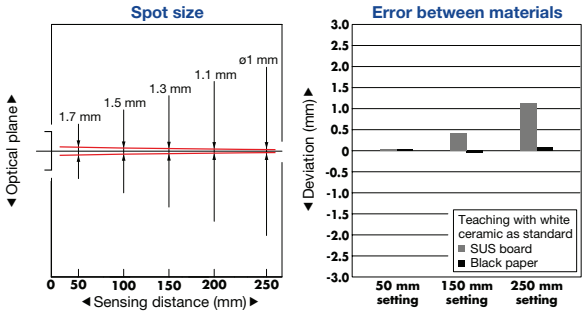
Photoelectric Sensors
Specialized Photoelectric Sensors
Laser Displacement Sensors
BGS Sensors
BGS-HL, BGS-HDL
BGS-DL
BGS-ZL, BGS-Z
BGS-ZM
BGS-S, BGS-2S
BGS
BGS-DL (potentiometer type)

Typical characteristic data

BGS-HL05T□□ / -HDL05T□□



BGS-HL25T□□ / -HDL25T□□



Precautions for laser light use

This product emits a Class 1 or Class 2 visible laser beam that is compliant with JIS C6802/ IEC/FDA laser safety standards. Labels for applicable standards are affixed or attached to the sides of the sensor.

Type of laser used in this product

Type	Red semiconductor laser
Wavelength	655 nm
Output	390 µW/1 mW

● Export to the United States
If you install this product in a piece of machinery that will then be exported to the United States, it is necessary to follow laser standards as stipulated by the American Food and Drug Administration (FDA). This product has already been submitted to the CDRH (Center for Devices and Radiological Health). If exporting to the United States, apply the attached seal to the product or replace the seal.

BGS-HL25T2



BGS-HDL25T2

