

# Laser Spot Sensor

## Background Suppression Type

# ZX-BGS



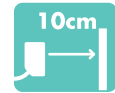
CE



Class II LASER Product

### SALIENT FEATURES

- ◆ ø1mm Spot size
- ◆ 250 μ sec Response
- ◆ External Laser Control
- ◆ Back Ground Suppression
- ◆ IP-67, Shock Resistant - 50G



### Model Number Legend

**ZX-BGS-□□□-□**  
 1    2    3 4 5 6

#### 1. Series

ZX

#### 2. Type

BGS: Diffuse Background Suppression Type

#### 3. Special Function

DS: Distance Settable

#### 4. Sensing Distance

100: 100 mm

300: 300 mm

#### 5. Output

N: NPN

P: PNP

#### 6. Connection

2M: 2m Cable

M8C: M8 Connector

#### #. Accessories included

Mounting Bracket : 1 set

Screws : 1 set

#### Example:

ZX-BGS-DS300P-2M

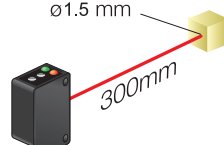
ZX Series - Diffuse Background Suppression Type - Distance Settable, 300mm Sensing Distance, PNP - 2m Cable

**NOTE:** Contact us for models not shown in catalogue.  
 Connector cables are sold separately; look in CC series catalogue for the same (www.inno.sg/cc).

## Product Highlights

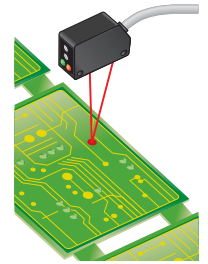
### ◆ Ultra small Spot size!

The short distance ZX-BGS-100DS□-□ models projects a very small spot of Ø1mm at 100mm distance. The ZX-BGS-300DS□-□ long distance models projects a spot of Ø1.5mm at 300mm distance. These are ideal for detection of very small targets at long distances.



### ◆ Ultra fast, BGS Laser.

The ultra fast 250 µsec sensing time coupled with the Background Suppression technology makes it a versatile unit. Its compact dimensions make it an ideal candidate for high speed inspection, packaging and printing machines.



### ◆ Externally controlled Laser beam!

External control of laser OFF is possible by connecting the gray wire to GND in NPN output and gray wire to 10-30 VDC in PNP output sensors.



### ◆ 4 Turn, Endless Pot.!

A four turn adjustment pot. is built in for precise adjustment of the sensing distance. The pot. has a slip-clutch that protects it from damage even when it is turned past the end limits.

## Ratings and Specifications

Type	Diffuse Reflective				
Models	NPN	ZX-BGS-DS100N-2M	ZX-BGS-DS100N-M8C	ZX-BGS-DS300N-2M	ZX-BGS-DS300N-M8C
	PNP	ZX-BGS-DS100P-2M	ZX-BGS-DS100P-M8C	ZX-BGS-DS300P-2M	ZX-BGS-DS300P-M8C
Sensing Distance	5-100mm			10-300mm	
Setting Distance	20-100mm			50-300mm	
Spot Size	Ø 1mm at 100mm			Ø 1.5mm at 300mm	
Hysteresis (white to white)	3%			5%	
Test Object	White Paper 100*100mm				
Response Time	250 µs				
Light Source	Red Laser Diode, Class2/ Class II IEC, FDA Regulation				
Light Wavelength	650 nm; Pulse Length 300 µs				
Sensitivity Adjustment	Built-in externally adjustable 4 turn endless pot.				
Operation Mode	Light ON/ Dark ON selectable				
Supply Voltage	10 - 30 VDC (Ripple Max 10%)				
Current Consumption	max. 30mA				
Protection Circuits	Reverse power supply polarity protection, Output short- circuit protection, Interference Prevention Function				
Connection	Prewired 2 meter cable outgoing type or M8 Connector (Male) type (depending on model)				
Control Output	NPN or PNP open collector output (depending on model)				
Control Output Rating	Load Voltage: max. 30 VDC; Load Current: max 100mA; Residual Voltage: NPN- max 1 V, PNP- min (-2.5 V)				
Operation Indication	Laser ON - Green; Output ON - Orange				
Vibration Resistance	10 to 55Hz Width 1.5mm				
Shock Resistance	upto 50G				
Ambient Temperature	Operation: -10° ~ 50°C; Storage: -25° ~ 70°C (non- freezing; non- condensing)				
Ambient Humidity	Operation: 35 ~ 85% RH; Storage: 35 ~ 90% RH (non- condensing)				
Protection Class	IP67				
Weight	aprox. 10g without cable				
Material	Housing: ABS with Glass, Lens: PMMA or Eqv.				

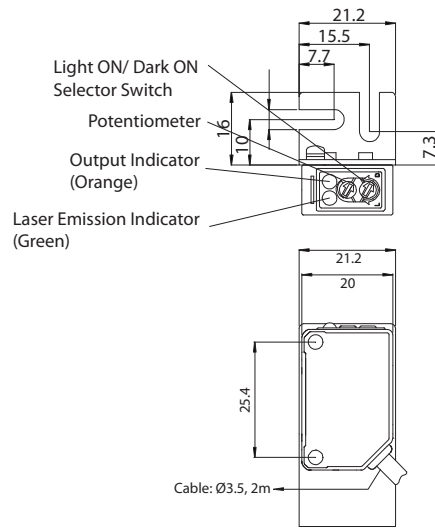
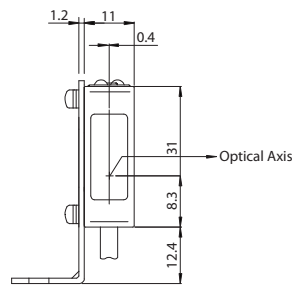
# Sensor Dimension Drawing

## ZX-BGS

All dimensions are in mm

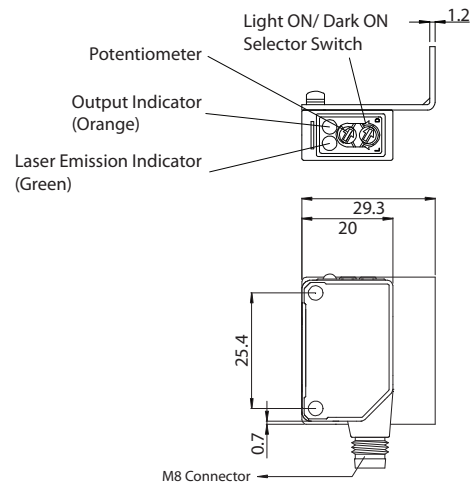
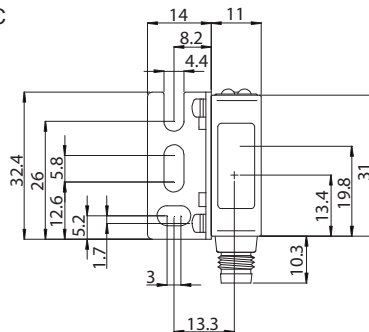
### Outgoing Cable Type

- ◆ ZX-BGS-DS100N-2M
- ◆ ZX-BGS-DS100P-2M
- ◆ ZX-BGS-DS300N-2M
- ◆ ZX-BGS-DS300P-2M



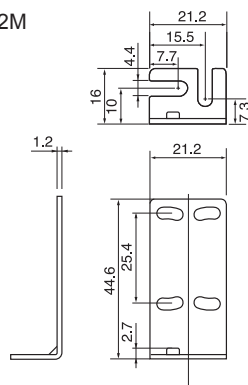
### Connector Type

- ◆ ZX-BGS-DS100N-M8C
- ◆ ZX-BGS-DS100P-M8C
- ◆ ZX-BGS-DS300N-M8C
- ◆ ZX-BGS-DS300P-M8C

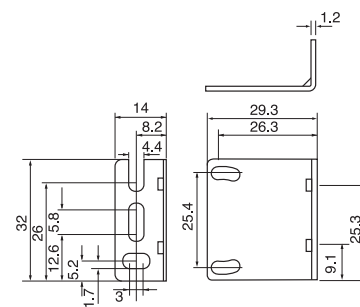


### Mouting Bracket

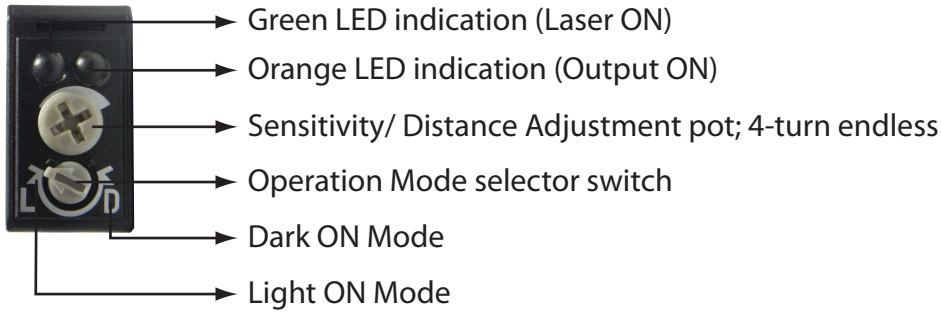
- ◆ ZX-BGS-\_\_\_-2M



- ◆ ZX-BGS-\_\_\_-M8C



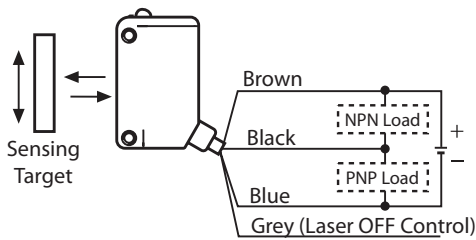
## Nomenclature



Note: Sensor adjustment screwdriver is provided along with the unit. Kindly use the same to avoid damage to the pot.

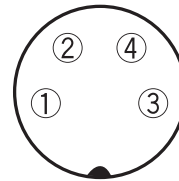
## Connection

### • Cable



Brown : DC 10~30V  
 Blue : GND  
 Black : Control Output  
 Gray : Laser Stop Control  
 (NPN to GND/ PNP to 24VDC)

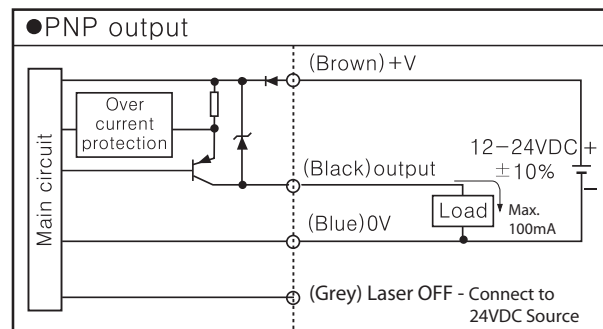
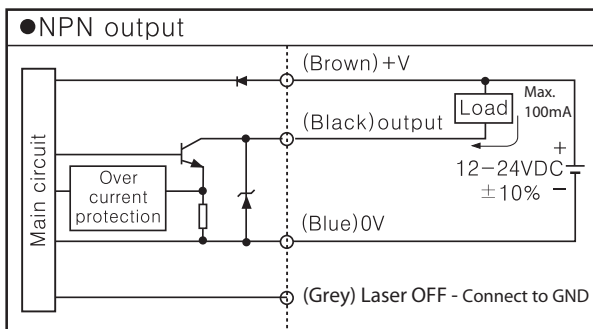
### • Connector \*



1 : DC 10~30V  
 2 : Laser Stop Control  
 (NPN to GND/ PNP to 24VDC)  
 3 : GND  
 4 : Control Output

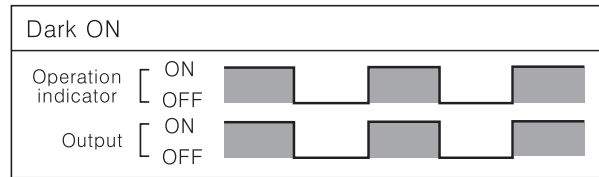
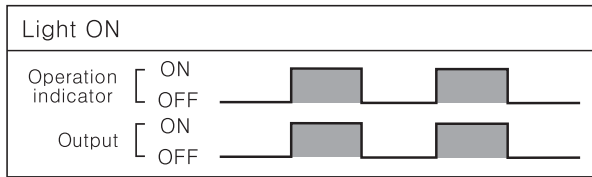
Note: \* - Connector Cable is not supplied along with unit

## Control Output Diagram

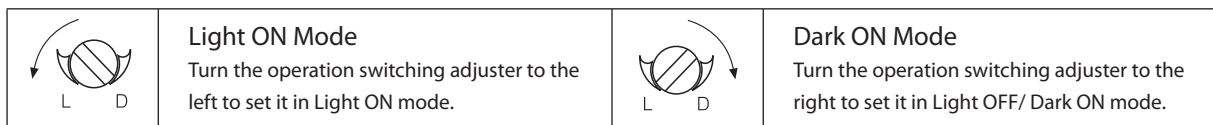


## Operation Type

ZX-BGS



## Operation Mode Adjustment

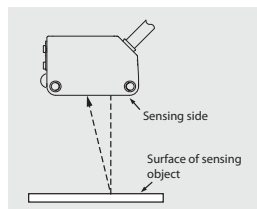


## Sensitivity Adjustment

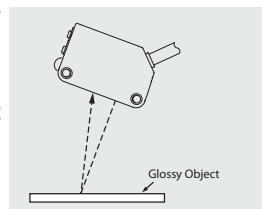
	<p>The sensitivity adjuster is a 4-turn endless potentiometer found on the top of the sensor unit. The adjuster is positioned just below the indication lamps.</p>
	<p>The adjuster is to be rotated in the clockwise direction to increase the sensitivity and thereby the sensing distance.</p>
	<p>The adjuster is to be rotated in the anti-clockwise direction to decrease the sensitivity and thereby the sensing distance.</p>

## Mounting and Adjustments

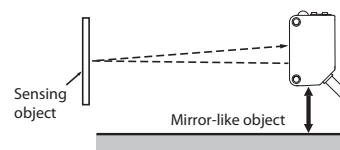
Make sure that the sensing side of the sensor is parallel with the surface of the sensing object. Normally, do not incline the sensor towards the sensing object.



If the sensing object has a glossy surface, incline the sensor by 5° to 10° as shown in the illustration, provided that the sensor is not influenced by background objects.



If there is a mirror like object below the sensor, the sensor may not operate correctly. Therefore ensure a separation or minimum distance of 10mm from the mirror like object.

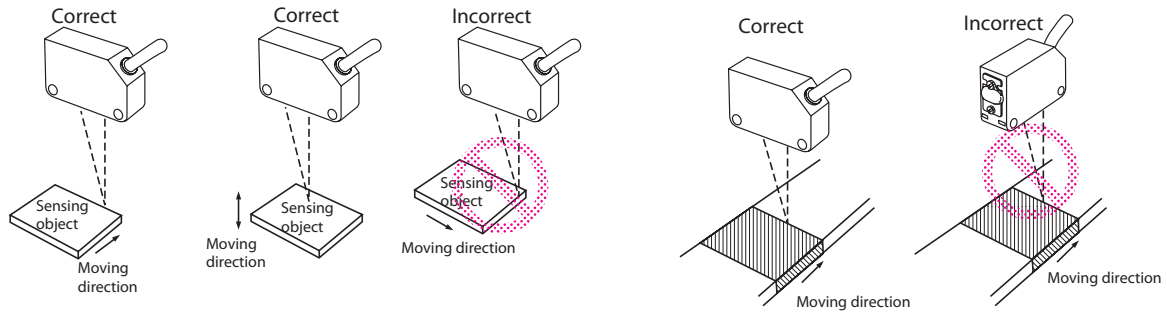


## Mounting and Adjustments

### ◆ Direction of mounting

Do not install the sensor in the wrong direction; refer to the following diagram.

Install the sensor as shown in the following illustration if the object greatly differs in color or reflectivity.



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