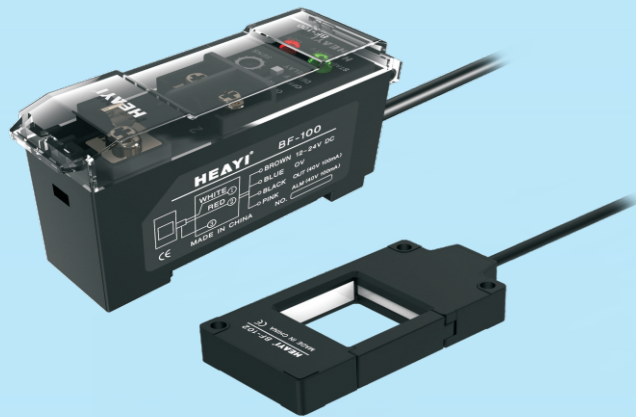


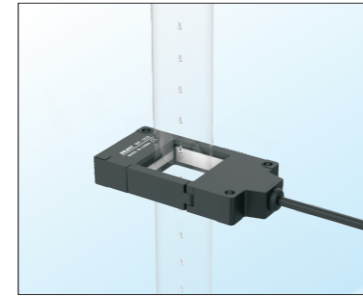
Optically passing photoelectric sensor BF-100/BF-102

Product features



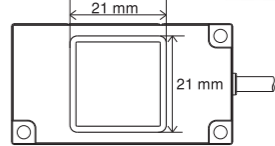
- The materials of the object are not limited;
Plastic, metal and other opaque objects can be detected.
- Perfect design of special flexible cable and anti break structure,
The service life of the sensor is greatly prolonged;
- The response speed is fast;
The fastest response speed can be up to 1000 times per second without missing detection.
- High detection accuracy;
The standard is 0.5mm, and 0.3mm can be customized.
- Strong anti-interference;
The built-in sensitivity compensation circuit enables the receiver to work normally even when the amount of light received is reduced due to dust.



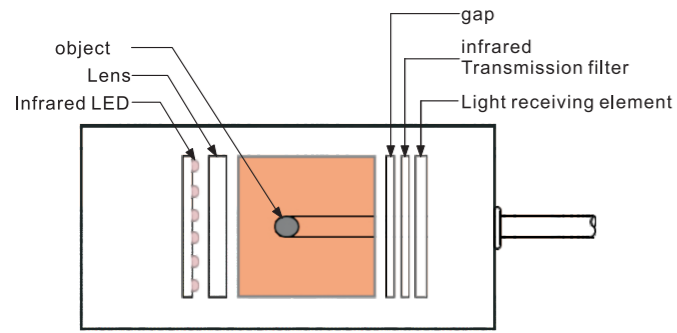
Application



Product parameters

Type	Amplifier	Sensor head
Model	BF-100	BF-102
Appearance		
Sensor head Dimensional drawing		
Smallest detectable object	diameter 0.5mm opaque object	
Light source	Infrared LED	
Sensitivity modulation	1 circle knob fine-tuning regulator	
Indicator	Output: Red LED; stable operation: green LED	
Output	control output	NPN: maximum 100mA (maximum 40V), residual voltage: Max 1V
	Self diagnosis output	NPN: maximum 100mA (maximum 40V), residual voltage: Max 1V
	reaction time	0.2ms
	Off time	0.5ms
Delay function	70ms (selectable)	
Power	12 to 24VDC±10%	
Current Consumption	Max. 40mA	
Ambient luminosity	filament lamp: maximum 10000lux; daylight maximum: 1500lux	
Ambient temperature	Sensor head : -10 to +50°C , Amplifier : -10 to +50°C , no freezing	
relative humidity	35 to 85% , no condensation	
Case material	polycarbonate	
Weight	Sensor head (with 2m cable) : about 40g Amplifier(with 2m cable) about 100g	

Operating principle

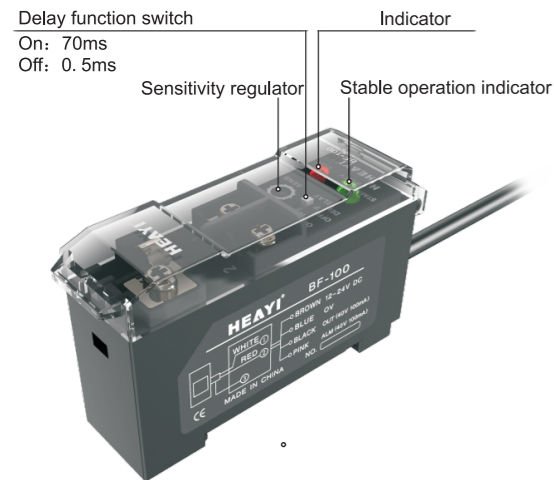


The light emitted by the infrared light-emitting LED evenly passes through the special lens, forming a detection area of 21 square mm. When an object passes through the area, the amount of light varies in proportion to the size of the object. By magnifying the change detection method, even objects with a diameter of 0.5mm can be detected stably.

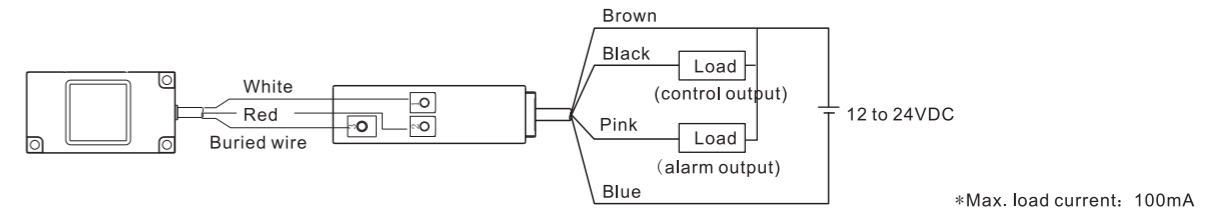
Chip falling from the transparent tube can be detected

If the ordinary optical sensor is used, the curved surface of the pipe will refract the light, which will form a blind area on one side of the pipe, and it is difficult to detect the workpiece. Optical pass bf-100 series products project light around the pipe, and equipped with a mirror to compensate for light reception and uneven light, such a structure almost does not produce dead zone.

Amplifier unit / panel

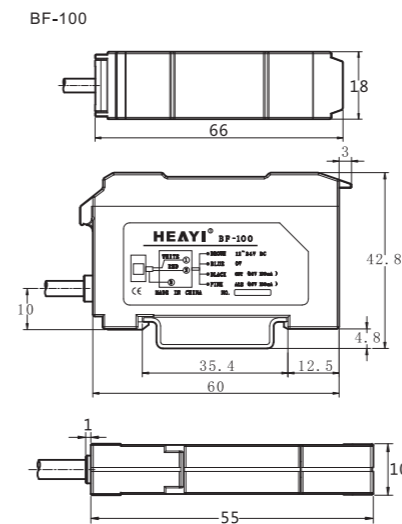


Wiring diagram

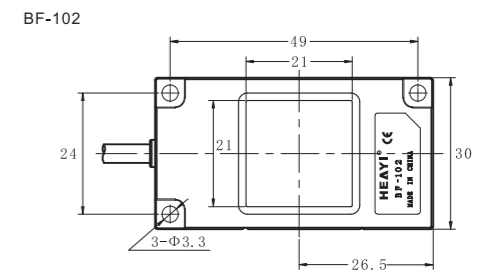


Dimensions

Amplifier



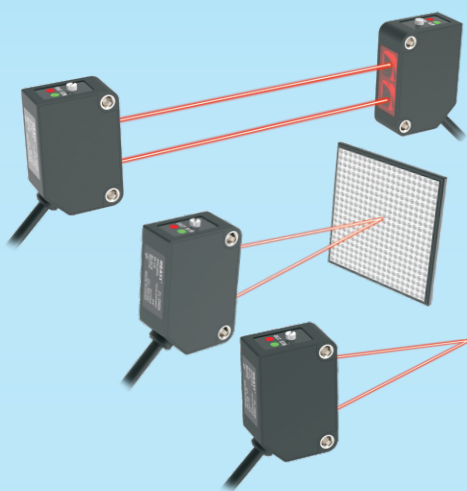
Sensor head



Square type photoelectric sensor ZL-D/T/R series

Product features

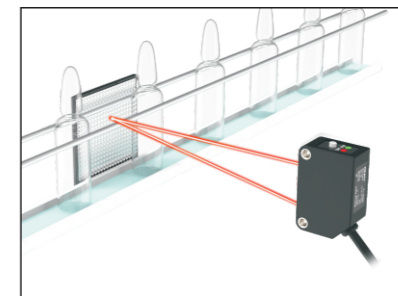
- High stability, unique interference light avoidance algorithm;
- Visible red LED light source, easy to install and debug;
- Built in photoelectric sensor chip;
- Fast speed;
- Strong anti-interference;
- High stability



Application





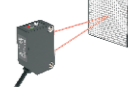
Detection circuit element



Retro reflective photoelectric sensor To test the transparent glass bottle

Product parameters

ZL-D50N

Appearance							
Type		Diffuse		Through beam		Retro	
Model	NPN	ZL-D10N	ZL-D50N	ZL-T10N	ZL-R20N	ZL-R30N	
	PNP	ZL-D10P	ZL-D50P	ZL-T10P	ZL-R20P	ZL-R30P	
Sensing range		100mm	500mm	10m	2m	2m	
Object		200X200mm white paper		φ 10mm Opaque objects	45X45mm Opaque objects	≥ 5mm Opaque object	
Light source		Red LED					
Power		12~24V DC ± 10%					
Wiring		4 cores cable					
Sensitivity modulation		One turn of the knob is adjustable (230 °)					
Output control		NPN collector open circuit is 24V, max. 50 mA; PNP collector open circuit is 24V, max. 50 mA					
Working mode		L-ON/D-ON (optional for wiring)					
Reaction time		Max. 3ms					
Current consumption		Max. 20mA					
IP Level		IP67					
Protection circuit		Reverse electrode protection, short circuit protection					
Ambient illuminance		Incandescent lamp: Max. 5,000lux , Sunlight Max. 20,000lux					
Ambient temperature / humidity		-20 °C to +55 °C, no freezing / 35 to 85% relative humidity					
Dimension		21mm (L) X11.4mm (W) X32mm (H)					

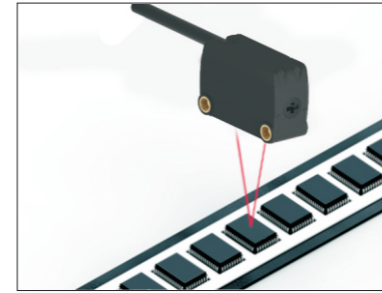
BGS Photoelectric sensor ZL-B05/ZL-B10 series

Product features

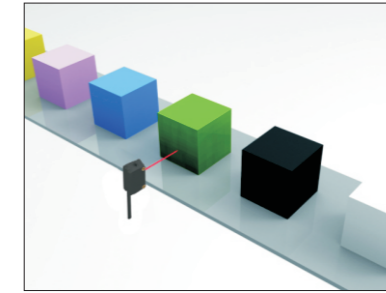
- The perfect application of BGS function, even in the production line with the circulation of different color workpieces, there is no need to adjust the detection distance;
- High precision, small differential distance, can detect small segment difference;
- Anti interference, according to the unique external interference light avoidance algorithm can also resist the frequency conversion fluorescent lamp;



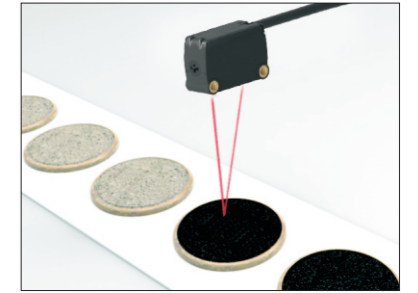
Application



Detected the metal parts of IC




Not affected by target color and background color




Detect fast moving objects

Product parameters

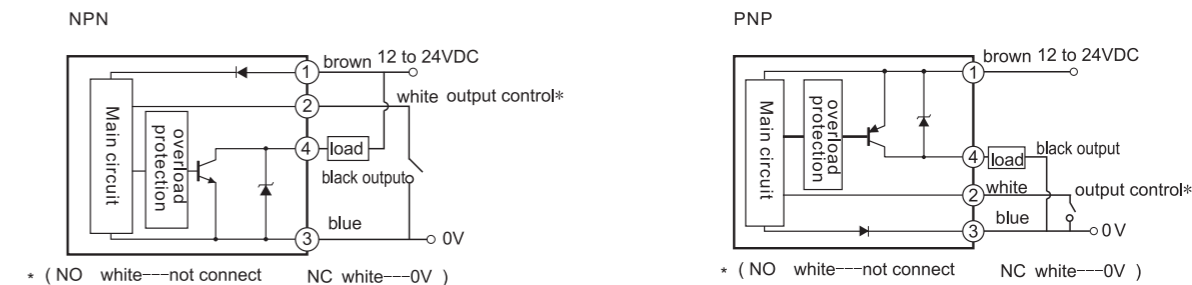
ZL-B05

Appearance		
Type	NPN	PNP
Model	ZL-B05N	ZL-B05P
Light source	Red LED (660nm)	
Sensing range	2-40mm	
Spot diameter	about 3mm (When 40mm distance)	
Repeatability accuracy	Along detection axis: max. 1mm / Perpendicular to the detection axis: max. 0.3mm	
Power	12~24VDC±10%, Ripple (P-P) : max.10%	
Indicator	Red (output indicator) , Green (stable indicator)	
Output mode	LIGHT-ON/DARK-ON	
Reaction time	max. 1ms	
Current consumption	15mA	
Output control	NPN output	NPN collector open circuit 24V; maximum output current: 50 mA; residual voltage 1V or less
	PNP output	PNP collector open circuit 24V; maximum output current: 50 mA; residual voltage 1V or less
protection circuit	Reverse electrode protection (power supply), over-current protection (output)	
Ambient tolerance	illuminance	Incandescent lamp: illumination degree of light receiving surface is below 3000lx
	Temperature	-20℃ to +55℃, no freezing
	Humidity	35 to 85%RH, no condensation
	Vibration	10 to 55Hz, Composite amplitude 1.5mm, X、Y、Z axis direction each 2 hours
	Shock	500m/s ² X、Y、Z each axis direction 3 times
Case material	PBT	
Dimension	31.4mm(H)*11.4mm(W)*21mm(D)	

ZL-B10

Appearance			
Model	NPN	ZL-B10N	ZL-B20N
	PNP	ZL-B10P	ZL-B20P
Setting range	20-80mm		10 ~ 250mm
Sensing range	2-80mm		35 ~ 140mm
Hysteresis	2% Max(White dull paper)		
Repeatability accuracy	Along detection of shaft:lower than 1mm, Perpendicular to the detection axis:lower than 0.2mm		
Power	12-24V DC±10% Ripple P-P lower than 10%		
Current consumption	Max. 25mA		
Output	NPN open-controller transistor		PNP open-controller transistor
	Maximum sink current:100mA Applied Voltage:30V DC or less(between control output to 0V) Residual voltage:2V or less(At 100mA sink current) 1V or less(At 16mA sink current)		Maximum sink current:100mA Applied Voltage:30V DC or less(between control output to +V) Residual voltage:2V or less(At 100mA sink current) 1V or less(At 16mA sink current)
Control output	Light ON/Dark ON Equip with two outputs		
Protection	Short Circuit Protection		
Reaction time	max. 1ms		
Working indicator	Red LED (output light on)		
Power indicator	Green LED		
Range Setting Regulator	5-turn knob adjuster		
Detection Mode	BGS		
Automatic Anti-interference Function	YES		
Protection	IP67		
Ambient Temperature	-25 to + 55℃ (no freezing), storage: 35 to +85%RH		
Ambient humidity	35 to +85%RH, storage: 35 to +85%RH		
Ambient illuminance	Incandescent lamp: illumination degree of light receiving surface is below 3000lx		
Withstand voltage	AC1000V 1 min between all power connection terminals and enclosure		
Insulation resistance	All power connection terminals and enclosure, more than 20MΩ, based on dc250v megger		
Vibration Resistance	10 ~ 500HZ amplitude 3mm(MAX.50G) X,Y and Z each 2 hours		
Shock Resistance	Acceleration 500 m/s ² (about 50G) X, Y, Z each 2 hours		
Cast Light Element	Red LED(emit peak wavelength:650nm,adjustable)		
Photoelectric Diameter	About φ2mm (The distance at 50mm)	About φ15mm (The distance at 300mm)	
Cage Material	Shell:PC		
Cable	φ3.8 wire , 4 cores,length 2m		

ZL-B10



User guide

ZL-B10N/ZL-B10P/ZL-B20N/ZL-B20P

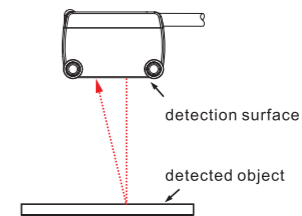
Installation

About installation

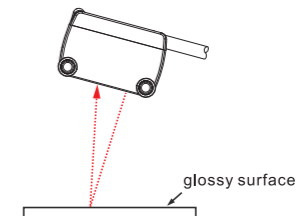
- When the sensors are installed in opposite directions, mutual interference may occur. Therefore, please avoid the opposite installation of optical axis of sensors.
- When setting, please avoid sunlight, fluorescent lamp, incandescent lamp and other strong light into the pointing angle of photoelectric sensor.

About installation direction

- During installation, the detection surface of photoelectric sensor should be equal to the detected object (can not inclined to the detected object)

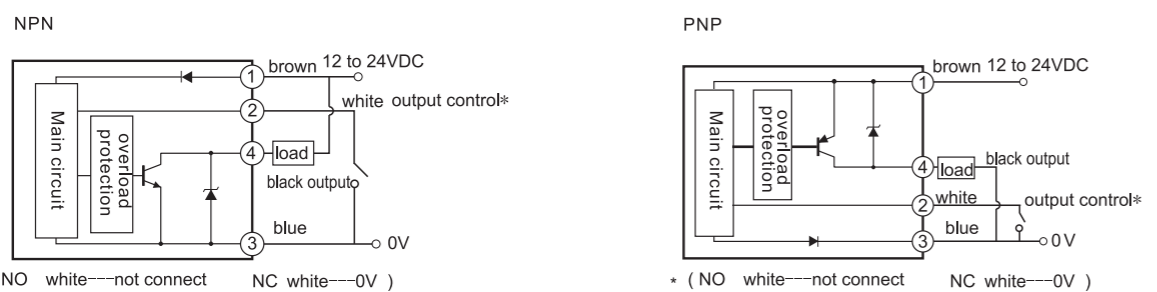


- However, in the detection of glossy objects (glossy surface), as shown in the figure below, the photoelectric switch is installed after tilting 5-10 degrees. In this case, make sure there is no effect on the background object.

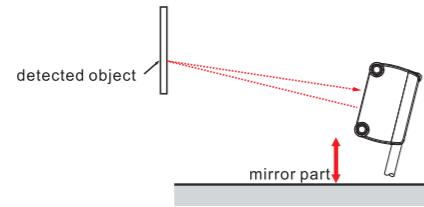


I/O circuit diagram

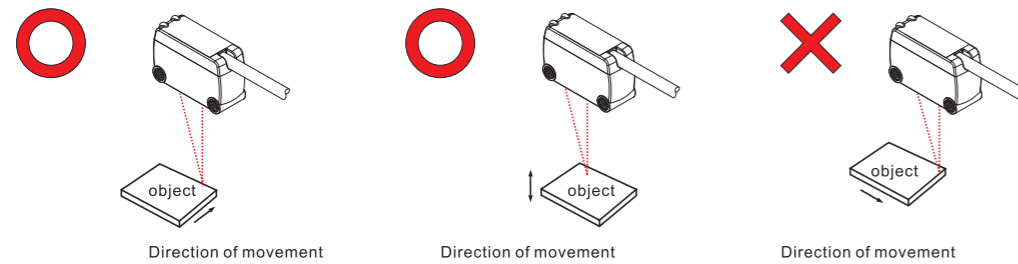
ZL-B05



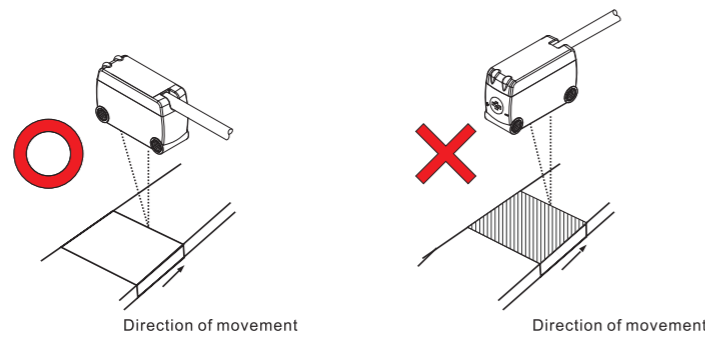
- When there is a mirror under the sensor, the light emitted from the detected object is reflected to the mirror body, and reversely returns to the photoelectric switch. Sometimes, the action is unstable. Therefore, the photoelectric switch should be installed as shown in the figure below, so that the photoelectric switch can be installed after tilting or keeping a certain distance from the bottom.



- As for the installation direction of the photoelectric switch, pay attention to the moving direction of the measured object, as shown in the figure below



- In addition, when the color and material of the object have extreme changes, install it as shown in the figure below



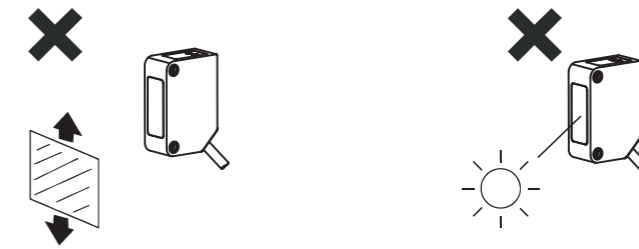
ZL-B05

- Correct installation



x Wrong installation

- Use in direct sunlight
- Use in the place with high humidity or easy condensation
- Use in the place containing corrosive gas
- In the vibration or shock can directly affect the use of sensors

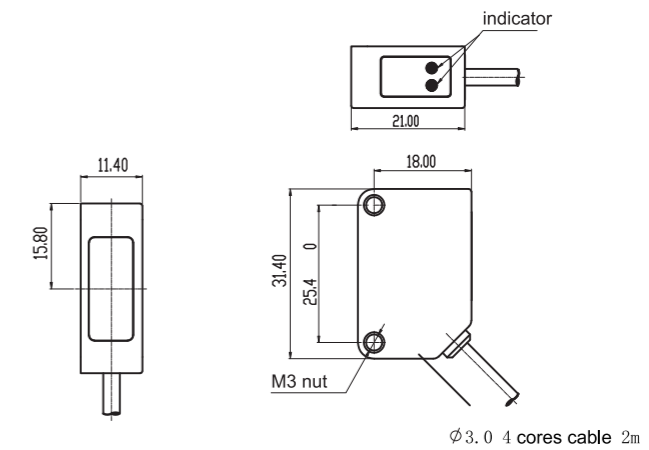


Do not use sensors to detect objects in this direction, which may cause unstable operation.

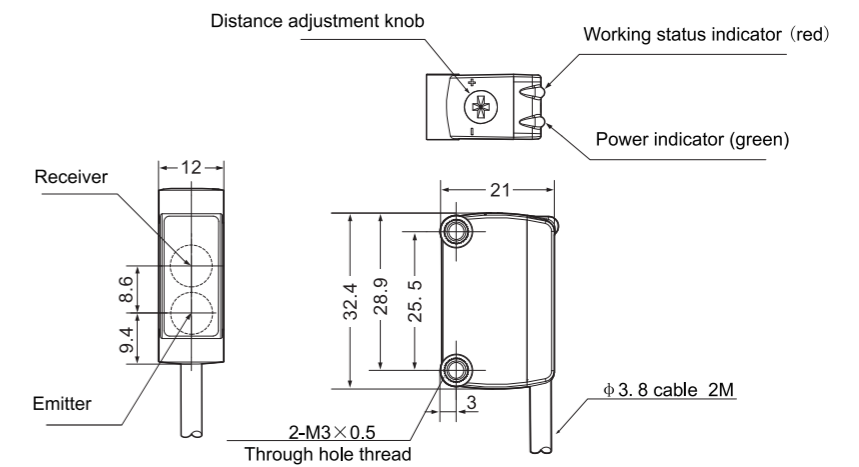
When installing, do not let sunlight or light directly illuminate the sensor sensing surface.

Dimensions

ZL-B05N



ZL-B10N/ZL-B10P/ZL-B20N/ZL-B20P



Digital display
Photoelectric sensor

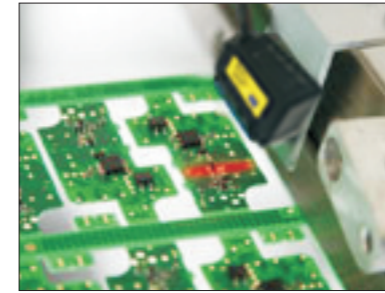
ZL-BG150 series

Product features

- Line spot design, suitable for detecting PCB on conveyor belt;
- Point spot, suitable for long range detection.
- 50 μ s high reaction speed ;
- with delay function ;
- One key setting and two key setting are available ;
- Line spot and point spot can be selected.




Application

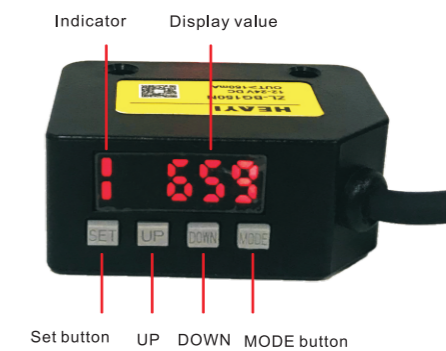


Line spot to ignore the gap of PCB

Product parameters

Appearance		
Model	NPN	ZL-DL150N(line spot)
	PNP	ZL-D1000N(point spot)
Output port	one output port	
Light source	Red LED	
Reaction time	0.5ms	
Output	LIGHT-ON/DARK-ON in one	
Display	Digital display, preset value (4-digit red LED), current value (4-digit red LED). The current value is displayed after power on, and the current value range is 4089	
Detection mode	light intensity	
Delay function	Turn off the delay timer and turn on the delay timer. Turn off the single time delay timer and turn on the single time delay timer. Delay time can be selected: 1-9999ms	
Control output	Collector open circuit 24 V, max 100mA.	
Power	12-24VDC ±10% , Ripple P-P 10% or less.	
Ambient illuminance	Incandescent lamp: Acceptance surface illuminance 3,000lx or less	
Power loss	Standard mode Max. 0.5W (24VDC)	
Vibration Resistance	10-55 Hz, dual amplitude. 1.5 mm, X.Y.Z axis for 2 hours	
Impact Resistance	500 m/s ² , each 3 times for X/Y/Z axis	
Ambient temperature	10-55°C no freezing	
Cage material	Polycarbonate	
Ambient Humidity	35-85% RH No condensing	
Weight	about 53g (with 2M cable)	

Name of each part



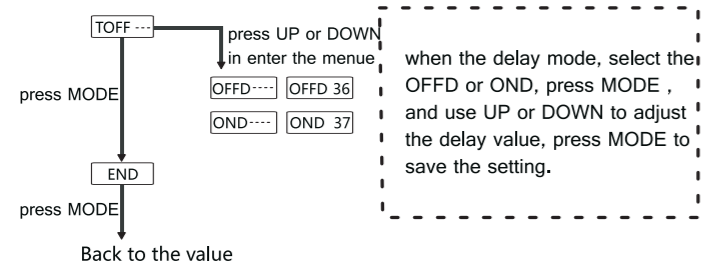
Setting

1. Light ON/ Dark On

Press mode button, the screen display the Previous setting value, press the MODE button again, display LON or DON, press UP or DOWN to select the output, press the MODE finish setting.

2. Delay function setting

Hold the MODE button for 3 seconds or more enter the menu



Delay function description

Delay mode	description
TOFF	Delay OFF
OND	Extended delay
OFFD	Reduce delay

3. Trigger value setting

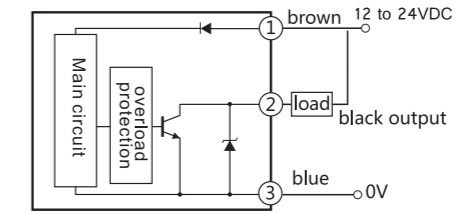
Aiming at the background, press SET button to display SET1 value and shield the background; place the target object and press SET button to display SET2, and quickly show to the current value. The setting is completed and the setting is recorded and saved.

4. Key LOC

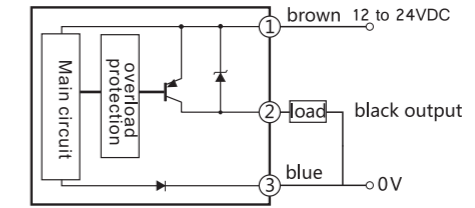
Press and hold the MODE and DOWN button for more than 3 seconds at the same time, the screen displays Loc. At this time, all the keys are locked. Press the MODE and DOWN button at the same time for more than 3 seconds again, the screen shows that the Uloc, key lock is released.

Output circuit

● NPN



● PNP



Dimension

ZL-DL150/ZL-D1000

