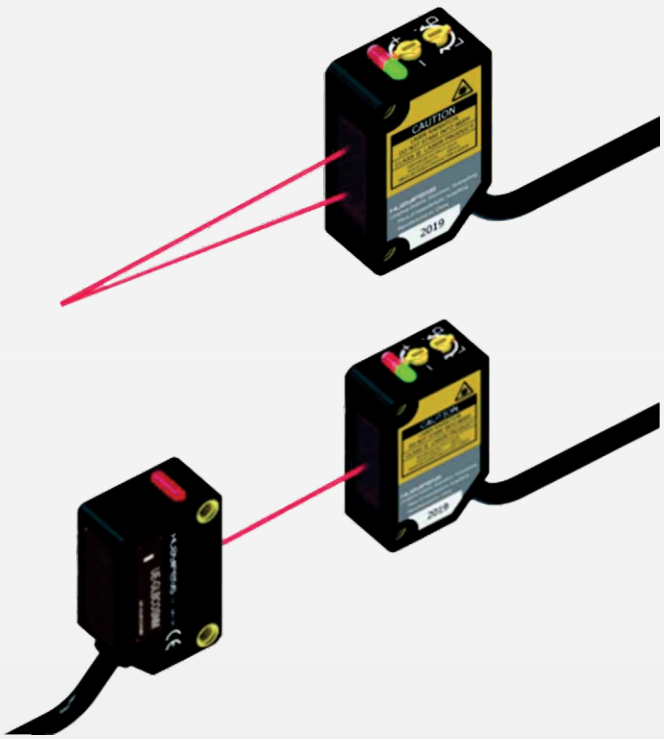
Laser Type Photoelectric sensor ZL-G/GT/GR series



Product characteristics

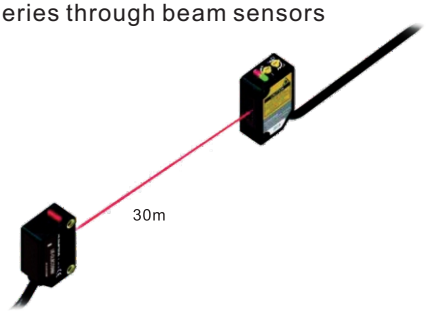
Ultra small spot;

The laser spot diameter is 2 mm,
It can accurately detect small objects with high repetition accuracy;

ZL-G series diffuse sensors



ZL-GT series through beam sensors



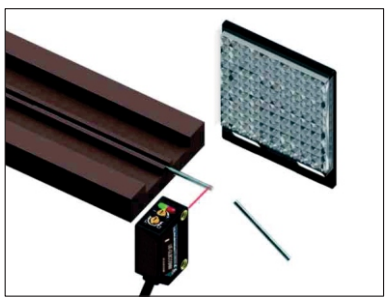
The maximum detection distance is 30m.

1 ms high speed response time;

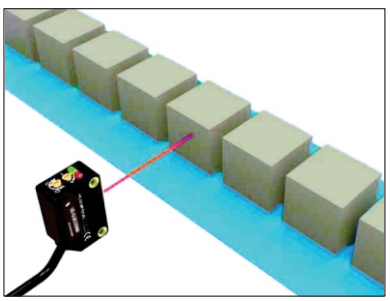
1 ms high speed response time, suitable for detecting fast passing objects;

Simple and easy adjustment;

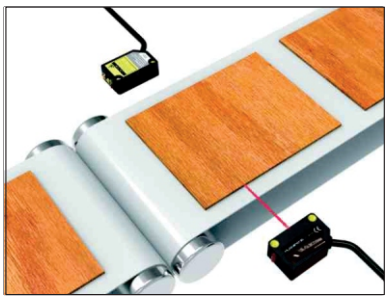
Application



Detection of metal parts

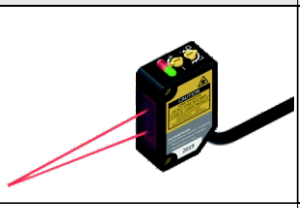
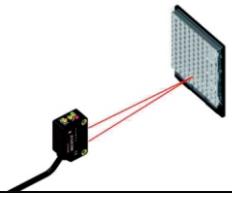


Detection of fast moving objects



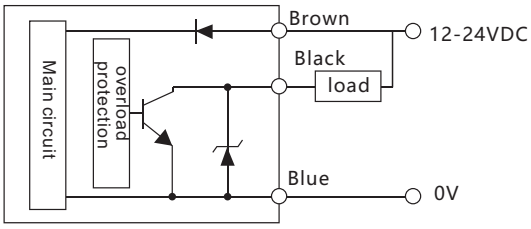
Detection of sheet

Technical parameter

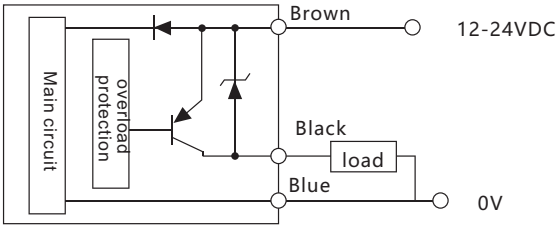
Type		Diffuse	Retro	Through beam
Model	NPN	ZL-G30N	ZL-GR10MN	ZL-GT30MN
	PNP	ZL-G30P	ZL-GR10MP	ZL-GT30MP
Apperance				
Sensing range		300mm	10m	30m
Current consumption		20mA max		30mA max
Spot size		about 1×2mm		
Hysteresis		20% Max.		
Light source		Laser 650nm		
Supply voltage		DC 12~24V±10%		
Response time		1ms max.		2ms max.
Ambient temperature		-10~+50℃		
Ambient humidity		35~85%		
Storage Tem./Hum.		-20~+60℃/35%~95%		
Vibration Resistance		10-55Hz, amplitude 1.5mm X,Y,Z each 2hours		
Shock Resistance		500m/s² amplitude, X,Y,Z each 3 times		
Protection		IP65		
Laser stage		classII		
Output Indicator		Red LED		
Power indicator		Orange LED		
Sensitivity adjust		Single turn potentiometer		
No/Nc mode		NO (light on) / NC (dark on) can switch		
Connection type		Cable type (2m standard cable)		
Shell Material		PC		

I / O circuit diagram

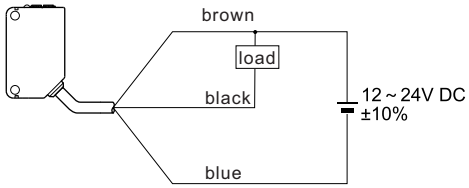
NPN



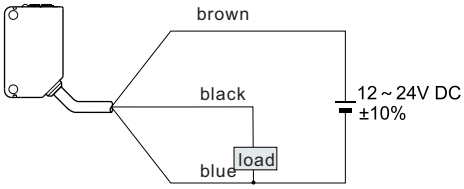
PNP



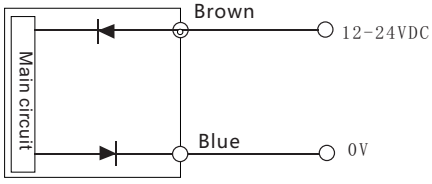
Wiring diagram



Wiring diagram

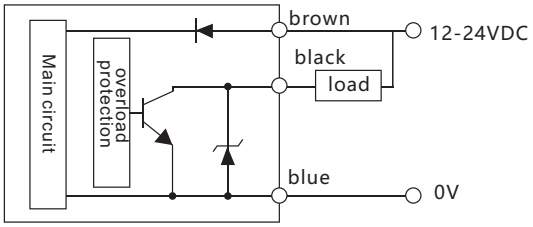


Circuit diagram of emitter

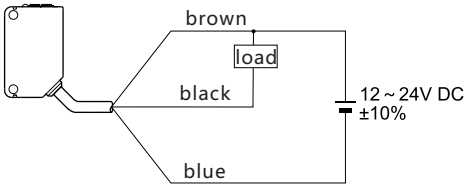


I / O circuit diagram

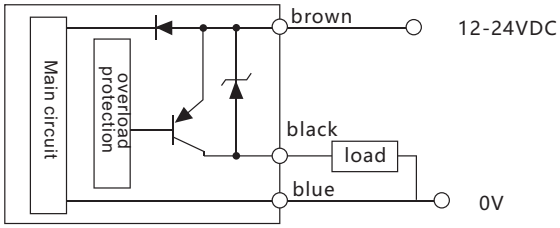
- NPN



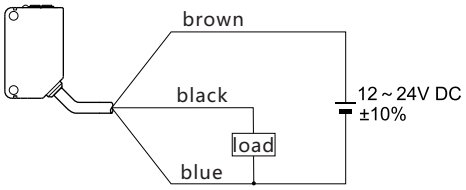
- Connection diagram



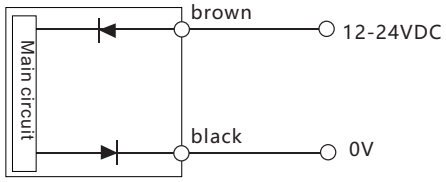
- PNP



- Connection diagram

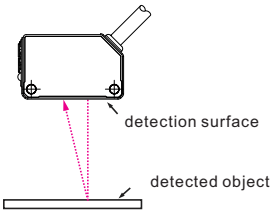


- Circuit diagram of emitter

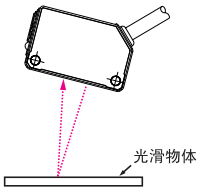


About installation direction

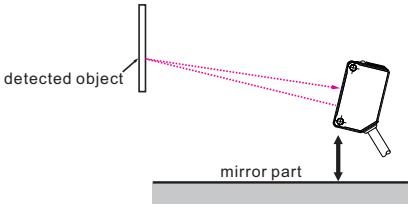
During installation, the detection surface of photoelectric sensor should be equal to the detected object (can not inclined to the detected object)



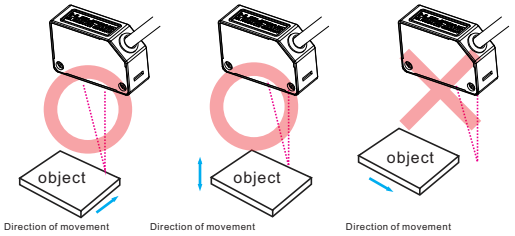
However, in the detection of glossy objects (glossy surface), as shown in the figure below, the photoelectric switch is installed after tilting 5-10 degrees. In this case,make sure there is no effect on the background object.



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.

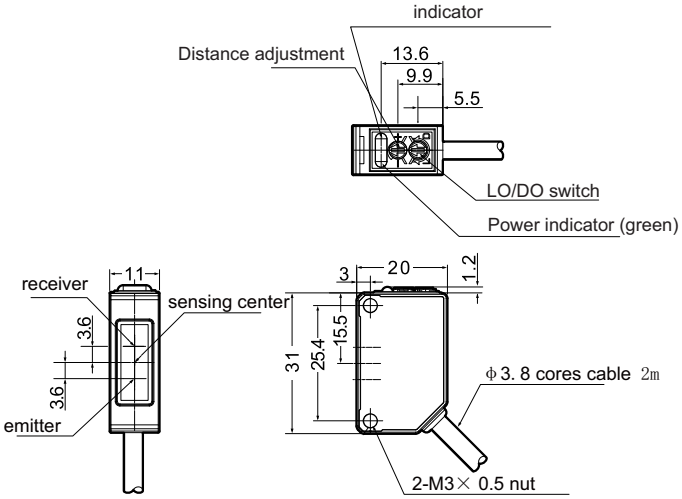


As for the installation direction of the photoelectric switch, pay attention to the moving direction of the measured object, as shown in the figure below

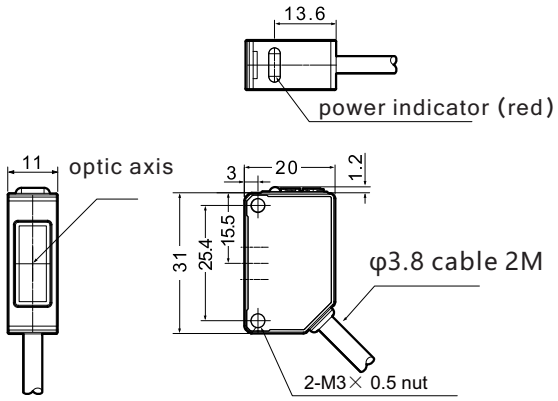


Dimensions

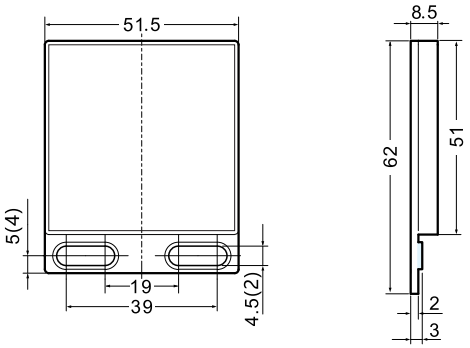
ZL-G30N/ZL-GR10MN/ZL-GT30MN receiver



ZL-GT30MN emitter



Reflector



Square type BGS laser photo sensor ZL-BG series



Product characteristics

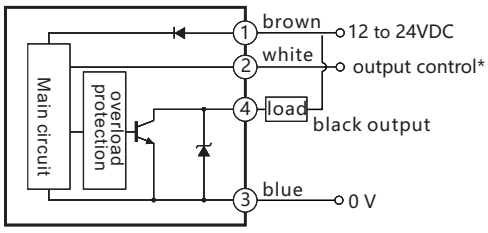
- Laser light source, small spot to achieve accurate detection of small objects;
- With BGS function, the detection is not affected by workpiece material and background color;
- Point spot or line spot can be selected according to application requirements;
- Strong anti-interference and high stability.

Product specifications

Type		Diffuse	
Model	NPN	ZL-BG30N(point spot)	ZL-BGL30N(line spot)
	PNP	ZL-BG30P(point spot)	ZL-BGL30P(line spot)
Appearance			
Sensing range		40-300mm(white paper 100mm) 40-280mm(black paper 100mm)	
Black and white error		3%(distance 160mm)	
Hysisteresis		Less than 3% of rated detection distance	
Sensing range		30-300mm	
Current consumption		Max. 30mA	
Light source		Laser (655mm)	
		JIS/IEC CLASS1,FDA CLASSI max. 4.5mW	
Control output		The load power supply voltage is max. DC26.4V, the load current is max. 100mA, the leakage current is less than 10 μ, and the collector is open circuit output	
Output residual voltage		Residual voltage below 1V (load current max. 10mA) residual voltage below 2V (load current max. 10 ~ 100mA)	
Power voltage		DC 12~24V±10% ripple (P-P) max.10%	
Response time		max. 0.5ms	
Ambient temperature		Working :-25~+55℃、storage: -40℃~+70℃	
Ambient humidity		Working:35~85%RH、storage: -35~95%RH	
Protection		Power reverse protection / load short circuit protection / mutual interference prevention function / output reverse connection protection	
Ip level		IEC60529: IP6	
Material	shell	Polybutylene terephthalate	
	display unit	Polyester rubber	
	lens	Polyester rubber	

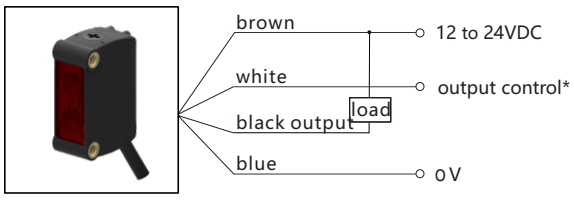
I / O circuit diagram

- NPN

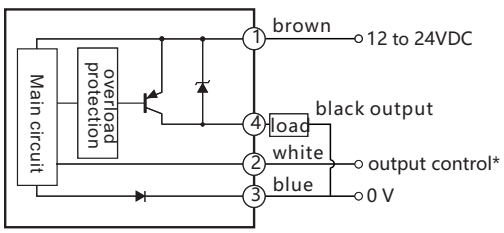


*LIGHT-ON模式 白色---NC (浮空)
DARK-ON模式 白色---0V

- Connection diagram

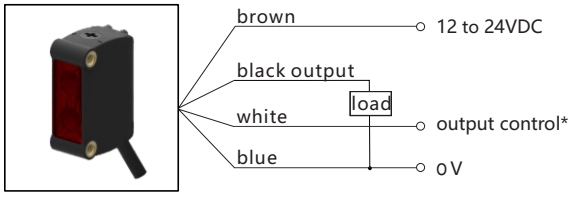


- PNP



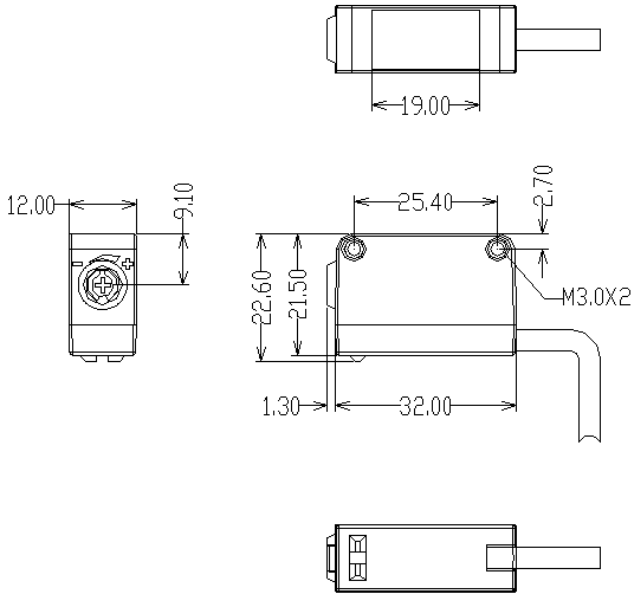
*LIGHT-ON模式 白色---NC (浮空)
DARK-ON模式 白色---0V

- Connection diagram



ZL-BG series

Dimension



Subminiature laser Photoelectric sensor UF-GD/GT series



Product characteristics

- Ultra small spot;

  The laser spot diameter is 1.5mm,
  It can accurately detect small objects with high repetition accuracy.

- 1 ms high speed response time;

  1 ms high speed response time, suitable for detecting fast passing objects.

- Simple and easy adjustment;

  The laser is visible, so it can be easily adjusted while observing the light spot.

- Small size, save space;

- Easy to install, using standard m3 screws;

- A unique stable detection algorithm is adopted;

- Waterproof characteristics of stainless steel SUS316L shell;

- With metal shell, it can be used in high humidity environment of water or other liquids.

- Protection level.

  IP67

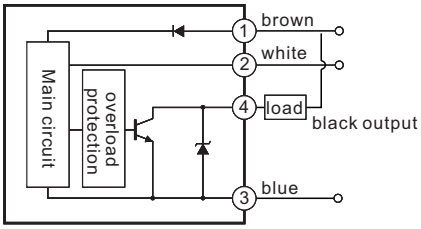
Product specifications

Type		Diffuse	Through beam
Model	NPN	UF-GD51N	UF-GT51N
	PNP	UF-GD51P	UF-GT51P
Apperance			
Sensing range		400mm	10m
Current consumption		20mA max	30mA max
Spot size		1.5mm	
Hysteresis		20% Max.	
Light source		laser 650nm	
Power voltage		DC 12~24V±10%	
Response time		1ms max.	
Ambient temperature		-10~+50℃	
Ambient humidity		35~85%	
Storage. Temp. / humidity		-20~+60℃/35%~95%	
Vibration (durability)		10 to 55Hz，Composite amplitude 1. 5mm，X、Y、Z axis direction each 2 hours	
Impact (durability)		500m/s² X、Y、Z each axis direction 3 times	
Protection level		IP67	
Laser grade		classll	
Output indicator		Red LED	
Power indicator		Green LED	
Sensitivity modulation		Single turn potentiometer	
No/Nc mode		No/ Nc can be swithched	
Connection mode		Cable 2M	
Shell material		SUS316L	

I / O circuit diagram

● Diffuse type

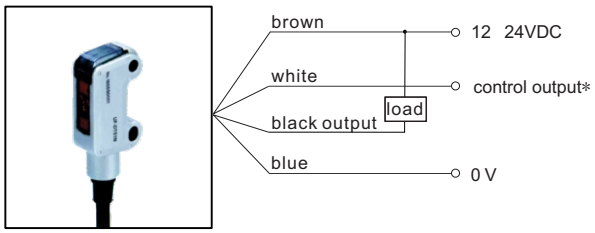
NPN



*LIGHT-ON mode
DARK-ON mode

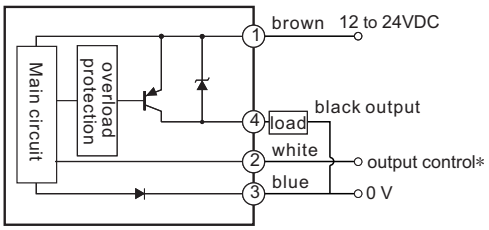
white---NC（not connect）
white---0V

Wiring diagram



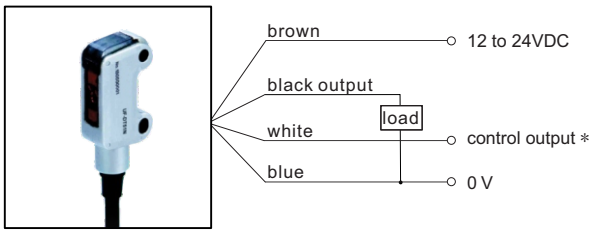
UE-G/GT/GR series

PNP

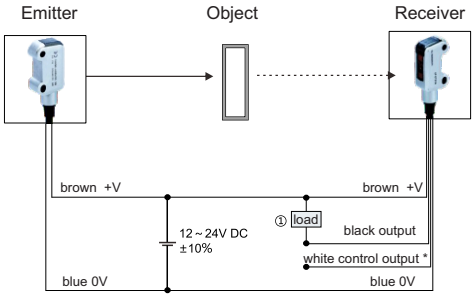


*LIGHT-ON mode white ---Nc（not connect）
DARK-ON mode white ---0V

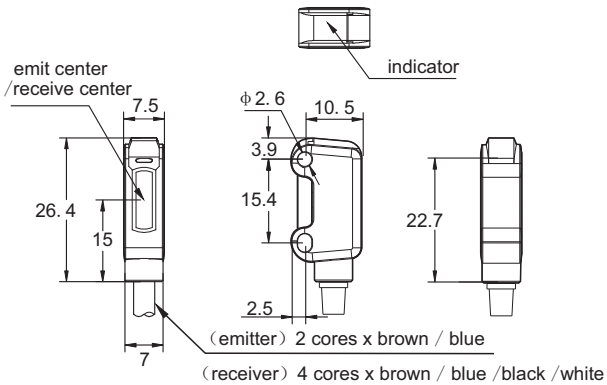
Wiring diagram



Through beam type



Product specifications



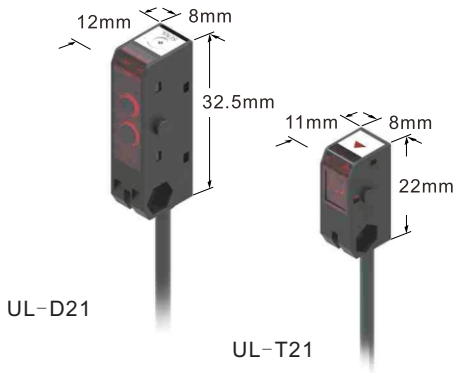
Square type photoelectric sensor

UL-D21 series



Product characteristics

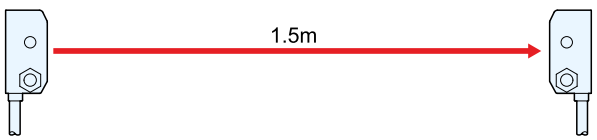
- Ultra small volume, save space;



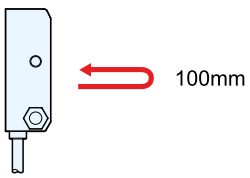
- Long detection distance

This series is small in size but can be tested over long distances, so it can also work on wide conveyors.

Through beam type



Diffuse type



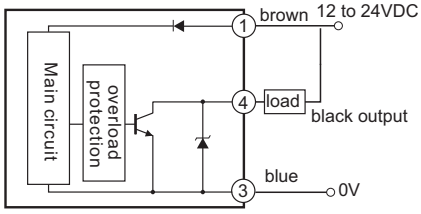
- The response time can reach 1ms;
- Two point calibration, sensitivity can be set automatically. Just press the sensitivity setting button twice, and press once when placing and not.

Product specifications

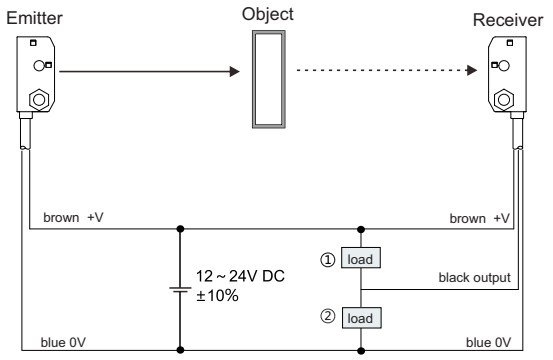
Model	NPN	UL-D21N	UL-T21N
Type		Diffuse	Through beam
Sensing range		10cm	1.5m
Light source		Infrared	Infrared
Reaction time		1ms	max. 3ms
Control output	NPN	NPN collector open circuit 24 V, maximum output 50 mA, residual voltage 1.5V	—
Protection circuit		Reverse electrode protection, over-current protection	Reverse electrode protection, short circuit protection
Rating	Power voltage	24VDC with ripple current (P-P) 10% Max.	12~24V DC
NPN		Max. 260mW (When 24V, 15mA Max.)	—
Ambient brightness		Fluorescent lamp: 20000lux Max., Sunlight: 5000lux Max.	Incandescent lamp: 5000lux Max., Sunlight: 20,000lux Max.
Ambient temperature		-20 to +55℃ (No freezing)	-20 to +55℃ (No freezing)
Ambient humidity		35 to 85%RH (No condensation)	35 to 85%RH (No condensation)
Vibration (durability)		10 to 55Hz，Composite amplitude 1.5mm，X、Y、Z axis direction each 2 hours	—
Impact (durability)		500m/s^2 X、Y、Z each axis direction 3 times	—
Shell material		polycarbonate	—
Dimensional		3.4mm (H)x1.2mm (W)x1.4mm (D)	—
Weight		21.5g	—

I / O circuit diagram

UL-D21



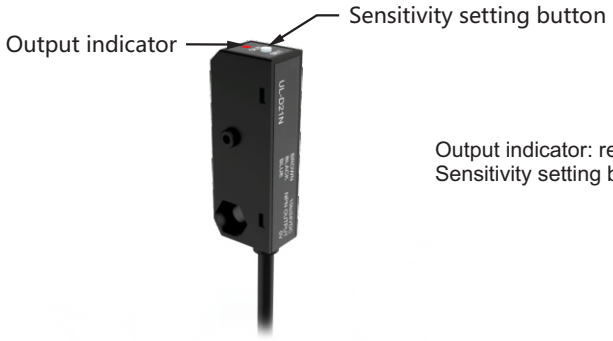
UL-T21



①NPN output
②PNP output

UL-D21 series

Name of each part

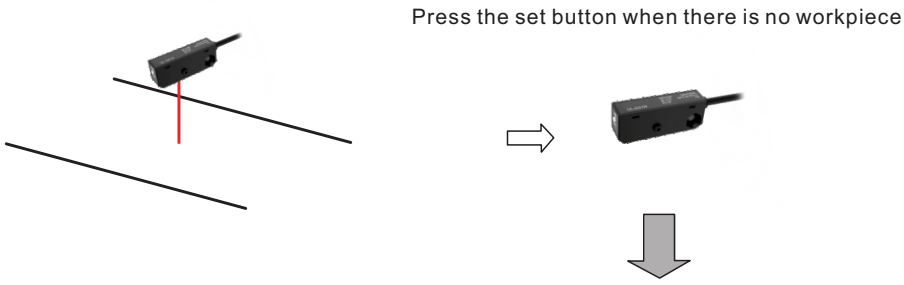


Output indicator: red. When an object is detected, the output indicator is on.
Sensitivity setting button: the sensitivity can be set by two-point calibration.

Calibration method

- Two point setting

Diffuse type setting mode

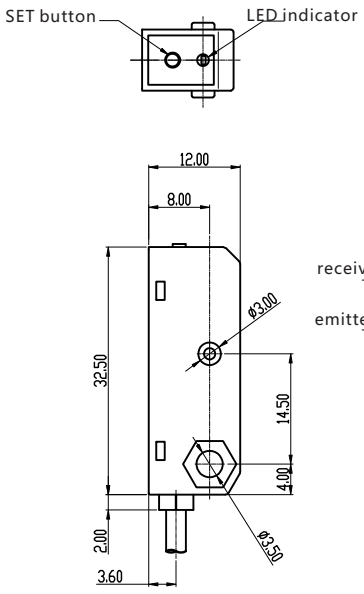




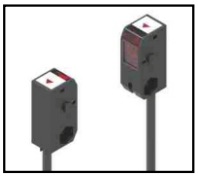
Dimensions

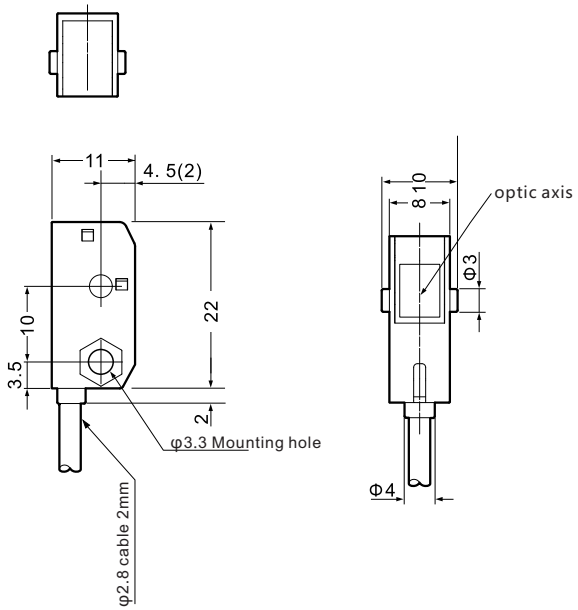
UL-D21N





UL-T21N





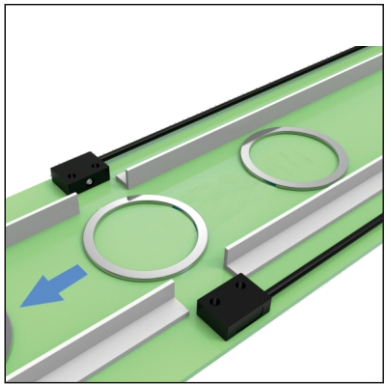
Photoelectric sensor UE-03 series



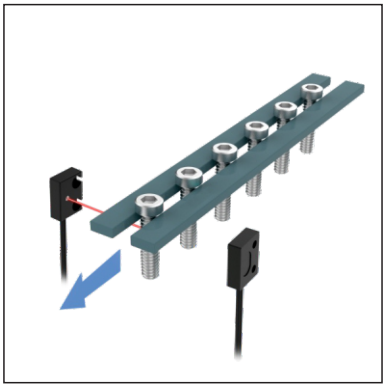
Product characteristics

- one key setting
- Small size, ultra-thin detector head, small volume, flexible and bending cable, good vibration resistance, impact resistance and strong anti-interference ability
- Installation is very simple, debugging free, low failure rate, greatly improving the stability of the feeding system detection, convenient maintenance;

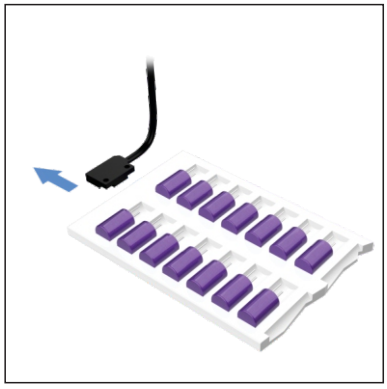
Application



Check whether there is thin workpiece on the conveyor belt



Inspection of small parts on conveyor belt



Detection of missing capacitors on the tray

Product specifications

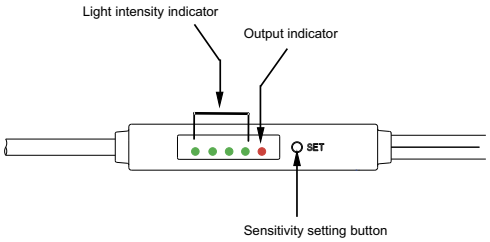
Model	NPN	UE-03D	UE-03L	UE-03R
	PNP	UE-03DP	UE-03LP	UE-03RP
Type		Front through beam	Side through beam	Diffuse
Sensing range		80cm	70cm	3cm
Light source		Infrared		
Response time		500μs		
Control output	NPN	NPN collector open circuit 24V; maximum output value: 50mA, residual voltage: 1.5V		
	PNP	PNP collector open circuit 24V; maximum output value: 50mA, residual voltage: 1.5V		
Protection circuit		Reverse electrode protection, over-current protection, over-voltage protection		
Power voltage		12 to 24 V DC ± 10%, ripple voltage P-P: 10% maximum		
NPN		Normal: maximum 360mW (15mA at 24V; 30mA at 12V)		
PNP		Normal: maximum 360MW (15mA at 24V; 30mA at 12V)		
Ambient luminosity		Incandescent lamp: 20000 lux; daylight: 30000 lux		
Ambient temperature		-20 to + 55 ° C (no freezing)		
Ambient humidity		35 to 85% RH (no condensation)		
Vibration resistance		10 to 55Hz, composite amplitude of 1.5mm, 2 hours in X, y and Z directions		
Impact resistance		500m / S² 3 times in X, y and Z axis directions		
Shell material		polycarbonate		
Dimensions		51mm(H)x8.5mm(W)x15mm(D)		
Weight		about 45g (with 2M cable)		

Name of each part

- Light intensity indicator: Green

- Output indicator: Red
  When an object is detected, the output indicator is on.

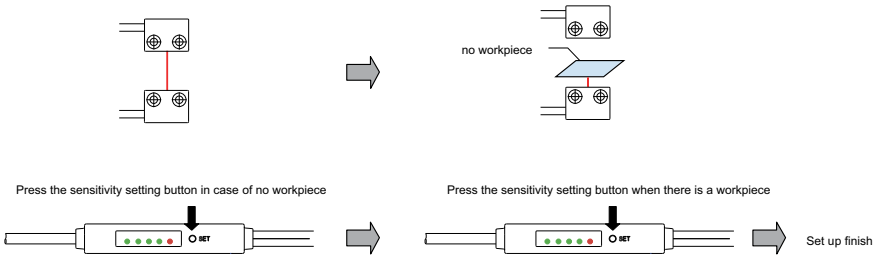
- Sensitivity setting button: SET
  The sensitivity is set by two-point calibration.



Calibration method

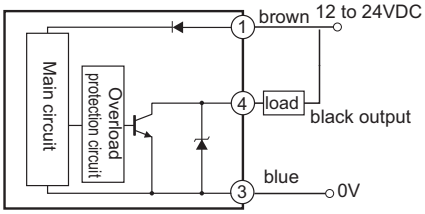
Two point calibration

Two point calibration is the basic calibration method.
You can set the sensitivity automatically by pressing the sensitivity setting button twice.
Press once for placing and not placing objects.

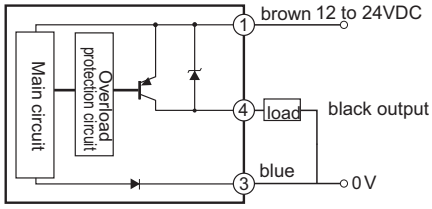


Input / output circuit

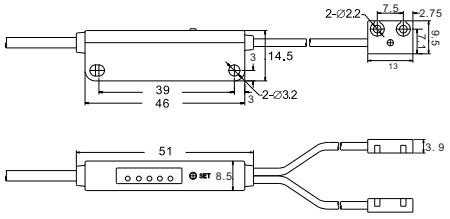
NPN



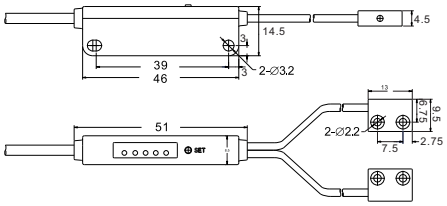
PNP



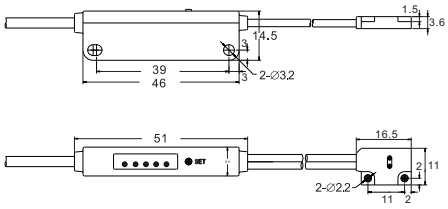
Dimensions



UE-03D

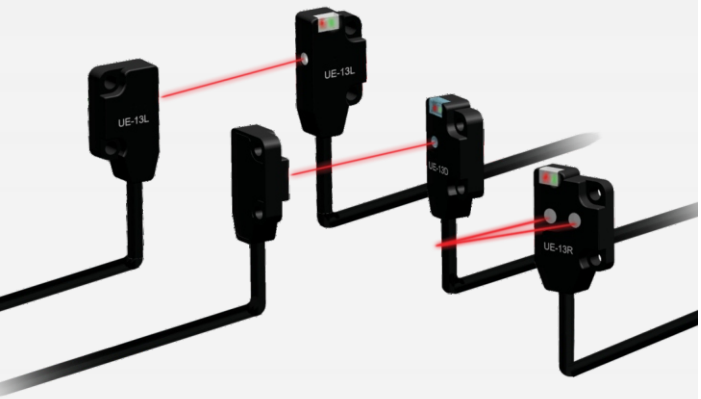


UE-03L



UE-03R

Photoelectric sensor UE-13 series



Product characteristics

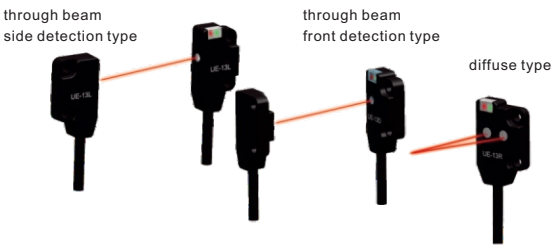
Ultra thin and ultra small size

Small size, only need to have a small space, can be installed everywhere.

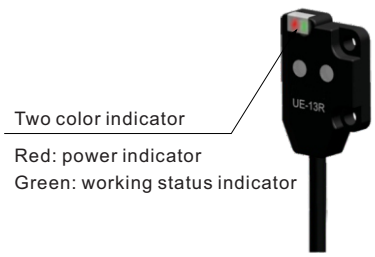


Flexible installation

The diffuse reflection sensor is front detection type, while the through beam type sensor has two types: front detection type and side detection type



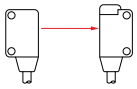
Clear two color indicator



Product specifications

Type		Diffuse	Through beam			
		Front detect	Front detect		Side detect	
Model	NPN	UE-13RN	UE-13DN	UE-13DTN	UE-13LN	UE-13LTN
	PNP	UE-13RP	UE-13DP	UE-13DTP	UE-13LP	UE-13LTP
Appearance						
Sensing range		1 to 22mm (white paper) 4 to 10mm (black paper)	300mm			
Sensing object		ϕ1mm Opaque objects				
Hysteresis		15% max.	----------			
Response time		1ms max.				
Light source		red LED				
Power voltage		12~24VDC±10%				
Current consumption		25mA max.				
Indicator		Power indicator: red, output indicator: green				
Circuit protection		Reverse electrode protection, short circuit protection				
IP code		IP66				
Ambient illumination		Incandescent lamp：3000lx max., sunlight: 10000lx max.				
Ambient temperature		-25~+55℃				
Ambient humidity		35~85%RH				
Vibration resistance		10 to 55Hz, composite amplitude of 1.5mm, 2 hours in X, y and Z directions				
Impact resistance		500m / S² 3 times in X, y and Z axis directions				
Connection type		cable 2M				
Shell material		shell ABS				

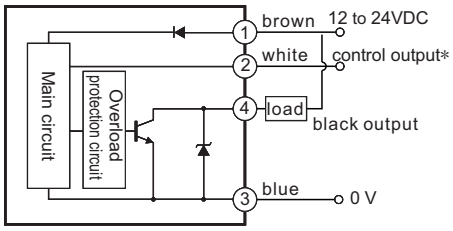
Product type

Sensing type		appearance	sensing range	NPN	PNP
Diffuse	front detect		22mm	UE-13RN	UE-13RP
Through beam	front detect		300mm	UE-13DN	UE-13DP
	side detect		300mm	UE-13LN	UE-13LP

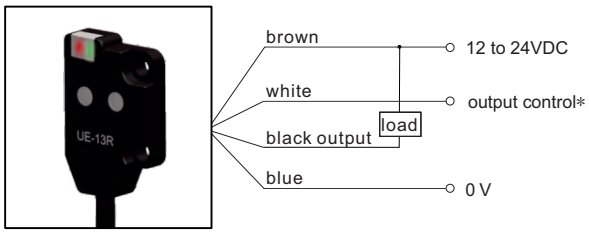
Input / output circuit

Diffuse type

NPN

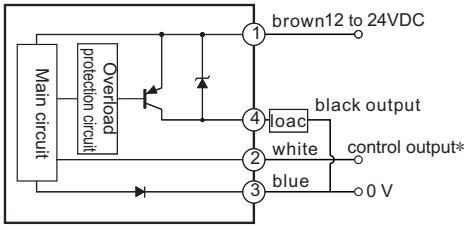


Wiring diagram

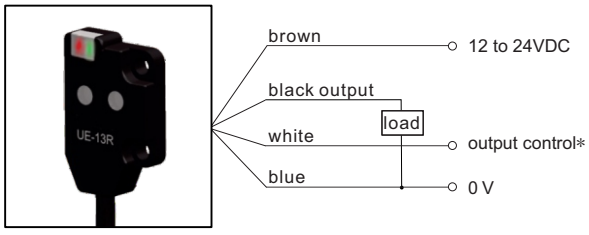


*LIGHT-ON mode white---NC（not connected）
DARK-ON mode white---0V

PNP

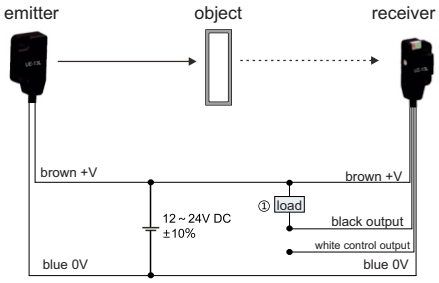


Wiring diagram



*LIGHT-ON mode white---NC（not connected）
DARK-ON mode white---0V

Through beam type



Input / output circuit

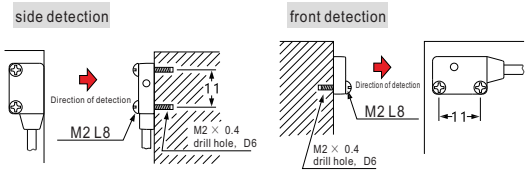
Warning

This product can not be used as human protection detection

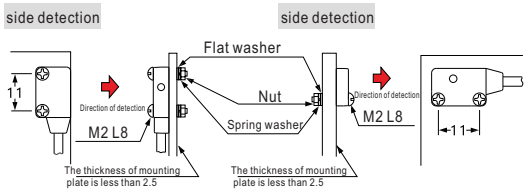


Attention during installation

- Installation on the borehole (mm)

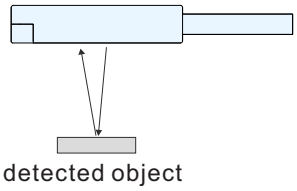


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About installation direction

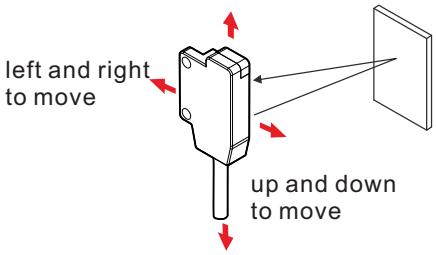
- The detection surface of the sensor must be installed parallel to the detected object



Optical axis adjustment

Diffuse type

- After the detection object is placed, adjust the sensor position to determine the center position and fix the sensor



Through beam type

- The sensor emitter and the receiver are placed in a straight line. When moving the emitter, the best installation position is determined by the working indicator light (green)

