

# Laser Sensors



- Laser light source and CMOS are effectively combined to enhance resistance to environmental influences
- Automatic light compensation technology, which can automatically adjust the threshold according to the change of the received light
- Response speed up to 0.25ms, can detect fast moving objects
- Up to 6 teaching functions are optional, which can easily solve various installation and debugging problems
- IP67 protection design prevents dust and moisture interference



**Square Type (ELC/ELE Series)**

- Response time high up to 0.25 ms, suitable for moving objects' detection
- 30mm, diameter of spot for thru-beam products (Position:30m)
- Protection degree IP67

P.D-03



**BGS Type (ELS/ELT Series)**

- Free from interference of objects and backgrounds' colors; ensure stable detection
- Laser light source, suitable for long distance detection of small objects
- Built-in rotational knobs with multiple turns to realize fine sensitivity adjustment

P.D-06



**Transparent Objects Detection (ESQ Series)**

- Automatically adjust threshold value according to the amount of lights
- Laser light sources, suitable for detections of glass or PET bottles
- Coxial light source makes calibration more easy.

P.D-08

- Fiber Optic
- Slot Sensors
- Photoelectric
- Laser**
- Proximity
- Displacement
- Magnetic
- Contact
- Area
- Ultrasonic
- Vision
- Vibration
- Temperature
- Annexes

Guidance

- Laser sensors**
- Square
- BGS
- Transparent objects detection

Appearance	Type	Sensing Distance	Model No.		Pages	
			NPN Normally open& Normally closed	PNP Normally open& Normally closed		
 (Square)	Thru-beam	3000cm	ELC-TM30N	ELC-TM30P	D-03	
	Retro-reflection	1000cm	ELC-RM10N	ELC-RM10P		
	Diffuse reflection	40cm	ELC-D40N	ELC-D40P		
	Diffuse reflection	15cm	ELE-B15N	ELE-B15P	D-04	
	Diffuse reflection	40cm	ELE-D40N	ELE-D40P		
	Retro-reflection	10cm	ELE-RM05N	ELE-RM05P		
	Thru-beam	3000cm	ELE-TM30N	ELE-TM30P		
 (Background suppression)	Diffuse reflection	70cm	Long distance type	ELS-ZL70N	ELS-ZL70P	D-06
		30cm	Long distance type	ELS-ZL30N <span style="color:red">HOT</span>	ELS-ZL30P	
		10cm	Short distance type	ELS-ZL10N	ELS-ZL10P	
		450cm	Long distance type	ELT-S450N	ELT-S450P	D-08
 (Transparent objects detection)	Retro-reflection (Coxial beam)	150cm	High resolution type	ESQ-150N <span style="color:red">HOT</span>	ESQ-150P	D-09
		400cm	Long distance type	ESQ-400N	ESQ-400P	

# Square

## ELC Series

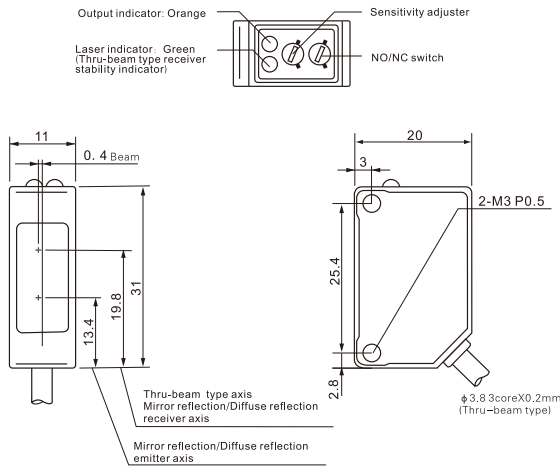


Appearance

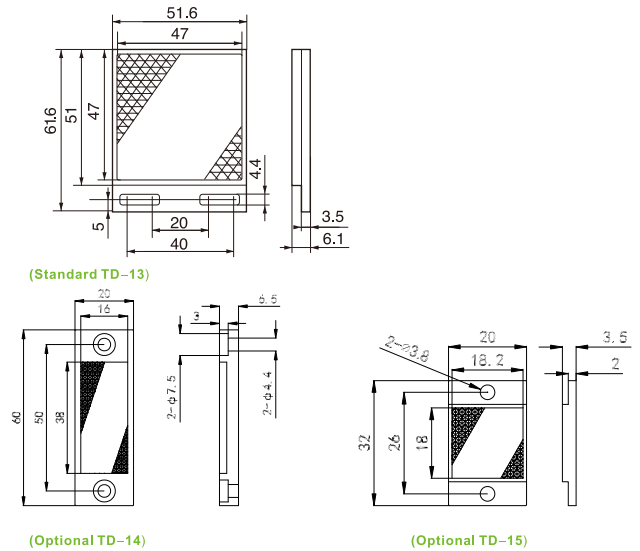
Sensing type	Thru-beam	Retro-reflection	Diffuse reflection
Sensing distance	30m	10m	40cm
Beam size	φ30mm /30m	φ10mm/ 10m	φ2mm/40cm
Switch type	Selectable L,on/D,on		
Indicator	Laser indicator: Green; Output indicator: Yellow		
Response time	0.25 ms		
Sensitivity adjustment	Single-turn potentiometer		
Light source	Laser(650nm)		
Laser class	Class1		Class2
Operating voltage	12~24V DC ± 10%		
Current consumption	≤30mA		≤20mA
Ambient temperature	-10°C~+50°C, No freezing		
Ambient humidity	35%~85%RH, No condensation		
Anti-vibration	10~55Hz Amplitude1.5mm		
Impact resistance	50G(500m/s <sup>2</sup> )		
Degree of protection	IP67		
Accessories	Bracket, screw	Bracket, screw, reflector	Bracket, screw
Model No.	NPN	<b>ELC-TM30N</b>	<b>ELC-RM10N</b>
	PNP	<b>ELC-TM30P</b>	<b>ELC-RM10P</b>
		<b>ELC-D40N</b>	<b>ELC-D40P</b>

### Dimensions

Unit: mm

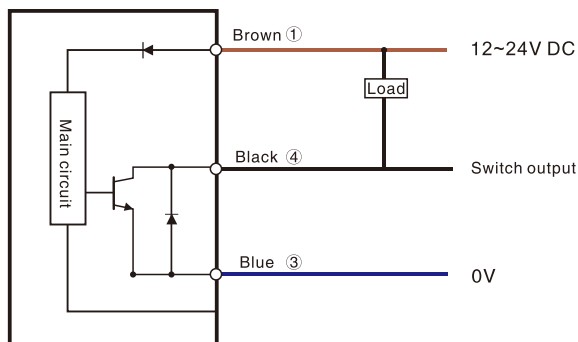


#### ELC-RM10N/P Reflector:

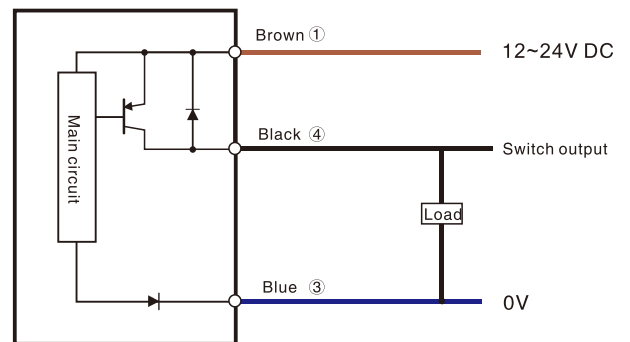


### Circuit diagram

#### NPN Output



#### PNP Output





Economical Type

**NEW!**

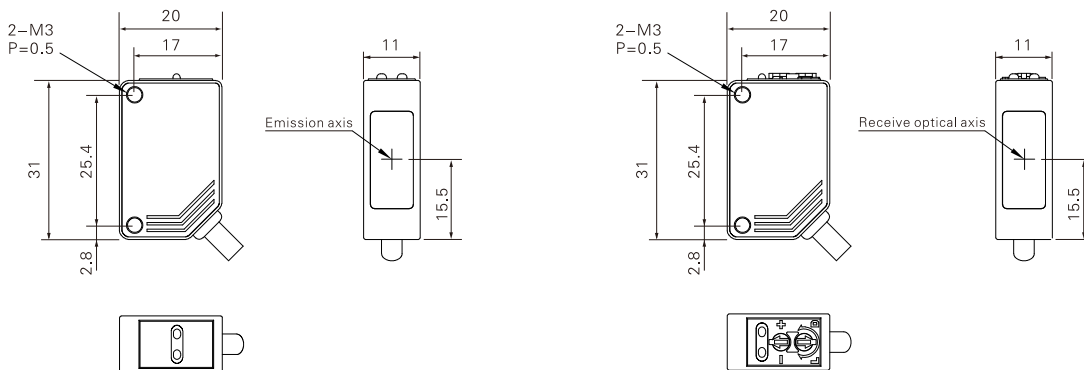
Appearance

Detection mode	Diffuse reflection-BGS	Diffuse reflection	Retro-reflection	Thru-beam
Detection distance	1-15cm	40cm	5m	30m
Set the distance	2-15cm	-	-	-
Spot diameter	± Ø1.5mm/15cm	± Ø1.5mm/40cm	± Ø20mm/5m	± Ø60mm/30m
Indicator light	Working indicator light: green; Action indicator: Red			
Sensitivity regulation	6 circle potentiometer	Single coil potentiometer		
Output mode	NPN or PNP open collector			
Switch mode	L.on (light-in action)/D.on (light-shielding action) can be switched			
Response time	≤2ms			
light source	Laser 650nm (modulation) Class 2			
Working voltage	10-30V DC			
Current consumption	≤20mA			
Environmental illumination	Incandescent lamp: 3000 lux or less / Sunlight: 5000 lux or less			
Ambient temperature	-25°C~+55°C, no freezing			
Ambient humidity	35%~85% RH, no condensation			
Protection circuit	Power reverse polarity protection, output reverse polarity protection, surge protection, short circuit protection		Power reverse polarity protection, surge protection, short circuit protection	
Degree of protection	IP65			
Material	PBT + glass fiber (shell), PMMA (lens)			
Way out	2M/3 core cable			
Anti-vibration	10~50Hz, 0.5mm amplitude, 2 hours each in X, Y, Z directions			
Accessories	Screwdriver			
Model No.	NPN <b>ELE-B15N</b>	<b>ELE-D40N</b>	<b>ELE-RM05N</b>	<b>ELE-TM30N</b>
	PNP <b>ELE-B15P</b>	<b>ELE-D40P</b>	<b>ELE-RM05P</b>	<b>ELE-TM30P</b>

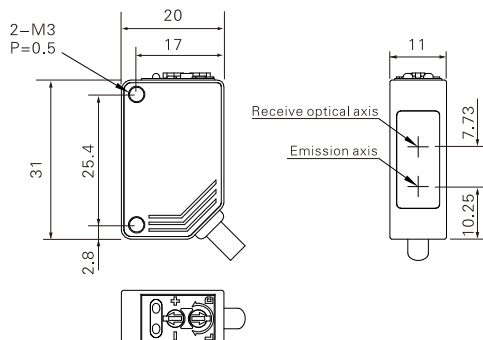
### Dimensions

Unit: mm

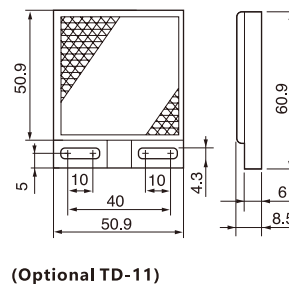
#### ELE-TM30N/P



#### ELE-B15N/P, ELE-D40N/P, ELE-RM05N/P



#### ELE-RM05 With reflector

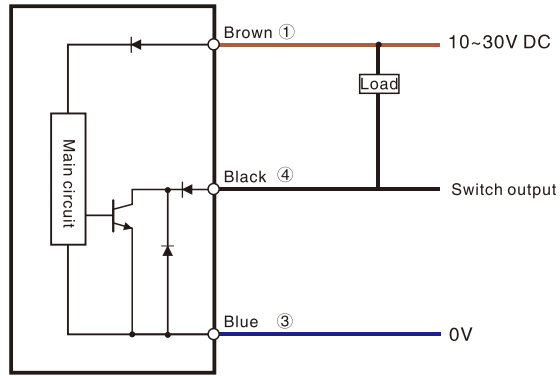


(Optional TD-11)

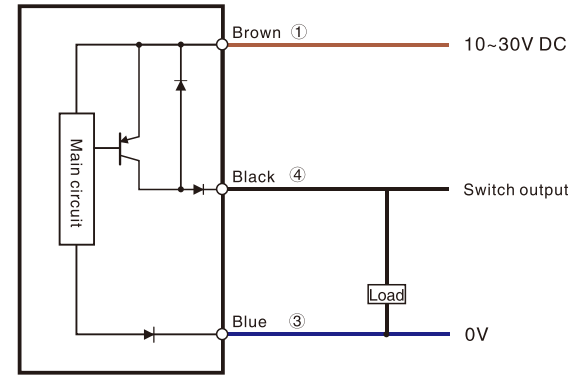
# Square

## Circuit diagram

### NPN Output



### PNP Output



Laser

Fiber Optic

Slot Sensors

Photoelectric

Laser

Proximity

Displacement

Magnetic

Contact

Area

Ultrasonic

Vision

Vibration

Temperature

Annexes

Guidance

Laser sensors

Square

BGS

Transparent objects  
detection



Appearance

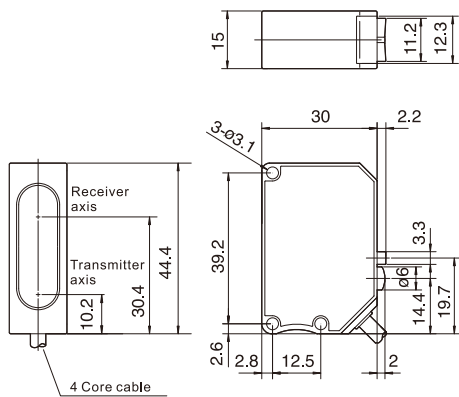
Type	Long distance type		Short distance type
Sensing type	Diffuse reflection		
Set distance	50~300mm		20~100mm
Sensing distance	100~700mm	10~300mm	5~100mm
Beam size	φ 6mm/200mm	φ 1.5mm/300mm	φ 1mm/100mm
Switch type	Selectable L.on/D.on		
Indicator	Output indicator: Orange; Laser indicator: Green		
Response time	0.7 ms		0.3 ms
Sensitivity adjustment	Four-turn potentiometer		
Light source	Laser(650nm)		
Laser class	Class2		Class1
Operating voltage	10~30V DC ± 10%		
Current consumption	35mA		≤30mA
Ambient temperature	-10°C~+50°C, No freezing		
Ambient humidity	35%~85%RH, No condensation		
Impact resistance	50G(500m/s <sup>2</sup> )		
Degree of protection	IP67		
Material	Housing: ABS+ fiber glass; Lens: PMMA		
Accessories	Bracket		
Model No.	NPN	<b>ELS-ZL70N</b>	<b>ELS-ZL30N</b> (HOT)
	PNP	<b>ELS-ZL70P</b>	<b>ELS-ZL30P</b>
			<b>ELS-ZL10N</b>
			<b>ELS-ZL10P</b>

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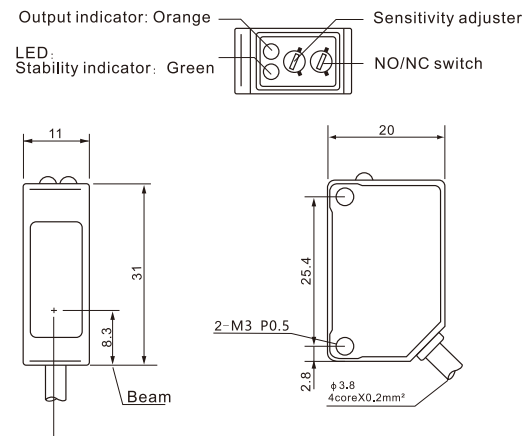
Dimensions

Unit: mm

ELS-ZL70N(P)

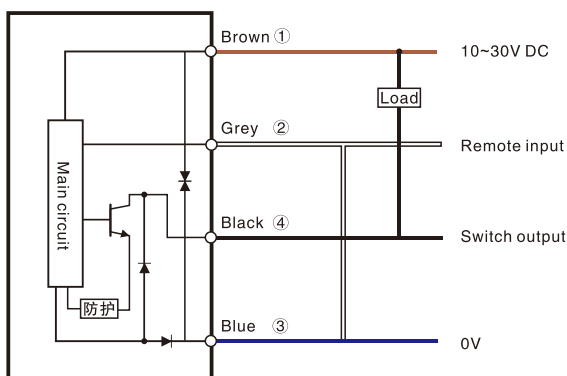


ELS-ZL30N(P)/ELS-ZL10N(P)

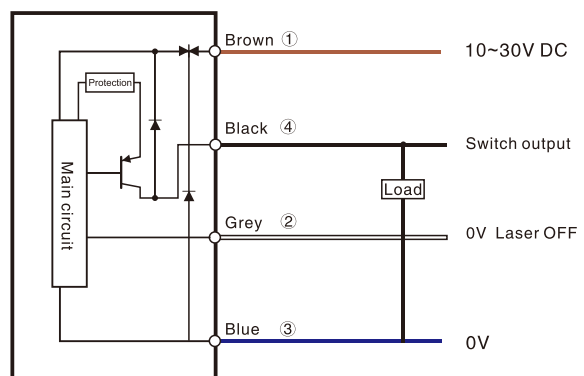


Circuit diagram

ELS-ZL30 NPN Output



PNP Output



Guidance

Laser sensors

Square

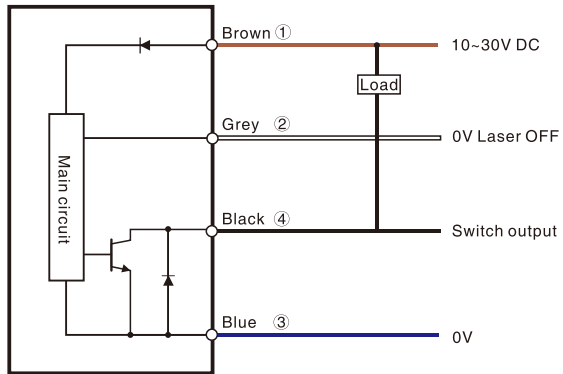
BGS

Transparent objects detection

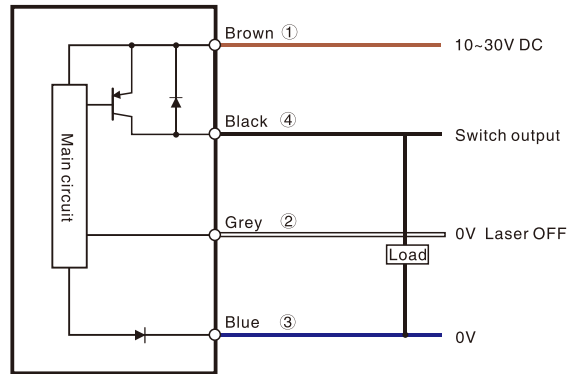
### Circuit diagram

ELS-ZL70/ELS-ZL10

#### NPN Output



#### PNP Output



Fiber Optic

Slot Sensors

Photoelectric

Laser

Proximity

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#### Guidance

#### Laser sensors

Square

BGS

Transparent objects detection



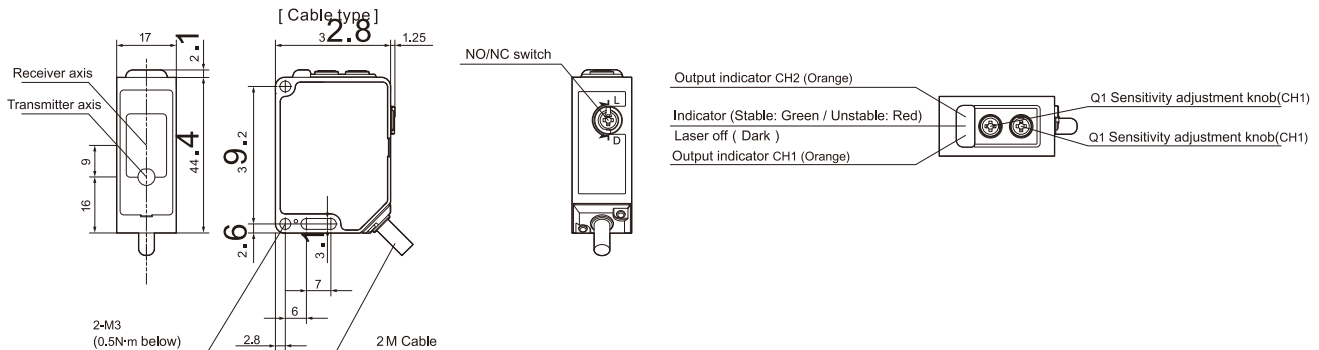
TOF Principle

Appearance	
Type	Long distance
Sensing type	Diffuse reflection
Sensing distance	0~4.5m
Beam size	About 17mm (4.5m away)
Switch type	Selectable L.on/D.on
Indicator	Output indicator: Orange; Laser indicator: Green
Response time	≤0.5ms
Sensitivity adjustment	Four-turn potentiometer
Light source	Laser(650nm)
Laser class	Class 1
Operating voltage	10~30V DC ± 10%
Current consumption	≤85mA
Ambient temperature	-10°C~+50°C, No freezing
Ambient humidity	35%~85%RH, No condensation
Impact resistance	50G(500m/s <sup>2</sup> )
Degree of protection	IP67
Material	Housing: ABS+ fiber glass; Lens PMM
Model No.	NPN <b>ELT-S450N</b> PNP <b>ELT-S450P</b>

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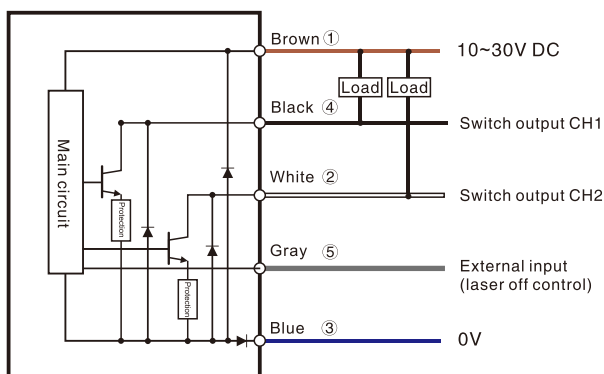
Dimensions

Unit: mm

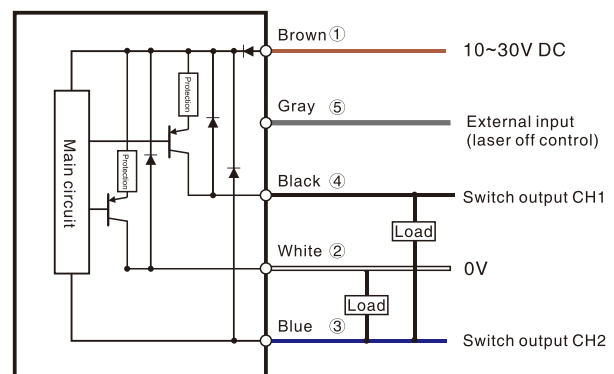


Circuit diagram

NPN Output



PNP Output



Guidance

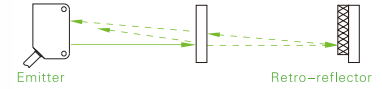
- Laser sensors
- Square
- BGS**
- Transparent objects detection



# Transparent Objects Detection

## ESQ Series

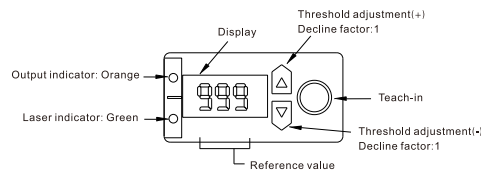
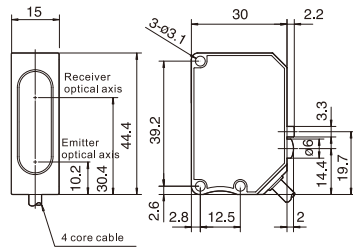
Laser



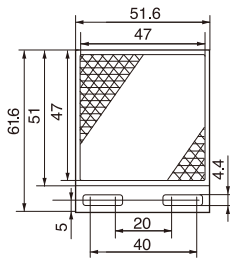
Appearance		
Type	High resolution type	Long distance type
Sensing type	Retro-reflection ( Coaxial beam )	
Sensing distance	1.5m	4m
Beam size	φ 15mm/1.5m	φ 20mm/3.5m
Output type	NPN/PNP open-collector output, ≤100mA/30V DC	
Switch type	Selectable L.on/D.on	
Indicator	Output indicator: Orange; Laser indicator: Green	
Digital display	7 segments, 3-digit Red LED display	
Response time	0.7 ms	
Time delay	0~999ms Value added unit:1ms;1~10ms Value added unit :1ms	
Sensitivity adjustment	Teach-in button	
Light source	Laser(650nm), Max 1mW	
Laser class	Class2	
Operating voltage	10~30V DC ± 10%	
Current consumption	35mA	
Ambient brightness	Sunlight≤10000Lux, Incandescent lamp≤3000Lux	
Ambient temperature	-10~+50°C, No freezing	
Ambient humidity	35~85%RH, No condensation	
Insulation resistance	≥20MΩ (500V DC)	
Impact resistance	50G(500m/s <sup>2</sup> ), XYZ three directions	
Certificate	IEC, EC	
Degree of protection	IP67	
Material	Housing: Antibacterial ABS; lens: PMMA	
Accessories	Bracket	
Model No.	NPN PNP	ESQ-150N <span style="color:red">HOT</span> ESQ-150P
		ESQ-400N ESQ-400P

## Dimensions

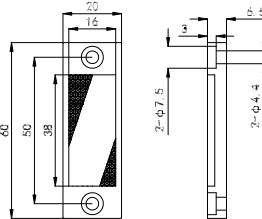
Unit: mm



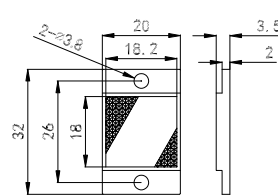
### Reflector:



(Standard TD-13)



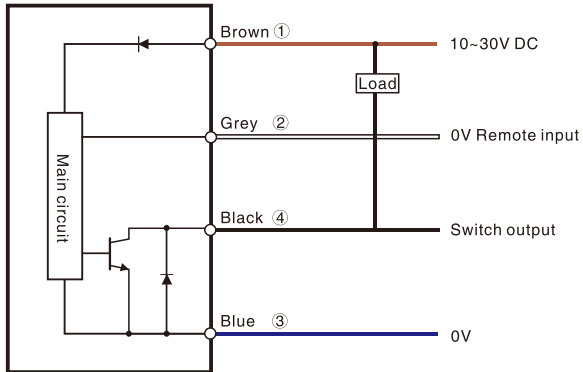
(Optional TD-14)



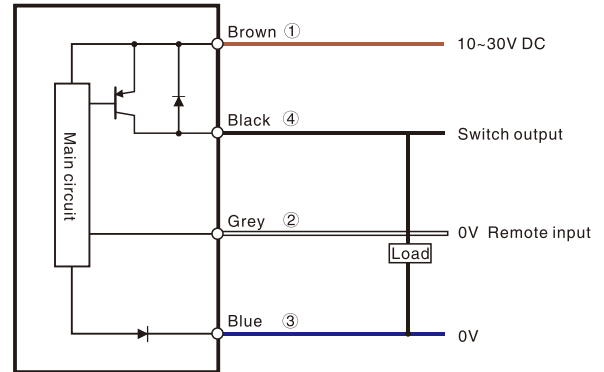
(Optional TD-15)

### Circuit diagram

NPN Output



PNP Output



Fiber Optic

Slot Sensors

Photoelectric

**Laser**

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Laser sensors

Square

BGS

**Transparent objects detection**