

# RT-610 SERIES

## Robust U-shaped Photoelectric Sensor **Amplifier Built-in**

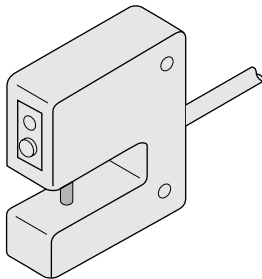


Suitable for address reading and sensing cut-off marks



### Beam axis alignment not required

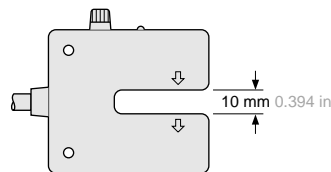
Beam axis alignment is not required as the emitter and the receiver are integrated in a single body.



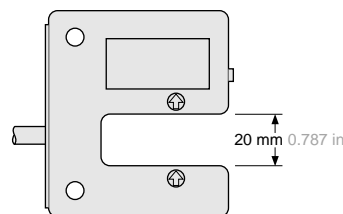
### Wide product range

There are three models having a sensing range of 10 mm 0.394 in, 20 mm 0.787 in and 50 mm 1.969 in. The models with a sensing range of 10 mm 0.394 in and 20 mm 0.787 in are also available as red LED type and green LED type for mark sensing.

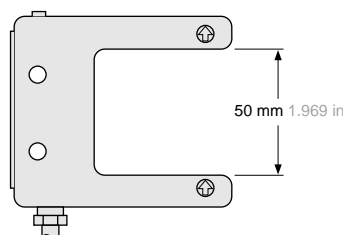
#### RT-610-10



#### RT-610-20



#### RT-610-50

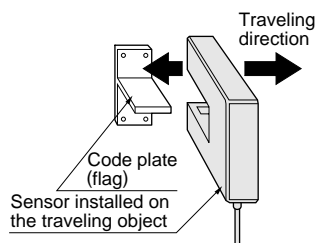


### Robust die-cast housing

The robust die-cast housing maintains high reliability.

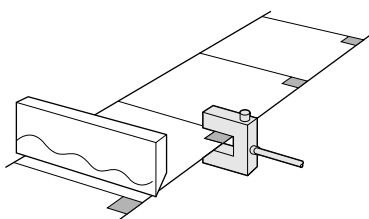
## APPLICATIONS

### Address reading



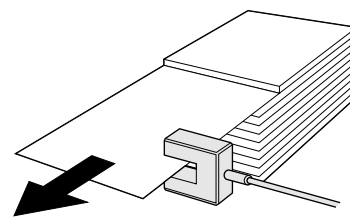
It can also be used to confirm the position of transportation equipment, such as, crane, etc.

### Sensing cut-off marks



It can sense cut-off marks on a transparent film.

### Sensing overlapping paper



Traveling direction  
Checking paper feed on various printing machines

## ORDER GUIDE

Type	Appearance	Sensing range	Model No.	Output	Emitting element
10 mm 0.394 in sensing range For mark sensing		10 mm 0.394 in (fixed)	RT-610-10	NPN transistor universal	Infrared LED
			RT-610-10R		Red LED
			RT-610-10G		Green LED
20 mm 0.787 in sensing range For mark sensing		20 mm 0.787 in (fixed)	RT-610-20	Infrared LED	
			RT-610-20R	Red LED	
			RT-610-20G	Green LED	
50 mm 1.969 in sensing range		50 mm 1.969 in (fixed)	RT-610-50		Infrared LED

### 5 m 16.404 ft cable length type

5 m 16.404 ft cable length type (Standard: 1 m 3.281 ft or 2 m 6.562 ft) is also available.

#### • Table of Model Nos.

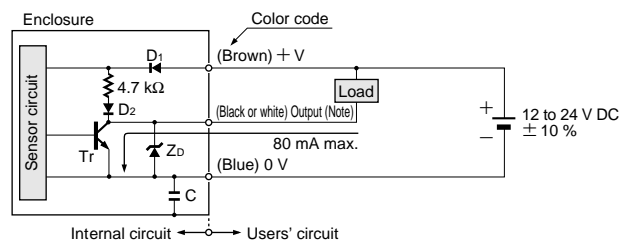
Type	Standard	5 m 16.404 ft cable length type
10 mm 0.394 in sensing range For mark sensing	RT-610-10	RT-610-10-C5
	RT-610-10R	RT-610-10R-C5
	RT-610-10G	RT-610-10G-C5
20 mm 0.787 in sensing range For mark sensing	RT-610-20	RT-610-20-C5
	RT-610-20R	RT-610-20R-C5
	RT-610-20G	RT-610-20G-C5
50 mm 1.969 in sensing range	RT-610-50	RT-610-50-C5

## SPECIFICATIONS

Item	Model No.	U-shaped thru-beam						
		RT-610-10	RT-610-20	RT-610-50	RT-610-10R	RT-610-20R	RT-610-10G	RT-610-20G
Sensing range (fixed)		10 mm 0.394 in	20 mm 0.787 in	50 mm 1.969 in	10 mm 0.394 in	20 mm 0.787 in	10 mm 0.394 in	20 mm 0.787 in
Sensing object		φ4 mm φ0.157 in or more opaque object			φ4 mm φ0.157 in or more opaque or translucent object			
Supply voltage		12 to 24 V DC ± 10 % Ripple P-P 10 % or less						
Current consumption		40 mA or less						
Output		NPN transistor universal • Maximum sink current: 80 mA • Residual voltage: 1 V or less (at 80 mA sink current)						
Utilization category		—		DC-12 or DC-13	—			
Output operation		Incorporated with two outputs, Light-ON / Dark-ON						
Response time		0.1 ms or less	1 ms or less	0.1 ms or less	0.1 ms or less	1 ms or less	0.1 ms or less	1 ms or less
Operation indicator		Red LED (lights up under light received condition)						
Sensitivity adjuster		Continuously variable adjuster		—	Continuously variable adjuster			
Pollution degree		—		3 (Industrial environment)	—			
Protection		IP62 (IEC)	IP66 (IEC)		IP62 (IEC)	IP66 (IEC)	IP62 (IEC)	IP66 (IEC)
Ambient temperature		- 10 to + 60 °C + 14 to + 140 °F (No dew condensation or icing allowed), Storage: - 10 to + 60 °C + 14 to + 140 °F						
Ambient humidity		35 to 85 % RH, Storage: 35 to 85 % RH						
Ambient illuminance		Sunlight: 11,000 lx (RT-610-20R/20G: 3,000 lx) at the light-receiving face Incandescent light: 3,500 lx (RT-610-20R/20G: 1,000 lx) at the light-receiving face						
EMC		—		EN 50081-2 EN 50082-2 EN 60947-5-2	—			
Vibration resistance		10 to 55 Hz frequency, 1.5 mm 0.059 in amplitude in X, Y and Z directions for two hours each						
Shock resistance		500 m/s <sup>2</sup> acceleration (50 G approx.) in X, Y and Z directions for three times each						
Emitting element		Infrared LED (modulated)			Red LED (modulated)		Green LED (modulated)	
Enclosure earthing		Floating	Capacitor earth	Floating	Floating	Capacitor earth	Floating	Capacitor earth
Material		Enclosure: Die-cast aluminum						
Cable		0.3 mm <sup>2</sup> 4-core cabtyre cable, 1 m 3.281 ft long (RT-610-20, RT-610-20R and RT-610-20G: 2 m 6.562 ft long)						
Cable extension		Extension up to total 100 m 328.084 ft is possible with 0.3 mm <sup>2</sup> , or more, cable.						
Weight		150 g approx.	240 g approx.	180 g approx.	150 g approx.	240 g approx.	150 g approx.	240 g approx.
Accessories		Adjusting screwdriver: 1 pc. (Accessory for RT-610-20□), Insulation fitting: 1 set (Accessory for RT-610-20□)						

## I/O CIRCUIT AND WIRING DIAGRAMS

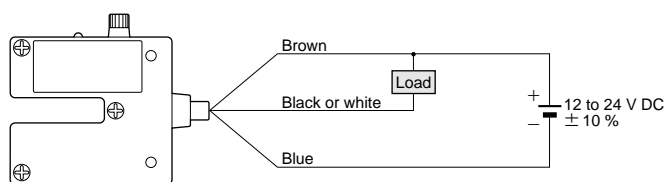
## I/O circuit diagram



Note: The output does not incorporate a short-circuit protection circuit.  
Do not connect it directly to a power supply or a capacitive load.

Symbols ... D1: Reverse supply polarity protection diode  
D2: Reverse current prevention diode  
Z0: Surge absorption zener diode  
Tr: NPN output transistor  
C: Capacitor (Not incorporated in RT-610-10□ and RT-610-50)

## Wiring diagram



## Output operation

Color code	Output operation
Black	Light-ON
White	Dark-ON

## PRECAUTIONS FOR PROPER USE

Refer to [p.1135](#) for general precautions.



This product is not a safety sensor. Its use is not intended or designed to protect life and prevent body injury or property damage from dangerous parts of machinery. It is a normal object detection sensor.

### Enclosure earthing

• RT-610-20□ is capacitor earthed to increase noise immunity. Use the attached insulation fitting (accessory) in case of the following.

(RT-610-10□ and RT-610-50 do not require the insulation fitting because of floating earth.)

★ If there is equipment, such as an ultrasonic welder, spot welder, etc., generating high frequency noise near the sensor and the sensor is mounted on an electric conductor such as metal.

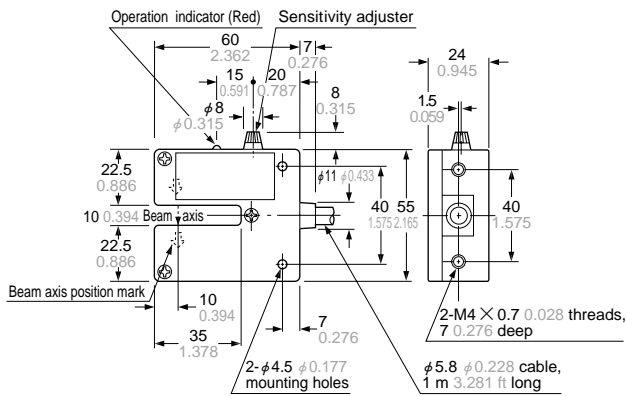
Further, do not supply power from a power supply incorporating an auto-transformer (single winding transformer), since this is dangerous.

### Others

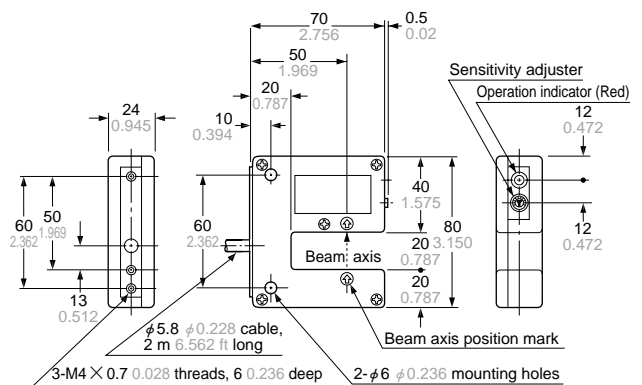
- The output does not incorporate a short-circuit protection circuit. Do not connect it directly to a power supply or a capacitive load.
- Do not use during the initial transient time (50 ms) after the power supply is switched on.

## DIMENSIONS (Unit: mm in)

**RT-610-10□** 10 mm 0.394 in sensing range type



**RT-610-20□** 20 mm 0.787 in sensing range type



**RT-610-50** 50 mm 1.969 in sensing range type

