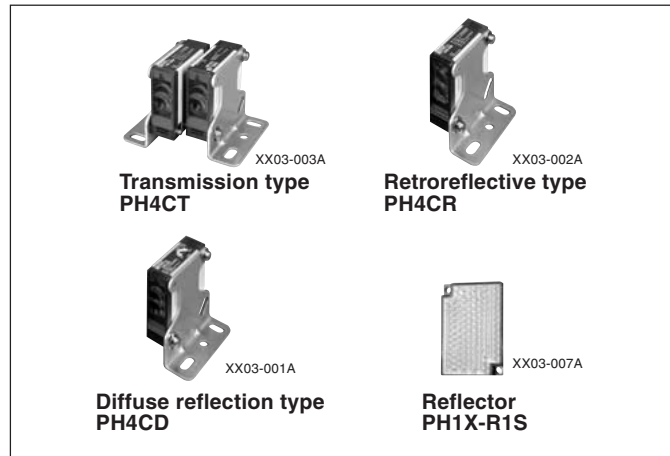


# Photoelectric Switches PH4C

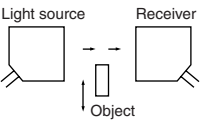
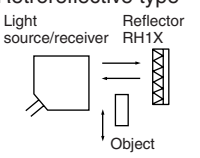
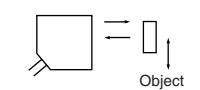
## Photoelectric switches with AC/DC input PH4C

### ■ Features

- Highly compact with dimensions of 18 x 50 x 50mm
- Accepts a wide range of supply voltage with AC/DC dual input
- Retroreflective type has a wider range of detecting distance. 3.5m for PH4CR-2HR□, 5m for PH4CR-4MR□ (using a separately-sold reflector PH1X-R1S)
- Retroreflective type equipped with mirror surface rejection function
- Meets CE Mark requirements



### ■ Types

Detecting method	Detecting distance	Light emitting element	Output	Operation mode	Type	Supplied item	
						Light source and receiver	Cable length
Transmission type 	5m	Infrared LED	Relay output (SPDT)	Light-ON	PH4CT-5MRA	Light source and receiver	2m
					PH4CT-5MRAR	Receiver	2m
				Dark-ON	PH4CT-5MRT	Light source	2m
					PH4CT-5MRB	Light source and receiver	2m
					PH4CT-5MRBR	Receiver	2m
Retroreflective type 	Without mirror surface rejection	0.1 to 4m (0.1 to 5m)*	Red LED	Light-ON	PH4CR-4MRA	Light source/receiver	2m
	With mirror surface rejection			0.1 to 2.5m (0.1 to 3.5m)*	Dark-ON	PH4CR-4MRB	Light source/receiver
				Light-ON	PH4CR-2HRA	Light source/receiver	2m
				Dark-ON	PH4CR-2HRB	Light source/receiver	2m
Diffuse reflection type 	30cm	Infrared LED		Light-ON	PH4CD-3CRA	Light source/receiver	2m
				Dark-ON	PH4CD-3CRB	Light source/receiver	2m

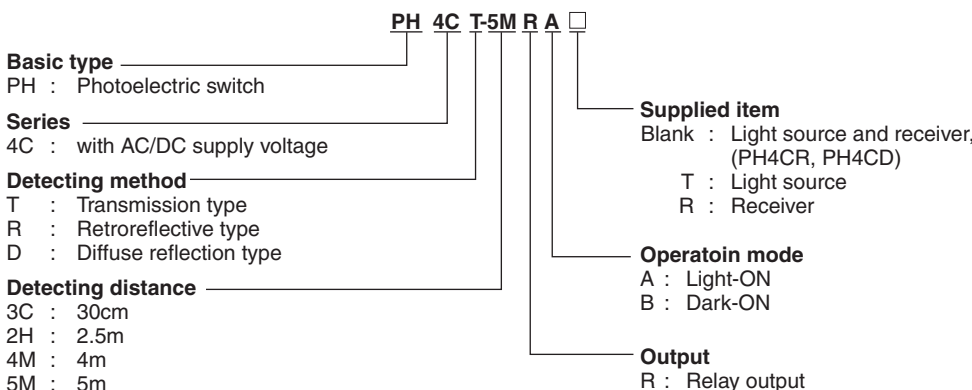
Note: \* The distances in ( ) are the values where a separately-sold reflector PH1X-R1S is used.

■ Ratings and specifications

Detection method	Transmission type	Retroreflective type		Diffuse reflection type	
Type	Light-ON Dark-ON	<b>PH4CT-5MRA</b> <b>PH4CT-5MRB</b>	Without mirror surface rejection <b>PH4CR-4MRA</b> <b>PH4CR-4MRB</b>	With mirror surface rejection <b>PH4CR-2HRA</b> <b>PH4CR-2HRB</b>	<b>PH4CD-3CRA</b> <b>PH4CD-3CRB</b>
Light emitting element	Infrared LED	Red LED	Infrared LED		
Supply voltage	24 to 240V AC ±10% 50/60Hz, 12 to 240V DC ±10% (ripple ±10% or less)				
Current consumption	3W max.	2W max.			
Detecting distance	5m	0.1 to 4m (using PH1X-R1) *	0.1 to 2.5m (using PH1X-R1) *	30cm (white mat paper 10x10cm)	
		0.1 to 5m (using PH1X-R1S) *	0.1 to 3.5m (using PH1X-R1S) *		
Detectable target	Opaque 14.8mm dia. min.	Opaque 75mm dia. min.		Transparent or opaque	
Directional angle	Light source and receiver: 3 to 20° each	Light source/receiver: 1 to 5°, Reflector: 40°		—	
Differential	—			Max. 20% of detecting distance	
Detecting output	Contact output: 250V AC 3A (cos φ =1), 5V DC 10mA				
Relay durability	Mechanical	50 millions operations (at 18,000 operations/hour)			
	Electrical	100,000 operations (at 1,800 operations/hour)			
Response time	30ms max. (operation/reset)				
Indicator	Red LED (on when light is incident) Power supply indicator for light source				
Connection	Attached cable (2m, 0.3mm <sup>2</sup> )				
Sensitivity adjustment	—			Dial type	
Ambient operating illumination	Incandescent lamp: 3,000 lx max. (at receiving surface)				
Ambient temperature	Operating: -25 to +55°C (no icing), storage: -30 to +70°C				
Ambient humidity	Operating: 45 to 85%RH (no condensation), storage: 35 to 95%RH				
Degree of protection	IP64 (IEC)				
Insulation resistance	20MΩ (500V DC megger)				
Dielectric strength	1,500V AC 50/60Hz for 1min				
Vibration	10 to 55Hz, 1.5mm double amplitude (2 hours for each X, Y, Z direction)				
Shock	500m/s <sup>2</sup> (3 times for each X, Y, Z direction)				
Material	Casing	Acrylonitrile butadiene styrene resin (ABS)			
	Lens	Methacrylic resin (PMMA)			
Mass	Approx. 420g	Approx. 250g		Approx. 250g	
Accessory (supplied)	Mounting bracket (PH4X-P1), reflector PH1X-R1 (only for retroreflective type)				

Note: \* Reflector PH1X-R1 is supplied, PH1X-R1S is sold separately.

■ Type number nomenclature



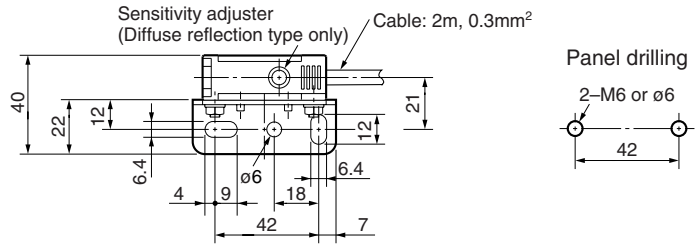
● Ordering information

Specify the following  
1. Type number

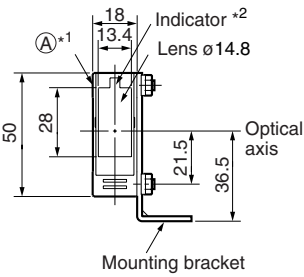
# Photoelectric Switches PH4C

## ■ Dimensions, mm

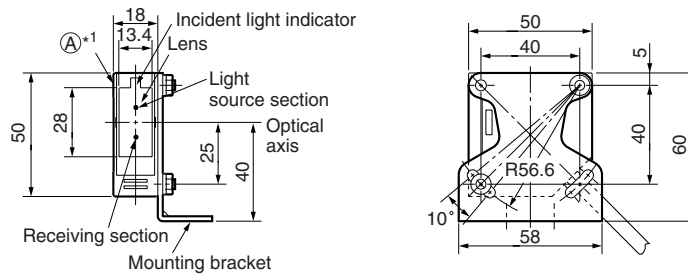
### ● PH4CT, PH4CR, PH4CD



PH4CT



PH4CR, PH4CD



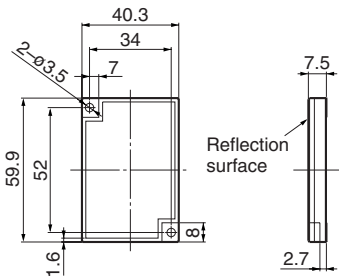
\*1 Mounting bracket can be fit on the side "A" too.

\*2 Power supply indicator for light source, incident light indicator for receiver

## ● Reflector for PH4CR

PH1X-R1 (supplied)

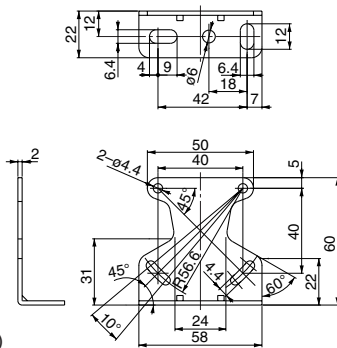
PH1X-R1S (optional)



Reflection surface: Methacrylic resin (PMMA)  
Reverse side: Acrylonitrile butadiene styrene resin (ABS)

## ● Mounting bracket

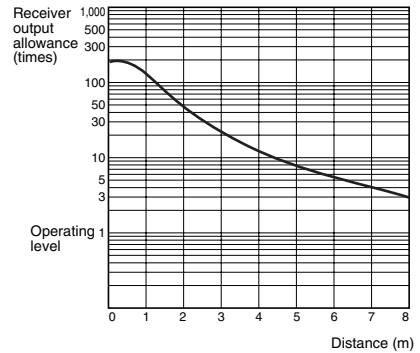
PH4X-P1



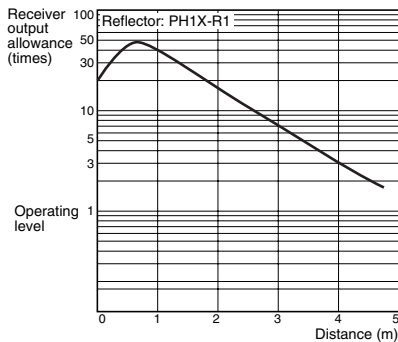
## ■ Characteristic curve, typical

Receiver output - Distance

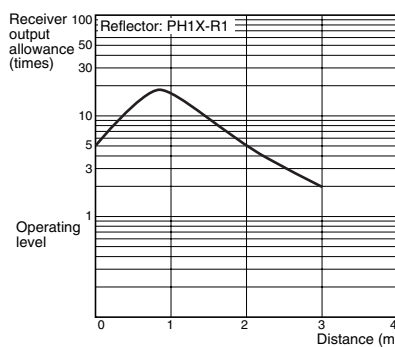
PH4CT-5MR



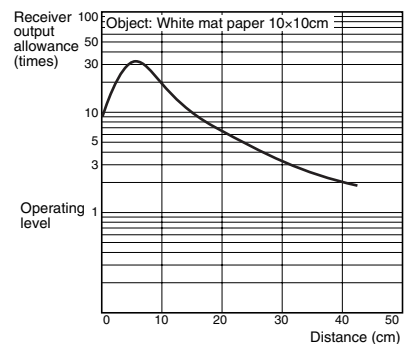
PH4CR-4MR + PH1X-R1 (supplied)



PH4CR-2HR + PH1X-R1 (supplied)



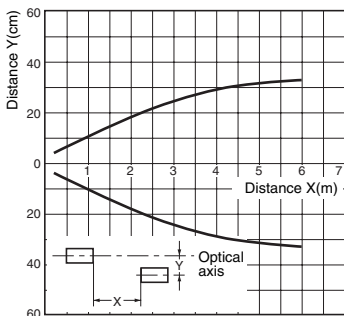
PH4CD-3CR



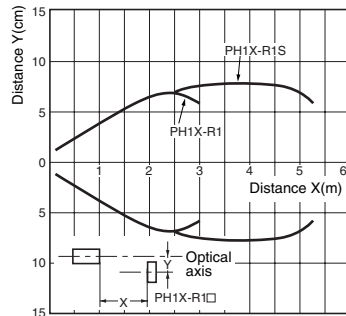
■ Characteristic curve, typical

● Setting range of light source and receiver head

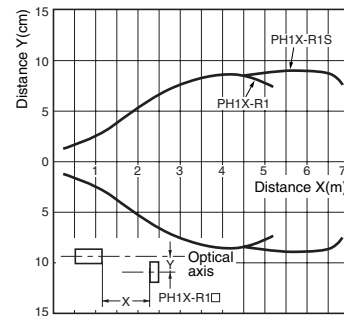
PH4CT-5MR



PH4CR-2HR + Reflector

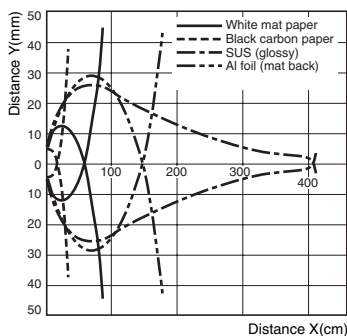


PH4CR-4MR + Reflector



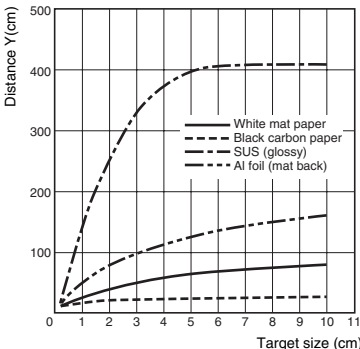
● Operating range

PH4CD-3CR



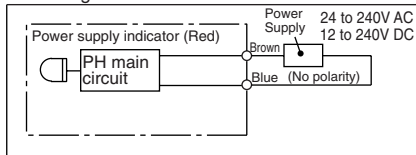
● Size of detecting target - Distance

PH4CD-3CR

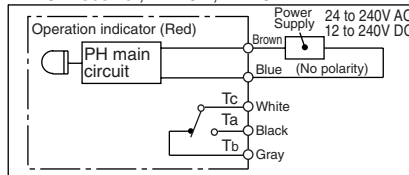


■ Wiring diagrams

PH4CT light source



PH4CT receiver, PH4CR, PH4CD



■ Timing chart

Type	Timing chart
PH4CT-5MRA PH4CT-5MRB	Light incident Light shaded
PH4CR-2HRA PH4CR-2HRB	Incident light indicator ON OFF
PH4CR-4MRA PH4CR-4MRB	Light-ON (PH4C□-□□RA) (Ta) ON OFF
PH4CD-3CRA PH4CD-3CRB	Dark-ON (PH4C□-□□RB) (Ta) ON OFF