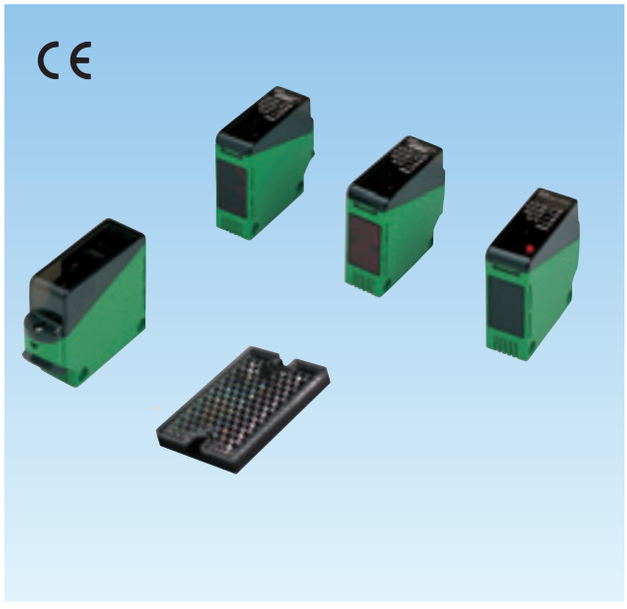
NA series

AC/DC Power Supply Photo Sensors



- Fully open terminal block for ease of wiring
- Compatibility with broad range of power supply voltages, therefore, allowing global use
  - Polarization reflector for stable detection of mirror-like objects
  - Red LED for easy adjustment
  - Improved resistance to noise with original photo IC

Type

Type	Detecting distance		Model	Timer feature	Operation mode	Output mode
Through-beam type	20m		NA-T20R	—	Light-ON/ Dark-ON selectable (Models with "F" at the end of the model No. is Light-ON/Dark-ON and timer function selectable)	Relay output 1a
			NA-T20RF	Provided		
	10m	Anti interference filter integrated	NA-T20RA※	—		
			NA-T20RB※			
			NA-T20RFA※	Provided		
			NA-T20RFB※			
	30m		NA-T30	—		
			NA-T30F	Provided		
Polarization reflector type	0.03-7m		NA-M7R	—		
			NA-M7RF	Provided		
Diffuse-reflector type	1m		NA-R10	—		
			NA-R10F	Provided		

*Interference between models with the "A" and "B" designation at the end of model Nos. is prevented.

Optional Parts

Type	Model	Applicable model	Description	
Pinhole sticker	AP35	NA-T20R NA-T20RF NA-T30 NA-T30F	Detecting distance with stickers attached to both transmitter and receiver of NT-T20R(F) ϕ3mm……1m ϕ5mm……3.5m	One sticker contains ϕ3 and ϕ 5 holes. Two stickers required for attachment to both transmitter and receiver.
Reflector	K-71	NA-M7R	Detecting distance: 0.03-3.5m	
	S-510G	NA-M7RF	Detecting distance : 0.1-4m	
Bushing rubber	JV7	All models	Compatible cable diameter: 6-8 mm	

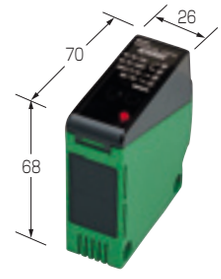
- Mounting brackets are accessories.

Rating/Performance/Specification

	Type	Basic type			Multifunctional type (with timer)		
Rating/performance	Model	**NA-T20R**	**NA-M7R**	**NA-R10**	**NA-T20RF**	**NA-M7RF**	**NA-R10F**
	Detection method	Through-beam type	Polarization reflector type	Diffuse-reflector type	Through-beam type	Polarization reflector type	Diffuse-reflector type
	Detecting distance	20m max.	0.03-7m max(*1)	1m max. (*2)	20m max.	0.03-7m max. *1)	1m max (*2)
	Detection object	Opaque object of ϕ22 min	Mirror-like objects, opaque objects	Opaque objects, translucent objects	Opaque object of ϕ22 min	Mirror-like objects, opaque objects	Opaque objects, translucent objects
	Power supply	24-240V AC/DC ±10% 50/60Hz					
	Power consumption	Transmitter: 1.5 W max. Receiver: 2 W max.	2 W max.		Transmitter: 1.5 W max. Receiver: 2 W max.	2 W max.	
	Output mode	Relay output 1a / Rating: 3 A (250 VAC max. resistance load 30 VDC max. resistance load)					
	Operation mode	Light-ON/Dark-ON selectable.			●Light-ON/Dark-ON selectable ●Timer function selectable Selectable between on-delay, off-delay, one-shot and timer disabled (with switch) Delay time: 0.1-5 s		
	Response time	10ms max.					
	Hysteresis	——		10% max	——		10% max
	Operating angle	3° (at receiver)	30° (at reflector)	——	3° (at receiver)	30° (at reflector)	——
Specification	Light source (wavelength)	Red LED (700 nm)		Infrared LED (880 nm)	Red LED (700 nm)		Infrared LED (880 nm)
	Indicator	Operation indicator (red LED)					
	Volume (VR)	—— - (*3)	——	Sensitivity adjustment	Delay time adjustment		Sensitivity adjustment Delay time djustment
	Switch (SW)	Light-ON/Dark-ON selector switch			FUNCTION.SW provided OND.: on-delay ○side···Light-ON ●side···Dark-ON OFD.: off-delay ○side···Light-ON ●side···Dark-ON OST.: one-shot ○side···Light-ON ●side···Dark-ON NORM.: timer disabled ○side···Light-ON ●side···Dark-ON		
	Material	Lens: acrylic / Case: heat-resistant ABS / Cover: acrylic					
	Connection	Terminal block (with M3.5 screws)					
	Mass	Transmitter: about 150 g./ Receiver: about 170 g	About 170 g		Transmitter: about 150 g./ Receiver: about 170 g	About 170 g	
	Notes	(*1) When used with K-7 reflector provided (*2) With 200 x 200 mm white drawing paper (*3) Sensors with sensitivity adjustment provided for receivers are available on request.					

Environmental Specification

Environment	Ambient light	10,000 lx max.
	Ambient temperature	–25 ~ +55 °C (non-freezing)
	Ambient humidity	35-85%RH (non-condensing)
	Protective structure	IP66
	Vibration	10-55 Hz / 1.5 mm amplitude / 2 hours each in 3 directions
	Shock	100 m/s2 / 3 times each in 3 directions
	Dielectric withstanding	1,500 VAC for 1 minute
	Insulation resistance	500 VDC, 100 MΩ or higher



●Compatible to DIN-PG11

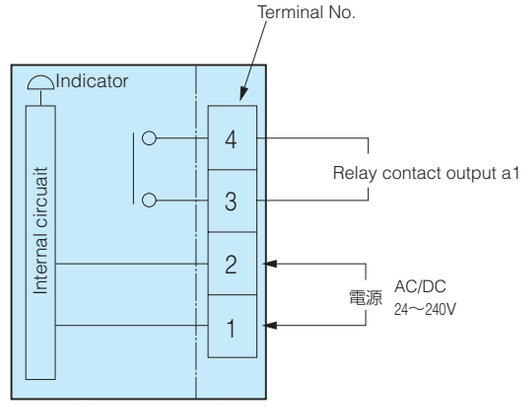
The ground hub may be made to conform to DIN PG11. Add X-PGT at the end of the model No. for ordering.

●Ground hub bushing rubber

Standard models are provided with linings compatible with cables of 9-11 mm in diameter. When using cables of 6-8 mm, use optional bushings.

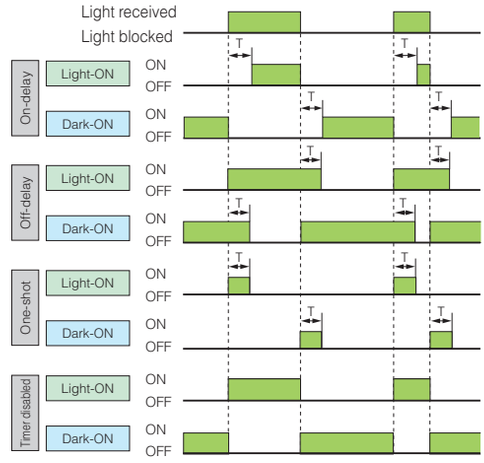
NA

Input/Output Circuit and Connection



(Note) Transmitter of the through-beam type only has power supply lines.

Timing Chart for “F” (multifunctional) Type

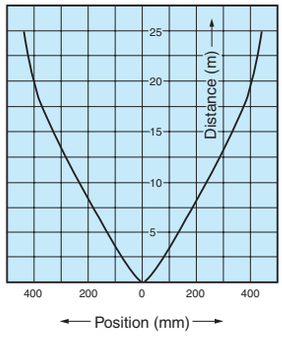


T: delay time

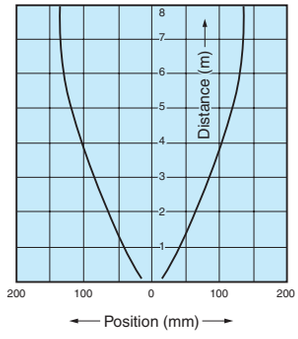
Delay time adjustable between 0.1-5 seconds with the included delay timer adjustment.

Directional Characteristics (Typical Example)

NA-T20R, NA-T20RF

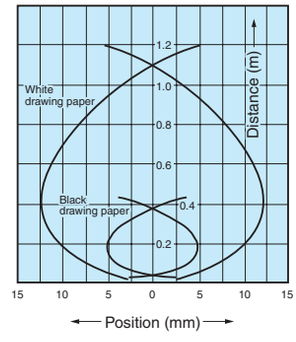


NA-M7R, NA-M7RF



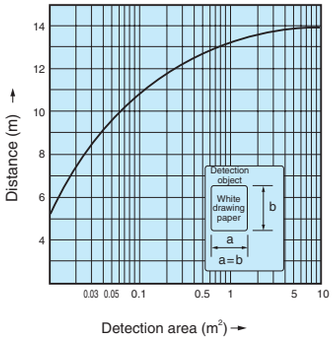
Activation Area Characteristics (Typical Example)

NA-R10, NA-R10F



Distance-Area Characteristics (Typical Example)

NA-R10
NA-R10F



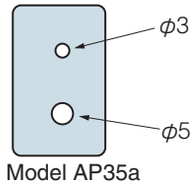
Pinhole

Pinhole stickers as described below are optionally available for through-beam type models. Use of pinhole stickers reduces the smallest allowable detection object diameter and activation area.
Attach the sticker with either the top or bottom side up for aligning either of the holes with the light axis. (The stickers are designed to allow automatic alignment of the light axis and a pinhole by aligning the “sticker” to the concave part of the sensor with either top or bottom side up.) Do not cut the sticker in two pieces.

Applicable model
NA-T20R
NA-T20RF

Detecting distance with sticker attached to both transmitter and receiver

Pinhole	ϕ3	ϕ5
Detecting distance	1m	3.5m



Model AP35a

Detecting Distances for Different Reflectors

Applicable model
NA-M7R
NA-M7RF

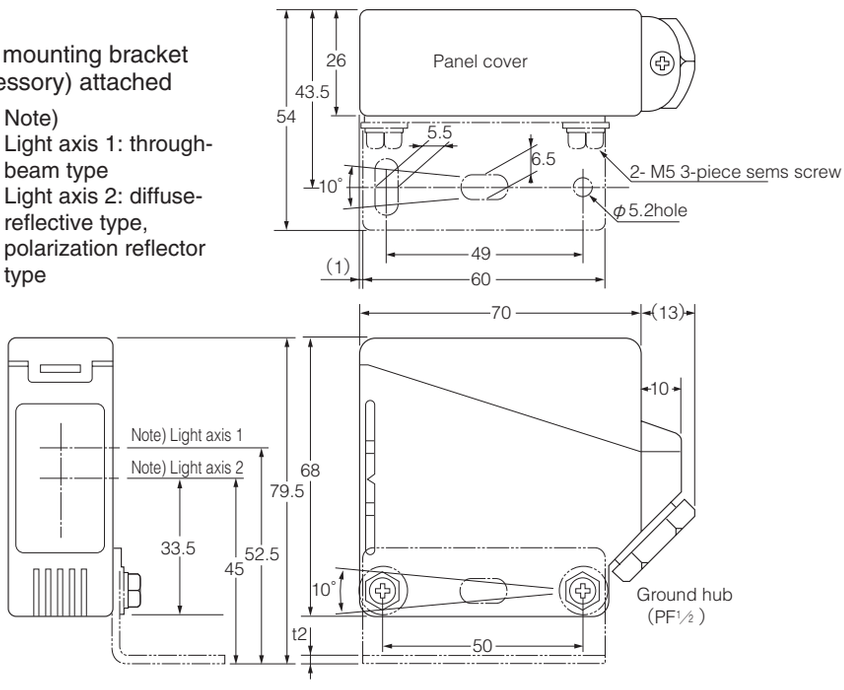
Reflector model	Detecting distance
K-7	0.03～7 m
K-71	0.03～3.5m
S-510G	0.1 ～4 m

Dimensions (in mm)

CAD

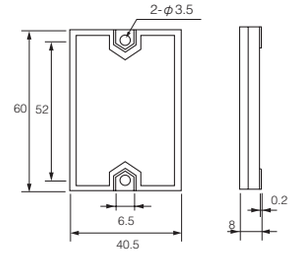
With mounting bracket (accessory) attached

Note)
Light axis 1: through-beam type
Light axis 2: diffuse-reflective type, polarization reflector type



The tightening torque for the sensor body and mounting bracket should be 0.8 N·m max.

Reflector K-7 (accessory)



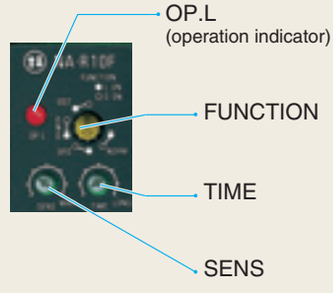
Effective reflecting surface: 56 x 36 mm
Mounting: secured with M3 screws (alternately adhesive may be used)
Protective structure: IP 67

Panel layout and functions

Diffuse-reflective type NA-R10

The switch is provided for selecting between Light-ON and Dark-ON modes. Turn the switch to L.ON or D.ON for Light-ON or Dark-ON mode respectively. Be sure to turn all the way to the end.
(Provided on NA-TR20R, NA-M7R and NA-R10)

Diffuse-reflective type with timer NA-R10F



- OP.L (operation indicator)
  Red LED is illuminated when output relay is activated.
- FUNCTION
  Rotary switch for selecting between functions, used for specifying the output relay timer function or operation mode.
- TIME
  Delay time adjustment for use of the timer feature. Time is adjustable between 0.1 and 5 seconds.
- SENS
  Sensitivity adjustment. Turning clockwise increases the sensitivity.

"F" (multifunctional type)

- Configure settings with FUNCTION switch on the panel.

Dark-ON setting

One-shot
Signal output for specified period after detection.

On-delay
Signal output after specified delay time after detection

Off-delay
Signal extended by specified period

Time disabled

- Do not use the sensor for protection of human body.
- For safety applications, ensure safe operation of the detection and control system overall.
- This product is not explosion proof.