

- Fully open terminal block for easy wiring
- Compatible with a broad range of power supply voltages
  - Polarized reflector for stable detection of mirror-like objects
  - Red LED for easy alignment
  - Improved resistance to noise with original photo IC

### Type

Type	Detecting distance	Model	Timer feature	Operation mode	Output mode
Through beam	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	NA-T20RA※	—		
		NA-T20RB※	—		
		NA-T20RFA※	Provided		
	NA-T20RFB※	—			
30m	NA-T30	—			
	NA-T30F	Provided			
Polarized retroreflective 0.03-7m	NA-M7R	—			
	NA-M7RF	Provided			
Diffuse reflective 1m	NA-R10	—			
	NA-R10F	Provided			

\* Interference between models is prevented by using models with "A" and "B" at the end of model Nos in combination.

### 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 NA-T20R · NA-T20RF φ3mm·····1m φ5mm·····3.5m	One sticker contains φ3 and φ5 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.

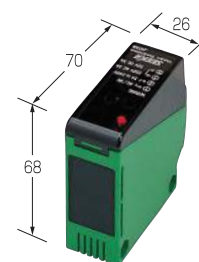
## Rating/Performance/Specification

Type	Basic				Multifunctional (with timer)			
Model	NA-T30	NA-T20R	NA-M7R	NA-R10	NA-T30F	NA-T20RF	NA-M7RF	NA-R10F
Detection method	Through beam		Polarized retroreflective	Diffuse reflector	Through beam		Polarized retroreflective	Diffuse reflector
Detecting distance	30m or less	20m or less	0.03-7m or less (with reflector model K-7)	1m or less (200×200mm white drawing paper)	30m or less	20m or less	0.03-7m or less (with reflector model K-7)	1m or less (200×200mm white drawing paper)
Detection object	Opaque object of dia. 22 mm min		Mirror-like opaque	Opaque translucent	Opaque of dia. 22 mm min		Mirror-like opaque	Opaque translucent
Power supply	24-240VAC/DC ±10% 50/60Hz							
Power consumption	Transmitter	1.8W or less	1.5W or less	2 W or less	1.8W or less	1.5W or less	2 W or less	2 W or less
	Receiver	2 W or less	2 W or less.		2 W or less.	2 W or less.		
Output mode	Relay output 1a / Rating : 3 A 250 VAC or less 30 VDC or less : resistive load							
Operation mode	Light ON/Dark ON selectable.				<ul style="list-style-type: none"> <li>Light ON/Dark ON selectable</li> <li>Timer function selectable</li> </ul> Selectable between on-delay, off-delay, one-shot and timer disabled (with switch) Delay time: 0.1-5 s			
Response time	10ms or less							
Hysteresis	—			10% or less	—			10% or less
Operating angle	3° (at receiver)		30° (at reflector)	—	3° (at receiver)°		30° (at reflector)	—
Light source (wavelength)	Infrared LED (880 nm)	Red LED (700 nm)		Infrared LED (880 nm)	Infrared LED (880 nm)	Red LED (700 nm)		Infrared LED (880 nm)
Indicator	Transmitter	Power indicator (orange LED)	—	Operation indicator (orange LED)	Power indicator (orange LED)	—	Operation indicator (orange LED)	Operation indicator (orange LED)
	Receiver	Operation indicator (orange LED)			Operation indicator (orange LED)			
Volume (VR)	—			Sensitivity Adjustment	Delay time adjustment			Sensitivity Adjustment Delay time adjustment
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 (Screw: M3.5)							
Weight	Transmitter	Approx. 170g	Approx. 150g	Approx. 170g	Approx. 170g	Approx. 150g	Approx. 170g	Approx. 170g
	Receiver	Approx. 170g	Approx. 170g		Approx. 170g	Approx. 170g		
Accessory			reflector model K-7				reflector model K-7	Operation manual, Mounting bracket

The detecting distance and detection object of retroreflective types varies, depending on reflector types combined with the sensor. The detecting distance is the range which you can set for the reflector. The sensor can detect an object even in extremely short range.

## Environmental Specification

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



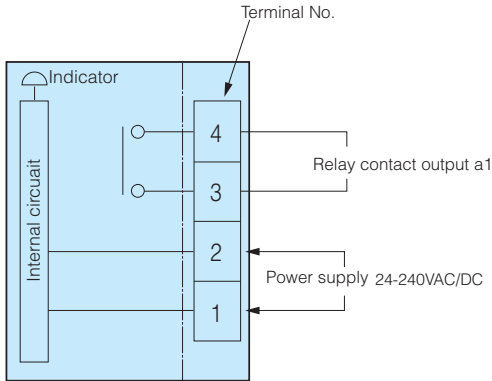
### Compatible to DIN-PG11

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

### Ground hub bushing rubber

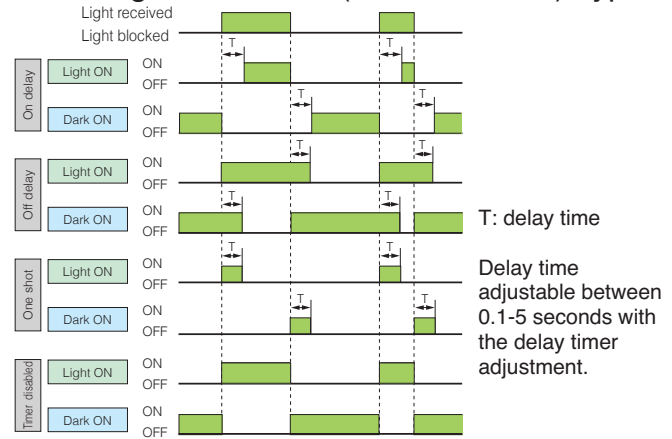
Standard models are provided with linings compatible with cables of 9-11 mm in diameter. When using cables of 6-8 mm, use optional bushings.

## Input/Output Circuit and Connection



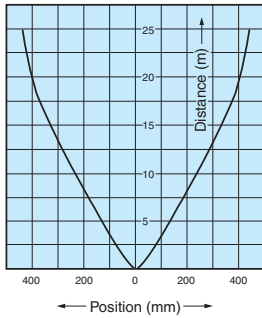
(Note) Transmitter of the through beam type only has power supply lines.

## Timing Chart for "F" (multifunctional) Type

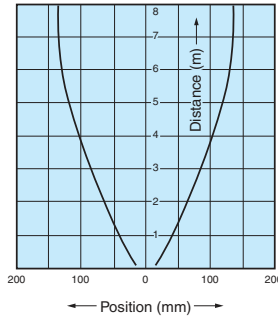


## Response Curves: Beam Pattern (Typical)

NA-T20R, NA-T20RF

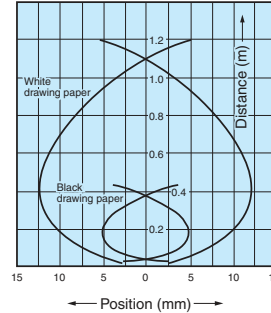


NA-M7R, NA-M7RF



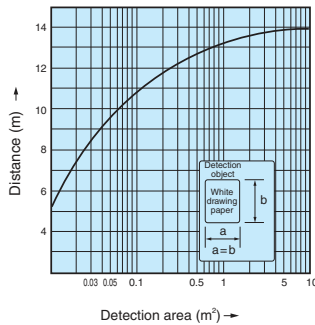
## Response Curves: Detecting Position (Typical)

NA-R10, NA-R10F



## Response Curves: Target Size (Typical)

NA-R10  
NA-R10F



## Pinhole

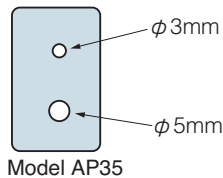
Pinhole stickers as described below are optionally available for through beam type models. Use of pinhole stickers reduces the smallest allowable detection object diameter and activation area.

Attach the sticker with either the top or bottom side up for aligning either of the holes with the optical axis. (The stickers are designed to allow automatic alignment of the optical 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	φ 3mm	φ 5mm
Detecting distance	1m	3.5m



## Detecting Distances for 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

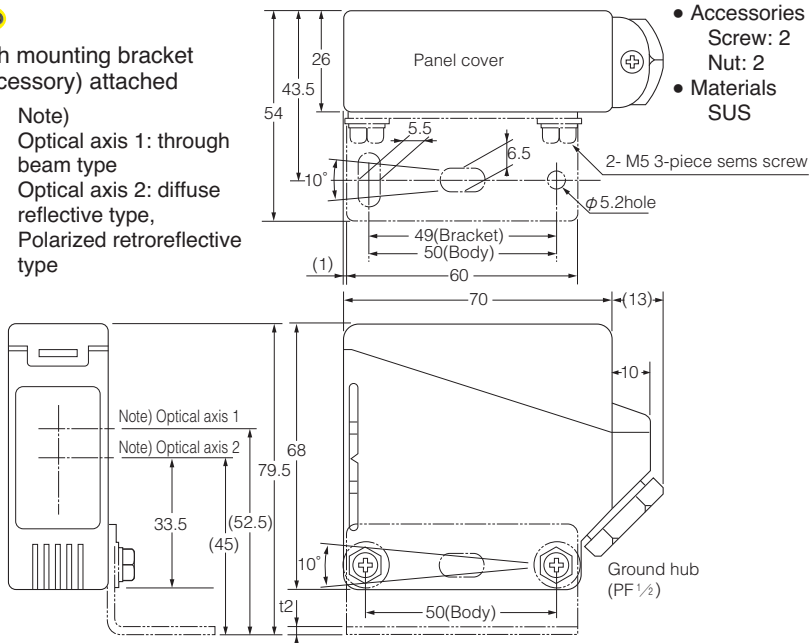
## Dimensions (in mm)

CAD

With mounting bracket (accessory) attached

Note)

Optical axis 1: through beam type  
Optical axis 2: diffuse reflective type,  
Polarized retroreflective type

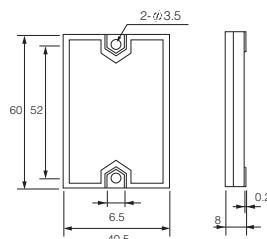


- Accessories  
Screw: 2  
Nut: 2
- Materials  
SUS

CAD

- Materials  
Mirror: acrylic  
Base: heat resistant ABS

### 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

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

## Panel layout and functions

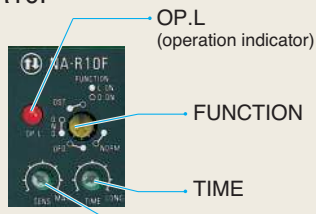
### Diffuse reflective type NA-R10



MODE  
● L.ON  
○ D.ON

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-M7R, NAR10)

### Diffuse reflective type with timer NA-R10F



- OP.L (operation indicator)  
Orange 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

Signal output after specified delay time after detection

