

NEseries

Ultra compact
AC/DC Power Supply Photo Sensors



- Ultimate simplicity
- Smallest of all AC/DC power supply models (18 x 55 x 35 mm)
- Longest-in-class detecting distance for accurate detection
- Polarized retroreflective type allows stable detection of mirror-like objects
- Red LED for easy adjustment (through beam type, polarized retroreflective type)
- Dramatically improved stability with original photo IC
- Capable of adjacent installation with polarizing filter (optional) (through beam type)

Type

Type	Detecting distance	Model		Output mode	Remarks
		Dark ON	Light ON		
 Through beam type	10m	NE-T10RD	NE-T10R	Relay output 1c (Sensors with high speed, long life photo-MOS relay are available on request. Contact Takex for details.)	“-J” indicates models with attached cable with connector.
		NE-T10RD-J	NE-T10R-J		
	30m	NE-T30D	NE-T30		
		NE-T30D-J	NE-T30-J		
 Polarized retroreflective	0.03-5m	NE-M5RD	NE-M5R		
		NE-M5RD-J	NE-M5R-J		
 Diffuse reflective	1m	NE-R10D	NE-R10		
		NE-R10D-J	NE-R10-J		

Optional Parts

Type	Model	Applicable model	Description	
Pinhole plate	NE-P3	NE-T10R (D) NE-T30 (D)	Hole diameter ϕ 3mm	For detecting distance with plate attached, see p. 334.
	NE-P5		Hole diameter ϕ 5mm	
	NE-P5×1		Hole diameter 5×1mm	
Reflector	K-71	NE-M5R (D)	Detecting distance: 0.03-2m	Two plates required for attaching to both transmitter and receiver.
	S-510G		Detecting distance : 0.1-3m	
Anti interference filter	NE-PFA	NE-T10R (D)	Longitudinal polarized filter	The detecting distance is 5m when the filter is attached.
	NE-PFB		Transverse polarized filter	
Mounting bracket	NE-B1	All models	Vertical mounting (Material:SUS)	
	NE-B2		Back-to-back mounting (Material:SUS)	
	NE-B1C		Vertical mounting (Material:SPC trivalent chromating)	
	NE-B2C		Back-to-back mounting (Material:SPC trivalent chromating)	
Cable with connector	FAC-A2R2	NE-TL10R	Attached cable with connector (-J)	For transmitter of through beam type
	FAC-A2R5	NE-TL30		2m
	FAC-A4R2	NE-TR10R (D)	For receiver of through beam type, polarization reflector type, diffuse reflective type	5m
	FAC-A4R5	NE-TR30 (D) NE-M5R (D) NE-R10		2m

Rating/Performance/Specification

Model	NE-T10RD	NE-T10R	NE-T30D	NE-T30	NE-M5RD	NE-M5R	NE-R10D	NE-R10
Detection method	Through beam				Polarized retroreflective		Diffuse reflective	
Detecting distance	10m		30m		0.03-5m (*1)		1m	
Detection object	Opaque object of ϕ 20 min.				Mirror-like, opaque		Opaque, translucent	
Power supply	AC/DC24-240V $\pm$ 10% 50/60Hz							
Power consumption	Transmitter: 1.5 W or less Receiver: 2 W or less		Transmitter: 1.8 W or less Receiver: 2 W or less		2 W or less			
Output mode	Relay output 1c / Rating: 1 A (250 VAC max. resistance load 30 VDC max. resistance load) (*2) (*3)							
Operation mode	Dark ON	Light ON	Dark ON	Light ON	Dark ON	Light ON	Dark ON	Light ON
Response time	5ms or less							
Hysteresis	—						10% or less	
Operating angle	3% (at receiver)		5% (at receiver)		30° (at reflector)		—	
Light source (wavelength)	Red LED (700 nm)		Infrared LED (880 nm)		Red LED (700 nm)		Infrared LED (880 nm)	
Indicator	—		(Transmitter) Power indicator (red LED)		Operation indicator (red LED)			
	(Receiver) Operation indicator (red LED) / Stability indicator (green LED)				Stability indicator (green LED)			
Volume (VR)	—				Sensitivity adjustment provided			
Material	Lens: acrylic / Case: heat resistant ABS							
Connection (*3)	Attached cable (Outer dimension: dia.6mm) Transmitter: 0.3 mm ² x 2 cores, 2 m, gray Receiver: 0.3 mm ² x 5 cores, 2 m, black				Attached cable (Outer dimension: dia.6mm) 0.3 mm ² x 5 cores, 2 m, black			
Weight	Transmitter: Approx.150 g / Receiver: Approx.150 g				Approx.150g			
Notes	(*1) When used with K-7 reflector provided (*2) Sensors with high-speed, long-life photo-MOS relay (1a) are available on request (Contact Takex for details). (*3) The cable length including connector for attached cable type (-J type) is 300 mm. Optional cable with connector is available. The output of a sensor with attached cable with connector (-J type) is 1a. Sensors of this series are not provided with mounting brackets. Brackets for vertical or back-to-back mounting are optionally available							
Accessory	Instruction Manual				K-7 reflector			
					Instruction Manual			

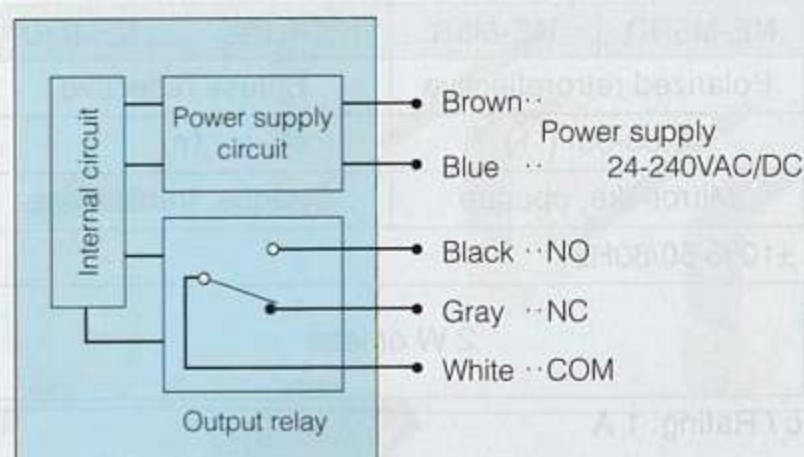
- The detecting distance and detection object of retroreflective types varies, depending on reflector types combined with the sensor.
- The detecting distance is the range which you can set for the reflector. The sensor can detect an object even in extremely short range.

Environmental Specification

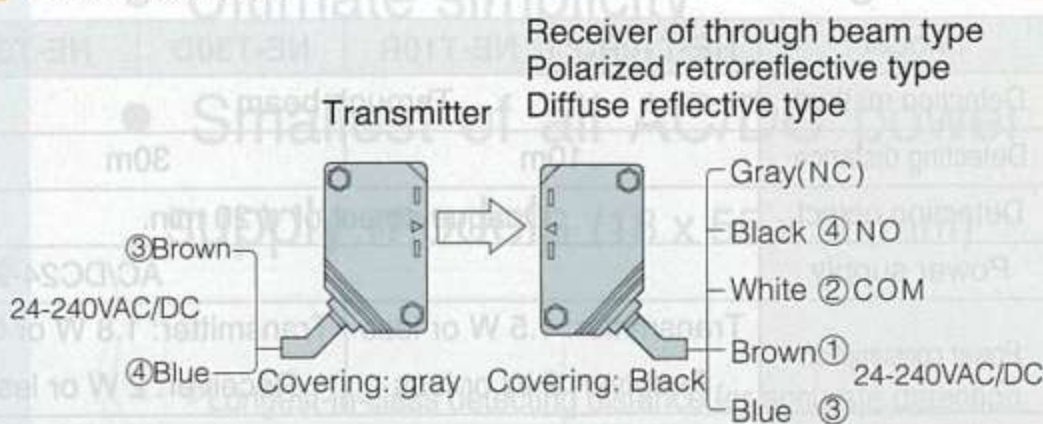
Ambient light	10,000 lx or less
Ambient temperature	-25 - +55 °C (non-freezing)
Ambient humidity	35-85%RH (non-condensing)
Protective structure	IP66
Vibration	10-55 Hz / 1.5 mm double amplitude / 2 hours each in 3 directions
Shock	500 m/s ² / 3 times each in 3 directions
Dielectric withstanding	1,500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



Input/Output Circuit and Connection



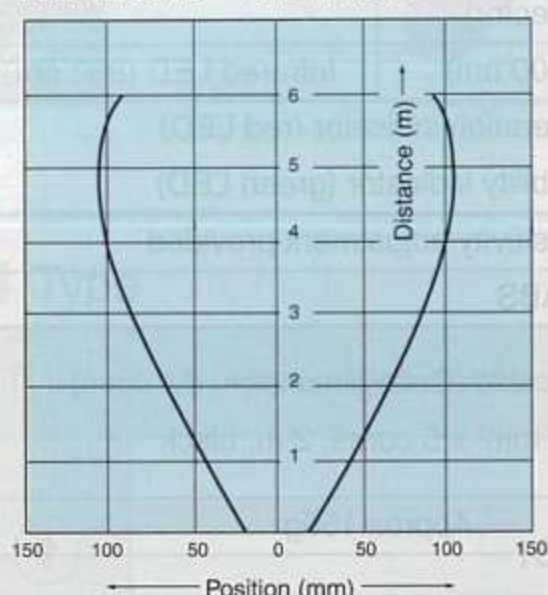
Transmitter of the through beam type only has power supply lines.



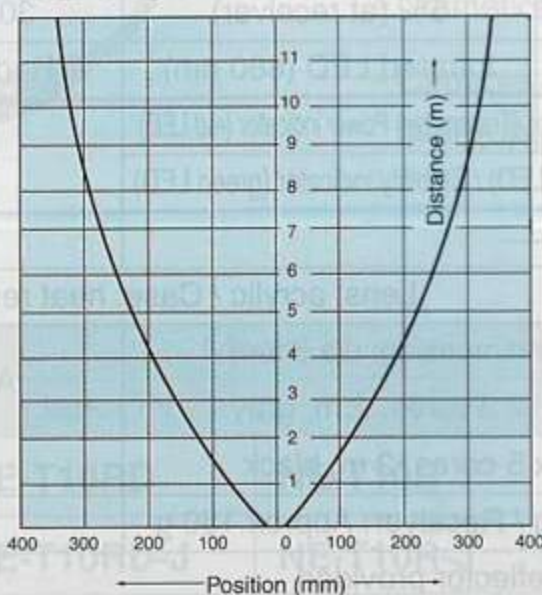
- Circled numbers show connector pin Nos. for -J type
- The output of -J type is 1a.

Response Curves : Beam Pattern (Typical)

NE-M5RD • NE-M5R

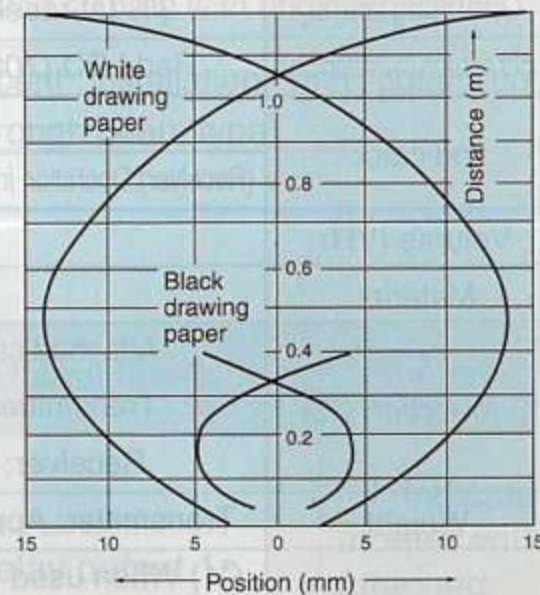


NE-T10RD • NE-T10R



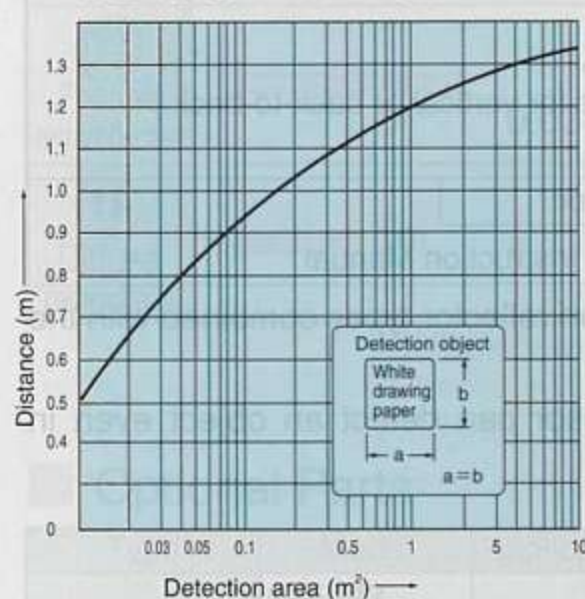
Response Curves : Detecting Position (Typical)

NE-R10 • NE-R10D



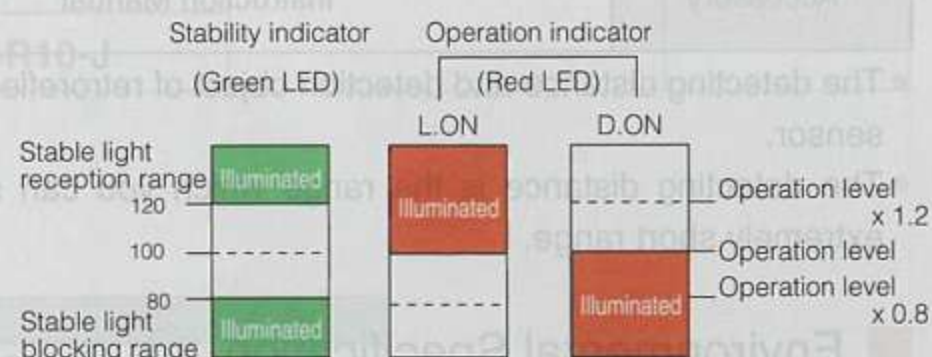
Response Curves: Target Size (Typical)

NE-R10 • NE-R10D



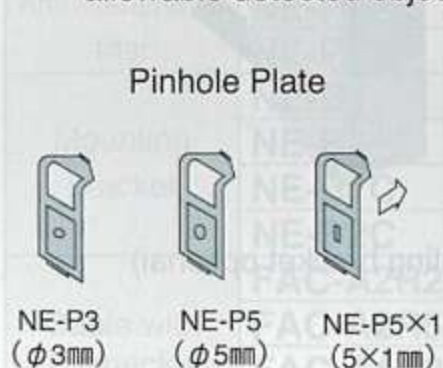
Indicators

- Indicators allow easy optical axis alignment and sensitivity adjustment. Setting the sensitivity in a range allowing stable operation achieves a higher degree of reliability against changes in the operating environment that may be generated after the sensitivity is set.
- The operation indicator (red LED) and stability indicator (green LED) respectively show different received light intensity levels as described in the figure below.



Pinhole Plate (Optional)

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



Note: Do not use the pinhole plate and anti-interference filter at the same time.

Detecting distance with plates attached to both transmitter and receiver

Sensor model	Pinhole plate model		
	NE-P3	NE-P5	NE-P5X1
NE-T10R (D)	1m	3m	0.7m
NE-T30 (D)	3m	7m	2m

Detecting Distances for Reflectors

The detecting distance depends on the reflector used.

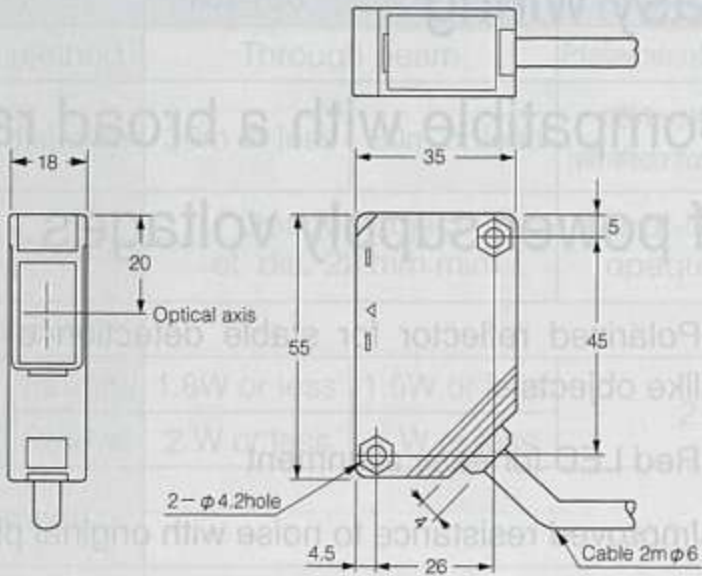
Applicable model
NE-M5R • NE-M5RD

Reflector model	Detecting distance
K-7	0.03-5m
K-71	0.03-2m
S-510G	0.1 -3m

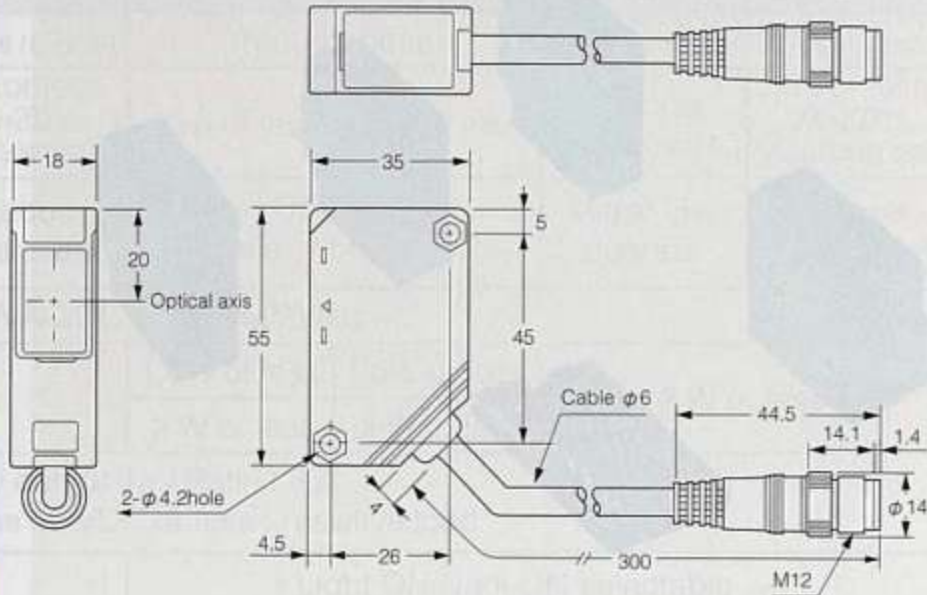
Dimensions (in mm)

Cable type

CAD

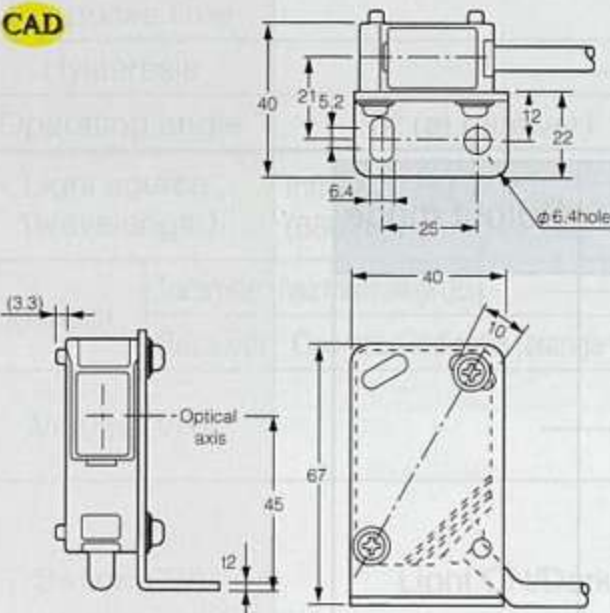


Attached cable with connector (-J) type

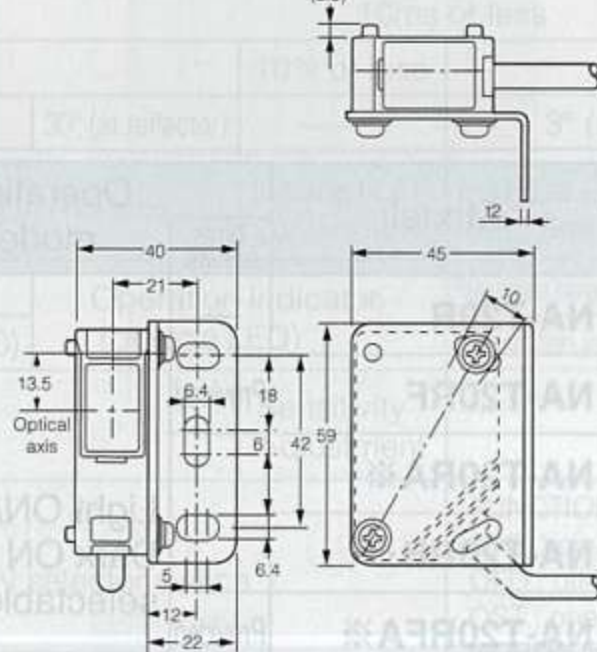


With mounting bracket NE-B1 attached (vertical)NE-B1C

CAD

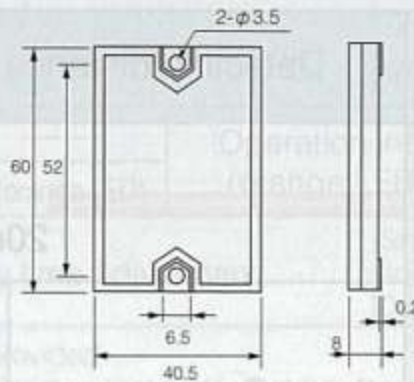


With mounting bracket NE-B2 attached (vertical)NE-B2C



Reflector K-7

- Materials
- Mirror: acrylic
- Base: heat resistant ABS



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

The NE Series sensors are not provided with mounting brackets, however two types of brackets are available as an option. (Bolts and nuts for mounting are provided with an optional mounting bracket) The tightening torque for the sensor body and mounting bracket should be 0.8 N·m max.

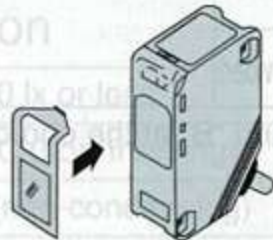
Attachment of Anti Interference filter (optional)

Model

NE-PFA (longitudinal polarization)

NE-PFB (transverse polarization)

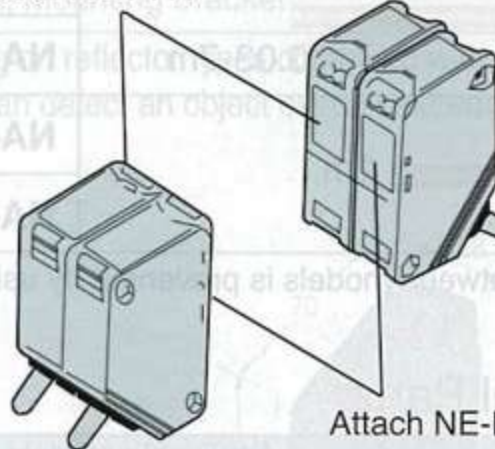
Use of filters allows adjacent mounting of through beam type sensors. For adjacent mounting of two sensors, use the longitudinal type for one pair and horizontal type for the other.



Insert into grooves at the top and bottom of the lens side of the transmitter and receiver.

Note: Do not use the pinhole plate and the interference immune filter at the same time.

Attach NE-PFA



Attach NE-PFB

May be attached to model NE-T10R (D).
The detecting distance with the filters attached is up to 5 m.