

NX5 SERIES

Compact Multi-voltage Photoelectric Sensor

MS-AJ

Sensor Mounting Stand

PM

Micro

PM2

NX5

Multi-voltage Type

VF

SU-7/SH

Amplifier-separated Type

SS-A5

CHX-SC2

Sensor Checker

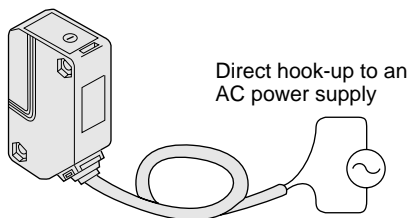


Multi-voltage Photoelectric Sensor Usable Worldwide

CE Marked
Conforming to Low Voltage and EMC Directives

Multi-voltage

The **NX5** series can operate at 24 to 240V AC or 12 to 240V DC, which makes it suitable for supply voltages all over the world.



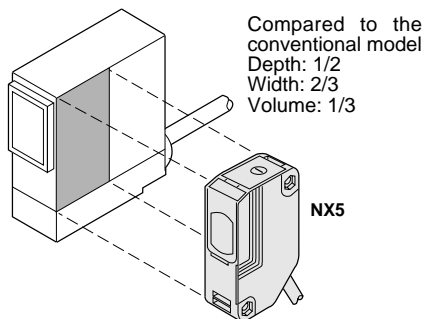
Direct hook-up to an AC power supply

No need to arrange a DC power supply.

Compact Size

Despite being multi-voltage, it has a depth of just 35mm. (W18 × H62 × D35mm)

Conventional model

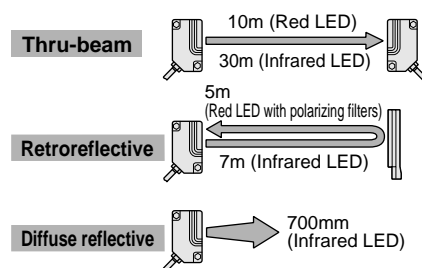


Compared to the conventional model
Depth: 1/2
Width: 2/3
Volume: 1/3

NX5

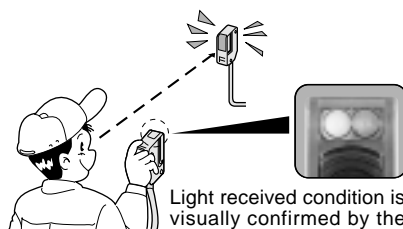
Long Sensing Range

Most suitable for conveyor lines and parking lot applications.



Easy Alignment

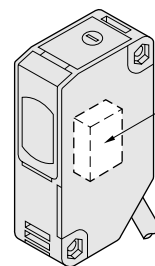
The 10m thru-beam type sensor and the 5m retroreflective type sensor incorporate a red LED beam source. Beam alignment can be attained by visually checking the emitted beam.



Light received condition is visually confirmed by the bright operation indicator.

High Reliability

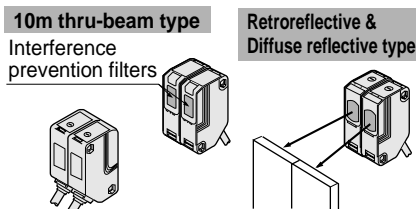
It has IP66 protection. Moderate dust or water splashes do not affect it. The new N₂ hermetically sealed output relay significantly increases its reliability.



N₂ hermetically sealed relay eliminates worries about bad contact

Interference Prevention

Two sensors operate quite normally even if mounted closely. (Excluding the 30m thru-beam type sensor)



10m thru-beam type
Interference prevention filters

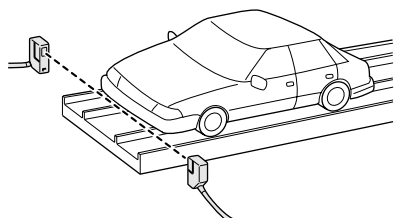
Retroreflective & Diffuse reflective type

Interference prevention filters are available. (Optional)

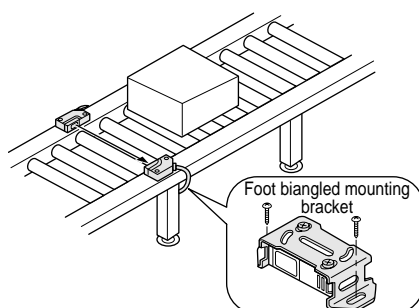
Incorporate automatic interference prevention function.

APPLICATIONS

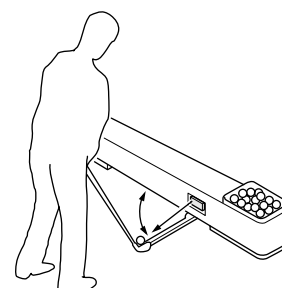
Detecting car position at parking garage



Detecting workpieces on conveyor line



Detecting golf balls

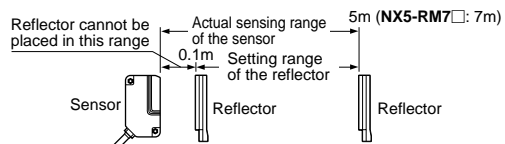


ORDER GUIDE

Type	Appearance	Sensing range	Model No. (Note 2)	Emitting element		
Thru-beam		10m	NX5-M10RA NX5-M10RB	Red LED		
		30m	NX5-M30A NX5-M30B		Infrared LED	
		Retroreflective		0.1 to 5m (Note 1)		NX5-PRVM5A NX5-PRVM5B
				0.1 to 7m (Note 1)	NX5-RM7A NX5-RM7B	Infrared LED
Diffuse reflective				700mm	NX5-D700A NX5-D700B	

NOTE: Mounting bracket is not supplied with the sensor. Please select from the range of optional sensor mounting brackets (three types).

Notes: 1) The sensing range of the retroreflective type sensor is specified for the RF-230 reflector. Further, the sensing range is the possible setting range for the reflector. The sensor can detect an object less than 0.1m away.



2) Light-ON type sensor (model No. with suffix 'A') and Dark-ON type sensor (model No. with suffix 'B') are available in the NX5 series. For the following models, in case of power off, the output relay condition is the same as when an object is detected. (In case of power supply line disconnection, the output operation is the same as when an object is detected.) Refer to P.336 for the output operation of each model.

Thru-beam type	Retroreflective type	Diffuse reflective type
NX5-M10RA and NX5-M30A (Light-ON)	NX5-PRVM5A and NX5-RM7A (Light-ON)	NX5-D700B (Dark-ON)

5m cable length type

5m cable length models are available (Standard: 2m). When ordering this type, add suffix '-C5' to the model No. (e.g.) 5m cable length type of NX5-M10RA is 'NX5-M10RA-C5'.

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Sensor Checker
CHX-SC2

NX5

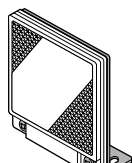
OPTIONS

Designation	Model No.	Description
Sensor mounting bracket	MS-NX5-1	Foot angled mounting bracket (The thru-beam type sensor needs two brackets.)
	MS-NX5-2	Foot biangled mounting bracket (sensor protection bracket) (The thru-beam type sensor needs two brackets.)
	MS-NX5-3	Back angled mounting bracket (The thru-beam type sensor needs two brackets.)
Slit mask (For thru-beam type sensor only)	OS-NX5-3 X 6 (Slit size 3 X 6mm)	Slit on one side <ul style="list-style-type: none"> • Sensing range: 3m [NX5-M10R□] 16m [NX5-M30□] • Min. sensing object: φ10mm
		Slit on both sides <ul style="list-style-type: none"> • Sensing range: 1m [NX5-M10R□] 6m [NX5-M30□] • Min. sensing object: 3 X 6mm
Interference prevention filter (For NX5-M10RA or NX5-M10RB only)	PF-NX5-V (Vertical)	Same type of filters on both sides <ul style="list-style-type: none"> • Sensing range: 5m • Min. sensing object: φ20mm (One set consists of 2 Nos. of interference prevention filters.)
	PF-NX5-H (Horizontal)	
Reflector (For retro-reflective type sensor only)	RF-210	<ul style="list-style-type: none"> • Sensing range: 0.1 to 1.5m [NX5-PRVM5□] 0.1 to 2.5m [NX5-RM7□] • Min. sensing object: φ30mm
	RF-220	<ul style="list-style-type: none"> • Sensing range: 0.1 to 3.5m [NX5-PRVM5□] 0.1 to 5m [NX5-RM7□] • Min. sensing object: φ35mm
Reflector mounting bracket	MS-RF21-1	Protective mounting bracket for RF-210 It protects the reflector from damage and maintains alignment.
	MS-RF22	For RF-220
	MS-RF23	For RF-230
Reflective tape (For retro-reflective type sensor only)	RF-11	<ul style="list-style-type: none"> • Ambient temperature: -25 to +50°C • Ambient humidity: 35 to 85% RH Notes: i) Keep the tape free from stress. If it is pressed too much, its capability may deteriorate. ii) Do not cut the tape. It will deteriorate the sensing performance.
	RF-12	
Sensor checker (Note)	CHX-SC2	It is useful for beam alignment of thru-beam type sensors. The optimum receiver position is given by indicators, as well as, an audio signal.

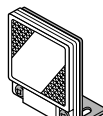
Note: Refer to P.378~ for details of the sensor checker **CHX-SC2**.

Reflector mounting bracket

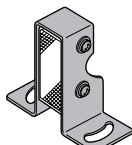
- **MS-RF23**
- **MS-RF22**
- **MS-RF21-1**



Two M4 (length 10mm) screws with washers are attached.



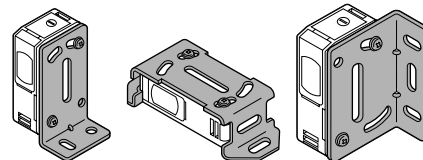
Two M3 (length 8mm) screws with washers are attached.



Two M3 (length 12mm) screws with washers are attached.

Sensor mounting bracket

- **MS-NX5-1**
- **MS-NX5-2**
- **MS-NX5-3**



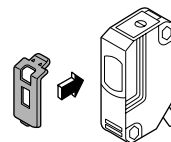
Two M4 (length 25mm) screws with washers and two M4 nuts are attached.

Two M4 (length 25mm) screws with washers and two M4 nuts are attached.

Two M4 (length 25mm) screws with washers and two M4 nuts are attached.

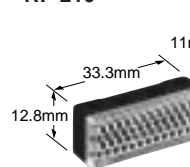
Slit mask

Fitted on the front face of the sensor with one-touch.

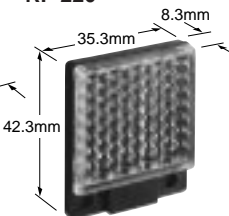


Reflector

- **RF-210**

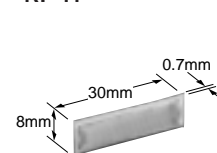


- **RF-220**

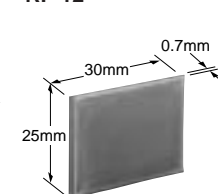


Reflective tape

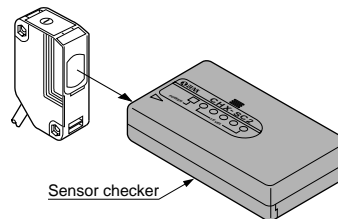
- **RF-11**



- **RF-12**



Sensor checker

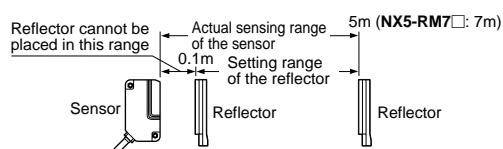


Sensor checker

SPECIFICATIONS

Item	Type Model No.	Thru-beam				Retroreflective				Diffuse reflective	
		NX5-M10RA	NX5-M10RB	NX5-M30A	NX5-M30B	With polarizing filters		Long sensing range		NX5-D700A	NX5-D700B
Sensing range		10m		30m		0.1 to 5m (Note 1)		0.1 to 7m (Note 1)		700mm (Note 2)	
Sensing object		φ20mm or more opaque object (Note 3)				φ50mm or more opaque, translucent or specular object (Note 1)		φ50mm or more opaque or translucent object (Note 1)		Opaque, translucent or transparent object	
Hysteresis		15% or less of operation distance									
Repeatability (perpendicular to sensing axis)		0.1mm or less		0.2mm or less						0.3mm or less	
Supply voltage		24 to 240V AC ± 10% or 12 to 240V DC ± 10% Ripple P-P 10% or less									
Power consumption		Emitter: 1VA or less Receiver: 2VA or less		Emitter: 1.5VA or less Receiver: 2VA or less		2VA or less					
Output		Relay contact 1c • Switching capacity: 250V AC 1A (resistive load) 30V DC 2A (resistive load) • Electrical life: 100,000 or more operations (at rated AC load) 500,000 or more operations (at rated DC load) • Mechanical life: 100,000,000 or more operations									
	Utilization category	DC-12 or DC-13									
	Output operation	Light-ON	Dark-ON	Light-ON	Dark-ON	Light-ON	Dark-ON	Light-ON	Dark-ON	Light-ON	Dark-ON
Response time		10ms or less									
Operation indicator		Red LED (lights up when the output is ON)									
Stability indicator		Green LED (lights up under stable light received condition or stable dark condition)									
Power indicator				Red LED (lights up when the power is ON)							
Sensitivity adjuster		Continuously variable adjuster				Continuously variable adjuster				Continuously variable adjuster	
Automatic interference prevention function		(Use optional interference prevention filters)				Incorporated (Two units of sensors can be mounted closely.)					
Environmental resistance	Pollution degree	3 (Industrial environment)									
	Protection	IP66 (IEC)									
	Ambient temperature	- 20 to + 55°C (No dew condensation or icing allowed) (Note 4), Storage: - 30 to + 70°C									
	Ambient humidity	35 to 85% RH, Storage: 35 to 85% RH									
	Ambient illuminance	Sunlight: 11,000 lx at the light-receiving face, Incandescent light: 3,500 lx at the light-receiving face									
	EMC	Emission: EN50081-2, Immunity: EN50082-2									
	Voltage withstandability	1,500V AC for one min. between power supply and output terminals, 1,000V AC for one min. between relay contact terminals									
	Insulation resistance	20MΩ, or more, with 500V DC megger between power supply and output terminals and between relay contact terminals									
Vibration resistance	10 to 55Hz frequency, 1.5mm amplitude in X, Y and Z directions for two hours each										
Shock resistance	500m/s ² (50G approx.) in X, Y and Z directions for three times each										
Emitting element		Red LED (modulated)		Infrared LED (modulated)		Red LED (modulated)		Infrared LED (modulated)			
Material		Enclosure: Polycarbonate, Lens: Polycarbonate, Cover: Polycarbonate, Front cover: Acrylic (retroreflective type sensor only)									
Cable		0.3mm ² 5-core (thru-beam type emitter: 2-core) cabtyre cable, 2m long									
Cable extension		Extension up to total 100m is possible with 0.3mm ² , or more, cable (thru-beam type: both emitter and receiver).									
Weight		Emitter: 100g approx. Receiver: 140g approx.		Emitter: 125g approx. Receiver: 140g approx.		140g approx.					
Accessories		Adjusting screwdriver: 1 No.				RF-230 (Reflector): 1 No. Adjusting screwdriver: 1 No.		RF-230 (Reflector): 1 No.		Adjusting screwdriver: 1 No.	

Notes: 1) The sensing range and the sensing object of the retroreflective type sensor is specified for the **RF-230** reflector. Further, the sensing range is the possible setting range for the reflector.
The sensor can detect an object less than 0.1m away.

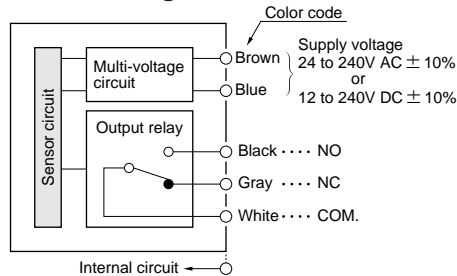


- The sensing range of the diffuse reflective type sensor is specified for white non-glossy paper (200 × 200mm) as the object.
- If slit masks (optional) are fitted, an object as small as 3 × 6mm can be detected.
- In case the sensor is to be used at an ambient temperature of - 15°C, or less, please contact our office.

NX5

I/O CIRCUIT DIAGRAM

I/O circuit diagram



Note: The emitter of the thru-beam type sensor has two wires for power (+ V and 0V) only.

Output operation

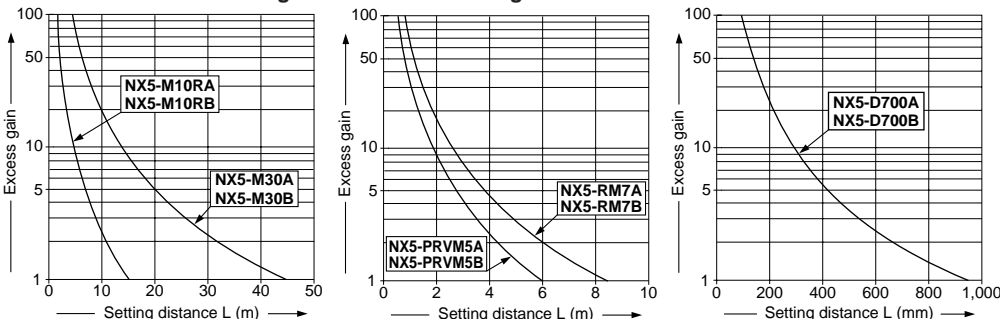
■ : Object detected state.

Sensing mode	Thru-beam & Retroreflective type				Diffuse reflective type			
	Light-ON (A) type		Dark-ON (B) type		Light-ON (A) type		Dark-ON (B) type	
Output	NO (Black cable)	NC (Gray cable)	NO (Black cable)	NC (Gray cable)	NO (Black cable)	NC (Gray cable)	NO (Black cable)	NC (Gray cable)
Power OFF	Open	Close	Open	Close	Open	Close	Open	Close
Beam-received	Close	Open	Open	Close	Close	Open	Open	Close
Beam-interrupted	Open	Close	Close	Open	Open	Close	Close	Open

SENSING CHARACTERISTICS (TYPICAL)

All models

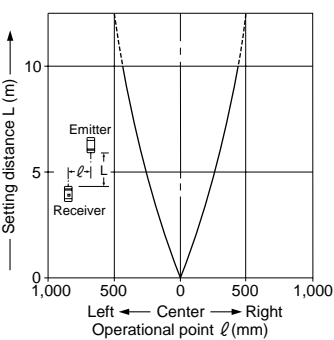
Correlation between setting distance and excess gain



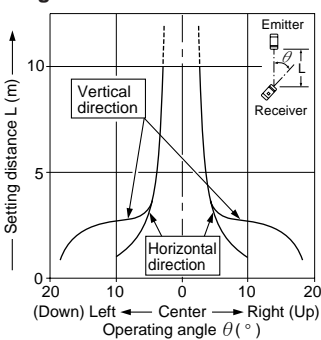
NX5-M10RA NX5-M10RB

Thru-beam type

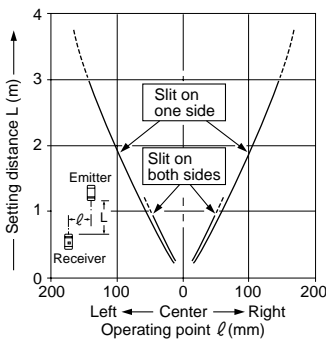
Parallel deviation



Angular deviation



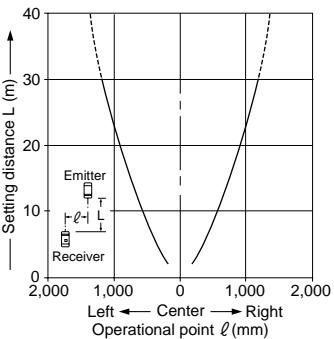
Parallel deviation with slit masks (3 × 6mm)



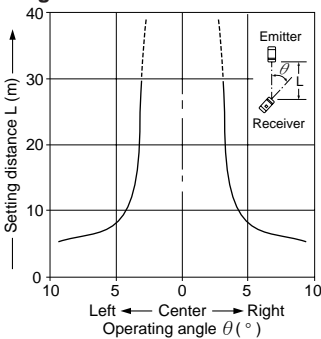
NX5-M30A NX5-M30B

Thru-beam type

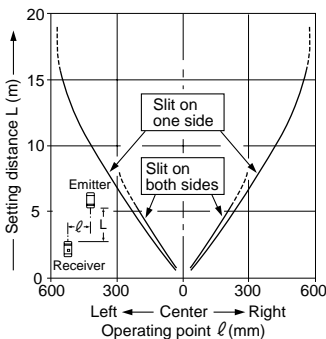
Parallel deviation



Angular deviation



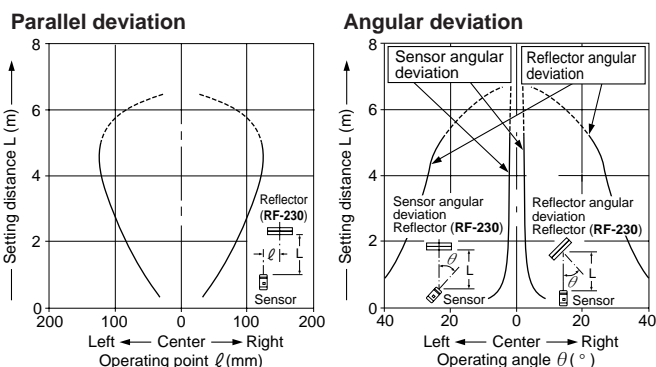
Parallel deviation with slit masks (3 × 6mm)



SENSING CHARACTERISTICS (TYPICAL)

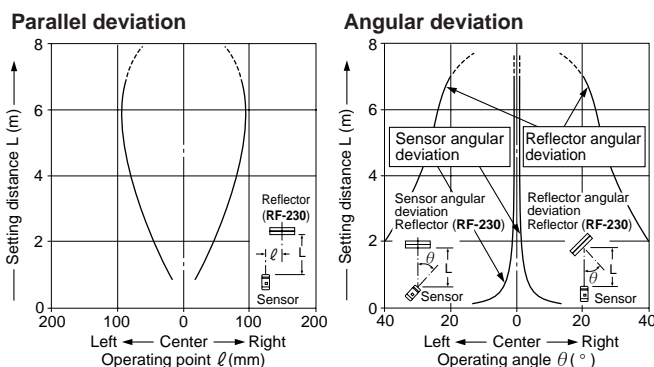
**NX5-PRVM5A
NX5-PRVM5B**

Retroreflective type



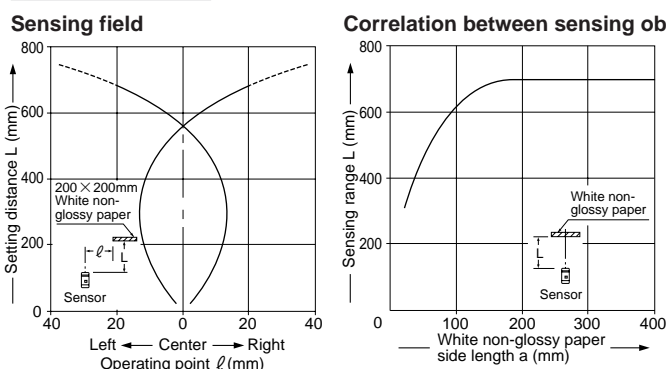
**NX5-RM7A
NX5-RM7B**

Retroreflective type



**NX5-D700A
NX5-D700B**

Diffuse reflective type



As the sensing object size becomes smaller than the standard size (white non-glossy paper 200×200 mm), the sensing range shortens, as shown in the left graph.

(For plotting the left graph, the sensitivity has been set such that a 200×200 mm white non-glossy paper is just detectable at a distance of 700mm.)

PRECAUTIONS FOR PROPER USE

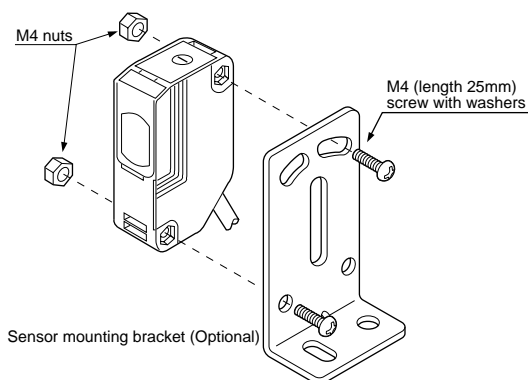
Refer to P.820~ for general precautions.



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.

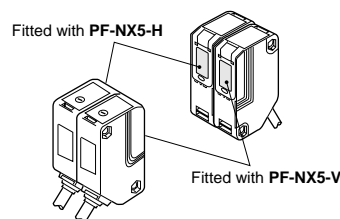
Mounting

- The tightening torque should be 0.8N·m or less.



Interference prevention filter (Exclusively for NX5-M10R□)

- Use the interference prevention filters (optional) when two units of thru-beam type sensors are mounted closely.



- There are two types of interference prevention filters. The two sets of thru-beam type sensors should be fitted with different types of interference prevention filters.

Note: The filters cannot be used for NX5-M30A or NX5-M30B.

Others

- Do not use during the initial transient time (50ms) after the power supply is switched on.

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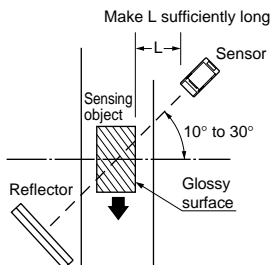
PRECAUTIONS FOR PROPER USE

Refer to P.820~ for general precautions.

Retroreflective type sensor (NX5-RM7□)

- Please take care of the following points when detecting materials having a gloss.

- ① Make L, shown in the diagram, sufficiently long.
- ② Install at an angle of 10 to 30 degrees to the sensing object.



※ NX5-PRVM5□ does not need the above adjustment.

Retroreflective type sensor with polarizing filters (NX5-PRVM5□)

- If a shiny object is covered or wrapped with a transparent film, such as those described below, the retroreflective type sensor with polarizing filters may not be able to detect it.

In that case, follow the steps given below.

Example of sensing objects

- Can wrapped by clear film
- Aluminum sheet covered by plastic film
- Gold or silver color (glossy) label or wrapping paper

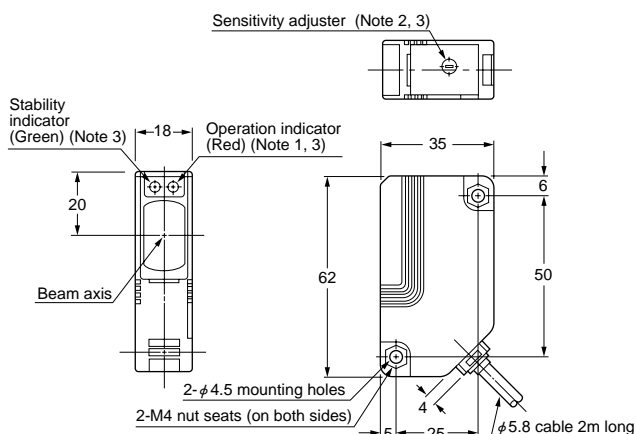
Steps

- Tilt the sensor with respect to the sensing object while fitting.
- Reduce the sensitivity.
- Increase the distance between the sensor and the sensing object.

DIMENSIONS (Unit: mm)

NX5-M10RA NX5-M30A
NX5-M10RB NX5-M30B

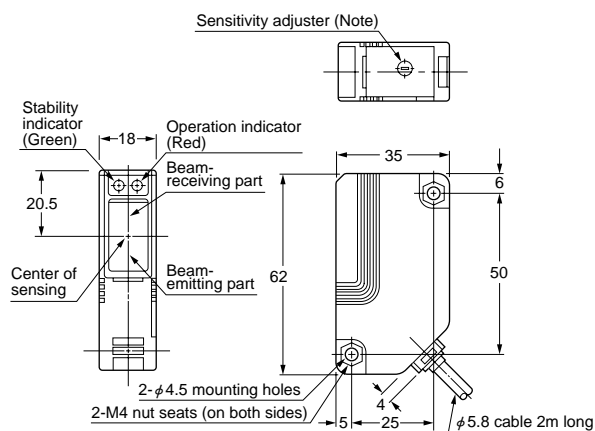
Sensor



- Notes: 1) It is the power indicator on the emitter of NX5-M30□.
2) Not incorporated on NX5-M30□.
3) Not incorporated on the emitter.

NX5-PRVM5A NX5-RM7A
NX5-PRVM5B NX5-RM7B

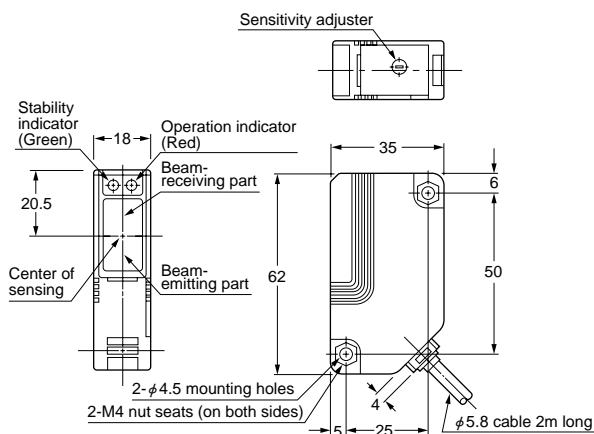
Sensor



Note: Not incorporated on NX5-RM7□.

NX5-D700A
NX5-D700B

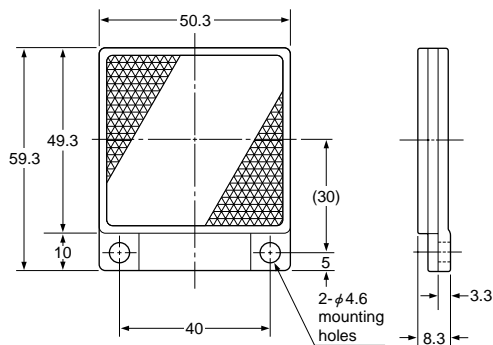
Sensor



DIMENSIONS (Unit: mm)

RF-230

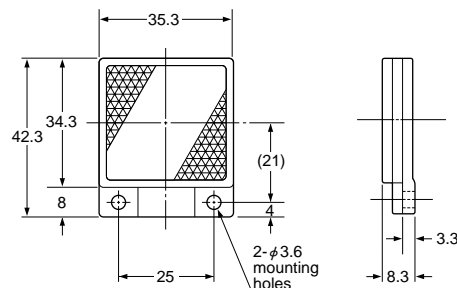
Reflector (Accessory for the retroreflective type sensor)



Material: Acrylic (Reflector)
ABS (Base)

RF-220

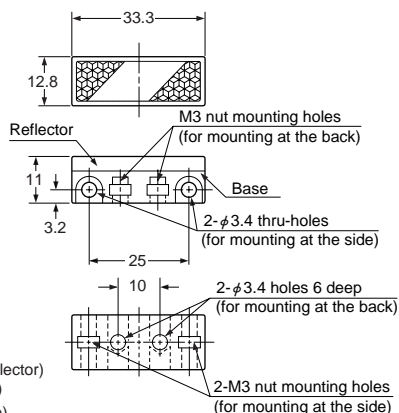
Reflector (Optional)



Material: Acrylic (Reflector)
ABS (Base)

RF-210

Reflector (Optional)

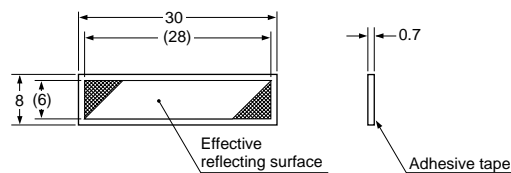


Material: Acrylic (Reflector)
ABS (Base)

Two M3 (length 8mm) screws with washers and two nuts are attached.

RF-11

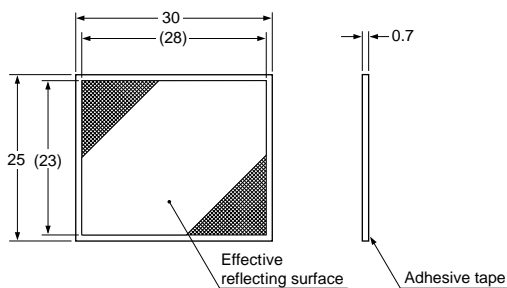
Reflective tape (Optional)



Material: Acrylic

RF-12

Reflective tape (Optional)



Material: Acrylic

Sensor Mounting Stand
MS-AJ

Micro
PM

PM2

Multi-voltage Type
NX5

VF

Amplifier-separated Type
SU-7/SH

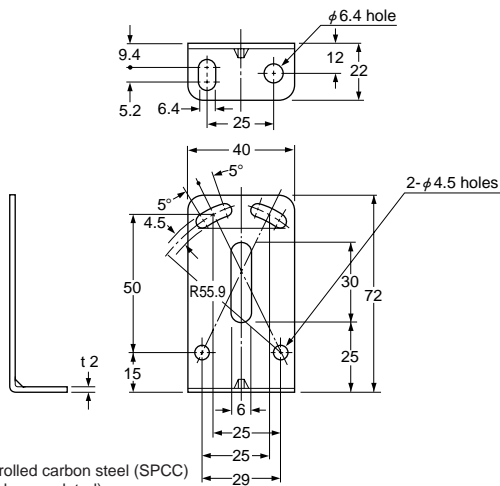
SS-A5

Sensor Checker
CHX-SC2

NX5

DIMENSIONS (Unit: mm)

MS-NX5-1 Sensor mounting bracket (Optional)

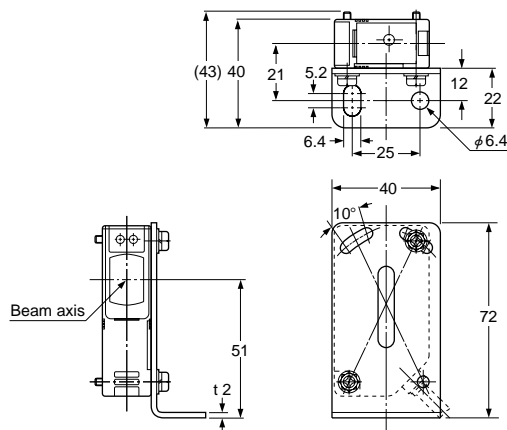


Material: Cold rolled carbon steel (SPCC)
(Uni-chrome plated)

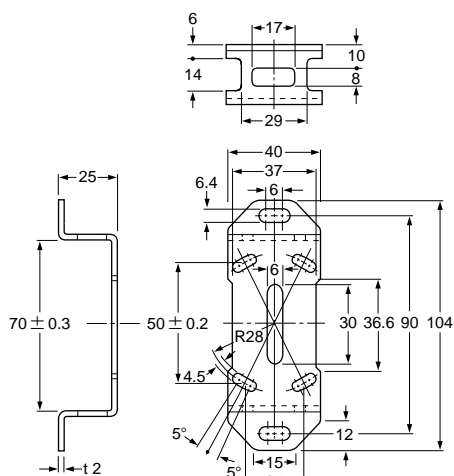
Two M4 (length 25mm) screws with washers and two M4 nuts are attached.

Assembly dimensions

Mounting drawing with the receiver of NX5-M10R□



MS-NX5-2 Sensor mounting bracket (Optional)

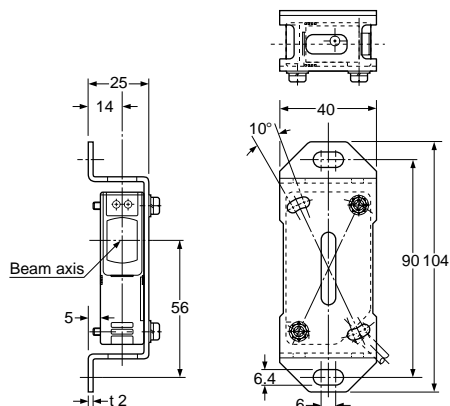


Material: Cold rolled carbon steel (SPCC)
(Uni-chrome plated)

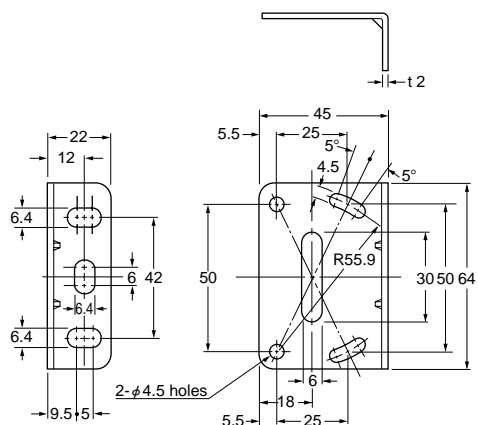
Two M4 (length 25mm) screws with washers and two M4 nuts are attached.

Assembly dimensions

Mounting drawing with the receiver of NX5-M10R□



MS-NX5-3 Sensor mounting bracket (Optional)

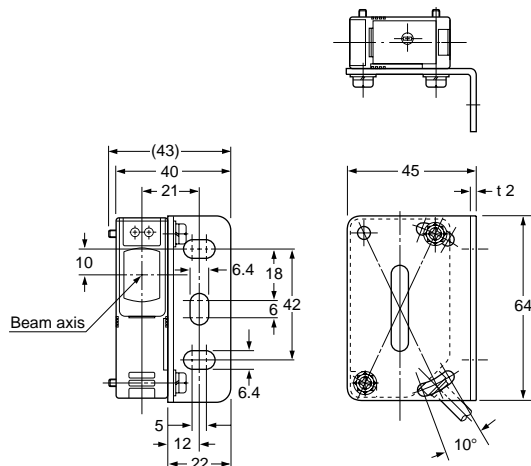


Material: Cold rolled carbon steel (SPCC)
(Uni-chrome plated)

Two M4 (length 25mm) screws with washers and two M4 nuts are attached.

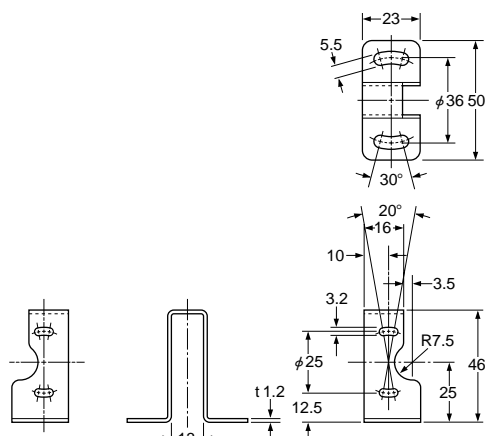
Assembly dimensions

Mounting drawing with the receiver of NX5-M10R□



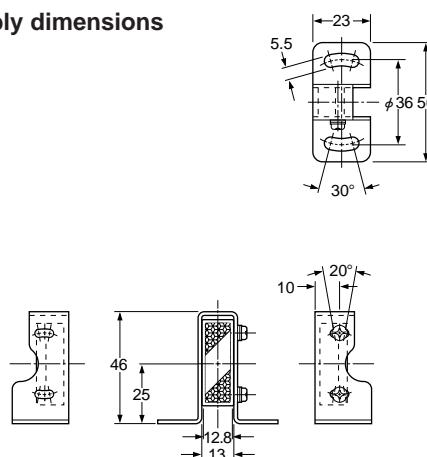
DIMENSIONS (Unit: mm)

MS-RF21-1 Reflector mounting bracket for RF-210 (Optional)

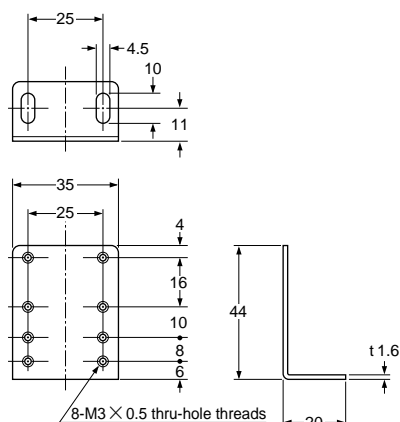


Material: Stainless steel (SUS304)
Two M3 (length 12mm) screws with washers are attached.

Assembly dimensions

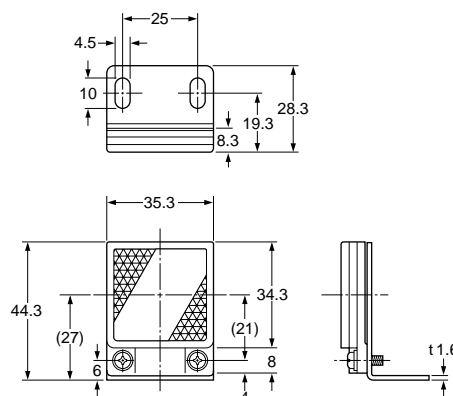


MS-RF22 Reflector mounting bracket for RF-220 (Optional)

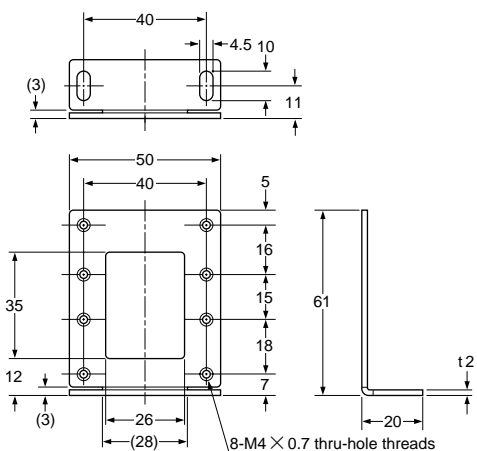


Material: Cold rolled carbon steel (SPCC)
(Uni-chrome plated)
Two M3 (length 8mm) screws with washers are attached.

Assembly dimensions

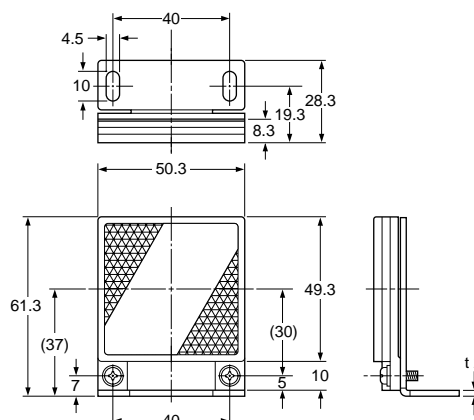


MS-RF23 Reflector mounting bracket for RF-230 (Optional)



Material: Cold rolled carbon steel (SPCC)
(Uni-chrome plated)
Two M4 (length 10mm) screws with washers are attached.

Assembly dimensions



Sensor Mounting Stand
MS-AJ

Micro
PM
PM2

Multi-voltage Type
NX5
VF

Amplifier-separated Type
SU-7/SH

SS-A5

Sensor Checker
CHX-SC2