Compact Multi-voltage Photoelectric Sensor Power Supply Built-in SERIES

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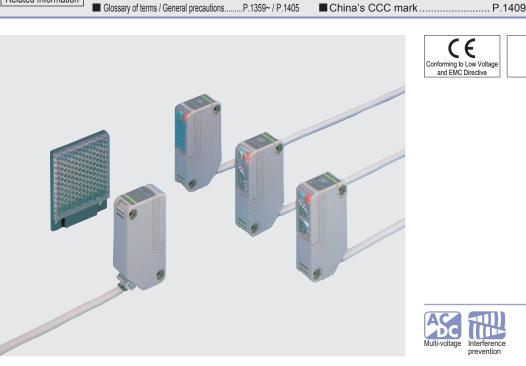
ENERGY CONSUMPTION VISUALIZATION

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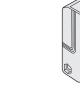


General terms and conditions...... F-17

Multi-voltage photoelectric sensor usable worldwide

Multi-voltage

The NX5 series can operate at 24 to 240 V AC or 12 to 240 V DC, which is suitable for supply voltages around the world.



Direct hook-up to an AC power supply

No need to arrange a DC power supply.

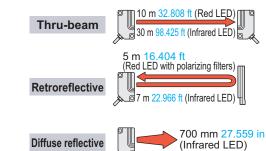
Selectior Guide Amplifier Built-in Amplifier-separated

VF

Long sensing range

BASIC PERFORMANCE

It is most suitable for conveyor lines and parking lot applications.



FUNCTIONS / MOUNTING

Easy alignment

The 10 m 32.808 ft thru-beam type sensor and the 5 m 16.404 ft retroreflective type sensor incorporate a red LED beam source. Beam alignment can be attained by checking the emitted beam visually.

Compact size

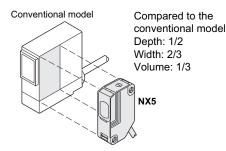
Despite of being multi-voltage, it has a depth of just 35 mm 1.378 in. (W18 × H62 × D35 mm W0.709 × H2.441 × D1.378 in)

Sensor selection guide P.283~

CE

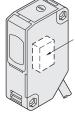
 \mathbf{w}

Certified



High reliability

It has an IP66 protection. Moderate dust or water splashes will not affect the sensor. The hermetically sealed output relay significantly increases its reliability.



Hermetically sealed relay eliminates worries about bad contact

Interference prevention

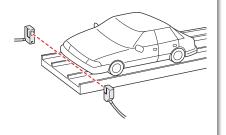
Two sensors can operate normally even if mounted close together.

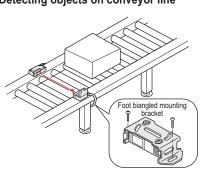
(Excluding the 30 m 98.425 ft thru-beam type sensor)

APPLICATIONS

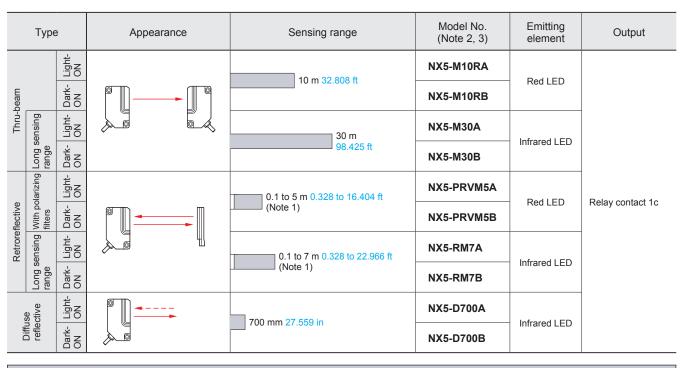
Detecting car position at parking garage

Detecting objects on conveyor line



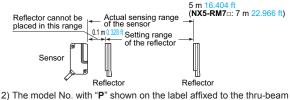


ORDER GUIDE



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 0.1 m 0.328 ft away.



type sensor is the emitter, "D" shown on the label is the receiver.

3) 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

Refer to "I/O CIRCUIT DIAGRAM AND OUTPUT OPERATION"

Diffuse reflective type

NX5-D700B

(Dark-ON)

Retroreflective type

NX5-PRVM5A and

NX5-RM7A

(Light-ON)

(e.g.) Emitter of NX5-M10RA: NX5-M10RP

is the same as when an object is detected.)

for the output operation of each model.

Thru-beam type

NX5-M10RA and

NX5-M30A

(Light-ON)

Receiver of NX5-M10RA: NX5-M10RAD

5 m 16.404 ft cable length type

5 m 16.404 ft cable length type (standard: 2 m 6.562 ft) is also available. When ordering this type, suffix "-C5" to the model No. (e.g.) 5 m 16.404 ft cable length type of NX5-M10RA is "NX5-M10RA-C5".

Accessory

• RF-230 (Reflector)



OPTIONS

LASER SENSORS
PHOTO- ELECTRIC SENSORS
MICRO PHOTO- ELECTRIC SENSORS
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PARTICULAR USE SENSORS
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SIMPLE WIRE-SAVING UNITS
WIRE-SAVING SYSTEMS
MEASURE- MENT SENSORS
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MACHINE VISION SYSTEMS
UV CURING SYSTEMS
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FIBER SENSORS

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-NX5-3×6	Sensing range: 3 m 9.843 ft [NX5-M10R□] 16 m 52.493 ft [NX5-M30□] Min. sensing object: ø10 mm ø0.394 in [NX5-M10R□] ø20 mm ø0.787 in [NX5-M30□]					
	$\left(\begin{array}{c} \text{Slit size 3 \times 6 mm} \\ 0.118 \times 0.236 \text{ in} \end{array}\right)$	• Sensing range: 1 m 3.281 ft [NX5-M10R□] Slit on both sides 6 m 19.685 ft [NX5-M30□] • Min. sensing object: 3 × 6 mm 0.118 × 0.236 in					
Interference prevention filter	PF-NX5-V (Vertical,Silver)	Same type of filters on both sides • Sensing range: 5 m 16.404 ft					
(For NX5-M10RA or NX5-M10RB only	PF-NX5-H (Horizontal, Light brown)	• Min. sensing object: Ø20 mm Ø0.787 in (One set consists of 2 pcs. of interference prevention filters.)					
Reflector (For retrore- flective type sensor only)	RF-210	Sensing range: 0.1 to 1.5 m 0.328 to 4.921 ft [NX5-PRVM5□] 0.1 to 2.5 m 0.328 to 8.202 ft [NX5-RM7□] Min. sensing object: ø30 mm ø1.181 in					
	RF-220	Sensing range: 0.1 to 3.5 m 0.328 to 11.483 ft [NX5-PRVM5□ 0.1 to 5 m 0.328 to 16.404 ft [NX5-RM7□] Min. sensing object: ø35 mm ø1.378 in					
Reflector	MS-RF21-1	Protective mounting bracket for RF-210 It protects the reflector from damage and maintains alignment.					
mounting bracket	MS-RF22	For RF-220					
	MS-RF23	For RF-230					
Reflective tape (For retrore- flective type sensor only	RF-11	 Ambient temperature: -25 to +50 °C -13 to +122 °F Ambient humidity: 35 to 85 % RH Notes Koop the tage free free stress 	Sensing range: 0.1 to 0.8 m 0.328 to 2.625 ft [NX5-PRVM5□] 0.1 to 1 m 0.328 to 3.281 ft [NX5-RM7□]				
	RF-12	 Keep the tape free from stress. If it is pressed too much, its capability may deteriorate. Do not cut the tape. It will deteriorate the sensing performance. 	 Sensing range: 0.1 to 1 m 0.328 to 3.281 ft [NX5-PRVM5-] 0.1 to 1.5 m 0.328 to 4.921 ft [NX5-RM7-] 				
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 the sensor checker CHX-SC2 pages for details.

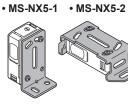


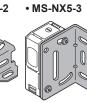
Selection Guide

Amplifier Built-in

Amplifier-separated

Sensor mounting bracket





Two M4 (length 25 mm 0.984 in) screws with washers and two M4 nuts are attached.

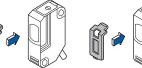
Slit mask

Two M4 (length 25 mm Two M4 (length 25 mm 0.984 in) screws with washers and two M4 0.984 in) screws with washers and two M4 nuts are attached.

Interference prevention filter (For NX5-M10R only)

• OS-NX5-3×6 Fitted on the front face of the sensor with one touch.

• PF-NX5-V(Vertical, Silver color) PF-NX5-H(Horizontal, Light brown) Two sets of thru-beam type sensors (Red LED type) can be mounted close together.



nuts are attached.



Reflector

G



screws with washers are

attached.

Two M4 (length 10 mm 0.394 in) in) screws with washers are attached.

Two M3 (length 12 mm 0.472 in) screws with washers are attached.

Reflective tape

• RF-11 • RF-12 0.7 mm 0.7 mm 30 mm 30 mm _ 1 181 8 mm 0.315 in 25 mm n. Sensor checker • CHX-SC2

₩ 200 200

Tel. +41 (0)56 222 38 Fax +41 (0)56 222 10



Sensor checker

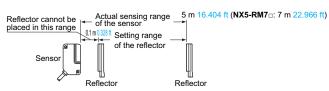
SPECIFICATIONS

\swarrow			Thru-beam					Retrore	flective				
	$\langle \rangle$	Туре			Long sens	sing range	With polari	izing filters	Long sens	sing range	Diffuse r	eflective	
Item	, \`	Model No.	NX5-M10RA	NX5-M10RB	NX5-M30A	NX5-M30B	NX5-PRVM5A	NX5-PRVM5B	NX5-RM7A	NX5-RM7B	NX5-D700A	NX5-D700B	
Sens	sing range		10 m 3	2.808 ft	30 m 98.425 ft 0.1 to 5 m 0.328 to 16.404 ft (Note 2) 0.1 to 7 m 0.3		0.1 to 7 m 0.328 to	22.966 ft (Note 2)	700 mm 27.5	59 in (Note 3)			
Sens	sing object		ø20 mm ø0.7 opaque objec	787 in or more ct (Note 4)	ø20 mm ø0.787 in or more opaque object (Completely beam interrupted object) (Note 4)				ø50 mm ø1.969 ir or translucent obj		Opaque, translucent or transparent object (Note 5)		
Hyst	eresis										15 % or less of operation distance (Note 3)		
Repea	tability (perpendic	cular to sensing axis)	0.1 mm 0.004 in or less				0.2 mm 0.00	08 in or less			0.3 mm 0.012 in or less		
Supp	oly voltage		24 to 240 V AC ⁺¹⁰ ₋₁₅ % or 12 to 240 V DC ⁺¹⁰ ₋₁₅						Ripple P-P 1	0 % or less			
Power consumption			Emitter: 1 VA or less Emitter: 1.5 VA or less Receiver: 2 VA or less Receiver: 2 VA or less										
Outp	put		 Relay contact 1 c Switching capacity: 250 V AC 1 A (resistive load) 30 V DC 2 A (resistive load) Electrical life: 500,000 or more switching operations (switching frequency 3,600 operations/hour) 100,000 or more switching operations (switching frequency 3,600 operations/hour) Mechanical life: 100 million or more switching operations (switching frequency 36,000 operations/hour) 										
	Output ope	ration	Light-ON	Dark-ON	Light-ON	Dark-ON	Light-ON	Dark-ON	Light-ON	Dark-ON	Light-ON	Dark-ON	
Resp	oonse time						10 ms	or less					
Oper	ration indicat	tor				Red LEI	D (lights up w	hen the output	ut is ON)				
Stab	ility indicator			Gr	een LED (ligh	nts up under	stable light re	ceived condi	tion or stable	dark condition	on)		
Pow	er indicator					Red LED lights up when the power is ON)							
Sens	sitivity adjust	er	Continuously v	variable adjuster			Continuously va	ariable adjuster			Continuously v	ariable adjuster	
Automatic interference prevention function			(Use optional interference)				Incorporated (Two units of sensors can be mounted close together.)						
	Pollution de	egree	3 (Industrial environment)										
	Protection		IP66 (IEC)										
nce	Ambient ter	mperature	-20 to +55 °C - 4 to +131 °F (No dew condensation or icing allowed) (Note 6), Storage: -30 to +70 °C -22 to +158 °F								-158 °F		
Environmental resistance	Ambient hu	midity	35 to 85 % RH, Storage: 35 to 85 % RH										
al re	Ambient illu	iminance	Incandescent light: 3,500 tx at the light-receiving face										
nent	EMC		EN 61000-6-2, EN 61000-6-4										
iron	Voltage with	hstandability	1,500 V AC for one min. between power supply and output terminals, 1,000 V AC for one min. between relay contact terminals										
ШЛ	Insulation re	esistance	20 MΩ, or more, with 500 V DC megger between power supply and output terminals, and between relay contact terminals										
	Vibration re	sistance	10 to 55 Hz frequency, 1.5 mm 0.059 in amplitude in X, Y and Z directions for two hours each										
	Shock resis	stance	500 m/s ² (50 G approx.) in X, Y and Z directions for three times each										
Emit	ting element		Red LED (modulated)		Infrared LED (modulated)		Red LED (modulated) Infrared LEI			D (modulated)			
	Peak emiss	ion wavelength	660 nm 0.026 mil 880 nm 0.035 mil 660 nm 0.026 mil 880 nm 0							0.035 mil			
Material			Enclosure: Polycarbonate, Lens: Polycarbonate, Cover: Polycarbonate, Front cover (retroreflective type sensor only): Acrylic										
Cable		0.3 mm ² 5-core (thru-beam type emitter: 2-core) cabtyre cable, 2 m 6.562 ft long											
Cable extension			Extension up to total 100 m 328.084 ft is possible with 0.3 mm ² , or more, cable (thru-beam type: both emitter and receiv							receiver).			
Net	weight		Emitter: 100 Receiver: 14) g approx. 40 g approx.					140 g approx.				
Accessories			Adjusting scre	ewdriver: 1 pc.			RF-230 (Refle Adjusting scre		RF-230 (Ref	lector): 1 pc.	Adjusting scre	ewdriver: 1 pc.	

Notes: 1) Where measurement conditions have not been specified precisely, the conditions used were an ambient temperature of +23 °C +73.4 °F. 2) 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 0.1 m 0.328 ft away.



3) The sensing range and the hysteresis of the diffuse reflective type sensor are specified for white non-glossy paper (200 × 200 mm 7.874 × 7.874 in) as the object.

4) If slit masks (optional) are fitted, an object as small as 3 × 6 mm 0.118 × 0.236 in can be detected.

5) Make sure to confirm detection with an actual sensor before use.

6) In case the sensor is to be used at an ambient temperature of -15 °C +5 °F, or less, please contact our office.

I/O CIRCUIT DIAGRAM AND OUTPUT OPERATION

I/O circuit diagram

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LASER SENSORS

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wer Supply Built-in

Amplifier-separated

VF

40

30 (ш ш

8 4 2

20

10

0

2,000

Emitter

1-1-1 L

1,000

Left -

Ó

Center

Operational point (mm in)

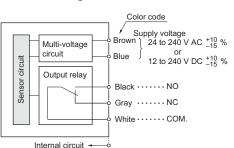
1,000

+ Right

b

Rec ive

Setting distance L



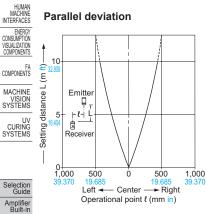
Note: The emitter of the thru-beam type sensor has two wires for power (+V and 0 V) only.

Output operation

Sensing mode		T	hru-beam & Re	troreflective typ)e	Diffuse reflective type					
		Light-ON	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)		
Output condition	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)

NX5-M10RA NX5-M10RB



10 Setting distance L (m ft) Vertical direction Receiver 5

10

Horizonta

ò

Center

Operating angle θ (°)

10

-Right (Up)

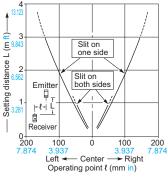
20

20

0

Angular deviation

Parallel deviation with slit masks (3 × 6 mm 0.118 × 0.236 in)



Thru-beam type

Thru-beam type

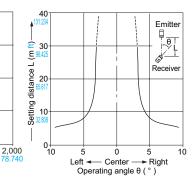
Object detected state.

NX5-M30A NX5-M30B Parallel deviation

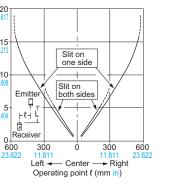


0∔ 20

(Down) Left -



Parallel deviation with slit masks (3 × 6 mm 0.118 × 0.236 in)



Refer to General precautions

FIBER SENSORS

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MICRO PHOTO-ELECTRIC SENSORS

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UV CURING SYSTEMS

Selection Guide

Amplifier Built-in

Amplifierseparated

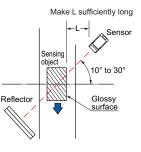
VF

SENSORS

PRECAUTIONS FOR PROPER USE

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.

 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.

Retroreflective type sensor with polarizing filters

In that case, follow the steps given below.

Example of sensing objects

(NX5-PRVM5_D)

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

Steps

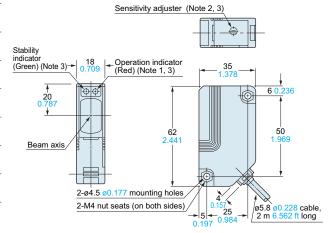
- Tilt the sensor with respect to the sensing object while fitting.
- Reduce the sensitivity.
- Increase the distance between the sensor and the sensing object.

The CAD data in the dimensions can be downloaded from our website.

DIMENSIONS (Unit: mm in)

NX5-M10RA NX5-M10RB NX5-M30A NX5-M30B Sensor NX5-PRVM

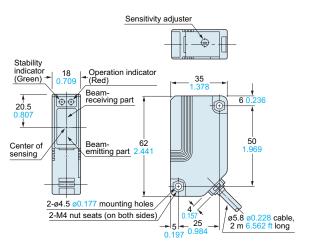
Sensor



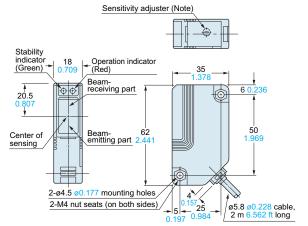
Notes: 1) It is the power indicator (red) on the emitter of NX5-M30.. 2) Not incorporated on NX5-M30.. 3) Not incorporated on the emitter.

NX5-D700A NX5-D700B





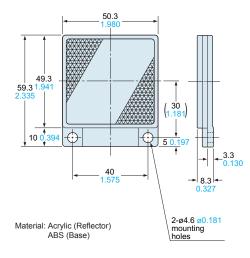
NX5-PRVM5A NX5-PRVM5B NX5-RM7A NX5-RM7B Sensor



Note: Not incorporated on NX5-RM7 ...

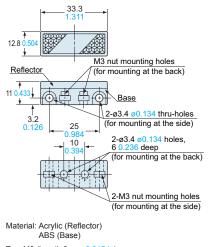
DIMENSIONS (Unit: mm in)



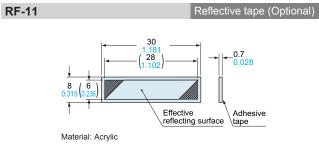


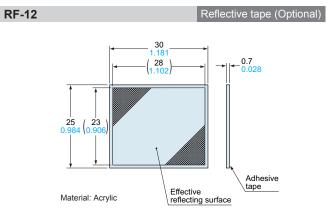
RF-210

Reflector (Optional)

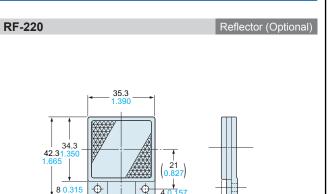


Two M3 (length 8 mm $0.315\ \text{in})$ screws with washers and two nuts are attached.





The CAD data in the dimensions can be downloaded from our website.



2-ø3.6 ø0.142 mounting holes <−^{3.3} 0.130

8.3

Material: Acrylic (Reflector) ABS (Base)

25

ø6.4 ø0.252 hole

2-ø4.5 ø0.177 holes

22

30

25

0

25 0.984

72

DIMENSIONS (Unit: mm in)

9.4

6.4 5.2

50

t 2

9

0

t 0.07 15

screws with washers and two M4 nuts are attached

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

Two M4 (length 25 mm 0.984 in)

MS-NX5-2

25

40

-5

-6-

25

29

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LASER SENSORS

MIC

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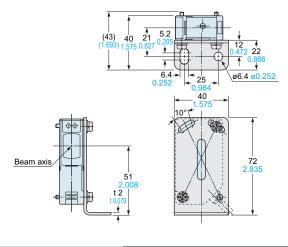
MS-NX5-1

The CAD data in the dimensions can be downloaded from our website.

Sensor mounting bracket (Optional)

Assembly dimensions

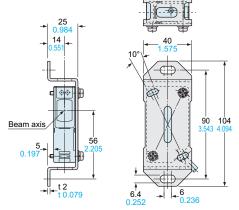
Mounting drawing with the receiver of NX5-M10R



Sensor mounting bracket (Optional)

Assembly dimensions

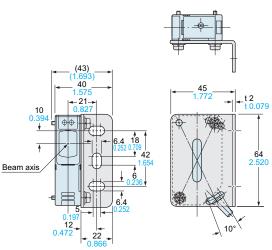
Mounting drawing with the receiver of NX5-M10R



Sensor mounting bracket (Optional)

Assembly dimensions

Mounting drawing with the receiver of NX5-M10R

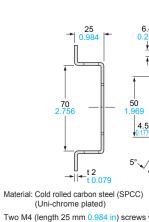




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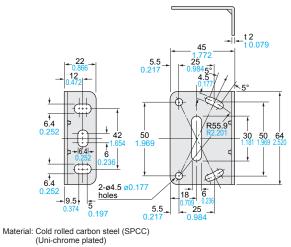
Rugghölzli 2 CH - 5453 Busslingen



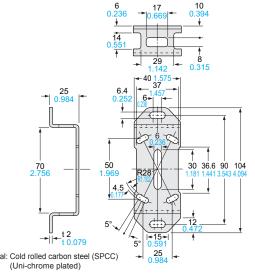


Selection Guide Amplifier Built-in Amplifier-separated





Two M4 (length 25 mm $0.984\ \text{in})$ screws with washers and two M4 nuts are attached.



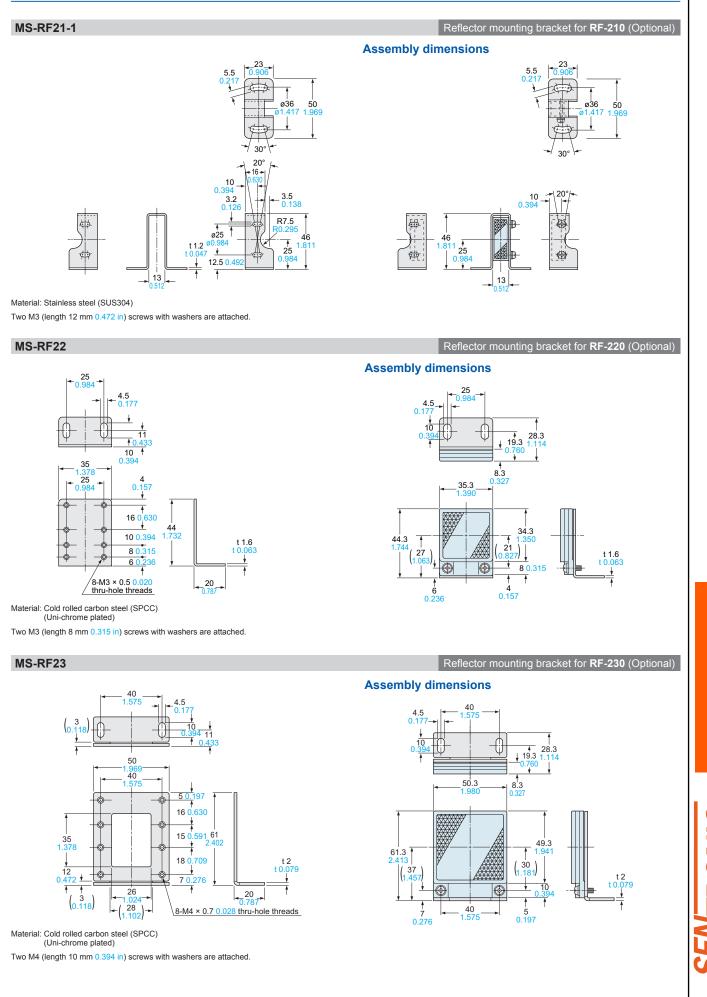
Two M4 (length 25 mm 0.984 in) screws with washers and two M4 nuts are attached.

MS-NX5-3



DIMENSIONS (Unit: mm in)

The CAD data in the dimensions can be downloaded from our website.



mailbox@sentronic.com www.sentronic.com

60