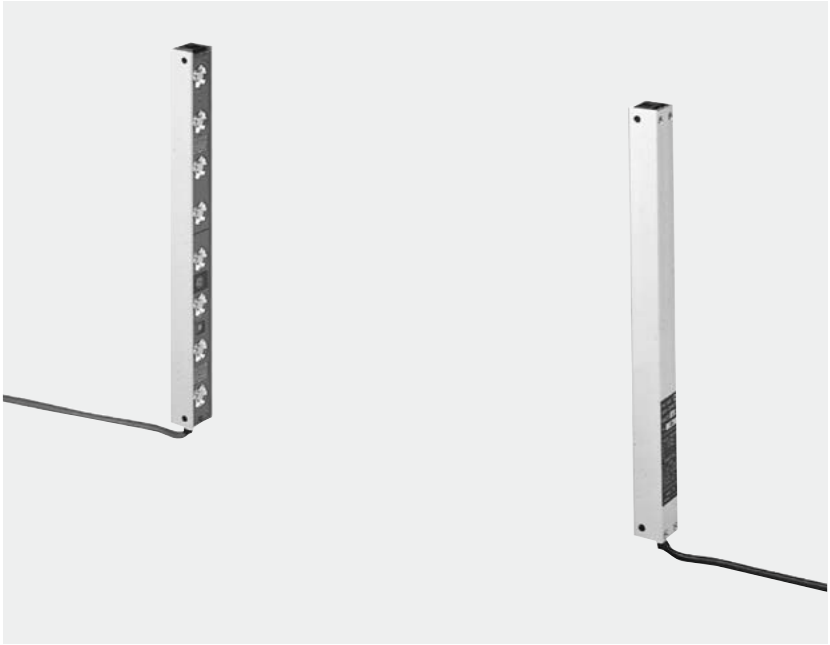
Panasonic
INDUSTRY

40 mm Beam Pitch
General Purpose Area Sensor

NA40 SERIES

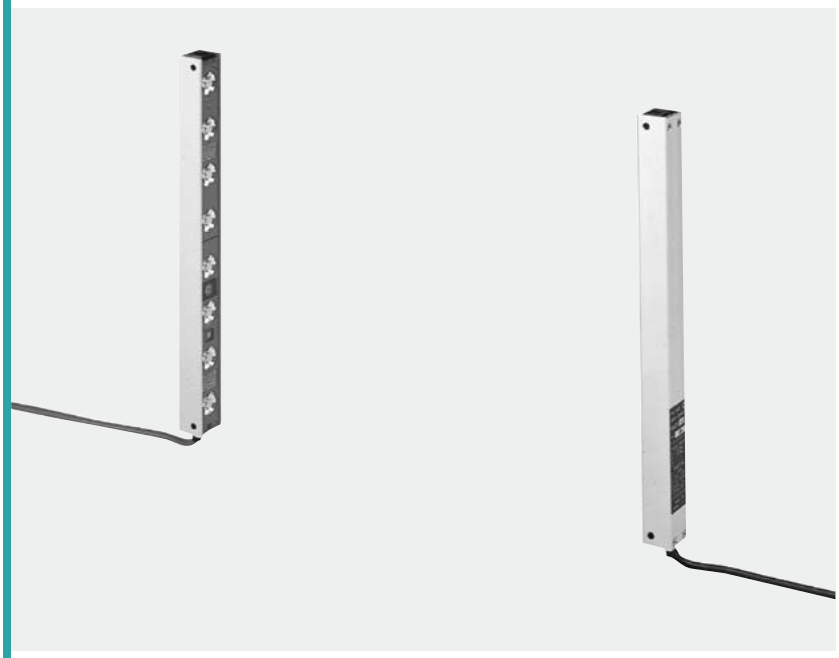


2022.7

* The contents of this catalog are as of October 2017.
For the latest information, please visit our company website.

40 mm Beam Pitch General Purpose Area Sensor

NA40 SERIES



Certified
(**NA40-□-K** only)

Make sure to use safety light curtains when using a sensing device for personnel protection.

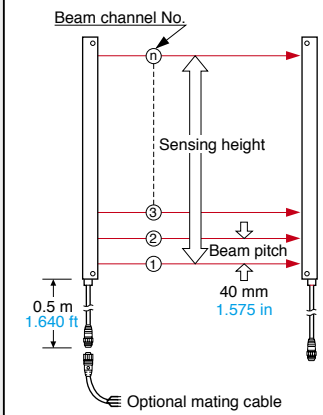
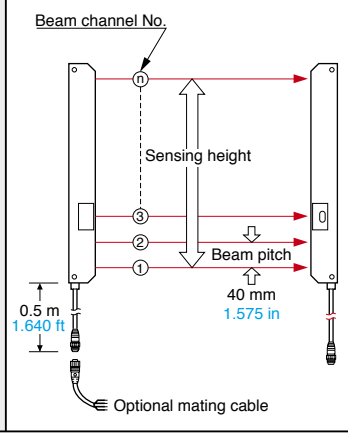
Self-diagnosis

Interference prevention

Slim and smart

ORDER GUIDE

Sensors Mating cable is not supplied with the sensor. Please order it separately.

Type	Appearance	Sensing range	Model No.	Number of beam channels	Sensing height (mm in)	Output
Area sensor		5 m 16.404 ft	**NA40-4**	4	120 4.724	NPN open-collector transistor
			NA40-6	6	200 7.874	
			NA40-8	8	280 11.024	
			NA40-10	10	360 14.173	
			NA40-12	12	440 17.323	
			NA40-14	14	520 20.472	
			NA40-16	16	600 23.622	
			NA40-20	20	760 29.921	
			NA40-24	24	920 36.221	
With spatter protection hood			**NA40-4-H**	4	120 4.724	
			NA40-6-H	6	200 7.874	
			NA40-8-H	8	280 11.024	
			NA40-10-H	10	360 14.173	
			NA40-12-H	12	440 17.323	
			NA40-14-H	14	520 20.472	
			NA40-16-H	16	600 23.622	
			NA40-20-H	20	760 29.921	
			NA40-24-H	24	920 36.221	

Note: The model No. with "**P**" shown on the label affixed to the product is the emitter, "**D**" shown on the label is the receiver.

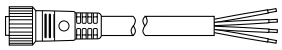
ORDER GUIDE

Products that obtained Korea's S-mark certification

We offer products that have obtained Korea's S-mark certification (excluding the sensors with spatter protection hood).
When ordering this type, suffix "**-K**" to the model No.
(e.g.) **NA40-4** with Korea's S-mark certification is "**NA40-4-K**".

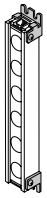
Mating cables

Mating cable is not supplied with the sensor. Please order it separately.

Appearance	Model No.	Description	
	**NA40-CC3**	Length: 3 m 9.843 ft Net weight: 600 g approx. (two cables)	0.5 mm² 3-core (for receiver: 4-core) cabtyre cable with connector on one end, two cables per set. Cable outer diameter: ø6.7 mm ø0.264 in Connector outer diameter: ø14 mm ø0.551 in max. Cable color: Gray (for emitter) Black (for receiver)
	NA40-CC7	Length: 7 m 22.966 ft Net weight: 950 g approx. (two cables)	

Accessory

• **MS-NA40-1** (Sensor mounting bracket)



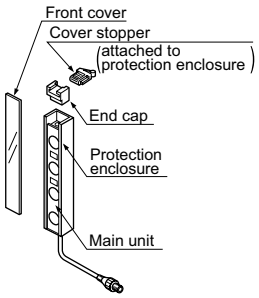
Four bracket set
[Four M5 (length 40 mm 1.575 in) truss head screws, four nuts and four spring washers are attached.]

Individual units and associated components can be purchased separately

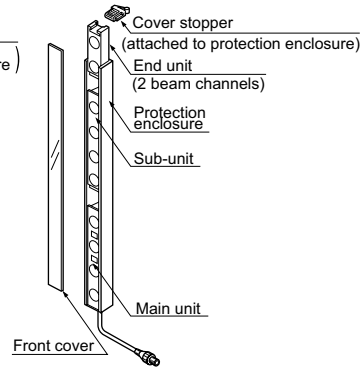
Designation	Number of beam channels	Model No.	
		Emitter	Receiver
Main unit	4	**NA40-MUP**	**NA40-MUD**
Sub-unit	4	**NA40-4SUP**	**NA40-4SUD**
End unit	2	**NA40-2EUP**	**NA40-2EUD**
	4	**NA40-4EUP**	**NA40-4EUD**
End cap (Note)	—	**NA40-ECP**	**NA40-ECD**

Note: It is required only for **NA40-4** or **NA40-4-H**.

• NA40-4



• NA40-10



Designation		Applicable beam channels: 4 beam channels	6 beam channels	8 beam channels	10 beam channels	12 beam channels	14 beam channels	16 beam channels	20 beam channels	24 beam channels
Protection enclosure	Model No.	**MC-NA40-4**	**MC-NA40-6**	**MC-NA40-8**	**MC-NA40-10**	**MC-NA40-12**	**MC-NA40-14**	**MC-NA40-16**	**MC-NA40-20**	**MC-NA40-24**
With spatter protection hood	Model No.	**MC-NA40-4H**	**MC-NA40-6H**	**MC-NA40-8H**	**MC-NA40-10H**	**MC-NA40-12H**	**MC-NA40-14H**	**MC-NA40-16H**	**MC-NA40-20H**	**MC-NA40-24H**
Front cover	Model No.	**FC-NA40-4**	**FC-NA40-6**	**FC-NA40-8**	**FC-NA40-10**	**FC-NA40-12**	**FC-NA40-14**	**FC-NA40-16**	**FC-NA40-20**	**FC-NA40-24**

Note: The model Nos. given above denote a single unit, not a pair of units.

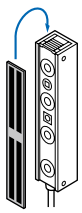
OPTIONS

Designation		Applicable beam channels: 4 beam channels	6 beam channels	8 beam channels	10 beam channels	12 beam channels	14 beam channels	16 beam channels	20 beam channels	24 beam channels
Slit mask	Model No.	**OS-NA40-4**	**OS-NA40-6**	**OS-NA40-8**	**OS-NA40-10**	**OS-NA40-12**	**OS-NA40-14**	**OS-NA40-16**	**OS-NA40-20**	**OS-NA40-24**

Note: The model Nos. given above denote a single unit, not a pair of units.

Slit mask

• **OS-NA40-□**



Sensing range

- Slit on emitter side: 1.3 m 4.265 ft
- Slit on receiver side: 3 m 9.843 ft
- Slit on both sides: 0.8 m 2.625 ft

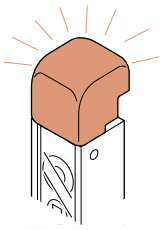
OPTIONS

Designation	Model No.	Description
Large indicator for area sensor	**SF-IND**	With the large indicators put on the sensors, the operation is easily observable from various directions. Orange.

Note: Two **SF-IND**s are required if they are to be mounted on, both, the emitter and the receiver.

Large indicator for area sensor

• **SF-IND**



The large indicator can be easily mounted on the sensor head at the top. It also can be mounted on an area sensor already being used.

SPECIFICATIONS

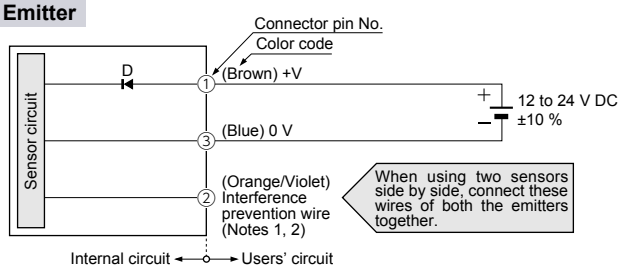
Item \ Number of beam channels	4	6	8	10	12	14	16	20	24
Model No.	**NA40-4**	**NA40-6**	**NA40-8**	**NA40-10**	**NA40-12**	**NA40-14**	**NA40-16**	**NA40-20**	**NA40-24**
With spatter protection hood	**NA40-4-H**	**NA40-6-H**	**NA40-8-H**	**NA40-10-H**	**NA40-12-H**	**NA40-14-H**	**NA40-16-H**	**NA40-20-H**	**NA40-24-H**
Sensing height	120 mm 4.724 in	200 mm 7.874 in	280 mm 11.024 in	360 mm 14.173 in	440 mm 17.323 in	520 mm 20.472 in	600 mm 23.622 in	760 mm 29.921 in	920 mm 36.220 in
Sensing range	5 m 16.404 ft								
Beam pitch	40 mm 1.575 in								
Sensing object	ø60 mm ø2.362 in or more opaque object								
Supply voltage	12 to 24 V DC ±10 % Ripple P-P 10 % or less								
Current consumption	Emitter: 30 mA or less Receiver: 60 mA or less			Emitter: 35 mA or less, Receiver: 90 mA or less				Emitter: 35 mA or less Receiver: 115 mA or less	
Sensing output	NPN open-collector transistor • Maximum sink current: 100 mA • Applied voltage: 30 V DC or less (between sensing output and 0 V) • Residual voltage: 1.6 V or less (at 100 mA sink current)								
Output operation	ON when all beam channels are received / OFF when one or more beam channels are interrupted								
Short-circuit protection	Incorporated								
Self-diagnosis output	NPN open-collector transistor • Maximum sink current: 50 mA • Applied voltage: 30 V DC or less (between self-diagnosis output and 0 V) • Residual voltage: 1.6 V or less (at 50 mA sink current)								
Output operation	OFF when unstable light received condition continues for 5 sec. or more, or the output transistor fails								
Short-circuit protection	Incorporated								
Response time	12 ms or less								
Indicator	Incorporated with the three color indicators on the receiver • Sensing output operation indicator: Red LED (lights up when one or more beam channels are interrupted) • Stable incident beam indicator: Green LED (lights up when all beam channels are received stably) • Unstable incident beam indicator: Yellow LED (lights up when one or more beam channels are received unstably) * When the output transistor fails, the three color indicators blink simultaneously.								
Interference prevention function	Incorporated (Two units of sensors can be mounted close together.)								
Environmental resistance: Protection	IP65 (IEC)								
Environmental resistance: Ambient temperature	–10 to +50 °C +14 to +122 °F (No dew condensation or icing allowed), Storage: –10 to +60 °C +14 to +140 °F								
Environmental resistance: Ambient humidity	35 to 85 % RH, Storage: 35 to 85 % RH								
Environmental resistance: Ambient illuminance	Incandescent light: 3,500 ℓx or less at the light-receiving face								
Environmental resistance: Voltage withstandability	1,000 V AC for one min. between all supply terminals connected together and enclosure								
Environmental resistance: Insulation resistance	20 MΩ, or more, with 500 V DC megger between all supply terminals connected together and enclosure								
Environmental resistance: Vibration resistance	10 to 55 Hz frequency, 1.5 mm 0.059 in double amplitude in X, Y and Z directions for two hours each								
Environmental resistance: Shock resistance	100 m/s² acceleration (10 G approx.) in X, Y and Z directions three times each								
Emitting element	Infrared LED (synchronized scanning system)								
Material	Protection enclosure: Aluminum, Unit case: ABS, Front cover: Acrylic, Lens: Acrylic								
Cable	0.5 mm² 4-core (emitter: 3-core) cabtyre cable, 0.5 m 1.640 ft long, with a round connector at the end * Use together with the optional mating cable								
Cable extension	Extension up to total 100 m 328.084 ft is possible, for both emitter and receiver, with 0.5 mm², or more, cable. (However, the interference prevention wire can extend up to 20 m 65.617 ft between two emitters.)								
Net weight (Total of emitter and receiver)	400 g approx.	500 g approx.	630 g approx.	770 g approx.	890 g approx.	1,020 g approx.	1,150 g approx.	1,400 g approx.	1,660 g approx.
With spatter protection hood	500 g approx.	630 g approx.	800 g approx.	990 g approx.	1,150 g approx.	1,330 g approx.	1,500 g approx.	1,840 g approx.	2,190 g approx.
Accessories	**MS-NA40-1** (Sensor mounting bracket): 1 set for emitter and receiver, Adjusting screwdriver: 1 pc.								

Note: Where measurement conditions have not been specified precisely, the conditions used were an ambient temperature of +23 °C +73.4 °F.

I/O CIRCUIT DIAGRAMS

I/O circuit diagrams

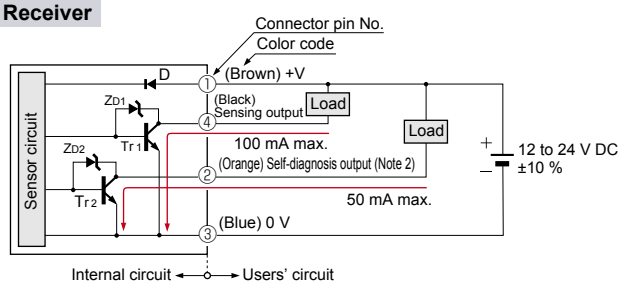
Emitter



Symbols ... D: Reverse supply polarity protection diode

Notes: 1) If the interference prevention wires (orange/violet) are not used, please insulate them.
2) Never connect the emitter's interference prevention wire (orange/violet) to the receiver's self-diagnosis output (orange). This can cause damage.

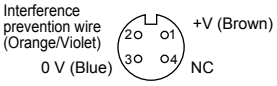
Receiver



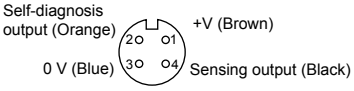
Symbols ... D: Reverse supply polarity protection diode
Z_{D1}, Z_{D2}: Surge absorption zener diode
Tr_1, Tr_2 : NPN output transistor

Connector pin position

Emitter



Receiver



PRECAUTIONS FOR PROPER USE

- Never use this product as a sensing device for personnel protection.
- For sensing devices to be used as safety devices for press machines or forpersonnel protection, use products which meet standards, such as OSHA, ANSI or IEC etc., for personnel protection applicable in each region or country.
- If this product is used as a sensing device for personnel protection, death or serious body injury could result.
- For a product which meets safety standards, use the safety light curtains.

Setting of interference prevention function

- Make sure that the power supply is off while operating the frequency selection switch. If the switch is operated while the power is on, the sensor may go into the operation stopped state. However, to restart the sensor, turn the power off and on again.
- The frequency selection switch should not be set to the positions other than those specified below.
- When the sensor A breaks down due to any reason, the sensor B goes into the operation stopped state. In order to check the operation of the sensor B, set the frequency selection switch to '1'. Note that when only the sensor B breaks down, the sensor A keeps operation correctly.

- When the interference prevention function is not used (when one set of sensor is used) make sure that the frequency selection switch in both the emitter and receiver is set to '1'. If the switch is set to other than that, the sensor may not operate properly.

When using one set of sensor

Frequency selection switches	
Emitter	Receiver
	

Set the switches of both the emitter and the receiver at '1'. The sensor does not function normally at other settings.

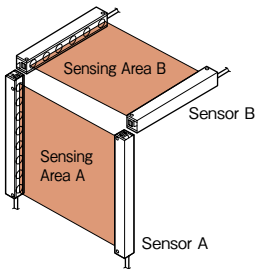
When using two sets of sensor

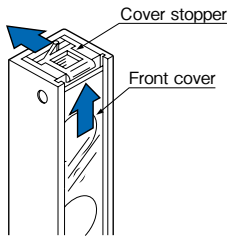
- Up to two sets of sensors can be mounted close together by using the interference prevention function. Set the interference prevention function in the following procedure.

①Set the frequency selection switch. Firstly, push up the front cover while pressing the cover stopper towards the arrow shown in the right figure.

②Turn the frequency selection switch with the accessory adjusting screwdriver to select the frequency.

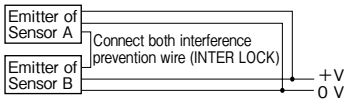
	Frequency selection switches	
	Emitter	Receiver
Sensor A		
Sensor B		





Set the switches of both the emitter and the receiver of Sensor A at '1', and both switches of Sensor B at '2'. The sensors do not function normally at other settings.

③Connect the interference prevention wire (INTER LOCK) of Sensor A and B.



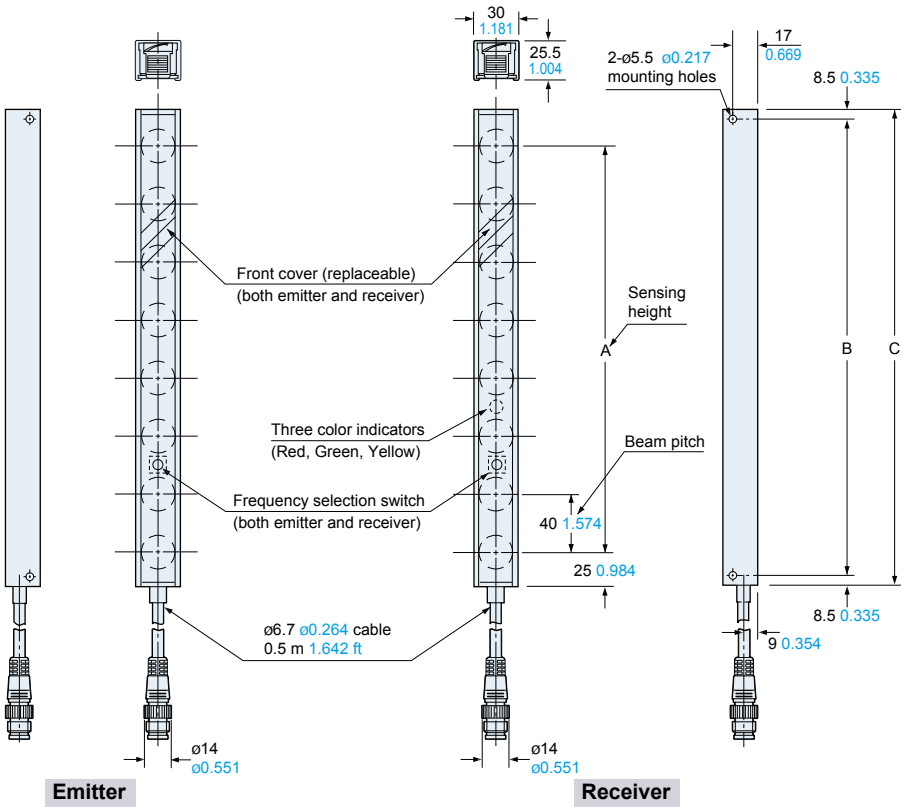
- Connect both the 0 V wires in common.
- +V wires need not be connected in common.

Note: Total of wire length between Sensor A and B is 20 m 65.617 ft max. (Total of wire length of interference prevention wire and 0 V is 20 m 65.617 ft max.)

DIMENSIONS (Unit: mm in)

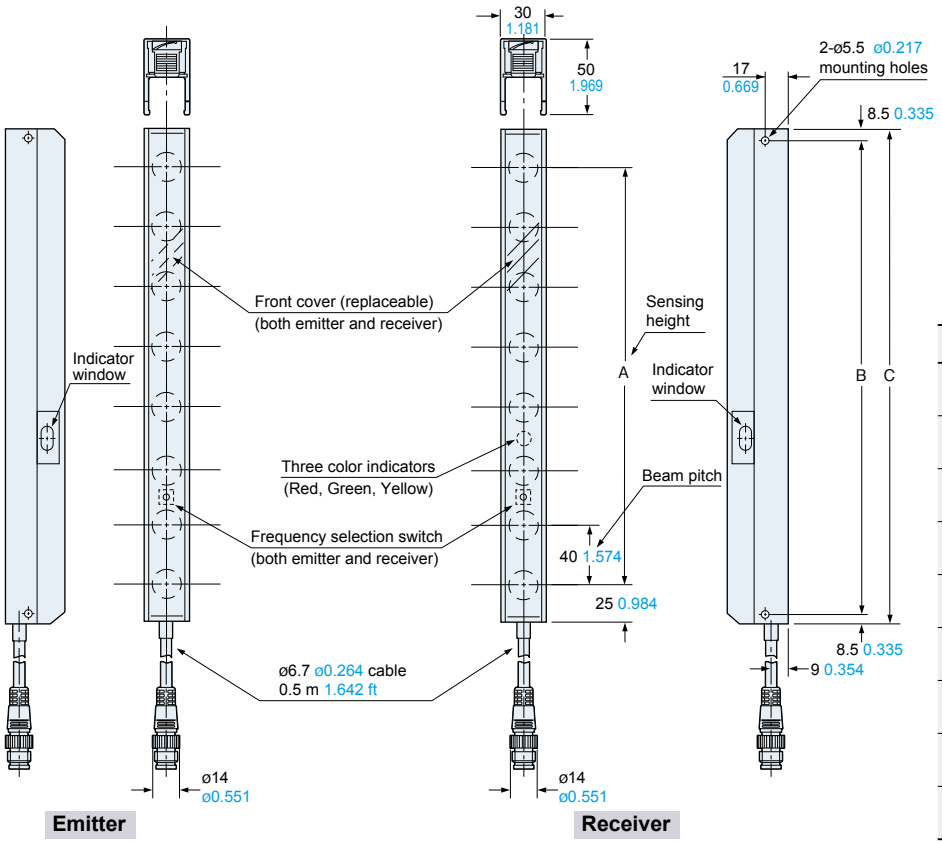
The CAD data can be downloaded from our website.

NA40-□ Sensor



Model No.	A	B	C
NA40-4	120 4.724	163 6.417	180 7.087
NA40-6	200 7.874	233 9.173	250 9.843
NA40-8	280 11.024	313 12.323	330 12.992
NA40-10	360 14.173	393 15.472	410 16.142
NA40-12	440 17.323	473 18.622	490 19.291
NA40-14	520 20.472	553 21.772	570 22.441
NA40-16	600 23.622	633 24.921	650 25.591
NA40-20	760 29.921	793 31.220	810 31.890
NA40-24	920 36.220	953 37.520	970 38.189

NA40-□-H Sensor



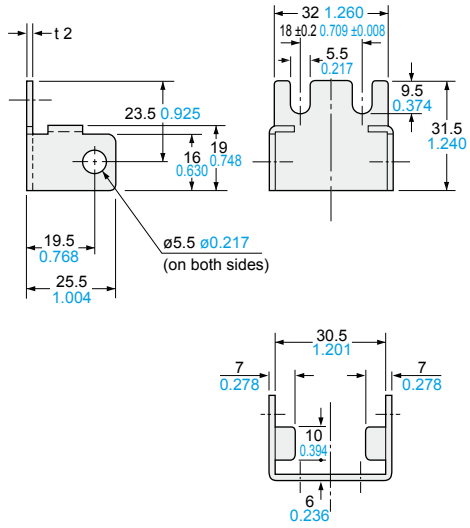
Model No.	A	B	C
NA40-4-H	120 4.724	163 6.417	180 7.087
NA40-6-H	200 7.874	233 9.173	250 9.843
NA40-8-H	280 11.024	313 12.323	330 12.992
NA40-10-H	360 14.173	393 15.472	410 16.142
NA40-12-H	440 17.323	473 18.622	490 19.291
NA40-14-H	520 20.472	553 21.772	570 22.441
NA40-16-H	600 23.622	633 24.921	650 25.591
NA40-20-H	760 29.921	793 31.220	810 31.890
NA40-24-H	920 36.220	953 37.520	970 38.189

DIMENSIONS (Unit: mm in)

The CAD data can be downloaded from our website.

MS-NA40-1

Sensor mounting bracket (Accessory)

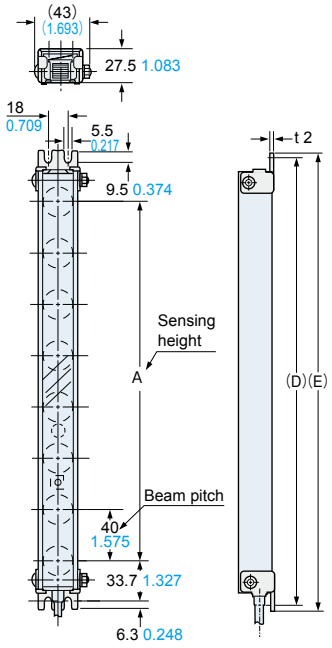


Material: Cold rolled carbon steel (SPCC)
(Uni-chrome plated)

Four bracket set
(4 pcs. each of M5 (length 40 mm 1.575 in) truss head screws, nuts and spring washers are attached.)

Assembly dimensions

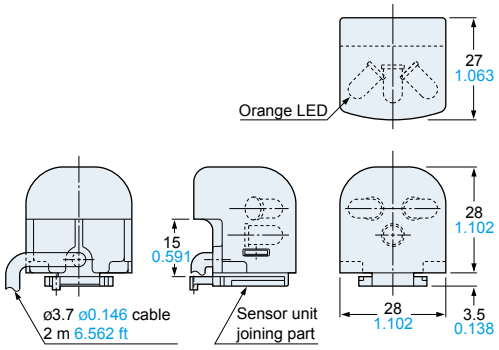
Mounting drawing with **NA40-□**.
The assembly for the spatter protection hood type (**NA40-□-H**) is similar.



Model No.	A	D	E
NA40-4(-H)	120 4.724	200 7.874	210 8.268
NA40-6(-H)	200 7.874	270 10.630	280 11.024
NA40-8(-H)	280 11.024	350 13.780	360 14.173
NA40-10(-H)	360 14.173	430 16.929	440 17.323
NA40-12(-H)	440 17.323	510 20.079	520 20.472
NA40-14(-H)	520 20.472	590 23.228	600 23.622
NA40-16(-H)	600 23.622	670 26.378	680 26.772
NA40-20(-H)	760 29.921	830 32.677	840 33.071
NA40-24(-H)	920 36.220	990 38.976	1,000 39.370

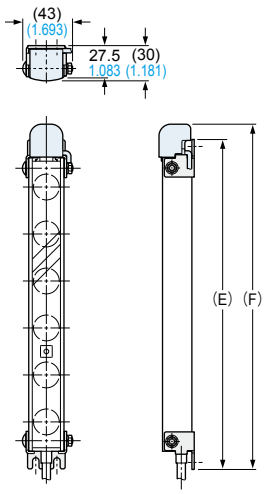
SF-IND

Large indicator for area sensor (Optional)



Assembly dimensions

Mounting drawing with **NA40-□** on which a sensor mounting bracket is attached.
The assembly for the spatter protection hood type (**NA40-□-H**) is similar.



Model No.	E	F
NA40-4(-H)	210 8.268	223 8.780
NA40-6(-H)	280 11.024	293 11.535
NA40-8(-H)	360 14.173	373 14.685
NA40-10(-H)	440 17.323	453 17.835
NA40-12(-H)	520 20.472	533 20.984
NA40-14(-H)	600 23.622	613 24.134
NA40-16(-H)	680 26.772	693 27.283
NA40-20(-H)	840 33.071	853 33.583
NA40-24(-H)	1,000 39.370	1,013 39.882

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