Related Information

- General terms and conditions ........ F-17
- Sensor selection guide .................. P.475~
- Glossary of terms / General precautions .... P.1359~ / P.1405
- Korea’s S-mark ............................. P.1410

Panasonic Electric Works

NA2-N SERIES

Slim body 13 mm 0.512 in
Maximum sensing height 540 mm 21.260 in

Maximum sensing height 540 mm 21.260 in (28 beam channels)
The thin resin case type area sensor has a sensing height of 540 mm 21.260 in (28 beam channels), a beam pitch of 20 mm 0.787 in (minimum sensing object of ø30 mm ø1.181 in), and sensing range of 5 m 16.404 ft to meet a variety of needs.

Slim body of just 13 mm 0.512 in thick
The slim-bodied NA2-N series fits right in your equipment, since it is only 13 mm 0.512 in thick and 30 mm 1.181 in wide. It does not get in the way of your access to the machine.

VARIETIES
6 types of sensing height
In addition to the conventional 12, 16, and 20 beam channel types, this new lineup includes 8, 24, and 28 beam channel types. A wide model variation is provided with sensing heights from 540 mm 21.260 in (28 beam channels) to 140 mm 5.512 in (8 beam channels).

BASIC PERFORMANCE
Globally usable
It conforms to the EMC Directive and obtains the UL Recognition. Products that has obtained the Korea’s S-mark certification are available as well. Moreover, PNP output type which is much in demand in Europe is also available.
APPLICATIONS

Detecting falling objects whose path is uncertain

Detecting a loop

Preventing wrong parts picking

FUNCTIONS

Clearly visible wide job indicator

Both the receiver and the emitter feature job indicators, 102 mm 4.016 in wide, with red bright LEDs.

When the sensing output and the job indicator input are connected, the job indicator can be used as a large operation indicator.

Selectable lighting pattern

The operation of the job indicator can be selected using the operation mode selection switch.

INTERFERENCE PREVENTION FOR PARALLEL INSTALLATION

By setting different emission frequencies for two sensors, mutual interference can be prevented. There is no problem even when the sensors are parallel installed for wide detections area coverage.

Moreover, the set frequencies can be identified by how many times the emitting indicators is light up.

MAINTENANCE

Convenient test input (emission halt) function

Beam output can be stopped via the input of an external signal. This is an useful test input (emission halt) function when beginning operation.

MAINTENANCE

Convenient test input (emission halt) function

Beam output can be stopped via the input of an external signal. This is an useful test input (emission halt) function when beginning operation.

Note: Install the sensor so as not to receive light reflected from the pipes.

* Non-glossy pipe used

Note: The photo above shows an 8 beam channels type. The operation mode selection switch is equipped on the left side of the main body for models other than the 8 beam channels type.
ORDER GUIDE

<table>
<thead>
<tr>
<th>Type</th>
<th>Appearance</th>
<th>Sensing range</th>
<th>Model No. (Note)</th>
<th>Number of beam channels</th>
<th>Sensing height (mm)</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>NPN output type</td>
<td>Beam channel No.</td>
<td>Sensing height</td>
<td>NA2-N8</td>
<td>8</td>
<td>140</td>
<td>5.512</td>
</tr>
<tr>
<td></td>
<td>Beam pitch</td>
<td>20 mm</td>
<td>NA2-N12</td>
<td>12</td>
<td>220</td>
<td>8.661</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.787 in</td>
<td>NA2-N16</td>
<td>16</td>
<td>300</td>
<td>11.811</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>NA2-N20</td>
<td>20</td>
<td>380</td>
<td>14.961</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>NA2-N24</td>
<td>24</td>
<td>460</td>
<td>18.110</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>NA2-N28</td>
<td>28</td>
<td>540</td>
<td>21.260</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>NA2-N8-PN</td>
<td>8</td>
<td>140</td>
<td>5.512</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>NA2-N12-PN</td>
<td>12</td>
<td>220</td>
<td>8.661</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>NA2-N16-PN</td>
<td>16</td>
<td>300</td>
<td>11.811</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>NA2-N20-PN</td>
<td>20</td>
<td>380</td>
<td>14.961</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>NA2-N24-PN</td>
<td>24</td>
<td>460</td>
<td>18.110</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>NA2-N28-PN</td>
<td>28</td>
<td>540</td>
<td>21.260</td>
</tr>
</tbody>
</table>

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.

(e.g.) Emitter of NA2-N8: NA2-N8P, Receiver of NA2-N8: NA2-N8D

5 m 16.404 ft cable length type

5 m 16.404 ft cable length type (standard: 3 m 9.843 ft) is also available for NPN output type. When ordering this type, suffix “-C5” to the model No.

(e.g.) 5 m 16.404 ft cable length type of NA2-N8 is “NA2-N8-C5”.

Products that have obtained Korea’s S-mark certification

There are NPN output type products (excluding the 5 m cable length type) that have obtained Korea’s S-mark certification. When ordering this type, suffix “-K” to the model No.

(e.g.) The NA2-N8 with Korea’s S-mark is “NA2-N8-K”.

OPTIONS

<table>
<thead>
<tr>
<th>Designation</th>
<th>Model No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slit mask</td>
<td>OS-NA2-N8</td>
<td>For 8 beam channels</td>
</tr>
<tr>
<td></td>
<td>OS-NA2-N12</td>
<td>For 12 beam channels</td>
</tr>
<tr>
<td></td>
<td>OS-NA2-N16</td>
<td>For 16 beam channels</td>
</tr>
<tr>
<td></td>
<td>OS-NA2-N20</td>
<td>For 20 beam channels</td>
</tr>
<tr>
<td></td>
<td>OS-NA2-N24</td>
<td>For 24 beam channels</td>
</tr>
<tr>
<td></td>
<td>OS-NA2-N28</td>
<td>For 28 beam channels</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The slit mask restrains the amount of beam emitted or received.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10 seal types in one set (5 sensor sets)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sensing range: 4 m 13.123 ft (slit on one side)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.5 m 4.921 ft (slit on both sides)</td>
</tr>
<tr>
<td>Sensor mounting bracket (Note)</td>
<td>MS-NA1-1</td>
<td>Four bracket set.</td>
</tr>
<tr>
<td></td>
<td>MS-NA1-1</td>
<td>Eight M4 (length 18 mm 0.705 in) screws with washers (Four screws with washers are used)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>eight nuts, four hooks, four spacers and four M4 (length 15 mm 0.591 in)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.5 mm 0.591 in screws with washers are attached.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Spacers are not attached with MS-NA1-1: M4 (length 15 mm 0.591 in)</td>
</tr>
<tr>
<td></td>
<td>MS-NA2-1</td>
<td>screws with washers are not used for NA2-N series.</td>
</tr>
<tr>
<td>Sensor supporting bracket</td>
<td>MS-NA3-N8</td>
<td>For 8 beam channels</td>
</tr>
<tr>
<td></td>
<td>MS-NA3-N12</td>
<td>For 12 beam channels</td>
</tr>
<tr>
<td></td>
<td>MS-NA3-N16</td>
<td>For 16 beam channels</td>
</tr>
<tr>
<td></td>
<td>MS-NA3-N20</td>
<td>For 20 beam channels</td>
</tr>
<tr>
<td></td>
<td>MS-NA3-N24</td>
<td>For 24 beam channels</td>
</tr>
<tr>
<td></td>
<td>MS-NA3-N28</td>
<td>For 28 beam channels</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Supports the body of the sensor when used in an environment with strong vibration.</td>
</tr>
</tbody>
</table>

Silk mask

• OS-NA2-N0

The silk mask restricts the amount of beam emitted or received and is used to reduce interference between neighboring sensors. It is also used in cases when the beam intensity is too strong penetrating through the sensing object. Remove the cover (name plate) from the front of the sensor and replace it with the silk mask. The sensing range is reduced when the silk mask is used.

Sensor mounting bracket

• MS-NA1-1

• MS-NA2-1

Sensor supporting bracket

• MS-NA3-N0

M4 screws with washers, nuts, and hooks are attached.
## SPECIFICATIONS

<table>
<thead>
<tr>
<th>Item</th>
<th>Model</th>
<th>Number of beam channels</th>
<th>Supply voltage</th>
<th>Sensing height</th>
<th>Sensing range</th>
<th>Beam pitch</th>
<th>Sensing object</th>
<th>Output</th>
<th>Receiver</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>8</td>
<td>12</td>
<td>16</td>
<td>20</td>
<td>24</td>
<td>28</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>NA2-N8</td>
<td>NA2-N12</td>
<td>NA2-N16</td>
<td>NA2-N20</td>
<td>NA2-N24</td>
<td>NA2-N28</td>
<td>NA2-N8-PN</td>
<td>NA2-N12-PN</td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Sensing height</td>
<td></td>
<td>140 mm 5.512 in</td>
<td>220 mm 8.661 in</td>
<td>300 mm 11.811 in</td>
<td>380 mm 14.961 in</td>
<td>460 mm 18.110 in</td>
<td>540 mm 21.260 in</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensing range</td>
<td></td>
<td>5 m 16.404 ft</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>Beam pitch</td>
<td></td>
<td>20 mm 0.787 in</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensing object</td>
<td></td>
<td>ø30 mm ø1.181 in or more opaque object (completely beam interrupted objects)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Job indicator ON</td>
<td></td>
<td>0.7 W or less</td>
<td>0.8 W or less</td>
<td>0.9 W or less</td>
<td>1.0 W or less</td>
<td>1.1 W or less</td>
<td>1.2 W or less</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Job indicator OFF</td>
<td></td>
<td>0.6 W or less</td>
<td>0.7 W or less</td>
<td>0.8 W or less</td>
<td>0.9 W or less</td>
<td>1.0 W or less</td>
<td>1.1 W or less</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Job indicator ON</td>
<td></td>
<td>0.7 W or less</td>
<td>0.8 W or less</td>
<td>0.9 W or less</td>
<td>1.0 W or less</td>
<td>1.1 W or less</td>
<td>1.2 W or less</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Job indicator OFF</td>
<td></td>
<td>0.6 W or less</td>
<td>0.7 W or less</td>
<td>0.8 W or less</td>
<td>0.9 W or less</td>
<td>1.0 W or less</td>
<td>1.1 W or less</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of beam channels</td>
<td></td>
<td>8</td>
<td>12</td>
<td>16</td>
<td>20</td>
<td>24</td>
<td>28</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Job indicator ON</td>
<td></td>
<td>0.7 W or less</td>
<td>0.8 W or less</td>
<td>0.9 W or less</td>
<td>1.0 W or less</td>
<td>1.1 W or less</td>
<td>1.2 W or less</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Job indicator OFF</td>
<td></td>
<td>0.6 W or less</td>
<td>0.7 W or less</td>
<td>0.8 W or less</td>
<td>0.9 W or less</td>
<td>1.0 W or less</td>
<td>1.1 W or less</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Job indicator ON</td>
<td></td>
<td>0.7 W or less</td>
<td>0.8 W or less</td>
<td>0.9 W or less</td>
<td>1.0 W or less</td>
<td>1.1 W or less</td>
<td>1.2 W or less</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Job indicator OFF</td>
<td></td>
<td>0.6 W or less</td>
<td>0.7 W or less</td>
<td>0.8 W or less</td>
<td>0.9 W or less</td>
<td>1.0 W or less</td>
<td>1.1 W or less</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Utilization category</td>
<td></td>
<td>DC-12 or DC-13</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Output operation</td>
<td></td>
<td>ON when all beam channels are received (OFF when one or more beam channels are interrupted)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Short-circuit protection</td>
<td></td>
<td>Incorporated</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Response time</td>
<td></td>
<td>10 ms or less (12 ms or less when the interference prevention function is used)</td>
<td></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Emitter</td>
<td></td>
<td>Emitting indicator: Green LED x 2 (light up during emission; one LED lights up for Frequency A setting, both LEDs light up for Frequency B setting)</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Receiver</td>
<td></td>
<td>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 stably received) Job indicator: Red LED (lights up, blinks or lights off when the job indicator input is applied, selected by operation mode switch)</td>
<td></td>
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<td></td>
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<tr>
<td>Interference prevention function</td>
<td></td>
<td>Incorporated</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Test input (emission halt) function</td>
<td></td>
<td>Incorporated</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Pollution degree</td>
<td></td>
<td>3 (Industrial environment)</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Protection</td>
<td></td>
<td>IP40(IEC)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Ambient temperature</td>
<td></td>
<td>–10 to +55 °C +14 to +131 °F (No dew condensation or icing allowed), Storage: –10 to +60 °C +14 to +140 °F</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Ambient humidity</td>
<td></td>
<td>35 to 85 % RH, Storage: 35 to 85 % RH</td>
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<td></td>
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<tr>
<td>Ambient illuminance</td>
<td></td>
<td>Incandescent light: 3,000 lx at the light-receiving face</td>
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<tr>
<td>EMC</td>
<td></td>
<td>EN 60947-5-2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Voltage withstandability</td>
<td></td>
<td>1,000 V AC for one min. between all supply terminals connected together and enclosure</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Insulation resistance</td>
<td></td>
<td>20 MD, or more, with 250 V DC megger between all supply terminals connected together and enclosure</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Vibration resistance</td>
<td></td>
<td>10 to 150 Hz frequency, 0.75 mm 0.030 in amplitude in X, Y and Z directions for two hours each</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shock resistance</td>
<td></td>
<td>500 m/s² acceleration (50 G approx.) in X, Y and Z directions for three times each</td>
<td></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Emitting element</td>
<td></td>
<td>Infrared LED (Peak emission wavelength: 950 nm 0.037 mil, modulated)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Material</td>
<td></td>
<td>Heat-resistant ABS, Lens cover: Polyester, Indicator cover: Acrylic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cable</td>
<td></td>
<td>0.2 mm² 4-core cabtyre cable, 3 m 9.843 ft long</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cable extension</td>
<td></td>
<td>Extension up to total 25 m 82.021 ft is possible for both emitter and receiver, with 0.2 mm², or more, cable.</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Notes: 1) Where measurement conditions have not been specified precisely, the conditions used were an ambient temperature of +23 °C ±3.4 °F. 2) Obtain the current consumption from the following equation.

Current consumption = Power consumption ÷ Supply voltage

(e.g.) In case of NA2-N8: When the supply voltage is 12 V, the current consumption of the emitter is: 0.7 W ÷ 12 V = 0.058 A = 58 mA.
### I/O CIRCUIT AND WIRING DIAGRAMS

#### NPN output type

**I/O circuit diagram**

**Emitter**

- **Color code**
  - (Brown) +V
  - (Blue) 0 V
  - (Pink) Input (Note 1)
- **Synchronization wire**
- **Job indicator**

**Receiver**

- **Color code**
  - (Orange / Violet) in Users’ circuit
- **Synchronization wire**

**Notes:**
1. Input (pink) is the job indicator input when No. 4 of the operation mode switch on the emitter is set to the OFF side, and it is the test input (emission halt input) when the switch is set to the ON side.
2. In order to use the job indicator as a large operation indicator, connect the input (pink) to the output (black) of the receiver.
3. When the test input (emission halt input) is set, the job indicator does not light up or blink.

**Symbols**
- D1: Reverse supply polarity protection diode
- D2: Reverse current protection diode
- D3: Reverse output polarity protection diode
- ZD: Surge absorption zener diode
- Tr: NPN output transistor
- E: Job indicator

**Wiring diagram**

**Emitter**

- **Brown** +V
- **Blue** 0 V
- **Pink** Input (Note 1)

**Receiver**

- **Orange / Violet**
- **Black** Load

**Non-voltage contact or NPN open-collector transistor**

*1 Note: Refer to “PRECAUTIONS FOR PROPER USE” for job indicator operation or test input (emission halt input) operation.

#### PNP output type

**I/O circuit diagram**

**Emitter**

- **Color code**
  - (Brown) +V
  - (Blue) 0 V
  - (Pink) Input (Note 1)
- **Synchronization wire**
- **Job indicator**

**Receiver**

- **Color code**
  - (Orange / Violet) in Users’ circuit
- **Synchronization wire**

**Notes:**
1. Input (pink) is the job indicator input when No. 4 of the operation mode switch on the emitter is set to the OFF side, and it is the test input (emission halt input) when the switch is set to the ON side.
2. In order to use the job indicator as a large operation indicator, connect the input (pink) to the output (black) of the receiver.
3. When the test input (emission halt input) is set, the job indicator does not light up or blink.

**Symbols**
- D1: Reverse supply polarity protection diode
- D2: Reverse current protection diode
- D3: Reverse output polarity protection diode
- ZD: Surge absorption zener diode
- Tr: PNP output transistor
- E: Job indicator

**Wiring diagram**

**Emitter**

- **Brown** +V
- **Blue** 0 V
- **Pink** Input (Note 1)

**Receiver**

- **Orange / Violet**
- **Black** Load

**Non-voltage contact or PNP open-collector transistor**

*1 Note: Refer to “PRECAUTIONS FOR PROPER USE” for job indicator operation or test input (emission halt input) operation.
### Sensing Characteristics (Typical)

#### Correlation between setting distance and excess gain

- **Parallel deviation (All models)**
  - **Vertical direction**
  - **Horizontal direction**

#### Angular deviation (All models)

- **Emitter angular deviation**
  - **Receiver angular deviation**

### 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 for personnel 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 following products.
  - Type 4: SF4B series
  - Type 2: SF2B series

### Job Indicator Operation Selection

- The operation of the job indicator can be selected with job indicator mode switch.

### Functional Description

- Use M4 screws with washers and M4 nuts. The tightening torque should be 0.5 N·m or less. During mounting, do not apply any bending or twisting force to the sensor. Purchase the screws and nuts separately.

### Mounting

- **Operation indicator**
  - **Test input**
  - **Job indicator / Test input (emission halt input) selection switch**
  - **Job indicator (Red LED)**
  - **Emitter (Green LED) x 2**
  - **Receiver (Red LED)**

### Job Indicator Input Signal Condition

- **Type**
- **Signal**
- **Signal condition**
  - NPN output: Low, 0 to 2 V; High, 5 to 30 V, or open (Note)
  - PNP output: Low, 0 to 2 V, or open (Note); High, 8 V to +V

Note: Insulate the wire if it is kept open.
## PRECAUTIONS FOR PROPER USE

### To use job indicator as large operation indicator

- The job indicators can be used as large operation indicators by setting No. 4 of the operation mode switch to the OFF side and connecting the input (pink) of the emitter to the output (black) of the receiver.

<table>
<thead>
<tr>
<th>Job indicator mode switch</th>
<th>Light state</th>
<th>Dark state</th>
</tr>
</thead>
<tbody>
<tr>
<td>ON</td>
<td>Lights up</td>
<td>Lights off</td>
</tr>
<tr>
<td>OFF</td>
<td>Lights up</td>
<td>Blinks</td>
</tr>
</tbody>
</table>

Note: In order to use the job indicators as large operation indicators, make sure to set No. 4 of the operation mode switch to the OFF side. If it is set to the ON side, the job indicator does not light up or blink.

### Orientation

- The emitter and the receiver must face each other correctly. If they are set upside down, the sensor does not work.

- Take care that the sensor is not directly exposed to water, oil, grease, or organic solvents, such as thinner, etc.

- Avoid dust, dirt and steam.

- Take care that the sensor does not come in direct contact with water, oil, grease, or organic solvents, such as, thinner, etc.

- Take care that the sensor is not directly exposed to fluorescent light from a rapid-starter lamp or a high frequency lighting device, as it may affect the sensing performance.

### Test input (emission halt) function

- The emission is stopped when No. 4 of the operation mode switch is set to the ON side and the input (pink) of the emitter is made High (PNP output type: Low). Since the output can be turned ON / OFF without the sensing object, this function is useful for start-up inspection. If the output follows the application / withdrawal of the test input (emission halt input), the sensor operation is normal, else it is abnormal.

### Interference prevention function

- By setting different emission frequencies, two units of NA2-N series can be mounted close together, as shown in the figure below. The emission frequency can be checked by the number of LEDs lighting up in the emitting indicator on the emitter.

### Wiring

- Make sure that the power supply is off while wiring.
- Verify that the supply voltage variation is within the rating.
- If power is supplied from a commercial switching regulator, ensure that the frame ground (F.G.) terminal of the power supply is connected to an actual ground.
- In case noise generating equipment (switching regulator, inverter motor, etc.) is used in the vicinity of this sensor, connect the frame ground (F.G.) terminal of the equipment to an actual ground.
- Do not run the wires together with high-voltage lines or power lines or put them in the same raceway. This can cause malfunction due to induction.

### Use conditions to comply with CE Marking

- Following work must be done in case of using this product as a CE marking (European standard EMC Directive) conforming product.

Place ferrite core at the sensor cable.

Prepare 2 pcs. of the following recommended ferrite core (or an equivalent product.)

- **Recommended product**
  - ESD-SR-110 [NEC TOKIN Corporation]
  - E04SR170730A [TDK Corporation]
  - ES1730-40010A [SEIWA ELECTRIC MFG. CO., LTD.]

Place ferrite cores near the cases of emitter and receiver.

### Others

- Do not use during the initial transient time (500 ms) after the power supply is switched on.
- Avoid dust, dirt and steam.
- Take care that the sensor does not come in direct contact with water, oil, grease, or organic solvents, such as, thinner, etc.
- Take care that the sensor is not directly exposed to fluorescent light from a rapid-starter lamp or a high frequency lighting device, as it may affect the sensing performance.
**DIMENSIONS (Unit: mm in)**

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

**NA2-Ng NA2-Ng-PN**

**Emitter**

- 2 ø4.6 ø0.181 supplementary mounting holes, 1.1 0.043 deep
- Last beam channel mark
- 13 0.512

**Receiver**

- 2 ø4.6 ø0.181 supplementary mounting holes, 1.1 0.043 deep
- 2-M4 nut seats, 1.1 0.043 deep

**Model No.**

- **A** 140 5.512
- **B** 180 7.087
- **C** 190 7.480
- **D** 52 2.047
- **NA2-N8(-PN)**
- **NA2-N12(-PN)**
- **NA2-N16(-PN)**
- **NA2-N20(-PN)**
- **NA2-N24(-PN)**
- **NA2-N28(-PN)**

**MS-NA1-1**

**Assembly dimensions**

**Mounting drawing with the receiver**

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

<table>
<thead>
<tr>
<th>Four bracket set</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eight M4 (length 18 mm 0.709 in) screws with washers (Four screws with washers are used), eight nuts, four hooks, and four M4 (length 15 mm 0.591 in) screws with washers are attached. M4 (length 15 mm 0.591 in) screws with washers are not used for NA2-N series.</td>
</tr>
</tbody>
</table>
### DIMENSIONS (Unit: mm in)

#### MS-NA2-1

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

**Assembly dimensions**

Mounting drawing with the receiver

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

Four bracket set

Eight M4 (length 18 mm 0.709 in) screws with washers (Four screws with washers are used), eight nuts, four hooks, four spacers, and four M4 (length 15 mm 0.591 in) screws with washers are attached. M4 (length 15 mm 0.591 in) screws with washers are not used for **NA2-N** series.

#### MS-NA3-N

**Assembly dimensions**

Mounting drawing with the receiver

**Material:** Aluminum (Black ALMITE)

Two bracket set

Note: The sensor supporting bracket can be used for both the emitter and the receiver.

<table>
<thead>
<tr>
<th>Model No.</th>
<th>A</th>
<th>B</th>
<th>G</th>
<th>H</th>
<th>J</th>
<th>K</th>
</tr>
</thead>
<tbody>
<tr>
<td>MS-NA3-N8</td>
<td>140</td>
<td>5.512</td>
<td>180</td>
<td>7.087</td>
<td>194</td>
<td>7.638</td>
</tr>
<tr>
<td>MS-NA3-N12</td>
<td>220</td>
<td>8.661</td>
<td>260</td>
<td>10.236</td>
<td>274</td>
<td>10.787</td>
</tr>
<tr>
<td>MS-NA3-N16</td>
<td>300</td>
<td>11.811</td>
<td>340</td>
<td>13.386</td>
<td>354</td>
<td>13.937</td>
</tr>
<tr>
<td>MS-NA3-N20</td>
<td>380</td>
<td>14.961</td>
<td>420</td>
<td>16.535</td>
<td>434</td>
<td>17.087</td>
</tr>
<tr>
<td>MS-NA3-N24</td>
<td>460</td>
<td>18.110</td>
<td>500</td>
<td>19.685</td>
<td>514</td>
<td>20.236</td>
</tr>
<tr>
<td>MS-NA3-N28</td>
<td>540</td>
<td>21.260</td>
<td>580</td>
<td>22.835</td>
<td>594</td>
<td>23.386</td>
</tr>
</tbody>
</table>

Note: The sensor supporting bracket can be used for both the emitter and the receiver.