Light Curtain

**SF2B SERIES Ver.2**

**Type 2 safety solution**

International regulations for safety measures at reasonable cost

Protective structure IP67* is achieved with a seamless structure that has reduced seams  

*Version 2.0 or later

The inner unit is protected by a cylindrical inner case. The seams of unit and lens surfaces have been greatly reduced, so that particles of oil mists and dust are prevented from getting in.

Extensive range of variations available with sensing widths from 168 mm to 1,912 mm 6.614 in to 75.275 in

Two types are available for different minimum sensing object sizes.

**Hand protection type SF2B-H:**

Minimum sensing object ø27 mm ø1.063 in  
(20 mm 0.787 in) beam pitch

**Arm / Foot protection type SF2B-A:**

Minimum sensing object ø47 mm ø1.850 in  
(40 mm 1.575 in) beam pitch

29/02/2012
Series connection of up to three sets is possible

Sub-sensors for series connection (optional) can be used to connect up to three sets of light curtains (up to a total of 128 beam channels maximum; however, the SF2B-A allows up to 96 beam channels when two sets are connected, and up to 64 beam channels when three sets are connected).

- The light curtains and the sub-sensors for serial connection (optional) have different models. When connecting light curtains in series, be sure to use the sub-sensors for serial connection and serial connection cables which are sold separately.
- The SF2B-H8 and SF2B-A4 cannot be connected in series. For details, refer to “Series connection” of “PRECAUTIONS FOR PROPER USE”.

“ZERO” dead zone. Unit length = protective height, so mounting is possible with no dead zone

The sensing area contains no dead spaces. Even with series connections, there are no dangerous openings at the interfaces between light curtains. This makes a simpler and more compact installation possible.

SF2B

“ZERO” dead zone when using series mounting

“ZERO” dead zone when using L-shaped mounting

Note: The SF2B-H8 and SF2B-A4 cannot be connected in series. For details, refer to “Series connection” of “PRECAUTIONS FOR PROPER USE”.

Mutual interference is reduced without need for interference prevention lines

The scan timing of the light curtain is automatically shifted in order to reduce mutual interference.

Reducing the number of malfunctions caused by extraneous light

A double scanning method and retry processing are new functions exclusive to that are effective in eliminating the effect of momentary extraneous light from peripheral equipment.
Equipped with a digital error indicator so that error details can be understood at a glance

The system constantly checks the light curtain for problems such as incorrect cable wiring, disconnection, short-circuits, internal circuit problems, and incoming light problems. If a problem should occur, details of the error appear on the digital display. Therefore, smooth support is possible if problems occur at startup and during maintenance operations, even if assistance is given via telephone.

Beam-axis alignment indicators show the incident light position at a glance

Beam-axis alignment indicators display the beam channels of the light curtain in four blocks. The blocks where the beam axes match will light up in red in turn. When all the beam axes receive light, all the LEDs light up green. Furthermore, a stability indicator lights up when there is sufficient incoming light.

Adapter cables and adapter mounting brackets are available so that previous peripheral devices for light curtains can still be used

The light curtain SF2-A / SF2-N series, area sensor NA40 series, and SF1-N series can be replaced with the SF2B series using the current mounting holes and connection cables.

Selectable safety circuits

The light curtain unit has a built-in monitoring function for external devices (such as fused relay monitoring). This supports the construction of light curtain peripheral safety circuits which do not use a safety relay unit, and contributes to reduced costs and a more compact control panel. In addition, a connectable control unit is used, so that a safety circuit that is easy to construct and easy to install can be selected.

Significant cost reduction is achieved by using corner mirror

By using a single corner mirror, light curtain and peripheral safety circuit for one set are eliminated. Enables significant cost reduction and savings on wiring. The control category is unchanged.

When setting up the light curtains in the L-shape or U-shape, usually two or three sets of the light curtains are required. However, using the corner mirror to reflect the laser light allows only one set of the light curtains to be set up at the L-shape or U-shape.
PRODUCT CONFIGURATION

- Sub-sensor for series connection only
  (Optional, use for connect in series)

- Cable for series connection
  (Optional, use for connect in series)

- Light curtain

- Bottom cap cable (Optional)

- Extension cable
  (Optional, use for cable extension)

- Mounting bracket (Optional)

ORDER GUIDE

1 Light curtains

Mounting bracket and bottom cap cable are not supplied with the light curtain. Be sure to order them separately.

<table>
<thead>
<tr>
<th>Type</th>
<th>Appearance</th>
<th>Operating range (Note 1)</th>
<th>Model No. (Note 5)</th>
<th>Number of beam channels</th>
<th>Protective height (mm in) (Note 4)</th>
</tr>
</thead>
</table>
| Hand protection type | Beam channel No. 6 mm 0.236 in
Protective height 6 mm 0.236 in | 0.2 to 13 m 0.656 to 42.651 ft | SF2B-H8-N (Note 2) SF2B-H8-P (Note 2) | 8                        | 168 6.614                         |
|               | Beam channel No. 6 mm 0.236 in
Protective height 6 mm 0.236 in | When using the adapter cable SF2B-CB05-B: 0.2 to 5 m 0.656 to 16.404 ft | SF2B-H12-N SF2B-H12-P | 12                      | 232 9.134                         |
|               | Beam channel No. 6 mm 0.236 in
Protective height 6 mm 0.236 in |               | SF2B-H16-N SF2B-H16-P | 16                      | 312 12.283                        |
|               | Beam channel No. 6 mm 0.236 in
Protective height 6 mm 0.236 in |               | SF2B-H20-N SF2B-H20-P | 20                      | 392 15.433                        |
|               | Beam channel No. 6 mm 0.236 in
Protective height 6 mm 0.236 in |               | SF2B-H24-N SF2B-H24-P | 24                      | 472 18.583                        |
|               | Beam channel No. 6 mm 0.236 in
Protective height 6 mm 0.236 in |               | SF2B-H28-N SF2B-H28-P | 28                      | 552 21.732                        |
|               | Beam channel No. 6 mm 0.236 in
Protective height 6 mm 0.236 in |               | SF2B-H32-N SF2B-H32-P | 32                      | 632 24.882                        |
|               | Beam channel No. 6 mm 0.236 in
Protective height 6 mm 0.236 in |               | SF2B-H36-N SF2B-H36-P | 36                      | 712 28.031                        |
|               | Beam channel No. 6 mm 0.236 in
Protective height 6 mm 0.236 in |               | SF2B-H40-N SF2B-H40-P | 40                      | 792 31.181                        |
|               | Beam channel No. 6 mm 0.236 in
Protective height 6 mm 0.236 in |               | SF2B-H44-N SF2B-H44-P | 48                      | 952 37.480                        |
|               | Beam channel No. 6 mm 0.236 in
Protective height 6 mm 0.236 in |               | SF2B-H56-N SF2B-H56-P | 56                      | 1,112 43.779                       |
|               | Beam channel No. 6 mm 0.236 in
Protective height 6 mm 0.236 in |               | SF2B-H64-N SF2B-H64-P | 64                      | 1,272 50.079                       |
|               | Beam channel No. 6 mm 0.236 in
Protective height 6 mm 0.236 in |               | SF2B-H72-N SF2B-H72-P | 72                      | 1,432 56.378                       |
|               | Beam channel No. 6 mm 0.236 in
Protective height 6 mm 0.236 in |               | SF2B-H80-N SF2B-H80-P | 80                      | 1,592 62.677                       |
|               | Beam channel No. 6 mm 0.236 in
Protective height 6 mm 0.236 in |               | SF2B-H88-N SF2B-H88-P | 88                      | 1,752 68.976                       |
|               | Beam channel No. 6 mm 0.236 in
Protective height 6 mm 0.236 in |               | SF2B-H96-N SF2B-H96-P | 96                      | 1,912 75.275                       |
| Arm protection type | Beam channel No. 6 mm 0.236 in
Protective height 6 mm 0.236 in | 0.2 to 13 m 0.656 to 42.651 ft | SF2B-A4-N (Note 2) SF2B-A4-P (Note 2) | 4                        | 168 6.614                         |
|               | Beam channel No. 6 mm 0.236 in
Protective height 6 mm 0.236 in |               | SF2B-A6-N SF2B-A6-P | 6                        | 232 9.134                         |
|               | Beam channel No. 6 mm 0.236 in
Protective height 6 mm 0.236 in |               | SF2B-A8-N SF2B-A8-P | 8                        | 312 12.283                        |
|               | Beam channel No. 6 mm 0.236 in
Protective height 6 mm 0.236 in |               | SF2B-A10-N SF2B-A10-P | 10                      | 392 15.433                        |
|               | Beam channel No. 6 mm 0.236 in
Protective height 6 mm 0.236 in |               | SF2B-A12-N SF2B-A12-P | 12                      | 472 18.583                        |
|               | Beam channel No. 6 mm 0.236 in
Protective height 6 mm 0.236 in |               | SF2B-A14-N SF2B-A14-P | 14                      | 552 21.732                        |
|               | Beam channel No. 6 mm 0.236 in
Protective height 6 mm 0.236 in |               | SF2B-A16-N SF2B-A16-P | 16                      | 632 24.882                        |
|               | Beam channel No. 6 mm 0.236 in
Protective height 6 mm 0.236 in |               | SF2B-A18-N SF2B-A18-P | 18                      | 712 28.031                        |
|               | Beam channel No. 6 mm 0.236 in
Protective height 6 mm 0.236 in |               | SF2B-A20-N SF2B-A20-P | 20                      | 792 31.181                        |
|               | Beam channel No. 6 mm 0.236 in
Protective height 6 mm 0.236 in |               | SF2B-A24-N SF2B-A24-P | 24                      | 952 37.480                        |
|               | Beam channel No. 6 mm 0.236 in
Protective height 6 mm 0.236 in |               | SF2B-A28-N SF2B-A28-P | 28                      | 1,112 43.779                       |
|               | Beam channel No. 6 mm 0.236 in
Protective height 6 mm 0.236 in |               | SF2B-A32-N SF2B-A32-P | 32                      | 1,272 50.079                       |
|               | Beam channel No. 6 mm 0.236 in
Protective height 6 mm 0.236 in |               | SF2B-A36-N SF2B-A36-P | 36                      | 1,432 56.378                       |
|               | Beam channel No. 6 mm 0.236 in
Protective height 6 mm 0.236 in |               | SF2B-A40-N SF2B-A40-P | 40                      | 1,592 62.677                       |
|               | Beam channel No. 6 mm 0.236 in
Protective height 6 mm 0.236 in |               | SF2B-A44-N SF2B-A44-P | 44                      | 1,752 68.976                       |
|               | Beam channel No. 6 mm 0.236 in
Protective height 6 mm 0.236 in |               | SF2B-A48-N SF2B-A48-P | 48                      | 1,912 75.275                       |

Notes:
1) The “operating range” is the possible setting distance between the emitter and the receiver.
2) The SF2B-H8- and SF2B-A4- cannot be connected in series because they do not include a connector for series connection. Refer to the “Series connection” of “PRECAUTIONS FOR PROPER USE” for details.
3) The distance between the tip of the light curtain and the last beam axis of the SF2B-H8- and SF2B-A4- is 22 mm 0.866 in.
4) Refer to the “Definition of light curtain and area sensor sensing heights” for details of the protective height.
5) Models which have an “E” symbol in the model No. on the name plate are emitters, and those with a “C” symbol are receivers.
6) The “operating range” is the possible setting distance between the emitter and the receiver.
## ORDER GUIDE

### Mounting brackets

Mounting bracket is not supplied with the light curtain. Be sure to order it separately.

<table>
<thead>
<tr>
<th>Designation</th>
<th>Appearance</th>
<th>Model No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard mounting bracket</td>
<td></td>
<td>MS-SF2B-1</td>
<td>Used to mount the light curtain on the rear surface and side surface. 4 pcs. per set for emitter and receiver</td>
</tr>
<tr>
<td>Dead zoneless mounting bracket</td>
<td></td>
<td>MS-SF2B-3</td>
<td>Mounting of the light curtain is possible so that the mounting bracket does not project past the protective height (light curtain length). 4 pcs. per set for emitter and receiver</td>
</tr>
</tbody>
</table>

For SF2-A / SF2-N

| For SF2-A / SF2-N | For rear and side mounting | MS-SF2B-5 | Used when replacing units in the SF2-A / SF2-N series. 4 pcs. per set for emitter and receiver |

For SF1-N / NA40

| For SF1-N / NA40 | For rear mounting | MS-SF2B-4 | Used when replacing units in the SF1-N / NA40 series which are using the MS-SF1-1 / MS-NA40-1 sensor mounting brackets. 4 pcs. per set for emitter and receiver |

For NA40

| For NA40 | For side mounting | MS-SF2B-6 | Used when replacing units in the NA40 series which are side mounted (direct mounted). 4 pcs. per set for emitter and receiver |

For SF1-N

| For SF1-N | For side mounting | MS-SF2B-7 | Used when replacing units in the SF1-N series which are side mounted (direct mounted). 4 pcs. per set for emitter and receiver |

**Note:** SF1-N-compatible mounting bracket can also be used for SF1-S / SF1-A series products that are discontinued. The NA40-compatible mounting bracket can also be used for NA40-S / NA40-B series products that are discontinued.

### Standard mounting bracket

- **MS-SF2B-1**
  - Hexagon-socket-head bolt [M3 (length 5 mm 0.197 in)]
  - Adapter mounting bracket MS-SF2B-6
  - Sensing surface
  - Light curtain
  - Four bracket set (M3 length 5 mm 0.197 in) hexagon-socket-head bolts are attached. (6 pcs. for beam axis adjustment)

- **MS-SF2B-3**
  - Hexagon-socket-head bolt [M3 (length 5 mm 0.197 in)]
  - Adapter mounting bracket MS-SF2B-5
  - Sensing surface
  - Light curtain
  - Four bracket set (M3 length 5 mm 0.197 in) hexagon-socket-head bolts are attached. (6 pcs. for beam axis adjustment)

- **MS-SF2B-5**
  - Hexagon-socket-head bolt [M3 (length 5 mm 0.197 in)]
  - Adapter mounting bracket MS-SF2B-4
  - Sensing surface
  - Light curtain
  - Four bracket set (M3 length 5 mm 0.197 in) hexagon-socket-head bolts are attached. (6 pcs. for beam axis adjustment)

- **MS-SF2B-6**
  - Hexagon-socket-head bolt [M3 (length 5 mm 0.197 in)]
  - Adapter mounting bracket MS-SF2B-7
  - Sensing surface
  - Light curtain
  - Four bracket set (M3 length 5 mm 0.197 in) hexagon-socket-head bolts are attached. (6 pcs. for beam axis adjustment)
### ORDER GUIDE

#### Bottom cap cable / Extension cable / Cables for series connection

Mating cable is not supplied with the light curtain. Be sure to order it separately.

<table>
<thead>
<tr>
<th>Type</th>
<th>Appearance</th>
<th>Model No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SF2B-CCB3</td>
<td>Cable length: 3 m 9.843 ft Net weight: 370 g approx. (2 cables)</td>
<td>Used for connecting to the light curtain and to other cables or the SF-C13 control unit. Two cables per set for emitter and receiver. Cable outer diameter: ø6 mm 0.236 in Cable color: Gray (for emitter). Gray with black line (for receiver). The min. bending radius: R6 mm 0.236 in.</td>
<td></td>
</tr>
<tr>
<td>SF2B-CCB7</td>
<td>Cable length: 7 m 22.966 ft Net weight: 820 g approx. (2 cables)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SF2B-CCB10</td>
<td>Cable length: 10 m 32.808 ft Net weight: 1,160 g approx. (2 cables)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SF2B-CCB15</td>
<td>Cable length: 15 m 49.213 ft Net weight: 1,720 g approx. (2 cables)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SF2B-CB05</td>
<td>Cable length: 0.5 m 1.640 ft Net weight: 95 g approx. (2 cables)</td>
<td>Used for connecting to the light curtain and to an extension cable or the SF-C11 control unit. Two cables per set for emitter and receiver. Cable outer diameter: ø6 mm 0.236 in Connector outer diameter: ø14 mm 0.551 in max. Cable color: Gray (for emitter), Gray with black line (for connector). Connecter color: Gray (for emitter), Black (for receiver). The min. bending radius: R6 mm 0.236 in.</td>
<td></td>
</tr>
<tr>
<td>SF2B-CB5</td>
<td>Cable length: 5 m 16.404 ft Net weight: 620 g approx. (2 cables)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SF2B-CB10</td>
<td>Cable length: 10 m 32.808 ft Net weight: 1,200 g approx. (2 cables)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SFB-CC3</td>
<td>Cable length: 3 m 9.843 ft Net weight: 380 g approx. (2 cables)</td>
<td>Used for cable extension or connecting to the SF-C13 control unit. Two cables per set for emitter and receiver. Cable outer diameter: ø6 mm 0.236 in Connector outer diameter: ø14 mm 0.551 in max. Cable color: Gray (for emitter), Gray with black line (for receiver). The min. bending radius: R6 mm 0.236 in.</td>
<td></td>
</tr>
<tr>
<td>SFB-CC10</td>
<td>Cable length: 10 m 32.808 ft Net weight: 1,200 g approx. (2 cables)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SFB-CCJ10E</td>
<td>Cable length: 10 m 32.808 ft Net weight: 580 g approx. (1 cable)</td>
<td>Used for cable extension or connecting to the SF-C11 control unit. One each for emitter and receiver. Cable outer diameter: ø6 mm 0.236 in Connector outer diameter: ø14 mm 0.551 in max. Cable color: Gray (for emitter), Gray with black line (for receiver). Connecter color: Gray (for emitter), Black (for receiver). The min. bending radius: R6 mm 0.236 in.</td>
<td></td>
</tr>
<tr>
<td>SFB-CCJ10D</td>
<td>Cable length: 10 m 32.808 ft Net weight: 600 g approx. (1 cable)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SF2B-CB05-A</td>
<td>Cable length: 0.5 m 1.640 ft Net weight: 95 g approx. (2 cables)</td>
<td>Used when replacing units in the SF2-A / SF2-N series. The SF2N-CC: cable with connector can be used without change, so that replacement with SF2B series units can be done smoothly. Two cables per set for emitter and receiver. Cable outer diameter: ø6 mm 0.236 in Connector outer diameter: ø14 mm 0.551 in max. Cable color: Gray (for emitter), Gray with black line (for receiver). Connecter color: Gray (for emitter), Black (for receiver). The min. bending radius: R6 mm 0.236 in.</td>
<td></td>
</tr>
<tr>
<td>SF2B-CB05-B</td>
<td>Cable length: 0.5 m 1.640 ft Net weight: 95 g approx. (2 cables)</td>
<td>Used when replacing units in the SF1-N / NA40 series. The SF1-CC / NA40-CC: cable with connector can be used without change, so that replacement with SF2B series units can be done smoothly. Two cables per set for emitter and receiver. Cable outer diameter: ø6 mm 0.236 in Connector outer diameter: ø14 mm 0.551 in max. Cable color: Gray (for emitter), Gray with black line (for receiver). Connecter color: Gray (for emitter), Black (for receiver). The min. bending radius: R6 mm 0.236 in.</td>
<td></td>
</tr>
<tr>
<td>SF2B-CB05</td>
<td>Cable length: 0.5 m 1.640 ft Net weight: 120 g approx. (2 cables)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SF2B-CB05A</td>
<td>Cable length: 0.1 m 0.328 ft Net weight: 70 g approx. (2 cables)</td>
<td>Used when connecting the sub-sensor for series connection to the light curtain in series. Two cables per set for emitter and receiver (common for emitter and receiver). Cable outer diameter: ø6 mm 0.236 in Cable color: Gray (common for emitter and receiver). The min. bending radius: R6 mm 0.236 in.</td>
<td></td>
</tr>
<tr>
<td>SF2B-CB05B</td>
<td>Cable length: 0.5 m 1.640 ft Net weight: 120 g approx. (2 cables)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Notes:
1. Not used in case of simple replacement of the SF1-N series (interference prevention wire is unused), therefore perform wire insulation so that it will not touch other wires.
2. Not used in case of simple replacement of the SF1-N series (non-safety applications), therefore perform wire insulation so that it will not touch other wires.
3. When used in safety applications, both OSSD1 and OSSD2 must be used.

* Interchangeability function

- This function is used for replacing other light curtains or area sensors with these new units. The bottom cap cables and sensor mounting brackets used will vary depending on the models being replaced. Refer to the instruction manual for details on actual wiring and mounting.

- **Models being replaced**
  - SF2-A / SF2-N series (Discontinued product)
  - SF1-N series (Discontinued product)
  - NA40 series

- **Adapter cable**
  - SF2B-CB05-A
  - SF2B-CB05-B

- **Adapter mounting bracket**
  - MS-SF2B-5
  - MS-SF2B-6

- **Details and points to note**
  - **NPN output type:** Connect the shielded wire to V+, PNP output type: Connect the shielded wire to V-.
  - **Existing SF2N-CC:** connection cables (optional) can be used without change.
  - **The interference prevention function (parallel connection) cannot be used.**

For direct mounting:
- **MS-SF2B-7**

- **Emitter:** Synchronization cable has changed to interference prevention cable. (Note 1)

- **Receiver:** Synchronization cable has changed to control output (OSSD 1). (Note 2)(Note 3)

- **Beam axis alignment indicator of emitter cannot be used.**

- **Existing OSSD1:** connection cables (optional) can be used without change.

- **The beam axis alignment indicator of emitter cannot be used.**

- **Emittance halt function cannot be used.**

- **The interference prevention function (parallel connection) cannot be used.**

- **The ambient temperature for the NA40-CC: connection cables (optional) is**

- **−10 +50 °C x ±122 °F.**

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29/02/2012
### ORDER GUIDE

#### 6 Sub-sensor for series connection only

The sub-sensors for series connection are PNP / NPN types. Furthermore, they cannot simply be used by themselves. Always use them in combination with light curtains.

<table>
<thead>
<tr>
<th>Type</th>
<th>Appearance</th>
<th>Operating range (Note 1)</th>
<th>Model No. (Note 6)</th>
<th>Number of beam channels</th>
<th>Protective height (mm in) (Note 4)</th>
<th>Current consumption (Note 5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emitter: 20 mA or less</td>
<td>SF2B-H8SL</td>
<td>0.2 to 13 m</td>
<td>(Note 2)</td>
<td>8</td>
<td>168 6.614</td>
<td>Emitter: 20 mA or less</td>
</tr>
<tr>
<td></td>
<td>SF2F-H12SL</td>
<td>0.656 to 62.651 ft</td>
<td>12</td>
<td>232 9.134</td>
<td>Receiver: 25 mA or less</td>
<td></td>
</tr>
<tr>
<td>Emitter: 15 mA or less</td>
<td>SF2B-H16SL</td>
<td>0.656 to 62.651 ft</td>
<td>16</td>
<td>312 12.283</td>
<td>Receiver: 35 mA or less</td>
<td></td>
</tr>
<tr>
<td>Emitter: 42 mA or less</td>
<td>SF2B-H20SL</td>
<td>0.2 to 5 m</td>
<td>20</td>
<td>392 15.433</td>
<td>Receiver: 35 mA or less</td>
<td></td>
</tr>
<tr>
<td>Emitter: 45 mA or less</td>
<td>SF2B-H25SL</td>
<td>0.2 to 5 m</td>
<td>24</td>
<td>472 18.583</td>
<td>Receiver: 45 mA or less</td>
<td></td>
</tr>
<tr>
<td>Emitter: 50 mA or less</td>
<td>SF2B-H30SL</td>
<td>0.2 to 5 m</td>
<td>28</td>
<td>552 21.732</td>
<td>Receiver: 45 mA or less</td>
<td></td>
</tr>
<tr>
<td>Emitter: 55 mA or less</td>
<td>SF2B-H35SL</td>
<td>0.2 to 5 m</td>
<td>32</td>
<td>632 24.882</td>
<td>Receiver: 45 mA or less</td>
<td></td>
</tr>
<tr>
<td>Emitter: 60 mA or less</td>
<td>SF2B-H40SL</td>
<td>0.2 to 5 m</td>
<td>36</td>
<td>712 28.031</td>
<td>Receiver: 55 mA or less</td>
<td></td>
</tr>
<tr>
<td>Emitter: 65 mA or less</td>
<td>SF2B-H45SL</td>
<td>0.2 to 5 m</td>
<td>40</td>
<td>792 31.181</td>
<td>Receiver: 65 mA or less</td>
<td></td>
</tr>
<tr>
<td>Emitter: 70 mA or less</td>
<td>SF2B-H50SL</td>
<td>0.2 to 5 m</td>
<td>48</td>
<td>952 37.480</td>
<td>Receiver: 65 mA or less</td>
<td></td>
</tr>
<tr>
<td>Emitter: 80 mA or less</td>
<td>SF2B-H60SL</td>
<td>0.2 to 5 m</td>
<td>64</td>
<td>1,272 50.079</td>
<td>Receiver: 85 mA or less</td>
<td></td>
</tr>
<tr>
<td>Emitter: 90 mA or less</td>
<td>SF2B-H70SL</td>
<td>0.2 to 5 m</td>
<td>72</td>
<td>1,432 56.378</td>
<td>Receiver: 105 mA or less</td>
<td></td>
</tr>
<tr>
<td>Emitter: 100 mA or less</td>
<td>SF2B-H80SL</td>
<td>0.2 to 5 m</td>
<td>80</td>
<td>1,592 62.677</td>
<td>Receiver: 125 mA or less</td>
<td></td>
</tr>
<tr>
<td>Emitter: 105 mA or less</td>
<td>SF2B-H90SL</td>
<td>0.2 to 5 m</td>
<td>96</td>
<td>1,912 75.275</td>
<td>Receiver: 125 mA or less</td>
<td></td>
</tr>
<tr>
<td>Emitter: 125 mA or less</td>
<td>SF2F-A4SL</td>
<td>0.2 to 5 m</td>
<td>4</td>
<td>168 6.614</td>
<td>Emitter: 15 mA or less</td>
<td></td>
</tr>
<tr>
<td>Emitter: 200 mA or less</td>
<td>SF2F-A6SL</td>
<td>0.2 to 5 m</td>
<td>8</td>
<td>312 12.283</td>
<td>Emitter: 20 mA or less</td>
<td></td>
</tr>
<tr>
<td>Emitter: 225 mA or less</td>
<td>SF2F-A8SL</td>
<td>0.2 to 5 m</td>
<td>12</td>
<td>392 15.433</td>
<td>Emitter: 25 mA or less</td>
<td></td>
</tr>
<tr>
<td>Emitter: 300 mA or less</td>
<td>SF2F-A10SL</td>
<td>0.2 to 5 m</td>
<td>16</td>
<td>472 18.583</td>
<td>Emitter: 30 mA or less</td>
<td></td>
</tr>
<tr>
<td>Emitter: 350 mA or less</td>
<td>SF2F-A12SL</td>
<td>0.2 to 5 m</td>
<td>20</td>
<td>552 21.732</td>
<td>Emitter: 30 mA or less</td>
<td></td>
</tr>
<tr>
<td>Emitter: 400 mA or less</td>
<td>SF2F-A14SL</td>
<td>0.2 to 5 m</td>
<td>24</td>
<td>632 24.882</td>
<td>Emitter: 35 mA or less</td>
<td></td>
</tr>
<tr>
<td>Emitter: 450 mA or less</td>
<td>SF2F-A16SL</td>
<td>0.2 to 5 m</td>
<td>28</td>
<td>712 28.031</td>
<td>Emitter: 35 mA or less</td>
<td></td>
</tr>
<tr>
<td>Emitter: 500 mA or less</td>
<td>SF2F-A18SL</td>
<td>0.2 to 5 m</td>
<td>32</td>
<td>792 31.181</td>
<td>Emitter: 40 mA or less</td>
<td></td>
</tr>
<tr>
<td>Emitter: 550 mA or less</td>
<td>SF2F-A20SL</td>
<td>0.2 to 5 m</td>
<td>36</td>
<td>952 37.480</td>
<td>Emitter: 40 mA or less</td>
<td></td>
</tr>
<tr>
<td>Emitter: 600 mA or less</td>
<td>SF2F-A24SL</td>
<td>0.2 to 5 m</td>
<td>40</td>
<td>1,112 43.779</td>
<td>Emitter: 50 mA or less</td>
<td></td>
</tr>
<tr>
<td>Emitter: 650 mA or less</td>
<td>SF2F-A28SL</td>
<td>0.2 to 5 m</td>
<td>48</td>
<td>1,272 50.079</td>
<td>Emitter: 50 mA or less</td>
<td></td>
</tr>
<tr>
<td>Emitter: 700 mA or less</td>
<td>SF2F-A32SL</td>
<td>0.2 to 5 m</td>
<td>64</td>
<td>1,432 56.378</td>
<td>Emitter: 60 mA or less</td>
<td></td>
</tr>
<tr>
<td>Emitter: 800 mA or less</td>
<td>SF2F-A36SL</td>
<td>0.2 to 5 m</td>
<td>80</td>
<td>1,592 62.677</td>
<td>Emitter: 60 mA or less</td>
<td></td>
</tr>
<tr>
<td>Emitter: 900 mA or less</td>
<td>SF2F-A40SL</td>
<td>0.2 to 5 m</td>
<td>96</td>
<td>1,752 68.970</td>
<td>Emitter: 70 mA or less</td>
<td></td>
</tr>
<tr>
<td>Emitter: 1000 mA or less</td>
<td>SF2F-A44SL</td>
<td>0.2 to 5 m</td>
<td>112</td>
<td>1,912 75.275</td>
<td>Emitter: 70 mA or less</td>
<td></td>
</tr>
</tbody>
</table>

Notes:
1) The “operating range” is the possible setting distance between the emitter and the receiver.
2) The SF2B-H8SL and SF2B-A4SL do not include a connector for series connection. Therefore, when connecting 3 sets in series, the sub-sensor can be used only for the third set. Refer to the “Series connection” of “PRECAUTIONS FOR PROPER USE” for details.
3) The distance between the tip of the light curtain and the top beam axis of the protective height is 22 mm 0.866 in.
4) Refer to the “Definition of light curtain and area sensor sensing heights” for details of the protective height.
5) The specifications of the sub-sensor for series connection are the same as the light curtain, except for the current consumption.
6) Models which have an “※ LIMITS” symbol in the model No. on the name plate are emitters, and those with a “● LIMITS” symbol are receivers.

### Spare parts (Accessories for light curtain)

#### Designation

**Intermediate supporting bracket (Note)**

**Model No.** MS-SF2B-2

**Description**

Used to mount the light curtain on the intermediate position. Mounting is possible behind or at the side of the light curtain.

**Test rod ø27**

**Model No.** SF2B-TR27

**Description**

Min. sensing object for regular checking (ø27 mm ø1.063 in), with hand protection type (min. sensing object ø27 mm ø1.063 in).

**Intermediate supporting bracket • MS-SF2B-2**

*In case of rear mounting*

**Intermediate supporting bracket • MS-SF2B-2**

*In case of side mounting*

**MS hexagon-sOCKET head bolt**

(Purchase separately.)

**Sensing surface**

**Light curtain**

**MS hexagon-sOCKET head bolt**

(Purchase separately.)

**Sensing surface**

**Light curtain**

**Hand protection type**

**Beam pitch**

20 mm 0.787 in (Note 3)

**Protective height**

6 mm 0.236 in (Note 3)

**Arm F protection type**

**Beam pitch**

20 mm 0.787 in

**Protective height**

0.624 in (In case of rear mounting)

**Intermediate supporting bracket**

*MS hexagon-sOCKET head bolt* (Purchase separately.)

**Sensing surface**

**Light curtain**

**MS hexagon-sOCKET head bolt** (Purchase separately.)

**Sensing surface**

**Light curtain**

**Hand protection type**

**Beam channel No.**

8 mm 0.315 in (Note 3)

**Protective height**

0.2 to 13 m

0.656 to 62.651 ft

**Intermediate supporting bracket**

*MS hexagon-sOCKET head bolt* (Purchase separately.)

**Sensing surface**

**Light curtain**

*MS hexagon-sOCKET head bolt* (Purchase separately.)

**Sensing surface**

**Light curtain**

**Notes:**

- 1) The “operating range” is the possible setting distance between the emitter and the receiver.
- 2) The SF2B-H8SL and SF2B-A4SL do not include a connector for series connection. Therefore, when connecting 3 sets in series, the sub-sensor can be used only for the third set. Refer to the “Series connection” of “PRECAUTIONS FOR PROPER USE” for details.
- 3) The distance between the tip of the light curtain and the top beam axis of the protective height is 22 mm 0.866 in.
- 4) Refer to the “Definition of light curtain and area sensor sensing heights” for details of the protective height.
- 5) The specifications of the sub-sensor for series connection are the same as for the light curtain, except for the current consumption.
- 6) Models which have an “※ LIMITS” symbol in the model No. on the name plate are emitters, and those with a “● LIMITS” symbol are receivers.
## OPTIONS

### Exclusive control units

<table>
<thead>
<tr>
<th>Designation</th>
<th>Appearance</th>
<th>Model No.</th>
<th>Applicable cable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connector connection type control unit</td>
<td><img src="image1.png" alt="Image" /></td>
<td>SF-C11</td>
<td>SF2B-CB ♦ SF2B-CCJ10 ♦</td>
<td>Use 8-core cable with connector to connect to the light curtain. Compatible with up to control category 4 (control category 2 when used together with the SF2B series).</td>
</tr>
<tr>
<td>Slim type control unit</td>
<td><img src="image2.png" alt="Image" /></td>
<td>SF-C13</td>
<td>SF2B-CCB ♦ SF2B-CC ♦</td>
<td>Use a discrete wire cable to connect to the light curtain. Compatible with up to control category 4 (control category 2 when used together with the SF2B series).</td>
</tr>
</tbody>
</table>

Note: Refer to the exclusive control units SF-C10 series pages for details.

### Front protection cover

- **FC-SF2BH-□**
  - This protects the sensing surfaces of the light curtain from flying objects such as welding spatter, oil and water. The operating range reduces when the front protection cover is used.
  - Material: Polycarbonate
  - Sensing range (Note): When using the SF2B-BC05-B
    - Only emitter installed: 0.2 to 11.5 m, 0.656 to 37.730 ft
    - Only receiver installed: 0.2 to 11.5 m, 0.656 to 37.730 ft
    - Both emitter and receiver installed: 0.2 to 10.0 m, 0.656 to 32.808 ft

### Corner mirror

- **RF-SFBH-□**
  - When setting up the light curtains in the L-shape or U-shape, usually two or three sets of the light curtains are required. However, using the corner mirror can reflect the laser light only on one set of the light curtains to be set up at the L-shape or U-shape.

### Specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>Type</th>
<th>Corner mirror</th>
<th>Description</th>
</tr>
</thead>
</table>
| Sensing range | With one mirror: declined to 90 %, With two mirrors: declined to 80 % (When used in combination with the SF2B series)
| Ambient temperature | –10 to +55 °C (+14 to +131 °F) (No dew condensation or icing allowed), Storage: –25 to +70 °C (+13 to +158 °F) |
| Ambient humidity | 30 to 85 % RH, Storage: 30 to 95 % RH |
| Vibration resistance | 10 to 55 Hz frequency, 0.75 mm amplitude in X, Y and Z directions for two hours each |
| Shock resistance | 300 m/s² acceleration (30 G approx.) in X, Y and Z directions for three times each |

### Sensing Heights

<table>
<thead>
<tr>
<th>Applicable beam channels</th>
<th>Designation</th>
<th>Front protection cover</th>
<th>Corner mirror</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hand</td>
<td>Arm / Foot</td>
<td>Model No.</td>
<td>Model No.</td>
</tr>
<tr>
<td>8</td>
<td>4</td>
<td>FC-SF2BH-8</td>
<td>RF-SFBH-8</td>
</tr>
<tr>
<td>12</td>
<td>6</td>
<td>FC-SF2BH-12</td>
<td>RF-SFBH-12</td>
</tr>
<tr>
<td>16</td>
<td>8</td>
<td>FC-SF2BH-16</td>
<td>RF-SFBH-16</td>
</tr>
<tr>
<td>20</td>
<td>10</td>
<td>FC-SF2BH-20</td>
<td>RF-SFBH-20</td>
</tr>
<tr>
<td>24</td>
<td>12</td>
<td>FC-SF2BH-24</td>
<td>RF-SFBH-24</td>
</tr>
<tr>
<td>28</td>
<td>14</td>
<td>FC-SF2BH-28</td>
<td>RF-SFBH-28</td>
</tr>
<tr>
<td>32</td>
<td>16</td>
<td>FC-SF2BH-32</td>
<td>RF-SFBH-32</td>
</tr>
<tr>
<td>36</td>
<td>18</td>
<td>FC-SF2BH-36</td>
<td>RF-SFBH-36</td>
</tr>
<tr>
<td>40</td>
<td>20</td>
<td>FC-SF2BH-40</td>
<td>RF-SFBH-40</td>
</tr>
<tr>
<td>48</td>
<td>24</td>
<td>FC-SF2BH-48</td>
<td>RF-SFBH-48</td>
</tr>
<tr>
<td>56</td>
<td>28</td>
<td>FC-SF2BH-56</td>
<td>RF-SFBH-56</td>
</tr>
<tr>
<td>64</td>
<td>32</td>
<td>FC-SF2BH-64</td>
<td>RF-SFBH-64</td>
</tr>
<tr>
<td>72</td>
<td>36</td>
<td>FC-SF2BH-72</td>
<td>RF-SFBH-72</td>
</tr>
<tr>
<td>80</td>
<td>40</td>
<td>FC-SF2BH-80</td>
<td>RF-SFBH-80</td>
</tr>
<tr>
<td>88</td>
<td>44</td>
<td>FC-SF2BH-88</td>
<td>RF-SFBH-88</td>
</tr>
<tr>
<td>96</td>
<td>48</td>
<td>FC-SF2BH-96</td>
<td>RF-SFBH-96</td>
</tr>
</tbody>
</table>

**Dimensions of effective reflective surface**

- 8 mm to 2,835 in
- 236 mm to 2,835 in
- 316 mm to 2,835 in
- 396 mm to 2,835 in
- 476 mm to 2,835 in
- 556 mm to 2,835 in
- 636 mm to 2,835 in
- 716 mm to 2,835 in
- 796 mm to 2,835 in
- 876 mm to 2,835 in
- 956 mm to 2,835 in
- 1,136 mm to 2,835 in
- 1,276 mm to 2,835 in
- 1,436 mm to 2,835 in
- 1,596 mm to 2,835 in
- 1,756 mm to 2,835 in
- 1,916 mm to 2,835 in

Note: The model Nos. given above denote a single unit, not a pair of units. 2 units are required for use in mounting to the emitter / receiver.

29/02/2012
## OPTIONS

<table>
<thead>
<tr>
<th>Designation</th>
<th>Appearance</th>
<th>Model No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test rod ø47</td>
<td>SF2B-TR47</td>
<td>Min. sensing object for regular checking (ø47 mm ø1.850 in), with Arm / Foot protection type (min. sensing object ø47 mm ø1.850 in)</td>
<td></td>
</tr>
</tbody>
</table>

### Laser alignment tool

#### SF-LAT-2B

- Allows easy beam axis alignment using easy-to-see laser beam

**Specifications**

- **Supply voltage:** 3 V
- **Battery:** 1.5 V (AA size battery) × 2 pcs. (replaceable)
- **Battery lifetime:** 30 hours approx. of continuous operation (Manganese battery, at +25 °C 77 °F ambient temperature)
- **Light source:** Red semiconductor laser: class 2 (IEC / JIS / FDA) (Max. output: 1 mW, Peak emission wavelength: 650 nm 0.026 mil)
- **Ambient temperature:** 0 to +40 °C 32 to +104 °F (No dew condensation)
- **Material:** ABS (Enclosure), Aluminum (Mounting part.)
- **Weight:** Net weight: 200 g approx. (including batteries)
- **Accessories AA size battery:** 2 pcs.

### Large display unit for light curtain

#### SF-IND-2

- With the auxiliary output of the light curtain, the operation is easily observable from various directions.

**Specifications**

- **Supply voltage:** 24 V DC ±15 %
- **Current consumption:** 12 mA or less
- **Indicators:** Orange LED (8 pcs. used)
- **Ambient temperature:** –10 to +55 °C 14 to +131 °F (No dew condensation or icing allowed)
- **Material:** POM (Enclosure), Polycarbonate (Cover), Cold rolled carbon steel (SPCC) (Bracket)
- **Cable:** 0.3 mm² 2-core cable, 3 m 9.843 ft long
- **Net weight:** 70 g approx. (including bracket)

**I/O circuit diagrams**

- **<With NPN output type>**

  - Color code
    - (Brown) +V
    - (Blue) –V

  - Internal circuit
    - Users’ circuit

  - Non-voltage contact or NPN open-collector transistor

- **<With PNP output type>**

  - Color code
    - (Brown) +V
    - (Blue) –V

  - Internal circuit
    - Users’ circuit

  - Non-voltage contact or PNP open-collector transistor

---

### Laser alignment tool

- **SF-LAT-2B**

  - Laser alignment tool SF-LAT-2B

### Large display unit for light curtain

- **SF-IND-2**

  - Large display unit for light curtain SF-IND-2

#### Notes

- Recommended safety relays
  - Panasonic Electric Works Co., Ltd.
  - Model No.: SF series

- Note: Contact the manufacturers for details on the recommended products.
### SPECIFICATIONS

#### Individual specifications

**SF2B-Hp**  
Hand protection type

<table>
<thead>
<tr>
<th>No.</th>
<th>Type</th>
<th>Min. sensing object ø27 mm</th>
<th>ø1.063 in</th>
<th>(20 mm 0.787 in beam pitch)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of beam channels</td>
<td>8</td>
<td>12</td>
<td>16</td>
<td>20</td>
</tr>
<tr>
<td>Beam pitch</td>
<td>20 mm</td>
<td>0.787 in</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protective height</td>
<td>168 mm</td>
<td>6.614 in</td>
<td>232 mm</td>
<td>9.134 in</td>
</tr>
</tbody>
</table>
| Current consumption | Emitter: 40 mA or less  
Receiver: 50 mA or less  
Emitter: 40 mA or less  
Receiver: 60 mA or less  
Emitter: 50 mA or less  
Receiver: 70 mA or less  
NPN output | 6.24×10⁻⁶ | 6.44×10⁻⁶ | 6.58×10⁻⁶ | 6.77×10⁻⁶ | 6.91×10⁻⁶ | 7.10×10⁻⁶ |
| PNP output | 6.04×10⁻⁶ | 6.23×10⁻⁶ | 6.37×10⁻⁶ | 6.57×10⁻⁶ | 6.71×10⁻⁶ | 6.90×10⁻⁶ |
| MTTFd | 100 years or more |
| Net weight (total of emitter and receiver) | 170 g approx. | 280 g approx. | 400 g approx. | 510 g approx. | 610 g approx. | 720 g approx. |
| Type  | Min. sensing object ø27 mm | ø1.063 in | (20 mm 0.787 in beam pitch) |
| No. of beam channels | 32 | 36 | 40 | 48 | 56 | 64 |
| Beam pitch | 20 mm | 0.787 in |
| Protective height | 632 mm | 24.882 in | 712 mm | 28.031 in | 792 mm | 31.181 in | 952 mm | 37.480 in | 1,112 mm | 43.779 in | 1,272 mm | 50.079 in |
| Current consumption | Emitter: 50 mA or less  
Receiver: 80 mA or less  
Emitter: 60 mA or less  
Receiver: 90 mA or less  
Emitter: 65 mA or less  
Receiver: 110 mA or less  
NPN output | 7.24×10⁻⁶ | 7.44×10⁻⁶ | 7.58×10⁻⁶ | 7.91×10⁻⁶ | 8.24×10⁻⁶ | 8.58×10⁻⁶ |
| PNP output | 7.04×10⁻⁶ | 7.23×10⁻⁶ | 7.37×10⁻⁶ | 7.71×10⁻⁶ | 8.04×10⁻⁶ | 8.37×10⁻⁶ |
| MTTFd | 100 years or more |
| Net weight (total of emitter and receiver) | 830 g approx. | 930 g approx. | 1,000 g approx. | 1,300 g approx. | 1,500 g approx. | 1,700 g approx. |

Note: Where measurement conditions have not been specified precisely, the conditions used were an ambient temperature of +20 °C ±68 °F.
## SPECIFICATIONS

### SF2B-A4

#### Arm / Foot protection type

<table>
<thead>
<tr>
<th>Item</th>
<th>Type</th>
<th>Min. sensing object ø47 mm (40 mm 1.575 in) beam pitch</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>No. of beam channels</th>
<th>4</th>
<th>6</th>
<th>8</th>
<th>10</th>
<th>12</th>
<th>14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beam pitch</td>
<td>40 mm</td>
<td>1.575 in</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protective height</td>
<td>168 mm</td>
<td>6.614 in</td>
<td>232 mm</td>
<td>9.134 in</td>
<td>312 mm</td>
<td>12.283 in</td>
</tr>
<tr>
<td>Emitter: 35 mA or less</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Receiver: 45 mA or less</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PFHd NPN output</td>
<td>6.11×10⁻²</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PNP output</td>
<td>6.03×10⁻²</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MTTFD</td>
<td>100 years or more</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Net weight (total of emitter and receiver)</td>
<td>170 g approx., 280 g approx., 400 g approx., 510 g approx., 610 g approx., 720 g approx.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### SF2B-A16

#### Min. sensing object ø47 mm (40 mm 1.575 in) beam pitch

<table>
<thead>
<tr>
<th>Item</th>
<th>Type</th>
<th>Min. sensing object ø47 mm (40 mm 1.575 in) beam pitch</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>No. of beam channels</th>
<th>16</th>
<th>18</th>
<th>20</th>
<th>24</th>
<th>28</th>
<th>32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beam pitch</td>
<td>40 mm</td>
<td>1.575 in</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protective height</td>
<td>632 mm</td>
<td>24.882 in</td>
<td>712 mm</td>
<td>28.031 in</td>
<td>792 mm</td>
<td>31.181 in</td>
</tr>
<tr>
<td>Emitter: 40 mA or less</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Receiver: 60 mA or less</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PFHd NPN output</td>
<td>6.69×10⁻²</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PNP output</td>
<td>6.68×10⁻²</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MTTFD</td>
<td>100 years or more</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Net weight (total of emitter and receiver)</td>
<td>830 g approx., 930 g approx., 1,000 g approx., 1,300 g approx., 1,500 g approx., 1,700 g approx.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### SF2B-A36

#### Min. sensing object ø47 mm (40 mm 1.575 in) beam pitch

<table>
<thead>
<tr>
<th>Item</th>
<th>Type</th>
<th>Min. sensing object ø47 mm (40 mm 1.575 in) beam pitch</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NPN</td>
<td>SF2B-A36-N, SF2B-A40-N, SF2B-A44-N, SF2B-A48-N</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>No. of beam channels</th>
<th>36</th>
<th>40</th>
<th>44</th>
<th>48</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beam pitch</td>
<td>40 mm</td>
<td>1.575 in</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protective height</td>
<td>1,432 mm</td>
<td>56.378 in</td>
<td>1,592 mm</td>
<td>62.677 in</td>
</tr>
<tr>
<td>Emitter: 55 mA or less</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Receiver: 85 mA or less</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PFHd NPN output</td>
<td>7.6×10⁻²</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PNP output</td>
<td>7.8×10⁻²</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MTTFD</td>
<td>100 years or more</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Net weight (total of emitter and receiver)</td>
<td>1,900 g approx., 2,100 g approx., 2,300 g approx., 2,500 g approx.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Where measurement conditions have not been specified precisely, the conditions used were an ambient temperature of +20 °C +68 °F.
## SPECIFICATIONS

### Common specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>Type</th>
<th>Min. sensing object ø27 mm</th>
<th>Min. sensing object ø47 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>ø1.063 mm in type (20 mm, 1.781 in beam pitch)</td>
<td>ø1.880 mm in type (40 mm, 1.575 in beam pitch)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NPN output</td>
<td>PNP output</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SF2B-Hg-N</td>
<td>SF2B-Hg-P</td>
</tr>
<tr>
<td>International standard</td>
<td>IEC 61496-1/2 (Type 2), ISO 13849-1 (Category 2, PLd), EN 61508-1 to 7 (SIL2)</td>
<td>Japan</td>
<td>JIS B 9704-1/2 (Type 2), JIS B 9705-1 (Category 2), JIS C 0508-1 to 7 (SIL2)</td>
</tr>
<tr>
<td>North America</td>
<td>UL 61496-1/2 (Type 2), UL 508, UL 1998 (Class 1), CSA C22.2 No.14, CSA C22.2 No.08, OSHA 1910.212 (Note 3), OSHA 1910.217 (C) (Note 3), ANSI B11.1 to B11.19, ANSI/URIA 15.06</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating range</td>
<td>0.2 to 1.3 m (5.98 to 42.55 ft) (0.2 to 5 m (5.98 to 16.40 ft) (404 ft when using the SF2B-CB05S-B adapter cable)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min. sensing object</td>
<td>ø27 mm ø1.063 in opaque object</td>
<td>ø47 mm ø1.880 in opaque object</td>
<td></td>
</tr>
<tr>
<td>Effective aperture angle</td>
<td>±5° or less for [an operating range exceeding 3 m, 9.843 ft (conforming to IEC 61496-2/UL 61496-2)]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supply voltage</td>
<td>24 V DC ±15 % Ripple P-P 10 % or less</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control outputs (OSSD 1, OSSD 2)</td>
<td>&lt;NPN output type&gt; NPN open-collector transistor</td>
<td>&lt;PNP output type&gt; PNP open-collector transistor</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Max. max. current: 200 mA</td>
<td>Max. max. current: 200 mA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Applied voltage: same as supply voltage</td>
<td>Applied voltage: same as supply voltage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Residual voltage: 2.0 V or less (sink current 200 mA)</td>
<td>Residual voltage: 2.5 V or less (sink current 200 mA)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(when using 30.5 m 100.066 ft length cable)</td>
<td>(when using 30.5 m 100.066 ft length cable)</td>
</tr>
<tr>
<td>Operation mode</td>
<td>ON when all beam channels are received, OFF when one or more beam channels are interrupted (OFF also in case of any malfunction in the light curtain or the synchronization signal)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protection circuit</td>
<td>Incorporated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Response time</td>
<td>OFF response: 15 ms or less, ON response: 40 to 60 ms</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Auxiliary output (Aux) (Note 4)</td>
<td>&lt;NPN output type&gt; NPN open-collector transistor</td>
<td>&lt;PNP output type&gt; PNP open-collector transistor</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Max. max. current: 60 mA</td>
<td>Max. max. current: 60 mA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Applied voltage: same as supply voltage</td>
<td>Applied voltage: same as supply voltage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Residual voltage: 2.0 V or less (sink current 60 mA)</td>
<td>Residual voltage: 2.5 V or less (sink current 60 mA)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(when using 30.5 m 100.066 ft length cable)</td>
<td>(when using 30.5 m 100.066 ft length cable)</td>
</tr>
<tr>
<td>Operation mode</td>
<td>When using SF2B-CB05S-B: OR SF2B-CB05-P: OFF when OSSD ON, ON when OSSD OFF</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protection circuit</td>
<td>Incorporated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Synchronization method</td>
<td>Cable synchronization (optical synchronization when using SF2B-CB05B)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interference prevention function</td>
<td>Incorporated</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Series connection: 3 sets max. (Total 128 beam channels). (However, SF2B-A: allows up to a total of 96 beam channels when two sets are connected, and up to 64 beam channels when three sets are connected). (Note 5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SF2B-H: and SF2B-A: can be used together. (Note 6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>When using SF2B-CB05B: (optical synchronization)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emission halt function</td>
<td>Incorporated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>External device monitoring function</td>
<td>System connection: 3 sets max. (Total 128 beam channels). (However, SF2B-A: allows up to a total of 96 beam channels when two sets are connected, and up to 64 beam channels when three sets are connected). (Note 5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SF2B-H: and SF2B-A: can be used together. (Note 6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Degree of protection</td>
<td>IP65 (IEC) (IP67 is later than Ver.2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambient temperature / Ambient humidity</td>
<td>−10 to +55 °C (−14 to +131 °F) (No dew condensation or icing allowed), Storage: −25 to +70 °C (−13 to +158 °F) 30 to 85 % RH, Storage: 30 to 95 % RH</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambient illumination</td>
<td>Incandescent light: 3,500 or less at the light-receiving face</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dielectric strength / Insulation resistance</td>
<td>1,000 V AC for one min. between all supply terminals connected together and enclosure / 20 MΩ, or more, with 500 V DC megger between all supply terminals connected together and enclosure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vibration resistance / Shock resistance</td>
<td>10 to 55 Hz frequency, 0.75 mm (0.030 in) amplitude in X, Y and Z directions for two hours each / 0.656 to 16.404 ft</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emitting element</td>
<td>Infrared LED (Peak emission wavelength: 870 ± 0.004 nm)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cable extension</td>
<td>Extension up to total 30.5 m 100.066 ft is possible for both emitter and receiver, with optional mating cables.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connecting method</td>
<td>Connector</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Material</td>
<td>Enclosure: Aluminum, Upper and lower edges: Die-cast zinc alloy, Inner case: Polycarbonate · Polyester resin, Cap: PBT</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
1) Where measurement conditions have not been specified precisely, the conditions used were an ambient temperature of +20 °C +68 °F.
2) PLd and SIL2 will be applied to the products from October 2009 production run.
3) Not compatible when using the bottom cap cable SF2B-CB05-A.
4) When using auxiliary output (AUX), the compatible cable SF2B-CB05S-B (sold separately) cannot be used.
5) SF2B-H6- and SF2B-A6- cannot be connected in series. For more information, refer to “PRECAUTIONS FOR PROPER USE”.
6) When making series connection mixing SF2B-H: and SF2B-A:, calculate by doubling the total number of optical axes only for SF2B-H: and SF2B-A:., and make the total number of optical axes fall below 128 axes.
7) When making series connection with SF2B-H36 and SF2B-A44, the total number of optical axes will be 124 axes. The number of optical axes for SF2B-H36 + (number of optical axes for SF2B-A44 x 2) = total number of optical axes. 36 optical axes + (44 optical axes x 2) = 124 optical axes.
8) Intermediate supporting bracket SF2B-TR27 is included with the following products. The number included varies as follows depending on the product.

1 set: SF2B-H36: Light curtain with 40 to 56 beam channels, SF2B-A44: Light curtain with 20 to 28 beam channels
2 sets: SF2B-H36: Light curtain with 64 to 80 beam channels, SF2B-A44: Light curtain with 32 to 40 beam channels
3 sets: SF2B-H36: Light curtain with 88 to 96 beam channels, SF2B-A44: Light curtain with 44 to 48 beam channels
I/O CIRCUIT AND WIRING DIAGRAMS

NPN output type

<i>In case of setting the external device monitoring function to enabled></i>

**Emitter**

- Color code of mating cable: (Brown) +V, (Shield), (Yellow-green / Black) Auxiliary output, (Pink) Test input: 65 mA max., (Blue) 0 V
- (Pale purple) Not connected
- (Orange) Synchronization +
- (Brown) +V

**Receiver**

- Color code of mating cable: (Shield), (Black) OSSD 1, (White) OSSD 2
- (Yellow-green) External device monitoring input: 200 mA max.
- (Blue) 0 V

Internal circuit

<i>Note: Unused wires must be insulated to ensure that they do not come into contact with wires already in use.</i>

**CAUTION**

Construct the interlock (reset input) circuit separately.

* S1

Switch S1

- Test input: Open: Emission halt 0 to +1.5 V (source current 5 mA or less): Emission

<i>In case of setting the external device monitoring function to disabled></i>

**Emitter**

- Color code of mating cable: (Brown) +V, (Shield), (Yellow-green / Black) Auxiliary output, (Pink) Test input: 65 mA max., (Blue) 0 V
- (Pale purple) Not connected
- (Orange) Synchronization +
- (Brown) +V

**Receiver**

- Color code of mating cable: (Shield), (Black) OSSD 1, (White) OSSD 2
- (Yellow-green) External device monitoring input: 200 mA max.
- (Blue) 0 V

Internal circuit

<i>Note: Unused wires must be insulated to ensure that they do not come into contact with wires already in use.</i>

**CAUTION**

Construct the interlock (reset input) circuit separately.

* S1

Switch S1

- Test input: Open: Emission halt 0 to +1.5 V (source current 5 mA or less): Emission
I/O CIRCUIT AND WIRING DIAGRAMS

PNP output type

I/O circuit diagram

<In case of setting the external device monitoring function to enabled>

Emitter

<table>
<thead>
<tr>
<th>Connector pin No.</th>
<th>Color code of mating cable</th>
</tr>
</thead>
<tbody>
<tr>
<td>* S1</td>
<td>(Brown) * +V</td>
</tr>
<tr>
<td></td>
<td>(Pink) Test input</td>
</tr>
<tr>
<td></td>
<td>Yellow/green / Black auxiliary cap 200 mA max.</td>
</tr>
<tr>
<td></td>
<td>Blue / V</td>
</tr>
<tr>
<td></td>
<td>(Pale purple) Not connected</td>
</tr>
<tr>
<td></td>
<td>(Orange) Synchronization +</td>
</tr>
<tr>
<td></td>
<td>(Orange / Black) Synchronization -</td>
</tr>
<tr>
<td></td>
<td>Users' circuit</td>
</tr>
</tbody>
</table>

Receiver

<table>
<thead>
<tr>
<th>Connector pin No.</th>
<th>Color code of mating cable</th>
</tr>
</thead>
<tbody>
<tr>
<td>* S1</td>
<td>(Brown) * +V</td>
</tr>
<tr>
<td></td>
<td>(Pink) Test input</td>
</tr>
<tr>
<td></td>
<td>Yellow/green / Black auxiliary cap 200 mA max.</td>
</tr>
<tr>
<td></td>
<td>Blue / V</td>
</tr>
<tr>
<td></td>
<td>(Pale purple) Not connected</td>
</tr>
<tr>
<td></td>
<td>(Orange) Synchronization +</td>
</tr>
<tr>
<td></td>
<td>(Orange / Black) Synchronization -</td>
</tr>
<tr>
<td></td>
<td>Users' circuit</td>
</tr>
</tbody>
</table>

Internal circuit

K1: External device (Force-guided relay or magnet contactor)

Internal circuit

Users' circuit (Force-guided relay or magnet contactor)

CAUTION

Construct the interlock (reset input) circuit separately.

* S1

Switch S1

- Test input
  - Open: Emission halt
  - Vs to Vs = 2.5 V (sink current 5 mA or less): Emission (Note 2)

Notes:
1) Unused wires must be insulated to ensure that they do not come into contact with wires already in use.
2) Vs is the applying supply voltage.

When using a SF2B-CCB or SF2B-CB bottom cap cable

Wiring diagram

<In case of setting the external device monitoring function to enabled>

Emitter

<table>
<thead>
<tr>
<th>Cable color: Gray</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Brown) * +V</td>
</tr>
<tr>
<td>(Pink) * S1</td>
</tr>
<tr>
<td>Yellow/green / Black auxiliary cap 200 mA max.</td>
</tr>
<tr>
<td>(Blue)</td>
</tr>
<tr>
<td>(Orange)</td>
</tr>
<tr>
<td>(Orange / Black)</td>
</tr>
<tr>
<td>(Brown)</td>
</tr>
</tbody>
</table>

Receiver

<table>
<thead>
<tr>
<th>Cable color: Gray with black line</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Brown)</td>
</tr>
<tr>
<td>(Orange)</td>
</tr>
<tr>
<td>(Orange / Black)</td>
</tr>
<tr>
<td>(Black)</td>
</tr>
<tr>
<td>(Blue)</td>
</tr>
</tbody>
</table>

Internal circuit

K1: External device (Force-guided relay or magnet contactor)

K1: External device (Force-guided relay or magnet contactor)

Note: Unused wires must be insulated to ensure that they do not come into contact with wires already in use.

<In case of setting the external device monitoring function to disabled>

Emitter

<table>
<thead>
<tr>
<th>Connector pin No.</th>
<th>Color code of mating cable</th>
</tr>
</thead>
<tbody>
<tr>
<td>* S1</td>
<td>(Brown) * +V</td>
</tr>
<tr>
<td></td>
<td>(Pink) Test input</td>
</tr>
<tr>
<td></td>
<td>Yellow/green / Black auxiliary cap 200 mA max.</td>
</tr>
<tr>
<td></td>
<td>Blue / V</td>
</tr>
<tr>
<td></td>
<td>(Pale purple) Not connected</td>
</tr>
<tr>
<td></td>
<td>(Orange) Synchronization +</td>
</tr>
<tr>
<td></td>
<td>(Orange / Black) Synchronization -</td>
</tr>
<tr>
<td></td>
<td>Users' circuit</td>
</tr>
</tbody>
</table>

Receiver

<table>
<thead>
<tr>
<th>Connector pin No.</th>
<th>Color code of mating cable</th>
</tr>
</thead>
<tbody>
<tr>
<td>* S1</td>
<td>(Brown) * +V</td>
</tr>
<tr>
<td></td>
<td>(Pink) Test input</td>
</tr>
<tr>
<td></td>
<td>Yellow/green / Black auxiliary cap 200 mA max.</td>
</tr>
<tr>
<td></td>
<td>Blue / V</td>
</tr>
<tr>
<td></td>
<td>(Pale purple) Not connected</td>
</tr>
<tr>
<td></td>
<td>(Orange) Synchronization +</td>
</tr>
<tr>
<td></td>
<td>(Orange / Black) Synchronization -</td>
</tr>
<tr>
<td></td>
<td>Users' circuit</td>
</tr>
</tbody>
</table>

Internal circuit

K1: External device (Force-guided relay or magnet contactor)

Internal circuit

Users' circuit (Force-guided relay or magnet contactor)

CAUTION

Construct the interlock (reset input) circuit separately.

* S1

Switch S1

- Test input
  - Open: Emission halt
  - Vs to Vs = 2.5 V (sink current 5 mA or less): Emission (Note 2)

Notes:
1) Unused wires must be insulated to ensure that they do not come into contact with wires already in use.
2) Vs is the applying supply voltage.

Note: Unused wires must be insulated to ensure that they do not come into contact with wires already in use.
I/O CIRCUIT AND WIRING DIAGRAMS

SF-C11

SF2B series wiring diagram (Control category 2)

**NPN output type**
- Set the light curtain input polarity selection switch to the NPN side and ground the 0 V line.

**PNP output type**
- Set the light curtain input polarity selection switch to the PNP side and ground the 0 V line.

Notes:
1) The above diagram is when using manual reset. If automatic reset is used, disconnect the lead from X2 and connect it to X3. In this case, a reset (RESET) button is not needed.
2) Use a momentary-type switch as the reset (RESET) button.
3) Emission halt occurs when the test (TEST) button is open, and emission occurs when the test (TEST) button is short-circuited. If not using the test (TEST) button, short-circuit T1 and T2. However, use a test rod or similar to interrupt the light in order to carry out self-diagnosis separately.

Terminal arrangement diagram

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>+24 V DC</td>
</tr>
<tr>
<td>A2</td>
<td>0 V</td>
</tr>
<tr>
<td>13-14</td>
<td>Safety output</td>
</tr>
<tr>
<td>33-34</td>
<td>(NO contact × 3)</td>
</tr>
<tr>
<td>41-42</td>
<td>Auxiliary output (NC contact × 1)</td>
</tr>
<tr>
<td>X1</td>
<td>Reset output terminal</td>
</tr>
<tr>
<td>X2</td>
<td>Reset input terminal (Manual)</td>
</tr>
<tr>
<td>X3</td>
<td>Reset input terminal (Automatic)</td>
</tr>
<tr>
<td>A</td>
<td>Not used</td>
</tr>
<tr>
<td>B</td>
<td>Not used</td>
</tr>
<tr>
<td>T1</td>
<td>Test output terminal</td>
</tr>
<tr>
<td>T2</td>
<td>Test input terminal</td>
</tr>
<tr>
<td>AUX</td>
<td>Semiconductor auxiliary output</td>
</tr>
</tbody>
</table>

Pin layout for light curtain connectors

**Connector pin No.**
1. Not used
2. +24 V DC
3. Emission halt
4. Auxiliary output
5. Synchronization wire +
6. Synchronization wire –
7. 0 V
8. Shield wire

Be sure to use the following mating cables when connecting SF-C11 to SF2B series.
- SF2B-CB05 (cable length: 0.5 m 1.640 ft)
- SF2B-CB05 (cable length: 5 m 16.404 ft)
- SF2B-CB10 (cable length: 10 m 32.808 ft)
- SF2B-CJ10E (for emitter, cable length: 10 m 32.808 ft)
- SF2B-CJ10D (for receiver, cable length: 10 m 32.808 ft)
SF-C13
SF2B series wiring diagram (Control category 2)

NPN output type
• Connect the light curtain control outputs OSSD 1 and OSSD 2 to S4 and S2 respectively and ground the + side.

PNP output type
• Connect the light curtain control outputs OSSD 1 and OSSD 2 to S1 and S2 respectively.

Terminal arrangement diagram

Notes: 1) The left diagram is when using manual reset. If automatic reset is used, disconnect the lead from X2 and connect it to X3. In this case, a reset (RESET) button is not needed.
2) Use a momentary-type switch as the reset (RESET) button.

Use a separate terminal block to carry out wiring for light curtains that cannot be connected to the SF-C13.
PRECAUTIONS FOR PROPER USE

- This light curtain is a Type 2 electro-sensitive protective equipment. It is specified that this light curtain be utilized only within systems implementing control categories 2, 1 and B (safety-related categories for control systems), as determined by European Standard EN 954-1. This light curtain must never be utilized in any system that requires the usage of category 4 equipment, such as press machines; nor for systems requiring category 3 equipment.
- To use this product in the U.S.A., refer to OSHA 1910.212 and OSHA 1910.217 for installation, and in Europe, refer to EN 999 as well. Observe your national and local requirements before installing this product.

Self-diagnosis function
- This light curtain incorporates the self-diagnosis function. In case an abnormality is detected during self-diagnosis, the light curtain is put in the lockout state at that instant, and the control output (OSSD 1, OSSD 2) become OFF status. Refer to "Troubleshooting" and the instruction manual and remove the cause of the abnormality.
- In order to maintain safe condition of light curtain, inspect the beam interrupted status of the device once a day or more. Failure to do so could delay the detection of unexpected abnormality and increase the degree of hazard, which may cause the malfunction of light curtain, resulting in serious body injury or death.
- In order to check all abnormalities in the OSSD 1, OSSD 2 and auxiliary output, the beam interrupted status of device must be checked. Perform either of two below to inspect the device under beam interrupted status.
  - Emission halt by test input (Emission halt function)
  - Beam interrupting by test rod (Excluding the cable SF2B-CB05-A)

Emission function (Test input)
- This function stops the emission process of the emitter. You can select whether emission is on or halted by means of the connection status for the test input (pink).

<table>
<thead>
<tr>
<th>Test input</th>
<th>Emission status</th>
<th>Emission status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open</td>
<td>Emission halt</td>
<td>Emission</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Connected to 0 V or +V</th>
<th>Emission halt</th>
<th>Emission</th>
</tr>
</thead>
</table>

- During emission halt, the control outputs (OSSD 1, OSSD 2) become OFF status.
- By using this function, malfunction due to extraneous noise or abnormality in the control outputs (OSSD 1, OSSD 2) and the auxiliary output can be determined even from the machinery side.

Auxiliary output
- Auxiliary output is incorporated into the emitter and its operation varies depending on the type of bottom cap cable (optional) to be used.

<table>
<thead>
<tr>
<th>Bottom cap cable</th>
<th>Emission status</th>
<th>Normal mode</th>
<th>Lockout</th>
</tr>
</thead>
<tbody>
<tr>
<td>SF2B-CB05-B</td>
<td>Emission halt</td>
<td>Beam received</td>
<td>Beam interrupted</td>
</tr>
</tbody>
</table>

- The auxiliary output is incorporated in the emitter. It is OFF when the control outputs (OSSD 1, OSSD 2) are ON and vice versa.
- The auxiliary output can be used as an operation monitor of the device.
- When the external device monitor function is not used, connect the external device monitor input line to the auxiliary output line to disable the function.
- In this case, do not connect the load to the auxiliary output. For details, refer to "External device monitoring function" and "I/O CIRCUIT AND WIRING DIAGRAMS".
- When the external device monitoring function is used to disable, do not directly use the auxiliary output as the operation monitor of this light curtain. When the external device monitor is used to disable and the auxiliary output is used to monitor the operation of light curtain, connect the auxiliary output and the external device monitoring input to the external relay (purchase separately) to use the external relay contacting point as an operation monitor of this light curtain.

<Time chart>

<table>
<thead>
<tr>
<th>Test input</th>
<th>Emission status</th>
<th>Emission status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open</td>
<td>Emission halt</td>
<td>Emission</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Connected to 0 V or +V</th>
<th>Emission halt</th>
<th>Emission</th>
</tr>
</thead>
</table>

- Do not use the emission halt function (test input) for the purpose of stopping the device. Failure to do so could result in serious injury or death.

When bottom cap cable SF2B-CB05-B or SF2B-CB06-B (optional) is used
- The auxiliary output is incorporated in the emitter. It is OFF when the control outputs (OSSD 1, OSSD 2) are ON and vice versa.
- The auxiliary output can be used as an operation monitor of the device.
- When the external device monitor function is not used, connect the external device monitor input line to the auxiliary output line to disable the function.
- Do not use the emission halt function (test input) for the purpose of stopping the device. Failure to do so could result in serious injury or death.

When bottom cap cable SF2B-CB05-A
- Cannot be used.
PRECAUTIONS FOR PROPER USE

When bottom cap cable SF2B-CB05-A (optional) is used

Make sure to use the auxiliary output when using the bottom cap cable SF2B-CB05-A (optional). Set the device so the control machine can be stopped when either the control output (OSSD 1) or auxiliary output turns to OFF. If the auxiliary output is not to be used, the device cannot stop operation when an unexpected error occurs during control output (OSSD 1) failure, which may result in serious injury or death.

- The auxiliary output is incorporated in the emitter. It outputs ON at the normal operation of device. It outputs OFF in the following cases:
  - When an abnormality which needs emission halt status occurs [for example, the control output (OSSD 1) short-circuit and an error occurs.]
  - While test input has been input
  - The error cannot be transmitted to the control machine. The alarm signal is output from the auxiliary output.

External device monitoring function

- This function is available when the bottom cap cable SF2B-CCB or SF2B-CB (optional) is used. This is the function for checking whether the external safety relay connected to the control outputs (OSSD 1, OSSD 2) performs normally in accordance with the control outputs (OSSD 1, OSSD 2) or not. When any abnormality such as deposit of the contacting point, etc. is detected, change the status of the light curtain into lockout one, and turn OFF the control outputs (OSSD 1, OSSD 2).

In case of setting the external device monitoring function to enabled

- Connect the external device monitoring input (yellow-green) to the b contact of the external safety relay that is connected to the control outputs (OSSD 1, OSSD 2).

In case of not using the external device monitoring function

- Connect the external device monitoring input (yellow-green) to the auxiliary output (yellow-green / black).

The time set for external device monitoring is 300 ms or less. Exceeding 300 ms turns the light curtain into lockout condition.

Series connection

Connectable up to 3 sets of light curtains (however, 128 beam channels max. Note 1, 2)

- This is the configuration for connecting multiple sets of emitters and receivers facing each other in series. It is used when the dangerous part can be entered from two or more directions. The control outputs (OSSD 1, OSSD 2) turns OFF if any of the light curtain is interrupted. For details, refer to the instruction manual.

Notes 1): Series connection connectors cannot be used with the SF2B-H-□ and SF2B-A4-□, and so series connection is not possible. The SF2B-HSL and SF2B-A4SL are not equipped with series connection connectors, so when connecting three sets in series, they cannot be used in the middle position.

2): The total number of beam axes for the SF2B-A4 is a maximum of 96 when two sets are connected, and 64 when three sets are connected. When SF2B-H-□ and SF2B-A4-□ are combined in series connection, double the number of the beam channels of SF2B-A4 to calculate the total number of beam channels, which should be 128 or less.

Example: The total no. of beam channels for SF2B-H36 and SF2B-A44 is 124.

The no. of beam channels of SF2B-H36 is 124.

For serial connection, connect the emitter and receiver of the light curtain to the emitter and receiver respectively of the sub-sensors for series connection using the SF2B-CL□: special series connection cables. Wrong connection could generate the non-sensing area, resulting in serious injury or death.
PRECAUTIONS FOR PROPER USE

Parallel connection
• Up to a maximum of two sets can be connected in parallel only when using the SF2B-CB05-B adapter cable (optional). For details, refer to the instruction manual.

Part description and function

**Emitter**

<table>
<thead>
<tr>
<th>Description</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beam-axis alignment indicator (Red / Green) [RECEPTION]</td>
<td>When all beam channels of light curtain top are receiving light: lights up in red When light curtain top end receives light: blinks in red When control outputs (OSSD 1, OSSD 2) are ON: lights up in green (always off when using the SF2B-CB05-B)</td>
</tr>
<tr>
<td></td>
<td>When all beam channels of light curtain upper middle are receiving light: lights up in red When control outputs (OSSD 1, OSSD 2) are ON: lights up in green (always off when using the SF2B-CB05-B)</td>
</tr>
<tr>
<td></td>
<td>When all beam channels of light curtain lower middle are receiving light: lights up in green (always off when using the SF2B-CB05-B)</td>
</tr>
<tr>
<td></td>
<td>When all beam channels of light curtain bottom are receiving light: lights up in green (always off when using the SF2B-CB05-B)</td>
</tr>
</tbody>
</table>

**Receiver**

<table>
<thead>
<tr>
<th>Description</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beam-axis alignment indicator (Red / Green) [RECEPTION]</td>
<td>When all beam channels of light curtain top are receiving light: lights up in red When sensor top end receives light: blinks in red When control outputs (OSSD 1, OSSD 2) are ON: lights up in green</td>
</tr>
<tr>
<td></td>
<td>When all beam channels of light curtain upper middle are receiving light: lights up in red When control outputs (OSSD 1, OSSD 2) are ON: lights up in green</td>
</tr>
<tr>
<td></td>
<td>When all beam channels of light curtain lower middle are receiving light: lights up in green (always off when using the SF2B-CB05-B)</td>
</tr>
<tr>
<td></td>
<td>When all beam channels of light curtain bottom are receiving light: lights up in green</td>
</tr>
</tbody>
</table>

Series and parallel mixed connection
• Up to a maximum of three sets can be connected in a mixture of series and parallel (for a total maximum number of 128 beam channels. However, the total number of beam channels for the SF2B-A4 is a maximum of 96 when two sets are connected, and 64 when three sets are connected) only when using the SF2B-CB05-B adapter cable (optional). For details, refer to the instruction manual.

---

Notes:
1) The threshold value where the control output changes from OFF to ON is applied as “100 % incident light intensity”.
2) The status “when light is interrupted” refers to the status that some obstacle is existed in the sensing area.
3) For details, refer to “Troubleshooting” and the instruction manual which is included with the unit.
4) The description given in [ ] is marked on the light curtain.
### PRECAUTIONS FOR PROPER USE

#### Wiring

Refer to the applicable regulations for the region where this light curtain is to be used when setting up the light curtain. In addition, make sure that all necessary measures are taken to prevent possible dangerous operating errors resulting from earth faults.

- Make sure to carry out the wiring in the power supply off condition.
- Verify that the supply voltage variation is within the rating.
- Make sure to perform the wiring in the power supply off condition.
- 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.

#### Sensing area

- Make sure to install this product such that any part of the human body must pass through its sensing area in order to reach the dangerous parts of the machinery. If the human body is not detected, there is a danger of serious injury or death.
- Do not use any reflective type or retroreflective type arrangement.
- Emitter and receiver that face each other should be from the same model No. (same beam axis pitch and number of beam channels) and aligned in the vertical direction. If units from different sets are connected together, it may cause blind spots in the sensing area, and death or serious injury may result.
- Furthermore, facing several receivers towards one emitter, or vice versa, could produce a non-sensing area or cause mutual interference, which may result in serious injury or death.

#### Correct mounting method

- Emitter
- Receiver
- Protective structure

#### Wrong mounting method

- Emitter
- Receiver

#### Safety distance

- Calculate the safety distance correctly, and always maintain a distance which is equal to or greater than the safety distance, between the sensing area of this light curtain and the dangerous parts of the machinery. (Please check the latest standards for the equation.) If the safety distance is miscalculated or if sufficient distance is not maintained, there is a danger of serious injury or death.
- Before designing the system, refer to the relevant standards of the region where this device is to be used and then install this device.

#### For use in Europe (EU) (as EN 999) (Also applicable to ISO 13855)

For intrusion direction perpendicular to the sensing area

**Equation 1:**

\[
S = K \times (T_s + T_c + TSF2B + Tbm) + Dpf
\]

- **S:** Safety distance (mm)
- **K:** Intrusion speed of operator’s body or objects (mm/sec.)
- **Tbm:** Additional halting time tolerance for the brake monitor (sec.)
- **Dpf:** Additional distance calculated from the size of the minimum sensing object of the light curtain (mm)

#### For use in the United States of America (as per ANSI B11.19)

**Equation 2:**

\[
S = K \times (T_s + T_c + TSF2B + Tbm) + Dpf
\]

- **S:** Safety distance (mm)
- **K:** Intrusion speed of operator’s body or objects (mm/sec.)
- **Tbm:** Additional halting time tolerance for the brake monitor (sec.)
- **Dpf:** Additional distance calculated from the size of the minimum sensing object of the light curtain (mm)
## PRECAUTIONS FOR PROPER USE

Refer to General precautions.

### Influence of reflective surfaces

Install the light curtain by considering the effect of nearby reflective surfaces, and take countermeasures such as painting, masking, or changing the material of the reflective surface, etc. Failure to do so may cause the light curtain not to detect, resulting in serious body injury or death.

- Keep the minimum distance given below, between the light curtain and a reflective surface.

### Troubleshooting

#### Emitter side

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>All indicators are off.</td>
<td>Power is not being supplied.</td>
<td>Check that the power supply capacity is sufficient. Connect the power supply correctly.</td>
</tr>
<tr>
<td></td>
<td>Supply voltage is out of the specified range.</td>
<td>Provide the supply voltage within the specified range.</td>
</tr>
<tr>
<td></td>
<td>Connector is not connected securely.</td>
<td>Connect the connector securely.</td>
</tr>
<tr>
<td></td>
<td><a href="#">Fault indicator (yellow) lights up or blinks.</a></td>
<td><a href="#">Digital error indicator</a> Total light curtain No. / total beam channel No. error</td>
</tr>
<tr>
<td></td>
<td></td>
<td><a href="#">Digital error indicator</a> External device monitoring error</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[Other than the above] Effect from noise / power supply or failure of internal circuit</td>
</tr>
</tbody>
</table>

#### Receiver side

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>All indicators are off.</td>
<td>Power is not being supplied.</td>
<td>Check that the power supply capacity is sufficient. Connect the power supply correctly.</td>
</tr>
<tr>
<td></td>
<td>Supply voltage is out of the specified range.</td>
<td>Set the supply voltage correctly.</td>
</tr>
<tr>
<td></td>
<td>Connector is not connected securely.</td>
<td>Connect the connector securely.</td>
</tr>
<tr>
<td></td>
<td><a href="#">Fault indicator (yellow) lights up or blinks.</a></td>
<td><a href="#">Digital error indicator</a> Total light curtain No. / total beam channel No. error</td>
</tr>
<tr>
<td></td>
<td></td>
<td><a href="#">Digital error indicator</a> External device monitoring error</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[Other than the above] Effect from noise / power supply or failure of internal circuit</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Connect the external device monitor input wire correctly. Replace the relay unit having appropriate response time.</td>
</tr>
</tbody>
</table>

#### Stable indicator lights up (Orange) [STB]

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>The beam channels of the emitter and the receiver are not correctly aligned.</td>
<td>The master / slave setting is different. When using the SF2B-CB05-B</td>
<td>Align the beam channels.</td>
</tr>
<tr>
<td></td>
<td>The beam channels of the emitter and the receiver are not correctly aligned.</td>
<td>Set the setting identically.</td>
</tr>
</tbody>
</table>

### Corner mirror

- Be sure to carry out maintenance while referring to the instruction manual for the SF4B/SF2B series of light curtains.
- Do not use if dirt, water, or oil, etc. is attached to the reflective surface of this product. Appropriate sensing range may not be maintained due to diffusion or refraction.
- Make sure that you have read the instruction manual for the corner mirror thoroughly before setting up the corner mirrors and light curtains, and follow the instructions given. If the equipment is not set up correctly or is not used correctly as stipulated in the instruction manual, incident light sensors may result in unexpected situations which may result in serious injury or death.
- Please download the instruction manuals from our website.
- Light curtain SF4B/SF2B series cannot be used as a retroreflective type. Avoid installing the light curtain as a retroreflective type when this product is applied.
- The mirror part of this product is made of glass. Note that if it is broken, the glass shards may fly apart.
### DIMENSIONS (Unit: mm in)

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

**SF2B-H96**

**SF2B-H88**

**SF2B-H48**

**SF2B-H40**

**SF2B-H28**

**SF2B-H24**

**SF2B-H16**

**Notes:**
1) The intermediate supporting bracket is provided as an accessory with this product. The number of accessories provided varies depending on the product.
2) An end cap (connector for series connection) is not provided for the SF2B-H8(SL)(<>) and SF2B-A4(SL)(<>).

**Assembly dimensions**

Mounting drawing for the light curtains using the standard mounting brackets **MS-SF2B-1** (optional) and the intermediate supporting brackets **MS-SF2B-2**.

<table>
<thead>
<tr>
<th>Model No.</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SF2B-H9(SL)(&lt;&gt;)</strong></td>
<td>188</td>
<td>207</td>
<td>223</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td><strong>SF2B-H12(SL)(&lt;&gt;)</strong></td>
<td>232</td>
<td>270</td>
<td>286</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td><strong>SF2B-H16(SL)(&lt;&gt;)</strong></td>
<td>312</td>
<td>352</td>
<td>366</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td><strong>SF2B-H20(SL)(&lt;&gt;)</strong></td>
<td>392</td>
<td>430</td>
<td>446</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td><strong>SF2B-A48(SL)(&lt;&gt;)</strong></td>
<td>522</td>
<td>560</td>
<td>576</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td><strong>SF2B-A44(SL)(&lt;&gt;)</strong></td>
<td>602</td>
<td>640</td>
<td>656</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td><strong>SF2B-A40(SL)(&lt;&gt;)</strong></td>
<td>682</td>
<td>720</td>
<td>736</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td><strong>SF2B-A36(SL)(&lt;&gt;)</strong></td>
<td>762</td>
<td>800</td>
<td>816</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td><strong>SF2B-A32(SL)(&lt;&gt;)</strong></td>
<td>842</td>
<td>880</td>
<td>896</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td><strong>SF2B-A28(SL)(&lt;&gt;)</strong></td>
<td>922</td>
<td>960</td>
<td>976</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td><strong>SF2B-A24(SL)(&lt;&gt;)</strong></td>
<td>1,002</td>
<td>1,040</td>
<td>1,056</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td><strong>SF2B-A20(SL)(&lt;&gt;)</strong></td>
<td>1,082</td>
<td>1,120</td>
<td>1,136</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td><strong>SF2B-A18(SL)(&lt;&gt;)</strong></td>
<td>1,162</td>
<td>1,200</td>
<td>1,216</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td><strong>SF2B-A16(SL)(&lt;&gt;)</strong></td>
<td>1,242</td>
<td>1,280</td>
<td>1,296</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td><strong>SF2B-A12(SL)(&lt;&gt;)</strong></td>
<td>1,322</td>
<td>1,360</td>
<td>1,376</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td><strong>SF2B-A10(SL)(&lt;&gt;)</strong></td>
<td>1,402</td>
<td>1,440</td>
<td>1,456</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td><strong>SF2B-A8(SL)(&lt;&gt;)</strong></td>
<td>1,482</td>
<td>1,520</td>
<td>1,536</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td><strong>SF2B-A6(SL)(&lt;&gt;)</strong></td>
<td>1,562</td>
<td>1,600</td>
<td>1,616</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td><strong>SF2B-A4(SL)(&lt;&gt;)</strong></td>
<td>1,642</td>
<td>1,680</td>
<td>1,696</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td><strong>SF2B-A2(SL)(&lt;&gt;)</strong></td>
<td>1,722</td>
<td>1,760</td>
<td>1,776</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td><strong>SF2B-A1(SL)(&lt;&gt;)</strong></td>
<td>1,802</td>
<td>1,840</td>
<td>1,856</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

**Model No.**

- **G**: 20
- **H**: 6
- **J (Note)**: 6

**SF2B-Hn**

**SF2B-An**

**Note:** The distance between the tip of the light curtain and the last beam axis of the SF2B-H8(SL)(<>) and SF2B-A4(SL)(<>) is 22 mm 0.866 in.
DIMENSIONS (Unit: mm in)

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

Assembly dimensions

Mounting drawing for the light curtains using the dead zoneless mounting brackets MS-SF2B-3 (optional) and the intermediate supporting brackets MS-SF2B-2.

Notes:
1) The MS-SF2B-2 intermediate supporting bracket is provided as an accessory with this product. The number of accessories provided varies depending on the product.
2) An end cap (connector for series connection) is not provided for the Light Curtain Type 2.
The CAD data in the dimensions can be downloaded from our website.

**DIMENSIONS (Unit: mm in)**

### RF-SFBH-8

**Model No.** RF-SFBH-8  
**A** 173  
**B** 183  
**C** 235  
**D** ___  
**E** ___  
**F** 209  
**Net weight** 810 g approx.

### RF-SFBH-12

**Model No.** RF-SFBH-12  
**A** 236  
**B** 246  
**C** 298  
**D** ___  
**E** ___  
**F** 251  
**Net weight** 820 g approx.

### RF-SFBH-16

**Model No.** RF-SFBH-16  
**A** 316  
**B** 326  
**C** 378  
**D** ___  
**E** ___  
**F** 352  
**Net weight** 1170 g approx.

### RF-SFBH-20

**Model No.** RF-SFBH-20  
**A** 396  
**B** 406  
**C** 458  
**D** ___  
**E** ___  
**F** 432  
**Net weight** 1370 g approx.

### RF-SFBH-24

**Model No.** RF-SFBH-24  
**A** 476  
**B** 486  
**C** 538  
**D** ___  
**E** ___  
**F** 512  
**Net weight** 1570 g approx.

### RF-SFBH-28

**Model No.** RF-SFBH-28  
**A** 556  
**B** 566  
**C** 618  
**D** ___  
**E** ___  
**F** 582  
**Net weight** 1770 g approx.

### RF-SFBH-32

**Model No.** RF-SFBH-32  
**A** 636  
**B** 646  
**C** 698  
**D** ___  
**E** ___  
**F** 672  
**Net weight** 1970 g approx.

### RF-SFBH-36

**Model No.** RF-SFBH-36  
**A** 716  
**B** 726  
**C** 778  
**D** ___  
**E** ___  
**F** 752  
**Net weight** 2170 g approx.

### RF-SFBH-40

**Model No.** RF-SFBH-40  
**A** 796  
**B** 806  
**C** 858  
**D** ___  
**E** ___  
**F** 832  
**Net weight** 2660 g approx.

### RF-SFBH-48

**Model No.** RF-SFBH-48  
**A** 956  
**B** 966  
**C** 1018  
**D** ___  
**E** ___  
**F** 992  
**Net weight** 3080 g approx.

### RF-SFBH-56

**Model No.** RF-SFBH-56  
**A** 1,116  
**B** 1,126  
**C** 1,178  
**D** ___  
**E** ___  
**F** 1,152  
**Net weight** 3460 g approx.

### RF-SFBH-64

**Model No.** RF-SFBH-64  
**A** 1,276  
**B** 1,286  
**C** 1,338  
**D** ___  
**E** ___  
**F** 1,392  
**Net weight** 3900 g approx.

### RF-SFBH-72

**Model No.** RF-SFBH-72  
**A** 1,436  
**B** 1,446  
**C** 1,498  
**D** ___  
**E** ___  
**F** 1,472  
**Net weight** 4550 g approx.

### RF-SFBH-80

**Model No.** RF-SFBH-80  
**A** 1,596  
**B** 1,606  
**C** 1,658  
**D** ___  
**E** ___  
**F** 1,632  
**Net weight** 4950 g approx.

### RF-SFBH-88

**Model No.** RF-SFBH-88  
**A** 1,756  
**B** 1,766  
**C** 1,818  
**D** ___  
**E** ___  
**F** 1,792  
**Net weight** 5350 g approx.

### RF-SFBH-96

**Model No.** RF-SFBH-96  
**A** 1,916  
**B** 1,926  
**C** 1,978  
**D** ___  
**E** ___  
**F** 1,952  
**Net weight** 5750 g approx.

---

**RF-SFBH-3**  
**MS-SF2B-1**<ref>MS-SF2B-1</ref>  
**<MS-SF2B-1(R)>**  
**<MS-SF2B-1(L)>**

**Side mounting**

**Rear mounting**

**Material:** Stainless steel (SUS304)  
*Four brackets (R type × 2 and L type × 2) per set.*  
*MS length 5 mm 0.197 in)* hexagon-socket-head bolts (eight bolts for light curtain mounting, eight bolts for beam axis aligned attached).
### DIMENSIONS (Unit: mm in)

**MS-SF2B-3**

**Main body**

- Material: Stainless steel (SUS304) + Die-cast zinc alloy
- Four bracket set

**L-shaped mounting**

- Center of rotation

**MS-SF2B-2**

**Intermediate supporting bracket (Accessory for light curtain)**

**<Rear mounting>**

- Material: Stainless steel (SUS304)
- Two main unit mounting brackets per set (for rear mounting and side mounting) (Note)

**<Side mounting>**

- Material: Stainless steel (SUS304)
- Two main unit mounting brackets per set (for rear mounting and side mounting) (Note)

**<For main unit mounting>**

- Material: Stainless steel (SUS304)

### Dead zoneless mounting bracket (optional)

**MS-SF2B-4**

**Adapter mounting bracket for SF1 / NA40 (Optional)**

- Material: Stainless steel (SUS304)
- Four bracket set

**Spacer for intermediate supporting bracket (Accessory)**

- The spacer for intermediate supporting bracket MS-SF2B-2 can be used as a spacer for eliminating the dead zone when mounting the light curtain laterally.

The adjustment range of the light curtain angle is up to ±10 degrees.

### Note

- The intermediate supporting bracket MS-SF2B-2 is enclosed with the following products. The quantity differs depending on the product as shown below:
  - 1 set: SF2B-Hs: Light curtain with 40 to 56 beam channels
  - 2 sets: SF2B-Hs: Light curtain with 64 to 80 beam channels
  - 3 sets: SF2B-Hs: Light curtain with 88 to 96 beam channels
Light Curtain Type 2 SF2B SERIES Ver.2

DIMENSIONS (Unit: mm in)

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

MS-SF2B-5
Adapter mounting bracket for SF2-A / SF2-N (Optional)

Rear mounting

Side mounting

Material: Stainless steel (SUS304)

Four brackets (R type × 2 and L type × 2) per set

Eight M3 (length 5 mm 0.197 in) hexagon-socket-head bolts (eight bolts for light curtain mounting, eight bolts for beam axis alignment) are attached.

MS-SF2B-6
Adapter mounting bracket for NA40 (Optional)

Rear mounting

Side mounting

Material: Stainless steel (SUS304)

Four brackets (R type × 2 and L type × 2) per set

Eight M3 (length 5 mm 0.197 in) hexagon-socket-head bolts are attached.
<table>
<thead>
<tr>
<th>Model No.</th>
<th>L</th>
</tr>
</thead>
<tbody>
<tr>
<td>SF2B-CCB3</td>
<td>3,000</td>
</tr>
<tr>
<td>SF2B-CCB7</td>
<td>7,000</td>
</tr>
<tr>
<td>SF2B-CCB10</td>
<td>10,000</td>
</tr>
<tr>
<td>SF2B-CCB15</td>
<td>15,000</td>
</tr>
</tbody>
</table>

---

**SF2B-CB**

**Bottom cap cable (Optional)**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>L</th>
</tr>
</thead>
<tbody>
<tr>
<td>SF2B-CB05 (A/B)</td>
<td>500 19.685</td>
</tr>
<tr>
<td>SF2B-CB5</td>
<td>5,000 196.850</td>
</tr>
<tr>
<td>SF2B-CB10</td>
<td>10,000 393.700</td>
</tr>
</tbody>
</table>

---

**DIMENSIONS (Unit: mm in)**

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

**MS-SF2B-7**

<For upper-right surface mounting>

<For upper-left surface mounting>

<For lower-right surface mounting>

<For lower-left surface mounting>

Material: Stainless steel (SUS304)

Four brackets (one of each type) per set

Eight M3 (length 5 mm 0.197 in) hexagon-socket-head bolts are attached.

---

**SF2B-CCB**

Bottom cap cable (Optional)

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**SF2B-CB**

Bottom cap cable (Optional)
**DIMENSIONS (Unit: mm in)**

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

### SF2B-CCL01 SF2B-CCL05
Cable for series connection (Optional)

<table>
<thead>
<tr>
<th>Model No.</th>
<th>L</th>
</tr>
</thead>
<tbody>
<tr>
<td>SF2B-CCL01</td>
<td>100 3.937</td>
</tr>
<tr>
<td>SF2B-CCL05</td>
<td>500 19.685</td>
</tr>
</tbody>
</table>

### SF-LAT-2B
Laser alignment tool (Optional)

### SF-IND-2
Large display unit for light curtain (Optional)

**Material:**
- Bracket: Cold rolled carbon steel (SPCC)(Black chromate)
- Enclosure: POM
- Cover: Polycarbonate