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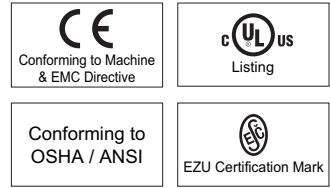
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SF4-AH SERIES

Related Information

- General terms and conditions..... P.1
- SF-AC P.588
- Glossary of terms..... P.983~
- General precautions P.986~



SUNX website <http://www.sunx.com>

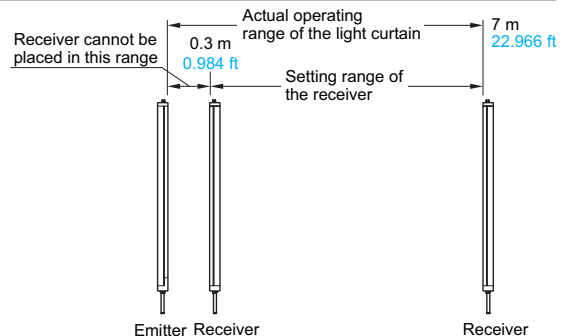
Compact size of 21 × 28 mm **0.827 × 1.102 in**
Type 4 light curtain

ORDER GUIDE

Light curtains Mating cable is not supplied with the light curtain. Please order it separately.

| Type | Appearance | Operating range (Note 1) | Model No. (Note 2) | | Number of beam channels | Protective height (mm in) (Note 3) |
|------------------------------|------------|----------------------------------|----------------------------|----------------------------|-------------------------|------------------------------------|
| | | | NPN output equivalent type | PNP output equivalent type | | |
| Normal case | | 0.3 to 7 m 0.984 to 22.966 ft | SF4-AH8-N | SF4-AH8 | 8 | 190 7.480 |
| | | | SF4-AH12-N | SF4-AH12 | 12 | 270 10.630 |
| | | | SF4-AH16-N | SF4-AH16 | 16 | 350 13.780 |
| | | | SF4-AH20-N | SF4-AH20 | 20 | 430 16.929 |
| | | | SF4-AH24-N | SF4-AH24 | 24 | 510 20.079 |
| | | | SF4-AH28-N | SF4-AH28 | 28 | 590 23.228 |
| | | | SF4-AH32-N | SF4-AH32 | 32 | 670 26.378 |
| | | | SF4-AH36-N | SF4-AH36 | 36 | 750 29.528 |
| | | | SF4-AH40-N | SF4-AH40 | 40 | 830 32.677 |
| | | | SF4-AH48-N | SF4-AH48 | 48 | 990 38.976 |
| | | | SF4-AH56-N | SF4-AH56 | 56 | 1,150 45.276 |
| | | | SF4-AH64-N | SF4-AH64 | 64 | 1,310 51.575 |
| | | | SF4-AH72-N | SF4-AH72 | 72 | 1,470 57.874 |
| | | | SF4-AH80-N | SF4-AH80 | 80 | 1,630 64.173 |
| | | | SF4-AH88-N | SF4-AH88 | 88 | 1,790 70.472 |
| | | | SF4-AH96-N | SF4-AH96 | 96 | 1,950 76.772 |
| With spatter protection hood | | 0.3 to 7 m 0.984 to 22.966 ft | — | SF4-AH8-H | 8 | 190 7.480 |
| | | | — | SF4-AH12-H | 12 | 270 10.630 |
| | | | — | SF4-AH16-H | 16 | 350 13.780 |
| | | | — | SF4-AH20-H | 20 | 430 16.929 |
| | | | — | SF4-AH24-H | 24 | 510 20.079 |
| | | | — | SF4-AH28-H | 28 | 590 23.228 |
| | | | — | SF4-AH32-H | 32 | 670 26.378 |
| | | | — | SF4-AH36-H | 36 | 750 29.528 |
| | | | — | SF4-AH40-H | 40 | 830 32.677 |
| | | | — | SF4-AH48-H | 48 | 990 38.976 |
| | | | — | SF4-AH56-H | 56 | 1,150 45.276 |
| | | | — | SF4-AH64-H | 64 | 1,310 51.575 |
| — | SF4-AH72-H | 72 | 1,470 57.874 | | | |
| — | SF4-AH80-H | 80 | 1,630 64.173 | | | |
| — | SF4-AH88-H | 88 | 1,790 70.472 | | | |
| — | SF4-AH96-H | 96 | 1,950 76.772 | | | |

- Notes: 1) The operating range is the possible setting distance between the emitter and the receiver.
The light curtain can detect an object less than 0.3 m 0.984 ft away.
- 2) The model No. with suffix "P" shown on the label affixed to the product is the emitter, "D" shown on the label is the receiver.
(e.g.) Emitter of SF4-AH8-N: SF4-AH8P-N
Receiver of SF4-AH8-N: SF4-AH8D-N
- 3) Refer to the "Definition of light curtain and area sensor sensing heights" (p.589) for the definition of the protective height.





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Mating cables Mating cable is not supplied with the light curtain. Please order it separately.

| Designation | Appearance | Model No. | Description |
|------------------------------------|------------|-------------------|--|
| Cable with connector on one end | | SF4A-CC3 | Length: 3 m 9.843 ft Net weight: 380 g approx. (two cables) These cables are used for wiring. 6-core shielded cable, with connector on one end, two cables per set |
| | | SF4A-CC7 | Length: 7 m 22.966 ft Net weight: 800 g approx. (two cables) Cable outer diameter: $\phi 6$ mm $\phi 0.236$ in Connector outer diameter: $\phi 14$ mm $\phi 0.551$ in max. Cable color: Gray (for emitter) Gray with black line (for receiver) |
| | | SF4A-CC10 | Length: 10 m 32.808 ft Net weight: 1,120 g approx. (two cables) Connector color: Gray (for emitter) Black (for receiver) The min. bending radius: R30 mm 1.181 in |
| Cable with connector on both ends | | SF4A-CCJ10 | Length: 10 m 32.808 ft Net weight: 1,160 g approx. (two cables) This cable is used for cable extension. Shielded cable, with connector on both ends, two cables per set Cable outer diameter: $\phi 6$ mm $\phi 0.236$ in Connector outer diameter: $\phi 14$ mm $\phi 0.551$ in max. Cable color: Gray (for emitter) Gray with black line (for receiver) Connector color: Gray (for emitter), Black (for receiver) The min. bending radius: R30 mm 1.181 in |
| Cable for series connection (Note) | | SF4A-CSL02 | Length: 200 mm 7.874 in Net weight: 70 g approx. (two cables) |
| | | SF4A-CSL05 | Length: 500 mm 19.685 in Net weight: 100 g approx. (two cables) |
| | | SF4A-CSL10 | Length: 1 m 3.281 ft Net weight: 160 g approx. (two cables) |
| | | SF4A-CSL30 | Length: 3 m 9.843 ft Net weight: 380 g approx. (two cables) Used to connect light curtains in series Shielded cable, with connector on both ends, two cables per set (common for emitter and receiver) Cable outer diameter: $\phi 6$ mm $\phi 0.236$ in Cable color: Gray (common for emitter and receiver) The min. bending radius: R30 mm 1.181 in |

Note: Note that the dimensions of the SF4-AH series will change when using the cable for series connection (SF4A-CSL□). Contact our office for further details.

Handy-controller

| Designation | Appearance | Model No. |
|------------------|------------|--------------|
| Handy-controller | | SF-HC |

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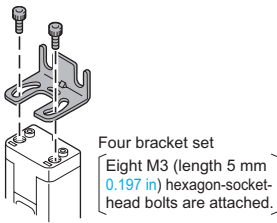
Spare parts (Accessories for light curtain)

| Designation | Model No. | Description | |
|---|-------------------|--|---|
| Rear mounting bracket | MS-SF2N-1 | Used to mount the light curtain on the rear surface (1 set for emitter and receiver) | |
| U-shaped rear mounting intermediate supporting bracket (Note) | MS-SF2N-2 | For SF4-AH□(-N) | Used to hold the light curtain at the intermediate position for protection against vibration (for rear surface mounting) (1 set for emitter and receiver) |
| | MS-SF4A-H2 | For SF4-AH□-H | |
| L-shaped intermediate supporting bracket (Note) | MS-SF2N-L | Used to install the U-shaped intermediate supporting bracket on the wall side, etc. (1 set for emitter and receiver) | |

Note: The number of sets required varies depending on the product. Refer to "SPECIFICATIONS" on p.573 for further details.

Rear mounting bracket

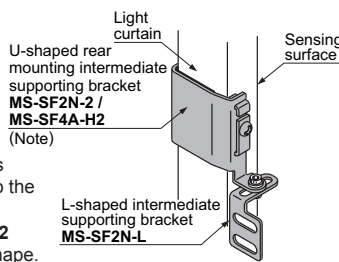
- **MS-SF2N-1**



U-shaped rear mounting intermediate supporting bracket
L-shaped intermediate supporting bracket

- **MS-SF2N-2**
- **MS-SF4A-H2**
- **MS-SF2N-L**

Note: The right figure is only applicable to the **MS-SF2N-2**. The **MS-SF4A-H2** has a different shape.



- **MS-SF2N-2 / MS-SF4A-H2**
Set of 2 pcs. each of U-shaped rear supporting bracket and retaining plate

- **MS-SF2N-L**
Two L-shaped bracket set
Two M3 (length 10 mm 0.394 in) pan head screws, two M4 (length 10 mm 0.394 in) hexagon-socket-head bolts and two nuts are attached.

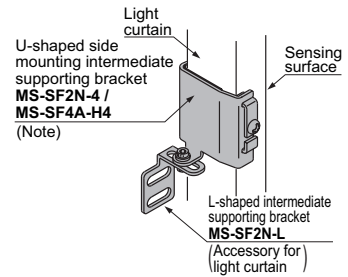
OPTIONS

| Designation | Model No. | Description | |
|---|-------------------|---|---|
| Large display unit for light curtain | SF-IND-2 | With the large display unit put on the light curtain, the operation is easily observable from various directions. • Supply voltage: 24 V DC ± 15 % • Current consumption: 12 mA or less | |
| Side mounting bracket | MS-SF2N-3 | Used for side-mounting of light curtains (four bracket set for emitter and receiver) | |
| U-shaped side mounting intermediate supporting bracket (Note 1) | MS-SF2N-4 | For SF4-AH□(-N) | Used to hold the light curtain at the intermediate position for protection against vibration (for side mounting) (1 set for emitter and receiver) |
| | MS-SF4A-H4 | For SF4-AH□-H | |
| Center sensor mounting bracket (Note 2) | MS-SF2N-5 | Used for one-point rear mounting Convenient for mounting on an aluminum frame (four bracket set for emitter and receiver) | |
| Laser alignment tool (Note 3) | SF-LAT-2N | Easy to align the beam axis with the visible laser beam | |

- Notes: 1) The number of sets required varies depending on the product. Contact our office for further details.
2) Multiple beam channel sensors requiring the intermediate supporting bracket (36 beam channels or more) cannot be mounted on an aluminum frame with the center sensor mounting bracket.
3) Refer to "SF4B series" on p.494 / p.513 for further details about the laser alignment tool.

U-shaped side mounting intermediate supporting bracket

- **MS-SF2N-4**
- **MS-SF4A-H4**

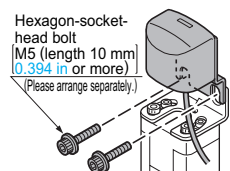


Note: The above figure is only applicable to the **MS-SF2N-4**. The **MS-SF4A-H4** has a different shape.

- **MS-SF2N-4 / MS-SF4A-H4**
Set of 2 pcs. each of U-shaped side supporting bracket and retaining plate

Large display unit for light curtain

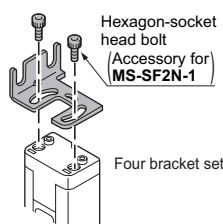
- **SF-IND-2**



Attaches to upper edge of light curtain. Tighten together the mounting bracket provided with the light curtain and the mounting bracket of **SF-IND-2**.

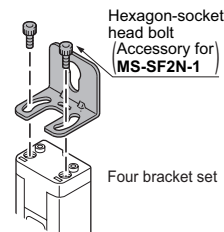
Side mounting bracket

- **MS-SF2N-3**



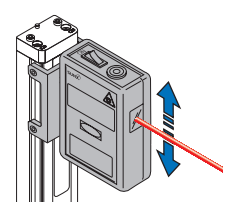
Center sensor mounting bracket

- **MS-SF2N-5**



Laser alignment tool

- **SF-LAT-2N**

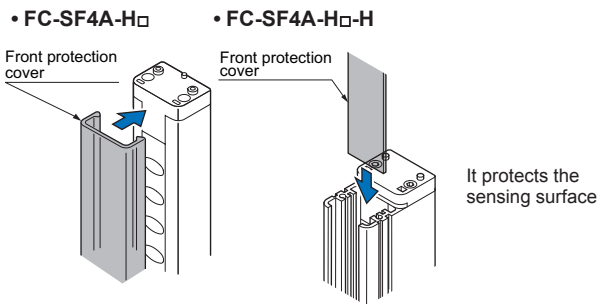


OPTIONS

| Applicable beam channels | | 8 beam channels | 12 beam channels | 16 beam channels | 20 beam channels | 24 beam channels | 28 beam channels | 32 beam channels | 36 beam channels | 40 beam channels | 48 beam channels | 56 beam channels | 64 beam channels | 72 beam channels | 80 beam channels | 88 beam channels | 96 beam channels |
|--------------------------|-----------------|------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Front protection cover | For SF4-AH□(-N) | Model No. FC-SF4A-H8 | FC-SF4A-H12 | FC-SF4A-H16 | FC-SF4A-H20 | FC-SF4A-H24 | FC-SF4A-H28 | FC-SF4A-H32 | FC-SF4A-H36 | FC-SF4A-H40 | FC-SF4A-H48 | FC-SF4A-H56 | FC-SF4A-H64 | FC-SF4A-H72 | FC-SF4A-H80 | FC-SF4A-H88 | FC-SF4A-H96 |
| | For SF4-AH□-H | Model No. FC-SF4A-H8-H | FC-SF4A-H12-H | FC-SF4A-H16-H | FC-SF4A-H20-H | FC-SF4A-H24-H | FC-SF4A-H28-H | FC-SF4A-H32-H | FC-SF4A-H36-H | FC-SF4A-H40-H | FC-SF4A-H48-H | FC-SF4A-H56-H | FC-SF4A-H64-H | FC-SF4A-H72-H | FC-SF4A-H80-H | FC-SF4A-H88-H | FC-SF4A-H96-H |
| Slit mask | For SF4-AH□(-N) | Model No. OS-SF4A-H8 | OS-SF4A-H12 | OS-SF4A-H16 | OS-SF4A-H20 | OS-SF4A-H24 | OS-SF4A-H28 | OS-SF4A-H32 | OS-SF4A-H36 | OS-SF4A-H40 | OS-SF4A-H48 | OS-SF4A-H56 | OS-SF4A-H64 | OS-SF4A-H72 | OS-SF4A-H80 | OS-SF4A-H88 | OS-SF4A-H96 |
| | For SF4-AH□-H | Model No. OS-SF4A-H8-H | OS-SF4A-H12-H | OS-SF4A-H16-H | OS-SF4A-H20-H | OS-SF4A-H24-H | OS-SF4A-H28-H | OS-SF4A-H32-H | OS-SF4A-H36-H | OS-SF4A-H40-H | OS-SF4A-H48-H | OS-SF4A-H56-H | OS-SF4A-H64-H | OS-SF4A-H72-H | OS-SF4A-H80-H | OS-SF4A-H88-H | OS-SF4A-H96-H |
| Front protection unit | Model No. | MC-SF4AH-8 | MC-SF4AH-12 | MC-SF4AH-16 | MC-SF4AH-20 | MC-SF4AH-24 | MC-SF4AH-28 | MC-SF4AH-32 | MC-SF4AH-36 | MC-SF4AH-40 | MC-SF4AH-48 | MC-SF4AH-56 | MC-SF4AH-64 | MC-SF4AH-72 | MC-SF4AH-80 | MC-SF4AH-88 | MC-SF4AH-96 |

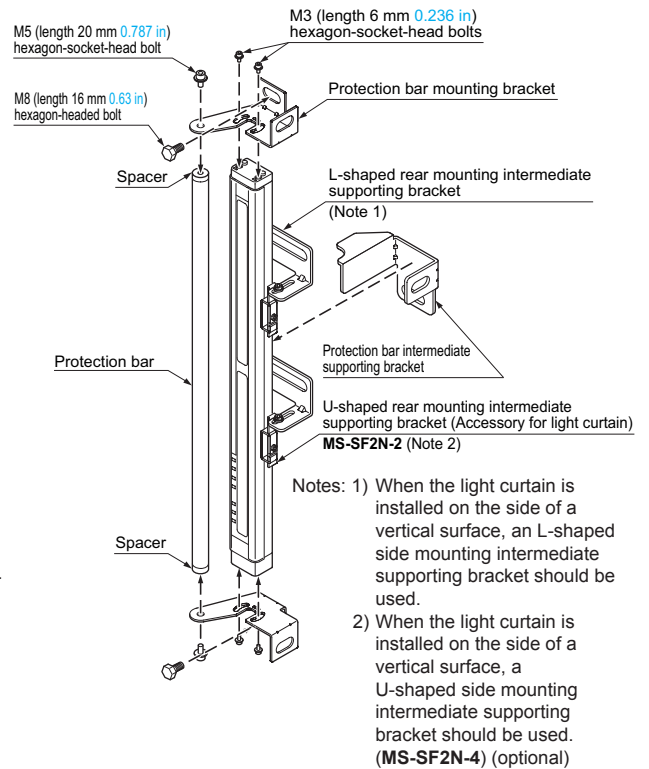
Note: The model Nos. given above denote a single unit, not a pair of units. 2 pcs. (2 sets) are required to mount the emitter / receiver.

Front protection cover



Front protection unit

• MC-SF4AH-□
It protects sensing surface from damage due to striking of an object.

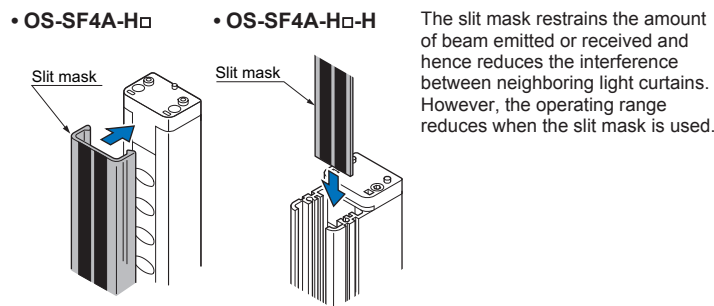


Operating range

<FC-SF4A-H□ / FC-SF4A-H□-H>

- Front protection cover on the emitter side: 0.3 to 7 m **0.984 to 22.966 ft**
- Front protection cover on the receiver side: 0.3 to 6 m **0.984 to 19.685 ft**
- Front protection cover on both sides: 0.3 to 5 m **0.984 to 16.404 ft**

Slit mask



Operating range

<OS-SF4A-H□>

- Slit on the emitter side: 0.3 to 4 m **0.984 to 13.123 ft**
- Slit on the receiver side: 0.3 to 3 m **0.984 to 9.843 ft**
- Slit on both sides: 0.3 to 2 m **0.984 to 6.561 ft**

<OS-SF4A-H□-H>

- Slit on the emitter side: 0.3 to 3 m **0.984 to 9.843 ft**
- Slit on the receiver side: 0.3 to 3 m **0.984 to 9.843 ft**
- Slit on both sides: 0.3 to 1.5 m **0.984 to 4.921 ft**

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Definition of Sensing Heights

SPECIFICATIONSThe CAD data in the dimensions can be downloaded from the SUNX website: <http://www.sunx.com>**Common specifications**

| Item | Type | NPN output equivalent | | PNP output equivalent | |
|--------------------------------------|--|-----------------------|---|-----------------------|--|
| | Model No. | SF4-AH□-N | | SF4-AH□(-H) | |
| Applicable standards | EN 954-1 (Category 4), EN 61496-1 (Type 4), IEC 61496-1/2 (Type 4), UL 61496-1/2 (Type 4), UL 1998 | | | | |
| Operating range | 0.3 to 7 m 0.984 to 22.966 ft | | | | |
| Detection capability | ø30 mm ø1.181 in opaque object (Note 2) | | | | |
| Effective aperture angle | ±2.5° or less [for an operating range exceeding 3 m 9.843 ft (conforming to IEC 61496-2 / UL 61496-2)] | | | | |
| Supply voltage | 24 V DC ± 10 % Ripple P-P 10 % or less | | | | |
| Control outputs (OSSD1, OSSD2) | Semiconductor output (NPN output equivalent) 2 outputs | | Semiconductor output (PNP output equivalent) 2 outputs | | |
| | <ul style="list-style-type: none"> • Maximum sink current: 200 mA • Applied voltage: Same as supply voltage (between control output and 0 V) • Residual voltage: 2 V or less (at 200 mA sink current) | | <ul style="list-style-type: none"> • Maximum source current: 200 mA • Applied voltage: Same as supply voltage (between control output and +V) • Residual voltage: 2.5 V or less (at 200 mA source current) | | |
| Operation mode | 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) | | | | |
| Response time | In normal operation: OFF response 11 ms or less, ON response 70 ms or less | | | | |
| | In the blanking function set condition: OFF response 15 ms or less, ON response 70 ms or less | | | | |
| Series connection | In normal operation: OFF response 20 ms or less, ON response 70 ms or less | | | | |
| | In the blanking function set condition: OFF response 20 ms or less, ON response 70 ms or less | | | | |
| Auxiliary output (Non-safety output) | NPN open-collector transistor | | PNP open-collector transistor | | |
| | <ul style="list-style-type: none"> • Maximum sink current: 60 mA • Applied voltage: Same as supply voltage (between auxiliary output and 0 V) • Residual voltage: 2 V or less (at 60 mA sink current) | | <ul style="list-style-type: none"> • Maximum source current: 60 mA • Applied voltage: Same as supply voltage (between auxiliary output and +V) • Residual voltage: 2.5 V or less (at 60 mA source current) | | |
| Operation mode | OFF when control outputs are ON, ON when control outputs are OFF (It is possible to use the handy-controller to switch the mode to ON when control outputs are ON and OFF when control outputs are OFF.) | | | | |
| Interference prevention function | Incorporated (In case of series connection: 3 sets max., Max. beam channels 192 beam channels) | | | | |
| Test input (emission halt) function | Incorporated | | | | |
| Test input (emission halt input) | Emission: 0 to +1.5 V (source current: 2 mA or less) Emission halt: Open, or +9 V to Vs (Note 3) | | Emission: +9 V to Vs (sink current: 2 mA or less)(Note 3) Emission halt: Open, or 0 to +1.5 V | | |
| Degree of protection | IP65 (IEC), (Refer to p.984 for details of standards) | | | | |
| 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 | | | | |
| Emitting element | Infrared LED (Peak emission wavelength: 870 nm 0.034 mil) | | | | |
| Material | Enclosure: Aluminium, Front case: Polycarbonate, Lens: Polycarbonate, Cap: Polycarbonate and ABS | | | | |
| Dimensions | W28 × H (protective height + 27) × D21 mm | | W28 × H (protective height + 27) × D21 mm (SF4-AH□-H: D41 mm) | | |
| | W1.102 × H (protective height + 1.063) × D0.827 in | | W1.102 × H (protective height + 1.063) × D0.827 in (SF4-AH□-H: D1.614 in) | | |
| Accessories | MS-SF2N-1 (Rear sensor mounting bracket): 1 set for emitter and receiver MS-SF2N-2 (U-shaped rear mounting intermediate supporting bracket, MS-SF4A-H2 for "-H" type): (Note 4) MS-SF2N-L (L-shaped intermediate supporting bracket): (Note 4), SF4-AH-TR (Test rod): 1 pc. | | | | |

- Notes: 1) Where measurement conditions have not been specified precisely, the conditions used were an ambient temperature of +20 °C +68 °F.
2) In this light curtain, the floating blanking function can be set by using the Handy-controller (**SF-HC**)(optional). When the floating blanking function is used, the size of the min. sensing object is changed. For details on the floating blanking function, refer to **SF4B** series on p.484 / p.506.
3) Vs is the same value as the voltage of the used power supply to be used.
4) **MS-SF2N-2 / MS-SF4A-H2** (U-shaped rear mounting intermediate supporting bracket) and **MS-SF2N-L** (L-shaped intermediate supporting bracket) are attached with the following light curtains.
The number of attached U-shaped rear mounting intermediate supporting bracket and L-shaped intermediate supporting bracket are different depending on the light curtain as follows.
SF4-AH36(-N/H), SF4-AH40(-N/H): 1 set, **SF4-AH48(-N/H)**: 2 sets, **SF4-AH56(-N/H), SF4-AH64(-N/H), SF4-AH72(-N/H)**: 3 sets
SF4-AH80(-N/H): 4 sets, **SF4-AH88(-N/H), SF4-AH96(-N/H)**: 5 sets

PRECAUTIONS FOR PROPER USE

Refer to p.986~ for general precautions.



- Do not utilize this light curtain in "PSDI Mode", in which the light curtain is utilized as an activator for machinery.
- 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.

- This catalog is a guide to select a suitable product. Be sure to read the instruction manual attached to the product prior to its use.