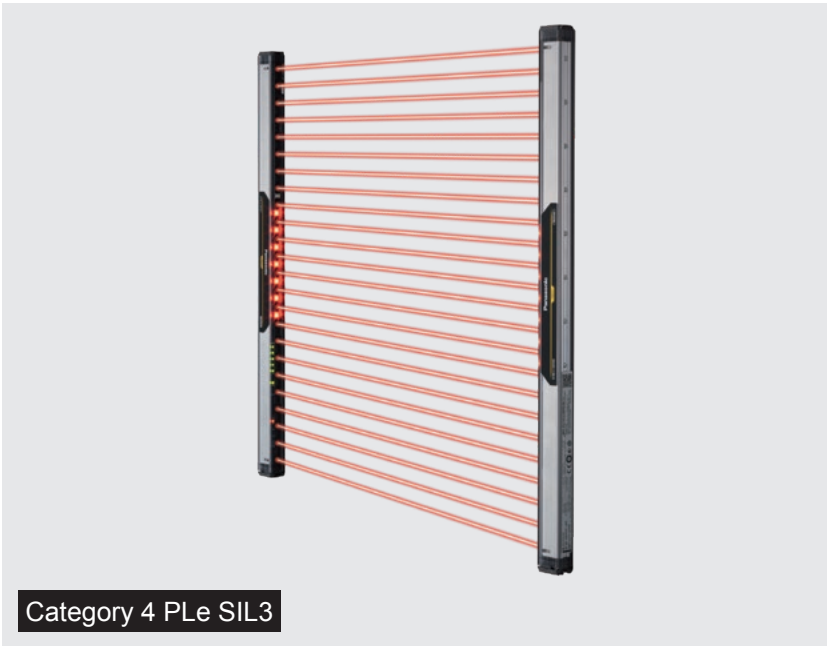
Panasonic
INDUSTRY

Type 4

Compact Safety Light Curtain

SF4B-C SERIES



Category 4 PLe SIL3

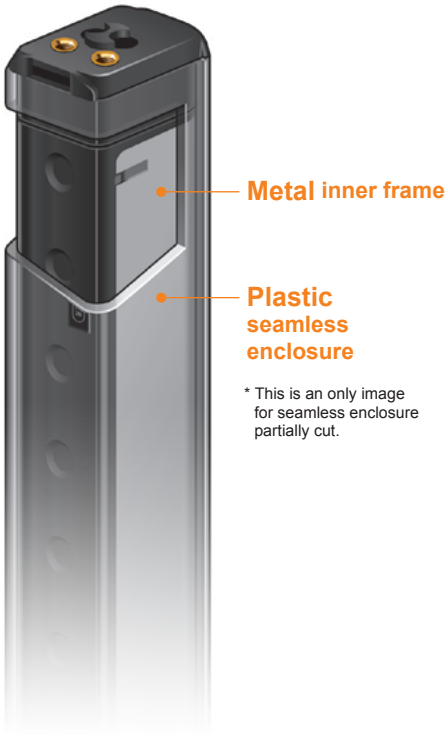
The control category differs depending on the configuration and wiring of the external circuit.

2023.8

* For the latest information, please visit our company website.

Plastic × metal

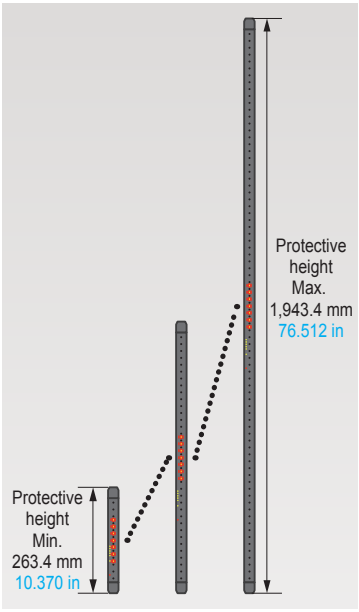
The **SF4B-C** series features a proprietary double structure of a “plastic body” with a “metal inner frame” which lightens the weight while maintaining the durability.



* This is an only image for seamless enclosure partially cut.

Maximum protective height of 1,943.4 mm 76.512 in

Despite its compact, plastic body, the **SF4B-C** series features a metal inner frame that increases toughness and also keeps its enclosure not to curve.
Protective heights range from 263.4 mm to 1,943.4 mm 10.370 in to 76.512 in.



45% lighter* for easy installation in high places and when mounting long models

Thanks to its plastic body, the **SF4B-C** series is 45 % lighter* than previous models with aluminum enclosures. This helps to reduce the overall weight of the equipment during transport and when shipping it overseas.

* Comparing **SF4B-H80<V2>** with **SF4B-H80CA-J05**



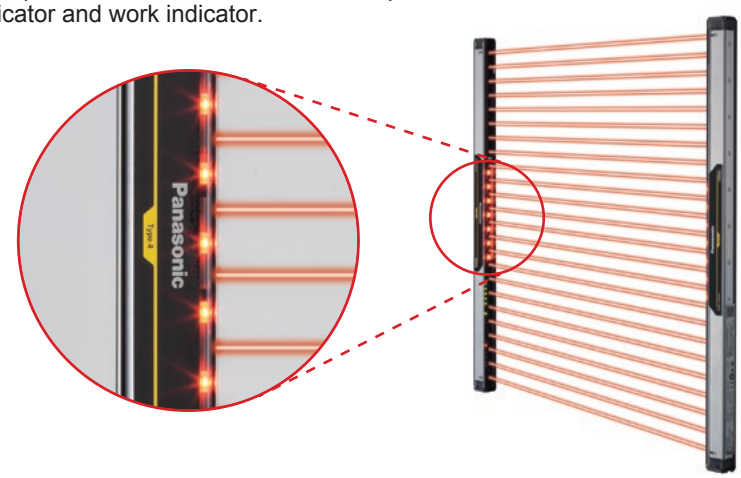
Large multi-purpose indicator

SF4B-□CA-J05

The **SF4B-C** series is equipped with the large multi-purpose indicator at the center of the unit. The indicator shows the presence of the safety light curtain, helping to prevent unintentional beam interruption. The indicator can be used in a variety of applications such as a muting indicator and work indicator.

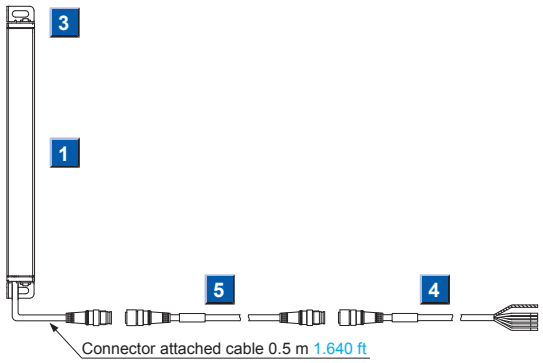
Exceptional visibility with wide angle

The large multi-purpose indicator shines brightly through the plastic body to ensure exceptional visibility.

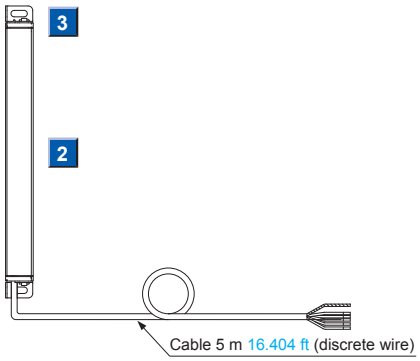


PRODUCT CONFIGURATION

Pigtailed type (with muting function)
(with 0.5 m 1.640 ft connector attached cable)

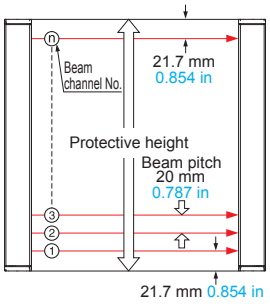
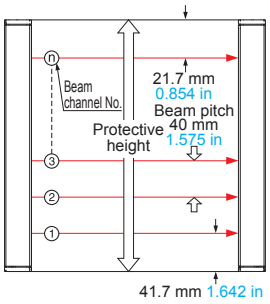


Cable type
(with 5 m 16.404 ft cable)

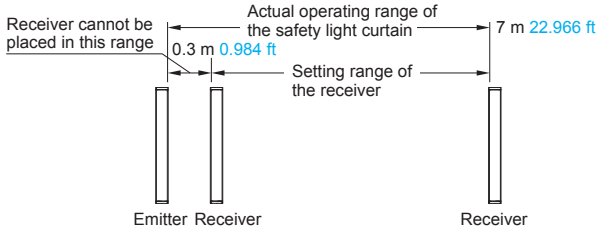


ORDER GUIDE

1 2 Safety light curtains

Type		Appearance	Operating range (Note 1)	Model No. (Note 2) 1 Pigtailed type (with muting function)	Model No. (Note 2) 2 Cable type	Number of beam channels	Protective height
Hand protection type	Min. sensing object ø25 mm ø0.984 in (20 mm 0.787 in beam pitch)		0.3 to 7 m 0.984 to 22.966 ft	SF4B-H12CA-J05	SF4B-H12C	12	263.4 mm 10.370 in
				SF4B-H16CA-J05	SF4B-H16C	16	343.4 mm 13.520 in
				SF4B-H20CA-J05	SF4B-H20C	20	423.4 mm 16.669 in
				SF4B-H24CA-J05	SF4B-H24C	24	503.4 mm 19.819 in
				SF4B-H28CA-J05	SF4B-H28C	28	583.4 mm 22.969 in
				SF4B-H32CA-J05	SF4B-H32C	32	663.4 mm 26.118 in
				SF4B-H36CA-J05	SF4B-H36C	36	743.4 mm 29.268 in
				SF4B-H40CA-J05	SF4B-H40C	40	823.4 mm 32.417 in
				SF4B-H48CA-J05	SF4B-H48C	48	983.4 mm 38.717 in
				SF4B-H56CA-J05	SF4B-H56C	56	1,143.4 mm 45.016 in
				SF4B-H64CA-J05	SF4B-H64C	64	1,303.4 mm 51.315 in
				SF4B-H72CA-J05	SF4B-H72C	72	1,463.4 mm 57.614 in
				SF4B-H80CA-J05	SF4B-H80C	80	1,623.4 mm 63.913 in
				SF4B-H88CA-J05	SF4B-H88C	88	1,783.4 mm 70.212 in
				SF4B-H96CA-J05	SF4B-H96C	96	1,943.4 mm 76.512 in
Arm / Foot protection type	Min. sensing object ø45 mm ø1.772 in (40 mm 1.575 in beam pitch)		0.3 to 7 m 0.984 to 22.966 ft	SF4B-A8CA-J05	SF4B-A8C	8	343.4 mm 13.520 in
				SF4B-A12CA-J05	SF4B-A12C	12	503.4 mm 19.819 in
				SF4B-A16CA-J05	SF4B-A16C	16	663.4 mm 26.118 in
				SF4B-A20CA-J05	SF4B-A20C	20	823.4 mm 32.417 in
				SF4B-A24CA-J05	SF4B-A24C	24	983.4 mm 38.717 in
				SF4B-A28CA-J05	SF4B-A28C	28	1,143.4 mm 45.016 in
				SF4B-A32CA-J05	SF4B-A32C	32	1,303.4 mm 51.315 in
				SF4B-A36CA-J05	SF4B-A36C	36	1,463.4 mm 57.614 in
				SF4B-A40CA-J05	SF4B-A40C	40	1,623.4 mm 63.913 in
				SF4B-A44CA-J05	SF4B-A44C	44	1,783.4 mm 70.212 in
				SF4B-A48CA-J05	SF4B-A48C	48	1,943.4 mm 76.512 in

Notes: 1) The operating range is the distance possible to set between the emitter and the receiver.

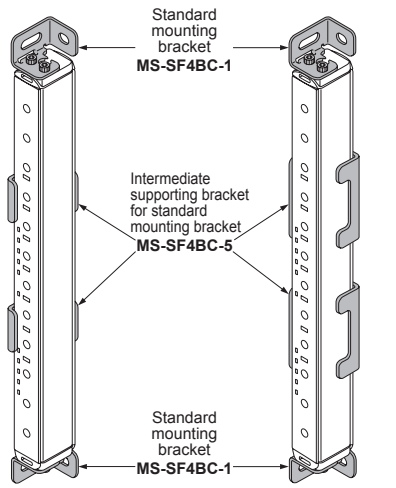


2) The model No. with **"E"** shown on the label affixed to the product is the emitter, **"D"** shown on the label is the receiver.

ORDER GUIDE

Standard mounting bracket and intermediate supporting bracket for standard mounting bracket

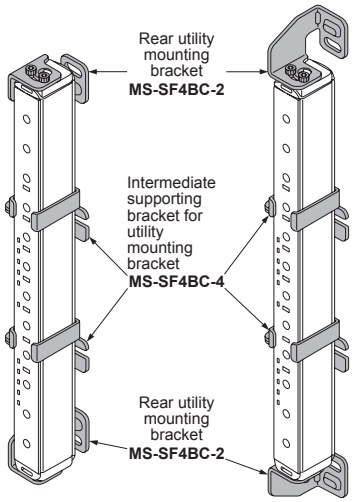
〈In case of side mounting〉 〈In case of side mounting〉



- **MS-SF4BC-1**
  Four brackets (two each R and L type) per set
  〔Eight M3 (length: 5 mm 0.197 in) hexagon-socket head bolts and four M5 flat washers are attached.〕
- **MS-SF4BC-5**
  Two pcs. for rear mounting, two pcs. for side mounting

Rear utility mounting bracket and intermediate supporting bracket for utility mounting bracket

〈Space-saving mounting (Note)〉 〈Standard mounting〉

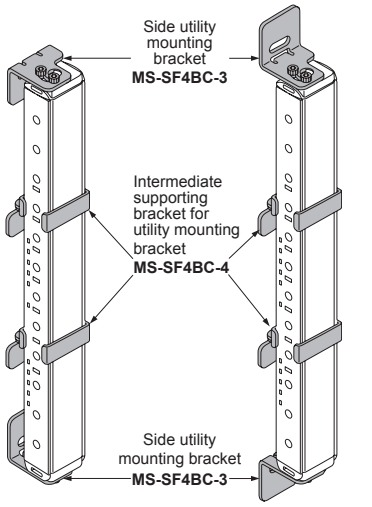


- **MS-SF4BC-2**
  Four brackets (two each R and L type) per set
  〔Eight M3 (length: 6 mm 0.236 in) hexagon-socket head bolts and four M5 flat washers are attached.〕
- **MS-SF4BC-4**
  Two brackets per set
  〔M5 flat washers, two pcs. assembled M3 (length: 6 mm 0.236 in) hexagon-socket head bolts for rear mounting, two pcs. attachments for side mounting〕

Note: For space-saving mounting, use an M5 hexagon head bolt.

Side utility mounting bracket and intermediate supporting bracket for utility mounting bracket

〈Space-saving mounting (Note)〉 〈Standard mounting〉

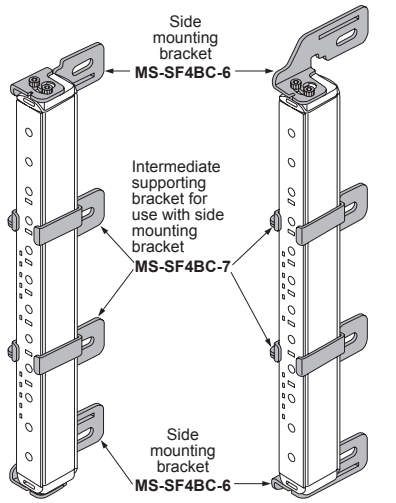


- **MS-SF4BC-3**
  Four brackets (two each R and L type) per set
  〔Eight M3 (length: 6 mm 0.236 in) hexagon-socket head bolts and four M5 flat washers are attached.〕
- **MS-SF4BC-4**
  Two brackets per set
  〔M5 flat washers, two pcs. assembled M3 (length: 6 mm 0.236 in) hexagon-socket head bolts for rear mounting, two pcs. attachments for side mounting〕

Note: For space-saving mounting, use an M5 hexagon head bolt.

Side mounting bracket and intermediate supporting bracket for use with side mounting bracket

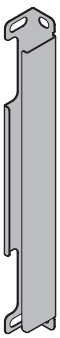
〈Space-saving mounting〉 〈Standard mounting〉



- **MS-SF4BC-6**
  Four brackets (two each R and L type) per set
  〔Eight M3 (length: 6 mm 0.236 in) hexagon-socket head bolts and four M5 flat washers are attached.〕
- **MS-SF4BC-7**
  Two brackets per set
  〔Two pcs. M5 flat washers, two pcs. assembled M3 (length: 6 mm 0.236 in) hexagon-socket head bolts for side mounting〕

OPTIONS

Metal protection case

Designation / Applicable beam channels: Hand protection type	Arm / Foot protection type	Appearance	Metal protection case (2 pcs. per set) (Note) Model No.
12	———		**MS-SF4BCH-12**
16	8		**MS-SF4BCH-16**
20	———		**MS-SF4BCH-20**
24	12		**MS-SF4BCH-24**
28	———		**MS-SF4BCH-28**
32	16		**MS-SF4BCH-32**
36	———		**MS-SF4BCH-36**
40	20		**MS-SF4BCH-40**
48	24		**MS-SF4BCH-48**
56	28		**MS-SF4BCH-56**
64	32		**MS-SF4BCH-64**
72	36		**MS-SF4BCH-72**
80	40		**MS-SF4BCH-80**
88	44		**MS-SF4BCH-88**
96	48		**MS-SF4BCH-96**

Note: In the case of using a metal protection case **MS-SF4BCH-□** (optional), make sure to assemble it with a standard mounting bracket **MS-SF4BC-1** (optional).

Others

Designation	Model No.	Description
Test rod ø45	**SF4B-TR45**	Min. sensing object for regular checking (ø45 mm ø1.772 in), for arm / foot protection type (min. sensing object ø45 mm ø1.772 in)

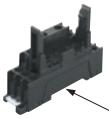
●Recommended safety relay

SF relay, slim type





SF relay, slim type
SFS3-L-DC24V (AG1S132)
SFS4-L-DC24V (AG1S142)



DIN terminal block
SFS4-SFD (AG1S847)[4-poles type]
SFS6-SFD (AG1S867)[6-poles type]

Note: Please contact our sales office for details on the recommended products.

Item \ Type	With LED indicator	
Model No.	SFS3-L-DC24V	SFS4-L-DC24V
Part No.	AG1S132	AG1S142
Contact arrangement	3a1b	4a2b
Rated nominal switching capacity	6 A / 250 V AC, 6 A / 30 V DC	
Min. switching capacity	1 mA / 5 V DC	
Coil rating	15 mA / 24 V DC	20.8 mA / 24 V DC
Rated power consumption	360 mW	500 mW
Operation time	20 ms or less	
Release time	20 ms or less	
Ambient temperature	–40 to +85 °C –40 to +185 °F (Humidity: 5 to 85 % RH)	
Applicable certifications	UL/c-UL, TÜV, Korea S-mark	

Safety control unit

Creating safety circuits is easier than ever.

SF-C21



Safety control unit
SF-C21

SPECIFICATIONS

Safety light curtain common specifications

Item \ Type		Pigtailed type (with muting function)		Cable type	
		Min. sensing object ø25 mm ø0.984 in (20 mm 0.787 in beam pitch)	Min. sensing object ø45 mm ø1.772 in (40 mm 1.575 in beam pitch)	Min. sensing object ø25 mm ø0.984 in (20 mm 0.787 in beam pitch)	Min. sensing object ø45 mm ø1.772 in (40 mm 1.575 in beam pitch)
Model No.		**SF4B-H□CA-J05**	**SF4B-A□CA-J05**	**SF4B-H□C**	**SF4B-A□C**
Applicable standards	International standard	IEC 61496-1/2 (Type 4), ISO 13849-1 (Category 4, PLe), IEC 61508-1 to 7 (SIL3)			
	Japan	JIS B 9704-1/2 (Type 4), JIS B 9705-1 (Category 4), JIS C 0508 (SIL3)			
	Europe (Note 2)	EN 61496-1 (Type 4), EN ISO 13849-1 (Category 4, PLe), EN 61508-1 to 7 (SIL3), EN 55011, EN 50178, EN 61000-6-2			
	North America (Note 3)	ANSI/UL 61496-1/2 (Type 4), ANSI/UL 508, CAN/CSA 61496-1/2 (Type 4), CAN/CSA C22.2 No.14, OSHA 1910.212, OSHA 1910.217(C), ANSI B11.1 to B11.19, ANSI/RIA 15.06			
	South Korea (S-Mark)	S1-G-35-2005, S2-W-11-2003			
Applicable regulations and certifications		CE Marking (Machinery Directive, EMC Directive, RoHS Directive), UKCA Marking [Supply of Machinery (Safety) Regulations, EMC Regulations, RoHS Regulations], TÜV SÜD certification, TÜV SÜD NRTL certification			
Operating range (Note 4)		0.3 to 7 m 0.984 to 22.966 ft			
Beam pitch		20 mm 0.787 in	40 mm 1.575 in	20 mm 0.787 in	40 mm 1.575 in
Min. sensing object (Note 5)		ø25 mm ø0.984 in opaque object	ø45 mm ø1.772 in opaque object	ø25 mm ø0.984 in opaque object	ø45 mm ø1.772 in opaque object
Effective aperture angle		±2.5° or less [for an operating range exceeding 3 m 9.843 ft (conforming to IEC 61496-2 / ANSI/UL 61496-2)]			
Supply voltage		24 V DC ±10 % Ripple P-P 10 % or less			
Control outputs (OSSD 1, OSSD 2)		PNP open-collector transistor / NPN open-collector transistor (switching method) <For PNP output> • Maximum source current: 200 mA • Applied voltage: Same as supply voltage (between the control output and +V) • Residual voltage: 2.5 V or less (source current 200 mA, when using 20 m 65.617 ft length cable) • Leakage current: 0.1 mA or less (Including power supply OFF condition) • Maximum load capacity: 0.22 µF (No load to maximum output current) • Load wiring resistance: 3 Ω or less		<For NPN output> • Maximum sink current: 200 mA • Applied voltage: Same as supply voltage (between the control output and 0 V) • Residual voltage: 2.5 V or less (sink current 200 mA, when using 20 m 65.617 ft length cable) • Leakage current: 0.1 mA or less (Including power supply OFF condition) • Maximum load capacity: 0.22 µF (No load to maximum output current) • Load wiring resistance: 3 Ω or less	
	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 safety light curtain or the synchronization signal) (Note 6, 7)			
	Protection circuit	Incorporated			
Response time		OFF response: 14 ms or less, ON response: 80 to 90 ms			
Auxiliary output (Non-safety output)		PNP open-collector transistor / NPN open-collector transistor (switching method) <For PNP output> • Maximum source current: 60 mA • Applied voltage: Same as supply voltage (between the auxiliary output and +V) • Residual voltage: 2.5 V or less (source current 60 mA, when using 20 m 65.617 ft length cable)		<For NPN output> • Maximum sink current: 60 mA • Applied voltage: Same as supply voltage (between the auxiliary output and 0 V) • Residual voltage: 2.5 V or less (sink current 60 mA, when using 20 m 65.617 ft length cable)	
	Operation mode	OFF when control outputs are ON, ON when control outputs are OFF [Factory setting, operating mode can be changed using the **SFB-HC** (optional) handy-controller.]			
	Protection circuit	Incorporated			
Muting auxiliary output		NPN open-collector transistor • Maximum sink current: 100 mA • Applied voltage: Same as supply voltage (between the muting auxiliary output and 0 V) • Residual voltage: 2.5 V or less (sink current 100 mA, when using 20 m 65.617 ft length cable)		———	
	Operation mode	When muting auxiliary output: ON			
	Protection circuit	Incorporated			
ELCA function		Incorporated (reducing mutual interference automatically)			
Emission halt function		Incorporated			
Interlock function		Incorporated [Manual reset / Auto reset (Note 8)]			
External device monitoring function		Incorporated			
Override function		Incorporated		———	
Muting function		Incorporated		———	
Large multi-purpose indicator function		Incorporated		———	
Optional functions (Note 9)		Muting setting changing, override setting changing, fixed blanking, floating blanking, light emitting amount control, auxiliary output switching, protecting, interlock setting changing, external relay monitor setting changing		Fixed blanking, floating blanking, light emitting amount control, auxiliary output switching, protecting, interlock setting changing, external relay monitor setting changing	
Pollution degree		3			
Operating altitude		2,000 m 6,561.68 ft or less (Note 10)			
Environmental resistance	Degree of protection	IP65 (IEC)			
	Ambient temperature	–10 to +55 °C +14 to +131 °F (No dew condensation or icing allowed), Storage: –25 to +60 °C –3 to +140 °F			
	Ambient humidity	30 to 85 % RH, Storage: 30 to 85 % RH			
	Ambient illuminance	Incandescent light: 3,500 ℓx or less at the light-receiving face			
	Dielectric strength voltage / Insulation resistance	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			
	Vibration resistance / Shock resistance	10 to 55 Hz frequency, 0.75 mm 0.030 in amplitude in X, Y and Z directions for two hours each / 300 m/s² acceleration (30 G approx.) in X, Y and Z directions for three times each			

Notes: 1) Where measurement conditions have not been specified precisely, the conditions used were an ambient temperature of +20 °C +68 °F.
2) Regarding EU Machinery Directive, a Notified Body, TÜV SÜD, has certified with the type examination certificate.
3) The product has been safety-certified in accordance with UL, ANSI, CSA, and other standards by TÜV SÜD America, a nationally recognized safety laboratory (NRTL) that has been approved by the Occupational Safety and Health Administration (OSHA) as defined by 29 CFR 1910.7
4) The operating range is the possible setting distance between the emitter and the receiver.
5) In case the blanking function is valid, the operation mode is changed.
6) During muting, control output will not turn off even if the beams are interrupted.
7) When the blanking function is enabled, the operating mode will change.
8) The manual reset and automatic reset are possible to be switched depending on the wiring status.
9) In case of using optional function, the handy-controller **SFB-HC** (optional) is required.
10) Do not use or store in an environment pressurized to atmospheric pressure or higher at an altitude of 0 m.

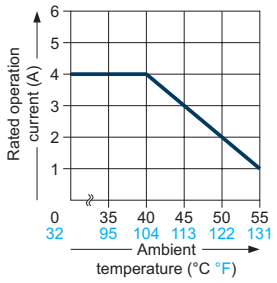
SPECIFICATIONS

Control unit

Item \ Model No.		SF-C13
Connectable safety light curtains		Safety light curtains manufactured by Panasonic Industry
Applicable standards		EN 61496-1 (Type 4), EN 55011, EN ISO 13849-1 (Category 4, PLe), IEC 61496-1 (Type 4), ISO 13849-1 (Category 4, PLe), JIS B 9704-1 (Type 4), JIS B 9705-1 (Category 4), ANSI/UL 61496-1 (Type 4), UL 1998 (Class 2)
Applicable regulations and certifications		CE Marking (Machinery Directive, EMC Directive, RoHS Directive), UKCA Marking [Supply of Machinery (Safety) Regulations, EMC Regulations, RoHS Regulations], UL/c-UL Listing certification, TÜV SÜD certification, Korea S-mark
Control category		ISO 13849-1 (EN ISO 13849-1, JIS B 9705-1) compliance up to Category 4, PLe standards
Supply voltage		24 V DC ±10 % Ripple P-P 10 % or less
Current consumption		100 mA or less (without safety light curtain)
Fuse (rating)		Built-in electronic fuse, Triggering current: 0.5 A or more, Reset after power down
Safety output		NO contact × 3 (13-14, 23-24, 33-34)
	Utilization category	AC-15, DC-13 (IEC 60947-5-1)
	Rated operation voltage (Ue) / Rated operation current (Ie)	30 V DC / 4 A, 230 V AC / 4 A, resistive load (For inductive load, during contact protection) Min. applicable load: 10 mA (at 24 V DC) (Note 2)
	Contact material / contacts	AgSnO, self cleaning, positively driven
	Contact resistance	100 mΩ or less (initial value)
	Contact protection fuse rating	4 A (slow blow)
	Mechanical lifetime	10,000,000 times or more (open/close frequency of 180 times/min) (Note 3)
	Electrical lifetime	100,000 times or more (open/close frequency of 20 times/min, 230 V AC, 3 A, using resistance load) (Note 3)
Pick-up delay (Auto reset/Manual reset)		80 ms or less / 90 ms or less
Response time		10 ms or less
Auxiliary output		Safety relay contact (NC contact) × 1 (41-42) (Related to safety output)
	Rated operation voltage/current	24 V DC / 2 A, Min. applicable load: 10 mA (at 24 V DC)
	Contact protection fuse rating	2 A (slow blow)
Semiconductor auxiliary output (AUX)		PNP open-collector transistor • Maximum source current: 60 mA • Applied voltage: Same as supply voltage (between the semiconductor auxiliary output and +V) • Residual voltage: 2.3 V or less (at source current 60 mA) • Leakage current: 2 mA or less
	Output operation	ON when the safety light curtain is interrupted
Excess voltage category		II
Indicators	Power supply (Ui)	Green LED (lights up when the power is ON)
	Safety output [OUT]	Green LED (lights up when enabling contacts are closed)
	Interlock (INTER_LOCK)	Yellow LED (lights up when enabling contacts are opened)
	Fault (FAULT)	Yellow LED (blinks when fault occurs)
External relay monitor function		Incorporated
Trailing edge function		Incorporated
Polarity selection function (Note 4)		Incorporated (Cable connection allows selection of plus/minus ground) Minus ground: Correspond to PNP output safety light curtain Plus ground: Correspond to NPN output safety light curtain
Pollution degree		2
Environmental resistance	Protection	Enclosure: IP40, Terminal: IP20
	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	Resistance/malfunction 10 to 55 Hz frequency, 0.35 mm 0.014 in amplitude in X, Y, and Z directions for twenty times each
Connection terminal		Spring-cage terminal
Enclosure material		ABS
Weight		Net weight: 200 g approx.

Notes: 1) Where measurement conditions have not been specified precisely, the conditions used were an ambient temperature of +20 °C +68 °F.
2) If several **SF-C13** units are being used in line together, leave a space of 5 mm 0.197 in or more between each unit.
If the units are touching each other, reduce the rated operating current for safety output in accordance with the ambient operating temperature as shown in the graphs at right.
3) Relay switching lifetime will vary depending on factors such as the type of load, the switching frequency, and ambient conditions.
4) Please switch the sliding switch to the PNP side for minus ground and to the NPN side for plus ground.

〈 Dilating when SF-C13 units are mounted close together 〉



I/O CIRCUIT AND WIRING DIAGRAMS

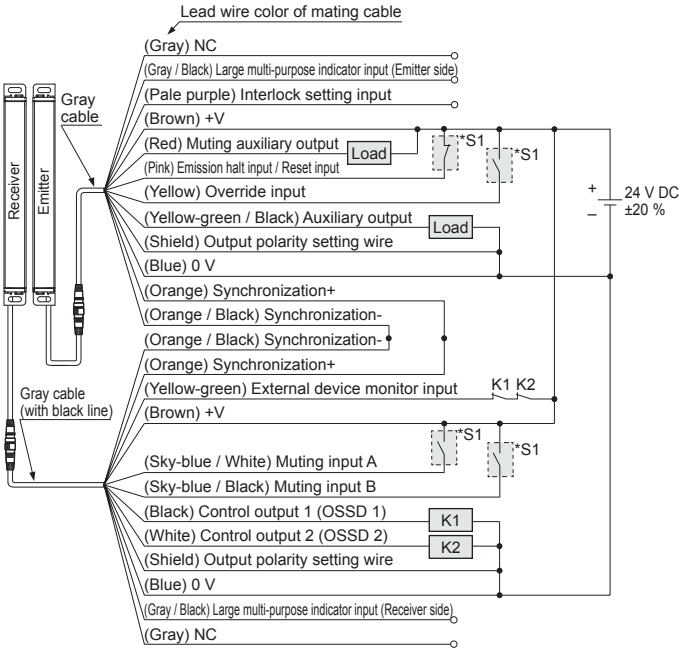
SF4B-□CA-J05

Pigtailed type (with muting function)

Connection examples

Muting control components: Interlock function “disabled (automatic reset)”, external device monitoring function “enabled”

<In case of using I/O circuit for PNP output>



K1, K2: External device (Forced guided relay or magnetic contactor)

*S1

Switch S1

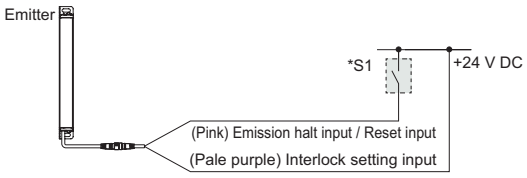
- Emission halt input / Reset input
  For automatic reset Vs to Vs – 2.5 V (sink current 5 mA or less): Emission (Note)
  Open: Emission halt
  For manual reset Vs to Vs – 2.5 V (sink current 5 mA or less): Emission halt (Note)
  Open: Emission
- Muting input A / B, Override input
  Vs to Vs – 2.5 V (sink current 5 mA or less): Valid (Note), Open: Invalid

Note: Vs is the applying supply voltage.

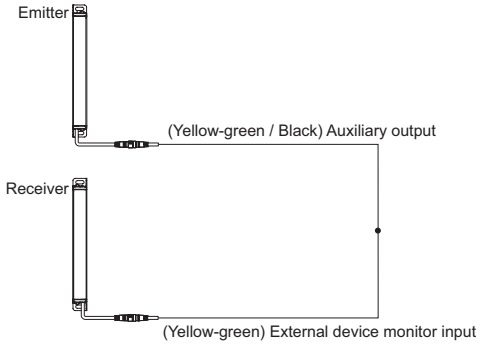
The diagram at left shows the configuration when using PNP output, interlock function “disabled (automatic reset)” and external device monitoring function “enabled”.

In case of setting the interlock function to “enabled (manual reset)”

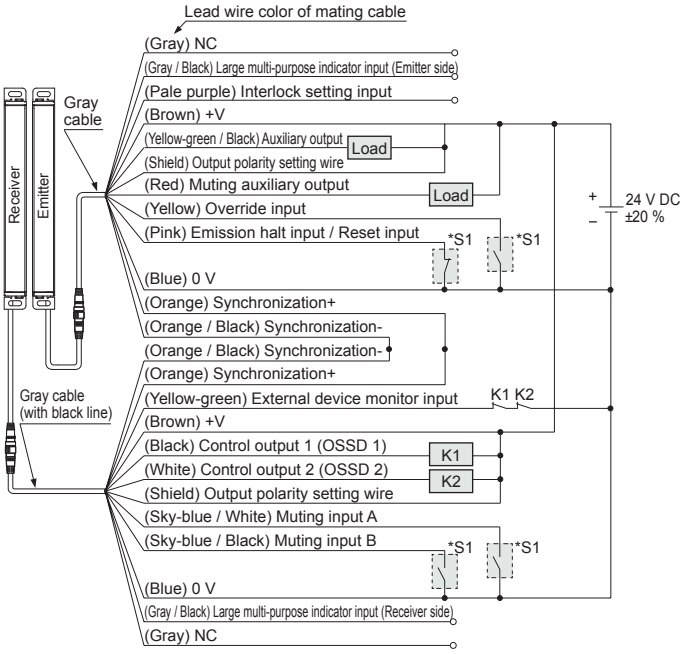
- When the interlock function is set to “Enable (manual reset),” the override function cannot be used.



In case of setting the external device monitoring function to “disabled”



<In case of using I/O circuit for NPN output>



K1, K2: External device (Forced guided relay or magnetic contactor)

*S1

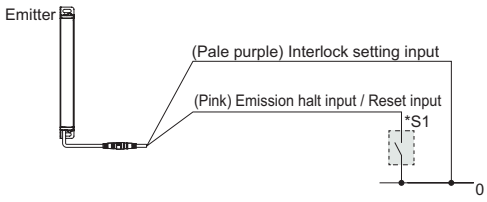
Switch S1

- Emission halt input / Reset input
  For automatic reset 0 to +1.5 V (source current 5 mA or less): Emission, Open: Emission halt
  For manual reset 0 to +1.5 V (source current 5 mA or less): Emission halt, Open: Emission
- Muting input A / B, Override input
  0 to + 1.5 V (source current 5 mA or less): Valid, Open: Invalid

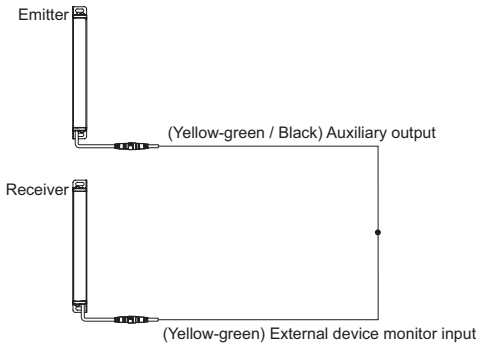
The diagram at left shows the configuration when using NPN output, interlock function “disabled (automatic reset)” and external device monitoring function “enabled”.

In case of setting the interlock function to “enabled (manual reset)”

- When the interlock function is set to “Enable (manual reset),” the override function cannot be used.



In case of setting the external device monitoring function to “disabled”



I/O CIRCUIT AND WIRING DIAGRAMS

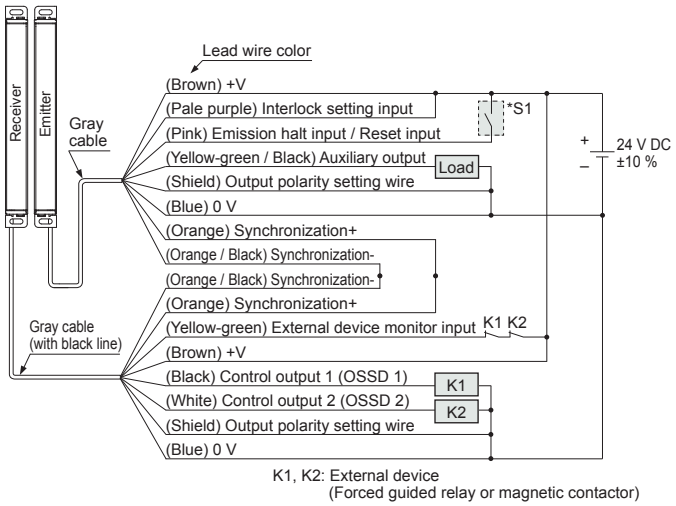
SF4B-□C

Cable type

Connection examples

Interlock function “enabled (manual reset)”, external device monitoring function “enabled”

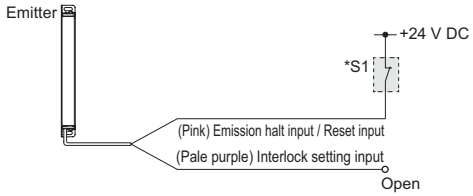
<In case of using I/O circuit for PNP output>



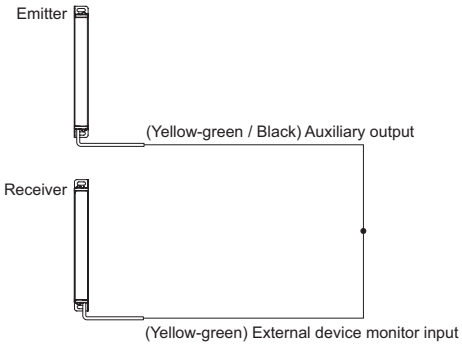
K1, K2: External device
(Forced guided relay or magnetic contactor)

The diagram at left shows the configuration when using PNP output, interlock function “enabled (manual reset)” and external device monitoring function “enabled”.

In case of setting the interlock function to “disabled (automatic reset)”



In case of setting the external device monitoring function to “disabled”

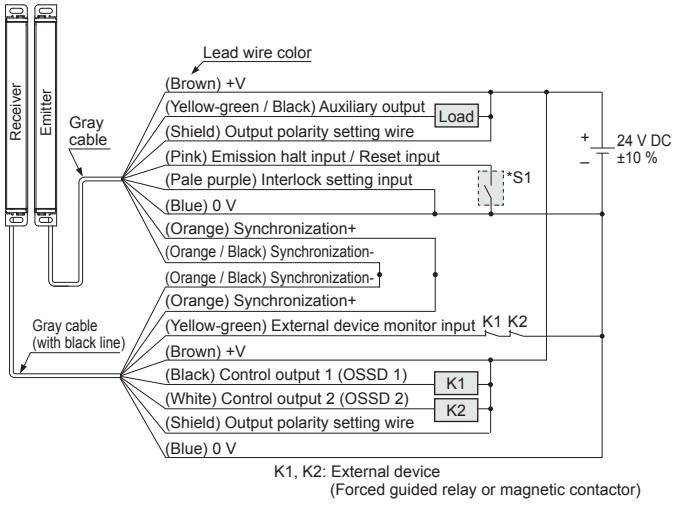


*S1

Switch S1
- Emission halt input / Reset input
  For manual reset
  Vs to Vs – 2.5 V (sink current 5 mA or less): Emission halt (Note)
  Open: Emission
  For automatic reset
  Vs to Vs – 2.5 V (sink current 5 mA or less): Emission (Note)
  Open: Emission halt
- Interlock setting input
  Vs to Vs – 2.5 V (sink current 5 mA or less): Valid (Note)
  Open: Invalid

Note: Vs is the applying supply voltage.

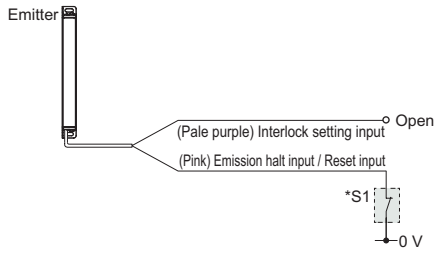
<In case of using I/O circuit for NPN output>



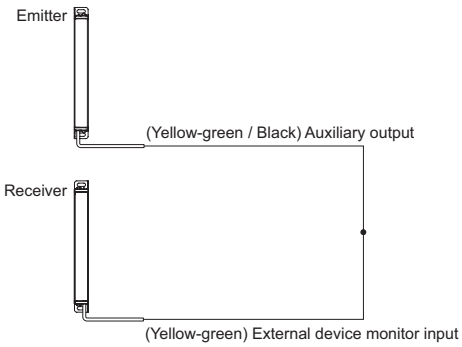
K1, K2: External device
(Forced guided relay or magnetic contactor)

The diagram at left shows the configuration when using NPN output, interlock function “enabled (manual reset)” and external device monitoring function “enabled”.

In case of setting the interlock function to “disabled (automatic reset)”



In case of setting the external device monitoring function to “disabled”



*S1

Switch S1
- Emission halt input / Reset input
  For manual reset
  0 to +1.5 V (source current 5 mA or less): Emission halt
  Open: Emission
  For automatic reset
  0 to +1.5 V (source current 5 mA or less): Emission
  Open: Emission halt
- Interlock setting input
  0 to +1.5 V (source current 5 mA or less): Valid, Open: Invalid

PRECAUTIONS FOR PROPER USE

Refer to the instruction manual for details.
The instruction manual can be downloaded from our website.

Wiring

Refer to the applicable regulations for the region where this device is to be used when setting up the device. 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.
- If power is supplied from a commercial switching regulator, ensure that the frame ground (F.G.) terminal of the power supply is connected to an actual ground.
- In case noise generating equipment (switching regulator, inverter motor, etc.) is used in the vicinity of this sensor, connect the frame ground (F.G.) terminal of the equipment to an actual ground.
- Do not run the wires together with high-voltage lines or power lines or put them in the same raceway. This can cause malfunction due to induction.

Others

- This device has been developed / produced for industrial use only.
- Do not use this device with mobile equipment such as an automated guided vehicle (AGV).
- Do not use during the initial transient time (2 sec.) after the power supply is switched on.
- Avoid dust, dirt and steam.
- Take care that the safety light curtain does not come in direct contact with water, oil, grease, or organic solvents, such as, thinner, etc.
- Take care that the safety light curtain is not directly exposed to fluorescent light from a rapid-starter lamp or a high frequency lighting device, as it may affect the sensing performance.

- When this device is used in the “PSDI mode”, an appropriate control circuit must be configured between this device and the machinery. For details, be sure to refer to the standards or regulations applicable in each region or country.

- This catalog is a guide to select a suitable product. Be sure to read instruction manual prior to its use.
- Both emitter and receiver are adjusted before shipment, please apply both emitter and receiver with the same serial No. The serial No. is indicated on the plates of both emitter and receiver. (Indicated under model No.)

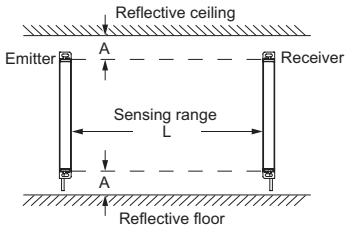
- Make sure to carry out the test run before regular operation.
- Do not use this product with machinery that cannot be stopped immediately during the operating cycle by means of an emergency stop system.

Influence of reflective surfaces

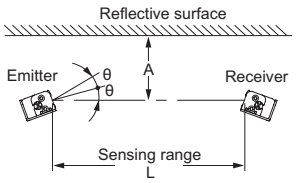
Install the safety light curtain by considering the effect of nearby reflective surfaces, and take countermeasures such as painting, masking, or changing the material of the reflective surface, etc. Failure to do so may cause the safety light curtain not to detect, resulting in serious body injury or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

- Install this device at a distance of at least A (m) (given below) away from reflective surfaces such as metal walls, floors, ceilings, workpiece, covers, panels or glass surfaces.

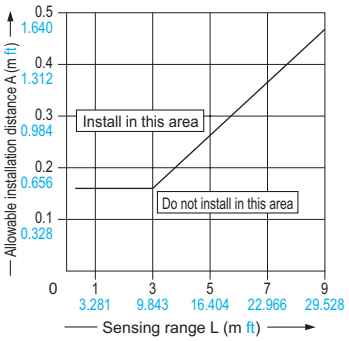
Side view



Top view



Distance between emitter and receiver (Setting distance L)	Allowable installation distance A
0.3 to 3 m 0.984 to 9.843 ft	0.16 m 0.525 ft
3 to 7 m 9.843 to 22.966 ft	L/2 × tan2θ = L/2 × 0.105 (m) 0.344 (ft) (θ = 3°)



Note: The effective aperture angle for this device is ±2.5° or less (when L > 3 m 9.843 ft) as required by IEC 61496-2, ANSI/UL 61496-2. However, install this device away from reflective surfaces considering an effective aperture angle of ±3° to take care of beam misalignment, etc. during installation.

Handy-controller

This device enables to set each function using the handy-controller **SFB-HC** (optional). Among the functions, the contents related to the safety distance such as the size of the minimum sensing object and response time are varied depending on the setting condition. When setting each function, re-calculate the safety distance, and make enough space larger than the calculated safety distance. Failure to do so might cause the accident that the device cannot stop quickly before reaching the dangerous area of the machinery, resulting in the serious injury or death.

- Refer to the instruction manual of the handy-controller for details of the function settings for using handy-controller **SFB-HC** (optional).

DIMENSIONS (Unit: mm in)

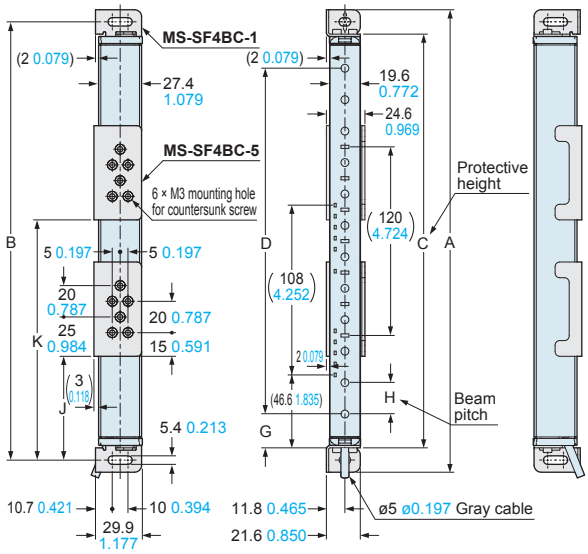
The CAD data can be downloaded from our website.

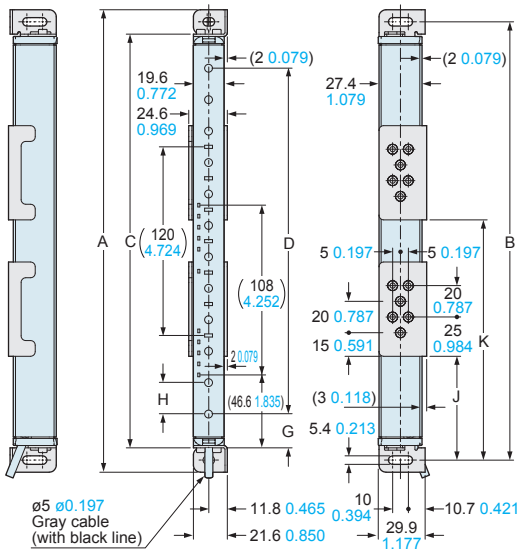
SF4B-□CA-J05 SF4B-□C

Safety light curtain

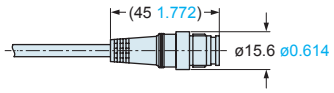
Assembly dimensions

The figure depicts side mounting using the standard mounting bracket **MS-SF4BC-1** (optional) and the intermediate supporting bracket for standard mounting bracket **MS-SF4BC-5** (optional).





<Connector of the pigtailed type (with muting function) SF4B-□CA-J05>



Model No.		A	B	C	D		J	K
					SF4B-H□C(A-J05)	SF4B-A□C(A-J05)		
SF4B-H12C(A-J05)	———	294.4 11.591	279 10.984	263.4 10.370	220 8.661	—	—	—
SF4B-H16C(A-J05)	SF4B-A8C(A-J05)	374.4 14.740	359 14.134	343.4 13.520	300 11.811	280 11.024	—	—
SF4B-H20C(A-J05)	———	454.4 17.890	439 17.283	423.4 16.669	380 14.961	—	—	—
SF4B-H24C(A-J05)	SF4B-A12C(A-J05)	534.4 21.039	519 20.433	503.4 19.819	460 18.110	440 17.323	—	—
SF4B-H28C(A-J05)	———	614.4 24.189	599 23.583	583.4 22.969	540 21.260	—	—	—
SF4B-H32C(A-J05)	SF4B-A16C(A-J05)	694.4 27.339	679 26.732	663.4 26.118	620 24.409	600 23.622	—	—
SF4B-H36C(A-J05)	———	774.4 30.488	759 29.882	743.4 29.268	700 27.559	—	—	—
SF4B-H40C(A-J05)	SF4B-A20C(A-J05)	854.4 33.638	839 33.031	823.4 32.417	780 30.709	760 29.921	390 15.354	—
SF4B-H48C(A-J05)	SF4B-A24C(A-J05)	1,014.4 39.937	999 39.331	983.4 38.717	940 37.008	920 36.220	470 18.504	—
SF4B-H56C(A-J05)	SF4B-A28C(A-J05)	1,174.4 46.236	1,159 45.630	1,143.4 45.016	1,100 43.307	1,080 42.520	550 21.654	—
SF4B-H64C(A-J05)	SF4B-A32C(A-J05)	1,334.4 52.535	1,319 51.929	1,303.4 51.315	1,260 49.606	1,240 48.819	410 16.142	849 33.425
SF4B-H72C(A-J05)	SF4B-A36C(A-J05)	1,494.4 58.835	1,479 58.228	1,463.4 57.614	1,420 55.906	1,400 55.118	463 18.228	956 37.638
SF4B-H80C(A-J05)	SF4B-A40C(A-J05)	1,654.4 65.134	1,639 64.528	1,623.4 63.913	1,580 62.205	1,560 61.417	516 20.315	1,063 41.850
SF4B-H88C(A-J05)	SF4B-A44C(A-J05)	1,814.4 71.433	1,799 70.827	1,783.4 70.212	1,740 68.504	1,720 67.716	569 22.402	1,170 46.063
SF4B-H96C(A-J05)	SF4B-A48C(A-J05)	1,974.4 77.732	1,959 77.126	1,943.4 76.512	1,900 74.803	1,880 74.016	622 24.488	1,277 50.275

Model No.	G	H
SF4B-H□C(A-J05)	21.7 0.854	20 0.787
SF4B-A□C(A-J05)	41.7 1.642	40 1.575

DIMENSIONS (Unit: mm in)

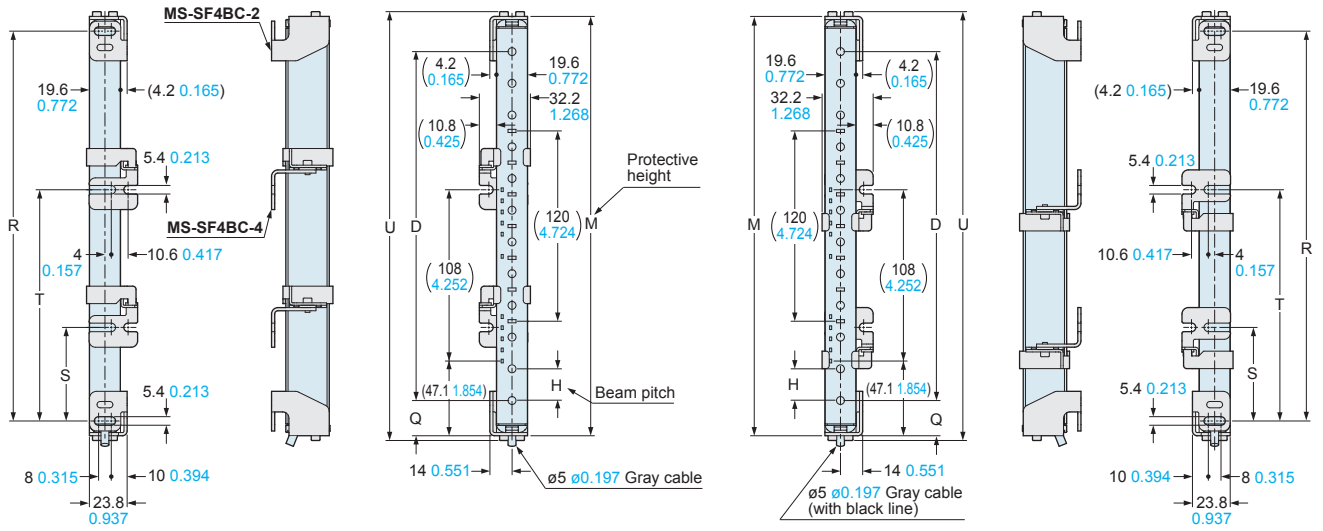
The CAD data can be downloaded from our website.

SF4B-□CA-J05 SF4B-□C

Safety light curtain

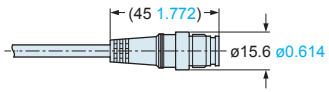
Assembly dimensions

The figure depicts space-saving mounting using the rear utility mounting bracket **MS-SF4BC-2** (optional) and the intermediate supporting bracket for utility mounting bracket **MS-SF4BC-4** (optional).



Emitter **Receiver**

<Connector of the pigtailed type (with muting function) SF4B-□CA-J05>



Model No.		D		M	R	S	T	U
		SF4B-H□C(A-J05)	SF4B-A□C(A-J05)					
SF4B-H12C(A-J05)	———	220 8.661	—	264.4 10.409	245.8 9.677	—	—	270.4 10.646
SF4B-H16C(A-J05)	SF4B-A8C(A-J05)	300 11.811	280 11.024	344.4 13.559	325.8 12.827	—	—	350.4 13.795
SF4B-H20C(A-J05)	———	380 14.961	—	424.4 16.709	405.8 17.748	—	—	430.4 16.945
SF4B-H24C(A-J05)	SF4B-A12C(A-J05)	460 18.110	440 17.323	504.4 19.858	485.8 19.126	—	—	510.4 20.094
SF4B-H28C(A-J05)	———	540 21.260	—	584.4 23.008	565.8 22.276	—	—	590.4 23.244
SF4B-H32C(A-J05)	SF4B-A16C(A-J05)	620 24.409	600 23.622	664.4 26.157	645.8 25.425	—	—	670.4 26.394
SF4B-H36C(A-J05)	———	700 27.559	—	744.4 29.307	725.8 28.575	—	—	750.4 29.543
SF4B-H40C(A-J05)	SF4B-A20C(A-J05)	780 30.709	760 29.921	824.4 32.457	805.8 31.724	382.9 15.075	—	830.4 32.693
SF4B-H48C(A-J05)	SF4B-A24C(A-J05)	940 37.008	920 36.220	984.4 38.756	965.8 38.024	462.9 18.224	—	990.4 38.992
SF4B-H56C(A-J05)	SF4B-A28C(A-J05)	1,100 43.307	1,080 42.520	1,144.4 45.055	1,125.8 44.323	542.9 21.374	—	1,150.4 45.291
SF4B-H64C(A-J05)	SF4B-A32C(A-J05)	1,260 49.606	1,240 48.819	1,304.4 51.354	1,285.8 50.622	402.9 15.862	841.9 33.146	1,310.4 51.590
SF4B-H72C(A-J05)	SF4B-A36C(A-J05)	1,420 55.906	1,400 55.118	1,464.4 57.654	1,445.8 56.921	455.9 17.949	948.9 37.358	1,470.4 57.890
SF4B-H80C(A-J05)	SF4B-A40C(A-J05)	1,580 62.205	1,560 61.417	1,624.4 63.953	1,605.8 63.220	508.9 20.035	1,055.9 41.571	1,630.4 64.189
SF4B-H88C(A-J05)	SF4B-A44C(A-J05)	1,740 68.504	1,720 67.716	1,784.4 70.252	1,765.8 69.520	561.9 22.122	1,162.9 45.783	1,790.4 70.488
SF4B-H96C(A-J05)	SF4B-A48C(A-J05)	1,900 74.803	1,880 74.016	1,944.4 76.551	1,925.8 75.819	614.9 24.209	1,269.9 49.996	1,950.4 76.787

Model No.	H	Q
SF4B-H□C(A-J05)	20 0.787	22.2 0.874
SF4B-A□C(A-J05)	40 1.575	42.2 1.661

DIMENSIONS (Unit: mm in)

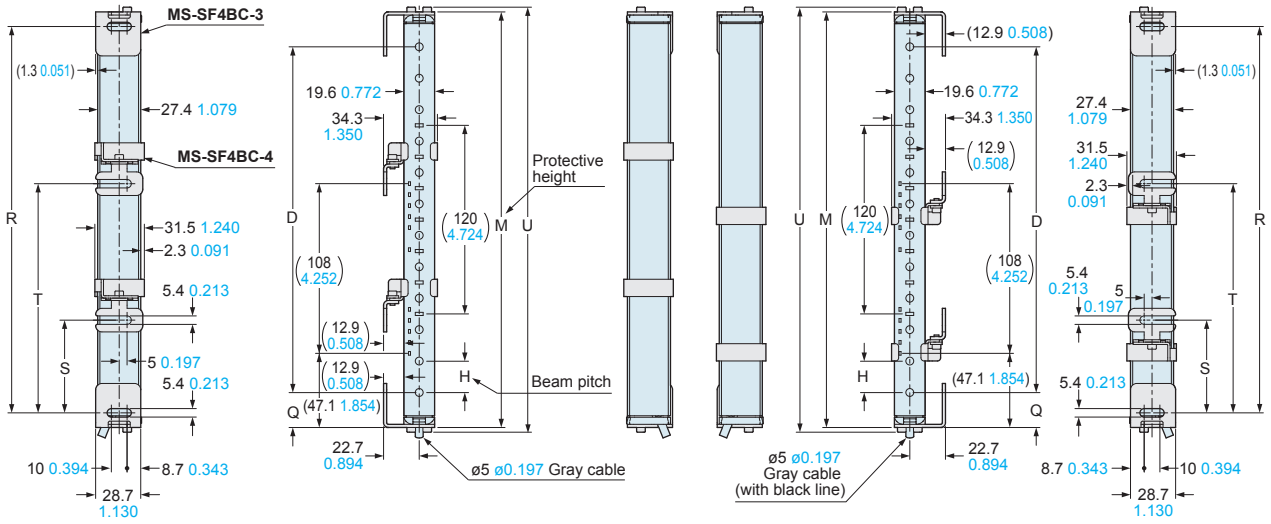
The CAD data can be downloaded from our website.

SF4B-□CA-J05 SF4B-□C

Safety light curtain

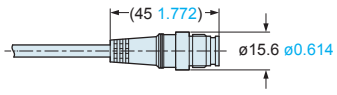
Assembly dimensions

The figure depicts space-saving mounting using the side utility mounting bracket **MS-SF4BC-3** (optional) and the intermediate supporting bracket for utility mounting bracket **MS-SF4BC-4** (optional).



Emitter **Receiver**

<Connector of the pigtailed type (with muting function) SF4B-□CA-J05>



Model No.		D		M	R	S	T	U
		SF4B-H□C(A-J05)	SF4B-A□C(A-J05)					
SF4B-H12C(A-J05)	———	220 8.661	—	264.4 10.409	245.8 9.677	—	—	270.4 10.646
SF4B-H16C(A-J05)	SF4B-A8C(A-J05)	300 11.811	280 11.024	344.4 13.559	325.8 12.827	—	—	350.4 13.795
SF4B-H20C(A-J05)	———	380 14.961	—	424.4 16.709	405.8 17.748	—	—	430.4 16.945
SF4B-H24C(A-J05)	SF4B-A12C(A-J05)	460 18.110	440 17.323	504.4 19.858	485.8 19.126	—	—	510.4 20.094
SF4B-H28C(A-J05)	———	540 21.260	—	584.4 23.008	565.8 22.276	—	—	590.4 23.244
SF4B-H32C(A-J05)	SF4B-A16C(A-J05)	620 24.409	600 23.622	664.4 26.157	645.8 25.425	—	—	670.4 26.394
SF4B-H36C(A-J05)	———	700 27.559	—	744.4 29.307	725.8 28.575	—	—	750.4 29.543
SF4B-H40C(A-J05)	SF4B-A20C(A-J05)	780 30.709	760 29.921	824.4 32.457	805.8 31.724	382.9 15.075	—	830.4 32.693
SF4B-H48C(A-J05)	SF4B-A24C(A-J05)	940 37.008	920 36.220	984.4 38.756	965.8 38.024	462.9 18.224	—	990.4 38.992
SF4B-H56C(A-J05)	SF4B-A28C(A-J05)	1,100 43.307	1,080 42.520	1,144.4 45.055	1,125.8 44.323	542.9 21.374	—	1,150.4 45.291
SF4B-H64C(A-J05)	SF4B-A32C(A-J05)	1,260 49.606	1,240 48.819	1,304.4 51.354	1,285.8 50.622	402.9 15.862	841.9 33.146	1,310.4 51.590
SF4B-H72C(A-J05)	SF4B-A36C(A-J05)	1,420 55.906	1,400 55.118	1,464.4 57.654	1,445.8 56.921	455.9 17.949	948.9 37.358	1,470.4 57.890
SF4B-H80C(A-J05)	SF4B-A40C(A-J05)	1,580 62.205	1,560 61.417	1,624.4 63.953	1,605.8 63.220	508.9 20.035	1,055.9 41.571	1,630.4 64.189
SF4B-H88C(A-J05)	SF4B-A44C(A-J05)	1,740 68.504	1,720 67.716	1,784.4 70.252	1,765.8 69.520	561.9 22.122	1,162.9 45.783	1,790.4 70.488
SF4B-H96C(A-J05)	SF4B-A48C(A-J05)	1,900 74.803	1,880 74.016	1,944.4 76.551	1,925.8 75.819	614.9 24.209	1,269.9 49.996	1,950.4 76.787

Model No.	H	Q
SF4B-H□C(A-J05)	20 0.787	22.2 0.874
SF4B-A□C(A-J05)	40 1.575	42.2 1.661

DIMENSIONS (Unit: mm in)

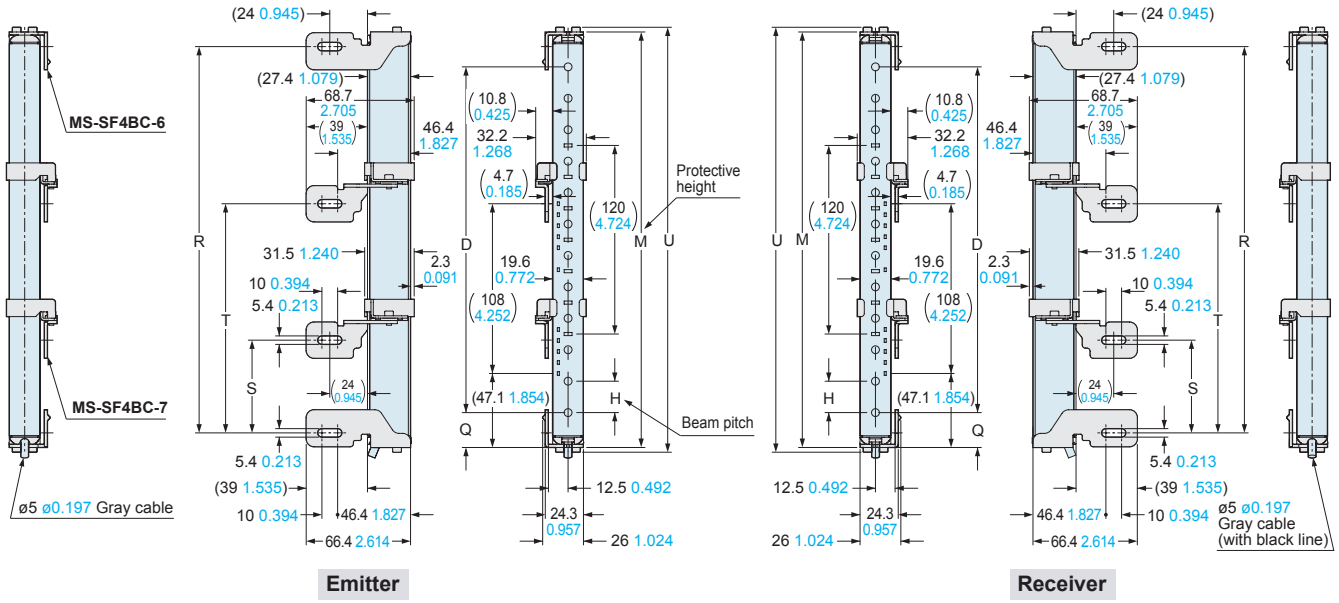
The CAD data can be downloaded from our website.

SF4B-□CA-J05 SF4B-□C

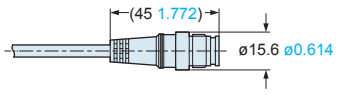
Safety light curtain

Assembly dimensions

The figure depicts space-saving mounting using the side mounting bracket **MS-SF4BC-6** (optional) and the intermediate supporting bracket for side mounting bracket **MS-SF4BC-7** (optional).



<Connector of the pigtailed type (with muting function) SF4B-□CA-J05>



Model No.		D		M	R	S	T	U
		SF4B-H□C(A-J05)	SF4B-A□C(A-J05)					
SF4B-H12C(A-J05)	———	220 8.661	—	264.4 10.409	245.8 9.677	—	—	270.4 10.646
SF4B-H16C(A-J05)	SF4B-A8C(A-J05)	300 11.811	280 11.024	344.4 13.559	325.8 12.827	—	—	350.4 13.795
SF4B-H20C(A-J05)	———	380 14.961	—	424.4 16.709	405.8 17.748	—	—	430.4 16.945
SF4B-H24C(A-J05)	SF4B-A12C(A-J05)	460 18.110	440 17.323	504.4 19.858	485.8 19.126	—	—	510.4 20.094
SF4B-H28C(A-J05)	———	540 21.260	—	584.4 23.008	565.8 22.276	—	—	590.4 23.244
SF4B-H32C(A-J05)	SF4B-A16C(A-J05)	620 24.409	600 23.622	664.4 26.157	645.8 25.425	—	—	670.4 26.394
SF4B-H36C(A-J05)	———	700 27.559	—	744.4 29.307	725.8 28.575	—	—	750.4 29.543
SF4B-H40C(A-J05)	SF4B-A20C(A-J05)	780 30.709	760 29.921	824.4 32.457	805.8 31.724	382.9 15.075	—	830.4 32.693
SF4B-H48C(A-J05)	SF4B-A24C(A-J05)	940 37.008	920 36.220	984.4 38.756	965.8 38.024	462.9 18.224	—	990.4 38.992
SF4B-H56C(A-J05)	SF4B-A28C(A-J05)	1,100 43.307	1,080 42.520	1,144.4 45.055	1,125.8 44.323	542.9 21.374	—	1,150.4 45.291
SF4B-H64C(A-J05)	SF4B-A32C(A-J05)	1,260 49.606	1,240 48.819	1,304.4 51.354	1,285.8 50.622	402.9 15.862	841.9 33.146	1,310.4 51.590
SF4B-H72C(A-J05)	SF4B-A36C(A-J05)	1,420 55.906	1,400 55.118	1,464.4 57.654	1,445.8 56.921	455.9 17.949	948.9 37.358	1,470.4 57.890
SF4B-H80C(A-J05)	SF4B-A40C(A-J05)	1,580 62.205	1,560 61.417	1,624.4 63.953	1,605.8 63.220	508.9 20.035	1,055.9 41.571	1,630.4 64.189
SF4B-H88C(A-J05)	SF4B-A44C(A-J05)	1,740 68.504	1,720 67.716	1,784.4 70.252	1,765.8 69.520	561.9 22.122	1,162.9 45.783	1,790.4 70.488
SF4B-H96C(A-J05)	SF4B-A48C(A-J05)	1,900 74.803	1,880 74.016	1,944.4 76.551	1,925.8 75.819	614.9 24.209	1,269.9 49.996	1,950.4 76.787

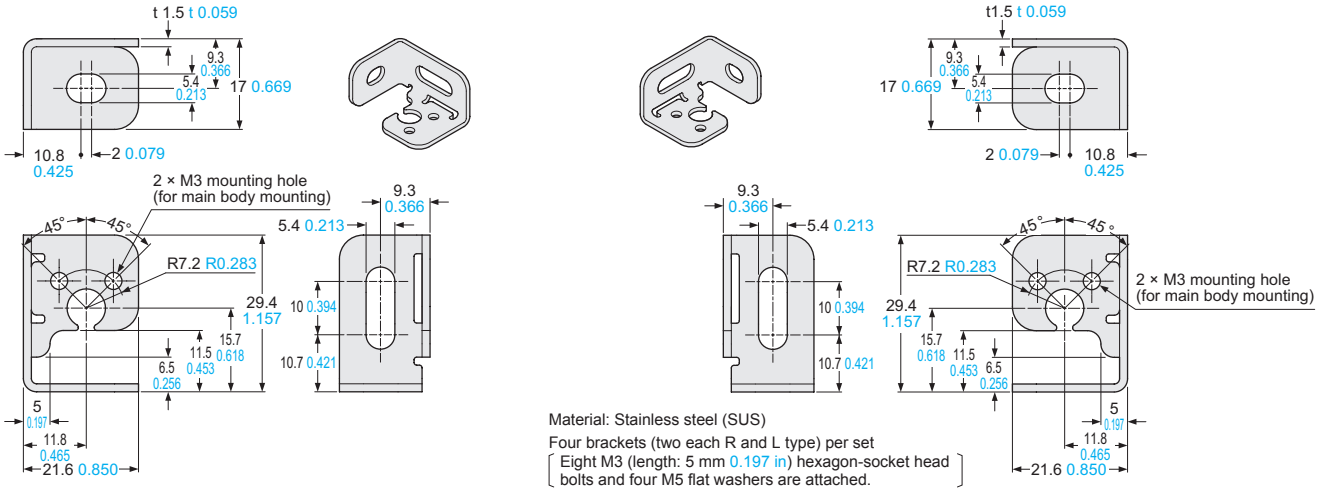
Model No.	H	Q
SF4B-H□C(A-J05)	20 0.787	22.2 0.874
SF4B-A□C(A-J05)	40 1.575	42.2 1.661

DIMENSIONS (Unit: mm in)

The CAD data can be downloaded from our website.

MS-SF4BC-1

Standard mounting bracket (optional)



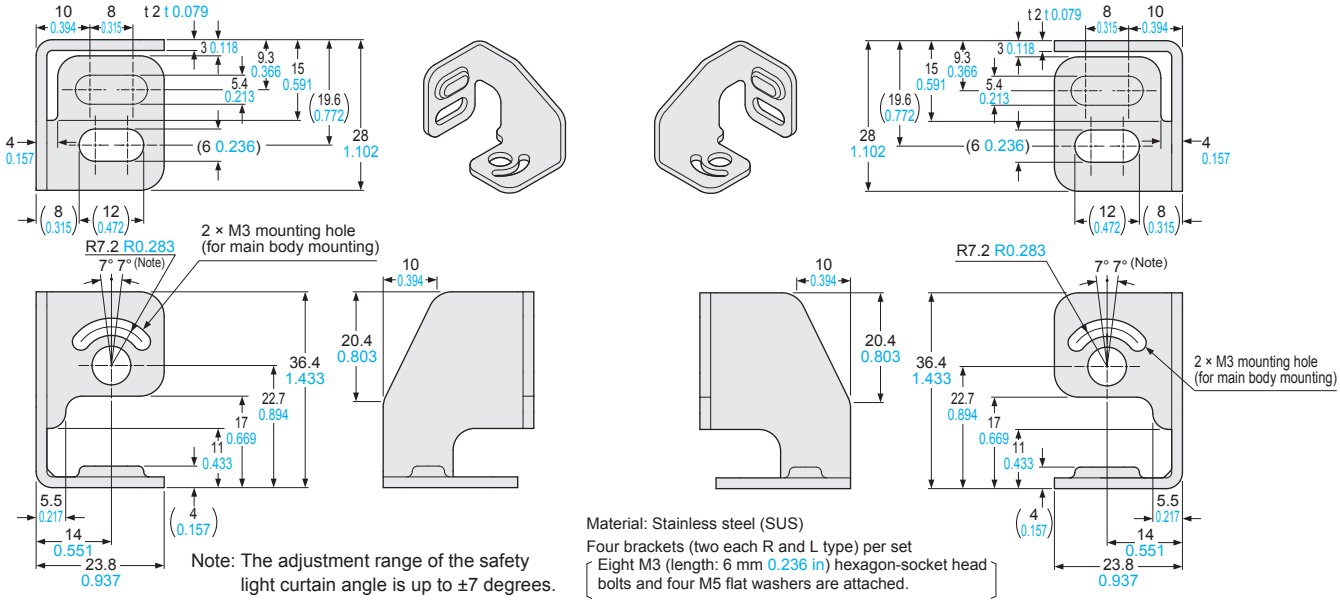
Material: Stainless steel (SUS)

Four brackets (two each R and L type) per set

[Eight M3 (length: 5 mm 0.197 in) hexagon-socket head bolts and four M5 flat washers are attached.]

MS-SF4BC-2

Rear utility mounting bracket (optional)



Note: The adjustment range of the safety light curtain angle is up to ±7 degrees.

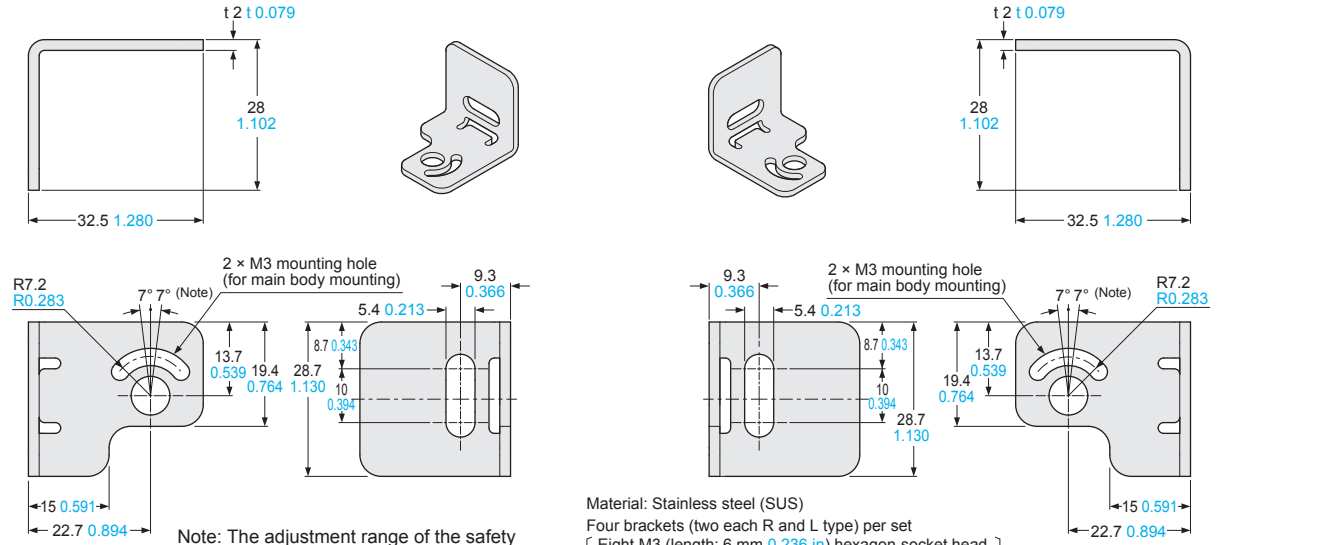
Material: Stainless steel (SUS)

Four brackets (two each R and L type) per set

[Eight M3 (length: 6 mm 0.236 in) hexagon-socket head bolts and four M5 flat washers are attached.]

MS-SF4BC-3

Side utility mounting bracket (optional)



Note: The adjustment range of the safety light curtain angle is up to ±7 degrees.

Material: Stainless steel (SUS)

Four brackets (two each R and L type) per set

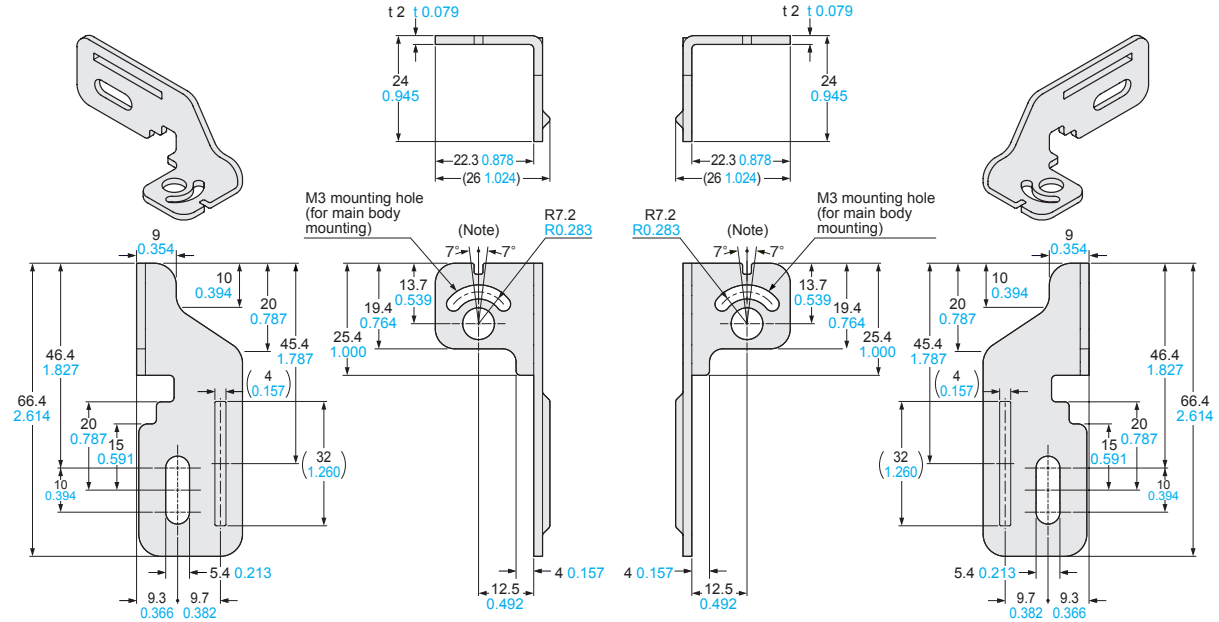
[Eight M3 (length: 6 mm 0.236 in) hexagon-socket head bolts and four M5 flat washers are attached.]

DIMENSIONS (Unit: mm in)

The CAD data can be downloaded from our website.

MS-SF4BC-6

Side mounting bracket (optional)

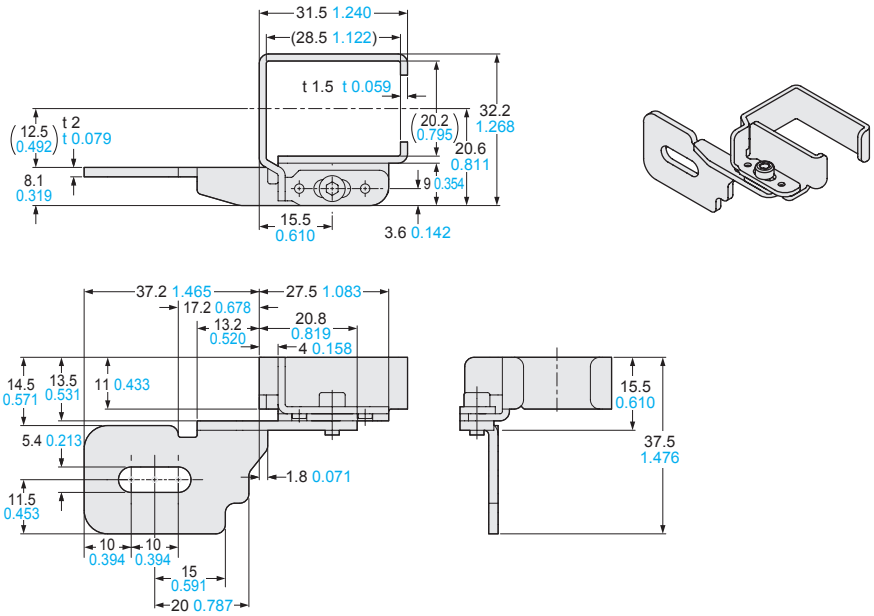


Material: Stainless steel (SUS)
Four brackets (two each L and R type) per set
[Eight M3 (length: 6 mm 0.236 in) hexagon-socket head bolts and four M5 flat washers are attached.]

Note: The adjustment range of the safety light curtain angle is up to ±7 degrees.

MS-SF4BC-7

Intermediate supporting bracket for side mounting bracket (optional)

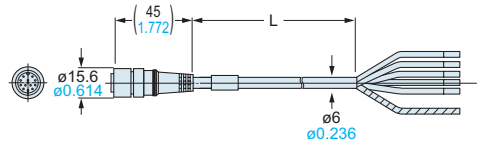


Material: Stainless steel (SUS)
Two brackets per set
[Two M5 flat washers and M3 (length: 6 mm 0.236 in) hexagon-socket head bolts in assembled state are attached.]

DIMENSIONS (Unit: mm in)

The CAD data can be downloaded from our website.

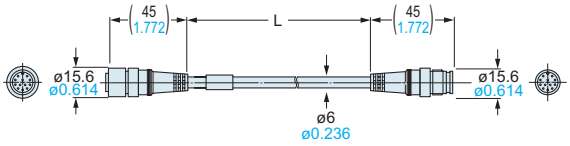
SFB-CC□-MU Mating cable with connector on one end (optional)



• Length: L

Model No.	Length: L
SFB-CC3-MU	3,000 118.110
SFB-CC7-MU	7,000 275.591
SFB-CC10-MU	10,000 393.701

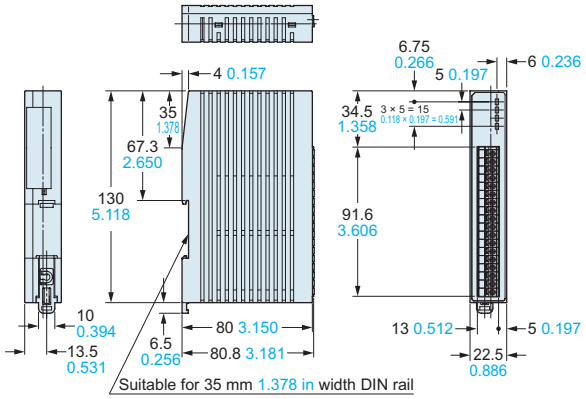
SFB-CCJ□-MU Mating cable with connectors on both ends (optional)



• Length: L

Model No.	Length: L
SFB-CCJ3D-MU	3,000 118.110
SFB-CCJ3E-MU	
SFB-CCJ10D-MU	10,000 393.701
SFB-CCJ10E-MU	

SF-C13 Control unit (optional)



SFB-HC Handy-controller (optional)

