Panasonic
INDUSTRY

Type 4 PLe SIL3

Ultra-slim

Safety Light Curtain

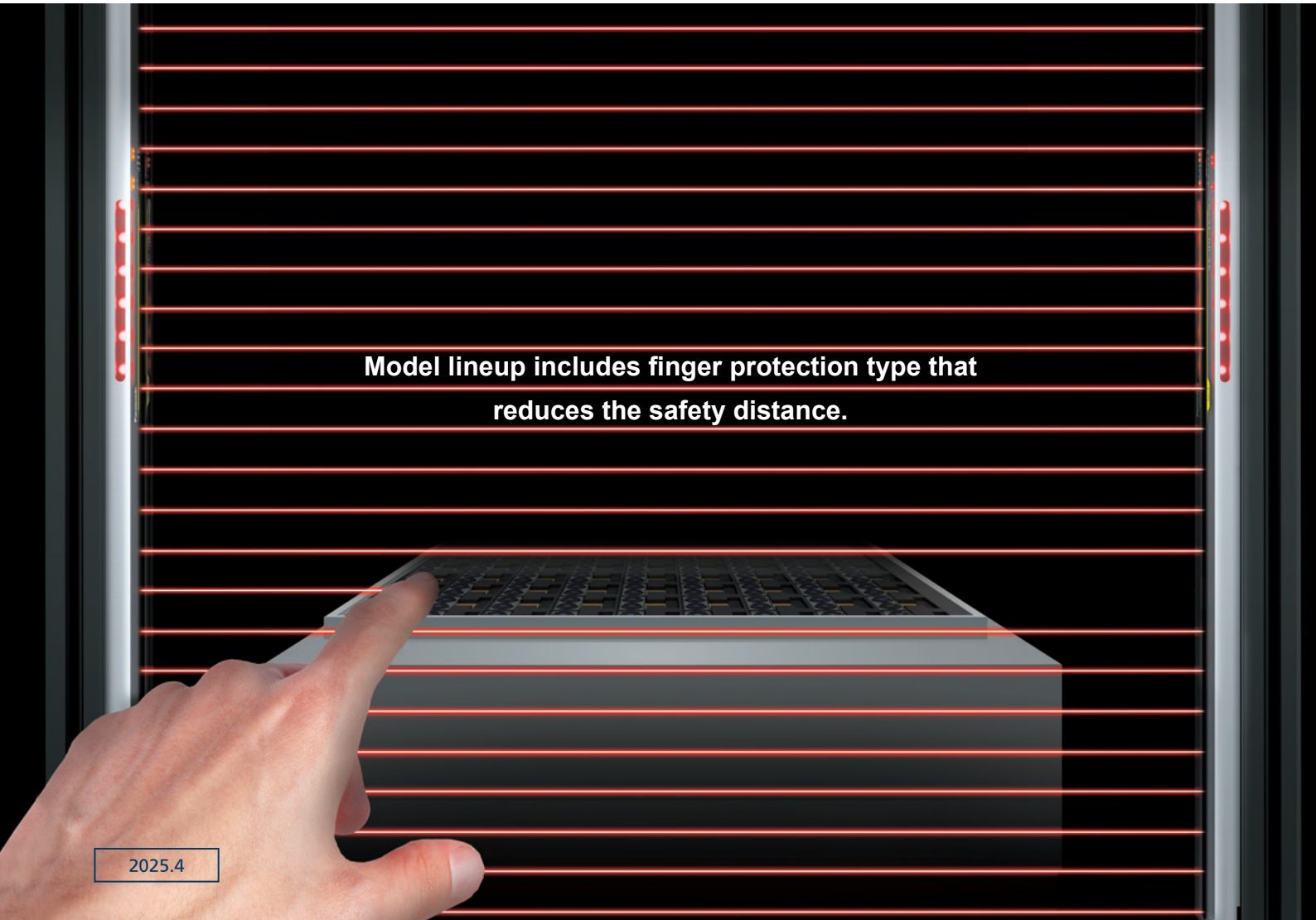
SF4C SERIES

Conforming to OSHA / ANSI

[SF4C-H□(-J05) only]

JIS

Wider opening for improved working ease!



2025.4

SF4C series

Helps Improve Both Productivity and Safety

While machine safety measures are becoming increasingly important, it is very difficult to improve productivity and safety at the same time. The **SF4C** series is packed with a variety of functions in its ultra-slim body to facilitate configuration design, installation and maintenance in order to overcome issues.

Reduces Design Burden

Contributes to Space-saving Machine Installation

Easy to Use

Convenient Functions

The series lineup includes finger protection type and hand protection type.

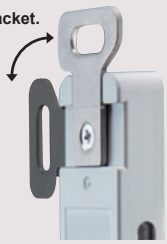
Large multi-purpose indicators can be used as operation indicators, work instruction lights, etc.

Ultra-slim body measuring **13 mm 0.512 in**

Quick and easy installation

Standard mounting brackets (preinstalled at factory)

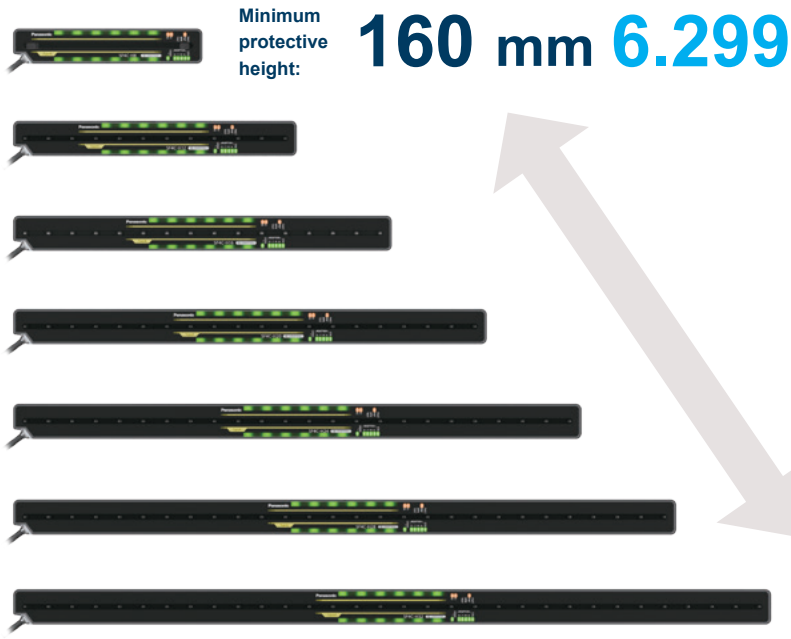
Standard mounting brackets are preinstalled at the factory, so the **SF4C** can be installed right out of the box. Simply turning the mounting bracket ensures secure installation of the upper and lower units.



Reduces Design Burden

Many specifications are unified in the **SF4C** series to reduce configuration design burden. This allows sharing of design assets at different installation locations and for different equipment types, thus reducing the time required for designing the configuration.

Performance and model variations to reduce design man-hours



Minimum protective height: **160 mm 6.299 in**

Minimum sensing object

Beam-axis pitch: 10 mm 0.394 in

ø14 mm ø0.551 in

Beam-axis pitch: 20 mm 0.787 in

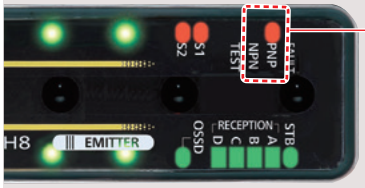
ø25 mm ø0.984 in

Sensing range

0.1 to 3 m
0.328 to 9.843 ft

Maximum protective height: **640 mm 25.197 in**

PNP / NPN polarities combined in single model



PNP / NPN polarity indicator

The PNP / NPN LED lights to indicate the selected polarity.

Response time is unified for all beam channels. All models offer fast response time.

The response time is unified in all models. The response time is remains the same even in models with many beam channels. Even if the number of beam channels is changed, the safety distance, which is dependent on the safety light curtain, stays the same. This eliminates the need for recalculation.

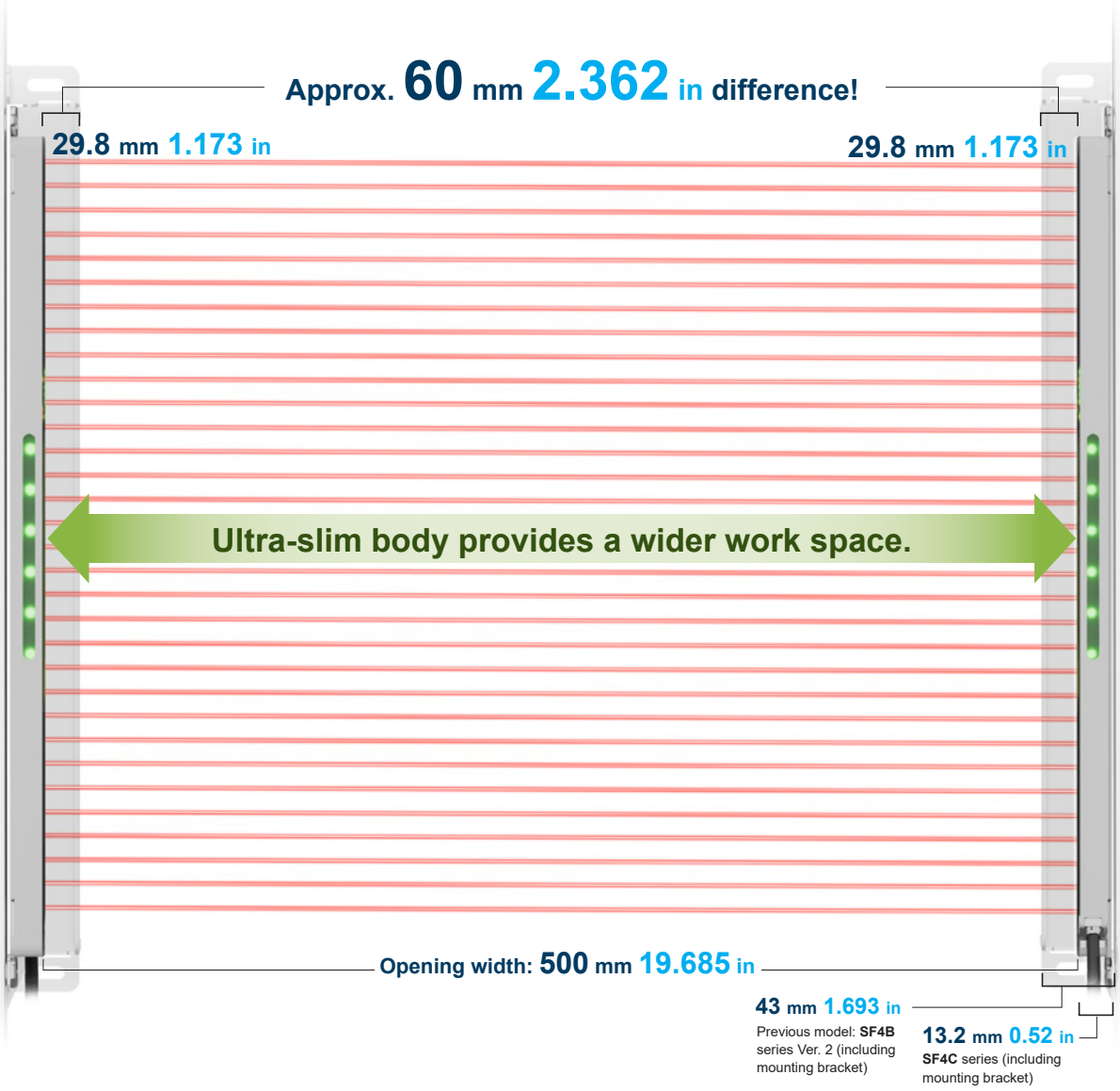
	Finger protection type	Hand protection type
Response time	SF4C-F□ **9 ms***	SF4C-H□ **7 ms**
Safety distance	SF4C-F□ **18 mm 0.709 in**	SF4C-H□ **102 mm 4.016 in**

* When a safety sensor (such as a safety light curtain) is connected to the safety input of the **SF4C** series, the response time will be the total time of the response times of the connected units.

Space Saving

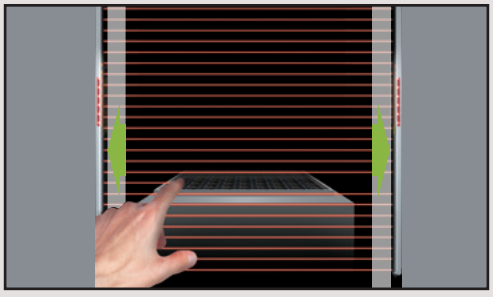
Contributes to Space-saving

The ultra-slim size of the safety light curtain allows maximum use of machine opening to help improve productivity.



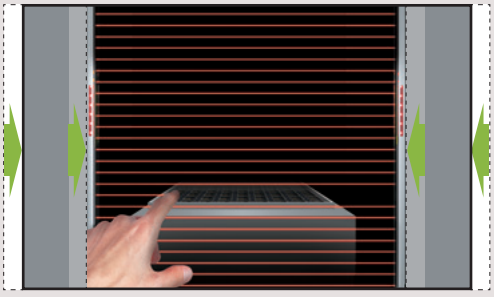
Benefit provided by the extra space

Wider opening



Provide a wider opening
for improved working ease.

Equipment downsizing



Keep the same opening size
and downsize the equipment.

Finger protection type (SF4C-F□) offering shorter safety distance

The safety distance of **SF4C** series finger protection type is 84 mm 3.307 in shorter than that of **SF4C** series hand protection type (**SF4C-H□**). As a result, the depth and guard of the equipment can be downsized.

Hand protection type

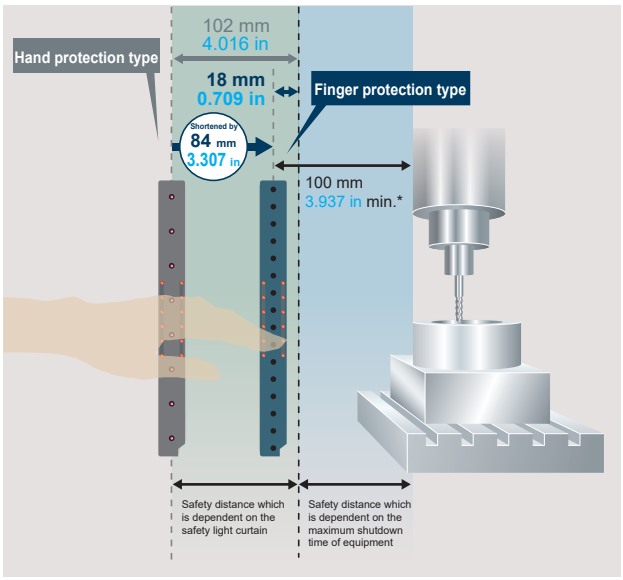
Safety distance **102 mm 4.016 in**

Shortened by **84 mm 3.307 in**

Finger protection type

Safety distance **18 mm 0.709 in**

* Calculation based on ISO 13855 with 41 ms or longer being the machinery's maximum stopping time.

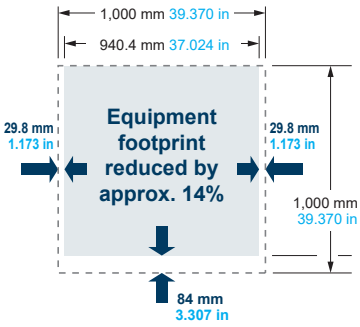


* The safety light curtain cannot be installed within a distance of 100 mm 3.937 in. (ISO 13855)

The finger protection type enables downsizing of equipment!

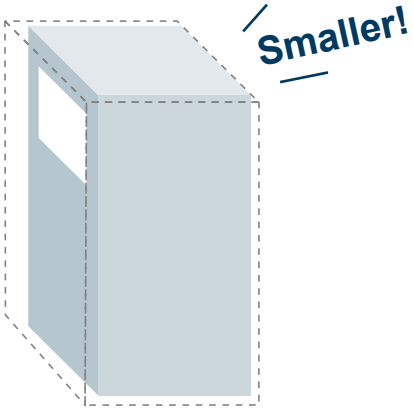
Example: Equipment measuring 1,000 mm 39.370 in in width, 1,000 mm 39.370 in in depth, and 1,800 mm 70.866 in in height

Equipment footprint reduced by approx. 14%



When our previous model (**SF4B** series Ver 2) is used
1,000 mm 39.370 in × 1,000 mm 39.370 in
= 1,000,000 mm²

When **SF4C** series finger protection type is used
940.4 mm 37.024 in × 916 mm 36.063 in
= 861,406.4 mm²



Lightweight!

The **SF4C** series is made of resin that is approx. 45 % lighter* than the conventional aluminum case type. Its lightweight body eases the burden on the mounting surface of the equipment and contributes to overall reduced weight during equipment transportation or overseas shipment. * Except the cable part

IP67 protection structure

Our proprietary laser welding method has achieved an IP67 (IEC) rating with an ultra-slim resin body.

Mutual interference is reduced without needing for interference prevention lines

The ELCA (Extraneous Light Check & Avoid) function automatically shifts the scan timing in order to avoid interference.

Reducing the number of malfunctions caused by extraneous light

Double scanning method and retry processing are effective in eliminating the effects of extraneous light.

User Friendly

Pursuit of Ease of Use

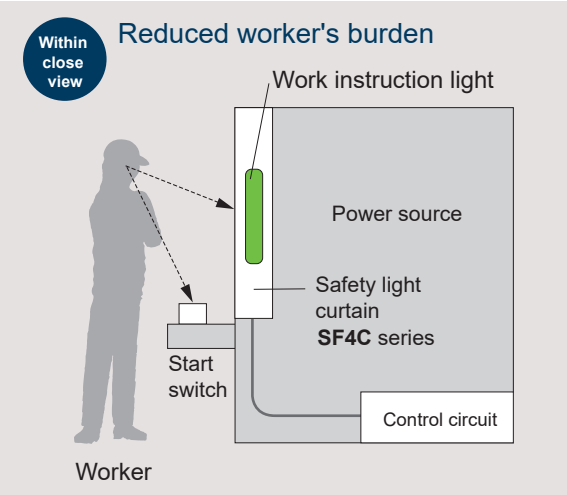
The **SF4C** series is designed for greater ease of use, for example by visualizing equipment status and simplifying beam-axis alignment, in order to reduce work hours.

Easy-to-see, useful large multi-purpose indicators

Can also be used as operation indicators, error indicators and muting lamps

The bright LED indicators located in the center of both sides of each safety light curtain can be illuminated by using external inputs. There is no need for setting up a separate work instruction light, so that equipment is consolidated.

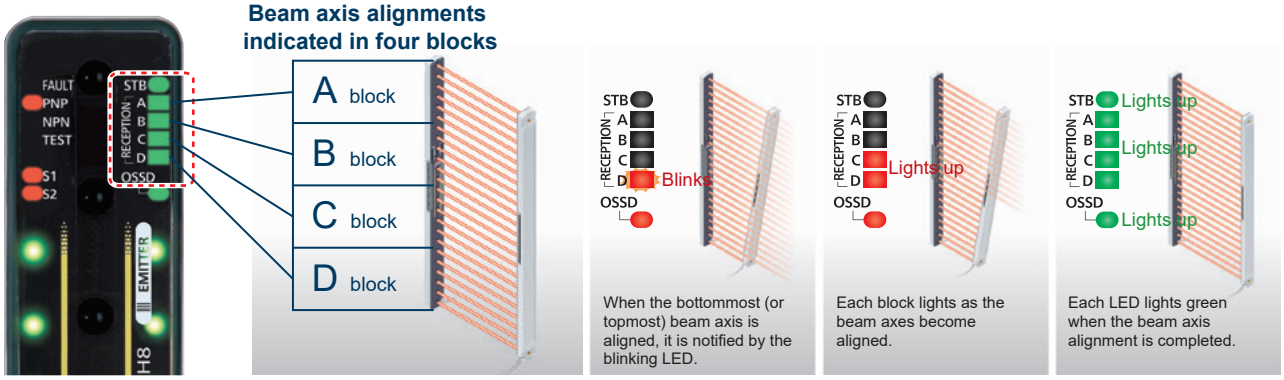
At-a-glance grasping of equipment condition at hand



* The lighting conditions of **SF4C** series can be changed by using a handy-controller **SFC-HC** (optional). It is possible to actuate the lighting together with internal operation, regardless of connection of the large multi-purpose indicator input wires.

Beam-axis alignment indicators help to reduce startup time

Since the beam channels of the safety light curtain are divided into four blocks for the indication of incident light conditions, the beam axes can be aligned intuitively. When the bottommost (or topmost) beam axis is aligned, the LED blinks red. Then, each block lights red as the beam axes become aligned successively. When all channel beam axes are aligned, all LEDs light green. The display also has an incident light intensity indicator (STB) added so that the setup can be carried out with greater stability.



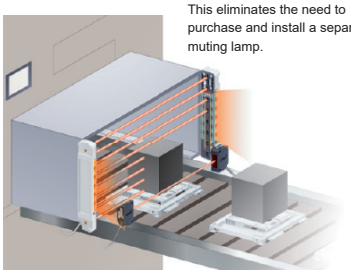
Convenient Functions

The **SF4C** series is equipped with various convenient functions to help improve productivity.

A diversity of built-in muting functions to help improve productivity

Muting control function

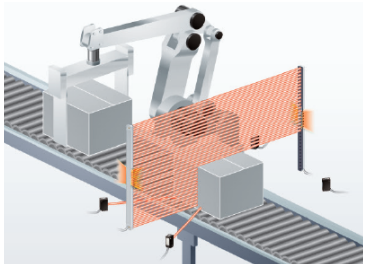
Provides a control that halts the line only when a person passes through the safety light curtain and that does not stop the line when a workpiece passes through.



This eliminates the need to purchase and install a separate muting lamp.

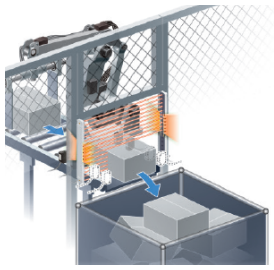
Separate muting control function for each beam channel

The muting control can be enabled for selected beam channels only.



Muting function only for the sensing object exit

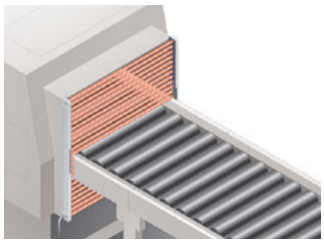
A delay timer of up to four seconds can be set for the muting sensor on the exit side. This is useful when a muting sensor cannot be installed.



Active beam channels can be set for improved productivity!

Fixed blanking function*

The **SF4C** series is equipped with a fixed blanking function which allows specific beam channels to be selectively interrupted without causing the control output (OSSD) to output the OFF signal. This function is convenient for use with applications in which certain fixed obstacles tend to interrupt specific beam channels.

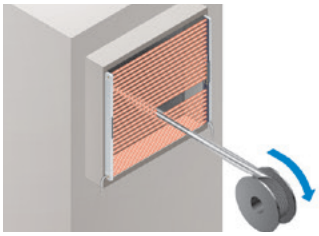


* Handy-controller (optional) is required for setting this function.

Unspecified beam channels can be deactivated for improved productivity!

Floating blanking function*

1, 2 or 3 unspecified beam channels can be deactivated.
This function is convenient when loading materials within the detection area of safety light curtain.



* Handy-controller (optional) is required for setting this function.
When the floating blanking function is used, the minimum sensing object size changes.
For details, refer to the instruction manual.

More convenient functions

- **Setting detail monitor function**
- **Protective function**
- **Settings copy function***
- **Muting lamp diagnosis function**
- **External device monitor function**

* This setting can be made in **SF4C** series Ver. 2.0 and newer models.

Wire-saving Y-shaped connector (optional)

By using the Y-shaped connector, the emitter-side cable and receiver-side cable can be consolidated into one cable. This reduces cumbersome wiring work to half.

Relay connector type
SF4C-F□-J05 / SF4C-H□-J05

Emitter Receiver

Wiring man-hours reduced to half

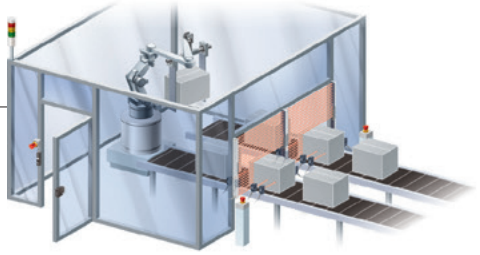
Wire-saving Y-shaped connector (optional)
SFC-WY1

* For details, see page 11 and following pages.

No Need for a Safety Relay Unit.
Reduced Cost of Safety Circuit.

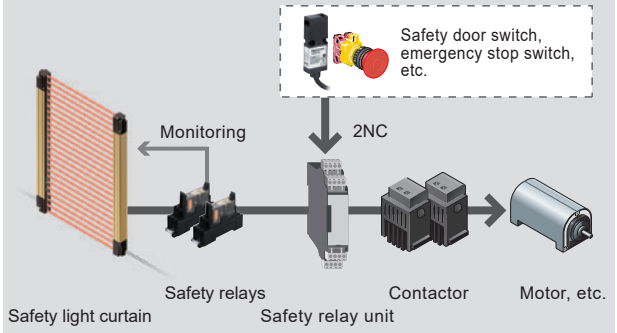
Wire-saving when connecting to safety devices [Safety input function]

Contact outputs such as an emergency stop switches or a safety door switches can be connected to the safety light curtain. Also, by using the handy-controller **SFC-HC** (optional) up to three sets of safety light curtains can be cascade connected for a consolidated safety output.



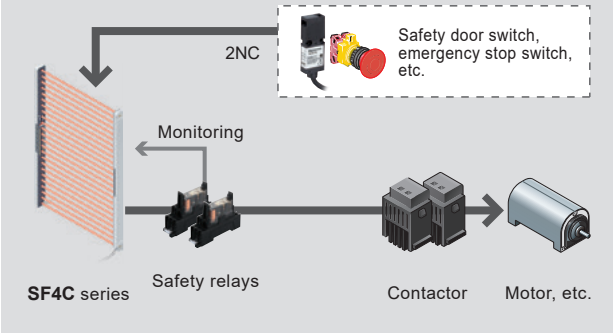
Direct connection of safety devices

Previous



A safety relay unit is needed for connecting safety devices other than safety light curtain.

SF4C series

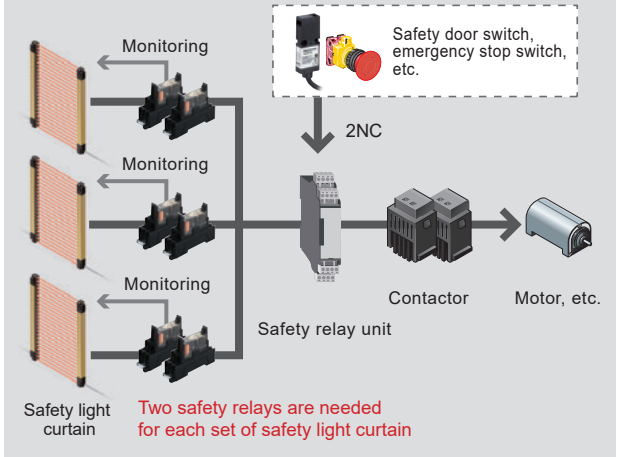


Direct connection of various safety devices is possible for a simplified safety circuit.

By using the handy-controller **SFC-HC** (optional) up to three sets of safety light curtains can be cascade connected for a consolidated safety output. (Note)

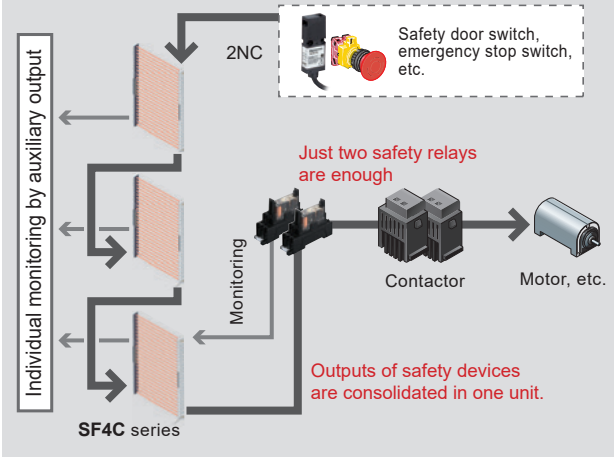
HC

Previous



Three sets of safety light curtains require three sets of safety relays.

SF4C series

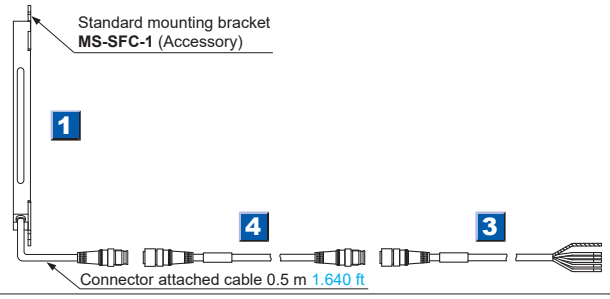


Individual monitoring on safety light curtains is possible while the outputs of three sets of safety light curtains and other safety devices are consolidated in one unit.

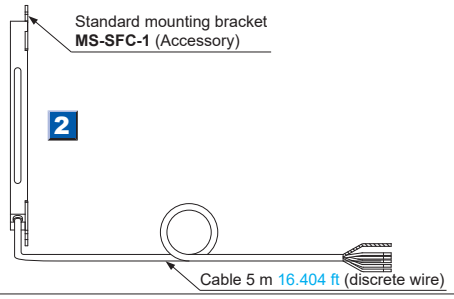
Note: This setting is possible with the use of handy-controller **SFC-HC** (optional) for **SF4C** series **Ver.2.1** or later.

PRODUCT CONFIGURATION

Maintenance is prioritized
Pigtailed type (with mounting bracket, 0.5 m 1.64 ft connector attached cable)

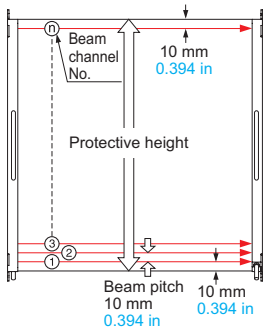
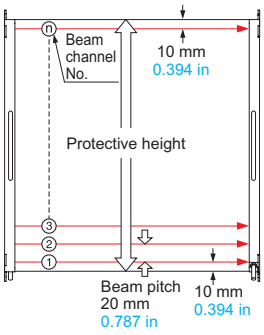


Basic set in one model No.
Cable type (with mounting bracket, 5 m 16.404 ft cable)

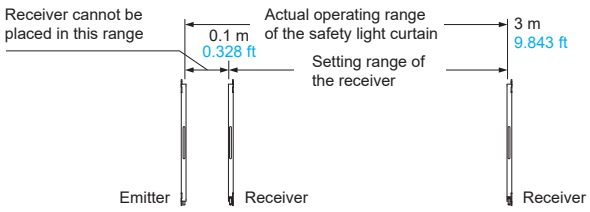


ORDER GUIDE

1 2 Safety light curtains

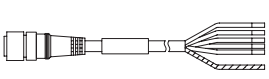
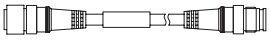
Type		Appearance	Operating range (Note 1)	Model No. (Note 2) <Part No.> 1 Pigtailed type	Model No. (Note 2) <Part No.> 2 Cable type	Number of beam channels	Protective height (mm in)
Finger protection type	Min. sensing object ø14 mm ø0.551 in (10 mm 0.394 in beam pitch)		0.1 to 3 m 0.328 to 9.843 ft	**SF4C-F15-J05 <USF4CF15J05>**	**SF4C-F15 <USF4CF15>**	15	160 mm 6.299 in
				SF4C-F23-J05 <USF4CF23J05>	**SF4C-F23 <USF4CF23>**	23	240 mm 9.449 in
				SF4C-F31-J05 <USF4CF31J05>	**SF4C-F31 <USF4CF31>**	31	320 mm 12.598 in
				SF4C-F39-J05 <USF4CF39J05>	**SF4C-F39 <USF4CF39>**	39	400 mm 15.748 in
				SF4C-F47-J05 <USF4CF47J05>	**SF4C-F47 <USF4CF47>**	47	480 mm 18.898 in
				SF4C-F55-J05 <USF4CF55J05>	**SF4C-F55 <USF4CF55>**	55	560 mm 22.047 in
				SF4C-F63-J05 <USF4CF63J05>	**SF4C-F63 <USF4CF63>**	63	640 mm 25.197 in
Hand protection type	Min. sensing object ø25 mm ø0.984 in (20 mm 0.787 in beam pitch)		0.1 to 3 m 0.328 to 9.843 ft	**SF4C-H8-J05 <USF4C3H081>**	**SF4C-H8 <USF4C3H080>**	8	160 mm 6.299 in
				SF4C-H12-J05 <USF4C3H121>	**SF4C-H12 <USF4C3H120>**	12	240 mm 9.449 in
				SF4C-H16-J05 <USF4C3H161>	**SF4C-H16 <USF4C3H160>**	16	320 mm 12.598 in
				SF4C-H20-J05 <USF4C3H201>	**SF4C-H20 <USF4C3H200>**	20	400 mm 15.748 in
				SF4C-H24-J05 <USF4C3H241>	**SF4C-H24 <USF4C3H240>**	24	480 mm 18.898 in
				SF4C-H28-J05 <USF4C3H281>	**SF4C-H28 <USF4C3H280>**	28	560 mm 22.047 in
				SF4C-H32-J05 <USF4C3H321>	**SF4C-H32 <USF4C3H320>**	32	640 mm 25.197 in

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



2) The model No. with suffix "**E**" shown on the label affixed to the product is the emitter, "**D**" shown on the label is the receiver.
3) Do not use the product with Ver. 3.0 in combination with an emitter or receiver with Ver. 2.1 or earlier. When replacing products, be sure to replace the emitter and receiver as a set.

3 4 Mating cables

Type			Appearance	Model No.	Description	
Mating cables	3 With connector on one end			**SFB-CC3-MU**	Length: 3 m 9.843 ft Net weight: 430 g approx. (2 cables)	Cable with connector on one end for pigtailed type Two cables per set for emitter and receiver Cable color: Gray (for emitter), Gray with black line (for receiver) Connector color: Gray (for emitter), Black (for receiver) The min. bending radius: R6 mm R0.236 in
				SFB-CC7-MU	Length: 7 m 22.966 ft Net weight: 1,000 g approx. (2 cables)	
				SFB-CC10-MU	Length: 10 m 32.808 ft Net weight: 1,300 g approx. (2 cables)	
	4 With connectors on both ends	For emitter		**SFB-CCJ3E-MU**	Length: 3 m 9.843 ft Net weight: 190 g approx. (1 cable)	Cable with connectors on both ends for pigtailed type Cable color: Gray (for emitter), Gray with black line (for receiver) Connector color: Gray (for emitter), Black (for receiver) The min. bending radius: R6 mm R0.236 in
				SFB-CCJ10E-MU	Length: 10 m 32.808 ft Net weight: 660 g approx. (1 cable)	
		For receiver		**SFB-CCJ3D-MU**	Length: 3 m 9.843 ft Net weight: 210 g approx. (1 cable)	
				SFB-CCJ10D-MU	Length: 10 m 32.808 ft Net weight: 680 g approx. (1 cable)	

ORDER GUIDE

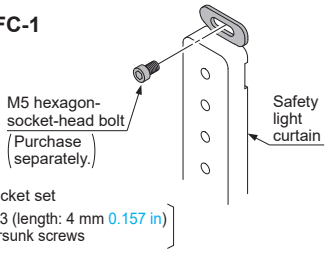
Spare parts (Accessories for safety light curtain)

Designation	Model No.	Description
Standard mounting bracket	**MS-SFC-1**	Allows the safety light curtain to be mounted at the rear with one M5 hexagon-socket-head bolt. Mounting direction of the bracket can be selected between vertical or horizontal (no dead zone). (4 pcs. per set for emitter and receiver) (Note)
Test rod ø14	**SF4C-TR14**	Min. sensing object for regular checking (ø14 mm ø0.551 in)
Test rod ø25	**SF4C-TR25**	Min. sensing object for regular checking (ø25 mm ø0.984 in)

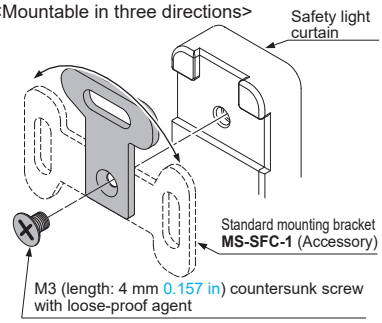
Note: The body of the safety light curtain is made of resin, so please take into account the expansion and contraction of the longitudinal dimension. When machining mounting holes, please check the actual product.

Standard mounting bracket

• **MS-SFC-1**



<Mountable in three directions>



OPTIONS

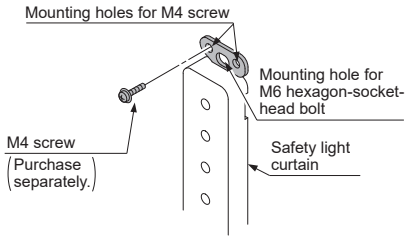
Mounting brackets

Designation	Model No.	Description
NA2-N compatible mounting bracket	**MS-SFC-2**	Used when changing over area sensor **NA2-N** series to the **SF4C** series. The mounting holes of **NA2-N** series can continue to be used. Center mounting by a M6 hexagon-socket-head bolt is also possible. (4 pcs. per set for emitter and receiver) (Note)
Versatile bracket	**MS-SFC-3**	Two ways of mounting are possible. ① Rear mounting which enables beam adjustment ② Dead zoneless center mounting on aluminum frame (4 pcs. per set for emitter and receiver) (Note)
Intermediate supporting bracket for versatile bracket	**MS-SFC-4**	Used to support the safety light curtain in the middle. Be sure to purchase it when using the versatile bracket **MS-SFC-3** (optional) on **SF4C-F55**(**-J05**), **SF4C-F63**(**-J05**), **SF4C-H28**(**-J05**) or **SF4C-H32**(**-J05**). (2 pcs. per set for emitter and receiver) (Note)

Note: The body of the safety light curtain is made of resin, so please take into account the expansion and contraction of the longitudinal dimension. When machining mounting holes, please check the actual product.

NA2-N compatible mounting bracket

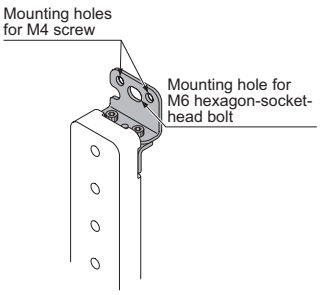
• **MS-SFC-2**



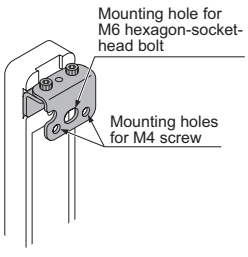
Versatile bracket

• **MS-SFC-3**

<Rear mounting>

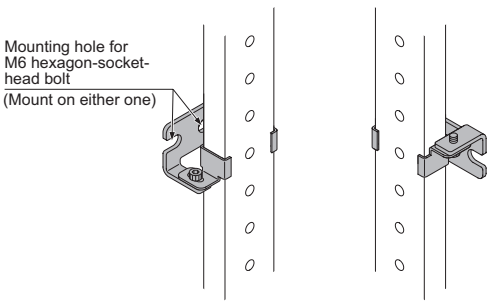


<Dead zoneless mounting>



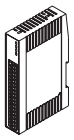
Intermediate supporting bracket for versatile bracket

• **MS-SFC-4**



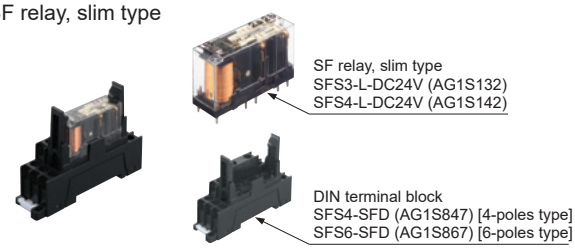
OPTIONS

Control unit

Designation	Appearance	Model No.	Description
Slim type control unit		**SF-C13**	Use a discrete wire cable to connect to the safety light curtain. Relay output. Compatible with up to Control Category 4.

●Recommended safety relay

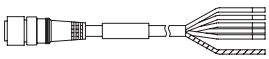
SF relay, slim type



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

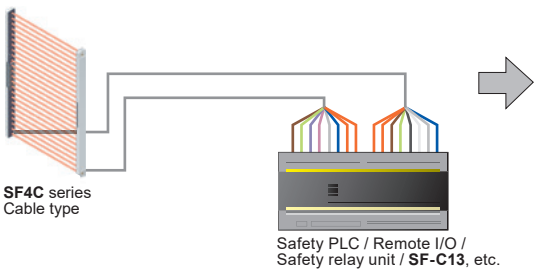
Item \ Type	With LED indicator	
Model No.	SFS3-L-DC24V	SFS4-L-DC24V
Part No.	AG1S132	AG1S142
Contact arrangement	3a1b	4a2b
Rated nominal switching capacity	6 A / 250 V AC, 6 A / 30 V DC	
Min. switching capacity	1 mA / 5 V DC	
Coil rating	15 mA / 24 V DC	20.8 mA / 24 V DC
Rated power consumption	360 mW	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	

Y-shaped connectors

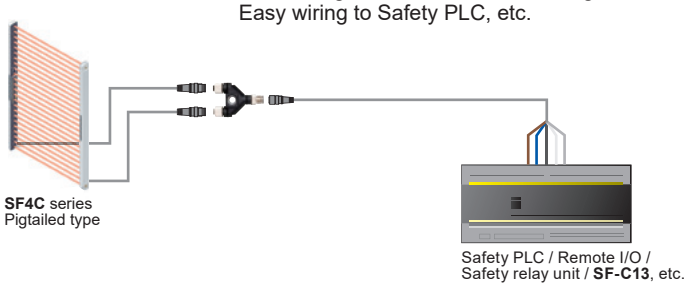
Type	Appearance	Model No.	Description	
Wire-saving Y-shaped connector		**SFC-WY1**	Wire-saving connector for **SF4C-F□-J05** and **SF4C-H□-J05**. Cables of emitter and receiver are consolidated into one cable for wire-saving. Wiring has +24 V, 0 V, OSSD 1, OSSD 2, output polarity setting wire (shield), large multi-purpose indicator input 1, and large multi-purpose indicator input 2 only. Net weight: 40 g approx. [Power wire and synchronization wire are connected inside the connector. Interlock is disabled (automatic reset).]	
Cable with connector on one side		**WY1-CCN3**	Cable length: 3 m 9.843 ft Net weight: 200 g approx. (1 cable)	Mating cable for Y-shaped connector Cable color: Gray (with black line) Connector color: Black The min. bending radius: R6 mm R0.236 in Connector outer diameter: ø14 mm ø0.551 in max.
		WY1-CCN10	Cable length: 10 m 32.808 ft Net weight: 620 g approx. (1 cable)	

By using the Y-shaped connector, the least required wires such as power or safety output are consolidated into one cable. Man-hours taken for wiring is eliminated to the minimum. Construction times as well as wiring mistakes are greatly reduced.

Previous A total of 24 wires



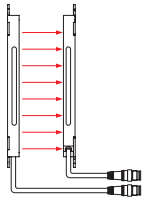
Y-shaped connector Only 7 wires
Less wiring mistakes! Reduced wiring time!
Easy wiring to Safety PLC, etc.



OPTIONS

Product configuration

Emitter Receiver



Pigtailed type
0.5 m 1.640 ft

Extension cable (1 cable for receiver)

SFB-CCJ3D-MU (3 m 9.843 ft for receiver)
SFB-CCJ10D-MU (10 m 32.808 ft for receiver)

Extension cable (1 cable for emitter)

SFB-CCJ3E-MU (3 m 9.843 ft for emitter)
SFB-CCJ10E-MU (10 m 32.808 ft for emitter)

Y-shaped connector
SFC-WY1

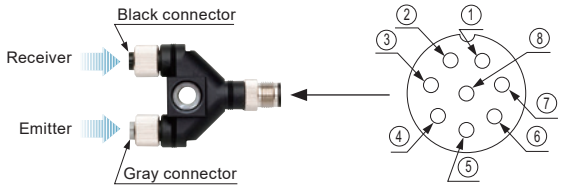
Extension cable

SFB-CCJ3D (3 m 9.843 ft)
SFB-CCJ10D (10 m 32.808 ft)

Cable with connector on one side (Common for all models)

WY1-CCN3 (3 m 9.843 ft)
WY1-CCN10 (10 m 32.808 ft)

Connector pin layout

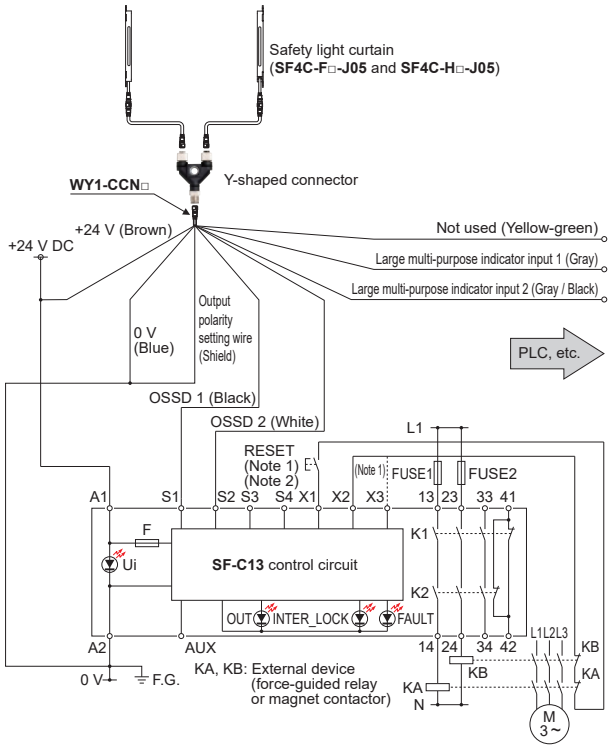


Connector pin No.	Description
①	OSSD 2
②	+24 V
③	OSSD 1
④	Not used
⑤	Large multi-purpose indicator input 1
⑥	Large multi-purpose indicator input 2
⑦	0 V
⑧	Output polarity setting wire (Shield)

Wiring diagram of control unit **SF-C13**

<For PNP output (minus ground)>

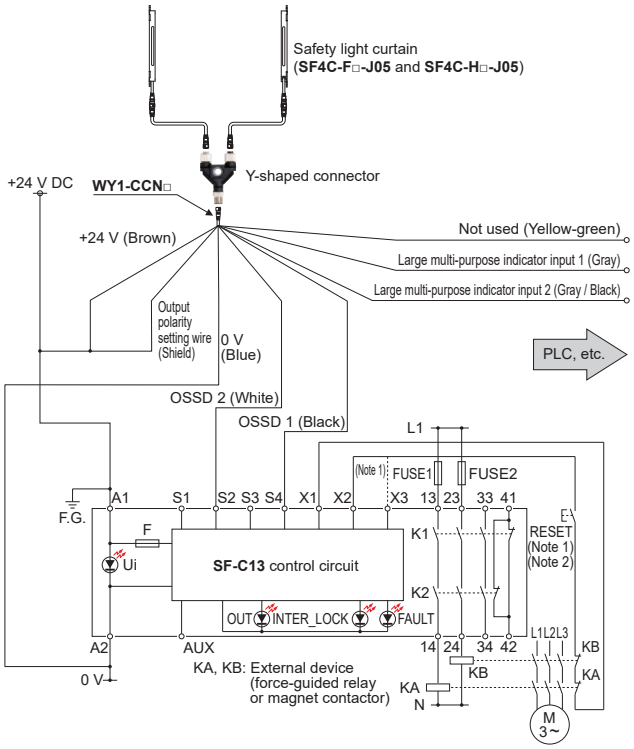
• Connect the safety light curtain control outputs OSSD 1 and OSSD 2 to S1 and S2 respectively.



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) Unused wires must be insulated.

<For NPN output (plus ground)>

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



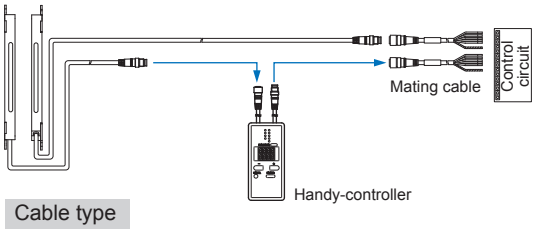
Notes: 1) The above diagram is when using manual reset. If automatic reset is used, disconnect the lead from X2 and connect it to X3. In this case, a reset (RESET) button is not needed.
2) Use a momentary-type switch as the reset (RESET) button.
3) Unused wires must be insulated.

OPTIONS

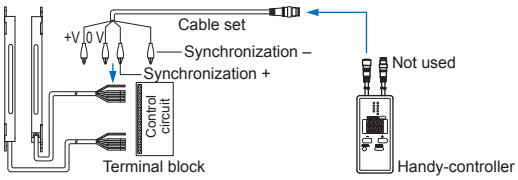
Handy-controller

Designation	Appearance	Model No.
Handy-controller		**SFC-HC**
Cable set for cable type connection		**SFC-WNC1**

Pigtailed type



Cable type



Metal protection case

Applicable beam channels / Designation		Metal protection case (2 pcs. per set for emitter and receiver)
SF4C-F□	**SF4C-H□**	Model No.
15	8	**MS-SFCH-8**
23	12	**MS-SFCH-12**
31	16	**MS-SFCH-16**
39	20	**MS-SFCH-20**
47	24	**MS-SFCH-24**
55	28	**MS-SFCH-28**
63	32	**MS-SFCH-32**

• **MS-SFCH-8**

• **MS-SFCH-12/16/20/24/28/32**

SPECIFICATIONS

Safety light curtain individual specifications

SF4C-F□

Item \ Type		Min. sensing object ø14 mm ø0.551 in type (10 mm 0.394 in beam pitch)						
Model No.	Pigtailed type	**SF4C-F15-J05**	**SF4C-F23-J05**	**SF4C-F31-J05**	**SF4C-F39-J05**	**SF4C-F47-J05**	**SF4C-F55-J05**	**SF4C-F63-J05**
	Cable type	**SF4C-F15**	**SF4C-F23**	**SF4C-F31**	**SF4C-F39**	**SF4C-F47**	**SF4C-F55**	**SF4C-F63**
No. of beam channels		15	23	31	39	47	55	63
Protective height		160 mm 6.299 in	240 mm 9.449 in	320 mm 12.598 in	400 mm 15.748 in	480 mm 18.898 in	560 mm 22.047 in	640 mm 25.197 in
Current consumption	Large multi-purpose indicator lights off	Emitter: 70 mA or less Receiver: 80 mA or less	Emitter: 75 mA or less Receiver: 85 mA or less		Emitter: 80 mA or less Receiver: 90 mA or less		Emitter: 85 mA or less Receiver: 95 mA or less	
	Large multi-purpose indicator lights up	Emitter: 105 mA or less Receiver: 110 mA or less	Emitter: 110 mA or less Receiver: 115 mA or less		Emitter: 115 mA or less Receiver: 120 mA or less		Emitter: 120 mA or less Receiver: 125 mA or less	
PFH		1.35×10^{-9}	1.79×10^{-9}	2.23×10^{-9}	2.67×10^{-9}	3.12×10^{-9}	3.56×10^{-9}	4.00×10^{-9}
$MTTF_D$		100 years or more						
Net weight (Total of emitter and receiver)	Pigtailed type	210 g approx.	270 g approx.	340 g approx.	400 g approx.	470 g approx.	540 g approx.	600 g approx.
	Cable type	600 g approx.	670 g approx.	730 g approx.	800 g approx.	860 g approx.	930 g approx.	1,000 g approx.

SF4C-H□

Item \ Type		Min. sensing object ø25 mm ø0.984 in type (20 mm 0.787 in beam pitch)						
Model No.	Pigtailed type	**SF4C-H8-J05**	**SF4C-H12-J05**	**SF4C-H16-J05**	**SF4C-H20-J05**	**SF4C-H24-J05**	**SF4C-H28-J05**	**SF4C-H32-J05**
	Cable type	**SF4C-H8**	**SF4C-H12**	**SF4C-H16**	**SF4C-H20**	**SF4C-H24**	**SF4C-H28**	**SF4C-H32**
No. of beam channels		8	12	16	20	24	28	32
Protective height		160 mm 6.299 in	240 mm 9.449 in	320 mm 12.598 in	400 mm 15.748 in	480 mm 18.898 in	560 mm 22.047 in	640 mm 25.197 in
Current consumption	Large multi-purpose indicator lights off	Emitter: 70 mA or less Receiver: 85 mA or less	Emitter: 70 mA or less Receiver: 90 mA or less		Emitter: 75 mA or less Receiver: 95 mA or less		Emitter: 80 mA or less Receiver: 100 mA or less	
	Large multi-purpose indicator lights up	Emitter: 120 mA or less Receiver: 135 mA or less	Emitter: 120 mA or less Receiver: 140 mA or less		Emitter: 120 mA or less Receiver: 145 mA or less		Emitter: 120 mA or less Receiver: 150 mA or less	
PFH		8.26×10^{-10}	1.07×10^{-9}	1.27×10^{-9}	1.52×10^{-9}	1.72×10^{-9}	1.97×10^{-9}	2.22×10^{-9}
$MTTF_D$		391 years	360 years	339 years	316 years	299 years	281 years	265 years
Net weight (Total of emitter and receiver)	Pigtailed type	220 g approx.	280 g approx.	340 g approx.	400 g approx.	460 g approx.	530 g approx.	600 g approx.
	Cable type	610 g approx.	680 g approx.	740 g approx.	800 g approx.	850 g approx.	930 g approx.	990 g approx.

Note: Where measurement conditions have not been specified precisely, the conditions used were an ambient temperature of +20 °C +68 °F.
PFH: Probability of dangerous failure per hour, $MTTF_D$: Mean time to dangerous failure (in years)

SPECIFICATIONS

Safety light curtain common specifications

Item \ Type	Model No.	Pigtailed type		Cable type	
		SF4C-F□-J05	**SF4C-H□-J05**	**SF4C-F□**	**SF4C-H□**
Applicable standards	International standard	IEC 61496-1/2 (Type 4), ISO 13849-1 (Category 4, PLe), IEC 61508-1 to 3 (SIL 3)			
	Japan	JIS B 9704-1/2 (Type 4), JIS B 9705-1 (Category 4), JIS C 0508 (SIL 3)			
	Europe (Note 2)	EN 61496-1 (Type 4), EN ISO 13849-1 (Category 4, PLe), EN 61508-1 to 3 (SIL 3), EN 55011, EN 50178, EN 61000-6-2			
	North America (Note 3)	ANSI/UL 61496-1/2 (Type 4), ANSI/UL 508, UL 1998 (Class 2), 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			
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 certification (U.S.A., Canada), Korea KCs mark [**SF4C-H□(-J05)** only] (Note 4)			
Operating range (Note 5)		0.1 to 3 m 0.328 to 9.843 ft			
Beam pitch		10 mm 0.394 in	20 mm 0.787 in	10 mm 0.394 in	20 mm 0.787 in
Min. sensing object (Note 6)		ø14 mm ø0.551 in opaque object	ø25 mm ø0.984 in opaque object	ø14 mm ø0.551 in opaque object	ø25 mm ø0.984 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 $^{+10}_{-15}$ % Ripple P-P 10 % or less			
Control outputs (OSSD 1, OSSD 2) (Note 12)		PNP open-collector transistor / NPN open-collector transistor (switching method) (Note 4) <When selecting PNP output> • Max. 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 10 m 32.808 ft length cable) • Leakage current: 200 µA or less (including power supply OFF condition) • Max. load capacity: 1 µF (No load to Max. source current) • Load wiring resistance: 3 Ω or less <When selecting NPN output> • Max. 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 10 m 32.808 ft length cable) • Leakage current: 200 µA or less (including power supply OFF condition) • Max. load capacity: 1 µF (No load to Max. sink 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 7,8)			
	Protection circuit	Incorporated			
Response time		OFF response: 9 ms or less, ON response: 90 ms or less	OFF response: 7 ms or less, ON response: 90 ms or less	OFF response: 9 ms or less, ON response: 90 ms or less	OFF response: 7 ms or less, ON response: 90 ms or less
Auxiliary output (Non-safety output)		PNP open-collector transistor / NPN open-collector transistor (switching method) (Note 4) <When selecting PNP output> • Max. source current: 100 mA • Applied voltage: same as supply voltage (between the auxiliary source and +V) • Residual voltage: 2.5 V or less (source current 100 mA, when using 10 m 32.808 ft length cable) <When selecting NPN output> • Max. sink current: 100 mA • Applied voltage: same as supply voltage (between the auxiliary sink and 0 V) • Residual voltage: 2.5 V or less (sink current 100 mA, when using 10 m 32.808 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 handy-controller **SFC-HC** (optional).]			
	Protection circuit	Incorporated			
Functions		ELCA function (reducing mutual interference automatically), test input function, Interlock function [manual reset / automatic reset (Note 9)], external device monitor function, safety input function (safety contact), muting function, override function, large multi-purpose indicator function			
Optional functions (Note 10)		Fixed blanking, floating blanking, auxiliary output change, safety input (safety sensor), large multi-purpose indicator setting change, interlock setting change, external relay monitor setting change, muting setting change, override setting change, protecting			
Pollution degree / Operating altitude		3 / 2,000 m 6,561 68 ft or less (Note 11)			
Environmental resistance	Degree of protection	IP67 / IP65 (IEC)			
	Ambient temperature	–10 to +55 °C +14 to +131 °F (No dew condensation or icing allowed) (Note 12), Storage: –25 to +60 °C –13 to +140 °F			
	Ambient humidity	30 to 85 % RH, Storage: 30 to 85 % RH			
	Ambient illuminance	Incandescent light: 5,000 ℓx or less at the light-receiving face			
	Dielectric strength voltage	1,000 V AC for one min. between all supply terminals connected together and enclosure			
	Insulation resistance	20 MΩ, or more, with 500 V DC megger between all supply terminals connected together and enclosure			
	Vibration resistance	10 to 55 Hz frequency, 0.75 mm 0.030 in double 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 three times each			
Emitting element		Infrared LED (Peak emission wavelength: 855 nm 0.034 mil)			
Material		Enclosure: Polycarbonate alloy, Sensing surface: Polycarbonate alloy, **MS-SFC-1** (Standard mounting bracket): SUS			
Cable		0.15 mm² (power line: 0.2 mm²) 12-core heat-resistant PVC cable with connector, 0.5 m 1.640 ft long		0.15 mm² (power line: 0.2 mm²) 12-core heat-resistant PVC cable, 5 m 16.404 ft long	
Cable extension (Note 13, 14)		Extension up to 30 m 98.425 ft (**SF4C-F□-J05**: 40.5 m 132.874 ft) is possible for both emitter and receiver optional mating cables		Extension up to 30 m 98.425 ft (**SF4C-F□**: 40.5 m 132.874 ft) is possible for both emitter and receiver, with 0.2 mm² or more cable	
Accessories		**MS-SFC-1** (Standard mounting bracket): 1 set, **SF4C-TR14** (Test rod): 1 pc.	**MS-SFC-1** (Standard mounting bracket): 1 set, **SF4C-TR25** (Test rod): 1 pc.	**MS-SFC-1** (Standard mounting bracket): 1 set, **SF4C-TR14** (Test rod): 1 pc.	**MS-SFC-1** (Standard mounting bracket): 1 set, **SF4C-TR25** (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) Regarding EU Machinery Directive, a Notified Body, TÜV SÜD, has certified with the type examination certificate.
3) With regards to the standards in the US/Canada, a Notified Body, TÜV SÜD, has certified the cTÜVus mark.
4) When using this device in Korea with KCs mark, be sure to ground to 0V side (PNP output).
5) The operating range is the possible setting distance between the emitter and the receiver.
6) When the floating blanking function is used, the size of the min. sensing object is changed. Please refer to the instruction manual for details.
7) The outputs are not “OFF” when muting function is active even if the beam channel is interruped.
8) In case the blanking function is valid, the operation mode is changed.
9) The manual reset and automatic reset are possible to be switched depending on the wiring status.
10) In case of using optional function, the handy-controller **SFC-HC** (optional) is required.
11) Do not use or store in an environment pressurized to atmospheric pressure or higher at an altitude of 0 m.
12) When large multi-purpose indicator of **SF4C-H□(-J05)** is used, allowable upper-limit ambient temperature is +50 °C +122 °F and control output (OSSD 1/2) must not exceed 100 mA.
13) When extending the cables of emitter and receiver, make sure total measured length of all cables (main unit cables and connection cables) is no more than 30 m 98.425 ft [**SF4C-F□(-J05)**: 40.5 m 132.874 ft]
14) When the synchronization + wire (orange) and synchronization - wire (orange / black) is extended with a cable other than exclusive cable, use a 0.2 mm² or more shielded twisted pair cable.

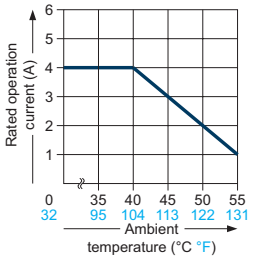
SPECIFICATIONS

Control unit

Item \ Model No.		SF-C13
Connectable safety light curtains		Safety light curtain manufactured by Panasonic Industry
Applicable standards		EN 61496-1 (Type 4), EN 55011, EN ISO 13849-1: 2015 (Category 4, PLe), IEC 61496-1 (Type 4), ISO 13849-1: 2015 (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
Control category		ISO 13849-1: 2015 (EN ISO 13849-1: 2015, 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 (power supply)		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)
	Application 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 resistance	100 mΩ or less (initial value)
	Contact protection fuse rated	4 A (slow blow)
Pick-up delay (Auto reset / Manual reset)		80 ms or less / 90 ms or less
Response time (Recovery 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 rated	2 A (slow blow)
Semiconductor auxiliary output (AUX)		PNP open-collector transistor • Max. source current: 60 mA
	Output operation	On when the safety light curtain is interrupted
Polarity selection function (Note 3)		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
Excess voltage category / Pollution degree		II / 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 double amplitude in X, Y, and Z directions twenty times each
B_{10D} (Note 4)		Minimum load: 20,000,000, Maximum load: 400,000
Mission time		20 years
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) Please switch the sliding switch to the PNP side for minus ground and to the NPN side for plus ground.
4) Mean cycle time that 10% of parts reach dangerous failure.
5) Refer to our website for detailed specifications of **SF-C13**.

Dilating when SF-C13 units are mounted close together



Handy-controller

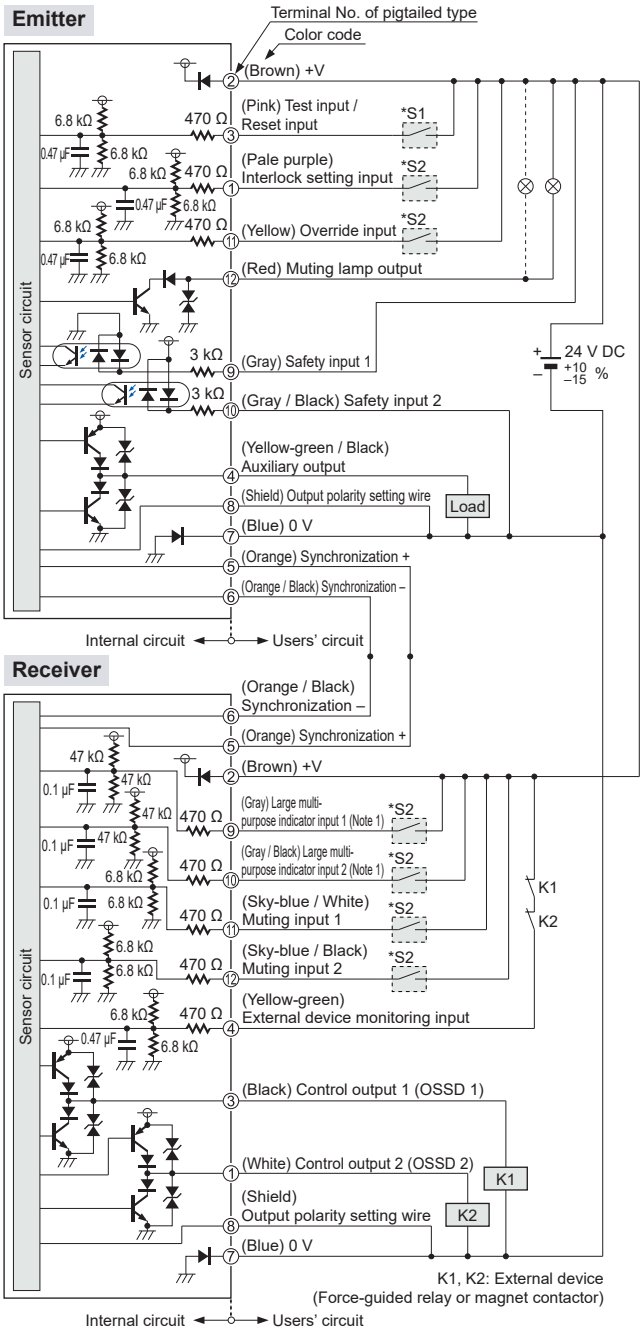
Item \ Model No.		SFC-HC
Supply voltage		24 V DC $^{+10}_{-15}$ % Ripple P-P 10 % or less (common to safety light curtain power supply)
Current consumption		65 mA or less
Communication method		RS-485 two-way communications (Specific procedure)
Digital display		4-digit red LED display × 2 (Selected beam channels, setting contents etc. are displayed.)
Function indicators		Green LED × 9 (Lights up when each functional setting is ON)
Functions		Fixed blanking / Floating blanking / Auxiliary output change / Satety input setting change / Large multi-purpose indicator setting change / Muting setting change / Interlock setting change / External device monitor setting change / Override setting changing function 60 sec. / Protecting
Environmental resistance	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 85 % RH
	Voltage withstandability	1,000 V AC for one min. between all supply terminals connected together and enclosure
	Insulation resistance	20 MΩ, or more, with 500 V DC megger between all supply terminals connected together and enclosure
Cable		12-core shielded cable, 0.5 m 1.640 ft long, with a connector at the end (2 cables)
Weight		Net weight: 200 g approx.

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

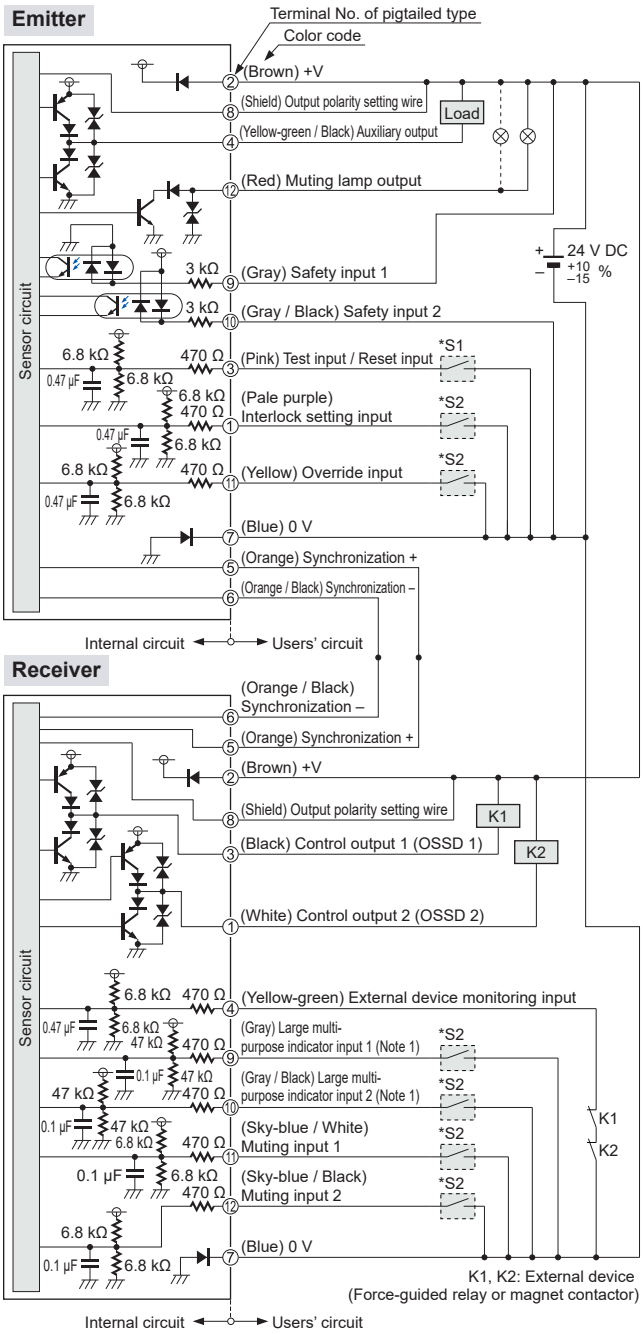
I/O CIRCUIT AND WIRING DIAGRAMS

I/O circuit diagram

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



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



*S1, S2

Switch S1
- Test input / Reset input
  For manual reset
  Vs to Vs – 3.5 V (sink current 5 mA or less): OFF (Note 2)
  Open: ON
  For automatic reset
  Vs to Vs – 3.5 V (sink current 5 mA or less): ON (Note 2)
  Open: OFF

Switch S2
- Interlock setting input, Override input, Muting input 1/2, Large multi-purpose indicator input 1/2,
  Vs to Vs – 3.5 V (sink current 5 mA or less): Valid (Note 2)
  Open: Invalid

Notes: 1) Large multi-purpose indicator lights up in red when connecting large multi-purpose indicator input 1 wire (gray) and +V, and large multi-purpose indicator lights up in green when connecting large multi-purpose indicator input 2 wire (gray / black) and +V.
2) Vs is the applying supply voltage.

*S1, S2

Switch S1
- Test input / Reset input
  For manual reset
  0 to +2.5 V (source current 5 mA or less): OFF
  Open: ON
  For automatic reset
  0 to +2.5 V (source current 5 mA or less): ON
  Open: OFF

Switch S2
- Interlock setting input, Override input, Muting input 1/2, Large multi-purpose indicator input 1/2,
  0 to +2.5 V (source current 5 mA or less): Valid
  Open: Invalid

Note: 1) Large multi-purpose indicator lights up in red when connecting large multi-purpose indicator input 1 wire (gray) and 0 V, and large multi-purpose indicator lights up in green when connecting large multi-purpose indicator input 2 wire (gray / black) and 0 V.

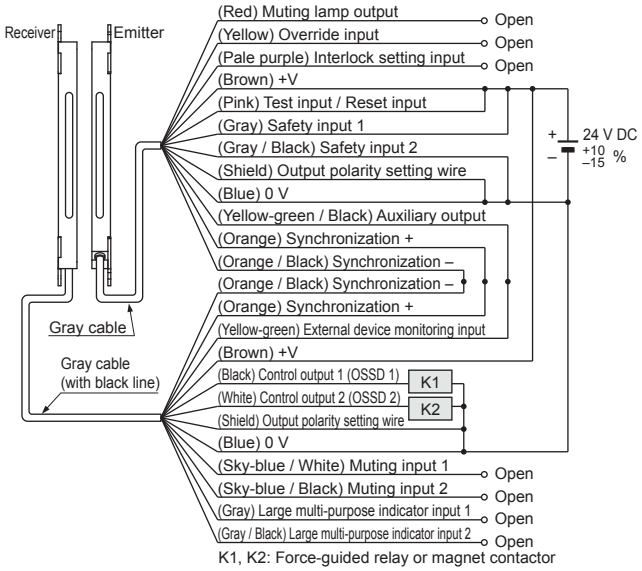
I/O CIRCUIT AND WIRING DIAGRAMS

Connection example

Basic wiring: Min. operation only

This is the general configuration using one set of the emitter and receiver facing each other. The control outputs (OSSD 1 / OSSD 2) turn OFF if the light is interrupted, while they automatically turn ON if receive the light.
The auxiliary output is used to invalid the external device monitoring function. The auxiliary output cannot be connected to external devices.

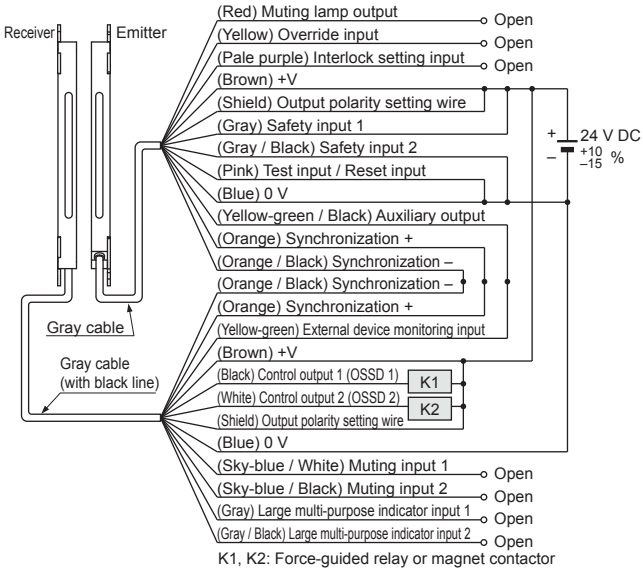
<In case of using I/O circuit for PNP output>



K1, K2: Force-guided relay or magnet contactor

Interlock function	Disabled (Automatic reset)
External device monitoring function	Disabled
Auxiliary output	Not used
Output polarity setting wire	PNP
Safety input	Invalid

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



K1, K2: Force-guided relay or magnet contactor

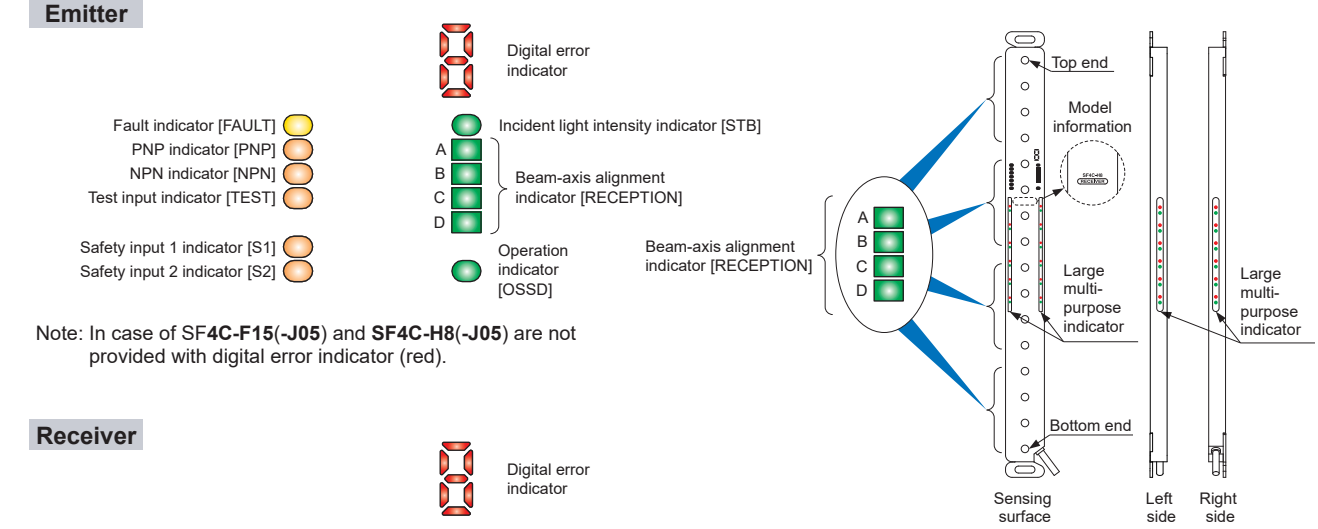
Interlock function	Disabled (Automatic reset)
External device monitoring function	Disabled
Auxiliary output	Not used
Output polarity setting wire	NPN
Safety input	Invalid

Wiring

- Be sure to carry out the wiring in the power supply OFF condition.
- All electrical wiring should conform to the regional electrical regulations and laws. The wiring should be done by engineer(s) having the special electrical knowledge.
- 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.
- In case of extending the cable of the emitter or the receiver, each can be extended up to 30 m 98.425 ft [40.5 m 132.874 ft for **SF4C-F□(-J05)**] by using the exclusive cable.
- When the synchronization + wire (orange) and synchronization - wire (orange / black) is extended with a cable other than exclusive cable, use a 0.2 mm^2 or more shielded twisted pair cable.
- Do not control the device only at one control output (OSSD 1 / 2).
- In order that the output is not turned ON due to earth fault of the control output (OSSD 1 / 2) wires, be sure to ground to 0 V side (PNP output) / +V side (NPN output).
- When using this device in Korea with KCs mark, be sure to ground to 0 V side (PNP output).

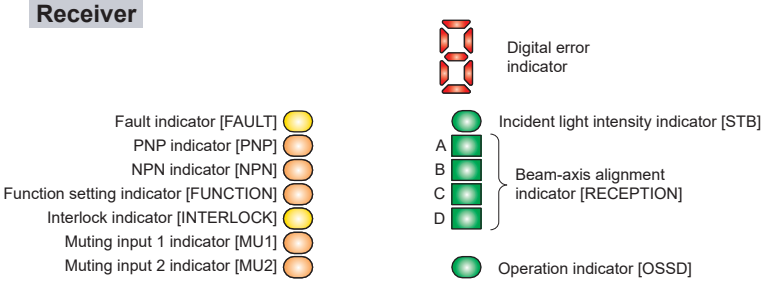
Part description

Emitter



Note: In case of SF**4C-F15**(**-J05**) and **SF4C-H8**(**-J05**) are not provided with digital error indicator (red).

Receiver



Note: In case of **SF4C-F15**(**-J05**) and **SF4C-H8**(**-J05**) are not provided with digital error indicator (red).

Emitter

Description	Function
Operation indicator (Red / Green) [OSSD] (Note 1)	Lights up when device operation is as follows. [Sequential operation to control output (OSSD 1 / 2).] Lights up in red when control output (OSSD 1 / 2) is OFF. Lights up in green when control output (OSSD 1 / 2) is ON.
Test input indicator (Orange) [TEST]	Lights up when test input is valid. Turns OFF when test input is invalid.
Safety input 1 indicator (Orange) [S1]	Lights up when safety input 1 is valid. Turns OFF when safety input 1 is invalid.
Safety input 2 indicator (Orange) [S2]	Lights up when the safety input 2 is valid. Turns OFF when the safety input 2 is invalid.

Receiver

Description	Function
OSSD indicator (Red / Green) [OSSD]	Lights up in red when control output (OSSD 1 / 2) is OFF. Lights up in green when control output (OSSD 1 / 2) is ON.
Function setting indicator (Orange) [FUNCTION]	Blinks when the handy controller is connected. Lights up when blanking function is valid. (Note 2)
Interlock indicator (Yellow) [INTERLOCK]	Lights up when interlock is valid. Turns OFF when interlock is invalid.
Muting input 1 indicator (Orange) [MU1]	Lights up when muting input 1 is valid. Turns OFF when muting input 1 is invalid.
Muting input 2 indicator (Orange) [MU2]	Lights up when muting input 2 is valid. Turns OFF when muting input 2 is invalid

Common to emitter and receiver

Description		Function
Large multi-purpose indicator (Red / Green) (Note 3)		Lights up in red when the large multi-purpose indicator input 1 is valid. Lights up in green when the large multi-purpose indicator input 2 is valid. Turns OFF when the input is invalid.
Incident light intensity indicator (Orange / Green) [STB]		Lights up in green when stable light is received. Lights up in orange when unstable light is received. Turns OFF when light is blocked. (Note 4)
Beam-axis alignment indicator (Red / Green) [RECEPTION]	A	Lights up in red when device top receives light. Blinks in red when device top end receives light. Lights up in green when control output (OSSD 1 / 2) is ON.
	B	Lights up in red when device upper middle receives light. Lights up in green when control output (OSSD 1 / 2) is ON.
	C	Lights up in red when device lower middle receives light. Lights up in green when control output (OSSD 1 / 2) is ON.
	D	Lights up in red when device bottom receives light. Blinks in red when device bottom end receives light. Lights up in green when control output (OSSD 1 / 2) is ON
Digital error indicator (Red)		Error contents are indicated when device is lockout.
Fault indicator (Yellow) [FAULT]		Lights up or blinks when fault occurs in the device.
PNP indicator (Orange) [PNP]		Lights up when PNP output is set.
NPN indicator (Orange) [NPN]		Lights up when NPN output is set.

Notes: 1) Since the color of the operation indicator changes according to ON / OFF status of the control output (OSSD 1 / 2), the operation indicator is marked as “OSSD” on the device.
2) The blanking function is set by using the handy controller **SFC-HC** (optional).
3) The operation of the large multi-purpose indicator (lights up, blinks or turns OFF) can be set by using the handy controller **SFC-HC** (optional).
4) “When light is blocked” refers to the status that there exists any object blocking light in the sensing area.
5) The description given in [ ] is marked on the device.

- 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 install this safety light curtain with a machine whose operation cannot be stopped immediately in the middle of an operation cycle by an emergency stop equipment.

Output waveform [when control output (OSSD 1 / 2) is ON]

- Since the receiver performs the self-diagnosis of the output circuit when the device is in light receiving status (ON status), the output transistor becomes OFF status periodically.
  When the OFF signal is fed back, the receiver judges the output circuit as normal. When the OFF signal is not fed back, the receiver judges either the output circuit or wiring as error, and the control output (OSSD 1 / 2) maintains OFF status.

- Perform the wiring with paying attention to the input response time of the machine to be connected to this device, since the OFF signal of this device might cause malfunction.

* Refer to the instruction manual for detail.

Handy-controller

This safety light curtain enables to set each function using the handy-controller **SFC-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 **SFC-HC** (optional).

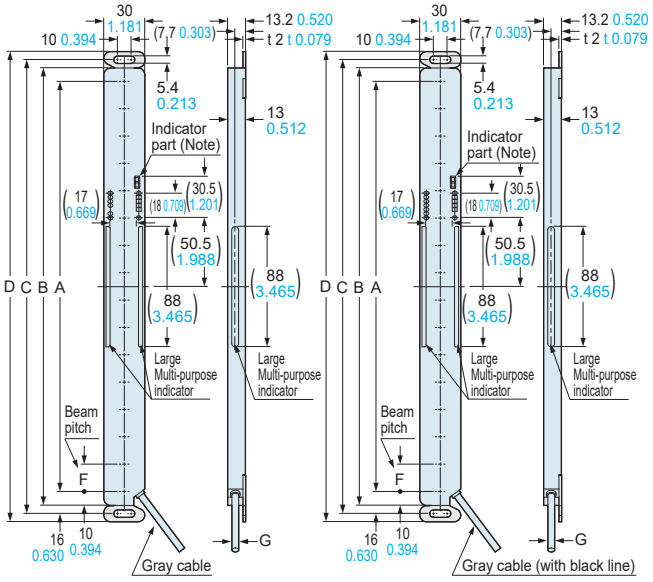
Others

- 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.
- This product is suitable for indoor use only.
- Avoid dust, dirt and steam.
- Take care that the sensor does not come in direct contact with water, oil, grease, or organic solvents, such as, thinner, etc.
- Take care that the sensor is not directly exposed to fluorescent lamp from a rapid-starter lamp or a high frequency lighting device, as it may affect the sensing performance.
- The body of this device is made of resin, so please take into account the expansion and contraction of the longitudinal dimension. When machining mounting holes, please check the actual product.

Mounting bracket assembly dimensions

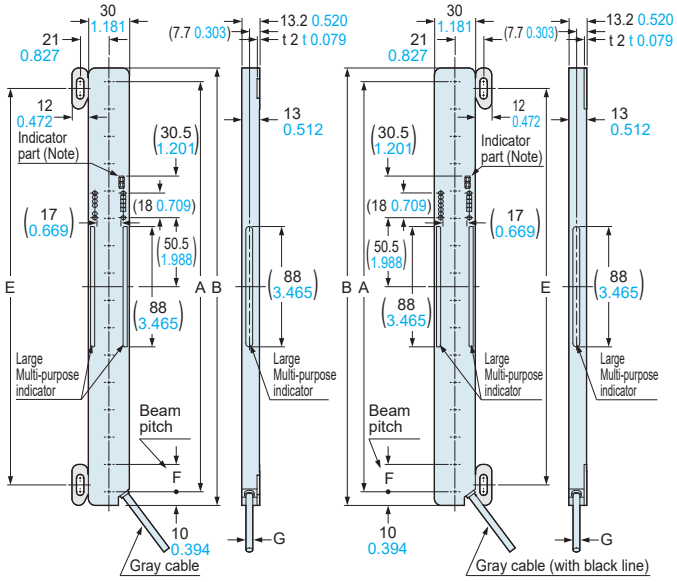
Mounting drawing for the safety light curtains using the standard mounting brackets **MS-SFC-1** (accessory).

<Center mounting>



Emitter **Receiver**

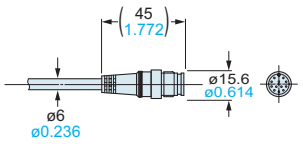
<Dead zoneless mounting>



Emitter **Receiver**

Note: In case of **SF4C-F15**(**-J05**) and **SF4C-H8**(**-J05**) are not provided with digital error indicator (red).

Connector of the pigtailed type SF4C-F□-J05 / SF4C-H□-J05



Model No.		A	B	C	D	E
SF4C-F15(-J05)	**SF4C-H8(-J05)**	140 5.512	160 6.299	172 6.772	184 7.244	130 5.118
SF4C-F23(-J05)	**SF4C-H12(-J05)**	220 8.661	240 9.449	252 9.921	264 10.394	210 8.268
SF4C-F31(-J05)	**SF4C-H16(-J05)**	300 11.811	320 12.598	332 13.071	344 13.543	290 11.417
SF4C-F39(-J05)	**SF4C-H20(-J05)**	380 14.961	400 15.748	412 16.220	424 16.693	370 14.567
SF4C-F47(-J05)	**SF4C-H24(-J05)**	460 18.110	480 18.898	492 19.370	504 19.842	450 17.717
SF4C-F55(-J05)	**SF4C-H28(-J05)**	540 21.260	560 22.047	572 22.520	584 22.992	530 20.866
SF4C-F63(-J05)	**SF4C-H32(-J05)**	620 24.409	640 25.197	652 25.669	664 26.142	610 24.016

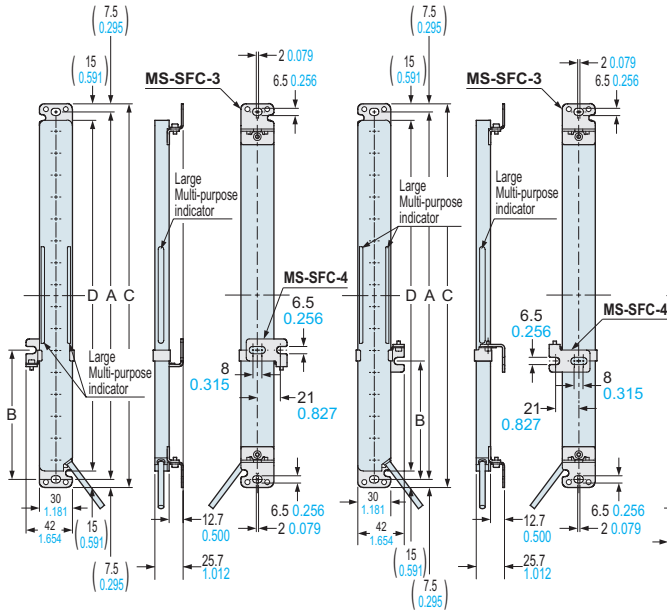
Model No.	F	G
SF4C-F□(-J05)	10 0.394	ø5 ø0.197
SF4C-H□(-J05)	20 0.787	

Note: The body of this device is made of resin, so please take into account the expansion and contraction of the longitudinal dimension. When machining mounting holes, please check the actual product.

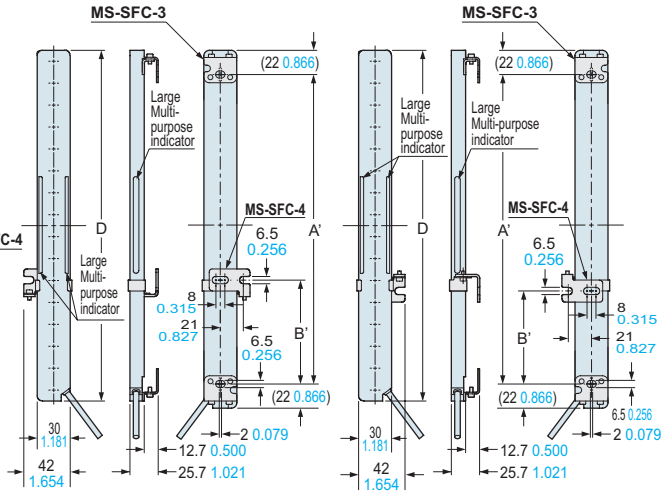
Mounting bracket assembly dimensions

Mounting drawing for the safety light curtains using the versatile brackets **MS-SFC-3** (optional) and intermediate supporting bracket for versatile brackets **MS-SFC-4** (optional).

<Rear mounting>



<Dead zoneless mounting>



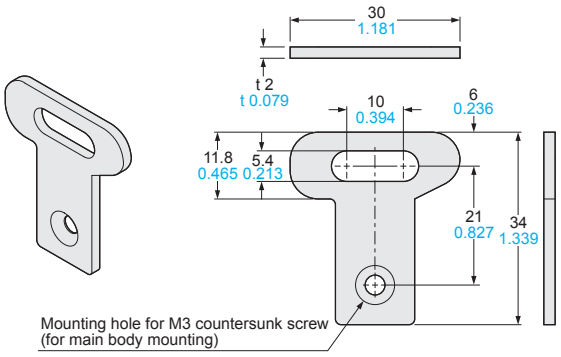
Model No.		Inter mediate supporting bracket	A	A'	B	B'	C	D
SF4C-F15(-J05)	**SF4C-H8(-J05)**	—	175 6.890	116 4.567	—	—	190 7.480	160 6.299
SF4C-F23(-J05)	**SF4C-H12(-J05)**	—	255 10.039	196 7.717	—	—	270 10.630	240 9.449
SF4C-F31(-J05)	**SF4C-H16(-J05)**	—	335 13.189	276 10.866	—	—	350 13.780	320 12.598
SF4C-F39(-J05)	**SF4C-H20(-J05)**	—	415 16.339	356 14.016	—	—	430 16.929	400 15.748
SF4C-F47(-J05)	**SF4C-H24(-J05)**	—	495 19.488	436 17.165	—	—	510 20.079	480 18.898
SF4C-F55(-J05)	**SF4C-H28(-J05)**	Available	575 22.638	516 20.315	238 to 338 9.370 to 13.307	209 to 309 8.228 to 12.165	590 23.228	560 22.047
SF4C-F63(-J05)	**SF4C-H32(-J05)**	Available	655 25.787	596 23.465	278 to 378 10.945 to 14.882	249 to 349 9.803 to 13.740	670 26.378	640 25.197

Notes: 1) Be sure to mount **MS-SFC-4** when using **SF4C-F55(-J05)**, **SF4C-F63(-J05)**, **SF4C-H28(-J05)** and **SF4C-H32(-J05)**.
2) The body of the safety light curtain is made of resin, so please take into account the expansion and contraction of the longitudinal dimension. When machining mounting holes, please check the actual product.

DIMENSIONS (Unit: mm in)

The CAD data can be downloaded from our website.

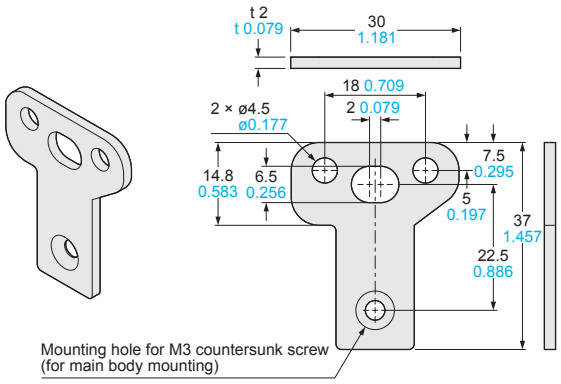
MS-SFC-1 Standard mounting bracket (Accessory)



Material: Stainless steel (SUS304)
Net weight: 32 g approx. (4 pcs.)
Package weight: 35 g appox.

Four bracket set
[Four M3 (length 4 mm 0.157 in) countersunk screws are attached.]

MS-SFC-2 NA2-N compatible mounting bracket (Optional)

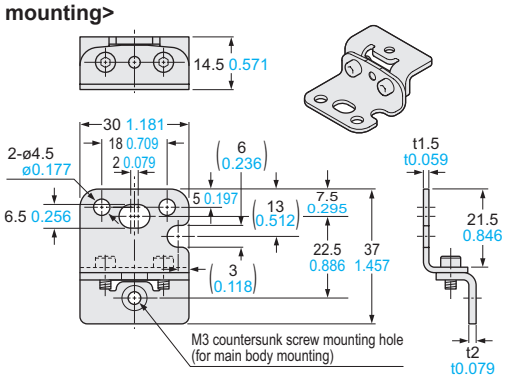


Material: Stainless steel (SUS304)
Net weight: 36 g approx. (4 pcs.)
Package weight: 40 g appox.

Four bracket set
[Four M3 (length 4 mm 0.157 in) countersunk screws are attached.]

MS-SFC-3 Versatile bracket (Optional)

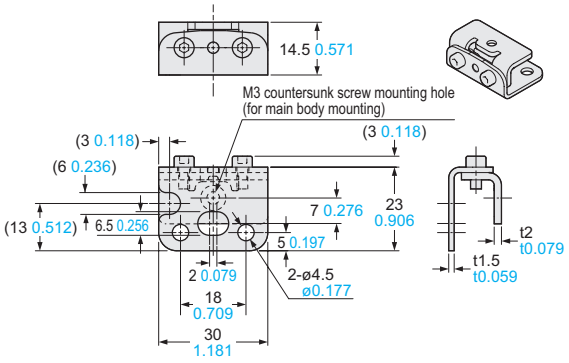
<Rear mounting>



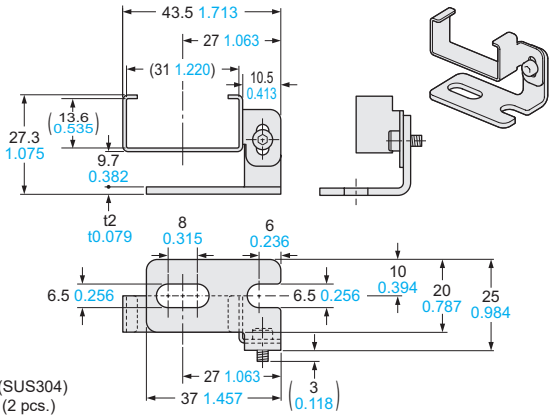
Material: Stainless steel (SUS304)
Net weight: 75 g approx. (4 pcs.)
Package weight: 90 g appox.

Four bracket set
[Four M3 (length 4 mm 0.157 in) countersunk screws are attached.]

<Dead zoneless mounting>



MS-SFC-4 Intermediate supporting bracket for versatile bracket (Optional)



Material: Stainless steel (SUS304)
Net weight: 40 g approx. (2 pcs.)
Package weight: 60 g appox.

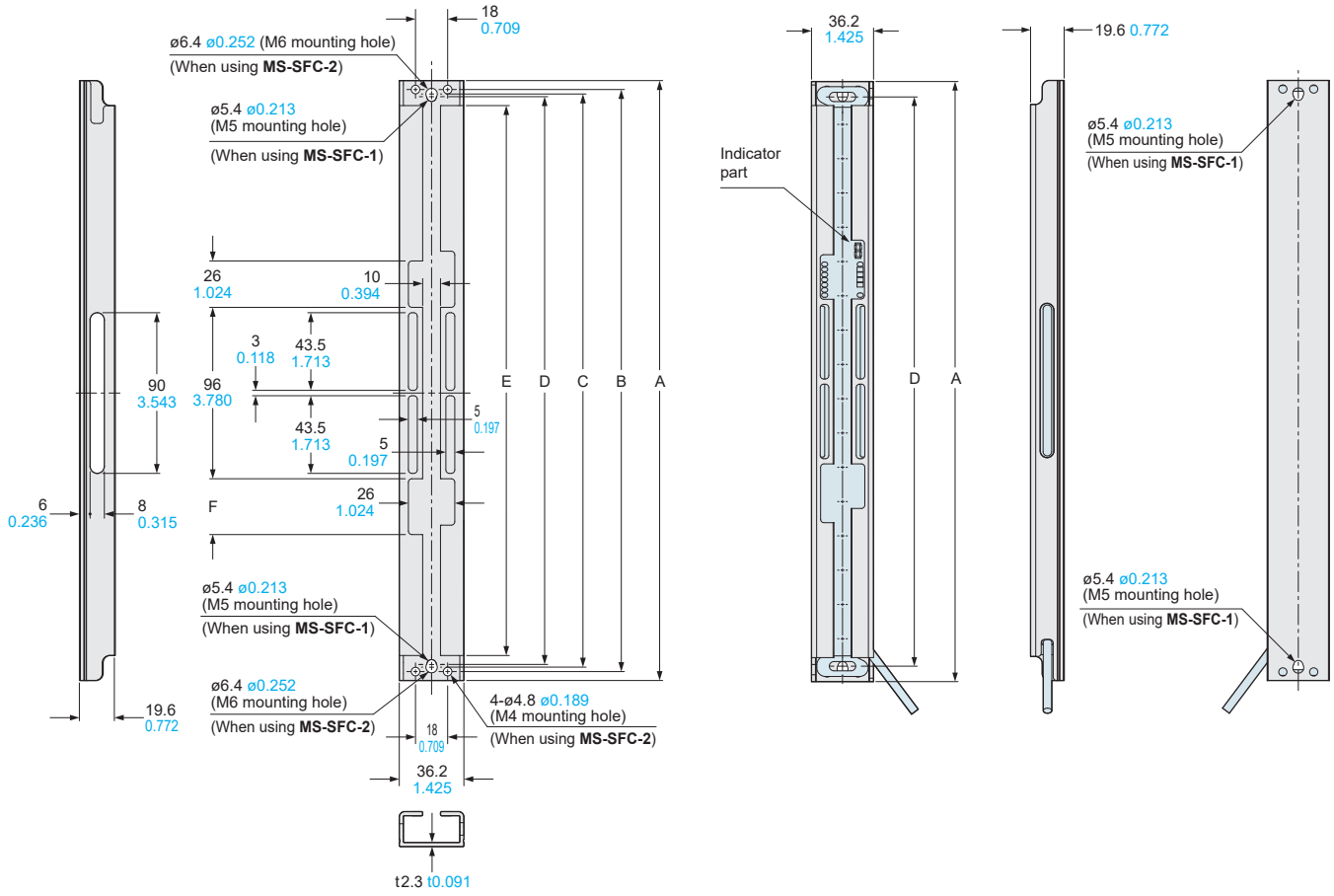
Two bracket set

MS-SFCH-□

Metal protection case (Optional)

Assembly dimensions

Mounting drawing for **SF4C-H□** using the metal protection case (**MS-SFCH-□**).

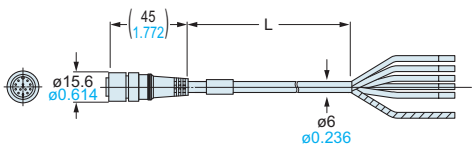


Material: Aluminum

Model No.	A	B	C	D	E	F	Net weight (2 pcs.)
MS-SFCH-8	190 7.480	180 7.087	175 6.890	172 6.772	162 6.378	26 1.024	160 g approx.
MS-SFCH-12	270 10.630	260 10.236	255 10.039	252 9.921	242 9.528	35 1.378	240 g approx.
MS-SFCH-16	350 13.780	340 13.386	335 13.189	332 13.071	322 12.677	35 1.378	340 g approx.
MS-SFCH-20	430 16.929	420 16.535	415 16.339	412 16.220	402 15.827	35 1.378	420 g approx.
MS-SFCH-24	510 20.079	500 19.685	495 19.488	492 19.370	482 18.976	35 1.378	520 g approx.
MS-SFCH-28	590 23.228	580 22.835	575 22.638	572 22.520	562 22.126	35 1.378	600 g approx.
MS-SFCH-32	670 26.378	660 25.984	655 25.787	652 25.669	642 25.276	35 1.378	700 g approx.

SFB-CC□-MU

Mating cable with connector on one end (Optional)

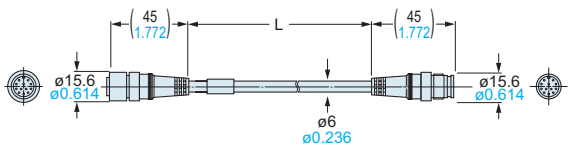


• Length L

Model No.	Length L
SFB-CC3-MU	3,000 118.110
SFB-CC7-MU	7,000 275.590
SFB-CC10-MU	10,000 393.700

SFB-CCJ□-MU

Mating cable with connectors on both ends (Optional)



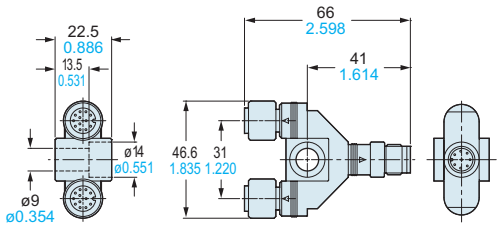
• Length L

Model No.	Length L
SFB-CCJ3D-MU	3,000 118.110
SFB-CCJ3E-MU	
SFB-CCJ10D-MU	10,000 393.700
SFB-CCJ10E-MU	

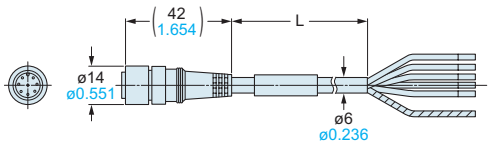
DIMENSIONS (Unit: mm in)

The CAD data can be downloaded from our website.

SFC-WY1 Y-shaped connector (Optional)



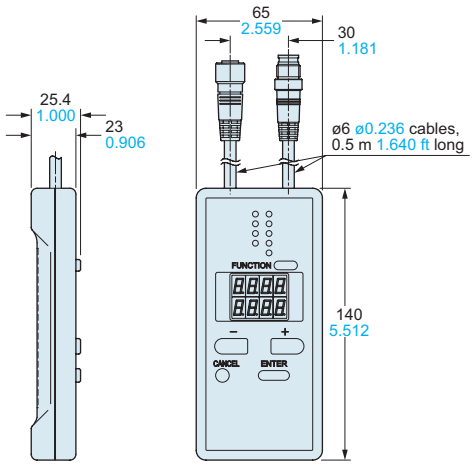
WY1-CCN3 WY1-CCN10 Mating cable (Optional)



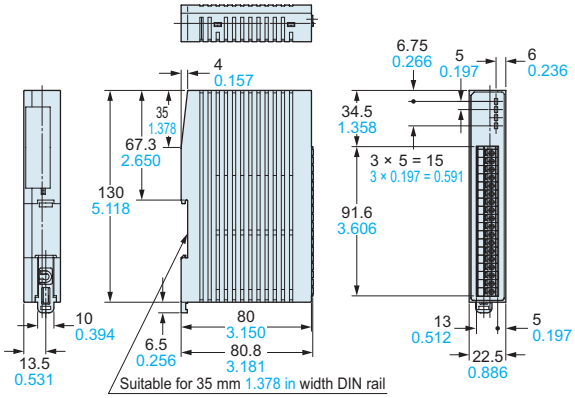
• Length L

Model No.	Length L
WY1-CCN3	3,000 118.110
WY1-CCN10	10,000 393.700

SFC-HC Handy-controller (Optional)



SF-C13 Control unit (Optional)



Disclaimer

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Specifications are subject to change without notice.
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