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Panasonic

NEW

Ultra-slim

LIGHT CURTAIN

Type 2 PLc SIL1

SF2C SERIES

Conforming to Machine & EMC Directive

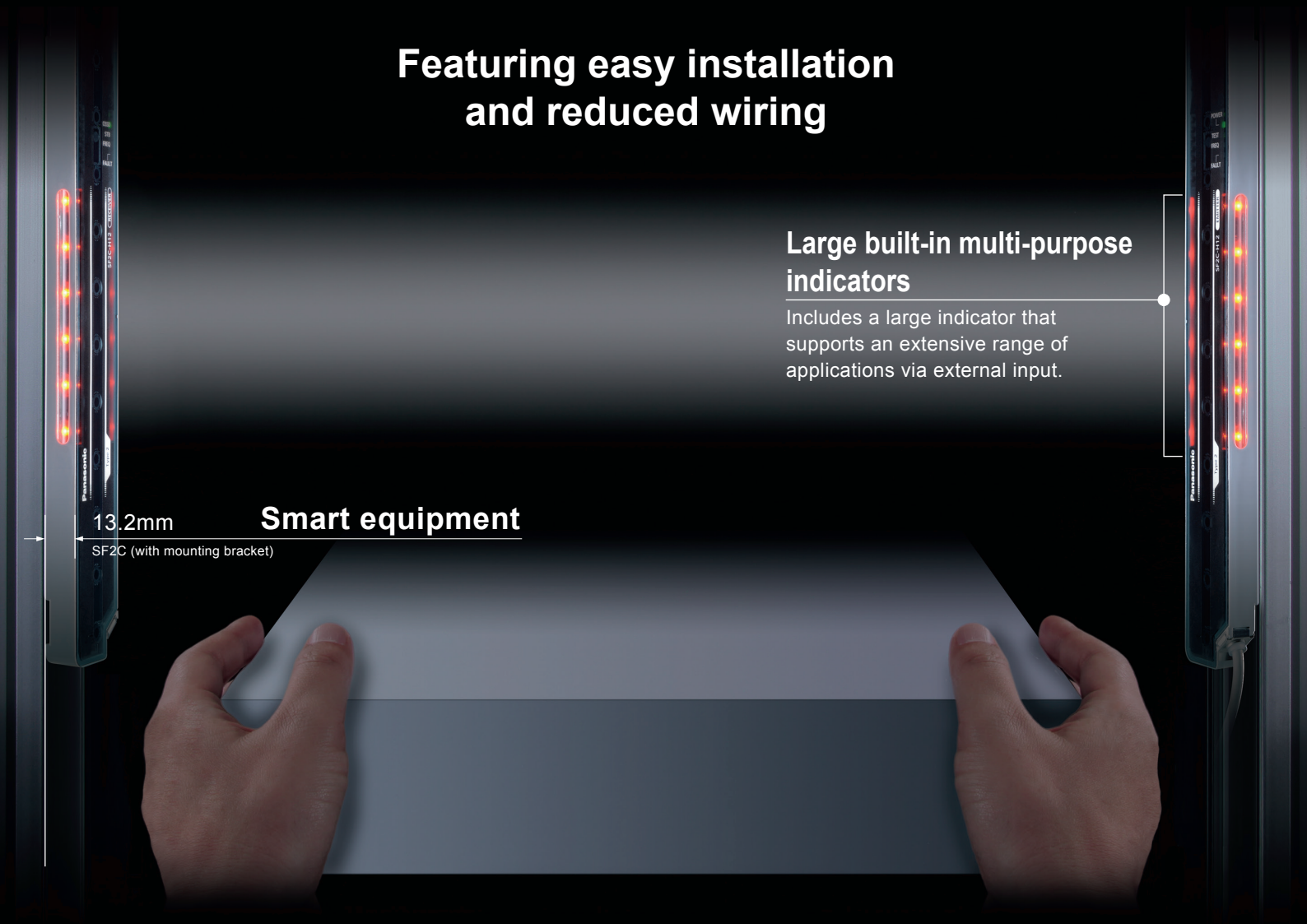
Certified

Certified by NRTL

Conforming to OSHA / ANSI

Introducing Type 2 Ultra-slim Light Curtains!

Featuring easy installation and reduced wiring



Large built-in multi-purpose indicators

Includes a large indicator that supports an extensive range of applications via external input.

13.2mm

SF2C (with mounting bracket)

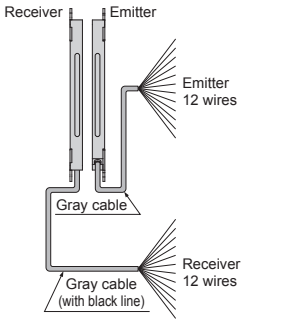
Smart equipment

*The picture is an image.

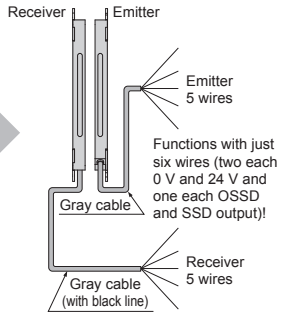
Dramatically less wiring work

Light curtain wiring consists of just five wires each for the emitter and receiver, allowing you to easily implement safety measures in about the same amount of time as with an area sensor.

SF4C Series (Type4)



SF2C Series (Type2)



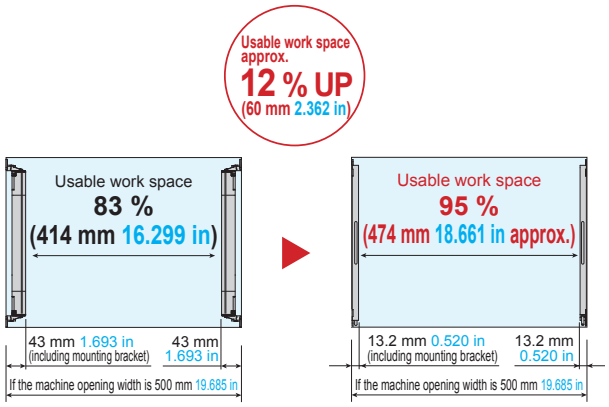
Note: Requires a safety circuit architecture that complies with the desired control category implemented using either an **SF-C13** Control Unit, a safety relay, or other equipment.

Slim size for efficient applications

Available work space is expanded from the previous model, and productivity is improved.

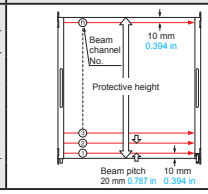
If the machine opening is 500 mm 19.685 in

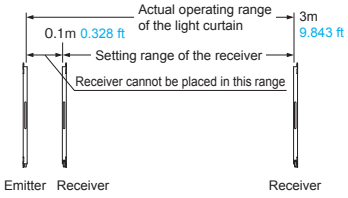
Previous | **SF2C** Series



ORDER GUIDE

Light curtains

Type	Appearance	Operating range (Note 1)	Model No. (Note 2) PNP output type	Model No. (Note 2) NPN output type	No. of beam Channels	Protective height (mm in)
Hand protection type (Min. sensing object ø25 mm ø0.984 in (20 mm 0.787 in beam pitch))		0.1 to 3m 0.328 to 9.843 in	**SF2C-H8-P**	**SF2C-H8-N**	8	160 6.299
			SF2C-H12-P	**SF2C-H12-N**	12	240 9.449
			SF2C-H16-P	**SF2C-H16-N**	16	320 12.598
			SF2C-H20-P	**SF2C-H20-N**	20	400 15.748
			SF2C-H24-P	**SF2C-H24-N**	24	480 18.898
			SF2C-H28-P	**SF2C-H28-N**	28	560 22.047
			SF2C-H32-P	**SF2C-H32-N**	32	640 25.197



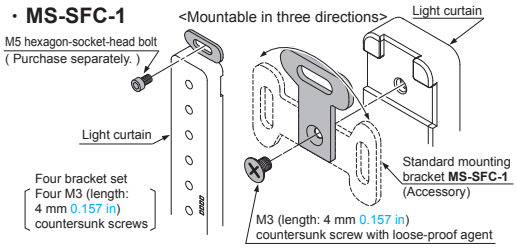
Notes: 1) The operating range is the possible setting distance between the emitter and the receiver.
2) The model No. with suffix "**E**" shown on the label affixed to the product is the emitter, "**D**" shown on the label is the receiver.

Spare parts (Accessories for light curtain)

Designation	Model No.	Description
Standard mounting bracket	**MS-SFC-1**	Allows the 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)
Test rod ø25	**SF4C-TR25**	Min. sensing object for regular checking (ø25 mm ø0.984 in)

Standard mounting bracket

· **MS-SFC-1** <Mountable in three directions>



OPTIONS

Mounting bracket

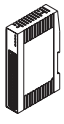
Designation	Model No.	Description
NA2-N compatible mounting bracket	**MS-SFC-2**	Used when changing over area sensor **NA2-N** series to the **SF2C** series. The mounting holes of **NA2-N** series can continue to be used. Center mounting by a M6 hexagon-socket-head bolt is also possible. (4 pcs. per set for emitter and receiver)
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)
Intermediate supporting bracket for versatile bracket	**MS-SFC-4**	Used to support the light curtain in the middle. Be sure to purchase it when using **MS-SFC-3** on **SF2C-H28-P**, **SF2C-H28-N**, **SF2C-H32-P**, **SF2C-H32-N**. (2 pcs. per set for emitter and receiver)

Metal protection case

Applicable beam channels \ Designation	Metal protection case (2 pcs. per set for emitter and receiver)
SF2C-H□	Model No.
8	**MS-SFCH-8**
12	**MS-SFCH-12**
16	**MS-SFCH-16**
20	**MS-SFCH-20**
24	**MS-SFCH-24**
28	**MS-SFCH-28**
32	**MS-SFCH-32**

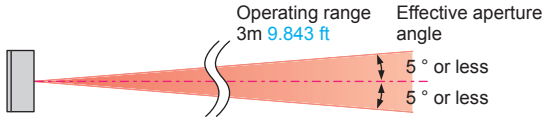
· **MS-SFCH-8** · **MS-SFCH-□** (Excluding **MS-SFCH-8**)

Control unit

Designation	Appearance	Model No.	Description
Slim type control unit		**SF-C13**	Use a discrete wire cable to connect to the light curtain. Relay output. Compatible with up to control category 4 (control category 2 when used together with the **SF2C** series).

Beam axis alignment made easy

The emitter has an effective aperture angle of ±5° or less for an operating range of 3 m 9.843 ft. Compared to Type 4 light curtains (which have an effective aperture angle of ±2.5° or less), the **SF2C** series is easy to align and install.



Includes cables and mounting brackets

The **SF2C** series includes cables (3 m 9.843 ft) for use with all models and standard mounting brackets (**MS-SFC-1**).

Simple Safety Distance Calculations

The response time of all finger protection light curtains in the finger type is 20 ms or less. Recalculation of the safety distance is unnecessary for each time light curtain length is changed.

Light weight!

The **SF2C** series is made of resin that is 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

Protection structure IP67

An IP67 (IEC) rating is achieved with an ultra-slim size for protection from environmental factors.

SPECIFICATIONS

Light curtain common specifications

Item \ Type		PNP output type	NPN output type
Item \ Model No.		**SF2C-H□-P**	**SF2C-H□-N**
Operating range		0.1 to 3 m 0.328 to 9.843 ft	
Beam pitch		20 mm 0.787 in	
Min. sensing object		ø25 mm ø0.984 in opaque object	
Effective aperture angle		±5° or less [for an operating range exceeding 3 m 9.843 ft (conforming to IEC 61496-2 / UL 61496-2)]	
Supply voltage		24 V DC ± 20 % Ripple P-P 10 % or less	
Control output (OSSD)		Max. source current: 200 mA	Max. sink current: 200 mA
	Operation mode	ON when all beam channels are received, OFF when one or more beam channels are interrupted (OFF also in case of any malfunction in the light curtain or the synchronization signal)	
	Protection circuit	Incorporated	
Response time		OFF response: 20 ms or less, ON response: 80 to 100 ms	
Lockout output (SSD)		Max. source current: 60 mA	Max. sink current: 60 mA
	Operation mode	ON during normal operation, OFF during lockout (Note2)	
	Protection circuit	Incorporated	
Pollution degree		3	
Operating altitude		2,000 m 6561.680 ft or less (Note3)	
Environmental resistance	Degree of protection	IP65, IP67 (IEC)	
	Ambient temperature	–10 to +55 °C +14 to +131 °F (No dew condensation or icing allowed), Storage: –25 to +60 °C –13 to +140 °F	
	Ambient humidity	30 to 85 % RH, Storage: 30 to 85 % RH	
Emitting element		Infrared LED (Peak emission wavelength: 850 nm 0.034 mil)	
Cable		0.16 mm^2 5-core heat-resistant PVC cable, 3 m 9.842 ft long	
Material		Enclosure: Polycarbonate alloy, Sensing surface: Polycarbonate alloy, **MS-SFC-1** (Standard mounting bracket) : Stainless steel (SUS)	
Accessories		**MS-SFC-1** (Standard mounting bracket): 1 set, **SF4C-TR25** (Test rod): 1 No.	

Notes: 1) Where measurement conditions have not been specified precisely, the conditions used were an ambient temperature of +20 °C +68 °F.
2) If the emitter enters a lockout state, and light from the emitter enters the receiver, lockout information will be transmitted and lockout output (SSD) will turn OFF.
3) Do not use or storage in environment of more than atmospheric pressure at sea level.

Light curtain individual specifications

Item \ Type		Min. sensing object ø25 mm ø0.984 in (20 mm 0.787 in beam pitch)						
Item \ Model No.	PNP output type	**SF2C-H8-P**	**SF2C-H12-P**	**SF2C-H16-P**	**SF2C-H20-P**	**SF2C-H24-P**	**SF2C-H28-P**	**SF2C-H32-P**
	NPN output type	**SF2C-H8-N**	**SF2C-H12-N**	**SF2C-H16-N**	**SF2C-H20-N**	**SF2C-H24-N**	**SF2C-H28-N**	**SF2C-H32-N**
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: 25 mA or less Receiver: 25 mA or less	Emitter: 30 mA or less Receiver: 30 mA or less		Emitter: 35 mA or less Receiver: 35 mA or less			
	Large multi- purpose indicator lights up	Emitter: 35 mA or less Receiver: 30 mA or less	Emitter: 35 mA or less Receiver: 35 mA or less	Emitter: 40 mA or less Receiver: 35 mA or less	Emitter: 40 mA or less Receiver: 40 mA or less	Emitter: 45 mA or less Receiver: 40 mA or less	Emitter: 45 mA or less Receiver: 45 mA or less	Emitter: 50 mA or less Receiver: 45 mA or less
PFHD (Note)	PNP output type	3.60×10^{-9}	3.66×10^{-9}	3.73×10^{-9}	3.79×10^{-9}	3.85×10^{-9}	3.92×10^{-9}	3.98×10^{-9}
	NPN output type	3.74×10^{-9}	3.80×10^{-9}	3.86×10^{-9}	3.93×10^{-9}	3.99×10^{-9}	4.05×10^{-9}	4.12×10^{-9}
MTTFd (Note)		100 years or more						
Net weight (Total of emitter and receiver)		280 g approx.	340 g approx.	400 g approx.	460 g approx.	520 g approx.	580 g approx.	640 g approx.

Note: PFHD; Probability of dangerous failure per hour, MTTFd; Mean time to dangerous failure.

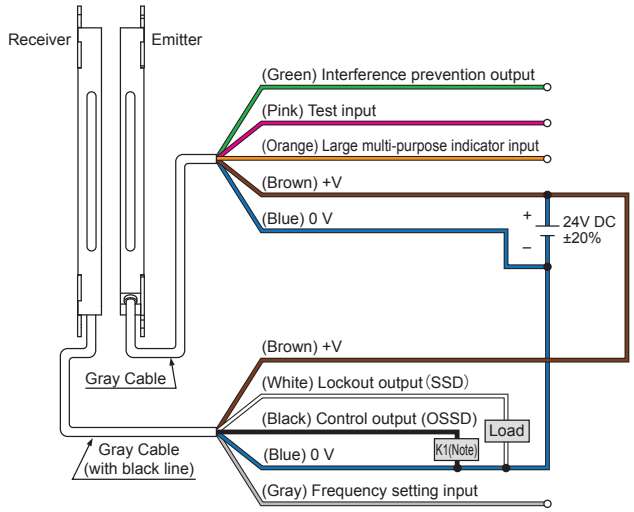
I/O CIRCUIT AND WIRING DIAGRAMS

Connection example

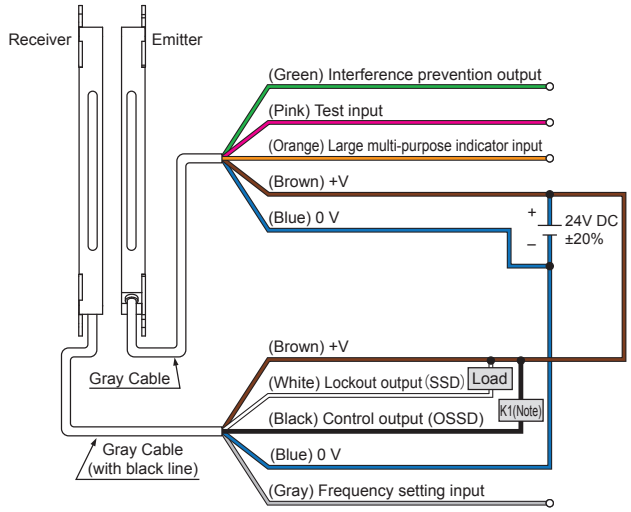
Basic wiring: Min. operation only

This is the general configuration using one set of the emitter and receiver facing each other. The control output (OSSD) turns OFF if the light is interrupted, while it automatically turns ON if receive the light.

<PNP output type SF2C-H□-P>



<NPN output type SF2C-H□-N>



Note: Requires a safety circuit architecture that complies with the desired control category implemented using either an **SF-C13** Control Unit, a safety relay, or other equipment.

DIMENSIONS (Unit: mm in)

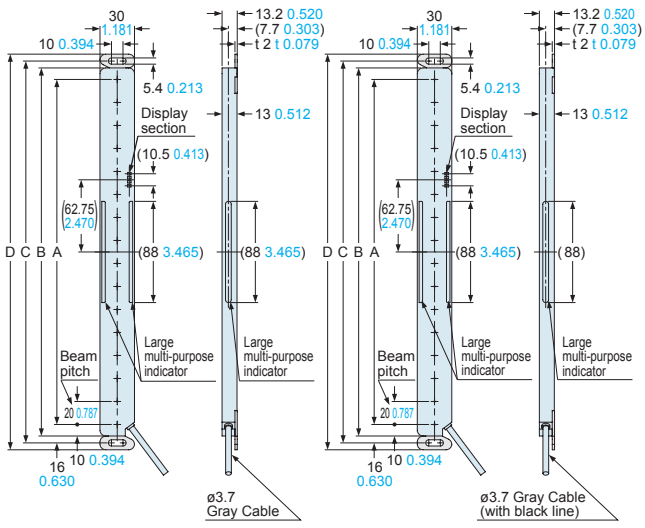
The CAD data in the dimensions can be downloaded from our website.
Refer to our web site for the dimensions of mounting bracket etc.

SF2C-H□ Light curtain

Mounting bracket assembly dimensions

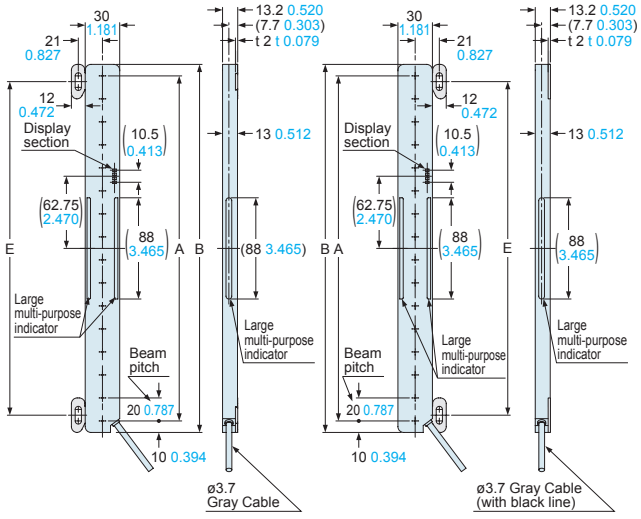
Mounting drawing for the light curtains using the standard mounting brackets **MS-SFC-1** (accessory).

<Center mounting>



Emitter **Receiver**

<Dead zoneless mounting>



Emitter **Receiver**

Model No.	A	B	C	D	E
SF2C-H8□	140 5.512	160 6.299	172 6.772	184 7.244	130 5.118
SF2C-H12□	220 8.661	240 9.449	252 9.921	264 10.394	210 8.268
SF2C-H16□	300 11.811	320 12.598	332 13.071	344 13.543	290 11.417
SF2C-H20□	380 14.961	400 15.748	412 16.220	424 16.693	370 14.567
SF2C-H24□	460 18.110	480 18.898	492 19.370	504 19.842	450 17.717
SF2C-H28□	540 21.260	560 22.047	572 22.520	584 22.992	530 20.866
SF2C-H32□	620 24.409	640 25.197	652 25.669	664 26.142	610 24.016

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