# Panasonic
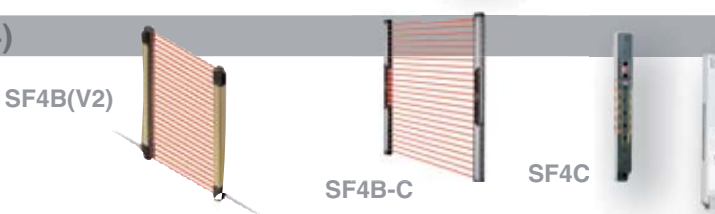
## SENSORS
INDUSTRIAL SAFETY PRODUCTS

21/11/2013

# 40 Years of reliability

# Panasonic safety sensors

(formerly sold under the brandname SUNX)

## Safety first worldwide

# Typical applications

■ **Detection of entry through the no-entry line**

SF2B series
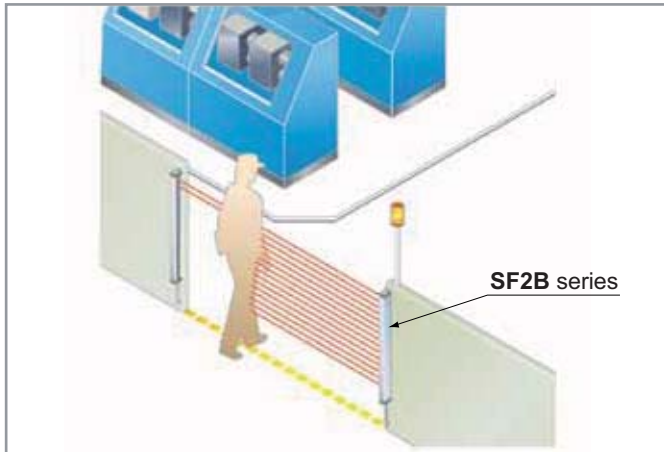
■ **Safeguard for press machine**
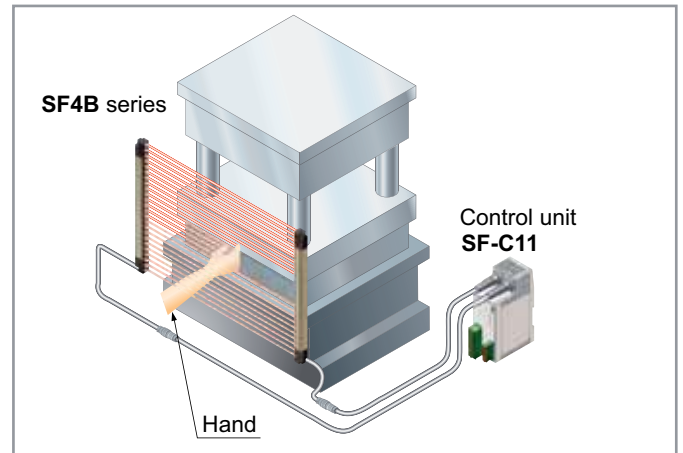
SF4B series

Control unit
**SF-C11**

Hand

■ **Safeguard for robots**

SF4B series

■ **Safety measures when objects exit (exit muting control function)**

Entrance side

Exit side
SF4C series

Muting sensors are not needed on the exit side!
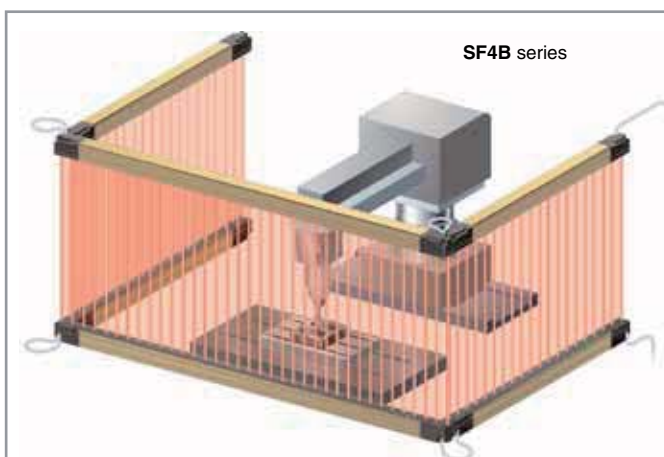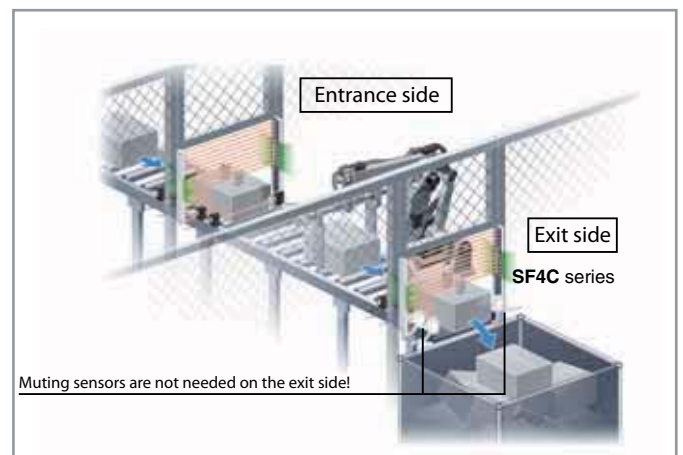
■ **Intrusion detection in areas with moving robots**

Muting lamp

SF4B series

Muting sensor
(CX-400 series etc.)

■ **Confirming safety around automatic guided vehicles**

SD3

21/11/2013
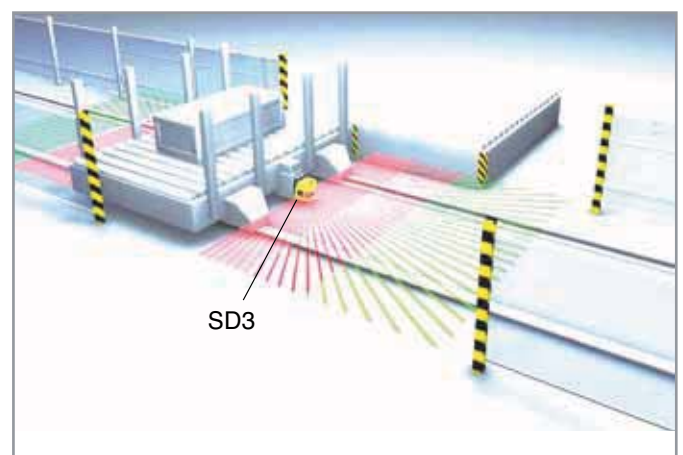
# SF2B

**Type 2 · PLd · SIL2**

> ## Achieving IP67 protection while keeping a slim body

## Features

■ **Safety designs for different risk levels at reasonable cost**

- Degree of protection IP67
- Digital error indicator incorporated
- Strong against mutual interference and extraneous light
- Unified response time of 15ms for all models and heights
- Built-in external device monitoring function
- "ZERO" dead zone
  Unit length = protective height, mounting with no dead zone

■ **A large number of variations to suit different needs**

Abundant range of variations available with sensing widths from 168mm to 1,912mm.

Two types are available for different minimum sensing object sizes. Furthermore, sub-sensors for serial connection (optional) can be used to connect up to three sets of light curtains (up to a total maximum of 128 beam channels; however the **SF2B-A□** allows up to 96 beam channels when two sets are connected, and up to 64 beam channels when three sets are connected).

**New concept** **'ZERO'** **Dead zone**
Unit length = Protective height

■ **Hand protection type SF2B-H□**

Minimum sensing object ø27mm

(20mm beam pitch)

■ **Arm / Foot protection type SF2B-A□**

Minimum sensing object ø47mm

(40mm beam pitch)

SF2B

■ Hand protection type and arm / foot protection type can be used together

Arm / Foot protection type

Hand protection type

Sub-sensor for series connection only
**SF2B-□SL** (Optional)

Sub-sensor for serial connection only
**SF2B-□SL** (Optional)

Cable for serial connection
**SF2B-CSL□** (Optional)
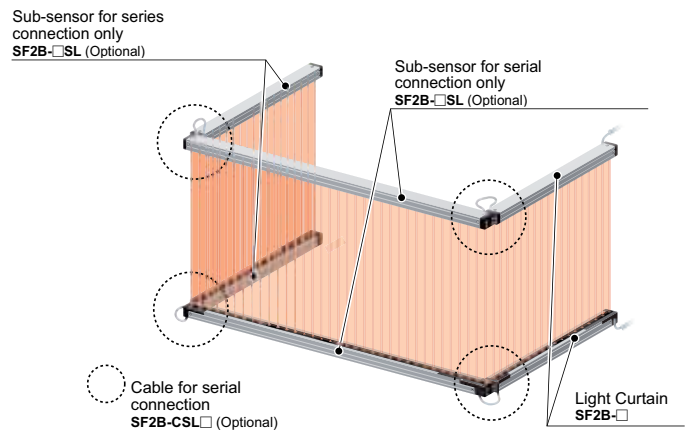
Light Curtain
**SF2B-□**

■ ELCA function incorporated

The advanced ELCA function used in previous light curtains that has been widely acclaimed in the marketplace has been included again. It suppresses mutual interference and the effects of extraneous light.

■ Mutual interference is reduced without need for interference prevention lines

The scan timing of the light curtain is automatically shifted in order to reduce mutual interference.
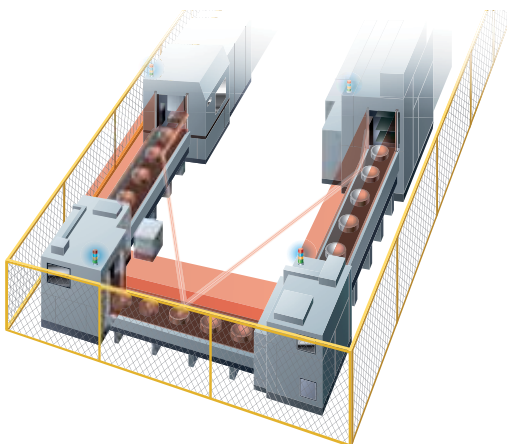
■ Light curtain is protected to prevent problems

Front protection cover protects the sensing surfaces.

This can be used to protect the sensing surfaces even if the light curtain is set up in harsh environments such as places where oil and welding spatter occur (optional).

**Maintenance is easy; simply by replacing the cover.**

Front protection cover

■ IP67 protection

International standard safety compliance can be achieved with excellent basic functions and IP67 protection at a reasonable price.

21/11/2013

# Technical specifications

| Type | Operating range | Model no. | PFHd | Number of beams | Protective height (mm) |
|---|---|---|---|---|---|
| Sensor hand type (20mm pitch) | 0.3 to 13m | SF2B-H8-P | 6.04E-09 | 8 | 168 |
| | | SF2B-H12-P | 6.23E-09 | 12 | 232 |
| | | SF2B-H16-P | 6.37E-09 | 16 | 312 |
| | | SF2B-H20-P | 6.57E-09 | 20 | 392 |
| | | SF2B-H24-P | 6.71E-09 | 24 | 472 |
| | | SF2B-H28-P | 6.90E-09 | 28 | 552 |
| | | SF2B-H32-P | 7.04E-09 | 32 | 632 |
| | | SF2B-H36-P | 7.23E-09 | 36 | 712 |
| | | SF2B-H40-P | 7.37E-09 | 40 | 792 |
| | | SF2B-H48-P | 7.71E-09 | 48 | 952 |
| | | SF2B-H56-P | 8.04E-09 | 56 | 1112 |
| | | SF2B-H64-P | 8.37E-09 | 64 | 1272 |
| | | SF2B-H72-P | 8.71E-09 | 72 | 1432 |
| | | SF2B-H80-P | 9.04E-09 | 80 | 1592 |
| | | SF2B-H88-P | 9.37E-09 | 88 | 1752 |
| | | SF2B-H96-P | 9.71E-09 | 96 | 1912 |
| Sensor arm/foot type (40mm pitch) | 0.3 to 13m | SF2B-A4-P | 5.90E-09 | 4 | 168 |
| | | SF2B-A6-P | 6.03E-09 | 6 | 232 |
| | | SF2B-A8-P | 6.10E-09 | 8 | 312 |
| | | SF2B-A10-P | 6.22E-09 | 10 | 392 |
| | | SF2B-A12-P | 6.29E-09 | 12 | 472 |
| | | SF2B-A14-P | 6.41E-09 | 14 | 552 |
| | | SF2B-A16-P | 6.48E-09 | 16 | 632 |
| | | SF2B-A18-P | 6.61E-09 | 18 | 712 |
| | | SF2B-A20-P | 6.68E-09 | 20 | 792 |
| | | SF2B-A24-P | 6.87E-09 | 24 | 952 |
| | | SF2B-A28-P | 7.07E-09 | 28 | 1112 |
| | | SF2B-A32-P | 7.26E-09 | 32 | 1272 |
| | | SF2B-A36-P | 7.46E-09 | 36 | 1432 |
| | | SF2B-A40-P | 7.65E-09 | 40 | 1592 |
| | | SF2B-A44-P | 7.84E-09 | 44 | 1752 |
| | | SF2B-A48-P | 8.04E-09 | 48 | 1912 |

For NPN type please contact your local office.

| Type | Hand protection | | Arm / Foot protection | |
|---|---|---|---|---|
| | NPN output | PNP output | NPN output | PNP output |
| Model no. | SF2B-H□-N | SF2B-H□-P | SF2B-A□-N | SF2B-A□-P |
| MTTFd | 100 years | | | |
| Applicable standards | IEC 61496 1/2 (type2), EN ISO 13849 (PLd), IEC 61508 (SIL2) | | | |
| Beam pitch | 20mm | | 40mm | |
| Operating range | 0.3 to 13m | | | |
| Protective height | 168 to 1912mm | | | |
| Min. sensing object | Ø27mm opaque object | | Ø47mm opaque object | |
| Supply voltage | 24V DC ±10% | | | |
| Control output | NPN output type: NPN open collector transistor PNP output type: PNP open collector transistor | | | |
| Response time | OFF response: 15ms or less, ON response: 40 to 60ms | | | |
| Ambient temperature | -10 to +55°C | | | |
| Dimensions | W28×H protective height×D24mm | | | |

## Options

■ Corner mirrors
■ Front protection covers
■ Mounting brackets
■ Cables
■ Control units (safety relays)
■ Alignment tool
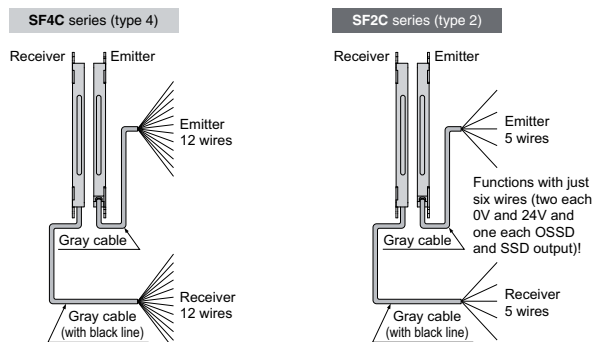
SF2C



**NEW!**

# SF2C

**Type 2 · PLc · SIL1**

Type 2 ultra-slim light curtains! Featuring easy installation and reduced wiring

# Features

### ■ 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.



### ■ Beam-axis alignment made easy

The emitter has an effective aperture angle of ±5° or less for an operating range of 3m. 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.
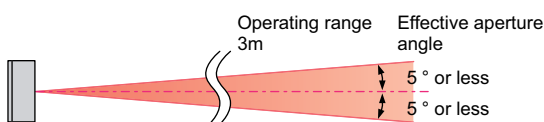


### ■ Light weight

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.

### ■ Includes cables and mounting brackets

The SF2C series includes cables (3m) for use with all models and standard mounting brackets.

### ■ Protection structure IP67

Even if the housing is made by polycarbonate the IP67 (IEC) rating is achieved with an ultra-slim size for protection from environmental factors.

### ■ Slim size for efficient applications

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

21/11/2013

# Technical specifications

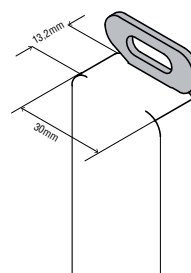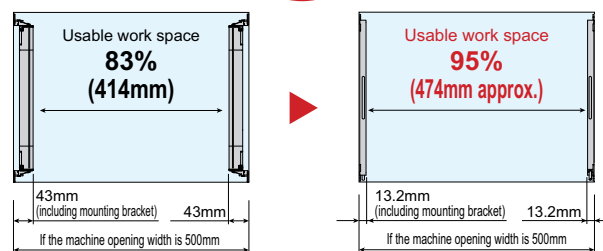| Type | Operating range | Model no. | PFHd | Number of beams | Protective height (mm) |
|---|---|---|---|---|---|
| Hand type (20mm pitch) | 0.1 to 3m | SF2C-H8-N | 3.74E-09 | 8 | 160 |
| | | SF2C-H12-N | 3.80E-09 | 12 | 240 |
| | | SF2C-H16-N | 3.86E-09 | 16 | 320 |
| | | SF2C-H20-N | 3.93E-09 | 20 | 400 |
| | | SF2C-H24-N | 3.99E-09 | 24 | 480 |
| | | SF2C-H28-N | 4.05E-09 | 28 | 560 |
| | | SF2C-H32-N | 4.12E-09 | 32 | 640 |
| | | SF2C-H8-P | 3.60E-09 | 8 | 160 |
| | | SF2C-H12-P | 3.66E-09 | 12 | 240 |
| | | SF2C-H16-P | 3.73E-09 | 16 | 320 |
| | | SF2C-H20-P | 3.79E-09 | 20 | 400 |
| | | SF2C-H24-P | 3.85E-09 | 24 | 480 |
| | | SF2C-H28-P | 3.92E-09 | 28 | 560 |
| | | SF2C-H32-P | 3.98E-09 | 32 | 640 |

The model no. with suffix "N" shown are NPN version, with suffix "P" are PNP versions.
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.

| Type | SF2C cable type |
|---|---|
| Beam pitch | Hand protection type 20mm |
| MTTFd | 100 years or more |
| Application standards | EN 61496-1 (type 2), EN ISO 13849-1 (category 2, PLc), EN 61508-1 to 7 (SIL1), EN 55011, EN 50178, EN 61000-6-2 |
| Operation range | 0.1 to 3m |
| Protective height | 160mm to 640mm |
| Min. sensing object | Ø 25mm or more in opaque object |
| Supply voltage | 24V DC (±20%) |
| Control output | OSSD1 and OSSD2 (2xPNP or 2xNPN), max. 200mA |
| Response time | OFF response: 20ms or less, ON response: 80 to 100ms |
| Dimensions | W30mm x protective height x D13.2mm |

# Options

Metal protection case (2 pcs. per set for emitter and receiver)

| Applicable beam channels 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**)

## SF4B(V2)

# SF4B(V2)

**Type 4 · PLe · SIL3**

> New concepts combining greater safety and higher productivity!

## Features

### ■ More safety with no loss in productivity

- Supports both NPN and PNP outputs in a single model
- Unified response time of 14ms for all models, easy design
- Degree of protection IP67
- Digital error indicator incorporated
- Built-in muting control circuit
- "ZERO" dead zone. Unit length = protective height, mounting with no dead zone

### ■ IP67 degree of protection despite slim body

Improved environmental resistance and easier new seamless structure with the least seam area possible. The inner unit is protected by a cylindrical inner case. Particles such as oil mists and dust are prevented from getting in, rising its environmental resistance performance.

### ■ Error details can be understood at a glance. Equipped with a digital error indicator

The system constantly checks the light curtain for problems such as incorrect cable wiring, disconnection, short-circuits, internal circuit problems, and incoming light problems. Details of any electrical problems such as at equipment startup will appear on the digital display. The previous method of counting the number of LED blinks is no longer needed.

### ■ Error number notification means smooth support via telephone

Normal operation | Breaking out error

Digital error indicator
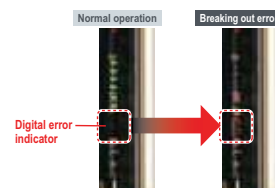
### ■ Achieving protection structure IP67 while keeping its slim body

Slim
28 mm 1.102 in

**New concept** **'ZERO'** **Dead zone**
Unit length = Protective height

21/11/2013

## ■ A unified response time of 14ms for all models makes setup easy

A fast response time of 14ms has been achieved regardless of the number of beam channels, the Beam-axis pitches and the number of units connected in series. This reduces calculation work required for the safety distance.

Same response time of 14ms

**Safety distance**

Characteristic distance for the machinery's maximum stopping time

**+**

| Finger protection type | Hand protection type |
|---|---|
| **28mm** * | or **116mm** * |

Safety distance

Characteristic distance for light curtain

Characteristic distance for the machinery's maximum stopping time

Characteristic distance for SF4B series
**28mm** *
(Finger protection type)

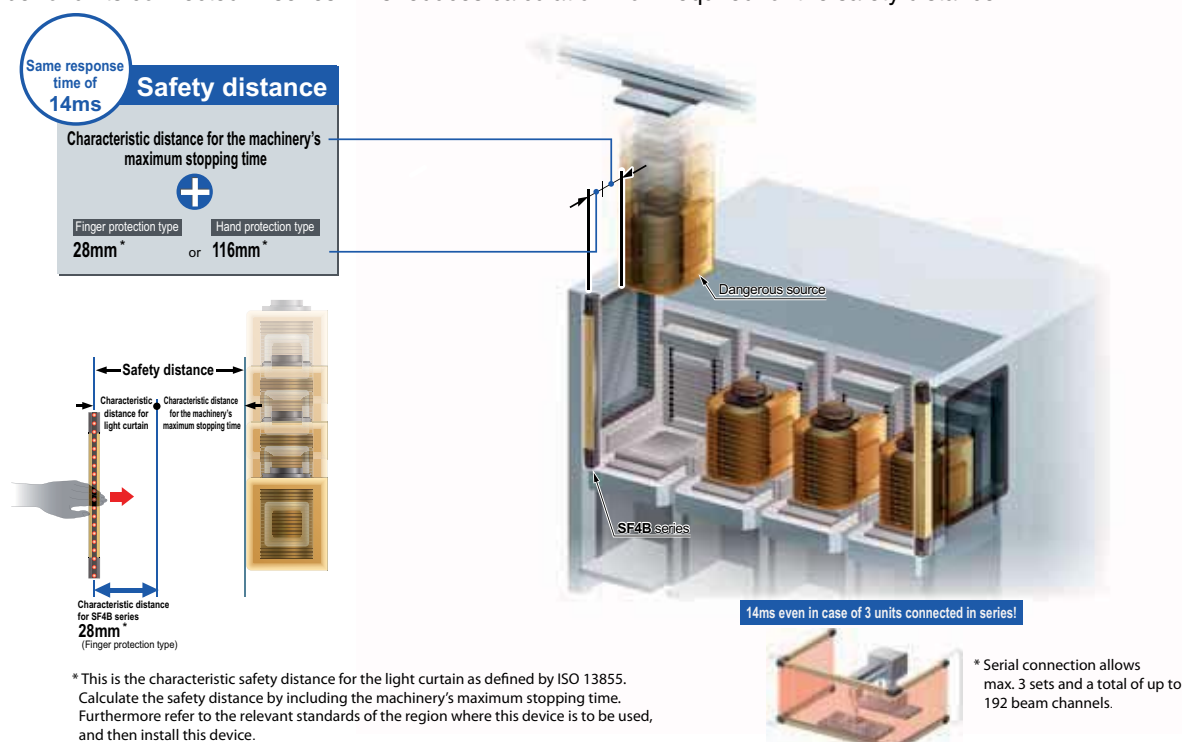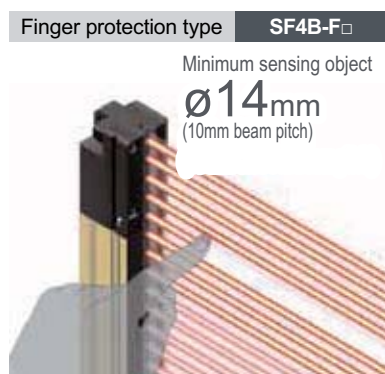* This is the characteristic safety distance for the light curtain as defined by ISO 13855. Calculate the safety distance by including the machinery's maximum stopping time. Furthermore refer to the relevant standards of the region where this device is to be used, and then install this device.

Dangerous source

**SF4B** series

14ms even in case of 3 units connected in series!

* Serial connection allows max. 3 sets and a total of up to 192 beam channels.

## ■ It is possible to select from among three types depending on the worksite
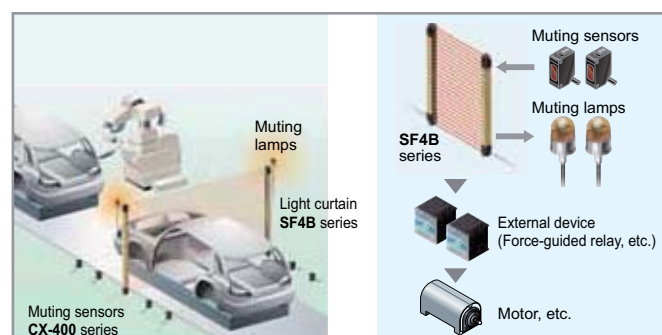
A wide range of variations are available with protective heights of 230 to 1,910mm (1,270mm for the finger protection type). Mixing three types in a serial connection is also possible.

| Finger protection type | **SF4B-F□** |
|---|---|

Minimum sensing object
ø14mm
(10mm beam pitch)

| Hand protection type | **SF4B-H□** |
|---|---|

Minimum sensing object
ø25mm
(20mm beam pitch)

| Arm / Foot protection type | **SF4B-A□** |
|---|---|

Minimum sensing object
ø45mm
(40mm beam pitch)

The spatter protection hood type perfect for welding devices is also available.

## ■ Mutual interference is reduced without needing interference prevention lines

The light curtain is equipped with the ELCA (Extraneous Light Check & Avoid) function. Because it automatically shifts the scan timing of the light curtain in order to avoid interference, it is not necessary to wire interference prevention lines between machinery.
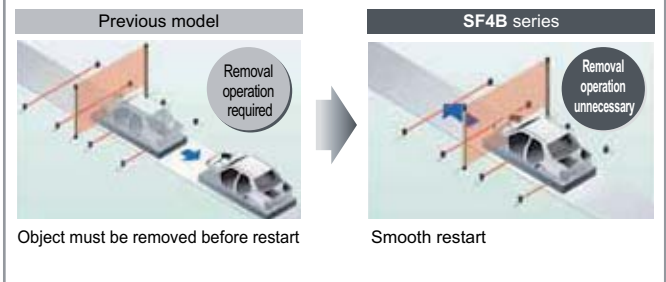
Muting lamps

Light curtain **SF4B** series

Muting sensors **CX-400** series

Muting sensors

Muting lamps

**SF4B** series

External device (Force-guided relay, etc.)

Motor, etc.

SF4B(V2)

## ■ Override function

In case the power turns off while the light curtain has been interrupted by an object or in case the line stops before the muting conditions have been established (if only one muting sensor has been interrupted), the line can be restarted smoothly without having to remove the object that is interrupting the light curtain.

(e.g.) When power turns off while light curtain was interrupted

| Previous model | SF4B series |
|---|---|
| Removal operation required | Removal operation unnecessary |
| Object must be removed before restart | Smooth restart |

## ■ A muting control function is provided to increase both safety and productivity

The light curtain is equipped with a muting control function that causes the line to stop only when a person passes through the light curtain and does not stop the line when an object passes through. The muting sensors and muting lamps can be connected directly to the light curtain so that an exclusive controller is not required for muting. This both reduces costs and increases safety and productivity.

## ■ Reducing the number of malfunctions caused by extraneous light

Double scanning method and retry processing are two new functions exclusive to Panasonic, which are effective in eliminating the effects of momentary extraneous light from peripheral equipment. The reduction in operating errors caused by extraneous light reduces frequent stopping of machinery.

## ■ Any beam channels can be selected

The **SF4B** 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 applications in which certain fixed obstacles tend to block specific beam channels.

Furthermore, this function provides greater safety as the control output (OSSD) will automatically output the OFF signal if the fixed obstacles are subsequently removed from the sensing area.
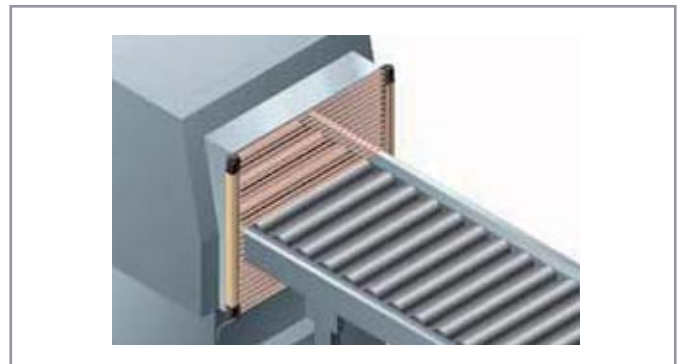
## ■ Non-specified beam channels can be deactivated

1, 2 or 3 non-specified beam channels can be deactivated. If the number of beam channels that are blocked is less than or equal to the set number of beam channels, then the control output (OSSD) will not output the OFF signal. This function is useful in the event when the positions of obstacles within the sensing area must be changed during object rearrangement, or when an object passes through the light curtain's sensing area.
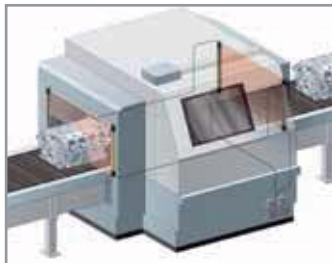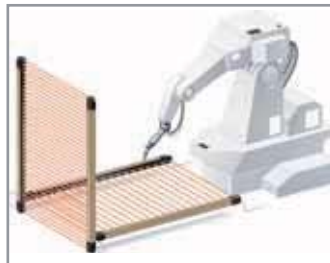
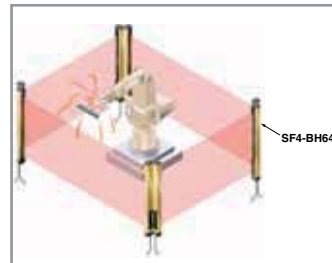21/11/2013
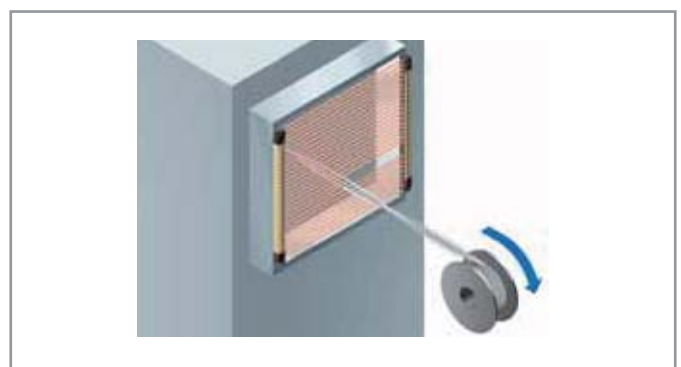
# Typical applications

Blanking function

Muting function

Serial connection

Guarding space around welding robot

SF4-BH64

# Technical specifications

| Type | Operating range | Model no. | PFHd | Number of beams | Protective height (mm) |
|---|---|---|---|---|---|
| **Sensor finger type (10mm pitch)** | 0.3 to 7m | SF4B-F23(V2) | 2.56E-09 | 23 | 230 |
| | | SF4B-F31(V2) | 2.96E-09 | 31 | 310 |
| | | SF4B-F39(V2) | 3.36E-09 | 39 | 390 |
| | | SF4B-F47(V2) | 3.75E-09 | 47 | 470 |
| | | SF4B-F55(V2) | 4.15E-09 | 55 | 550 |
| | | SF4B-F63(V2) | 4.55E-09 | 63 | 630 |
| | | SF4B-F71(V2) | 4.95E-09 | 71 | 710 |
| | | SF4B-F79(V2) | 5.35E-09 | 79 | 790 |
| | | SF4B-F95(V2) | 6.15E-09 | 95 | 950 |
| | | SF4B-F111(V2) | 6.94E-09 | 111 | 1110 |
| | | SF4B-F127(V2) | 7.74E-09 | 127 | 1270 |
| **Sensor hand type (20mm pitch)** | 0.3 to 9m | SF4B-H12(V2) | 2.01E-09 | 12 | 230 |
| | | SF4B-H16(V2) | 2.21E-09 | 16 | 310 |
| | | SF4B-H20(V2) | 2.41E-09 | 20 | 390 |
| | | SF4B-H24(V2) | 2.61E-09 | 24 | 470 |
| | | SF4B-H28(V2) | 2.81E-09 | 28 | 550 |
| | | SF4B-H32(V2) | 3.01E-09 | 32 | 630 |
| | | SF4B-H36(V2) | 3.21E-09 | 36 | 710 |
| | | SF4B-H40(V2) | 3.41E-09 | 40 | 790 |
| | | SF4B-H48(V2) | 3.80E-09 | 48 | 950 |
| | | SF4B-H56(V2) | 4.20E-09 | 56 | 1110 |
| | | SF4B-H64(V2) | 4.60E-09 | 64 | 1270 |
| | 0.3 to 7m | SF4B-H72(V2) | 5.00E-09 | 72 | 1430 |
| | | SF4B-H80(V2) | 5.40E-09 | 80 | 1590 |
| | | SF4B-H88(V2) | 5.80E-09 | 88 | 1750 |
| | | SF4B-H96(V2) | 6.20E-09 | 96 | 1910 |
| **Sensor arm/foot type (40mm pitch)** | 0.3 to 9m | SF4B-A6(V2) | 1.71E-09 | 6 | 230 |
| | | SF4B-A8(V2) | 1.81E-09 | 8 | 310 |
| | | SF4B-A10(V2) | 1.91E-09 | 10 | 390 |
| | | SF4B-A12(V2) | 2.01E-09 | 12 | 470 |
| | | SF4B-A14(V2) | 2.11E-09 | 14 | 550 |
| | | SF4B-A16(V2) | 2.21E-09 | 16 | 630 |
| | | SF4B-A18(V2) | 2.31E-09 | 18 | 710 |
| | | SF4B-A20(V2) | 2.41E-09 | 20 | 790 |
| | | SF4B-A24(V2) | 2.61E-09 | 24 | 950 |
| | | SF4B-A28(V2) | 2.81E-09 | 28 | 1110 |
| | | SF4B-A32(V2) | 3.01E-09 | 32 | 1270 |
| | 0.3 to 7m | SF4B-A36(V2) | 3.21E-09 | 36 | 1430 |
| | | SF4B-A40(V2) | 2.41E-09 | 40 | 1590 |
| | | SF4B-A44(V2) | 3.61E-09 | 44 | 1750 |
| | | SF4B-A48(V2) | 3.80E-09 | 48 | 1910 |

SF4B(V2)

# Technical specifications

| Type | Finger protection | Hand protection | Arm / Foot protection |
|---|---|---|---|
| Model no. | SF4B-F□□(V2) | SF4B-H□□(V2) | SF4B-A□□(V2) |
| MTTFd | 100 years | | |
| Applicable standards | IEC 61496 1/2 (type 4), EN ISO 13849 (PLe), IEC61508 (SIL3) | | |
| Beam pitch | 10mm | 20mm | 40mm |
| Operating range | 0.3 to 7m | 0.3 to 9m (72 beam channels or more: 0.3 to 7m) | 0.3 to 9m (36 beam channels or more: 0.3 to 7m) |
| Protective height | 230 to 1270mm | 230 to 1910mm | 230 to 1910mm |
| Min. sensing object | 14mm or more for opaque object | 25mm or more for opaque object | 45mm or more for opaque object |
| Supply voltage | 24VDC±10% | | |
| Control output | PNP open collector transistor / NPN open collector transistor (selectable using wiring) | | |
| Response time | OFF response: 14ms or less, ON response: 80 to 90ms | | |
| Dimensions | W28×protective height×D30mm | | |

□□ Number of beams

# Options

■ Corner mirrors
■ Front protection covers
■ Mounting brackets
■ Cables
■ Control units (safety relays)
■ Alignment tool
■ Handy controller

21/11/2013

**NEW!**

# SF4B-C

**Type 4 · PLe · SIL3**

Type 4 compact light curtain
Mounts flush on aluminum frames

# Features

## ■ Compact design

The **SF4B-C** series is designed to mount flush on an aluminum frame, allowing you to maximize the machinery opening. It can even be installed with zero dead zone.

- Side mounting
- The light curtain does not protrude beyond the frame
- The light curtain's thin design allows protuberances to be minimized during mounting

Width
Just 20mm

Depth
27.4mm
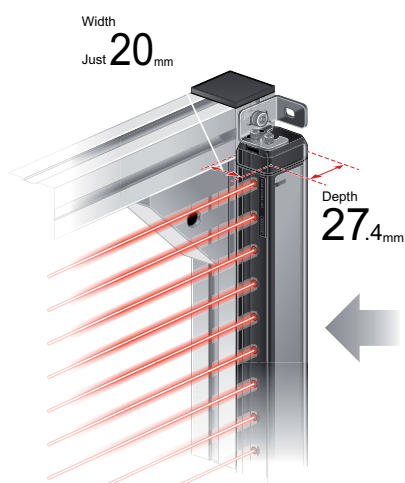
## ■ Extraneous light check & avoid (ELCA) function

The ELCA function reduces interference without the need for an interference prevention line.

## ■ Beam alignment indicator

A beam alignment indicator divides the light curtain beams into four equal displays, allowing you to see at a glance where light is being received.

## ■ Easy mounting on aluminum frame

Mounts flush on aluminum frames.

### Buried mounting (side)

The light curtain mounts flush, even in embedded installations.

- The light curtain protrudes neither into the machinery opening nor outside the frame.
- There's no risk of workpieces bumping into the light curtain.

### Rear mounting

- The light curtain fits onto a 20 × 20mm aluminum frame perfectly.
- It does not protrude from the frame.

## ■ The SFB-HC handy controller (optional)

Offers easy access to settings for a range of functionality.

SF4B-C

### ■ Plastic and metal

Double structure with light weight polycarbonate body & robust inner metal frame. Compared to conventional models the weight could be reduced by 45% (comparison models SF4B-H80(V2) & SF4B-H80CA-J05). Thanks to its plastic body, the SF4B-C series is 45% lighter than previous models with aluminum enclosures. The reduced weight is of great advantage when it comes to transport and shipping the system overseas.
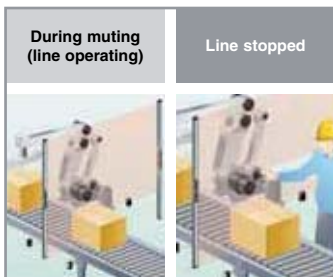
Metal inner frame
Transparent frame
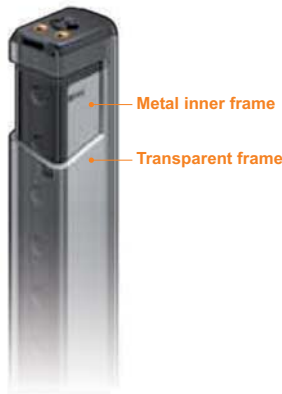
### ■ Large indicator is easy to see from the side at the pigtailed type

The SF4B-C series incorporates a large multi-purpose indicator (orange) positioned at workers' eye level. The indicator signals the presence of the light curtain, helping to prevent stoppages due to inadvertent interruption of its beams. The indicator can be used in a variety of applications, including as a muting indicator or operation indicator. The large multi-purpose indicator shines brightly through the plastic body to ensure exceptional visibility from the side.
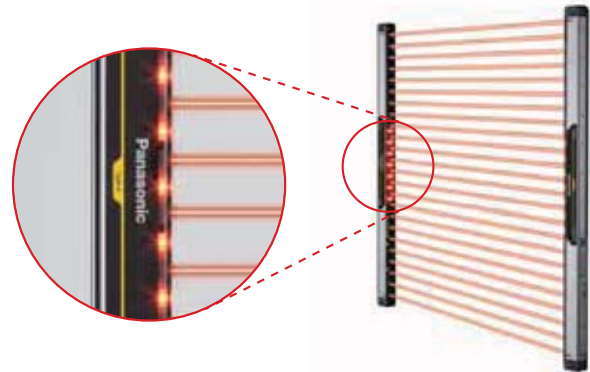
## Typical applications

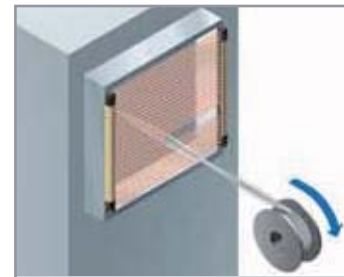| Muting control function for individual beams: Limit the muting area | Fixed blanking function: Choose active beams | Floating blanking function: Disable unspecified beams |

During muting (line operating)    Line stopped

The SFB-HC handy controller (optional) allows you to perform muting control for certain beams only. Since you can specify the beams, there is no need to install a separate guard to prevent incursions. For example, if you use muting control from the lowermost beam to the 10th beam, the light curtain will detect any interruption of the 11th or higher beam as a person and stop the machinery.

The SFB-HC handy controller provides a fixed blanking function that prevents control output (OSSD) from turning off even if certain beams are interrupted. This capability is convenient in applications where an obstruction always interrupts certain beams. Additionally, a high level of safety is provided since control output (OSSD) is forcibly turned off in the event the obstruction moves outside the detection area.

The floating blanking function allows you to disable up to three unspecified beams. Control output (OSSD) will not turn off as long as the number of interrupted beams is less than the set number of beams. This capability is convenient when an obstruction must move inside the detection area during setup changes or when loading materials inside the light curtain's detection area.

21/11/2013

# Technical specifications

| Type | Operating range | Model no.* | PFHd | Number of beams | Protective height (mm) |
|---|---|---|---|---|---|
| Hand type (20mm pitch) | 0.1 to 7m | SF4B-H12C(A-J05) | 1.9E-09 | 12 | 263.4 |
| | | SF4B-H16C(A-J05) | 2.1E-09 | 16 | 343.4 |
| | | SF4B-H20C(A-J05) | 2.4E-09 | 20 | 423.4 |
| | | SF4B-H24C(A-J05) | 2.6E-09 | 24 | 503.4 |
| | | SF4B-H28C(A-J05) | 2.8E-09 | 28 | 583.4 |
| | | SF4B-H32C(A-J05) | 3.0E-09 | 32 | 663.4 |
| | | SF4B-H36C(A-J05) | 3.3E-09 | 36 | 743.4 |
| | | SF4B-H40C(A-J05) | 3.5E-09 | 40 | 823.4 |
| | | SF4B-H48C(A-J05) | 3.9E-09 | 48 | 983.4 |
| | | SF4B-H56C(A-J05) | 4.4E-09 | 56 | 1143.4 |
| | | SF4B-H64C(A-J05) | 4.8E-09 | 64 | 1303.4 |
| | | SF4B-H72C(A-J05) | 5.3E-09 | 72 | 1463.4 |
| | | SF4B-H80C(A-J05) | 5.7E-09 | 80 | 1623.4 |
| Arm type (40mm pitch) | 0.1 to 7m | SF4B-A8C(A-J05) | 1.7E-09 | 8 | 343.4 |
| | | SF4B-A12C(A-J05) | 1.9E-09 | 12 | 503.4 |
| | | SF4B-A16C(A-J05) | 2.2E-09 | 16 | 663.4 |
| | | SF4B-A20C(A-J05) | 2.4E-09 | 20 | 823.4 |
| | | SF4B-A24C(A-J05) | 2.7E-09 | 24 | 983.4 |
| | | SF4B-A28C(A-J05) | 2.9E-09 | 28 | 1143.4 |
| | | SF4B-A32C(A-J05) | 3.2E-09 | 32 | 1303.4 |
| | | SF4B-A36C(A-J05) | 3.4E-09 | 36 | 1463.4 |
| | | SF4B-A40C(A-J05) | 3.7E-09 | 40 | 1623.4 |

*) All products are equipped with a 5m cable except those with the product number extension A-J05. They are equipped with a 5m cable and a connector.

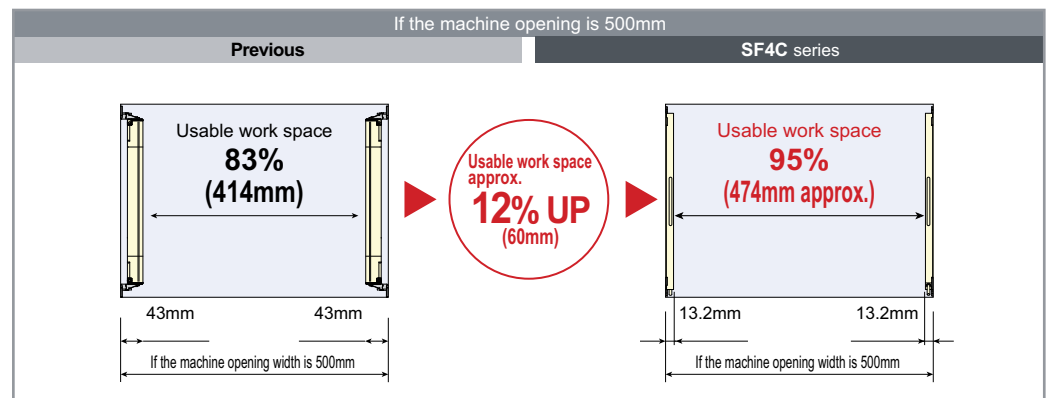| Type | SF4B-C pigtailed type (with muting function) | | SF4B-C cable type | |
|---|---|---|---|---|
| Beam pitch | Hand protection type 20mm | Arm protection type 40mm | Hand protection type 20mm | Arm protection type40 mm |
| MTTFd | 100 years or more | | | |
| Application standards | EN 61496-1 (type 4), EN ISO 13849-1 (category 4, PLe), EN 61508-1 to 7 (SIL3), EN 55011, EN 50178, EN 61000-6-2 | | | |
| Operation range | 0.1 to 7m | | | |
| Protective height | 263.4mm to 1.634.4mm | | | |
| Min. sensing object | Ø 25mm or more for opaque object | Ø 45mm or more for opaque object | Ø 25mm or more for opaque object | Ø 45mm or more for opaque object |
| Supply voltage | 24V DC ±10% | | | |
| Control output | OSSD1 and OSSD2 (2xPNP or 2xNPN, switchable), max. 200mA | | | |
| Response time | OFF response: 14ms or less, ON response: 80 to 90ms | | | |
| Dimensions | W20mm x protective height x D27.4mm | | | |

SF4C

**40th Anniversary MODEL**
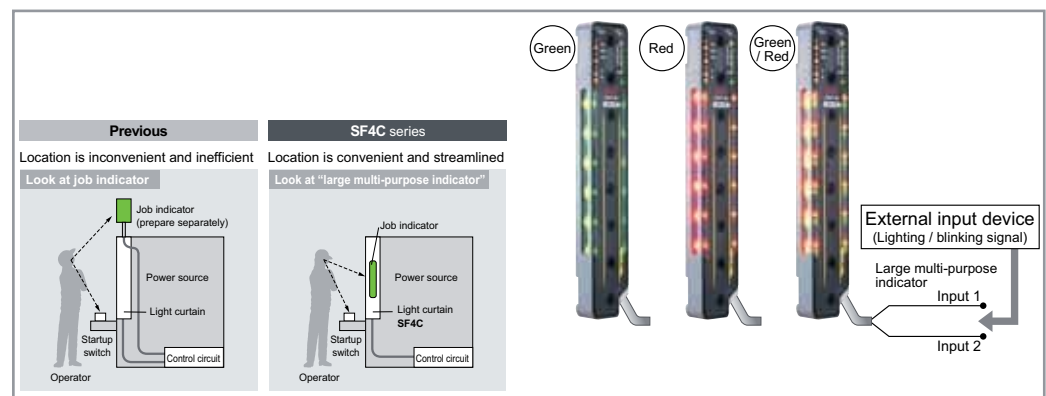
# SF4C

**Type 4 · PLe · SIL3**

Ultra-slim light curtain

## Features

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

| If the machine opening is 500mm | |
|---|---|
| **Previous** | **SF4C** series |

Usable work space
**83%**
**(414mm)**

43mm    43mm
If the machine opening width is 500mm

Usable work space approx.
**12% UP**
**(60mm)**

Usable work space
**95%**
**(474mm approx.)**

13.2mm    13.2mm
If the machine opening width is 500mm

■ Large multi-purpose indicators for external inputs

The bright LED indicators located in the center of both sides of each light curtain can be illuminated green or red by using external inputs. There is no need to set up a separate indicator e. g. muting lamp.

| **Previous** | **SF4C** series |
|---|---|
| Location is inconvenient and inefficient | Location is convenient and streamlined |
| Look at job indicator | Look at "large multi-purpose indicator" |

Job indicator (prepare separately)
Power source
Light curtain
Startup switch
Control circuit
Operator

Job indicator
Power source
Light curtain **SF4C**
Startup switch
Control circuit
Operator

Green    Red    Green / Red

External input device
(Lighting / blinking signal)

Large multi-purpose indicator
Input 1
Input 2

21/11/2013

# ■ Wire-saving when connecting to safety devices (safety input functions)

Contact outputs such as emergency stop switches or safety door switches can be connected to the light curtain. Also, by using the handy controller **SFC-HC,** up to three sets of light curtains can be connected in cascade to consolidate safety outputs.
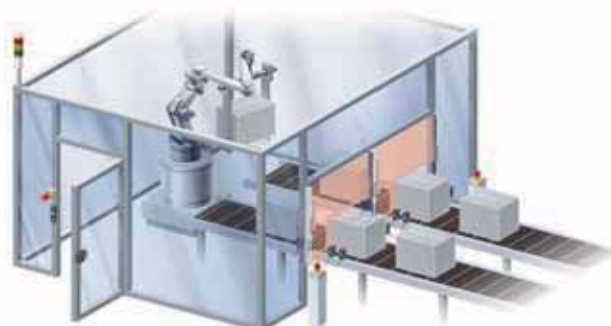
## ■Direct connection of safety devices



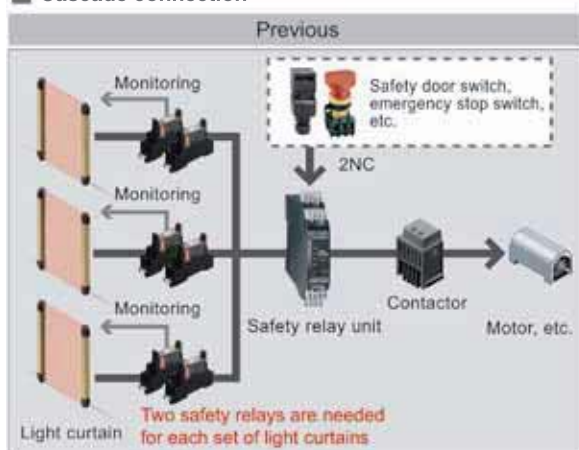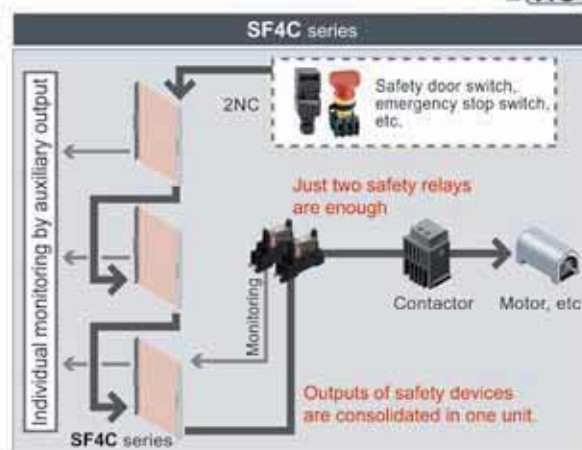A safety relay unit is needed to connect safety devices other than light curtains.
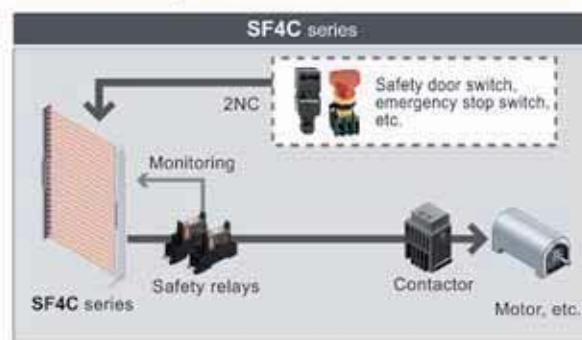
Direct connection of various safety devices is possible for a simplified safety circuit.

## ■ Cascade connection



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

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

21/11/2013

SF4C

## ■ IP67 protection structure

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

## ■ Mutual interference is reduced without needing interference prevention lines

The light curtain is equipped with the ELCA (Extraneous Light Check & Avoid) function, which has been proven to be strong against mutual interference. Because it automatically shifts the scan timing of the light curtain in order to avoid interference, it is not necessary to wire interference prevention lines between machinery.

## ■ Safety, productivity, and cost reduction (muting control function)

The light curtain has a built-in muting control function that causes the line to stop only when a person passes through the light curtain, and does not stop the line when an object passes through. The muting sensors and muting lamps can be connected directly to the light curtain. Furthermore, the large multi-purpose indicators can be used as muting lamps, which contribute to less wiring troubles, improvement of safety and productivity, and cost reduction.
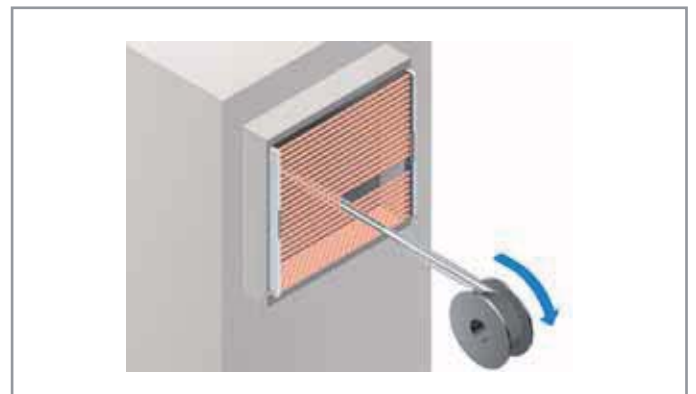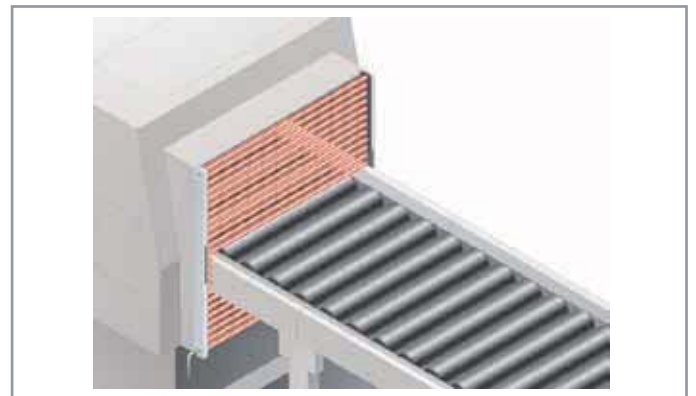
## ■ A fast response time of 7ms* for all models

A fast response time of 7ms* for all models regardless of the number of beam channels. This reduces the safety distance as well as the calculation work required for the safety distance among models with different beam channels.

\* When connecting safety sensors (light curtains, etc.) to the safety input, the response time will be the total time of connected units.



Previous

Light curtain · Muting lamps · Muting sensors · Muting unit · Safety circuit (Safety relay, etc.)

SF4C series

Muting lamps · Muting sensors · SF4C series · Safety circuit (Safety relay, etc.)

\* If a failure diagnosis of the muting lamp is needed as a result of risk assessment, use the handy-controller **SFC-HC** to change the setting, and connect the muting lamp output wire (red) of this light curtain to an incandescent lamp separately.
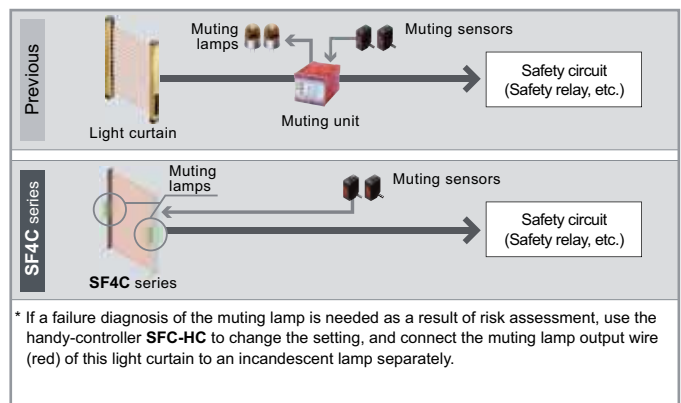
## ■ Fixed blanking function which allows selective beam channels to be activated improves productivity



## ■ Floating blanking function which allows non-specified beam channels to be deactivated improves productivity
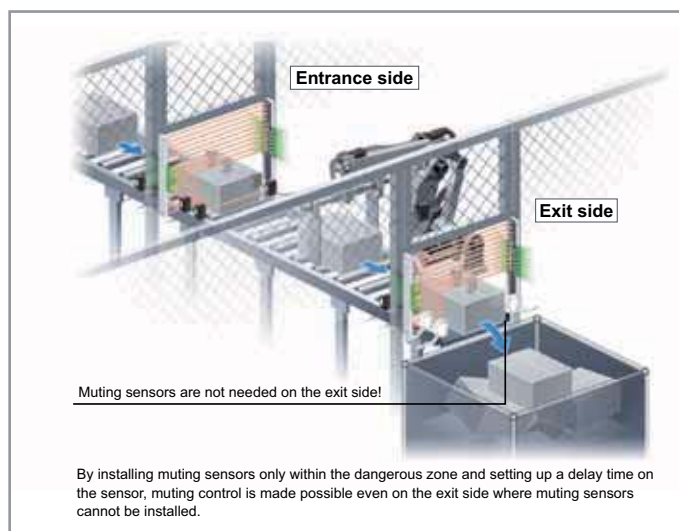


21/11/2013

## ■ Selective muting area (Separate muting control function for each beam channel) ≡HC

The handy controller SFC-HC can be used to carry out muting control for specified beam channels only. Because individual beam channel can be specified to suit the object, separate guards to prevent entry do not need to be set up.



| While muting control is active (line operating) | Line stopped |
|---|---|

For example, depending on the height of the object, the muting function can be activated for 10 beam channels starting from the bottom most so that if the 11th or subsequent beam channels are interrupted, it is judged that a person has entered the area and the line stops.
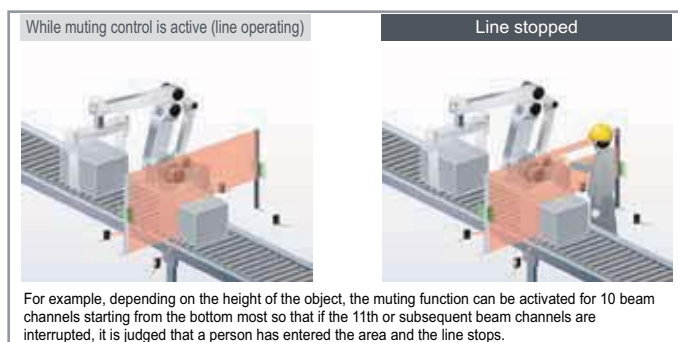
## ■ Safety measures when objects exit (Exit muting control function) ≡HC

Muting at the exit of a machine is now possible using the handy controller SFC-HC. Just set a delay time to the muting sensor to 4s (max.).



Entrance side

Exit side

Muting sensors are not needed on the exit side!

By installing muting sensors only within the dangerous zone and setting up a delay time on the sensor, muting control is made possible even on the exit side where muting sensors cannot be installed.

# Typical applications

Use indicators as a muting lamp



Selective muting area



Direct connection of safety devices



21/11/2013
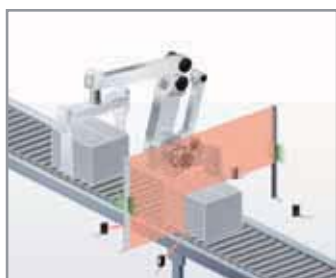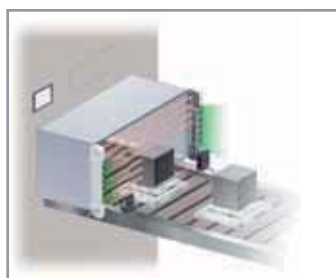
**SF4C**

# Technical specifications

| Type | Operating range | Model no.* | PFHd | Number of beams | Protective height CA (mm) |
|---|---|---|---|---|---|
| Finger type CA (10mm pitch) | 0.1 to 3m | SF4C-F15(-J05) | 2.29E-09 | 15 | 160 |
| | | SF4C-F23(-J05) | 2.73E-09 | 23 | 240 |
| | | SF4C-F31(-J05) | 3.18E-09 | 31 | 320 |
| | | SF4C-F39(-J05) | 3.62E-09 | 39 | 400 |
| | | SF4C-F47(-J05) | 4.06E-09 | 47 | 480 |
| | | SF4C-F55(-J05) | 4.50E-09 | 55 | 560 |
| | | SF4C-F63(-J05) | 4.95E-09 | 63 | 640 |
| Hand type (20mm pitch) | 0.1 to 3m | SF4CH8(-J05) | 1.66E-09 | 8 | 160 |
| | | SF4CH12(-J05) | 1.90E-09 | 12 | 240 |
| | | SF4CH16(-J05) | 2.10E-09 | 16 | 320 |
| | | SF4CH20(-J05) | 2.33E-09 | 20 | 400 |
| | | SF4CH24(-J05) | 2.54E-09 | 24 | 480 |
| | | SF4CH28(-J05) | 2.77E-09 | 28 | 560 |
| | | SF4CH32(-J05) | 2.98E-09 | 32 | 640 |

*) All products are equipped with a 5m cable except those with the product number extension A-J05. They are equipped with a 5m cable and a connector.

| Type | SF4C pigtailed type | SF4C cable type | SF4C pigtailed type | SF4C cable type |
|---|---|---|---|---|
| Beam pitch | Finger protection type 10mm | | Hand protection type 20mm | |
| MTTFd | 100 years | | | |
| Application standards | IEC 61496-1 (type 4), ISO 13849-1 (category 4, PLe) EN 61508-1 to 7 (SIL3), EN 55011, EN 50178, EN 61000-6-2 | | | |
| Operating range | 0.1 to 3m | | | |
| Protective height | 160mm to 640mm | | | |
| Min. sensing object | ø14mm or more for opaque object | | ø25mm or more for opaque object | |
| Supply voltage | 24V DC +10/-15% | | | |
| Control output | OSSD1 and OSSD2 (2xPNP or 2xNPN, switchable), max. 200mA | | | |
| Response time | OFF response: 9ms or less / ON response: 90ms or less | | OFF response: 7ms or less / ON response: 90ms or less | |
| Dimensions | W13.2 x protective height x D30mm | | | |

# Options

■ Metal protection case
■ Mounting brackets
■ Cables
■ Wire-saving connectors
■ Control units (safety relay)
■ Handy controller

21/11/2013

# www.panasonic-electric-works.com

# Would you like more information?

**Please visit us: www.panasonic-electric-works.com**

**or call us:**

# Tel.: +49(0)8024 648-737

21/11/2013

ST4

# ST4

**Type 4 · PLe · SIL3**

Single-beam sensors with several muting patterns

## Features

### ■ Serial connection of 6 sets of sensor heads to 1 controller

Panasonic's new concept of connecting 6 sets of sensor heads to 1 controller in series offers you maximum flexibility to solve your safety application.

### ■ Beam-axis alignment and operation confirmation

The beam interruption indicator is incorporated in both the emitter and receiver. This indicator can be used not only to confirm operation but also to align the beam-axis.

### ■ Compact sensor head saves space

The size of the type 4 long sensing range type is similar to general purpose photoelectric sensors.

### ■ IP67 degree of protection

The sensor heads can be used safely even on lines where water splashes.

### ■ Interference prevention

The emission amount adjuster can be used to prevent interference to the surrounding sensors.

### ■ Supports both PNP and NPN polarities

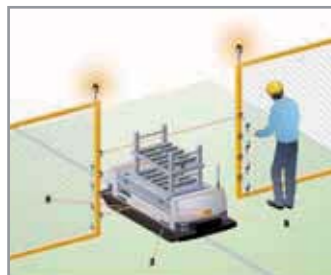A single unit supports both PNP and NPN polarities, easing stock management.

Branch cable

To controller

Extension cable
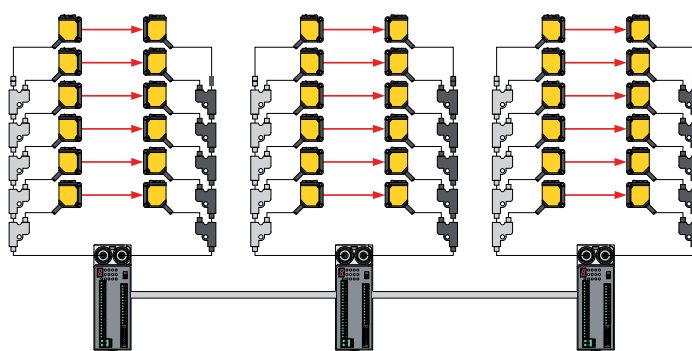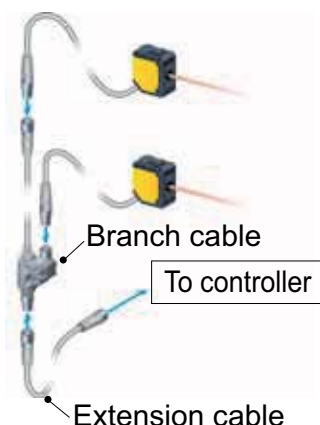
# Typical applications

| Protection for long sensing ranges | Protection for small openings | Protection against non-authorized entry |
|---|---|---|

# Technical specifications

| Sensor heads | Cable length 0.2m | | Cable length 1m | |
|---|---|---|---|---|
| | - | With emission amount adjuster | - | With emission amount adjuster |
| Model no. | ST4-A1-J02 | ST4-A1-J02V | ST4-A1-J1 | ST4-A1-J1V |
| Applicable standards* | EN 61496-1/2 (type 4), ISO 13849-1 (PLe), JEC 61508 (SIL3) | | | |
| Operating range | 0.1 to 15m | | | |
| Sensing object | ø9mm or more for opaque objects | | | |
| Supply voltage | Supplied from controller | | | |
| Current consumption | Emitter: 11mA or less, receiver: 9mA or less | | | |
| Protection | IP67 | | | |
| Weight | 45g | | 100g | |
| Usable ambient temperature | -10 to +55°C (no dew condensation or icing allowed), Storage: -25 to +70°C | | | |
| Emitting element | Infrared LED (peak emission wavelength: 870nm) | | | |
| Material | Enclosure: PBT, lens: acrylic, indicator cover: acrylic | | | |
| Cable | Shielded cable with connector, 0.2m long | | Shielded cable with connector, 1m long | |

| Sensor type | Controller | | | | | | High-functional controller | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ST4-C11 | | | | | | ST4-C12EX | | | | | |
| | Number of ST4-A(V) in use | | | | | | Number of ST4-A(V) in use | | | | | |
| | 1 | 2 | 3 | 4 | 5 | 6 | 1 | 2 | 3 | 4 | 5 | 6 |
| PFHd | $1.19 \times 10^{-9}$ | $1.35 \times 10^{-9}$ | $1.50 \times 10^{-9}$ | $1.66 \times 10^{-9}$ | $1.82 \times 10^{-9}$ | $1.97 \times 10^{-9}$ | $1.55 \times 10^{-9}$ | $1.71 \times 10^{-9}$ | $1.86 \times 10^{-9}$ | $2.02 \times 10^{-9}$ | $2.18 \times 10^{-9}$ | $2.33 \times 10^{-9}$ |
| MTTFd | 100 years | | | | | | | | | | | |
| Applicable standards* | IEC 61496 1/2 (type 4), EN ISO 13849 (PLe), IEC 61508 (SIL 3) | | | | | | | | | | | |
| Supply voltage | 24V DC +10/ -15% ripple P-P 10% or less | | | | | | | | | | | |
| Current consumption | Max. 100mA (excluding sensor heads) | | | | | | Max. 120mA (excluding sensor heads) | | | | | |
| Output transistors | OSSD1 and OSSD2 (PNP or NPN, switchable), max. 200mA | | | | | | | | | | | |
| Response time | ON -> OFF: 25ms or less OFF -> ON: 90ms or less (auto reset) 140ms or less (manual reset) | | | | | | | | | | | |
| Protection | Enclosure: IP40 (IEC), terminal: IP20 (IEC) | | | | | | | | | | | |
| Ambient temperature | -10 to +55°C (no dew condensation or icing allowed) Storage: -25 to +70°C | | | | | | | | | | | |
| Material | Enclosure: ABS | | | | | | | | | | | |
| Weight | 180g | | | | | | 240g | | | | | |

\* Complies with those standards only when the sensor head is used in combination with the controller ST4-C11 or ST4-C12EX

21/11/2013

# Safety laser scanner

# SD3-A1

**Type 3 · PLd · SIL2**

> Monitor dangerous areas for unauthorized entry using flexible detection zones!

## Features

### ■ Freely configurable zones

Two zones can be monitored with the **SD3-A1**: the warning zone within a radius of 15m, and the protection zone within a radius of 4m. You can configure the contours of these zones to perfectly accomodate any application. You can configure up to eight zone patterns and switch between them at any given time, even during operation. This flexible zone configuration can be done by PC.



RS-232C
RS-422

Detection zone

Warning zone

### ■ Monitors beam misalignment after installation of safety laser scanner

By activating the reference boundary function which enables constant detection of stationary objects, the safety laser scanner memorizes the position of stationary objects and checks for beam misalignment after installation.



The safety laser scanner memorizes the position of stationary objects and monitors for beam misalignment in the detection zone.
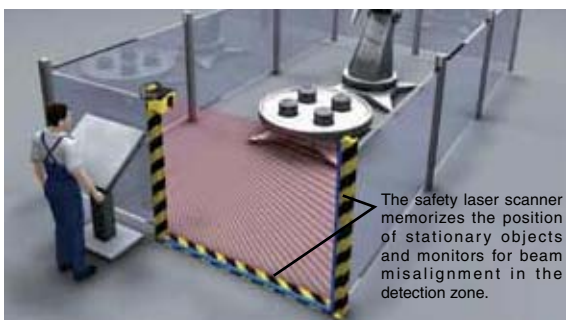
### ■ Adjustment of response times enables interference prevention

The response time can be adjusted from 80 to 640ms. Mutual interference can be prevented by adjusting the response time when setting up multiple safety laser scanners in close vicinity.



Configuration plug

### ■ Memorized configurations make post-maintenance recovery easy (optional)
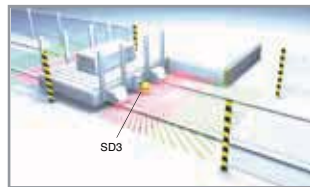
Configurations can be saved in the optional configuration plug's built-in memory and reloaded after maintenance or exchanging safety laser scanners.

21/11/2013

# Typical applications

Detecting entry into dangerous areas at processing machines



Confirming safety around automatic guided vehicles



SD3

Detecting presence in a defined field



Guarding the sides of automatic guided vehicles (AGV)



Detecting entry into dangerous areas of circular cycle tables



Detecting entry into areas with robots



# Technical specifications

| Type | Safety laser scanner | | | | |
|---|---|---|---|---|---|
| **Model no.** | SD3-A1 | | | | |
| **MTTFd** | 100 years | | | | |
| **Applicable standards** | IEC 61496 1/2 (Type 3), EN ISO 13849 (PLd), IEC 61508 (SIL2) | | | | |
| **PFHd** | $1.5 \times 10^{-7}$ 1/h | | | | |
| **Detection zone** | Min. sensing object setting | ø150mm | ø70mm | ø50mm | ø40mm | ø30mm |
| | Sensing range (radius) | 0 to 4.0m | 0 to 4.0m | 0 to 2.8m | 0 to 2.2m | 0 to 1.6m |
| **Warning zone** | Min. sensing object setting | Min. sensing object setting | ø150mm (fixed) | | | |
| | Sensing range (radius) | Sensing range (radius) | 0 to 15m | | | |
| **Scanning angle** | 190° / 180° (by setting) | | | | |
| **Measurement zone** | Max. measurement range (radius) 50m (fixed) | | | | |
| **Number of zone settings** | Max. 7 + 1 (without detection zone) | | | | |
| **Min. zone setting range** | 200mm | | | | |
| **Supply voltage** | 24V DC +20/-30% | | | | |
| **Current consumption** | 300mA approx. (excluding external connection load) | | | | |
| **Control outputs (OSSD 1, OSSD 2)** | PNP open-collector transistor 2 outputs<br>Rated operating voltage: supply voltage (UB) -3.2V<br>Max. source current: 250mA<br>Residual voltage: 3.2V or less | | | | |
| **Laser protection class** | Class 1 (IEC 60825) | | | | |
| **Degree of protection** | IP65 | | | | |
| **Ambient temperature** | 0 to +50°C, storage: -20 to + 60°C | | | | |
| **Material** | Main body: die-cast aluminium, scanner window: thermoplastic resin | | | | |
| **Accessories** | · SD3-PS (exclusive 15-pin connector): 1 pc.,<br>· SD3-RS232 (exclusive 9-pin connector): 1 pc.,<br>· Mounting screws M5 (length 20 mm) hexagon-socket-head bolt: 2 pcs.,<br>· Mounting screws M5 (length 16mm) hexagon-socket-head bolt: 2 pcs., attached to SD3-PS: 1 set,<br>· Simplified instruction manual: 1 copy, installation CD-ROM (includes detailed instruction manual data): 1 CD | | | | |
| **Weight** | Net weight: 2.1kg approx., gross weight: 2.9kg approx. | | | | |

# SF-C10

**Type 4 · PLe**

Less setup time for safety light curtains

## Features

### ■ Plug-in type control unit

**Quick connection**

Connecting to the light curtain is done using plug-in connections, which shortens setup and replacement time.

**Easy setup requiring no torque control**

A spring method is used for the terminal blocks for connections other than to the light curtain. There is no need to control tightening torques for these terminal blocks.
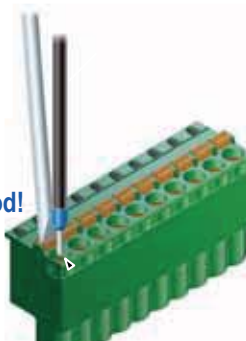
**SF-C11 / SF-C14EX**

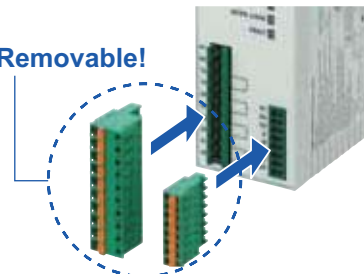**Removable terminal blocks reduce maintenance time**

Removable terminal blocks are used. This reduces the work required for reconnecting wiring during maintenance.
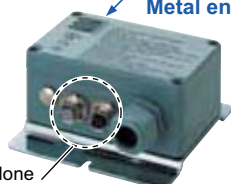
**Uses a spring method!**

**Removable!**

### ■ Robust type control unit    SF-C12

**Metal enclosure with a IP65 protective structure**

The strong metal enclosure has a built-in safety relay. It has an IP65 protective structure so that it can be set up individually without needing to be inserted into a control panel.

**IP65 Metal enclosure**

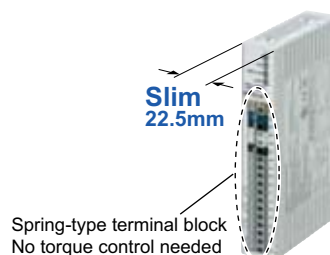Connecting to the light curtain is done using plug-in connectors

### ■ Slim type control unit    SF-C13

**Slim design**

22.5mm thickness, so can be inserted even into narrow spaces inside panels.

**Slim 22.5mm**

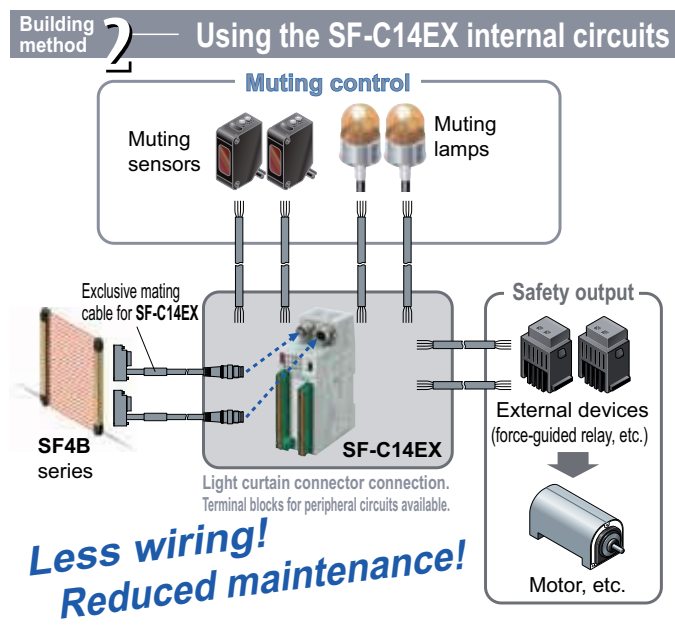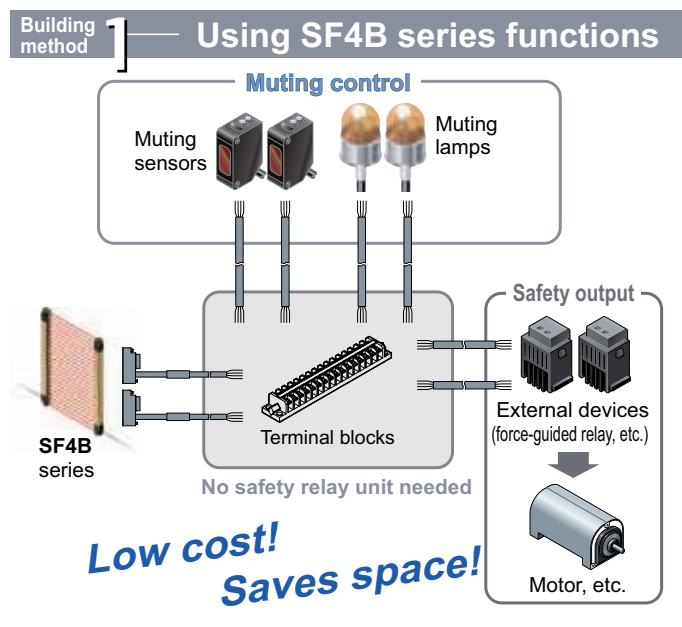Spring-type terminal block
No torque control needed

21/11/2013

## ■ Building of muting control circuits is easy　　SF-C14EX

### The method used to build the safety circuit is selectable

It is possible to build muting control circuits using a stand-alone light curtain from the **SF4B** series. The newly-released **SF-C14EX** application expansion unit allows the light curtain, muting sensors and muting lamps to be connected together directly so that muting control circuits can be built very easily.



Building method **1** — **Using SF4B series functions**

Building method **2** — **Using the SF-C14EX internal circuits**

## ■ Both safety and productivity can be obtained by stopping only one part of the device　　SF-C14EX
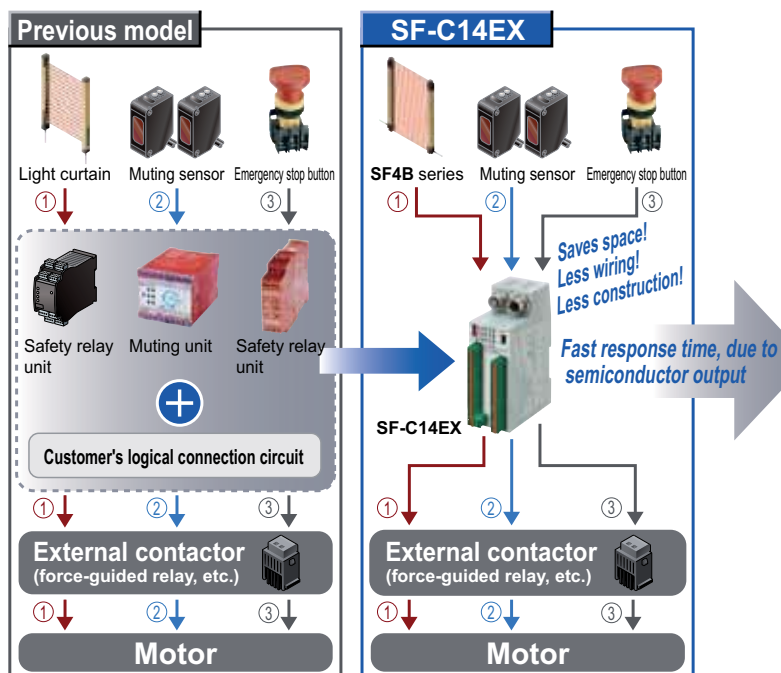
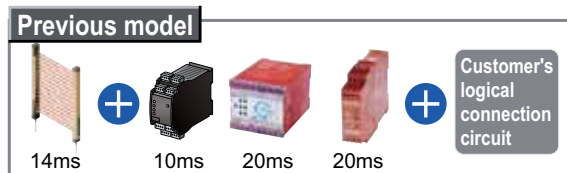### Three safety circuit systems combined in a single unit!

Three safety circuit systems ① Light curtain output circuit, ② Muting control circuit, and ③ Emergency stop circuit are packaged into a single unit. Functions that require multiple safety relay units and muting control units can be concentrated into a single unit, which results in large space savings, less wiring and less installation work.

### High-speed response 14ms (Including light curtain)

High-speed response has been achieved due to the adoption of the semiconductor output. Avoids the response delays that occur when using more than one safety relay unit, and greatly reduces the light curtain safety distance and improves ease of working. Of course, it is not necessary to exchange the safety relays within the unit anymore, which reduces running costs.



① Light curtain output circuit ② Muting control circuit
③ Emergency stop circuit

21/11/2013

SF-C10

### ■ Three safety circuit systems can be controlled independently

SF-C14EX

Controls motors that use muting control (robots) and motors that do not use a single unit.

**Safety circuit ❶**: Linked to light curtain beam received / interrupted status (partial stop)

When the light curtain is interrupted, this circuit switches off the safety output and stops the turntable.

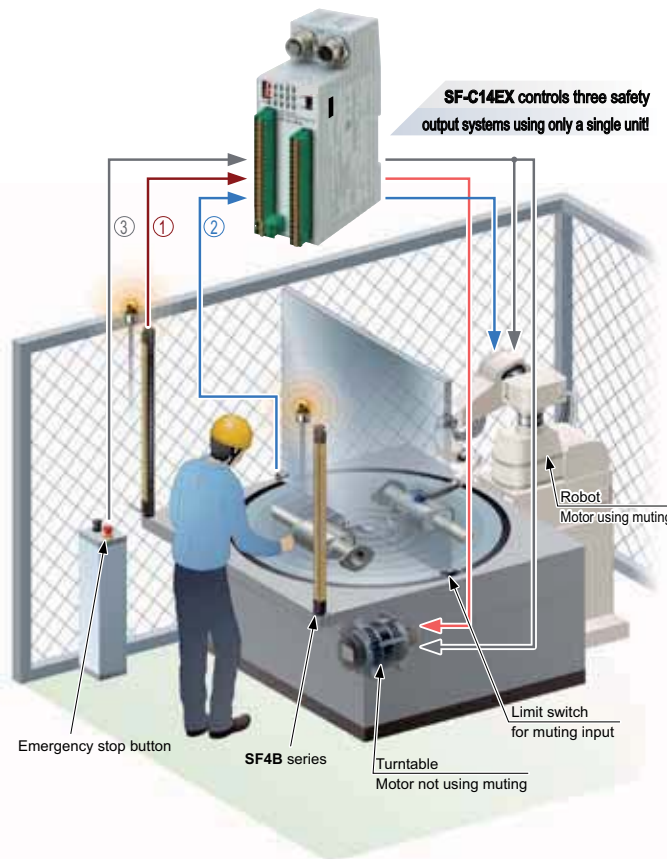**Safety circuit ❷**: Linked to muting control (partial stop)

If a workpiece enters when the turntable has stopped normally, (muting conditions met), this circuit allows the robot to operate.

If an workpiece enters while the turntable is turning (muting conditions are not met), this circuit switches off the safety output and stops the robot.

**Safety circuit ❸**: Linked to emergency stop input (all stop)

When the emergency stop button is pressed, this circuit switches off the safety output and stops all equipment.

**Equipped with blown-lamp output for muting lamp**

If one of the two muting lamps blows, a warning is output. It is possible to replace the lamp before both lamps blow and the equipment stops. In addition, an auxiliary output, that is linked to the muting function, override function and light curtain control output is also available.

### ■ Supports both PNP and NPN polarities

A single model can be used for PNP / NPN input switching, reducing the number of parts that need to be registered.

SF-C14EX controls three safety output systems using only a single unit!

③ ① ②

Robot
Motor using muting

Emergency stop button

SF4B series

Limit switch for muting input

Turntable
Motor not using muting

Equipped with a digital indicator so that error details can be understood at a glance!

All models

## Technical specifications

| Model no. | SF-C11 | SF-C12 | SF-C13 | SF-C14EX |
|---|---|---|---|---|
| Designation | Connector control unit | Robust type control unit | Slim type control unit | Application expansion type* |
| Connectable light curtains | SF4B/SF2B series | SF4B series | Light curtains manufactured by Panasonic (included SD3-A1) | SF4B series |
| MTTFd | 100 years | | | |
| Applicable standards | IEC 61496/1 (Type 4), EN ISO 13849 (PLe) | | | |
| PFHd | 4.17 E-7 | | | 6.82 E-10 |
| Control category | ISO 13849-1 (EN 954-1, JIS B 9705-1) compliance up to category 4 standards | | | |
| Supply voltage | 24 V DC ± 10% Ripple P-P 10% or less | | | |
| Current consumption | 100mA or less (excluding light curtain and other external connecting device) | | | 200mA or less (excluding light curtain and other external connecting device) |
| Response time (off response) | 10ms or less | 14ms or less | 10ms or less | 14ms or less |
| Protection | IP40, terminal IP20 | IP65 | IP40, terminal IP20 | IP40, terminal IP20 |

* This type is equipped with muting control function and emergency stop input. It can be connected to SF4B safety light curtains.

21/11/2013

# FP-Safe

## ■ Compatibility with all FP series PLCs

- All Panasonic FP series PLCs are extendable with FP-Safe controllers. The result is an integrated solution featuring both standard PLC and safety-related functions.
- Simple diagnostics and easy communication are the key benefits of this solution package.

FP-X

FP7

FP0R

FPΣ (Sigma)

FP2SH

*High-end safety PLC*

*Separate safety relay units*
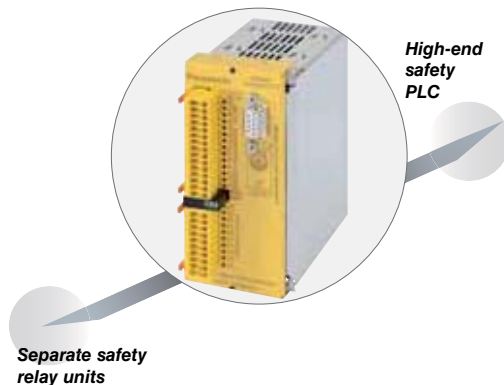
## ■ Flexibility and cost-effectiveness

- Compared to a set of separate safety relays, FP-Safe controllers are freely configurable – which provides for flexible system design, easy wiring, and smooth communication with the PLC.
- Compared to complex solutions where standard and safety-related controlling are processed by two redundant CPUs, the integration of FP-Safe with FP series PLCs is much more cost-effective and offers more expansion options.

## ■ Safety and multiple functionality

- Up to 5 safety-related functions can be configured by a single compact FP-Safe controller with no expansion units required.
- With the intuitive configurator software, programming and configuration are a snap.
- All status information regarding the safety I/Os on FP-Safe is monitored by the PLCs.
- A function block for reading diagnostic data to FP series PLCs is available in Control FPWIN Pro.

*Relays*

*Drives*

*Sensors*
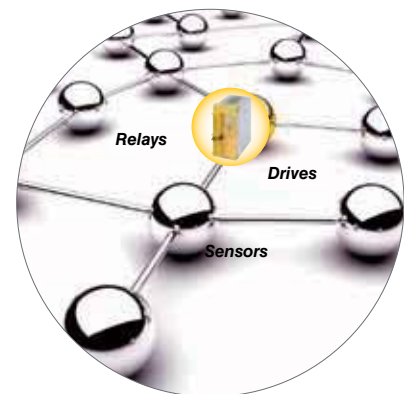
# MINAS A5 series servo drives

## ■ Servo drives for all motion control applications

EN 61508/62061, SIL CL2
EN ISO 13849-1, PLd
EN 61800-5-2, STO
IEC 61326-3-1

| North America | Europe | Asia Pacific | China | Japan |
|---|---|---|---|---|

## Panasonic Electric Works

**Please contact our Global Sales Companies in:**

### Europe

| | | |
|---|---|---|
| ▶ Headquarters | **Panasonic Electric Works Europe AG** | Rudolf-Diesel-Ring 2, 83607 Holzkirchen, Tel. +49 (0) 8024 648-0, Fax +49 (0) 8024 648-111, www.panasonic-electric-works.com |
| ▶ Austria | **Panasonic Electric Works Austria GmbH** | Josef Madersperger Str. 2, 2362 Biedermannsdorf, Tel. +43 (0) 2236-26846, Fax +43 (0) 2236-46133 www.panasonic-electric-works.at |
| | **Panasonic Industrial Devices Materials Europe GmbH** | Ennshafenstraße 30, 4470 Enns, Tel. +43 (0) 7223 883, Fax +43 (0) 7223 88333, www.panasonic-electronic-materials.com |
| ▶ Benelux | **Panasonic Electric Works Sales Western Europe B.V.** | De Rijn 4, (Postbus 211), 5684 PJ Best, (5680 AE Best), Netherlands, Tel. +31 (0) 499 372727, Fax +31 (0) 499 372185, www.panasonic-electric-works.nl |
| ▶ Czech Republic | **Panasonic Electric Works Europe AG** | Administrative centre PLATINIUM, Veveri 111, 616 00 Brno, Tel. +420 541 217 001, Fax +420 541 217 101, www.panasonic-electric-works.cz |
| ▶ France | **Panasonic Electric Works Sales Western Europe B.V.** | Succursale française, 10, rue des petits ruisseaux, 91370 Verrières Le Buisson, Tél. +33 (0) 1 6013 5757, Fax +33 (0) 1 6013 5758, www.panasonic-electric-works.fr |
| ▶ Germany | **Panasonic Electric Works Europe AG** | Rudolf-Diesel-Ring 2, 83607 Holzkirchen, Tel. +49 (0) 8024 648-0, Fax +49 (0) 8024 648-111, www.panasonic-electric-works.de |
| ▶ Hungary | **Panasonic Electric Works Europe AG** | Magyarországi Közvetlen Kereskedelmi Képviselet, 1117 Budapest, Neumann János u. 1., Tel. +36 1 999 89 26 www.panasonic-electric-works.hu |
| ▶ Ireland | **Panasonic Electric Works UK Ltd.** | Irish Branch Office, Dublin, Tel. +353 (0) 14600969, Fax +353 (0) 14601131, www.panasonic-electric-works.co.uk |
| ▶ Italy | **Panasonic Electric Works Italia srl** | Via del Commercio 3-5 (Z.I. Ferlina), 37012 Bussolengo (VR), Tel. +39 0456752711, Fax +39 0456700444, www.panasonic-electric-works.it |
| ▶ Nordic Countries | **Panasonic Electric Works Europe AG** | Filial Nordic, Knarrarnäsgatan 15, 164 40 Kista, Sweden, Tel. +46 859476680, Fax +46 859476690, www.panasonic-electric-works.se |
| | **Panasonic Eco Solutions Nordic AB** | Jungmansgatan 12, 21119 Malmö, Tel. +46 40 697 7000, Fax +46 40 697 7099, www.panasonic-fire-security.com |
| ▶ Poland | **Panasonic Electric Works Polska sp. z o.o** | ul. Wołoska 9A, 02-583 Warszawa, Tel. +48 22 338-11-33, Fax +48 22 338-12-00, www.panasonic-electric-works.pl |
| ▶ Spain | **Panasonic Electric Works España S.A.** | Barajas Park, San Severo 20, 28042 Madrid, Tel. +34 913293875, Fax +34 913292976, www.panasonic-electric-works.es |
| ▶ Switzerland | **Panasonic Electric Works Schweiz AG** | Grundstrasse 8, 6343 Rotkreuz, Tel. +41 (0) 41 7997050, Fax +41 (0) 41 7997055, www.panasonic-electric-works.ch |
| ▶ United Kingdom | **Panasonic Electric Works UK Ltd.** | Sunrise Parkway, Linford Wood, Milton Keynes, MK14 6 LF, Tel. +44 (0) 1908 231555, Fax +44 (0) 1908 231599, www.panasonic-electric-works.co.uk |

### North & South America

| | | |
|---|---|---|
| ▶ USA | **Panasonic Industrial Devices Sales Company of America** | 629 Central Avenue, New Providence, N.J. 07974, Tel. 1-908-464-3550, Fax 1-908-464-8513, www.pewa.panasonic.com |

### Asia Pacific / China / Japan

| | | |
|---|---|---|
| ▶ China | **Panasonic Electric Works Sales (China) Co. Ltd.** | Level 2, Tower W3, The Towers Oriental Plaza, No. 2, East Chang An Ave., Dong Cheng District, Beijing 100738, Tel. +86-10-5925-5988, Fax +86-10-5925-5973 |
| ▶ Hong Kong | **Panasonic Industrial Devices Automation Controls Sales (Hong Kong) Co., Ltd.** | RM1205-9, 12/F, Tower 2, The Gateway, 25 Canton Road, Tsimshatsui, Kowloon, Hong Kong, Tel. +852-2956-3118, Fax +852-2956-0398 |
| ▶ Japan | **Panasonic Corporation** | 1048 Kadoma, Kadoma-shi, Osaka 571-8686, Japan, Tel. +81-6-6908-1050, Fax +81-6-6908-5781, www.panasonic.net |
| ▶ Singapore | **Panasonic Industrial Devices Automation Controls Sales Asia Pacific** | 300 Beach Road, #16-01 The Concourse, Singapore 199555, Tel. +65-6390-3811, Fax +65-6390-3810 |

# Panasonic®

21/11/2013