# Type 4 self-contained single beam

*FF-SPS4 Series*

## For access control

**FEATURES**

- Meets applicable parts of US OSHA 1910.212, ANSI B11.19 and RIA 15.06 for Control Reliability
- Active optoelectronic protective equipment, Type 4 according to the norm IEC/EN 61496 - parts 1 & 2
- **Protection against mutual interference by selection of the emission frequency**
- Through scan device with permanent self-checking ensuring the highest level of safety
- Power supplies: 120 Vac, 240 Vac and 24 Vdc
- Response time: 0.020 s
- Scanning range:
  0,5 m to 40 m / 1.6 ft to 131.2 ft *(standard)*
  0,5 m to 20 m / 1.6 ft to 65.6 ft *(lens heating)*
  30 m to 75 m / 98.4 ft to 246 ft *(long range)*
- Beam aperture angle: ± 2° in compliance with the norm IEC/EN 61496 - 2
- Connection: terminal strips or connectors
- Outputs: 2 safety relays with guided contacts
- Sealing: IP 67 / NEMA 6 (terminal) or IP 65 / NEMA 4 (connector)
- Available restart modes:
  - automatic restart
  - start interlock (at power up only)
  - start & restart interlock (at power up and after any beam interruption)
- Final Switching Devices monitoring input
- Test input
- Numerous LED status indicators
- Accessories: individual and adjustable beam deflection mirror, floor mounting deflection mirrors for 2, 3 or 4 beams
- Alignment aid kit: compact and self-contained laser pen, signal margin LED indicator

**TYPICAL APPLICATIONS**

Access control: perimetric protection around a robot zone, trip device at the entrance and the exit of a paint shop, etc.

INRS

C US

Approved as
Type 4
per pr EN 50100 - 1/2



The FF-SPS4 Active Optoelectronic Protective Device is a single through scan infrared beam designed to detect the body of an operator on approach to a dangerous zone.

The interruption of the beam de-energizes the output contacts which in turn de-energizes the machine stop circuitry.

The emission source is modulated infrared which makes the operation almost completely independent of ambient light conditions. Moreover, the device is equipped with an emission frequency selector to avoid possible mutual interference between sets.

The processing is a permanent dynamic self-checking principle meeting the requirements of the norm IEC/EN 61496 - parts 1 & 2 for Type 4 Electrosensitive Protective Equipment. Any internal failure will be immediately detected and disable the output relays.

The Canadian cCSA$_{us}$ gave an approval to this device which meets applicable parts of US ANSI, RIA 15.06 standards and OSHA 29 CFR and 1910.212 regulations for Control Reliability.

The FF-SPS4 is preset with the start and restart interlock mode on delivery. The start and restart interlock guarantees that the equipment remains in alarm at power up or after an interruption of the beam. The operator must press a push-button to restart the protective equipment. However, an automatic restart can be easily programmed by internal switches.

**⚠ WARNING**

**MISUSE OF DOCUMENTATION**

- The information presented in this product sheet (or catalogue) is for reference only. DO NOT USE this document as system installation information.
- Complete installation, operation and maintenance information is provided in the instructions supplied with each product.

**Failure to comply with these instructions could result in death or serious injury.**

The receiver unit is equipped with 2 safety relays with guided contacts which can be directly used to stop the dangerous movement. However, most of the time, additional relaying (or Final Switching Devices) between the equipment outputs and the machine circuitry is necessary. For this reason, the FF-SPS4 has a Final Switching Device monitoring input to negate the use of a self-checking relay module. A test input is also available. The use of the test input sets the equipment in an alarm condition. When used in conjunction with the monitoring input, the test input facility provides the ability to regularly check the correct operation of interface relays.

A lens heating system is available on some models to prevent condensation where conditions of use may require such an equipment. These models can operate down to -25 °C / -13 °F ambient temperature.

LED indicators provide useful visual information on the equipment status during installation and operation. They ease beam adjustment and warn the operator about a lens contamination or misalignment before an unexpected emergency stop signal is generated.

The equipment is delivered with a pair of standard adjustable brackets for ease of installation. The use of deflection mirrors is a cost effective solution for designing multiple separate beam trip devices or perimetric protections around a dangerous area.

A laser pen is available as an accessory. It helps a single person adjust rapidly and easily the infrared beams even if deflection mirrors are used.

The device features the highest level of safety and can be used for a wide range of dangerous machines.

## Multiple separate beams

Multiple separate beams are often used to detect the intrusion of the whole body rather than parts of the body.

The installation of a multiple separate beam arrangement has to be carried out in such a way that access to the dangerous moving parts is impossible without breaking the beams.

**The EN 999** European standard gives the following formula for the calculation of the minimum safety distance between the dangerous zone and the detection plane. Compliance to this formula will ensure reliable detection of an operator and stop the dangerous motion before the operator reaches the danger:

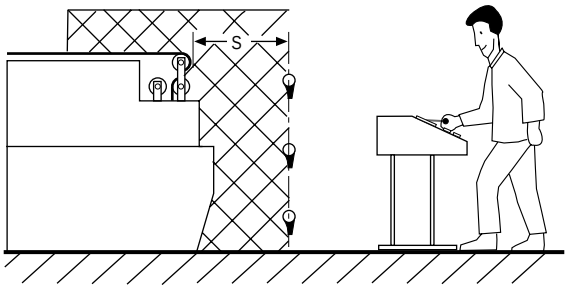
**S ≥ 1600 (t1 + t2) + 850 (mm)**
**(or Ds ≥ 63 (t1 + t2) + 33.5 (in)  Ds = S)**

*S: Minimum safety distance (mm / in)*
*t1: Response time of the FF-SPS4 equipment (0.02 s)*
*t2: Response time of the machine (s), i.e. time required to stop the machine or remove the risk after receiving the output signal from the protective equipment*

### Recommended beam heights

EN 999 recommends the following heights which have been found to be the most practical in application for multiple separate beams.

| Number of beams | Beam heights above the reference floor | |
|---|---|---|
| | mm | in |
| 2 | 400 / 900 | 15.7 / 35.4 |
| 3 | 300 / 700 / 1100 | 11.8 / 27.6 / 43.3 |
| 4 | 300 / 600 / 900 / 1200 | 11.8 / 23.6 / 35.4 / 47.2 |



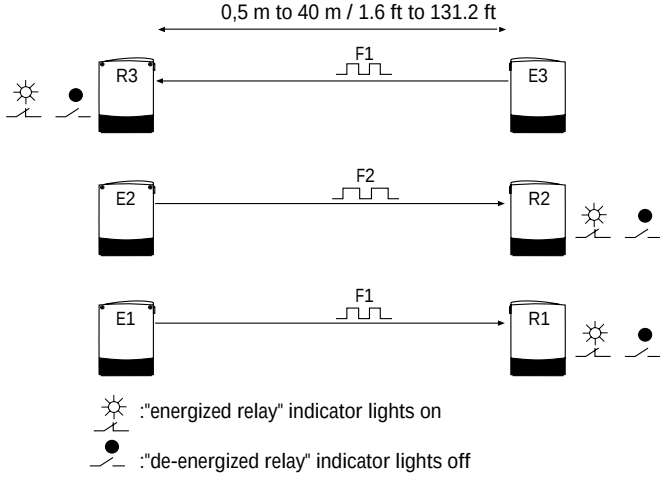

The number of beams to be used needs to be defined according to the risk assessment and to the importance for the machine operator to pass undetected. Particularly, during risk assessment, methods of defeating the safety equipment shall be taken into account before selecting the correct configuration.

## Protection against mutual interference

When more than one FF-SPS4 is used, mutual interference may occur between sets.

To avoid these undesirable disturbances, the device is equipped with internal switches designed to select the emission frequency F1 or F2 of the infrared modulated light. The position of these switches can be changed to avoid mutual interference between two systems.

In some cases, mutual interference can be cancelled by using two different emission frequencies and by reversing the transmission direction of the through scan beams. This would be the case for a three beam trip device for instance:




FF-SPS4

## Status indicators

### Emitter


Power on indicator
● power off ☼ power on

TEST Test mode indicator
● normal ☼ alarm

Emission frequency indicator
☼ F1 ● F2

### Receiver


Signal margin (ms)
● ms ≥ 2 threshold ☼ ms < 0.5 threshold ☼ 0.5 ≤ ms < 2 threshold

RESET reset mode indicator
● Automatic ☼ Manual ☼ Press the push-button

Energized relay indicator
● NO contacts: OFF state ☼ NO contacts: ON state

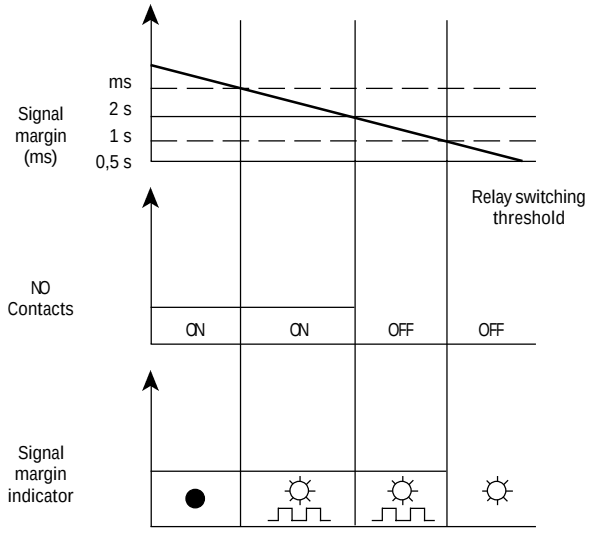
De-energizer relay indicator
● NO contacts: ON state ☼ NO contacts: OFF state

Emission frequency indicator
● F2 ☼ F1

● Light Off ☼ Light On ☼ Flickering light

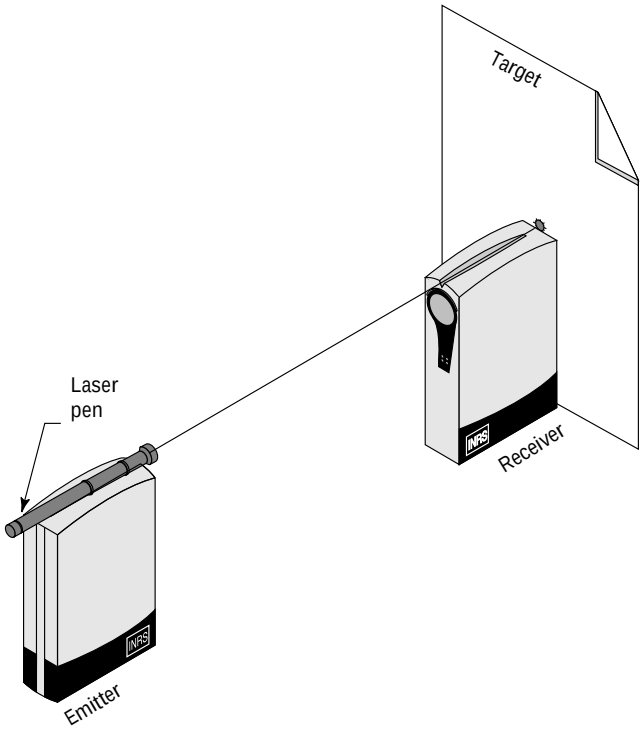
## Operating diagram

(Output status/Reception signal)




## Laser alignment procedure

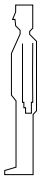
The use of the FF-SPZLASER pen is recommended to perform easy and fast beam alignment, particularly if the scanning distance is greater than 10 m / 32.8 ft. The FF-SPS4 equipment housing is designed to support the laser pen without any additional mechanical adapter. A location notch found on the top of the housing is designed to support the laser pen which should be used in conjunction with a target (such as a white sheet of paper) as shown below. However, in the absence of the laser pen, the notch can be used as a “backsight notch” to ease alignment operations.




FF-SPS4

# FF-SPS4

- **Type 4 according to IEC/EN 61496 - parts 1 & 2**
- **Scanning range up to 75 m / 246 ft without adjustment**
- **ø35 mm / 1.4 in detection capability**
- **Meets applicable parts of US OSHA, ANSI and RIA for Control Reliability**



Approved as Type 4 per pr EN 50100 - 1/2

INRS

C US

***Dimensions in millimeters / inches, meters / feet, weights in kg / lbs***

| Specifications | |
|---|---|
| **Power supply voltage** | 120 Vac or 240 Vac (+10%, -20%) 24 Vdc, ±15%(1) |
| **Power consumption** | *Standard*: 8 • *Long range*: E = 4 VA / 3 W, R = 6 VA / 5 W • *Lens heating*: E = 7 VA, R = 9 VA |
| **Output switching capacity** | 2 A/250 Vac, 2 safety relays with guided contacts (10 mA min.) |
| **Material** | *Housing*: Aluminium alloy, yellow painted according to RAL 1021 (polyurethane) |
| | *Front face*: polycarbonate |
| **Dimensions** | *Terminal*: 187 mm x 120 mm x 50 mm / 7.4 in x 4.7 in x 2 in |
| | *Connector*: 277 mm x 120 mm x 50 mm / 10.9 in x 4.7 in x 2 in |
| | *Lens emitter*: ø35 mm / 1.4 in • *Lens receiver*: ø35 mm / 1.4 in |
| **Emission** | Modulated infrared (880 nm), 2 selectable emission frequencies (50 Hz and 40 Hz) |
| **Power supply frequency** | 48 to 62 Hz (for the power supplies 120 Vac or 240 Vac) |
| **Resolution** | ø35 mm / 1.4 in |
| **Alignment tolerance** | ± 2° in compliance with IEC/EN 61496 - 2 requirements |
| **Ambient temperature** | *Standard*: 0 °C to 55 °C / 32 °F to 131 °F • *Lens heating*: -25 °C to 55 °C / -13 °F to 131°F |
| **Sealing** | *Terminal*: IP 67 or NEMA 6 • *Connector*: IP 65 or NEMA 4 and 13 |
| **Noise immunity** | *Electrical*: IEC 801-4, level IV • *Electromagnetic*: IEC 801-3, level IV |
| **Immunity to ambient light** | *Sun*: 20 000 Lux • *Lamp*: 15 000 Lux |
| **Status indicator** | LEDs display on unit front face |
| **Scanning range** | *Standard*: 0,5 m to 40 m / 1.6 ft to 131.2 ft • *Lens heating*: 0,5 m to 20 m /1.6 ft to 65.6 ft • |
| | *Long range*: 30 m to 75 m / 98.4 ft to 246 ft |
| **Electrical connection** | Connecting terminals: snap-in clips or DIN 43652 connector model |

**Ordering information** (Emitter/Receiver) (2)

**FF-SPS4 ❑ ❑ R ❑**

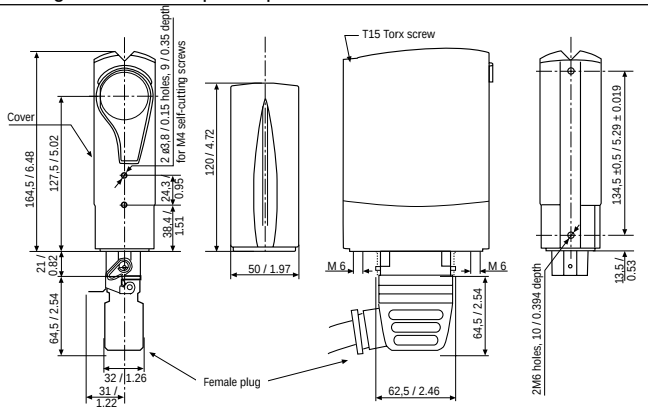
- **Power supply voltage:**
  - *E:* 120 Vac
  - *G:* 240 Vac
  - *2:* 24 Vdc (1)
- **With test input**
- **Electrical wiring:**
  - *T:* Terminal strip (snap-in-clip)
  - *C:* DIN 43652 connector
- **Scanning range:**
  - *4*: 0,5 m to 40 m / 1.6 ft to 131.2 ft (standard model)
  - *2*: 0,5 m to 20 m / 1.6 ft to 65.6 ft (lens heating model, available with terminal strip and Vac supply only)
  - *7*: 30 m to 75 m / 98.4 ft to 246 ft (long range)

**Note**

(1) - Dc versions are featured with a galvanic insulation (dc to dc converter) that provides immunity to external disturbances; this is essential to guarantee the safety integrity of the equipment.

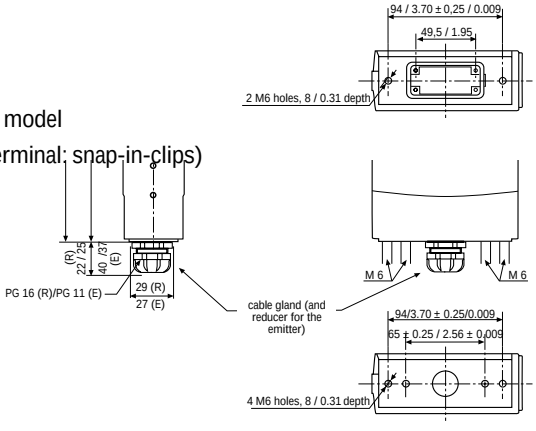
(2) - The equipment is delivered with two standard brackets and two separate plugs (for the FF-SPS4❑C❑❑ models) or two cable glands and one reducer (for the FF-SPS4❑T❑❑ models).

DIN 43652 connector model




Terminal strip model

(connecting terminal; snap-in-clips)

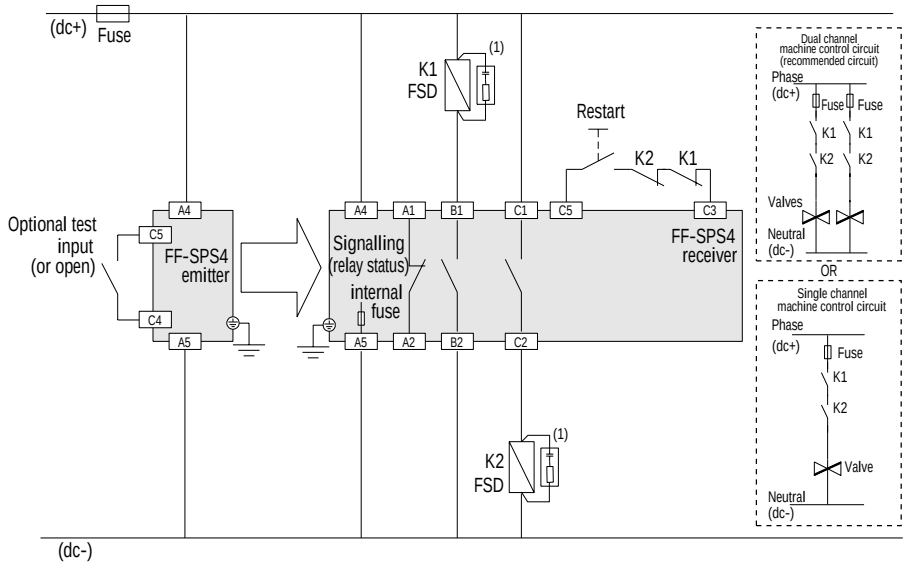



| | | Emitter | Receiver |
|---|---|---|---|
| Response time ($10^{-3}$ s) | t1 | 20 | |
| Mass per device | kg / lbs | 1,15 / 2.5 | 1,35 / 3 |

FF-SPS4

**Connection diagram**

The FF-SPS4 can be easily connected to the machine control circuitry due to the FSD monitoring and start and restart interlock facilities:



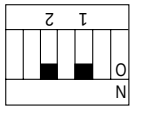
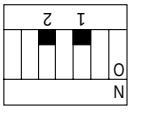
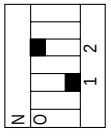
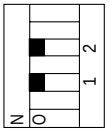
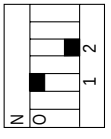
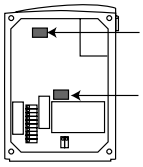
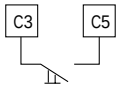
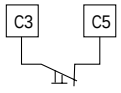
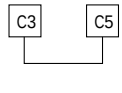
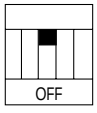
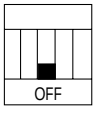
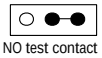
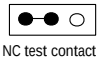
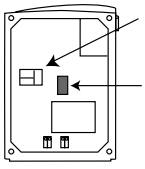

(1) RC (220 Ω + 0.22 μF) for ac interfaces or varistors for dc interfaces.

FSD: Final Switching Device.

**Frequency switches and restart mode selectors**

The position of the emission frequency switches must be changed on both the emitter and the receiver units otherwise the system remains permanently in alarm.

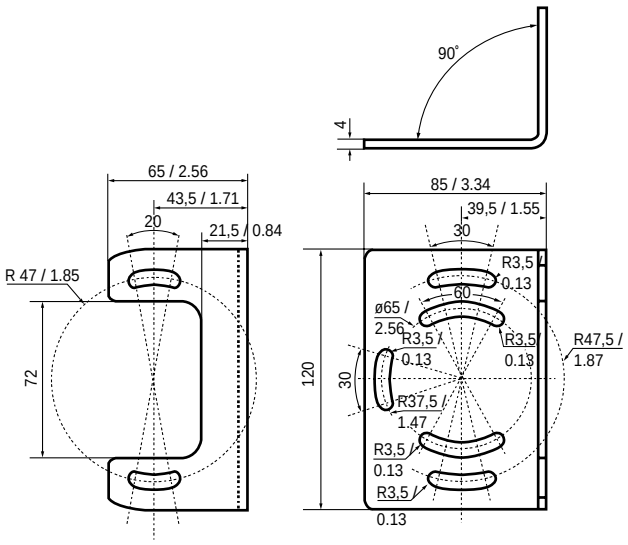
It is recommended to use the start and restart interlock facility when using the equipment as a trip device to control access to a dangerous zone. The restart push-button should be installed outside the dangerous zone. However, if the application does not require this facility, it can be removed using the following indications:

| Position of the switches (see *) | Frequency F1 (50 kHz) | Frequency F2 (40 kHz) | Start & restart interlock | Start interlock | Automatic |
|---|---|---|---|---|---|
| **Receiver** |  |  |  |  |  |
|  2 switches for restart mode; 2 switches for frequency adjustment | Indicator status  | Indicator status  |  |  |  |
| | Frequency F1 (50 kHz) | Frequency F2 (40 kHz) | Test input setting | | |
| **Emitter** |  |  | Position of the jumper  NO test contact  | Position of the jumper  NC test contact  | |
|  1 jumper for test input setting; 1 switch for frequency adjustment | Indicator status  | Indicator status  | | | |

*Factory settings: the equipment is preset on the emission frequency F1 (50 kHz), Start & Restart interlock and a NO test contacts.

## Accessories FF-SPS4

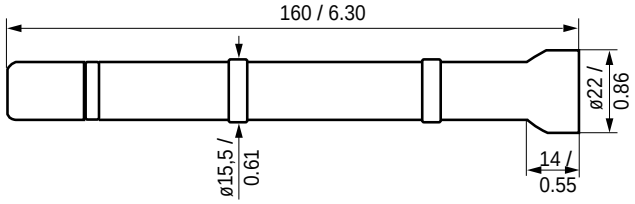
### FF-SPZSPX001




**Mounting bracket (already included in the FF-SPS4 package)**

Mounting bracket for fixing a unit onto a wall (tool: Allen key no. 5).

### FF-SPZLASER




**Laser pen**

The laser pen FF-SPZLASER is a self-contained and compact laser device designed to ease infrared beam alignments. Its IIa class conforms to the EN 60825 European standard and the US 21 CFR 1040 American standard.

| | |
|---|---|
| Laser | Red visible light diode |
| Classification | Class II |
| Optical power | Max. 1 mW |
| Wavelength | 635 nm |
| Beam diameter. | 4 mm / 0.15 in |
| Beam spread | Less than 0,7 mrad |
| Supply | 2 AAA batteries (1,5 V) |
| Endurance time | Typically 20 hours continuous |
| Lifetime | MTBF greater than 10 000 hours |
| Material | Aluminium |
| Weight | Approx. 80 gr / 0.17 lb (2.8 oz) |



## Tools

### FF-SPZSCREW

Torx T15 screwdriver for FF-SPS4 cover.

### FF-SBZCRIMP

Crimping tool for female contacts (for connector version).

### FF-SBZREMOV

Removal tool for female contacts (for connector version).

# Access control systems

*FF-SPS4 Series*

**MAIN FEATURES**

- Meets applicable parts of US OSHA 1910.212, ANSI B11.19 and RIA 15.06 for Control Reliability
- 2 or 3-beam electrosensitive protective devices designed in compliance with the IEC 61496-1/2 standard for Type 4 protective equipment
- Easy and quick installation
- Beam height in compliance with the EN 999 European standard
- Different models available with scanning ranges from 8 m to 75 m / 26.24 ft to 246 ft
- Supply voltages: 24 Vdc, 120 Vac, 240 Vac
- Selectable restart modes (automatic or manual restart)
- Final Switching Devices monitoring loop
- Mutual interference immunity
- Wiring: terminal strips, connectors or 10 m / 32.8 ft cable
- Laser pen for beam alignment

**TYPICAL APPLICATIONS**

Access control: perimetric protection around a robot zone, trip device at the entrance and the exit of a paint shop, etc.

INRS

C US

Approved as
Type 4
per pr EN 50100 - 1/2

The FF-SPS4 access control systems are protective equipment designed for the control of dangerous zones in Industry. The intrusion of a person inside the zone is detected by the interruption of one or several infrared beams permanently self-checked by an electronic circuitry which outputs an alarm signal toward the machine control circuitry. The opening of the output contacts due to the detection immediately stops the dangerous movement.

These systems offer different solutions which fit any need. Each system consists of two columns which support one or several FF-SPS4 single safety beams and 45° deflection mirrors for some of them. The nominal scanning distance of the beam allows to cover distances from 8 m to 75 m / 26.24 ft to 246 ft with or without mirrors, offering a cost effective solution. The installation of beams and mirrors is done on delivery to shorten time spent on setting up the system. The mechanics of both column and mirrors is designed to fulfill the requirements of the optics, and eases beam alignment adjustment. Moreover, a laser pen can be used to adjust beam alignment quickly.

The integrated functions simplify the electrical interfacing of the machine control circuits while saving cost: the restart input and the final switching device monitoring loop reduce the number of components used in the interface with two relays (with guided contacts). Prewired models are also available and add flexibility to the application.

**⚠ WARNING**

**MISUSE OF DOCUMENTATION**

- The information presented in this product sheet (or catalogue) is for reference only. DO NOT USE this document as system installation information.
- Complete installation, operation and maintenance information is provided in the instructions supplied with each product.

**Failure to comply with these instructions could result in death or serious injury.**

# 2-beam access control systems

- **Scanning ranges: 0 m to 20 m / 0 ft to 65.6 ft, 5 m to 75 m / 16.4 ft to 246 ft(1)**
- **Terminal strips or connector option**
- **Meets applicable parts of US OSHA, ANSI and RIA for Control Reliability, and IEC/EN 61496 - parts 1 & 2 requirements for Type 4 protective equipment**

INRS

C US

Approved as Type 4 per pr EN 50100 - 1/2

CE

***Dimensions in millimeters / inches, meters / feet, weights in kg / lbs***

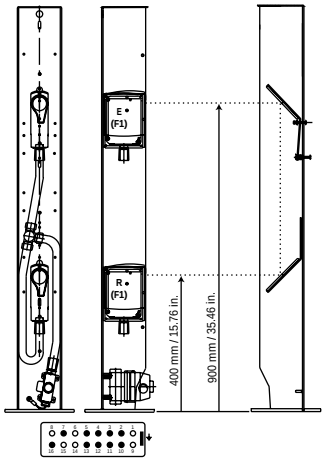
| Features | Range | | |
|---|---|---|---|
| | **Beam heights** | 400 mm and 900 mm / 15.76 in and 35.4 in | |
| | **Supply voltages** | 120 Vac (+10 %, -20 %), 240 Vac (+10%, -20%), 24 Vdc (±15%) (2) | |
| | **Consumption** | 10 VA or 8 W per system | 20 VA or 16 W per system |
| | **Outputs** | *Contacts*: 2 NO + 1 NC • *Switching capacity*: 2 A/250 Vac (10 mA min.) | |
| | **Response time** | 0.02 s | |
| | **Inputs** | Manual or automatic restart / FSD monitoring loop (3) | |
| | **Material** | *Column*: steel (4 mm / 0.15 in thickness), yellow painted according to RAL 1021 (epoxy) | |
| | **Dimensions** | 1170 mm x 133 mm x 128 mm / 46.09 in x 5.24 in x 5.04 in | |
| | | *Base plate:* 200 mm x 200 mm / 7.88 in x 7.88 in | |
| | **Emission** | Modulated infrared LED (880 nm), 2 emission frequencies: 40 kHz or 50 kHz | |
| | **Effective aperture angle** | ≤ 1,6° | ≤ 2,5° |
| | **Ambient temperature** | 0 °C to 55 °C / 32 °F to 131 °F | |
| | **Sealing** | *FF-SPS4 single beam*: IP 67 or NEMA 6 • *Connector*: IP 65 / *Prewired*: IP 54 | |
| | **Electrical immunity** | IEC 801-4 (level IV), IEC 801-3 (level III) | |
| | **Optical immunity** | *Sun*: 20 000 Lux • *Lamp*: 15 000 Lux | |
| | **Indicators** | Front panel LEDs | |
| | **Connecting terminals** | Terminal strips located on each FF-SPS4 units connectors located at the bottom of each column | Connectors located at the bottom of each column |

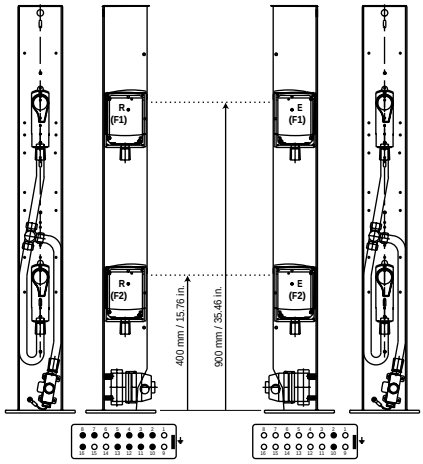
**Tools (refer to the accessories section)**

**FF-SPZLASER**
Laser pen for beam alignment

**FF-SCZ604764**
Mechanical adapter for laser pen

For safety distances see Type 4 self-contained single beam section




**Notes**

(1) This system does not fully comply with certain requirement of the IEC 61496-2 standard for distances below 5 m / 16.4 ft. If necessary, use models with a smaller nominal scanning range.
(2) The 24 Vdc models are featured with a galvanic insulation (dc/dc converter) that provides the immunity to external disturbances: this is essential to guarantee the safety integrity of the equipment (per IEC 61496-1 standard)
(3) Final Switching Devices
(4) Order each of the two listings for a complete system. Each column is delivered with a protective cover (refer to the accessories section).

**Ordering information** (4)

**FF-SPS4ERX❑-❑**

- **Connection**
  - ***blank:*** individual terminal strips
  - ***1:*** intermediary connector
- **Supply voltage**
  - ***E***: 120 Vac
  - ***G***: 240 Vac
  - ***2***: 24 Vdc (2)

**FF-SPZ12MIR**

**Ordering information** (4)

**FF-SPS4❑❑X❑-1**

- **Supply voltage**
  - ***E***: 120 Vac
  - ***G***: 240 Vac
  - ***2***: 24 Vdc (2)
- **Columns** (4)
  - ***EE***: emitting column
  - ***RR***: receiving column

FF-SPS4

# 3-beam access control systems

- **Scanning ranges 0 m to 8 m / 0 ft to 26.24 ft, 5 m to 75 m / 16.4 ft to 246 ft**
- **Terminal strips or connector option**
- **Meets applicable parts of US OSHA, ANSI and RIA for Control Reliability, and IEC/EN 61496 - parts 1 & 2 requirements for Type 4 protective equipment**

Approved as Type 4 per pr EN 50100 - 1/2

***Dimensions in millimeters / inches, meters / feet, weights in kg / lbs***

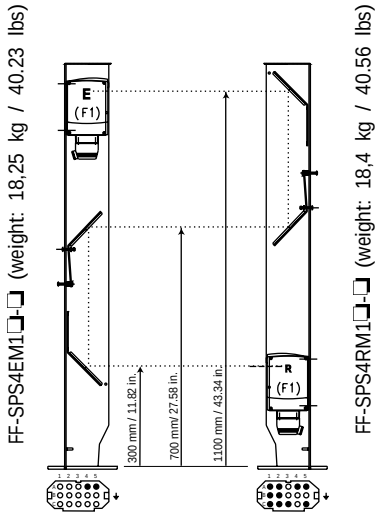
| Features | Range | | |
|---|---|---|---|
| | **Range** | 0 m to 8 m / 0 ft to 26.24 ft | 5 m to 75 m / 16.4 ft to 246 ft |
| | **Beam heights** | 300 mm, 700 mm and 1100 mm / 11.82 in , 27.58 in and 43.34 in | |
| | **Supply voltages** | 120 Vac (+10 %, -20 %), 240 Vac (+10%, -20%), 24 Vdc (±15%) (1) | |
| | **Consumption** | 10 VA or 8 W per system | 30 VA or 24 W per system |
| | **Outputs** | Contacts: 2 NO + 1 NC / switching capacity : 2 A/250 Vac (10 mA min.) | |
| | **Response time** | 0.02 s | |
| | **Inputs** | Manual or automatic restart / FSD monitoring loop (2) | |
| | **Material** | *Column*: steel (4 mm / 0.15 in thickness), yellow painted according to RAL 1021 (epoxy) | |
| | **Dimensions** | 1170 mm x 133 mm x 128 mm / 46.09 in x 5.24 in x 5.04 in, | |
| | | *base plate:* 200 mm x 200 mm / 7.88 in x 7.88 in | |
| | **Emission** | Modulated infrared LED (880 nm), 2 emission frequencies: 40 kHz or 50 kHz | |
| | **Effective aperture angle** | ≤ 1,6° | ≤ 2,5° |
| | **Ambient temperature** | 0 °C to 55 °C / 32 °F to 131 °F | |
| | **Sealing** | *FF-SPS4 single beam*: IP 67 or NEMA 6 • *Connector*: IP 65 / *Prewired*: IP 54 | |
| | **Electrical immunity** | IEC 801-4 (level IV), IEC 801-3 (level III) | |
| | **Optical immunity** | *Sun*: 20 000 Lux • *Lamp*:15 Lux | |
| | **Indicators** | Front panel LED's | |
| | **Connecting terminals** | Terminal strips located on each FF-SPS4 unit<br>Connectors located on each FF-SPS4 unit | Connectors located at the bottom of each column |

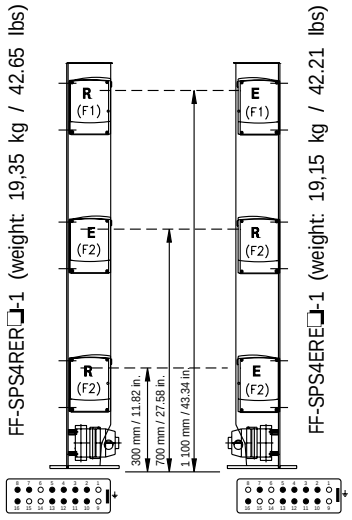
**Tools (refer to the accessories section)**

**FF-SPZLASER**
Laser pen for beam alignment

**FF-SCZ604764**
Mechanical adapter for laser pen

For safety distances see Type 4 self-contained single beam section




**Ordering information** (3)

**FF-SPS4❑M1❑-❑**

- **Connection**
  ***blank***: individual terminal strips
  ***2***: individual connector
- **Supply voltage**
  ***E***: 120 Vac
  ***G***: 240 Vac
  ***2***: 24 Vdc (1)
- **Columns** (3)
  ***E***: emitting column
  ***R***: receiving column

**Ordering information** (3)

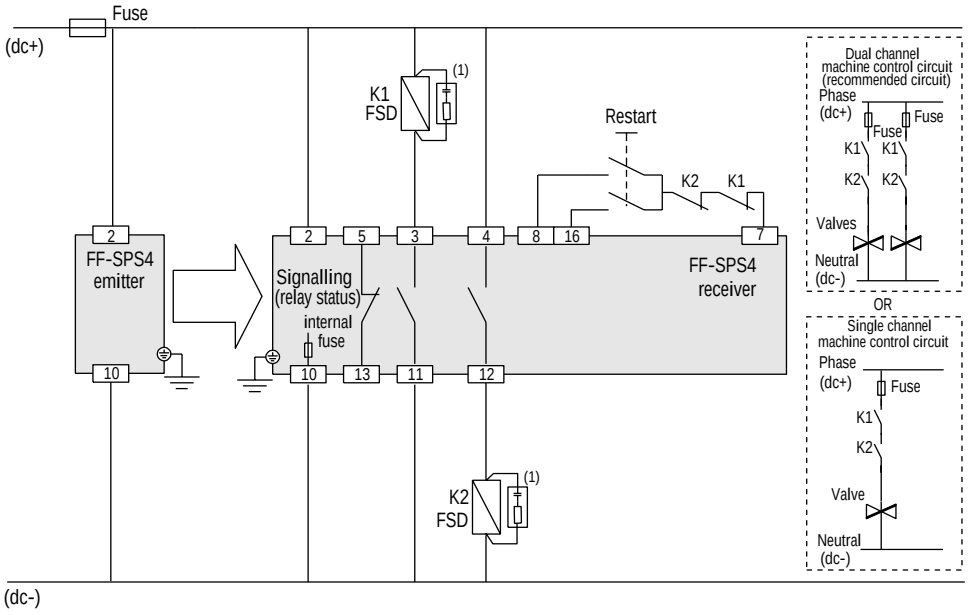
**FF-SPS4❑❑❑❑-1**

- **Supply voltage**
  ***E***: 120 Vac
  ***G***: 240 Vac
  ***2***: 24 Vdc (2)
- **Columns** (3)
  ***RER***: emitting and receiving column
  ***ERE***: emitting and receiving column

**Notes**

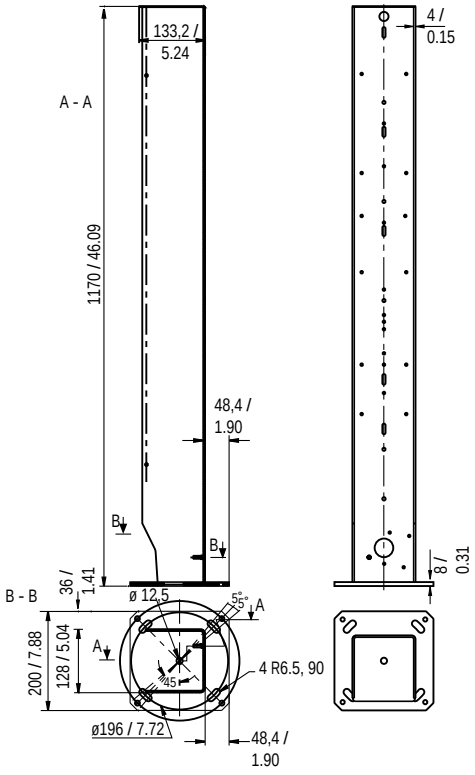
(1) The 24 Vdc models are featured with a galvanic insulation (dc/dc converter) that provides the immunity to external disturbances: this is essential to guarantee the safety integrity of the equipment (per IEC 61496-1 standard)
(2) Final Switching Devices
(3) Order each of the two listings for a complete system. Each column is delivered with a protective cover (refer to the accessories section).

FF-SPS4




(1): RC (200 Ω + 0.22 μF) for ac interfaces, or varistors for dc interfaces.

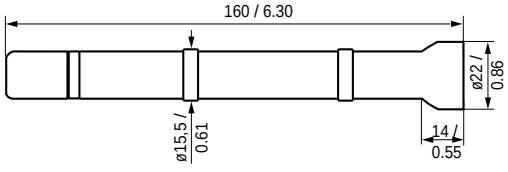
**Dimensions (in mm / in)**




- **Tools (to be ordered separately)**

**FF-SPZLASER**

The laser pen FF-SPZLASER is a self-contained and compact laser device designed to ease infrared beam alignments; its II class conforms to the EN 60825 European standard and the US 21 CFR 1040 American standard.




**FF-SCZ604764**

Mechanical adapter M18 x 90.

To be used for the installation of the laser pen on the columns.