Panasonic
INDUSTRY

Compatible with Up to Control Category 4, PLe and SIL3

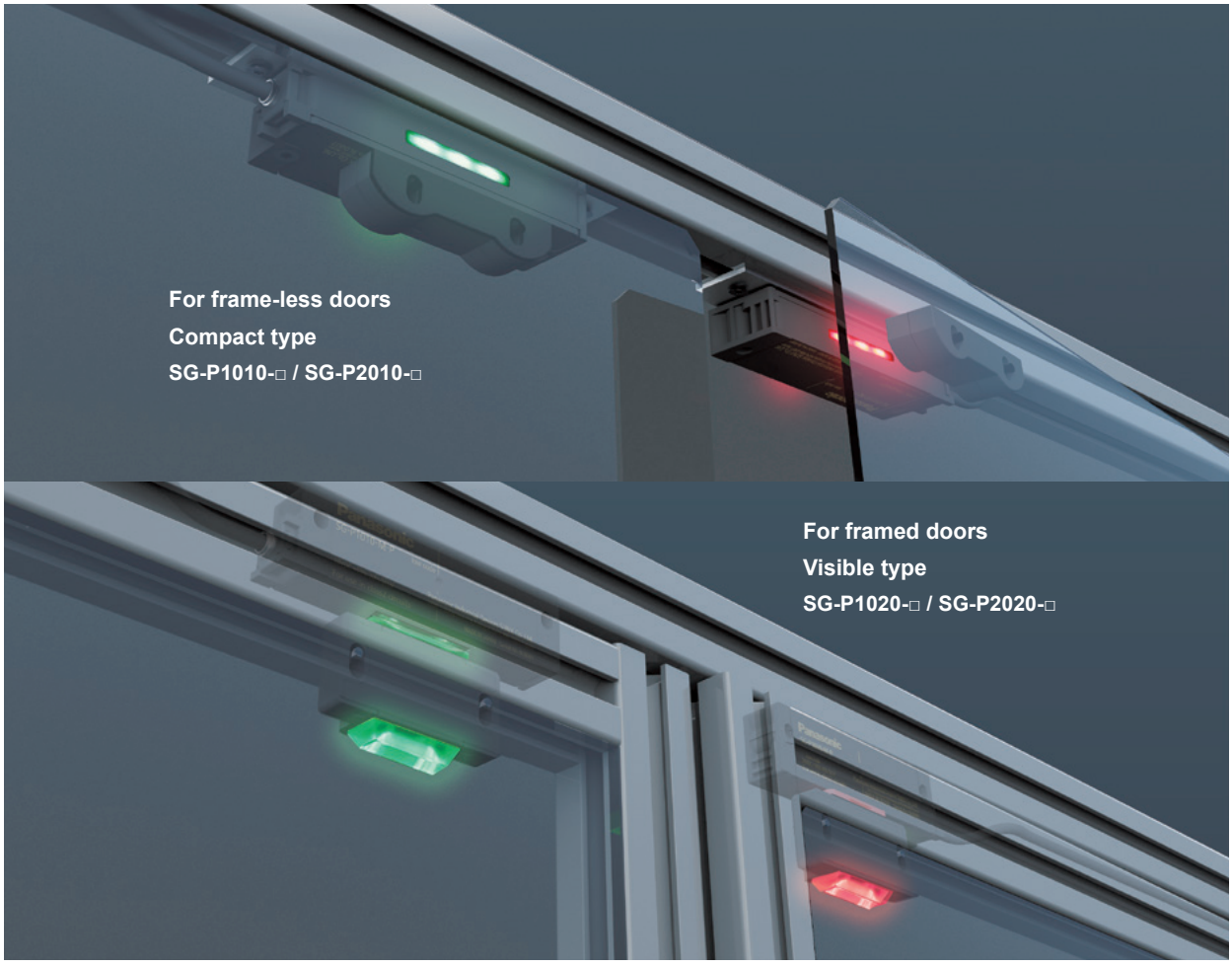
Non-Contact

Safety Door Switch

SG-P SERIES

CE | UKCA | TÜV Certified | TÜV c US Certified by NRTL

At-a-Glance Confirmation of Open / Close Conditions of All Equipment Doors

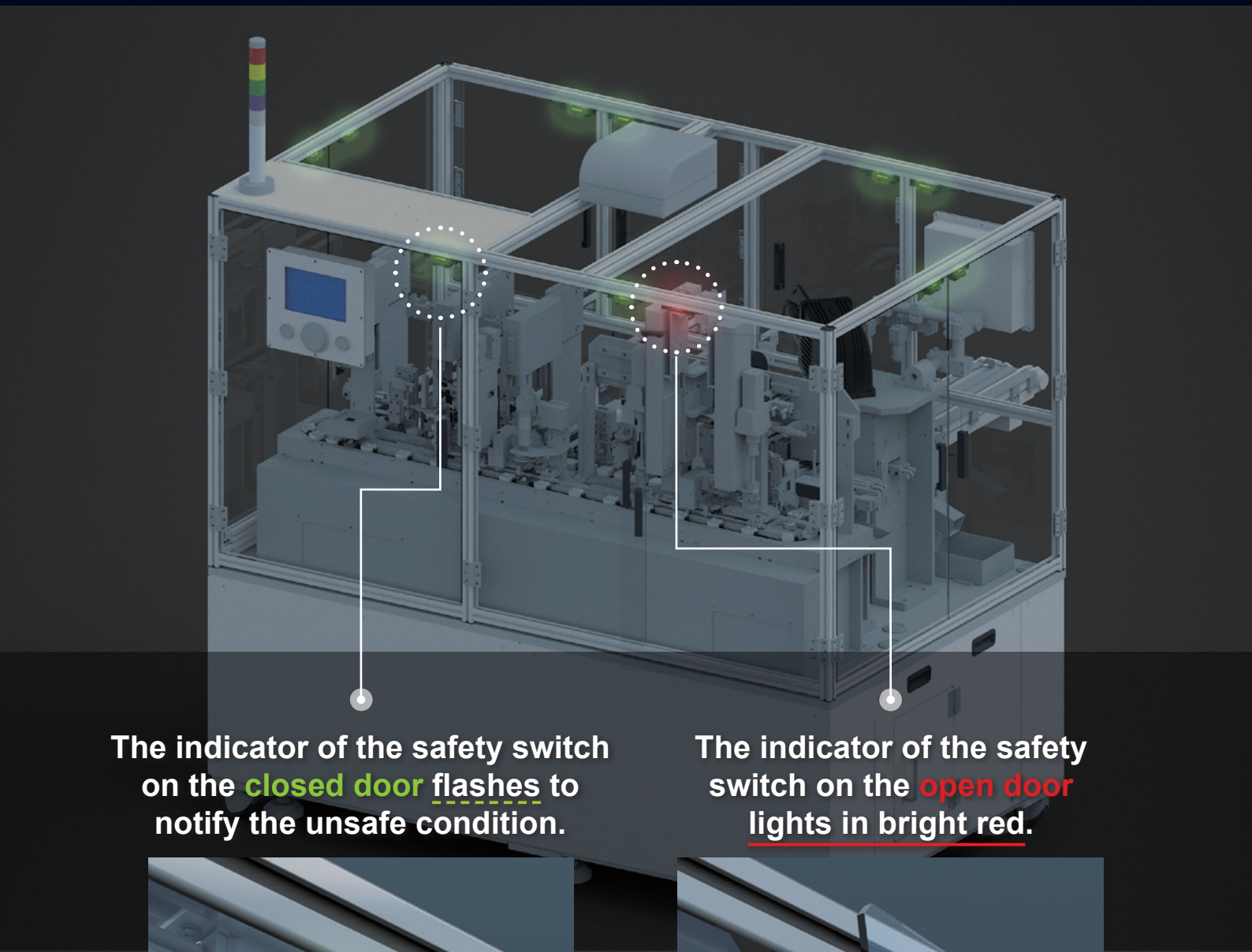


* Control category varies depending on external circuit configurations and wirings.
* This product uses a weak radio signal for its detection operation. Regarding radio regulations, refer to the Specifications section.

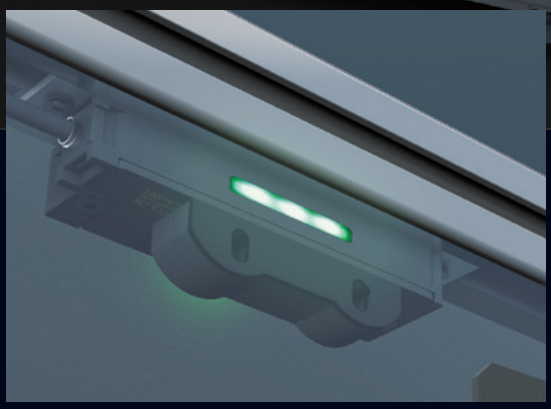
2023.5

Large and Bright Indicators Show the Open / Close Conditions of All Equipment Doors.

When one of the safety switches connected in series enters a non-detection state, the indicators of all other safety switches flash in green to notify the operator.



The indicator of the safety switch on the closed door flashes to notify the unsafe condition.



The indicators of the safety switches on all other closed doors that are interlocked with the open door flash in green to notify the unsafe condition.

The indicator of the safety switch on the open door lights in bright red.

The indicator of the safety switch on the open door lights in bright red so that the operator can recognize at a glance which equipment door is open.

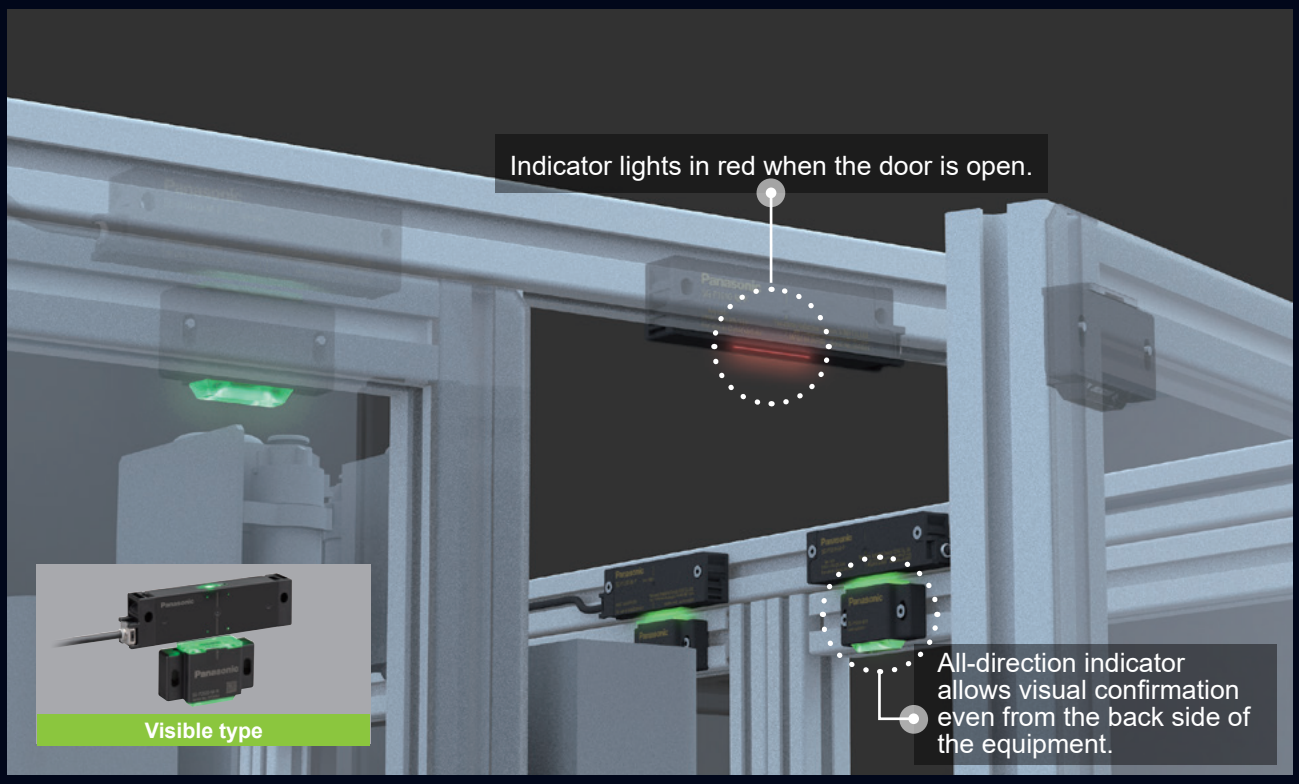
Two Types to Choose from


Visible type


Compact type

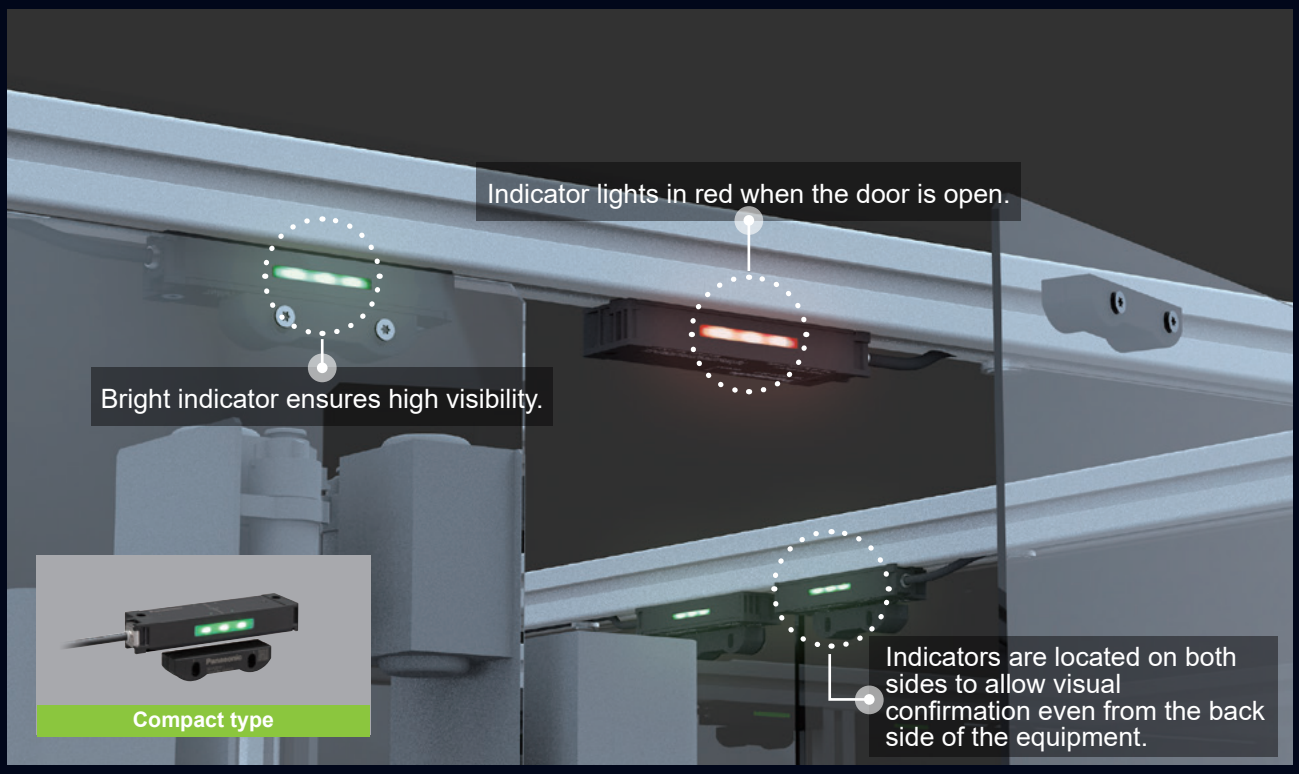
For doors with aluminum frames

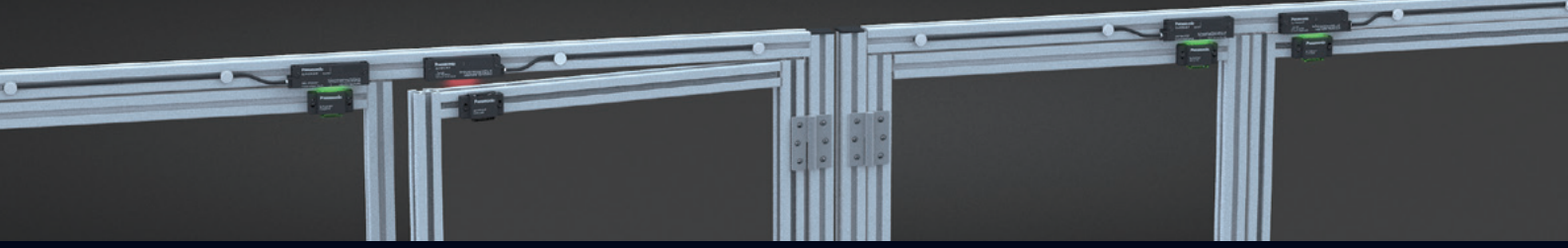
Visible type



For doors without aluminum frames

Compact type



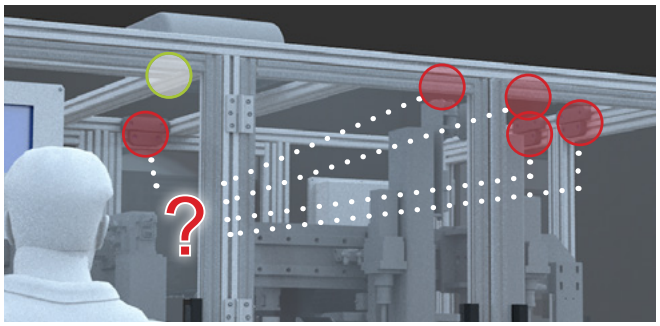


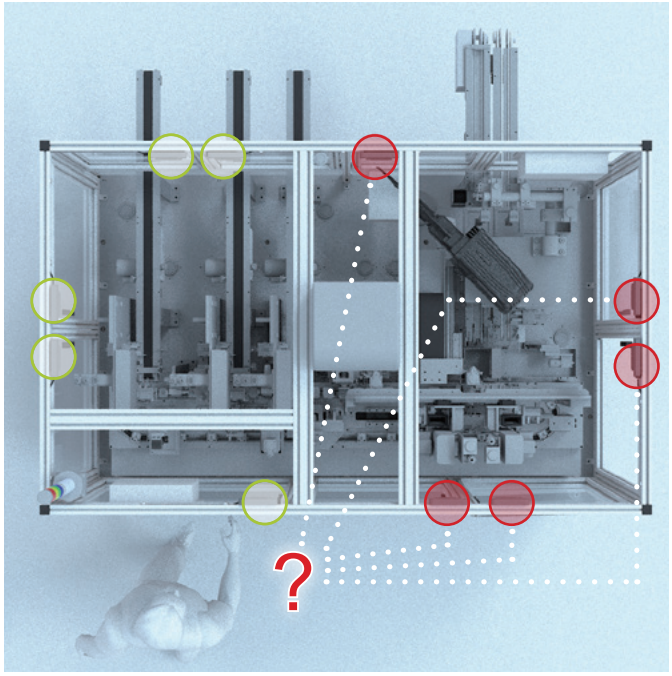
Flashing Function Notifies Unsafe Condition

When a door is intentionally kept open, the indicator of the safety switch on that door changes to red and the indicators of the safety switches on all other doors flash in green.
The operator can recognize immediately the equipment status and which door is open.

Before Conventional system

When one of the doors was kept open, the indicators of all other interlocked safety switches turned off so there was no way of knowing which door was open without checking each door.
When the safety switch was installed on the inner side of the door, the indicator of the safety switch was not visible from the outside of the equipment area in some cases.



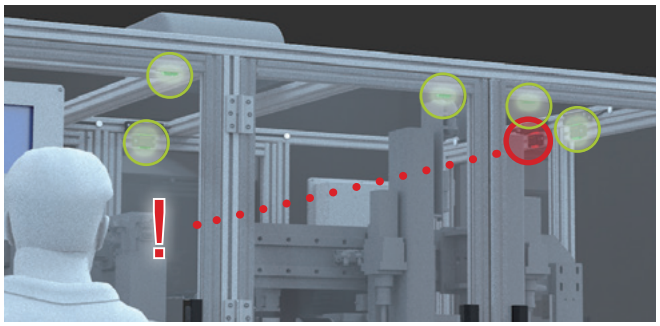


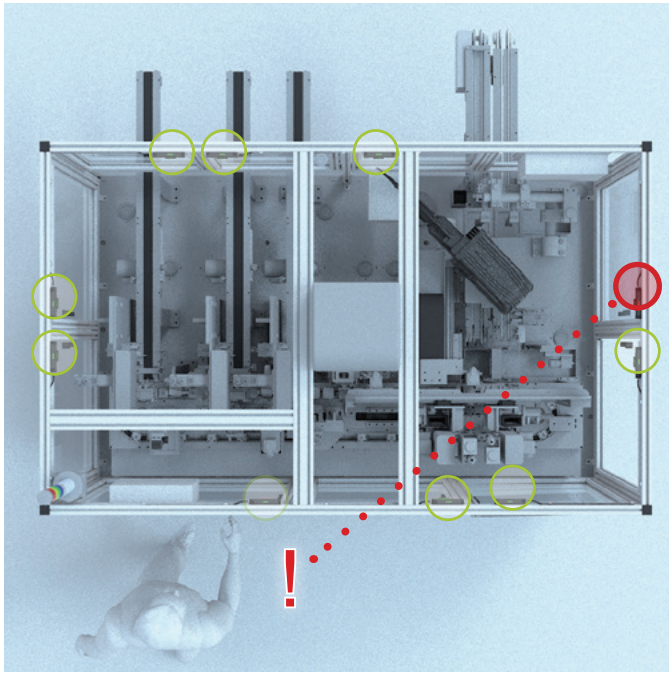
Industry's First

* As of September 2020, in-company survey

After SG-P series

The indicator of the safety switch on the open door changes to red and the indicators on all other doors flash in green.
The operator can recognize immediately the equipment status and which door is open.

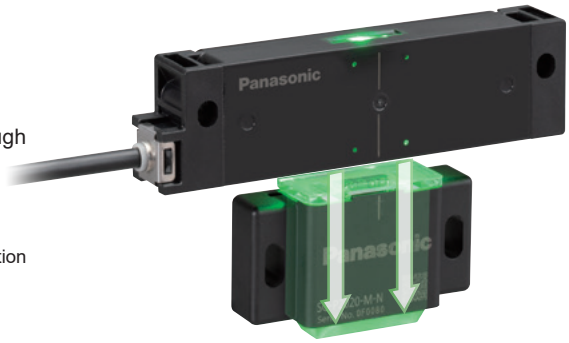




Actuator with Industry's First* "Indicator Light Pass-through System"

The visible type actuator allows the light from the switch body to pass through so that the indicator light is visible from the actuator side.
This ensures high visibility of the safety switches installed on doors with aluminum frames.

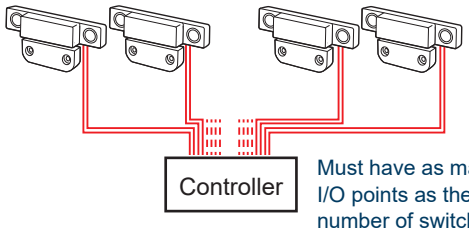
* Industry's first safety door switches with this function as of October 2020, in-company survey.



Master-Slave (Standard / Sub) System for Reduced Wiring Serial Connection of Up to 30 Units without Dedicated Controller

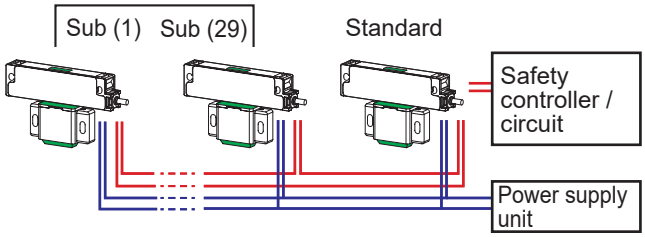
The **SG-P** series standard units, which are used as master units, can output safety signals all at once (OSSD1 / OSSD2).
The sub units used as slave units minimize the wiring for a cascade connection.
There is no need to purchase a dedicated controller. The presently used safety controller / circuit can be connected directly. Up to 30 units can be connected, thus contributing to wire-saving.

Before Magnetic switch or other conventional system



After SG-P series

Up to 29 sub units can be connected to one standard unit.



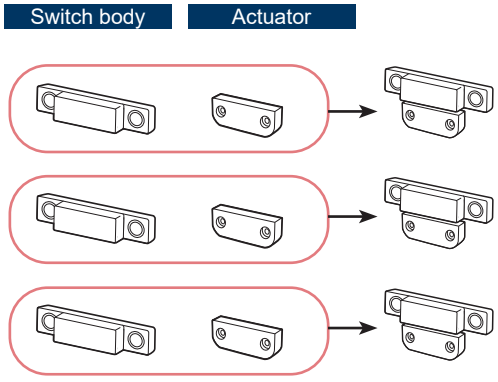
No Cumbersome Manual Pairing Necessary before Installation

* High-code models (**SG-P20□-M-□**, **SG-P20□-S**) only

During the initial setting, bring the switch body close to the actuator and turn on the power to let the safety switch detect the actuator for 3 seconds. This simple procedure completes the pairing.
In a cascade connection, pairing can be achieved all at once by simply turning on the power. This reduces the man-hours required for starting up the equipment.
* Low-code models (**SG-P10□-M-□**, **SG-P10□-S**) do not require pairing.

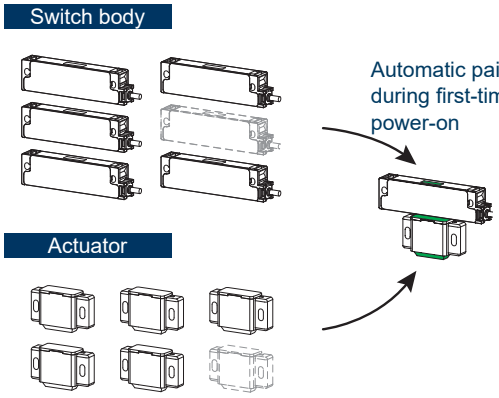
Before Conventional system

Each switch unit must be paired with one actuator during installation, and they must be managed as a set.



After SG-P series

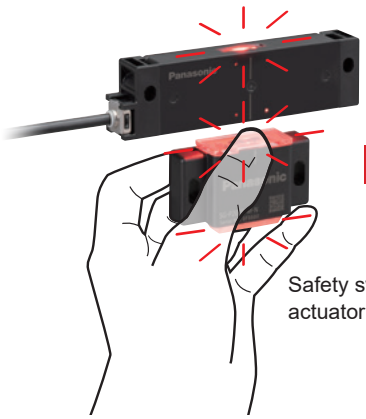
Any safety switch unit can be paired with a selected actuator for initial pairing.



Helps Prevent Intentional Deactivation of Safety Function

The ISO 14119:2013* international standard stipulates a design requirement that deactivations of safety functions shall be minimized.
Export of equipment sometimes requires to meet this standard. The **SG-P** series products are available with two different coding levels: High-code models and Low-code models. The High-code models are compatible with ISO 14119* coding level (**high level coded actuators**) and prevent intentional deactivation of their safety function.

* ISO 14119: Safety of machinery – Interlocking devices associated with guards – Principles for design and selection



Inoperable

Safety switch does not operate if the actuator is not paired.

Operable

Safety signal is output only when the actuator is paired.

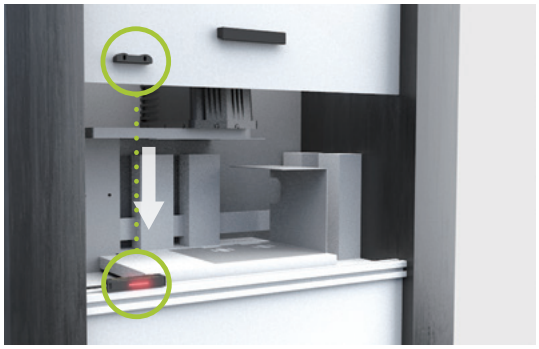
Installation example

The **SG-P** series offers visible type and compact type safety door switch models for installation on various types of doors. The visible type and compact type models can be used together and interlocked so that the most suitable models can be selected according to the types of equipment doors.
Even if there are many equipment doors, up to 30 units can be connected in series and the standard unit used as a master unit can output safety signals from all doors at once.

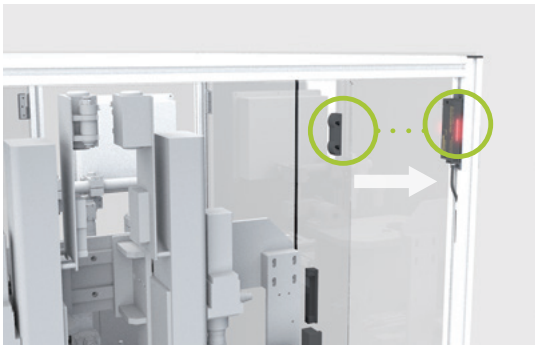
Visible type

Compact type

Lifting door for laser marker



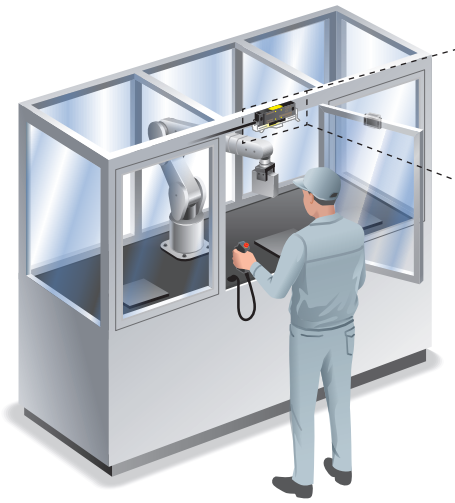
Sliding door on electronic parts inspection machine

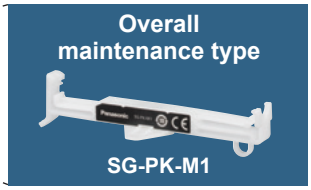


Maintenance doors on large equipment

Maintenance Actuators SG-PK-M Series (Sold separately)

Simple and Easy Maintenance!





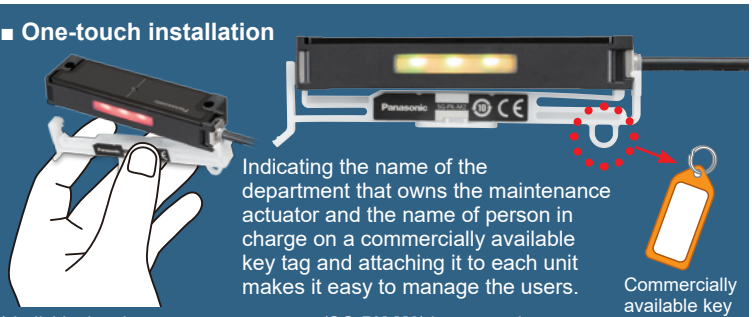
Renewal of maintenance procedures by eliminating the use of potentially dangerous deactivation tool (dummy or spare key)

Desired maintenance mode can be easy constructed by mounting the coded actuator to the switch body.
The **SG-PK-M** series realizes safe equipment startups as well as easy maintenance, thus resolving the conventional issues of high level coded safety door switches.

One-touch Installation and Easy Construction of Maintenance Mode

Mounting the maintenance actuator to the **SG-P** unit enables the control output function for the maintenance mode.
The following two types of maintenance actuators are available:
Overall maintenance type (**SG-PK-M1**)
Individual maintenance type (**SG-PK-M2**)

■ One-touch installation



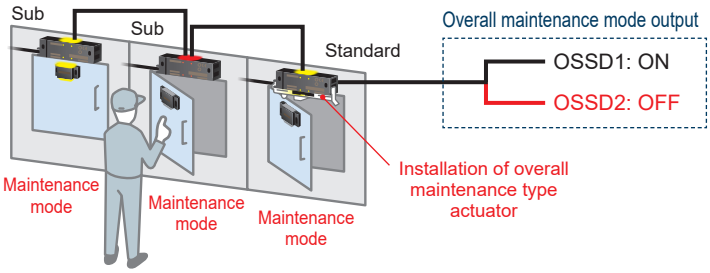
Indicating the name of the department that owns the maintenance actuator and the name of person in charge on a commercially available key tag and attaching it to each unit makes it easy to manage the users.

Commercially available key tag

* Individual maintenance type actuator (**SG-PK-M2**) is mounted on a compact type unit in the above example.

<Overall maintenance type (SG-PK-M1)>

All doors can be opened and closed. This product type can be used for equipment startups.

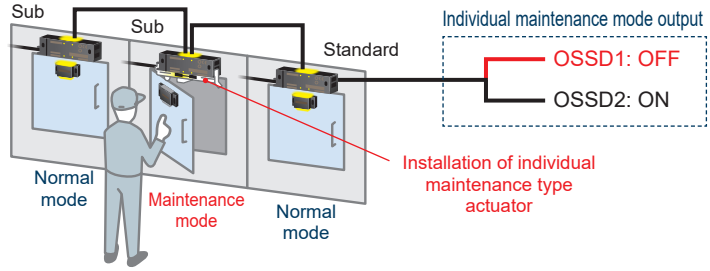


* Be sure to evaluate the control output correctly.
* Can be used only with the standard switch body.
* All switch bodies in series connection change to the maintenance mode.
* The indicators on the switch bodies in series connection change in color.

* All doors with the switch bodies in series connection can be opened and closed. Take care not to allow unauthorized persons to open or close the doors.

<Individual maintenance type (SG-PK-M2)>

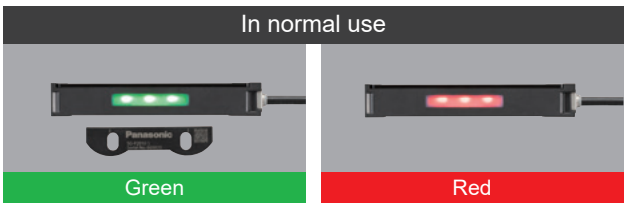
Only specific doors can be opened and closed. This product type can enhance the safety of maintenance work.



* Be sure to evaluate the control output correctly.
* Can be used with the standard or sub switch body.
* Can be installed to multiple switch bodies for simultaneous use.
* Only the switch bodies installed with this product type can be individually changed to the maintenance mode.
* The indicators on the switch bodies in series connection change in color.

Large and Bright Indicator for the Notification of Maintenance Mode Status to Workers

When the **SG-P** unit is mounted with the maintenance actuator, the large indicator lights in **yellow**.
The workers can readily recognize that the equipment is in maintenance.



* Compact type unit is shown above as an example.

* Compact type unit is shown above as an example.

Introduction to Safety Devices

Safety control unit

SF-C21

- No programming knowledge is required. Operation is as simple as selecting a desired logic from the preset logics.
- OFF delay time can be set.
- Logic can be customized according to applications.

* Exclusively for PNP semiconductor inputs or contact inputs.
* Cannot be used together with the SF-C21 in the case SG-PK-M series maintenance actuators are used.

Safety door switch with solenoid interlock

SG-B1 series

- Ultra-slim safety door switch with solenoid interlock
- Equipped with 5 built-in contact points

Safety door switch

SG-A1 series

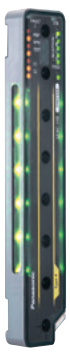
- World's slimmest-class* safety door switch
- Equipped with three built-in contact points
- All models are a cable pull-through type.
- Actuator is selectable according to door shape and application.

* As of April 2017, in-company survey.

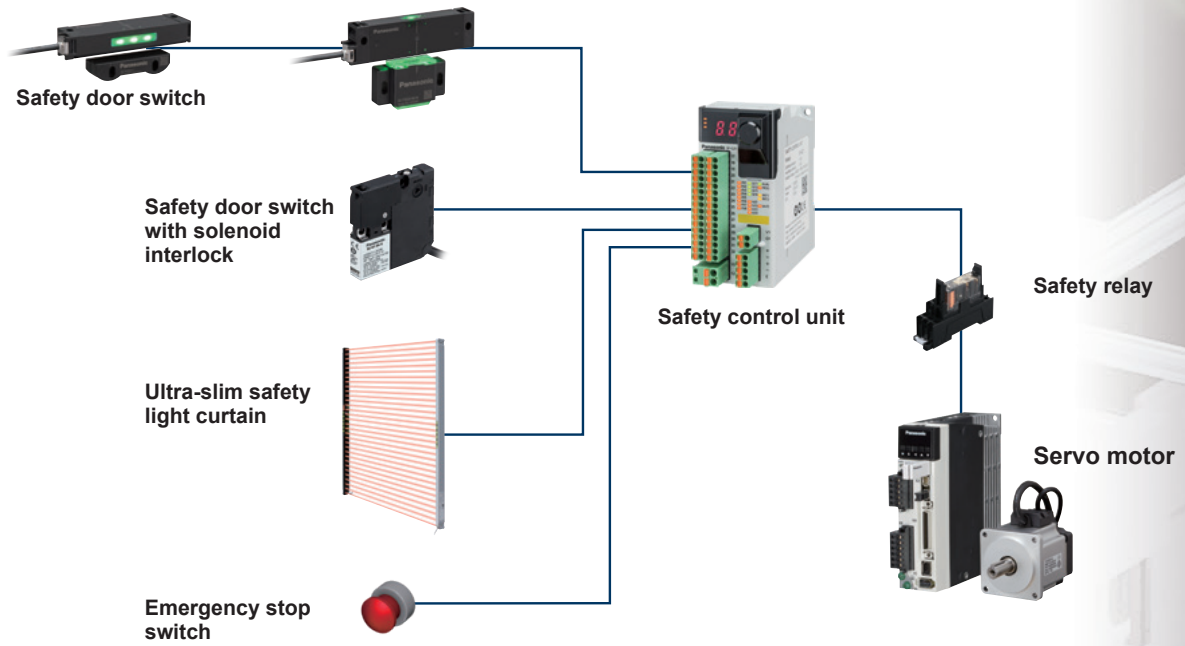
Ultra-slim safety light curtain

SF4C series

- Ultra-slim 13 mm 0.512 in light curtain with wide coverage
- Helps decrease safety distances and facility sizes
- Large, versatile app indicator



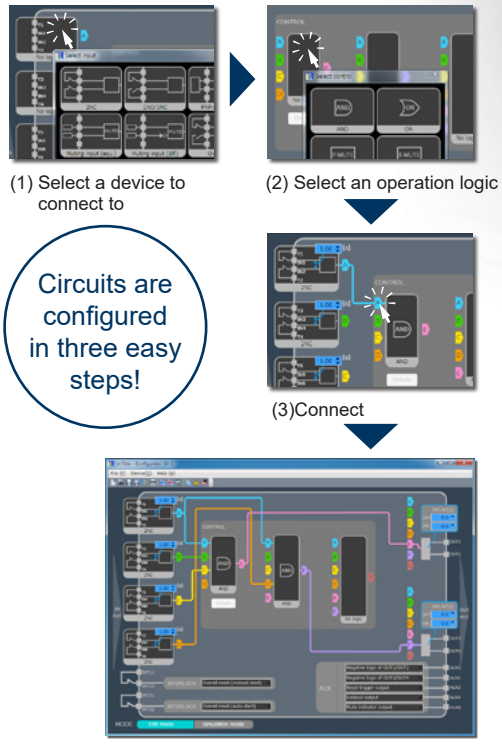
Example of System Configuration

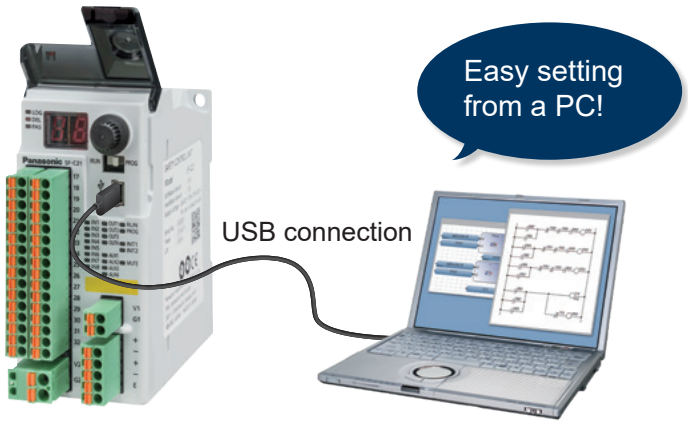


Application-based customization is easy

Easy to create a reliable safety circuit

Use our **"Configurator SF-C"** software to build your own safety circuits of connected devices, control logic, output modes, etc.
No programming skills required!





PRODUCT CONFIGURATION

Model No.

SG-P [10] [10] - [M] [-P]

Low code / High code
- **10**: Low code
- **20**: High code

Installation method
- **10**: Compact type
- **20**: Visible type

OSSD output (OSSD1, OSSD2) (Note)
- **-P**: PNP output
- **-N**: NPN output

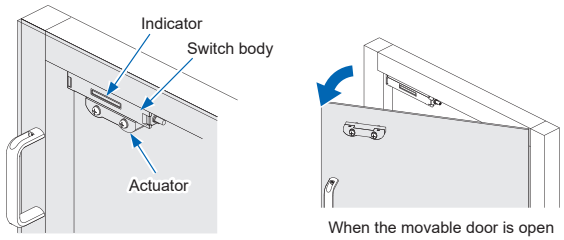
Note: Provided only on the **SG-P□□-M** standard unit.

Standard / Sub
- **M**: Standard
- **S**: Sub

Product type

Select either the Compact type or Visible type depending on how the door opens or how it is installed. Mount the switch body of this device on a machine unit or on a guard and mount the actuator on the door of a movable member.

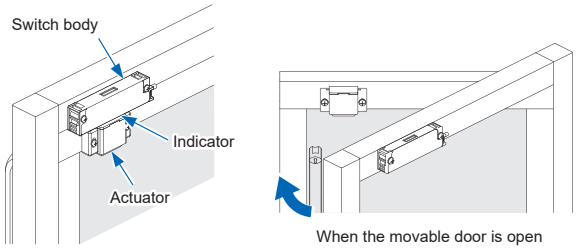
Compact type



<Standard>
- **SG-P1010-M-P**
- **SG-P1010-M-N**
- **SG-P2010-M-P**
- **SG-P2010-M-N**

<Sub>
- **SG-P1010-S**
- **SG-P2010-S**

Visible type



<Standard>
- **SG-P1020-M-P**
- **SG-P1020-M-N**
- **SG-P2020-M-P**
- **SG-P2020-M-N**

<Sub>
- **SG-P1020-S**
- **SG-P2020-S**

Notes: 1) Sub units cannot be used alone. When using a single unit, use a standard unit. When using multiple units in series connection, combine a standard unit with sub units.
2) The switch body must be connected to a power supply unit and a safety device such as a safety controller. Power supply unit and safety controller must be purchased separately.

ORDER GUIDE

Coding level	Type (Note)		Model No.	Control output (OSSD1, OSSD2)	Cable length
Low code	Compact type	Standard	**SG-P1010-M-P**	PNP open-collector transistor, 2 outputs	5 m 16.404 ft
			SG-P1010-M-N	NPN open-collector transistor, 2 outputs	
		Sub	**SG-P1010-S**	—	3 m 9.843 ft
	Visible type	Standard	**SG-P1020-M-P**	PNP open-collector transistor, 2 outputs	5 m 16.404 ft
			SG-P1020-M-N	NPN open-collector transistor, 2 outputs	
		Sub	**SG-P1020-S**	—	3 m 9.843 ft
High code	Compact type	Standard	**SG-P2010-M-P**	PNP open-collector transistor, 2 outputs	5 m 16.404 ft
			SG-P2010-M-N	NPN open-collector transistor, 2 outputs	
		Sub	**SG-P2010-S**	—	3 m 9.843 ft
	Visible type	Standard	**SG-P2020-M-P**	PNP open-collector transistor, 2 outputs	5 m 16.404 ft
			SG-P2020-M-N	NPN open-collector transistor, 2 outputs	
		Sub	**SG-P2020-S**	—	3 m 9.843 ft

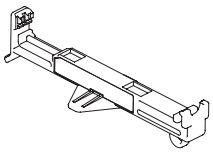
Note: Sub units cannot be used alone. When using a single unit, use a standard unit. When using multiple units in series connection, combine a standard unit with sub units.

OPTIONS

Type		Model No.
Maintenance actuator	Overall maintenance type	**SG-PK-M1**
	Individual maintenance type	**SG-PK-M2**

Maintenance actuator

- **SG-PK-M1**
- **SG-PK-M2**



SPECIFICATIONS

Item \ Type (Note 2) / Model No.		Standard / PNP output	Standard / NPN output	Sub
		SG-P□-M-P	**SG-P□-M-N**	**SG-P□-S**
Applicable standards	International standards	ISO 13849-1 (Category 4, PLe), IEC 61508-1 to 7 (SIL3), IEC 62061 (SIL3), IEC 60947-5-3, ISO 14119		
	Japan	JIS B 9705-1, JIS C 0508 1 to 7, JIS B 9961, JIS C 8201-5-2, JIS B 9710		
	Europe	EN ISO 13849-1 (Category 4, PLe), EN ISO 14119, EN 60947-5-3, EN 300 330, EN IEC 63000, EN 301 489-1		
	North America	CAN/CSA C22.2 No.14, UL508		
Applicable regulations and certifications		CE Marking (Machinery Directive, RE Directive, RoHS Directive), UKCA Marking (Supply of Machinery (Safety) Regulations, RE Regulations, RoHS Regulations), TÜV SÜD certification, TÜV SÜD NRTL certification (U.S.A., Canada), the U.S.'s radio regulations (FCC) (Note 5), Canada's radio regulations (ICES-003, RSS-310) (Note 5), Singapore's radio regulations (IMDA certification) (Note 5), Thailand's radio regulations (NBTC certification) (Note 5), Philippines' radio regulations (NTC certification) (Note 5), Korea's radio regulations (KC certification) (Note 5), India's radio regulations (WPC certification) (Note 5), Viet Nam's radio regulations (ICT certification) (Note 5)		
Operating distance	Front / Side	Sao (OFF → ON): 5 mm 0.197 in, Sar (ON → OFF): 15 mm 0.591 in		
Power supply voltage		24 V DC $^{+10}_{-20}$% Ripple P-P 10% or less		
Current consumption		30 mA or less		20 mA or less
Control output (OSSD1, OSSD2) (Note 3)		PNP open-collector transistor 2 outputs • Maximum source current:100 mA	NPN open-collector transistor 2 outputs • Maximum sink current:100 mA	——
		• Applied voltage: Same as the power supply voltage (PNP output: between control output and 0 V, NPN output: between control output and +V) • Residual voltage: 2 V or less (source current and sink current: 100 mA) (excluding voltage drop due to cable) • Leakage current: 0.2 mA or less (including power OFF state) • Maximum load capacity: 0.47 µF • Load wiring resistance: 3 Ω or less		——
	Operation mode (Output operation)	• When the actuator is detected (safe state): ON • When the actuator is not detected (unsafe state or lockout state): OFF • When the switch body (sub) does not detect actuator (series connection): OFF		——
	Protection circuit (Short-circuit protection)	Incorporated		——
Response time		• For single unit: ON→OFF 100 ms or less, OFF→ON 100 ms or less • For multiple units: Time for single unit + 5 ms × (number of connected units - 1)		
Check input and output		Dedicated communication line between the switch body (standard) and the switch body (sub) (Note 4) *It is not for external input and output. (voltage range 0 V to 5 V DC)		
Number of units connected in series		30 units or less (standard 1 unit, sub 29 units)		
Pollution degree		3		
Environmental resistance	Protection	IP65 (IEC)		
	Ambient temperature	-10 to +55 °C +14 to +131 °F (No dew condensation or icing allowed), Storage: -25 to +65 °C -13 to +149 °F		
	Ambient humidity	30 to 85% RH, Storage: 30 to 95% RH		
	Voltage withstandability	1,000 V AC for one minute between all supply terminals connected together and enclosure		
	Insulation resistance	20 MΩ or more, with 500 V DC megger between all supply terminals connected together and enclosure		
	Vibration resistance	10 to 55 Hz, 1 mm double amplitude, 2 hours each in X, Y, and Z directions		
	Shock resistance	300 m/s^2 (approx. 30 G), 3 times each in X, Y, and Z direction		
Material		Switch body: PBT, PC, SUS (stainless steel), EPDM Actuator: PBT, PC (Only visible type)		
Cable		6–core cabtyre cable, 5 m 16.404 ft long		4–core cabtyre cable, 3 m 9.843 ft long
Connected cable length		• When using only one unit: Maximum cable length of 20 m 65.617 ft between switch body and power supply unit • When connecting multiple units in series: Maximum total cable length of 100 m 328.084 ft, maximum cable length of 20 m 65.617 ft between two adjacent units		
Weight		• Compact type Switch body (standard): 180 g approx., Switch body (sub): 110 g approx., Actuator: 10 g approx. • Visible type Switch body (standard): 180 g approx., Switch body (sub): 120 g approx., Actuator : 20 g approx.		
Gross weight		• Compact type **SG-P□10-M-□**: 260 g approx., **SG-P□10-S**: 190 g approx. • Visible type **SG-P□20-M-□**: 270 g approx., **SG-P□20-S**: 210 g approx.		

Notes: 1) Where measurement conditions have not been specified precisely, the conditions used were ambient temperature +23°C +73°F.
2) Sub units cannot be used alone. When using a single unit, use a standard unit.
When using multiple units in series connection, combine a standard unit with sub units.
3) Provided only on the standard unit.
4) When using the device as a single unit, connect the check input with the check output.
5) This product uses a weak radio signal for its detection operation. Please confirm compliance with applicable laws in the country of use.

■U.S.A. ■Singapore

Complies with IMDA Standards DA107926

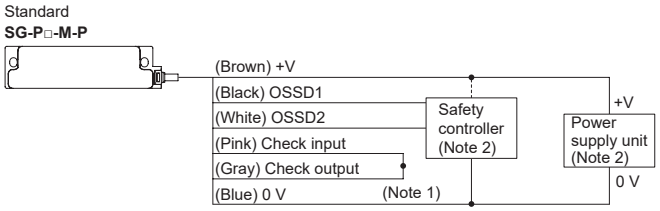
■Transponder specifications
Operating frequency: 125 kHz
Max. transmitter output: 3.33 µW

WIRING DIAGRAMS

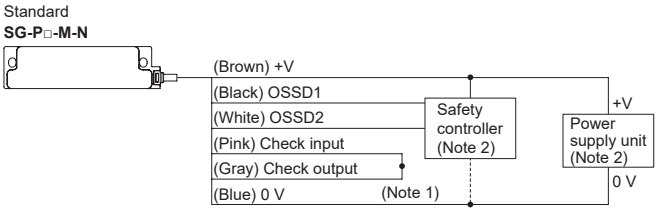
Using only one unit

* Sub unit **SG-P□-S** cannot be used alone.

<PNP output type / SG-P□-M-P>



<NPN output type / SG-P□-M-N>



Notes: 1) Connect the check input line (pink) with the check output line (gray).
2) The switch body must be connected to a power supply unit and a safety device such as a safety controller. Power supply unit and safety controller must be purchased separately.

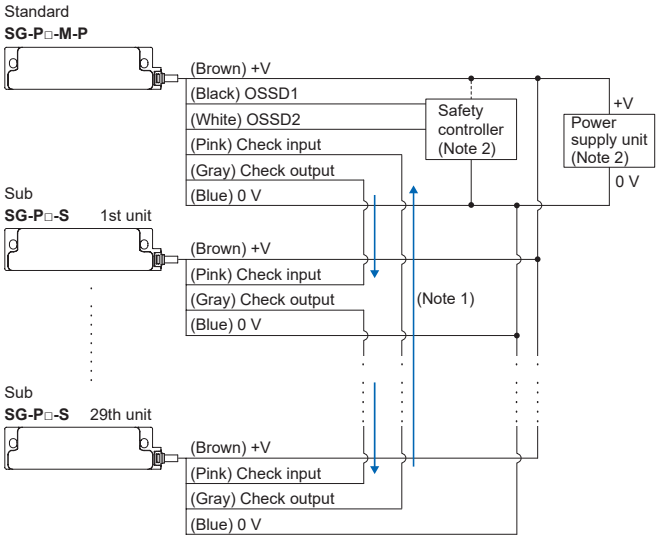
• Maximum cable length

The cable connected between the switch body and power supply unit must not exceed 20 m 65.617 ft.

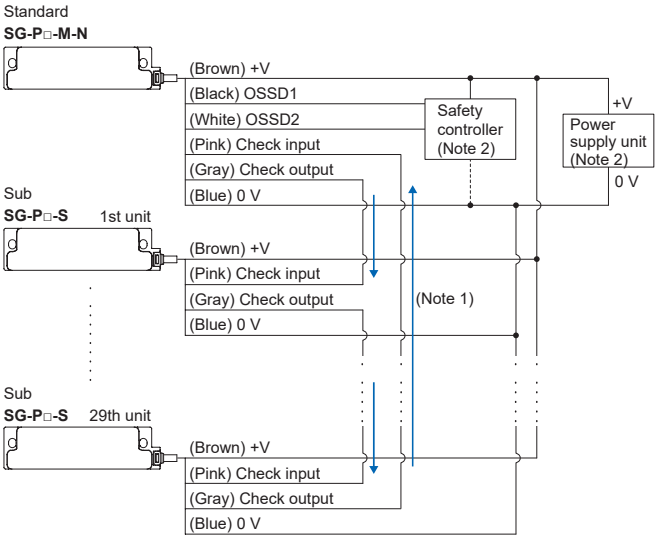
Using multiple units in series connection

One standard unit (**SG-P□-M-P** / **SG-P□-M-N**) can be connected with up to 29 **SG-P□-S** sub units in series.

<PNP output type / SG-P□-M-P>

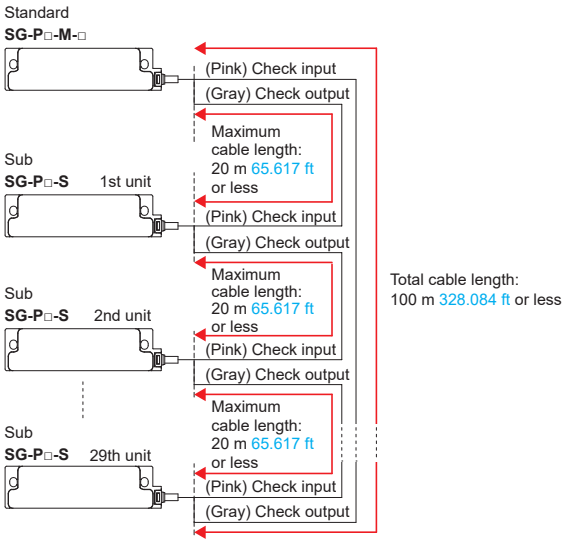


<NPN output type / SG-P□-M-N>



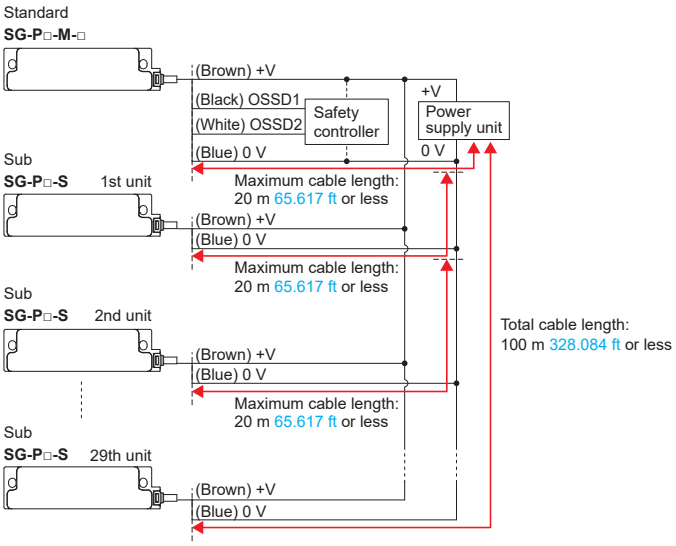
Notes: 1) For connecting multiple units in series connection connect the check output line (gray) with the check input line (pink) of the **SG-P□-S** sub unit connected next. Connect the check output line (gray) of the **SG-P□-S** sub unit connected at the end with the check input line (pink) of the standard unit (**SG-P□-M-P** / **SG-P□-M-N**) placed at the beginning.
2) The switch body must be connected to a power supply unit and a safety device such as a safety controller. Power supply unit and safety controller must be purchased separately.

• Total / maximum cable length of check input / output cables



The total length of the cables connected from the **SG-P□-M-□** standard unit to the last **SG-P□-S** sub unit (farthest from the standard unit) must not exceed 100 m 328.084 ft. The cable connected from each switch body to the adjacent switch body must not exceed 20 m 65.617 ft.

• Total / maximum cable length of power cables and OSSD cables



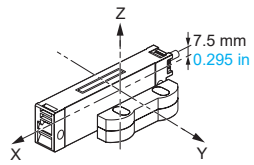
The total length of the cables between the switch bodies and power supply unit and the total length of the cables between the switch bodies and safety control unit must not exceed 100 m 328.084 ft each. The cable connected from each switch body to the adjacent switch body must not exceed 20 m 65.617 ft.

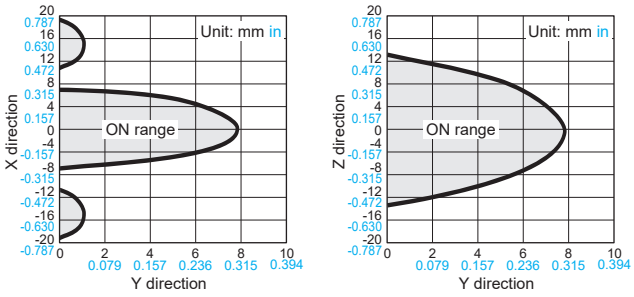
SENSING CHARACTERISTICS (TYPICAL)

* Be sure to confirm proper operation in the actual installation environment.

SG-P□10-M-□ SG-P□10-S — Compact type

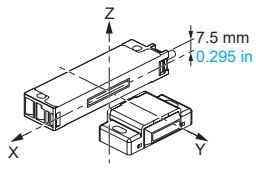
Sensing field

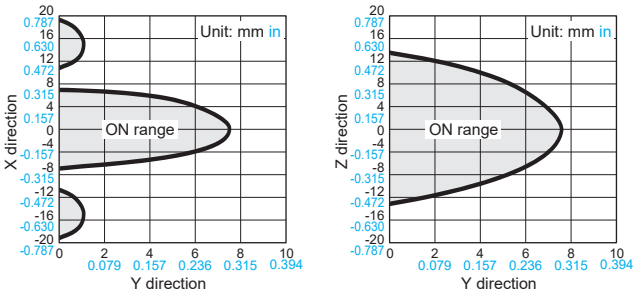




SG-P□20-M-□ SG-P□20-S — Visible type

Sensing field





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

PRECAUTIONS FOR PROPER USE

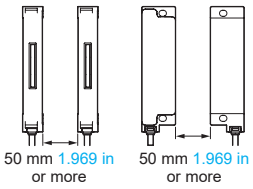
• This catalog is a guide to select a suitable product. Be sure to read instruction manual attached to the product prior to its use.

The customer is responsible for ensuring the safety of the entire system and the compliance with the standards applicable in the country / region of use.

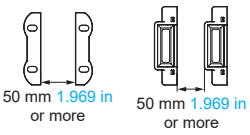
Mutual Interference

When multiple devices are installed next to one another, mutual interference may occur and cause malfunctioning. When using them next to one another, provide a distance between one another as shown below.

Switch body



Actuator

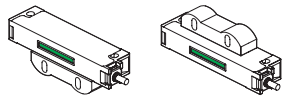


Mounting

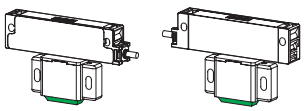
- Do not install the switch body of this device on a movable door.
- Mount the switch body carefully so that it does not come in contact with the movable door.
- Mount the switch body in a location where it cannot be reached or it is hidden so that it cannot be easily disabled. Or, mount the switch body in such a way that it cannot be removed with ordinary tools.

Correct mounting orientation

<Compact type>

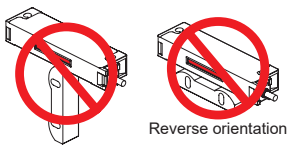


<Visible type>

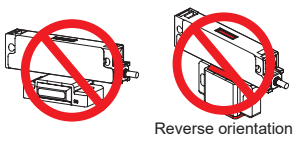


Incorrect mounting orientation

<Compact type>



<Visible type>



Machine designer, installer, employer and operator

- The machine designer, installer, employer and operator are solely responsible to ensure that all applicable legal requirements relating to the installation and the use in any application are satisfied and all instructions for installation and maintenance contained in the instruction manual are followed.
- Whether this device functions as intended to and systems including this device comply with safety regulations depends on the appropriateness of the application, installation, maintenance and operation. The machine designer, installer, employer and operator are solely responsible for these items.

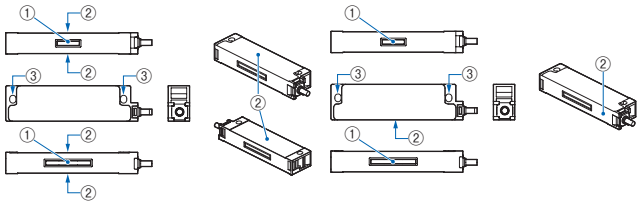
- This product has been developed / produced for industrial use only.
- This product is an extremely low power radio device and complies with the Japanese Radio Act. There is no need to obtain a radio station license to use the product in Japan.
- Do not use this product near equipment that emits strong electromagnetic waves.
- If the power supply used for this device is shared by other devices, the device may be affected by noise emitted from other devices. Do not share the power supply used for this device with other devices.
- The switch body of this product must be connected to a power supply unit and a safety device such as a safety controller. Power supply unit and safety controller must be purchased separately.
- The power supply unit used for this device must satisfy the following requirements.
  - The power supply unit must be certified for use in your region.
  - The power supply unit must have the rated output voltage of 24 V DC $^{+10}_{-20}$ % and the ripple (P-P) of 10 % or less.
  - The power supply with SELV (Secondary Extra Low Voltage) or PELV (Protective Extra Low Voltage) that comply with the RE Directive must be used. (When CE Marking is required)
  - The power supply must comply with Class 2 defined by UL508 or satisfy the output characteristics requirements of the limited voltage and current circuit.
  - The power supply unit must have reinforced insulation or double insulation between the primary circuit and secondary circuit.
  - When using a commercial switching regulator, the frame ground (F.G.) terminal must be connected to ground.
  - The power supply unit must have an output holding time of 20 ms or more.
  - If surges occur, take countermeasures such as connecting a surge absorber to the source of the surges.

PRECAUTIONS FOR PROPER USE

Part description

Switch body

<Compact type> **<Visible type>**

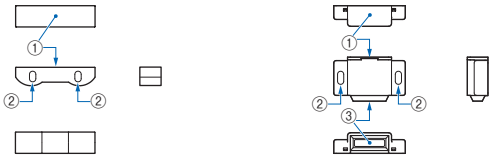


No.	Name	Function	
①	Indicator	Lights green	When the actuator is detected
		Lights red	When the actuator is not detected
		Blinks red	• Lockout state, error occurrence • When the teaching sequence was incorrect (only when using high-code models **SG-P20**□**-**□)
		Blinks green	When other switch bodies (standard unit, sub unit) in series connection do not detect actuators, when error occurs
		Lights yellow (Simultaneously light green and red) (Note)	After the power supply is turned ON, during self-diagnosis
		Alternately blinking red to yellow (lights red, blinking green) (Note)	When an unpaired actuator is detected (only when using high-code models **SG-P20**□**-**□)
②	Actuator detection surface	When the actuator is brought near to the surface, the switch body detects the actuator.	
③	Mounting hole	Use M4 screws (length: 20 mm 0.787 in or more), flat washers and spring washers (not supplied with the product) to install the switch body to the equipment body or guard. The screws should be tightened with a torque of 1.2 N·m.	

Note: When you look at a lit LED on a visible type model through the actuator, the LED may sometimes appear green in some part and red in other part.

Actuator

<Compact type> **<Visible type>**



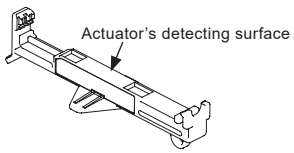
No.	Name	Function
①	Switch body detection surface	When the actuator is brought near to the switch body, the switch body detects the actuator.
②	Mounting hole	Use M4 screws (length: 20 mm 0.787 in or more), flat washers and spring washers (not supplied with the product) to install the actuator to the door. The screws should be tightened with a torque of 1.2 N·m.
③	Transmission part	The light of the indicator is transmitted through the part.

About maintenance actuators (optional)

Using a maintenance actuator incorrectly can lead to an accident. Be sure to understand the operation of the system when using a maintenance actuator to use maintenance actuators correctly.

By directly mounting the maintenance actuator to the switch body while the door is open, it is possible to distinguish accidental opening of the door. Two types of maintenance actuators are available: overall maintenance type (**SG-PK-M1**) and individual maintenance type (**SG-PK-M2** (Note)).

Note: In the case of the individual maintenance type **SG-PK-M2**, multiple units can be installed and used simultaneously.



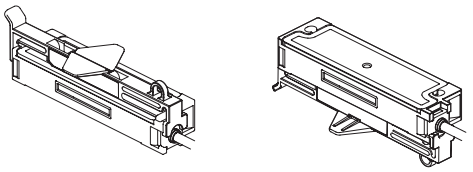
Type	Overall maintenance type	Individual maintenance type
Model No.	**SG-PK-M1**	**SG-PK-M2**
Ambient temperature	0 to +40 °C 0 to +104 °F (No dew condensation), Storage: -25 to +65 °C -13 to +149 °F	
Ambient humidity	35 to 85 % RH, storage: 35 to 85 % RH	
Vibration resistance	10 to 55Hz, 1 mm double amplitude, 2 hours each in X, Y, and Z directions	
Shock resistance	300 m/s^2 (30 G approx.), 3 times each in X, Y, and Z direction	
Material	POM (polyacetal)	
Weight	7 g approx.	

- Overall maintenance type (**SG-PK-M1**) can be used only on standard switch bodies.
- Individual maintenance type (**SG-PK-M2**) can be used on standard and sub switch bodies.
- When maintenance actuators are used, redundant input monitoring (dual channel monitoring) of OSSD1 and OSSD2 for the **SG-P** series by a safety controller, etc. cannot be used.
- When using a maintenance actuator, be careful that the normal actuator will not be detected at the same time.
- Determine whether to use the normal mode or maintenance mode according to the system.

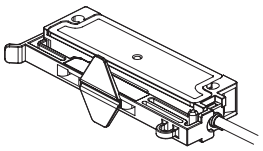
Installation

Installation on compact type unit

< Installation on top surface > **< Installation on bottom surface >**



Installation on visible type unit



PRECAUTIONS FOR PROPER USE

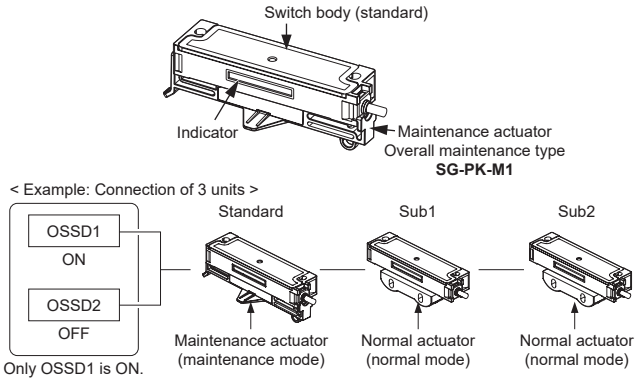
About maintenance actuators (optional)

Output operation and indicator operation

Operation differs between the overall maintenance type (**SG-PK-M1**) and individual maintenance type (**SG-PK-M2**). The output operation and indicator operation of the switch body when used with each maintenance actuator is as follows

When using overall maintenance type actuator (SG-PK-M1)

The **SG-PK-M1** can only be used on standard switch bodies.



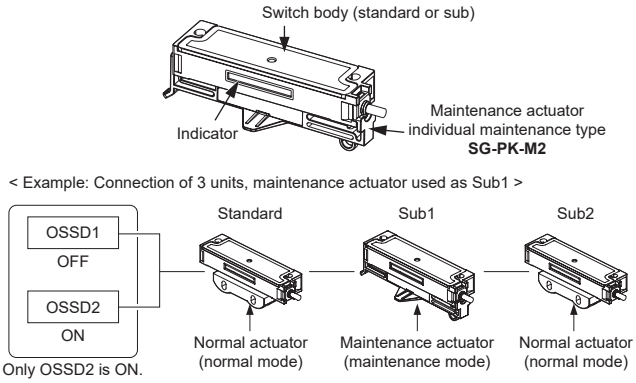
Note: Individual maintenance type (**SG-PK-M2**) cannot be used when overall maintenance type is used.

Type	Standard			Sub1			Sub2			OSSD1	OSSD2
	Actuator	Detection Status	Indicator	Actuator	Detection Status	Indicator	Actuator	Detection Status	Indicator		
Overall Maintenance	Maintenance	Detection	Yellow	Normal	Detection	Yellow	Normal	Detection	Yellow	ON	OFF
		Detection	Yellow		Detection	Yellow		Not detected	Red	ON	OFF
		Detection	Yellow		Not detected	Red		Detection	Yellow	ON	OFF
		Not detected	Red		Detection	Blinks green		Detection	Blinks green	OFF	OFF
After 12 hours (Note 1)		Detection	Blinks yellow/ red		Detection	Blinks yellow/ red		Detection	Blinks yellow/ red	OFF	OFF

Notes: 1) Maintenance actuator can operate continuously for up to 12 hours. After 12 hours, OSSD1 turns OFF automatically and the indicator on the switch body blinks in yellow / red. To use the maintenance actuator again, detach the actuator and reinstall.
2) The indicator on the switch body blinks in yellow or red to indicate one of the two modes. For details, see the Instruction Manual of the **SG-P** series.

When using individual maintenance type actuator (SG-PK-M2)

The **SG-PK-M2** can be used for standard and sub switch bodies.



Type	Standard			Sub1			Sub2			OSSD1	OSSD2
	Actuator	Detection Status	Indicator	Actuator	Detection Status	Indicator	Actuator	Detection Status	Indicator		
Individual Maintenance	Normal	Detection	Yellow	Maintenance	Detection	Yellow	Normal	Detection	Yellow	OFF	ON
		Not detected	Red		Detection	Blinks yellow/ red		Detection	Blinks yellow/ red	OFF	OFF
		Detection	Blinks green		Not detected	Red		Detection	Blinks green	OFF	OFF
After 12 hours (Note)		Detection	Blinks yellow/ red		Detection	Blinks yellow/ red		Detection	Blinks yellow/ red	OFF	OFF

Note: Maintenance actuator can operate continuously for up to 12 hours. After 12 hours, OSSD2 turns OFF automatically and the indicator on the switch body blinks in yellow / red. To use the maintenance actuator again, detach the actuator and reinstall.

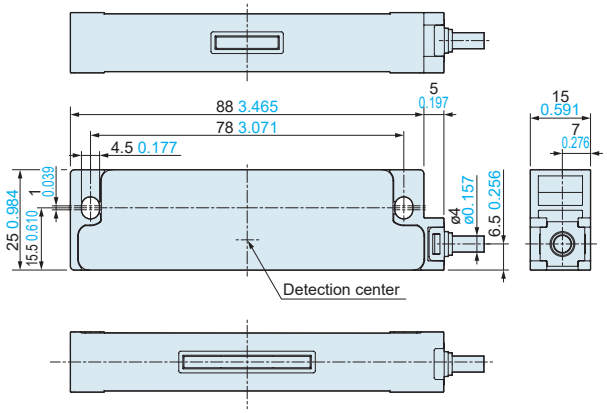
The CAD data can be downloaded from our website.

DIMENSIONS (Unit: mm in)

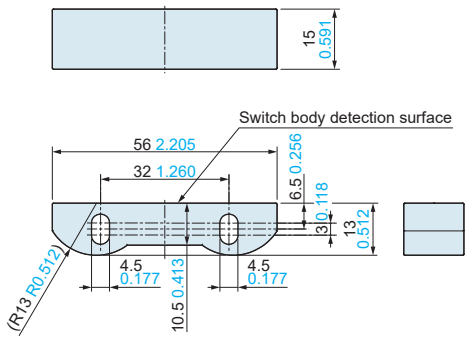
SG-P□10-M-□ SG-P□10-S

Compact type

Switch body



Actuator (accessory)

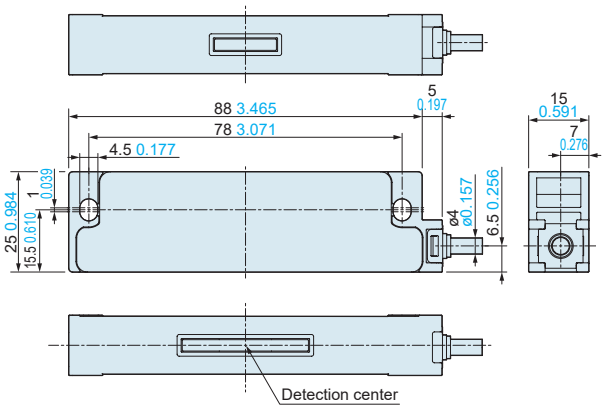


The CAD data can be downloaded from our website.

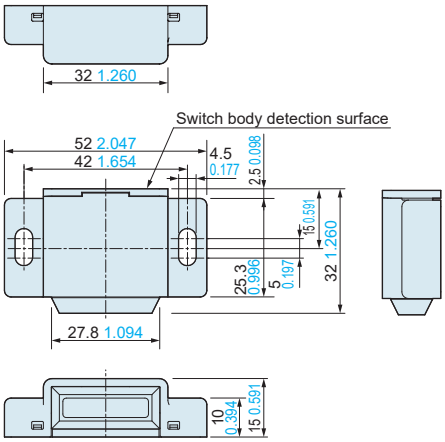
DIMENSIONS (Unit: mm in)

SG-P□20-M-□ SG-P□20-S — Visible type

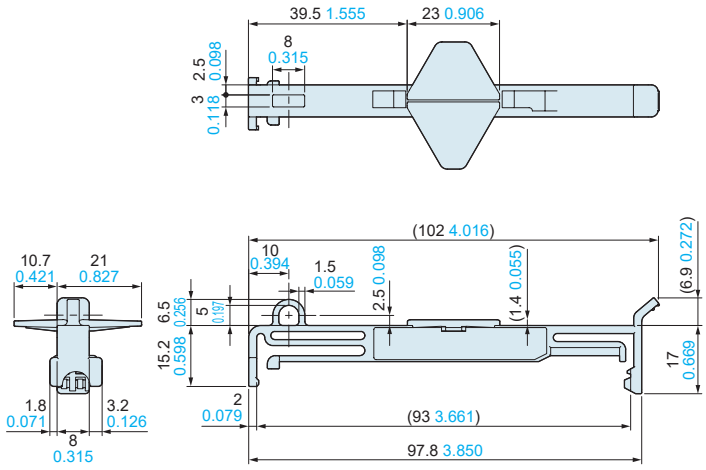
Switch body



Actuator (accessory)



SG-PK-M1 SG-PK-M2 — Maintenance actuator (optional)



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Panasonic INDUSTRY

Panasonic Industry Co., Ltd.
Industrial Device Business Division
7-1-1, Morofuku, Daito-shi, Osaka 574-0044, Japan
industrial.panasonic.com/ac/e/

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