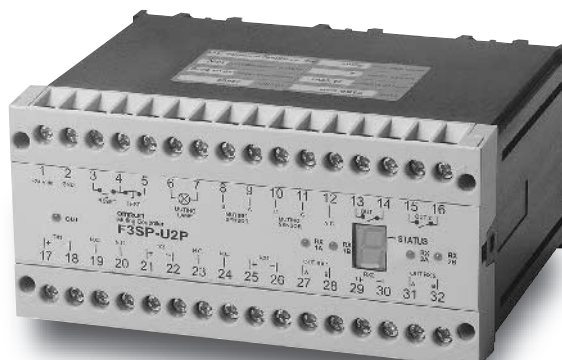


Safety Sensor Muting Controller F3SP-U2P

A Controller That Adds a Muting Function to Safety Sensor

- Applicable safety category: 4
- Connects to up to two Safety Curtains.
- Disconnection detection function for muting lamp output.

Note: Be sure to read the "Safety Precautions" on page H-100.

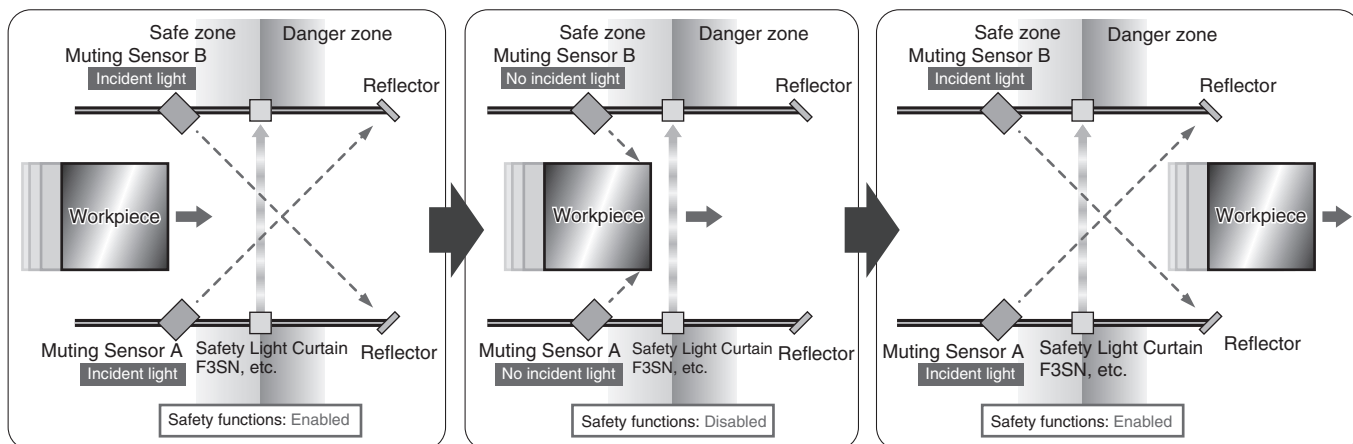


Features

Muting

Muting temporarily disables safety functions when workpieces, conveyance pallets, or other items pass into the Safety Sensor detection zone.

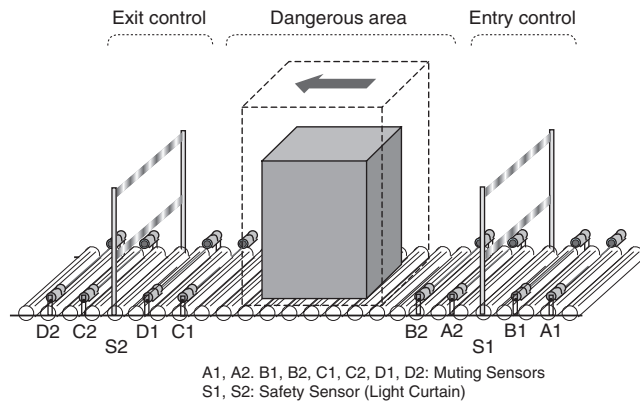
Note: Refer to the definition in international standard IEC61496-1 (JIS B9704-1), 3-1. Muting: A temporary automatic suspension of a safety function(s) by safety-related parts of the control system.



Note: The F3SP-U2P Muting Controller distinguishes between entry of a workpiece and a human using differences in the detection timing between Muting Sensors A and B. Adjust the installation locations and detection directions for Muting Sensors A and B so that the light for both sensors will not be blocked by the passing of a human.

Connect Two Safety Sensors (Maximum)

Using two Safety Sensors is ideal for line loading and unloading areas.

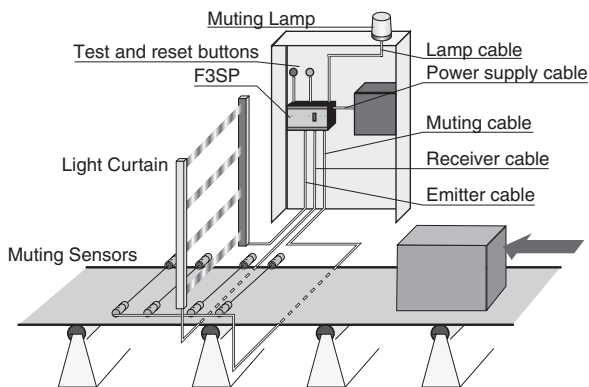


Either Two or Four Muting Sensors per Safety Sensor

The sensors that determine the timing of muting to distinguish between workpieces and humans are the Muting Sensors. Either of the following two installation methods can be used. With the first method, they are installed so that the optical axes of two through-beam or retro-reflective photoelectric sensors cross. With the other method, four through-beam or retro-reflective photoelectric sensors are installed and, in parallel with the safety sensors, proximity sensors or limit switches are installed, two each front and back. The muting sensor output must be a PNP transistor or NO contact output.

Muting Lamp Output

It is essential to install a Muting Lamp to notify workers in the area when the muting function is in effect. The F3SP-U2P has a built-in diagnostic function with which errors such as burned out Muting Lamp bulbs are detected by means of the current to disable the muting function.



Compliance with Safety Category 4

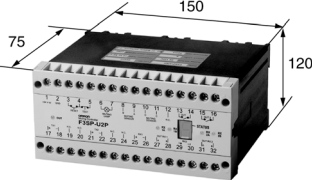
Safety Category 4 can be complied with by connecting to type 4 sensors, such as the F3SN-A, F3SH, F3SL, or F3SS. Connecting to a type 2 sensor, such as the F3SN-B, complies with Safety Category 2.

Complies with International Standards

EC Directive compliance has been certified by TÜV Product Service, an independent German certification body. (CE marking) For use in North America, the cUL Mark has been certified.



Ordering Information

Appearance	Model
	F3SP-U2P

Ratings and Performance (For details, refer to the *Instruction Manual*.)

Item	Model	F3SP-U2P
Safety category		Up to Category 4.
Number of light curtains connected		2 sets max. (See note 1.)
Power supply voltage		24 VDC \pm 10% (ripple p-p 10% max.)
Current consumption		8 W max. (not including Muting Lamps and Sensors) (See note 2.)
Response time		30 ms max.
Connectable light curtains		OMRON F3SN, F3SH, F3SL, and F3SS
Outputs		2 NO contacts, 250 VAC, 2.5 A max,
Inputs		Test inputs: NC contacts Reset inputs: NO contacts Muting sensor inputs: PNP transistor or NO contact; 4 sets max.
Indicators/Displays		Output indicators (Red/green LED indicators): Lit red when output is OFF. Lit green when output is ON. Input indicators (4 green LED indicators): Lit green when 24 V is input. Status display (7-segment, 1 digit) Displays F3SP status.
Test functions		Self-test (After power ON and during operation) External test (by test input)
Safety-related functions		Auto-reset/manual reset (interlock) Muting function and override function
Applicable Muting Lamps		Incandescence lamp, 24 VDC, 3 to 7 W (See notes 1 and 2.)
Ambient temperature		During operation: -10 to 50 °C During storage: -30 to 70 °C (with no icing or condensation)
Ambient humidity		15% to 95% (with no condensation)
Degree of protection		IEC60529 standard IP20
Vibration resistance (malfunction)		10 to 55 Hz, 0.7-mm double amplitude, 20 sweeps each in X, Y and Z directions
Shock resistance (malfunction)		100 m/s ² 1,000 times each in X, Y, and Z directions
Weight (packaged)		Approx. 870 g
Accessories		Instruction manual

Note: 1. The total power consumption cannot exceed 24 W, which is the F3SP fuse (self-resetting) rating.

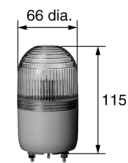
- Light curtain
- Muting lamp: 3 to 7 W
- F3SP alone (without load current): 8 W

2. A Muting Lamp is required even when the muting function is not used. The following are recommended. (The power consumption is 5 W for either one.)

- PS-24-Y B0568: By PATLITE Corporation. (Incandescence electric bulbs must be used for replacements. Fault detection will not function if an LED lamp is used.)
- ASSC-24: By ARROW ELECTRONICS IND. Co., Ltd.
- F39-A11 (Order Separately)



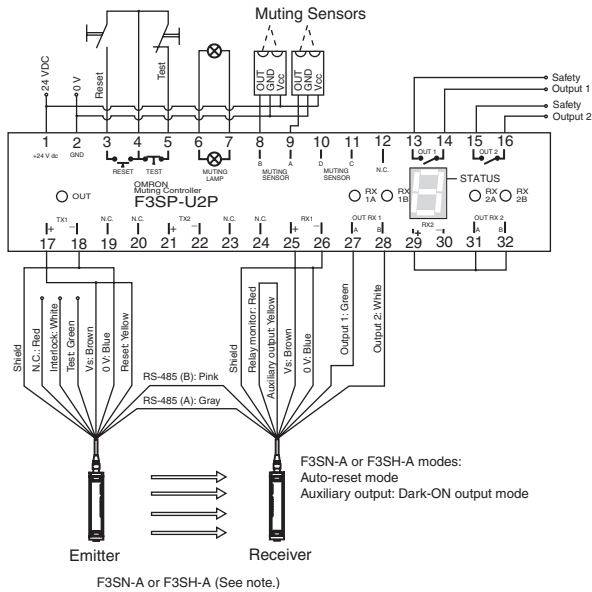
PS-24-Y B0568
(by PATLITE Corporation)



ASSC-24
(by ARROW ELECTRONICS IND. Co., Ltd.)

Connection Examples (Complies with Category 4)

Using One Safety Light Curtain and Two Muting Sensors

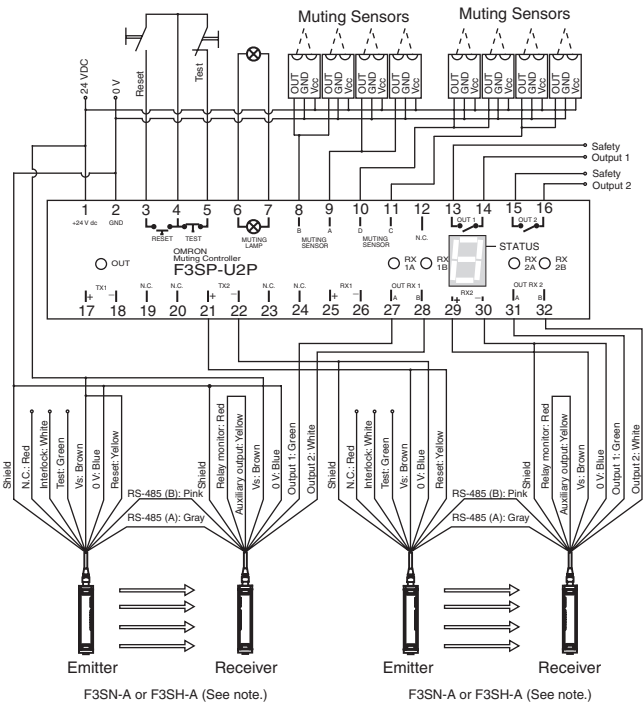


F3SN-A or F3SH-A modes:

- Auto-reset mode.
- Auxiliary output: Dark-ON output mode.

Note: When an F3SN-B is connected, Category 2 is satisfied.

Using Two Safety Light Curtains and Eight Muting Sensors



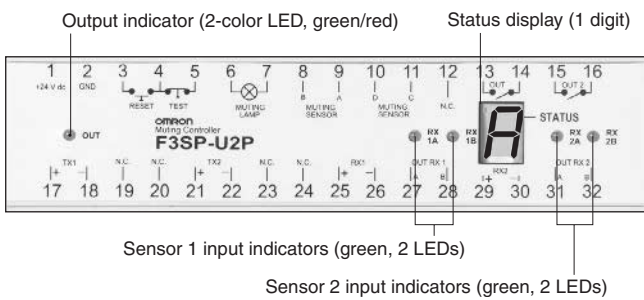
When two Safety Light Curtains are connected, there is a possibility of exceeding the F3SP-U2P's rated power consumption of 24 W. As shown in the wiring diagram, provide 24 V directly from an external power supply to either of the Safety Light Curtains.

F3SN-A or F3SH-A modes:

- Auto-reset mode.
- Auxiliary output: Dark-ON output mode.

Note: When an F3SN-B is connected, Category 2 is satisfied.

Nomenclature



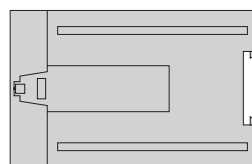
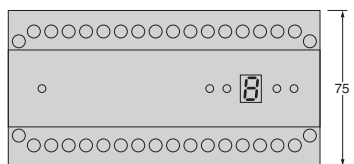
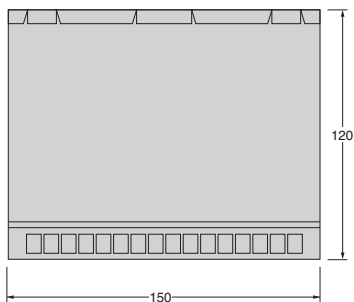
F3SP-U2P

Safety Application Controllers

Dimensions

Note: All units are in millimeters unless otherwise indicated.

F3SP-U2P



Safety Precautions

WARNING

The Muting Controller temporarily disables Safety Sensor outputs. If it is installed or used incorrectly, not only can safety not be assured, but an extremely dangerous situation may result.

- This catalog is simply a guide to selecting products. Before attempting to operate the product, carefully read and understand the information provided in the *Instruction Manual*. Consult with your OMRON representative if you are not provided an *Instruction Manual*.
- Carefully consider the installation environment and the performance and functionality of the equipment before using the product.
- Have a risk assessment carried out by qualified personnel before using the product.
- The product is designed to be used in combination with special safety sensors. Do not use it in combination with other sensors that do not conform to applicable international standards.

Applicable International Standards

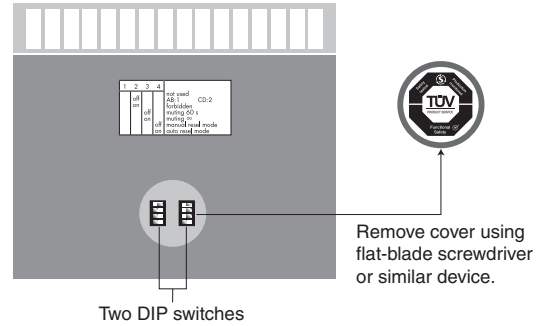
The following international standards apply when implementing muting control. Refer to these standards when constructing actual safety circuits, and make sure that requirements are satisfied.

- EN954-1, ISO13849-1 Safety on machinery: Safety-related parts of control systems, Part 1: General principles for design, Section 5.9 Muting.
- IEC61496-1 Safety of machinery: Electro-sensitive protective equipment, Part 1: General requirements and tests, Annex A, A.7 Muting.
- EN 415-4: "Safety of packaging machines part 4. Palletizers and depalletizers" Annex A, A2.2 Muting
- ANSI B11.19-1990 "for Machine Tools - Safeguarding When Referenced by the Other B11 Machine Tool Safety Standards - Performance Criteria for the Design, Construction, Care, and Operation" 4.2.3 Presence-Sensing Devices: Electro-Optical and Radio Frequency (R.F.)

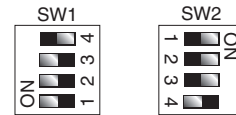
Precautions for Correct Use

Do not use the F3SP-U2P in atmospheres or environments that exceed product ratings.

DIP Switches



The F3SP has two DIP switches that can be used to change operating modes. Set the DIP switches as shown in the following table.



- Note:**
1. Code 8 (error) will be displayed if both switches are not set to the same setting.
 2. The two DIP switches are facing in opposite directions.

No.	Setting	Function
1	X	Not used.
2	OFF	Muting sensor AB controls Light Curtain 1, and Muting sensor CD controls Light Curtain 2. (factory setting)
	ON	Prohibited.
3	OFF	Maximum muting time: 60 s (factory setting)
	ON	Maximum muting time: Infinite
4	OFF	Manual reset mode
	ON	Auto-reset mode (factory setting)

Note: To ensure system safety, do not change the settings on the DIP switches during F3SP operation.

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

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