

Got a Light Curtain question?  
Contact Ramco today!



# Safety Light Curtain

F3SG-R



## More Rugged

Advanced, Rugged and Easy Types



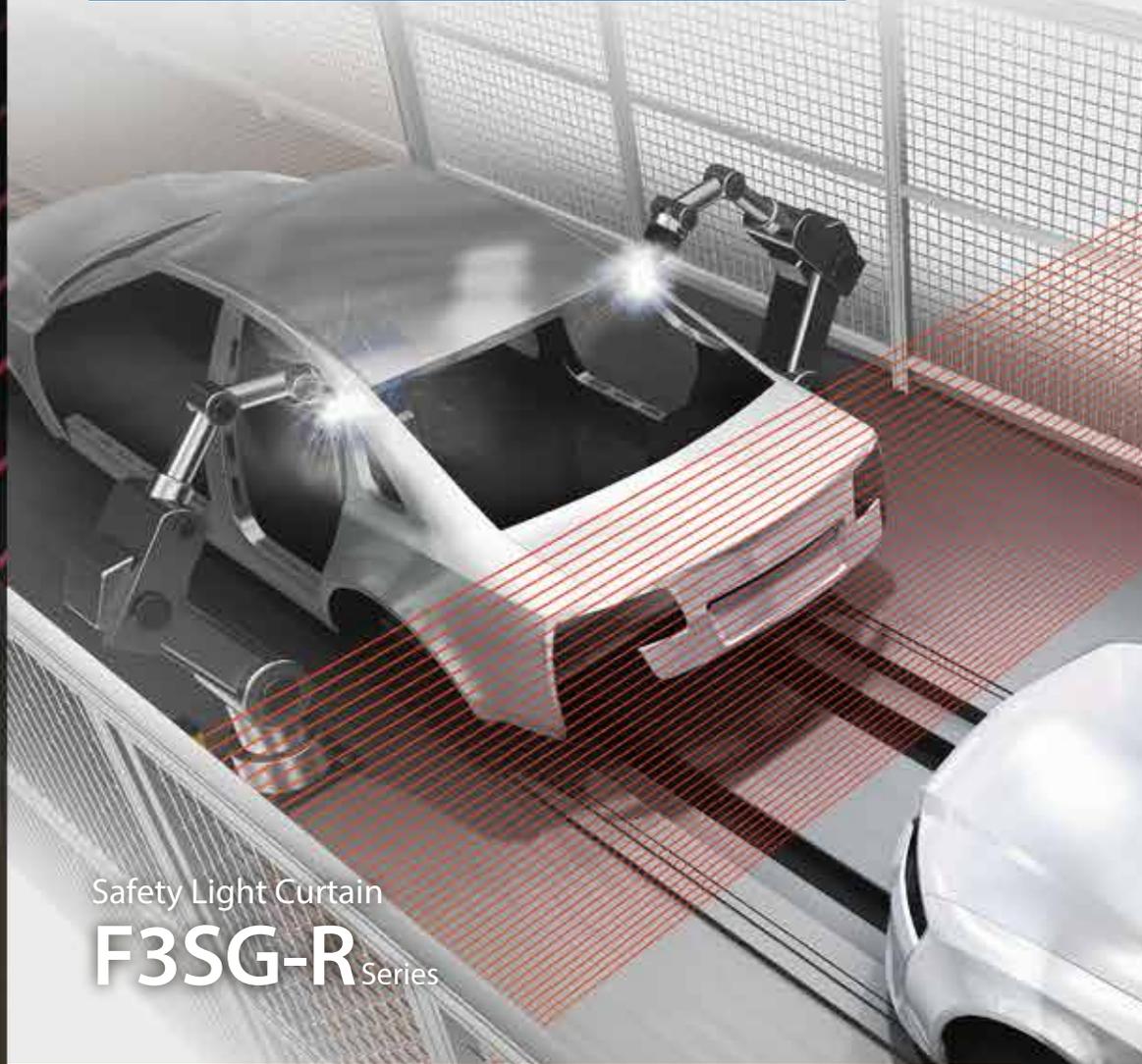
Rugged type **NEW**

Advanced type

Easy type

# Increase both durability and productivity

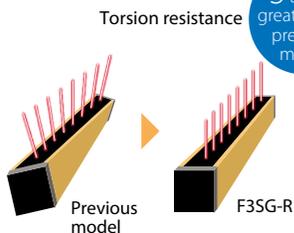
The new cutting oil resistant Rugged type is added



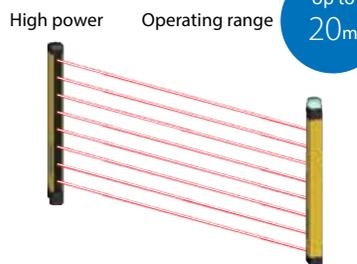
Safety Light Curtain  
**F3SG-R** Series

Fast set-up and high resistance to environmental changes

**Tough 1** Resistant to vibration



**Tough 2** Rugged against environmental changes



**Tough 3** Reliable in dusty wash-down environments



\* Compared to the previous model (Omron survey as of March 2017)

## A choice of products to suit your need

Multiple versions available: finger, hand and arm protection

### Ideal for flexible manufacturing

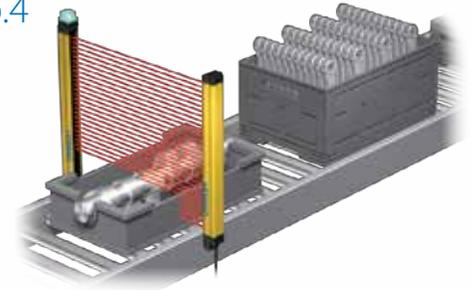


Multifunctional Advanced type

## F3SG-RA

- Quick and easy installation
- Stable operation and predictive maintenance
- For global use
- Easy adjustment
- Easy configuration and maintenance

p.4



### For environments where cutting oil is present



Cutting oil resistant Rugged type

## F3SG-RR NEW

- IP67G

p.10



### Ideal for simple applications



Simple Easy type

## F3SG-RE

- Simple functions
- Reduced wiring
- Fast response time: 5 ms

p.11



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Quick and easy installation

# Intuitive and smart designs for fast set-up

**TOP**  
(top-beam-state indicator)

## Simple beam adjustment

Simply watch for the top and bottom indicators to illuminate when adjustment is completed. The optional laser pointer and lamp can be used to reduce the time required to set up the light curtain.

**1** The TOP indicator turns ON when the top beam is unblocked

F39-PTG Laser Pointer

Shows the sensor direction

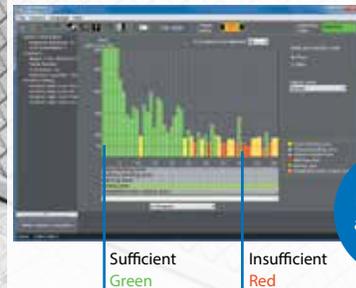


F39-LP Lamp

Turns ON when safety output turns ON, making adjustment easier



Also The incident light levels of each beam can be checked with the Configuration Tool SD Manager2



Fine beam adjustment

Sufficient  
Green

Insufficient  
Red

\* Image for illustration purpose only.

**BTM**  
(bottom-beam-state indicator)

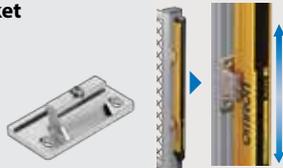
**2** The BTM indicator turns ON when the bottom beam is unblocked

## Mounting brackets

Four types of mounting brackets provide vertical or vertical and horizontal adjustment even after mounting, making beam adjustment easier.

### Standard fixed bracket

You can slide the F3SG-R up and down to make vertical adjustments after mounting on a safety fence.



### Standard adjustable bracket (sold separately)

This bracket provides vertical as well as horizontal adjustment of  $\pm 15^\circ$ .



### Top/bottom adjustable bracket (sold separately)

Use this bracket at the top and bottom of the F3SG-R to make horizontal adjustment of  $\pm 22.5^\circ$ .



### Top/bottom adjustable bracket (for user-made mounting part) (sold separately)

The wall mounting bracket is not provided so that you can design your own wall mounting part.



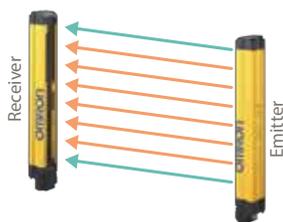
## Optical synchronization—No sync lines required

Optical synchronization eliminates the need of wiring for synchronization between the emitter and receiver. The resulting flexible wiring reduces disconnection risk and avoids noise sources.

### Optical synchronization

#### Start-up

The top or bottom beam of the emitter starts synchronizing with the corresponding beam of the receiver



#### After sync

Once synchronization is done, the emitter is kept synchronized with the receiver while at least one beam is unblocked



## Smartclick cable connection for fast set-up

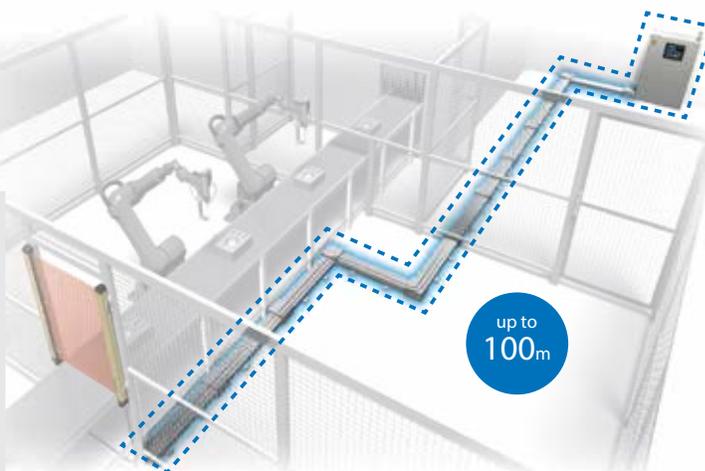
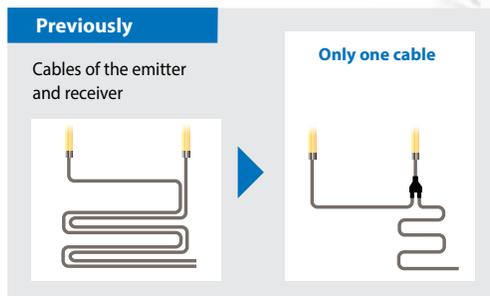
No torque-control required: the Smartclick connectors connect cables with just a 1/8th turn of the M12 waterproof connector.

\* Smartclick is a registered trademark of OMRON Corporation



## Simple wiring thanks to reduced wiring connectors

Simple wiring makes installation faster. Fewer cables reduce disconnection risk and noise trouble.

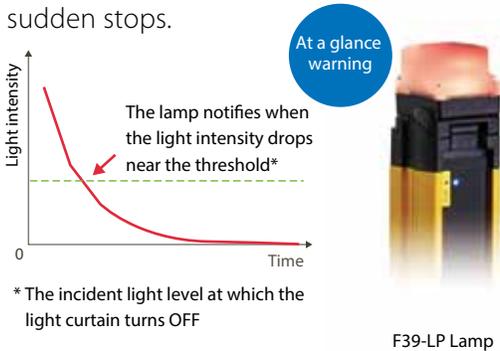


Stable operation and predictive maintenance

# Visualization eliminates machine downtime

## Low light intensity notification lamp

The lamp notifies when the incident light level drops due to dirt, which prevents sudden stops.



## Data logging for quick troubleshooting

The error logs stored in the F3SG-RA can be downloaded to a PC that is connected with the F3SG-RA using the dedicated interface unit. The Configuration Tool SD Manager2 can be used to analyze errors to identify causes and solutions. The data on light intensity, power-ON time, and switching frequency can also be collected regularly for predictive maintenance.



Configuration Tool SD Manager2

## Check status without stopping the line with Bluetooth®

The SD Manager2 can be used to check the status of the safety light curtain wirelessly after pairing the safety light curtain with PC via Bluetooth®, which reduces maintenance time.

### Wireless connectivity

- **Monitoring during operation**
- **No possibility of blocking beams**
- **No work required after completing checks**
- Monitoring from **anywhere**
- Serial number to choose the right safety light curtain from **many installed on lines**

F39-BT/BTLP Bluetooth® Communication Unit



Line A

Line B

For global use

# Easy to deploy around the world

## PNP/NPN selection

The F3SG-RA is designed to be used in a variety of environments around the world, conforming to international standards.



PNP or NPN can be selected with the DIP switch. The same cables are used.



The F3SG-R conforms to major international standards including Chinese GB standards

## Global production and delivery

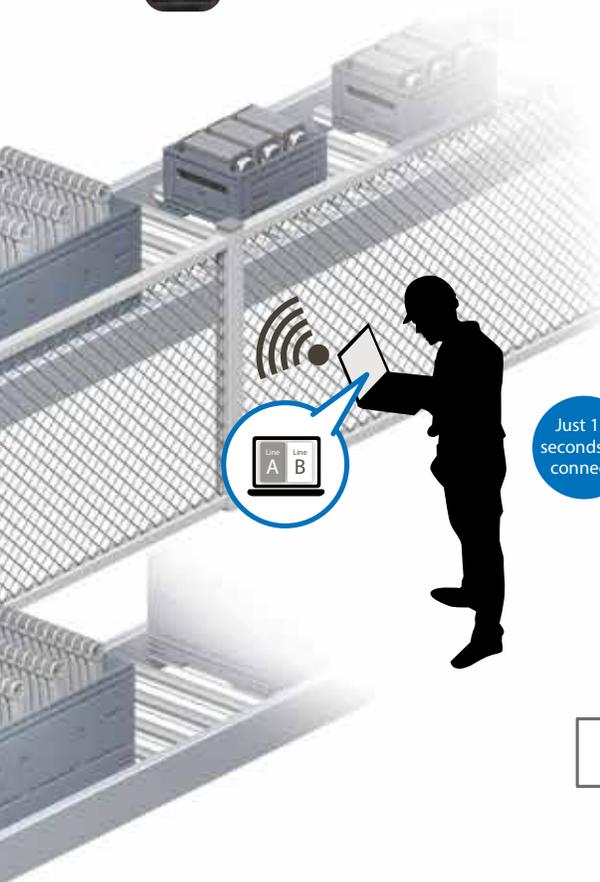
Omron enhanced the global production bases and local services in Japan, China, United States and Europe to deliver Omron products quickly and reliably. Our sales network of approximately 150 offices in 40 countries and regions supports our customers.



## Troubleshooting in eight languages\*

You can find causes and solutions of errors that occur during operation on the troubleshooting web page in eight languages. Operators across the world can check the error details in their local languages, which will help them minimize time to troubleshoot.

\* English, Chinese, Italian, Korean, French, German, Spanish and Japanese



Just 15 seconds to connect!



Scan the QR code and go directly to the troubleshooting web page

Select the status of the indicator



Result	
Indication status	
Indicator	Receiver
LOCK OUT	Blinks 1 time
Blinking indicator	ON/OFF
Description	
Safety input error	
Cause and measures	
* Safety output lines may be short-circuited to each other or another signal line may be	

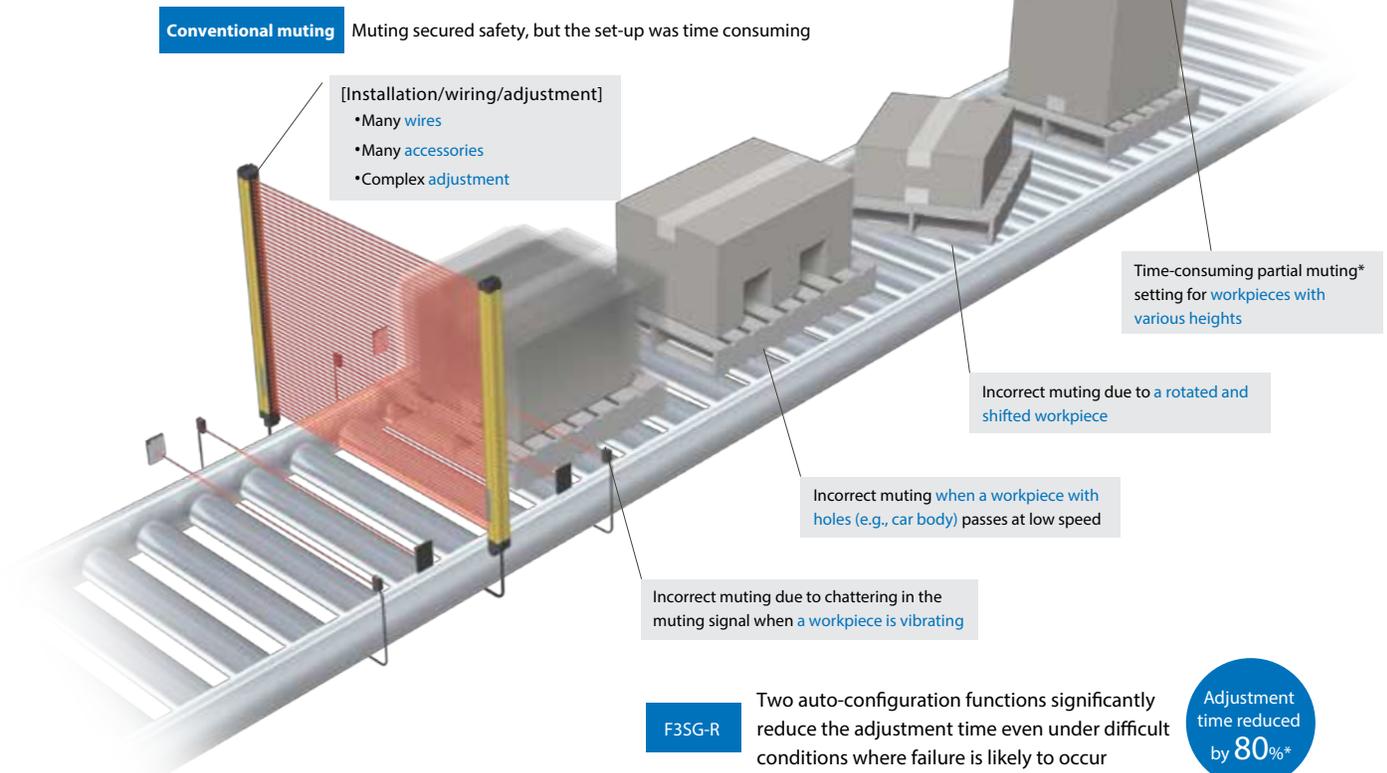
Easy troubleshooting

Easy adjustment

# Increase productivity by detecting workpieces correctly

## Muting

The F3SG-RA provides the advanced Muting function that disables beams which detect the presence of a workpiece or the position of a machine or robot. Workpieces can go in and out of a danger zone without stopping the machine.

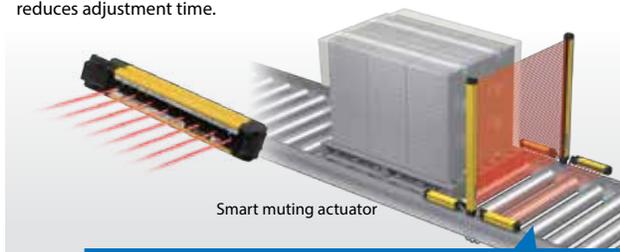


\* Compared to the previous model (Omron survey as of March 2017)

### Multiple-beam sensor technology for vibrating workpieces

#### Smart muting actuator

The smart muting actuator extends the functions of the F3SG-R in applications where a workpiece is vibrating forward and backward. This prevents unexpected machine downtime and significantly reduces adjustment time.

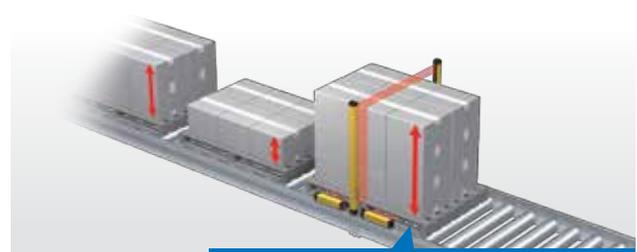


Automatic and flexible detection even under unstable conveying conditions

### Automatic partial muting for workpieces with various heights

#### Dynamic muting

When workpieces with various heights are conveyed on the same line, the dynamic muting function automatically sets the appropriate beams, based on the height of the object.



\* Partial muting: A function that allows specified beams (e.g., beams blocked by a workpiece) to be disabled, keeping others active, even during muting

Easy configuration and maintenance

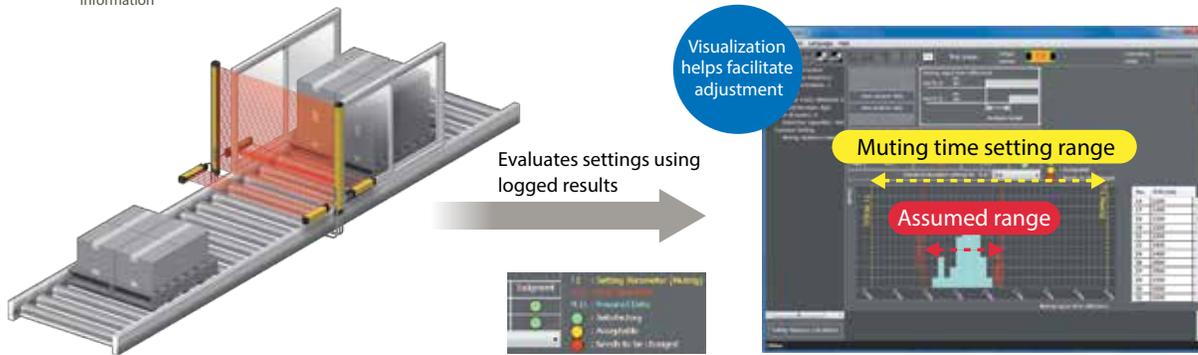
# Easy to use | Configuration Tool SD Manager2

## Minimizing setting and detection errors

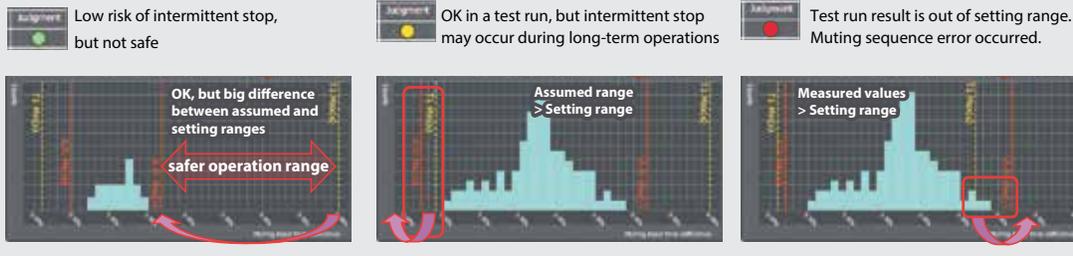


Muting statistics information

The Configuration Tool SD Manager2 visualizes the installation positions and settings by logging the muting sensor operating conditions of the F3SG-R. It helps ensure reliable, first-time-right configuration.



### Examples of logging



## From configuration and adjustment to maintenance

The SD Manager2 helps you to make and change settings

Easy-to-understand icons



### Examples

#### Monitoring

Incident/ambient light level monitoring



Monitor incident light levels of each beam for fine tuning

Maintenance information



Check error log and other data required for maintenance

#### I/O Setting

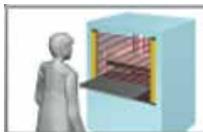
Auxiliary output/lamp



Change the settings assigned to each output including lamp color and pattern

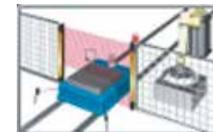
#### Function Setting

Fixed blanking



Set disabled beams manually or by teach-in

Muting/override



Set disabled beams and time. Setting can be evaluated.

IP67G

# Rugged design for reliable use in cutting oil environments



## Unique construction

### No gaps

The optical surface is completely covered with rubber, and the metal parts placed on the rubber are compressed and deformed to seal tightly. This construction does not use double-sided tape that oil can penetrate, preventing cutting oil from getting inside.

Patented



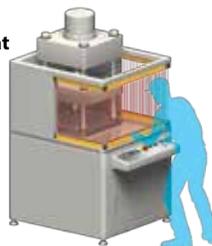
## No dead space

The F3SG-R perfectly fits to machines without wasting space. Thanks to the Cascade Connection function and perfect fit installation, you can series-connect light curtains to fit various protective heights, reducing inventories.

### The detection zone completely covers the joint

25-mm dia.

Example of 25 mm detection capability



No dead space

\* Up to three sets of F3SG-R (up to 255 beams in total) can be series-connected

Reduced wiring and fast response

# Simple ON/OFF detection

## Easy version for cost-efficiency

The Easy type inherits the rugged but slim housing and basic safety features of the Advanced type. Simple ON/OFF detection reduces errors, preventing productivity from dropping.

<b>Simple safety functions to reduce errors and save costs</b>
<b>Reduced to just 4 wires</b>
<b>Fastest response time of 5 ms</b>

## Easier to build safety circuits

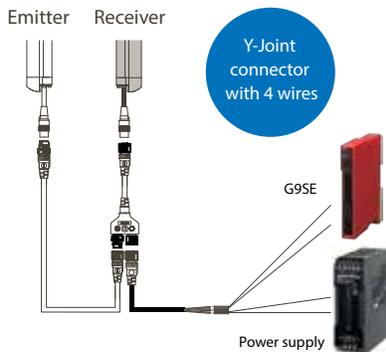
Only four wires are required for the minimum configuration, which is as simple as wiring a photoelectric sensor. Simple connection with a safety controller makes it easy to build a safety circuit.

Industry's fastest class\*

## Fastest response time of 5 ms

The Easy type that allows the distance between the light curtain and hazard source to be reduced is ideal for the use in a small machine.

\* Omron survey as of March 2017



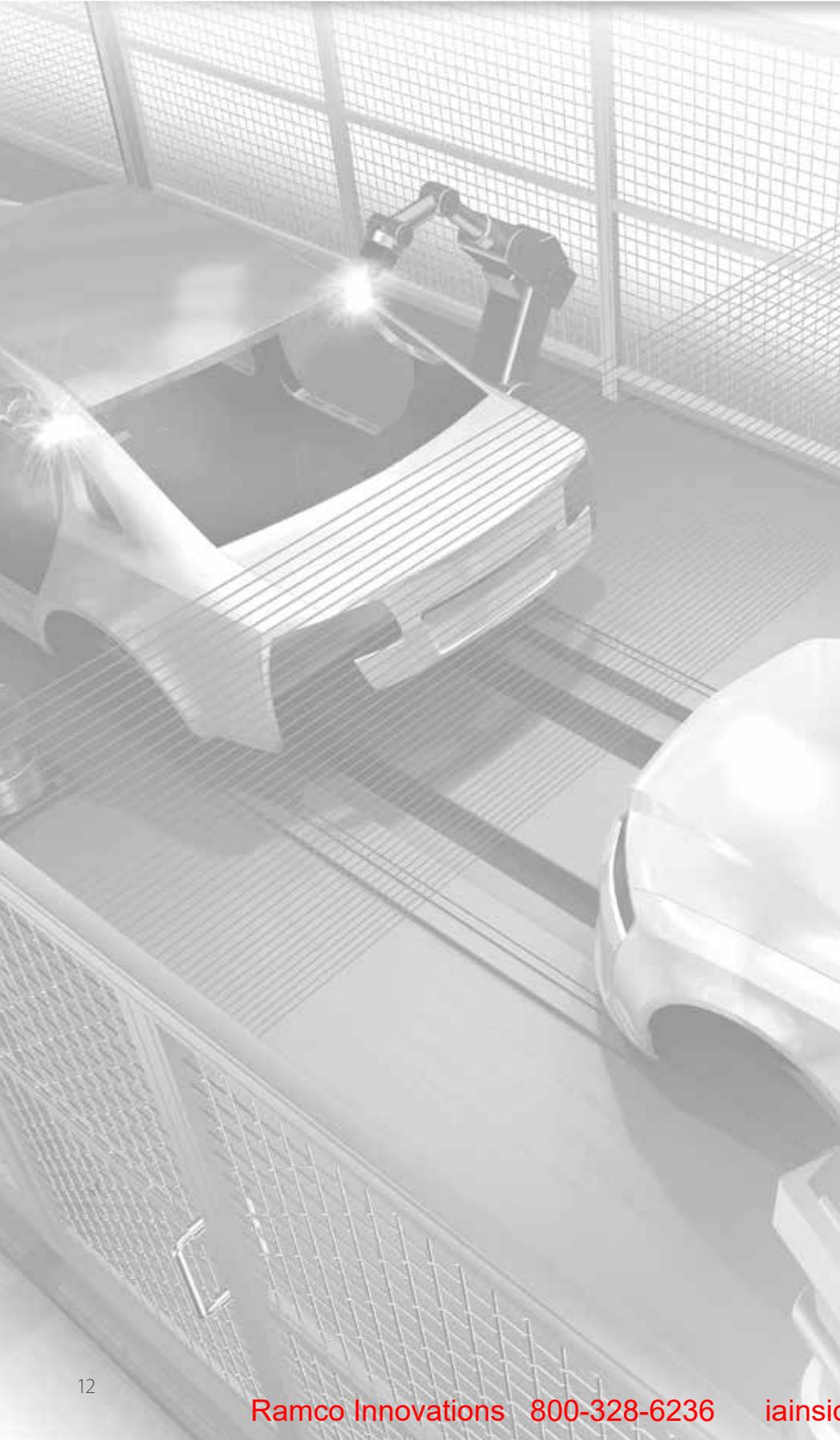
Also

## Use easy-to-obtain cables

Commercially available M12 connector cables can be used as extension cables to build a safety circuit.



# List of specifications and features



Application	Finger Protection
	Hand and Arm Protection
	Body Protection
Specification	Detection Capability
	Beam Gap
	Operating Range
	Protective Height
Feature	Number of Beams
	PNP/NPN Selection
	External Test
	Interlock
	Pre-Reset
	External Device Monitoring (EDM)
	Auxiliary Output
	Muting
	Blanking
	Reduced Resolution
	Warning Zone
	Scan Code Selection
	Operating Range Selection
	Response Time Adjustment
	Designated Beam Output
Bracket	Standard Fixed Bracket
	Standard Adjustable Bracket
	Top/Bottom Adjustable Bracket
	Top/Bottom Adjustable Bracket (For User-Made Mounting Part)
	Location Bracket (Intermediate Bracket)
Top/Bottom Bracket (3 Types)	
Connection/Wiring	Cascade Connection
	Reduced Wiring
Environmental Resistance	Degree of Protection
Accessory	Lamp
	Bluetooth Communication Unit
	SD Manager2
	Laser Pointer
	Single/Double-Ended Connector Cable
	Cascading Cable
	Spatter Protection Cover

Advanced Type		Rugged Type		Easy Type	
F3SG-RA		F3SG-RR		F3SG-RE	
 <p>Ideal for flexible manufacturing</p> <ul style="list-style-type: none"> <li>Quick and easy installation</li> <li>Stable operation and predictive maintenance</li> <li>For global use</li> <li>Easy adjustment</li> <li>Easy configuration and maintenance</li> </ul>		 <p>Ideal for environments where cutting oil is present</p> <ul style="list-style-type: none"> <li>Four times longer oil resistance</li> <li>IP67G</li> <li>No dead space</li> </ul>		 <p>Ideal for simple applications</p> <ul style="list-style-type: none"> <li>Simple functions</li> <li>Reduced wiring</li> <li>Fast response time: 5 ms</li> </ul>	
■	■	■	■	■	■
14-mm dia.	30-mm dia.	14-mm dia.	25-mm dia.	14-mm dia.	30-mm dia.
10 mm	20 mm	10 mm	20 mm	10 mm	20 mm
0.3 to 10 m	0.3 to 20 m	0.3 to 10 m	0.3 to 17 m	0.3 to 10 m	0.3 to 20 m
160 to 2,080 mm	190 to 2,510 mm	240 to 1,920 mm		160 to 2,080 mm	190 to 2,510 mm
15 to 207	8 to 124	23 to 191	12 to 96	15 to 207	8 to 124
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# OMRON Safety Product Offering

## 1 Safety Light Curtains

The F3SG global light curtains offers advanced functionality suitable for a wide range of applications. The economy type offers simple on/off operation for basic applications. The F3SG-RA and RE both have a robust IP67 waterproof housing and the F3SG-RR has a IP67G oil resistant housing for demanding environments.



F3SG-RA/RE/RR



A4EG

## 8 Enabling Switches

Provides the additional protection needed during set-up, programming and servicing of robotic and automatic equipment.

- Has distinct clicks for three easily discernible positions



F3SJ-E



F3SJ-B



F3SJ-A



MS4800



F3SG-RR **NEW**

## 2 Safety Laser Scanners

Our OS32C is a very compact safety laser scanner. It has 70 zone configurations for complex guarding parameters. Safety coverage up to 4 m at 270 degrees.



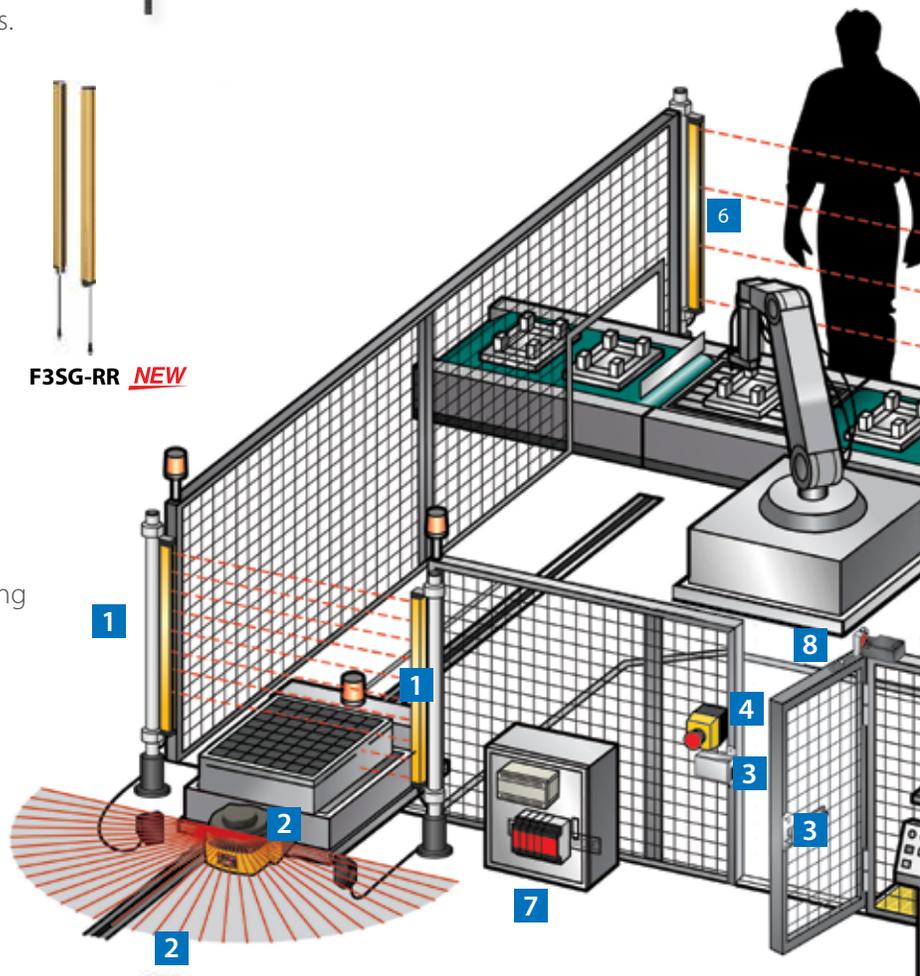
OS32C

Industry First!  
EtherNet/IP capable of status and measurement data reporting.

## 3 Safety Interlock Switches

Tamper resistant switches enhance mechanical guarding methods.

- Guardlocking switches
- Hinge pin switches
- Non-contact switches
- Limit switches
- Tongue switches
- Explosion-proof versions

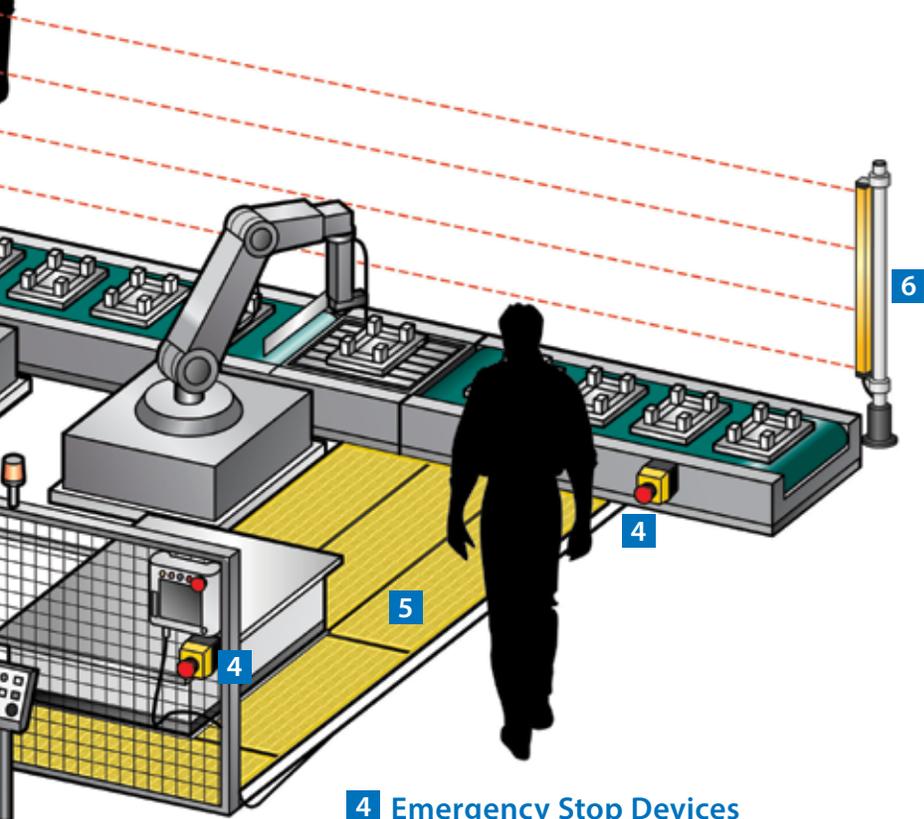


**7 Safety Programmable Controllers**

**7 Safety Monitoring Relays**

The NX-S series of controller offers Safety over EtherCAT, our first to offer integrated safety functionality into the Sysmac platform, suitable for mid to large sized applications; now with stand-alone capabilities.

The G9SP stand-alone programmable safety controller for mid-sized applications supports direct connection to safety mats and non-contact switches. The new G9SE series of safety relay units offers an easy approach for various simple safety applications. The G9SE saves mounting space, lowers installation cost with screw-less terminals, and reduces operational cost with intuitive diagnostic indicators.



**4 Emergency Stop Devices**

- Enclosed and panel-mounted models available with key-operated reset.
- Combination rope and push button actuated emergency stop switches.
- Heavy duty housing offering rope spans to 200 meters



**6 Perimeter Guarding**

PA4600 models are available with single and multiple-beam models with an operating range to 70 meters. They're perfect when installing fences is not practical.



**5 Safety Edges & Bumpers**

**5 Safety Mats & Area Guarding**

Built tough for tough environments. Combine a mat with a controller to provide proven reliability.



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- Safety Switches & Operator Controls • Safety Monitoring/Force-guided Relays

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- Solid State Relays

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