OMRON

Safety Light Curtain
F3SG-R Series

More Rugged

Advanced, Robust, and Easy types

NEW
Robust type

Advanced type

Easy type

Sti SAFETY, TECHNOLOGY & INNOVATION

F3SG-RA/RE:IP67

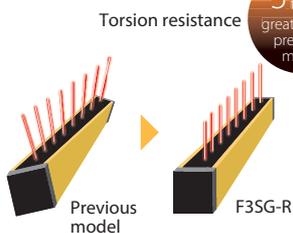# Increase both durability and productivity

The new cutting oil resistant Robust type is added

Safety Light Curtain
F3SG-R Series

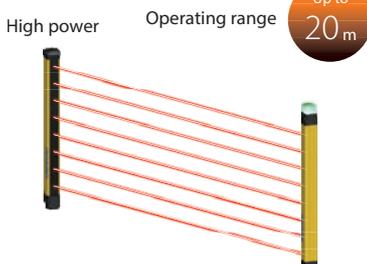**Fast set-up and high resistance to environmental changes**

Tough 1 **Resistant to vibration**

Torsion resistance

5 times greater than previous model

Previous model

F3SG-R

Tough 2 **Robust against environmental changes**

High power   Operating range

Up to 20 m

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

F3SG-RR IP67G

F3SG-RA/RE:IP67

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

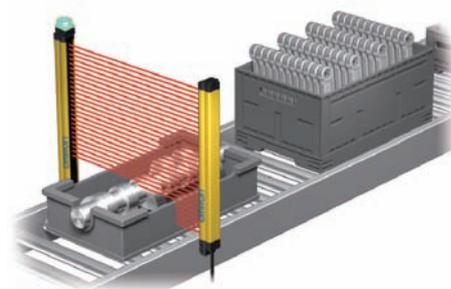**A choice of products to suit your need** Multiple versions available: finger, hand and arm protection

Ideal for flexible manufacturing

Multifunctional **Advanced** type

>>p.4

F3SG-RA

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

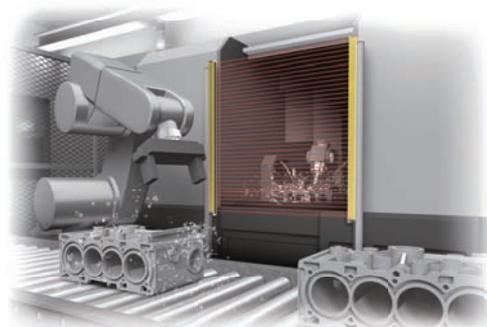## Even for environments where cutting oil is present

Cutting oil resistant **Robust** type

>>p.10

F3SG-RR N E W

- Four times longer* cutting oil resistance
- No dead space
- IP67G

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

Ideal for simple applications

Simple **Easy** type

>>p.11

F3SG-RE

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

Multifunctional
Advanced
type
F3SG-RA

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

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

Sufficient
Green

Insufficient
Red

BTM
(bottom-beam-state indicator)

* Image for illustration purpose only.

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 ±15º.

±15°

Top/bottom adjustable bracket
(sold separately)
Use this bracket at the top and bottom of the F3SG-R to make horizontal adjustment of ±22.5º.

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.

±22.5°

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.
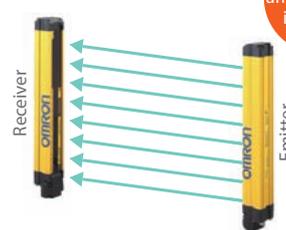
Optical synchronization

Start-up

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

Receiver

Emitter

After sync

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

Receiver

Emitter

High ambient light immunity

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.

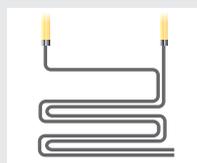* Smartclick is a registered trademark of OMRON Corporation.

Smartclick *

Insert fully

Click!

1/8th turn

Just a 1/8th turn to connect

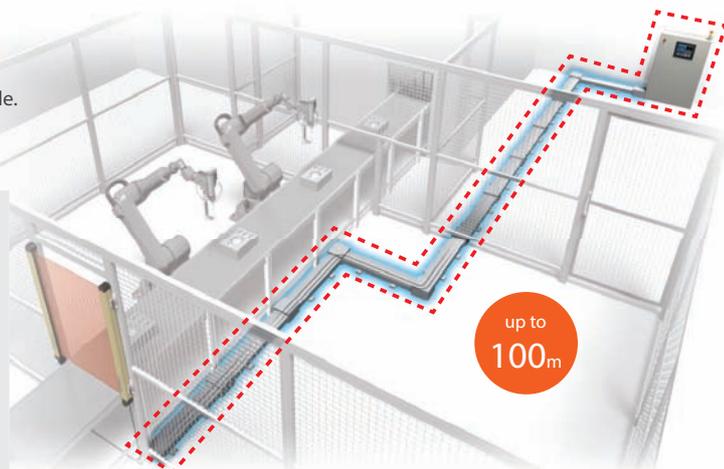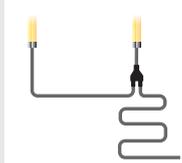# Simple wiring thanks to reduced wiring connectors

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

Previously
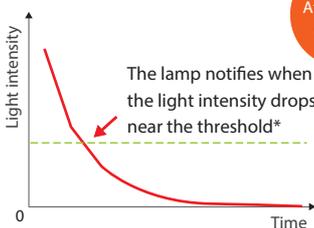
Cables of the emitter and receiver

Only one cable

up to
100m

Multifunctional
Advanced
type
F3SG-RA

Stable operation and predictive maintenance

Visualization eliminates machine downtime

The lamp notifies low light intensity

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

At a glance warning

The lamp notifies when the light intensity drops near the threshold*

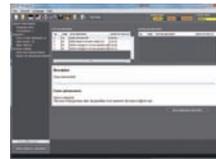*Light intensity (y-axis), Time (x-axis), 0*

* The incident light level at which the light curtain turns OFF

F39-LP Lamp

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

Bluetooth® allows to check status without stopping the line

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**

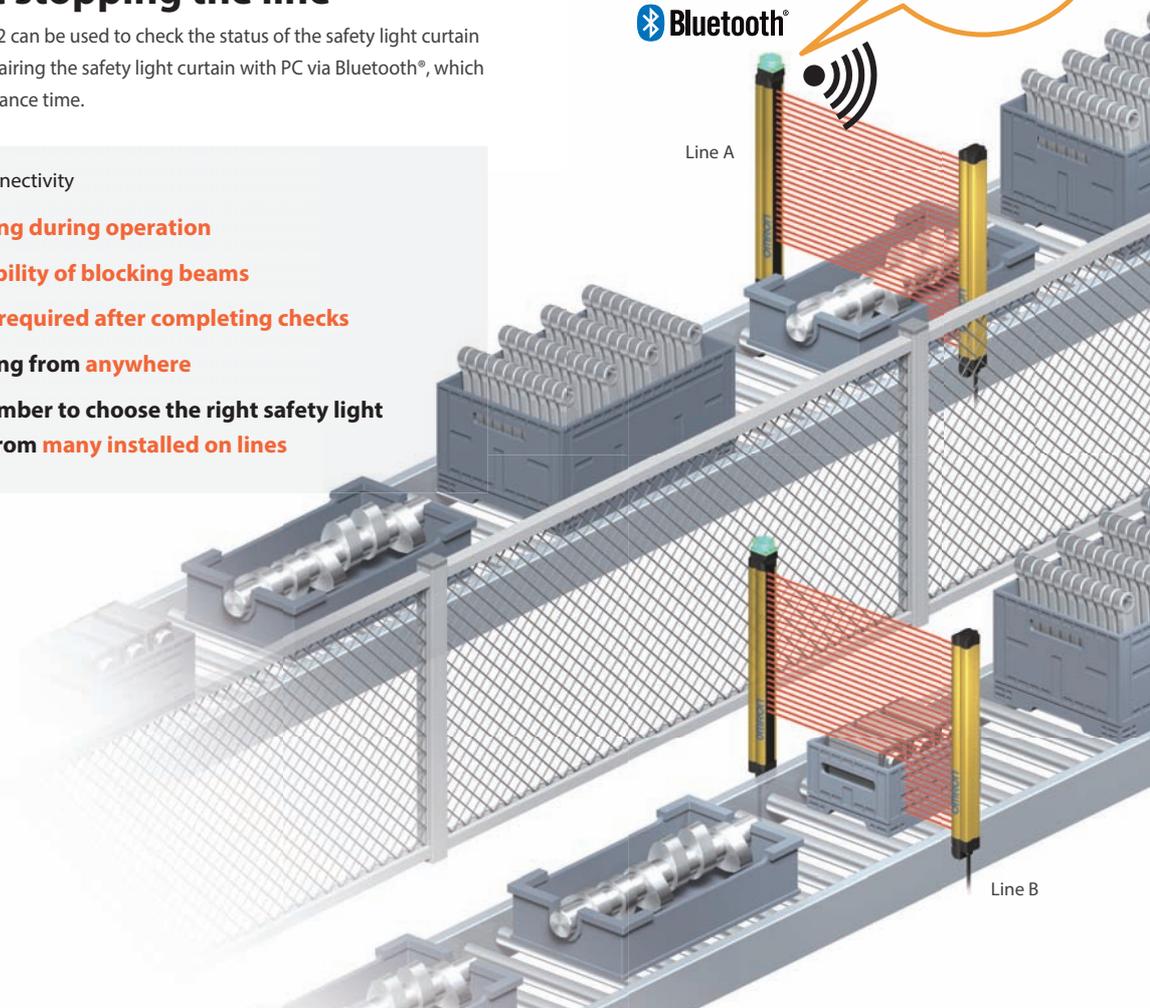F39-BT/BTLP Bluetooth®
Communication Unit

Bluetooth®

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.

NPN Global PNP

International Standard
GB
IEC ISO

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 webpage in eight languages. Operators across the world can check the error details in their local languages, which will help them minimize time to troubleshoot.

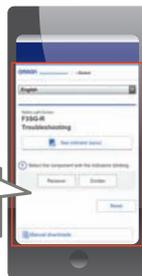* English, Chinese, Italian, Korean, French, German, Spanish, and Japanese

Scan the QR code and go directly to the troubleshooting webpage

Just 15 seconds to connect!

Line A Line B

Select the status of the indicator

Easy trouble shooting

Result

Indication status

Indicator	Receiver
LOCK OUT	Blinks 1 time
Blinking indicator	ON OFF

Description
Safety output error

Cause and measures
* Safety output lines may be short-circuited to each other or another signal line may be

Multifunctional
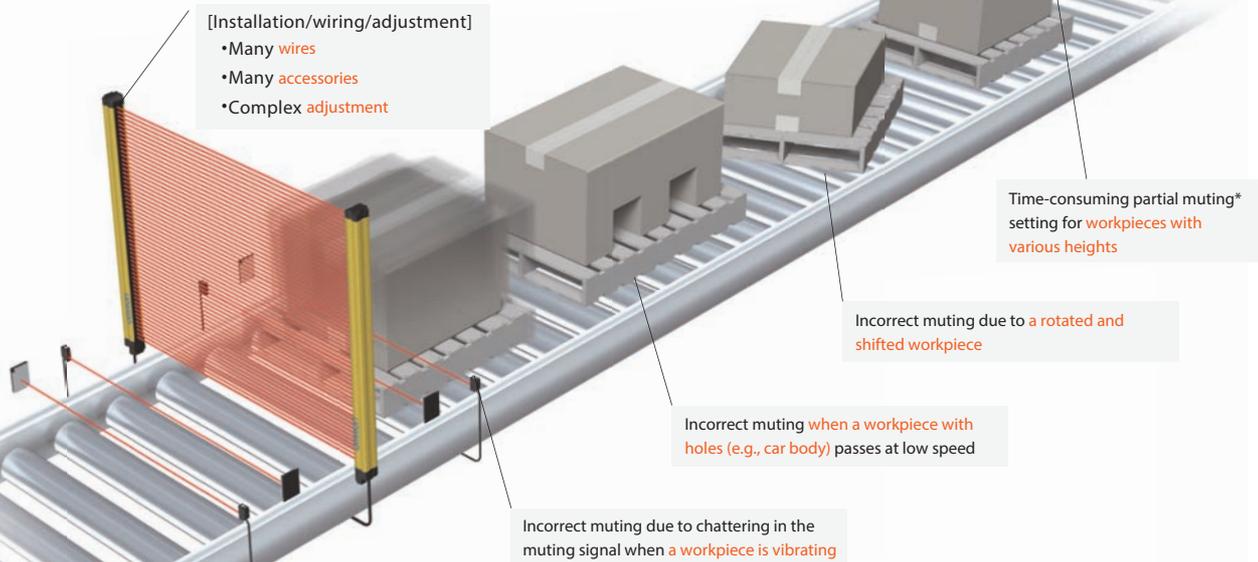**Advanced**
type
F3SG-RA

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.

Conventional Muting Muting secured safety, but the set-up was time consuming.

[Installation/wiring/adjustment]
• Many wires
• Many accessories
• Complex adjustment

Time-consuming partial muting* setting for workpieces with various heights

Incorrect muting due to a rotated and shifted workpiece

Incorrect muting when a workpiece with holes (e.g., car body) passes at low speed

Incorrect muting due to chattering in the muting signal when a workpiece is vibrating

F3SG-R Two auto-configuration functions significantly reduce the adjustment time even under difficult conditions where failure is likely to occur.

Adjustment time reduced by **80%***

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

Multiple-beam sensor technology for vibrating workpieces

Smart muting actuator   F3W-MA

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.
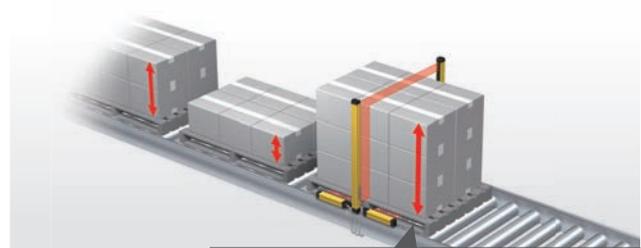
Smart muting actuator F3W-MA

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 based on the detected workpiece height

* 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.
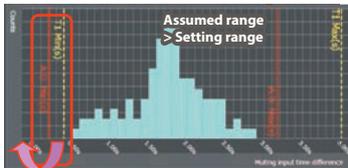
Visualization helps facilitate adjustment

Evaluates settings using logged results

Muting time setting range

Assumed range

Judgment
M.D. : Mesured Data
: Satisfactory
: Acceptable
: Needs to be changed

Examples of logging

Judgment Low risk of intermittent stop, but not safe

OK, but big difference between assumed and setting ranges

safer operation range

Judgment OK in a test run, but intermittent stop may occur during long-term operations

Assumed range > Setting range

Judgment Test run result is out of setting range. Muting sequence error occurred

Measured values > Setting range

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

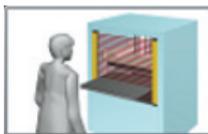Check error log and other data required for maintenance

I/O Setting

Auxiliary output/ lamp

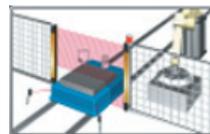Change the settings assigned to each output including lamp color and pattern

Function Setting

Fixed blanking

Set disabled beams manually or by teach-in

Muting/override

Set disabled beams and time. Setting can be evaluated

The Configuration Tool SD Manager2 is available to download from Omron website:
http://www.ia.omron.com/f3sg-r_tool

NEW
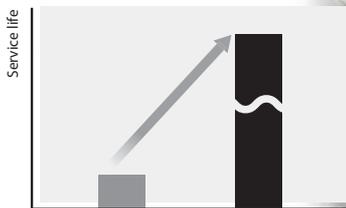
Cutting oil resistant

Robust type

F3SG-RR

IP67G

Robust design for reliable use even in cutting oil environments
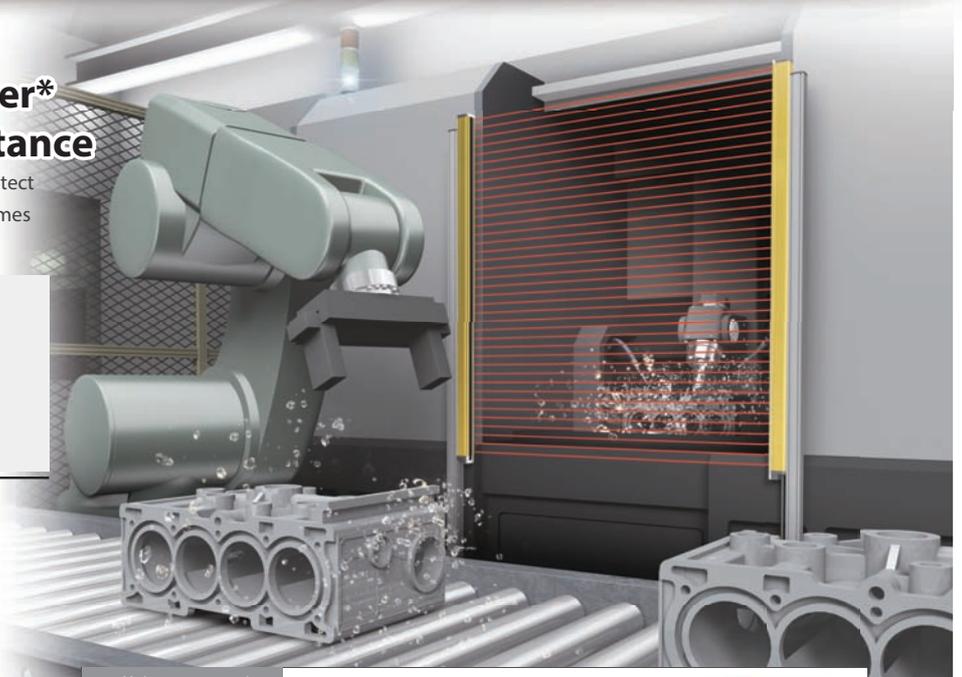
Four times longer* cutting oil resistance

The F3SG-RR has the ability to protect from cutting oil (IP67G) for four times longer than the previous model.

Service life

Previous model F3SJ-A/B

F3SG-RR

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

Unique construction

No gaps

Patented

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.

Cutting oil

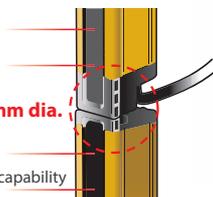Cutting oil

Completely blocked

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.

No dead space

Example of 25 mm detection capability

*1. Up to three sets of F3SG-R (up to 255 beams in total) can be series-connected.
*2. Protect cascading cables from cutting oil.