

# Safety Light Curtain F3SG-R

F3SG-R



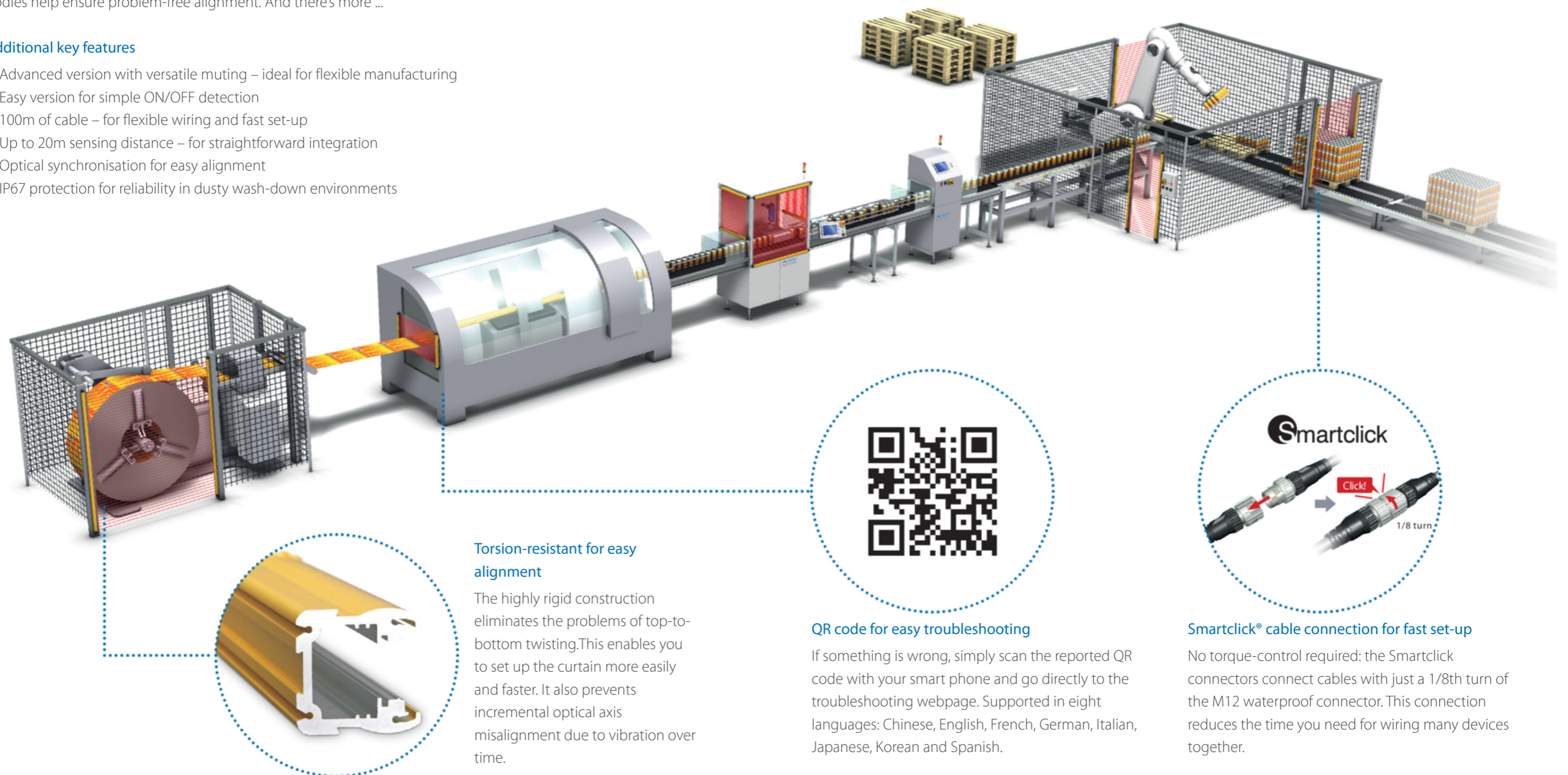
- Torsion-resistant for easy alignment
- QR code indication for easy troubleshooting
- Smart-click cable connection for fast set-up

# Quick and easy installation

Safety light curtains are a suitable product to help fulfil machinery safety standards, but they can be tricky to set up and maintain. That's why we have re-thought, re-designed, and re-invented our F3SG-R series, with special features and smart designs that help you select, install and maintain the ideal light curtain with a minimum of time and effort. For example, we now use snap-in bayonet coupling for fast set up. Also the new torsion resistant bodies help ensure problem-free alignment. And there's more ...

## Additional key features

- Advanced version with versatile muting – ideal for flexible manufacturing
- Easy version for simple ON/OFF detection
- 100m of cable – for flexible wiring and fast set-up
- Up to 20m sensing distance – for straightforward integration
- Optical synchronisation for easy alignment
- IP67 protection for reliability in dusty wash-down environments



### Torsion-resistant for easy alignment

The highly rigid construction eliminates the problems of top-to-bottom twisting. This enables you to set up the curtain more easily and faster. It also prevents incremental optical axis misalignment due to vibration over time.



### QR code for easy troubleshooting

If something is wrong, simply scan the reported QR code with your smart phone and go directly to the troubleshooting webpage. Supported in eight languages: Chinese, English, French, German, Italian, Japanese, Korean and Spanish.

Smartclick



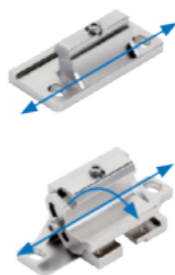
### Smartclick® cable connection for fast set-up

No torque-control required: the Smartclick connectors connect cables with just a 1/8th turn of the M12 waterproof connector. This connection reduces the time you need for wiring many devices together.

# Family features and benefits

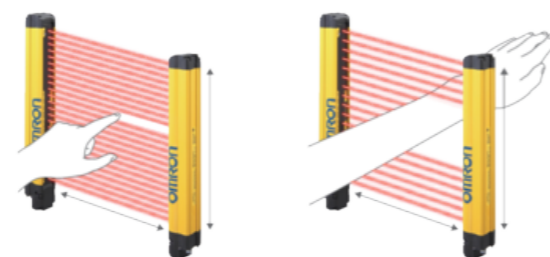
**EASY** **ADVANCED** Easy adjustment – even after mounting

Our fixed mounting brackets, which are included as standard, allow you to slide the safety light curtain up and down to make vertical adjustments. While our optional adjustable mounting brackets provide vertical as well as horizontal adjustment of  $\pm 15^\circ$ .



**EASY** **ADVANCED** Choice of detection capabilities

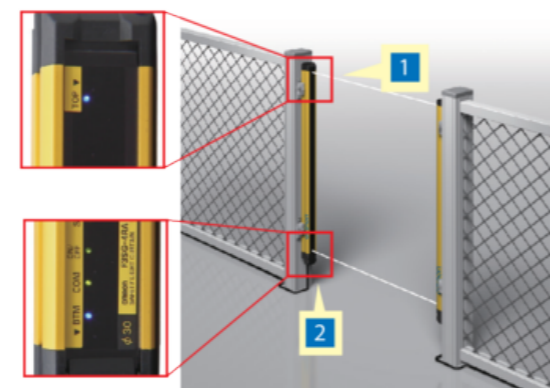
- Two versions available: hand protection (30mm) and finger protection (14mm)
- Sensing distances range from 0.3m to 20.0m
- Heights from 160mm to 2,500mm



**EASY** **ADVANCED**

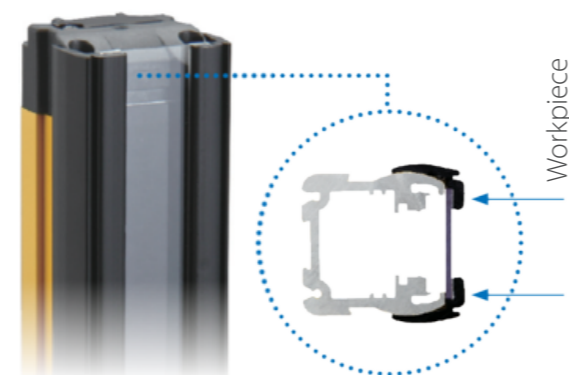
Simple 'two-step' beam adjustment

Simply position the safety light curtain in place and watch for the top and bottom LEDs to illuminate when adjustment is completed.



**EASY** **ADVANCED** Optional extra protection

You can add extra protection to the optical surface of your F3SG-R Safety Light Curtain with our special cover (F39-HGA and/or F39-HGB) to prevent scratches and other mechanical impacts.



**EASY** **ADVANCED**

Built for wash-down and dusty environments

The F3SG-R Safety Light Curtain Series meets IP67 protection rating to be used in wash-down and dusty applications.



**EASY** **ADVANCED** Automatic emitter-receiver synchronization

Our two-step optical synchronisation means you do not need to synchronise the wiring between the emitter and receiver. So you save even more time. Also, the resulting flexible wiring reduces disconnection risk and avoids noise sources.



**EASY** F3SG-RE Easy version for cost-efficiency

We have developed a basic ON/OFF version that's ideal for simple applications.

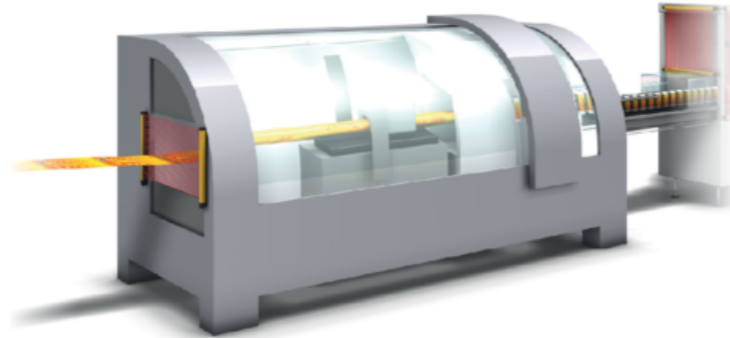
- Fastest (5ms) response time on the market for the shortest safety light curtain height
- Reduced wiring, thanks to prewired connectors, for fast installation
- Fast, easy troubleshooting via QR codes
- Clear LED ON/OFF indication



# Optimising safety throughout your production line with F3SG-RA

## ADVANCED Blanking

The F3SG-RA provides floating and fixed blanking functions. Setting of the number of beams can be configured by specifying the number of beams manually using the SD Manager 2 or in Dip-Switch mode by moving an interrupting object in the detection zone using the Push Switch to perform the teach-in task.



## ADVANCED Reduced Resolution

With Reduced Resolution the F3SG-RA is able to ignore interrupted beams (1 to 3 floating beams). This changes the detection capability of the safety light curtain and supports more flexible safety, e.g. where objects are moving within the detection zone.



## ADVANCED Cascading

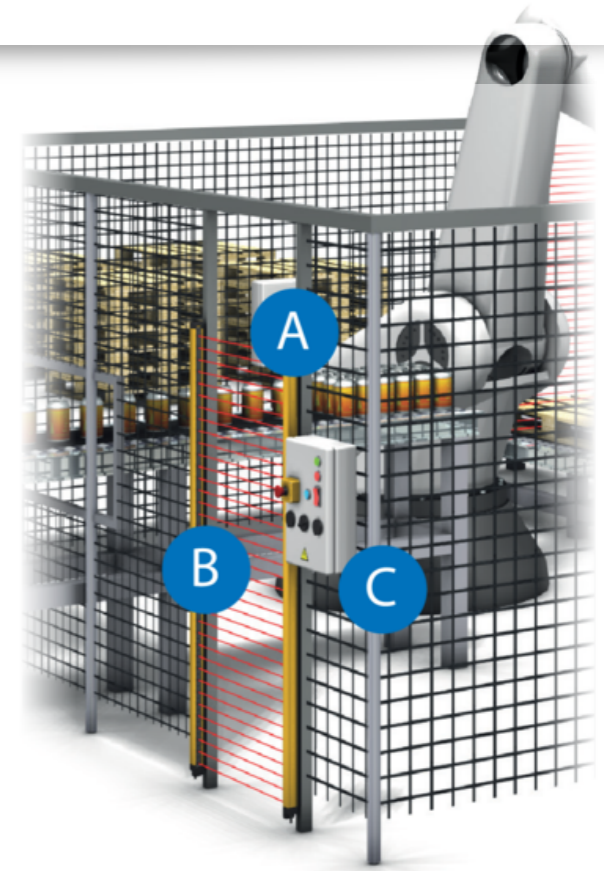
Up to three sets of F3SG-R can be series-connected. Cascade connection allows them to be used as one safety light curtain, requiring only one set to be wired to a controller and preventing mutual interference. If any one set of series-connected F3SG-R is blocked, both of the safety outputs turn OFF.

- Number of connections: up to 3 sets
- Total number of beams: up to 255 beams
- Total sum of cable lengths between cascaded segments: 10m max.

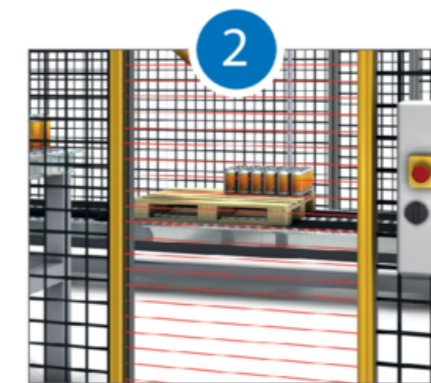
## ADVANCED Pre-reset

The pre-reset button prevents the restart of a machine while an unseen worker is still inside the cell.

- A** A local pre-reset pushbutton inside the machine needs to be pressed before the safety system can be reset
- B** Safety light curtain for easy access, for example by a forklift truck
- C** Reset pushbutton to acknowledge and start.



Press the pre-reset inside the machine



Pass the safety light curtain to walk out of the dangerous area



Press the Reset Button outside the dangerous area

# Muting with F3SG-RA

## ADVANCED

Automated production systems can be protected using fixed guards, but where material goes in and out of a danger zone, muting can aid efficiency without affecting operator safety.

A full range of muting options is available with F3SG-RA Safety Light Curtains using standard Omron accessories.

### F3SG-RA provides 3 different muting modes:

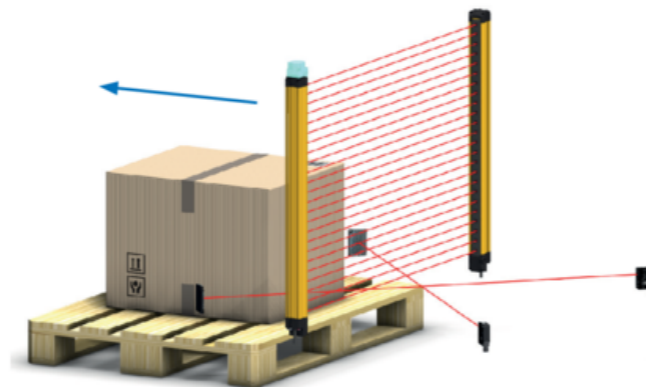
- Standard muting mode (T-Shape Muting and X-Shape Muting)
- Exit only muting mode (L-Shape muting)
- Position detection mode (E.g. Robot is stopped in a safe position)

### The following settings are available for a beam range to be the muting state.

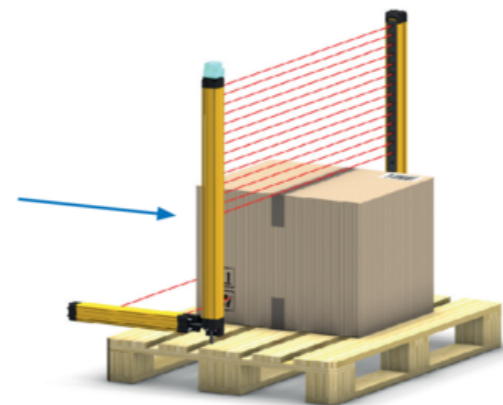
- Full range muting
- Partial range muting
- Dynamic range muting

### 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 workpiece.



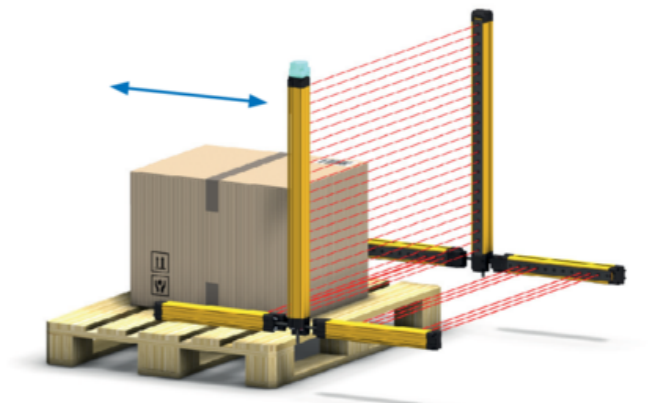
*X-Shape Muting*



*Dynamic Muting used in L-Shape Muting*

### Smart muting actuator

The Smart Muting Actuator extends the functions of the F3SG-RA in applications where a workpiece is vibrating forward and backward or where the goods on the pallet have small gaps.

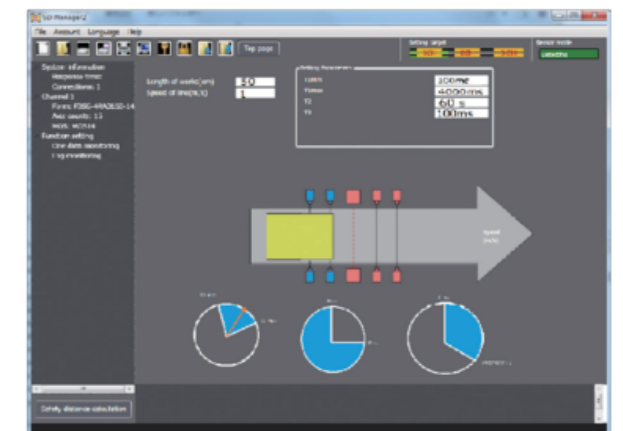


*Smart Muting Actuator used in T-Shape Muting*

## Configuration Tool SD Manager2

### Minimizing setting and detection errors

The Configuration Tool SD Manager2 visualizes your installation positions and settings, and helps ensure reliable, first-time-right configuration. In addition, you can analyse any stops due to muting error using the data stored in the F3SG-R, this will minimize unexpected machine downtime.



# List of features

Feature	Advanced type F3SG-RA		Easy type F3SG-RE	Factory default setting
PNP/NPN Selection	●			PNP output
External Test	●			24 V Active
Interlock	●	■		Auto Reset Mode
Pre-Reset	●	■		Disabled
External Device Monitoring (EDM)	●	■		Disabled
Auxiliary Output		■		Muting/Override information
Muting		■		Standard Muting mode
Override		■		Enabled
Fixed Blanking	●	■		Disabled
Floating Blanking	●	■		Disabled
Reduced Resolution		■		Disabled
Warning Zone		■		Disabled
Scan Code Selection	●			CodeA
Operating Range Selection	●		○	Short mode
Response Time Adjustment		■		Standard mode
Lamp		■		Red: Disabled Orange: Disabled Green: Muting/Override information
Designated Beam Output		■		Disabled

- Setting by DIP Switch
- Setting by Configuration Tool
- Setting by Wiring



**Advanced type for complex safety solutions**

The F3SG-RA advanced safety light curtain provides simplicity in mounting, daily operation and maintenance.

- Torsion-resistant for fast and simple alignment
- Smart-click cable connection for fast set-up and correct torque to ensure IP67
- QR code indication for easy online troubleshooting
- PNP/NPN output selection by DIP switch
- Cascading connection up to 3 segments and up to 255 beams
- Built in blanking, muting and reset functions

**Ordering information**

**Sensors**

Application	Type	Detection capability	Operating range	Protective height	Order code
Finger detection	Type 4 / Type 2	14 mm	0.3 to 10 m	160 to 2,080 mm	F3SG-RA__-14
Hand detection	Type 4 / Type 2	30 mm	0.3 to 20 m	190 to 2,510 mm	F3SG-RA__-30

**F3SG-RA\_14 models (14 mm detection capability)**

Protective height	Number of beams	Order code	
		Type 4	Type 2
160 mm	15	F3SG-4RA0160-14	F3SG-2RA0160-14
240 mm	23	F3SG-4RA0240-14	F3SG-2RA0240-14
320 mm	31	F3SG-4RA0320-14	F3SG-2RA0320-14
400 mm	39	F3SG-4RA0400-14	F3SG-2RA0400-14
480 mm	47	F3SG-4RA0480-14	F3SG-2RA0480-14
560 mm	55	F3SG-4RA0560-14	F3SG-2RA0560-14
640 mm	62	F3SG-4RA0640-14	F3SG-2RA0640-14
720 mm	71	F3SG-4RA0720-14	F3SG-2RA0720-14
800 mm	79	F3SG-4RA0800-14	F3SG-2RA0800-14
880 mm	87	F3SG-4RA0880-14	F3SG-2RA0880-14
960 mm	95	F3SG-4RA0960-14	F3SG-2RA0960-14
1040 mm	103	F3SG-4RA1040-14	F3SG-2RA1040-14
1120 mm	111	F3SG-4RA1120-14	F3SG-2RA1120-14
1200 mm	119	F3SG-4RA1200-14	F3SG-2RA1200-14
1280 mm	127	F3SG-4RA1280-14	F3SG-2RA1280-14
1360 mm	135	F3SG-4RA1360-14	F3SG-2RA1360-14
1440 mm	143	F3SG-4RA1440-14	F3SG-2RA1440-14
1520 mm	151	F3SG-4RA1520-14	F3SG-2RA1520-14
1600 mm	159	F3SG-4RA1600-14	F3SG-2RA1600-14
1680 mm	167	F3SG-4RA1680-14	F3SG-2RA1680-14
1760 mm	175	F3SG-4RA1760-14	F3SG-2RA1760-14
1840 mm	183	F3SG-4RA1840-14	F3SG-2RA1840-14
1920 mm	191	F3SG-4RA1920-14	F3SG-2RA1920-14
2000 mm	199	F3SG-4RA2000-14	F3SG-2RA2000-14
2080 mm	207	F3SG-4RA2080-14	F3SG-2RA2080-14

**F3SG-RA\_30 models (30 mm detection capability)**

Protective height	Number of beams	Order code	
		Type 4	Type 2
190 mm	8	F3SG-4RA0190-30	F3SG-2RA0190-30
270 mm	12	F3SG-4RA0270-30	F3SG-2RA0270-30
350 mm	16	F3SG-4RA0350-30	F3SG-2RA0350-30
430 mm	20	F3SG-4RA0430-30	F3SG-2RA0430-30
510 mm	24	F3SG-4RA0510-30	F3SG-2RA0510-30
590 mm	28	F3SG-4RA0590-30	F3SG-2RA0590-30
670 mm	32	F3SG-4RA0670-30	F3SG-2RA0670-30
750 mm	36	F3SG-4RA0750-30	F3SG-2RA0750-30
830 mm	40	F3SG-4RA0830-30	F3SG-2RA0830-30
910 mm	44	F3SG-4RA0910-30	F3SG-2RA0910-30
990 mm	48	F3SG-4RA0990-30	F3SG-2RA0990-30
1070 mm	52	F3SG-4RA1070-30	F3SG-2RA1070-30
1150 mm	56	F3SG-4RA1150-30	F3SG-2RA1150-30
1230 mm	60	F3SG-4RA1230-30	F3SG-2RA1230-30
1310 mm	64	F3SG-4RA1310-30	F3SG-2RA1310-30
1390 mm	68	F3SG-4RA1390-30	F3SG-2RA1390-30
1470 mm	72	F3SG-4RA1470-30	F3SG-2RA1470-30
1550 mm	76	F3SG-4RA1550-30	F3SG-2RA1550-30
1630 mm	80	F3SG-4RA1630-30	F3SG-2RA1630-30
1710 mm	84	F3SG-4RA1710-30	F3SG-2RA1710-30
1790 mm	88	F3SG-4RA1790-30	F3SG-2RA1790-30
1870 mm	92	F3SG-4RA1870-30	F3SG-2RA1870-30
1950 mm	96	F3SG-4RA1950-30	F3SG-2RA1950-30
2030 mm	100	F3SG-4RA2030-30	F3SG-2RA2030-30
2110 mm	104	F3SG-4RA2110-30	F3SG-2RA2110-30
2190 mm	108	F3SG-4RA2190-30	F3SG-2RA2190-30
2270 mm	112	F3SG-4RA2270-30	F3SG-2RA2270-30
2350 mm	116	F3SG-4RA2350-30	F3SG-2RA2350-30
2420 mm	120	F3SG-4RA2430-30	F3SG-2RA2430-30
2510 mm	124	F3SG-4RA2510-30	F3SG-2RA2510-30

Accessories (Sold separately)

Single-end connector cable

Appearance	Type	Specification	Cable length	Order code
	Emitter cable M12 connector 5-Pin Color: Gray		1 +24 VDC Brown	3 m F39-JG3A-L
			2 TEST Black	7 m F39-JG7A-L
			3 0 VDC Blue	10 m F39-JG10A-L
			4 Not used White	15 m F39-JG15A-L
			5 Not used Yellow	20 m F39-JG20A-L
	Receiver cable M12 connector 8-Pin Color: Black		1 Reset Yellow	3 m F39-JG3A-D
			2 +24 VDC Brown	7 m F39-JG7A-D
			3 MUTE A Gray	10 m F39-JG10A-D
			4 MUTE B Pink	15 m F39-JG15A-D
			5 OSSD 1 Black	20 m F39-JG20A-D
			6 OSSD 2 White	
			7 0 VDC Blue	
			8 AUX(Lamp) Red	

Double-end connector cable

Appearance	Type	Specification	Cable length	Order code
	Emitter cable M12 connector 5-Pin Color: Gray		0.5 m F39-JGR5B-L	
			1 m F39-JG1B-L	
			3 m F39-JG3B-L	
			5 m F39-JG5B-L	
			7 m F39-JG7B-L	
			10 m F39-JG10B-L	
			15 m F39-JG15B-L	
20 m F39-JG20B-L				
	Receiver cable M12 connector 8-Pin Color: Black		0.5 m F39-JGR5B-D	
			1 m F39-JG1B-D	
			3 m F39-JG3B-D	
			5 m F39-JG5B-D	
			7 m F39-JG7B-D	
			10 m F39-JG10B-D	
			15 m F39-JG15B-D	
20 m F39-JG20B-D				

Y-joint Plug/Socket Connector

Appearance	Type	Specification	Cable length	Order code
	M12 connectors. Used for reduced wiring.		0.5 m	F39-GCNY2

Cascading cable

Appearance	Type	Specification	Cable length	Order code
	Cascading cable set Set including: Emitter cable: Cap (5-pin), M12 connector (5-pin) Receiver cable: Cap (8-pin), M12 connector (8-pin)		0.2 m	F39-JGR2W

Mounting brackets

Appearance	Type	Specification	Order code
	Standard fixed bracket set (Two brackets per set)	Bracket to mount the F3SG-R. Side mounting and backside mounting possible. (Included in the F3SG-R product package <sup>*1</sup> )	F39-LGF
	Standard adjustable bracket set (Two brackets per set)	Bracket to mount the F3SG-R. Beam alignment after mounting possible. The angle adjustment range is ±15°. Side mounting and backside mounting possible.	F39-LGA
	Top/Bottom adjustable bracket set <sup>*2</sup> (Four brackets per set)	Bracket to mount the F3SG-R at the top and bottom position. Beam alignment after mounting possible. The angle adjustment range is ±22.5°. Can be used in combination with the standard adjustable brackets.	F39-LGTB

\*1 F3SG-RA \_\_\_-14: Protective height of 0160 to 1200: 2 sets, protective height of 1280 to 2080: 3 sets

F3SG-RA \_\_\_-30: Protective height of 0190 to 1230: 2 sets, protective height of 1310 to 2270: 3 sets, protective height of 2350 to 2510: 4 sets

\*2 Optional available F39-LGTB-1 Top/Bottom adjustable bracket set (4 pcs.) without angle bracket to mount to the wall.

Interface units and configuration tool SD Manager 2

Appearance	Type	Specification	Order code
	SD Manager2	The configuration tool SD Manager2 is available to download from our website at <a href="http://www.ia.omron.com/f3sg-r_tool">http://www.ia.omron.com/f3sg-r_tool</a> . To change the settings of the F3SG-RA using SD Manager 2, it is necessary to set the receiver's two DIP switches No. 8 to ON.	-
	Interface unit	F39-GIF interface unit to connect the F3SG-RA receiver to a USB port of the PC	F39-GIF
	Bluetooth unit	F39-BT bluetooth unit to enable bluetooth on the F3SG-RA	F39-BT

Lamp and Bluetooth

Appearance	Type	Specification	Order code
	Lamp unit	The lamp unit can be connected to a F3SG-RA receiver. The lamp can indicate red, orange, and green colors, to which three different states can be assigned.	F39-LP
	Bluetooth + Lamp unit	The bluetooth + lamp unit can be connected to a F3SG-RA receiver to enable bluetooth on the F3SG-RA. The lamp can indicate red, orange, and green colors, to which three different states can be assigned.	F39-BTLP

Test rod

Appearance	Type	Specification	Order code
	Test rod 14mm	14 mm diameter	F39-TRD14
	Test rod 30mm	30 mm diameter	F39-TRD30



Spatter protection cover (Two covers per set, for emitter and receiver)


Spatter protection covers include mounting brackets.

For safety light curtain models of the protective height of 2,000 mm or longer, use two spatter protection covers of different lengths.

Appearance	Safety light curtain model		Order code
	Finger protection	Hand and arm protection	
	F3SG_RA0160-14	F3SG_RA0190-30	F39-HGA0200
	F3SG_RA0240-14	F3SG_RA0270-30	F39-HGA0280
	F3SG_RA0320-14	F3SG_RA0350-30	F39-HGA0360
	F3SG_RA0400-14	F3SG_RA0430-30	F39-HGA0440
	F3SG_RA0480-14	F3SG_RA0510-30	F39-HGA0520
	F3SG_RA0560-14	F3SG_RA0590-30	F39-HGA0600
	F3SG_RA0640-14	F3SG_RA0670-30	F39-HGA0680
	F3SG_RA0720-14	F3SG_RA0750-30	F39-HGA0760
	F3SG_RA0800-14	F3SG_RA0830-30	F39-HGA0840
	F3SG_RA0880-14	F3SG_RA0910-30	F39-HGA0920
	F3SG_RA0960-14	F3SG_RA0990-30	F39-HGA1000
	F3SG_RA1040-14	F3SG_RA1070-30	F39-HGA1080
	F3SG_RA1120-14	F3SG_RA1150-30	F39-HGA1160
	F3SG_RA1200-14	F3SG_RA1230-30	F39-HGA1240
	F3SG_RA1280-14	F3SG_RA1310-30	F39-HGA1320
	F3SG_RA1360-14	F3SG_RA1390-30	F39-HGA1400
	F3SG_RA1440-14	F3SG_RA1470-30	F39-HGA1480
	F3SG_RA1520-14	F3SG_RA1550-30	F39-HGA1560
	F3SG_RA1600-14	F3SG_RA1630-30	F39-HGA1640
	F3SG_RA1680-14	F3SG_RA1710-30	F39-HGA1720
	F3SG_RA1760-14	F3SG_RA1790-30	F39-HGA1800
	F3SG_RA1840-14	F3SG_RA1870-30	F39-HGA1880
	F3SG_RA1920-14	F3SG_RA1950-30	F39-HGA1960
	F3SG_RA2000-14	F3SG_RA2030-30	F39-HGA1480
			F39-HGA0550
	F3SG_RA2080-14	F3SG_RA2110-30	F39-HGA1560
			F39-HGA0550
		F3SG_RA2190-30	F39-HGA1640
			F39-HGA0550
		F3SG_RA2270-30	F39-HGA1720
			F39-HGA0550
		F3SG_RA2350-30	F39-HGA1800
			F39-HGA0550
		F3SG_RA2430-30	F39-HGA1880
			F39-HGA0550
		F3SG_RA2510-30	F39-HGA1960
			F39-HGA0550

Note: The operating range of the safety light curtain attached with the product is 10% shorter than the rating.

Spare parts

Appearance	Type	Specification	Order code
	End cap	Housing color: Black For both emitter and receiver (Attached to the F3SG-R. The end cap can be purchased if lost.)	F39-CNM

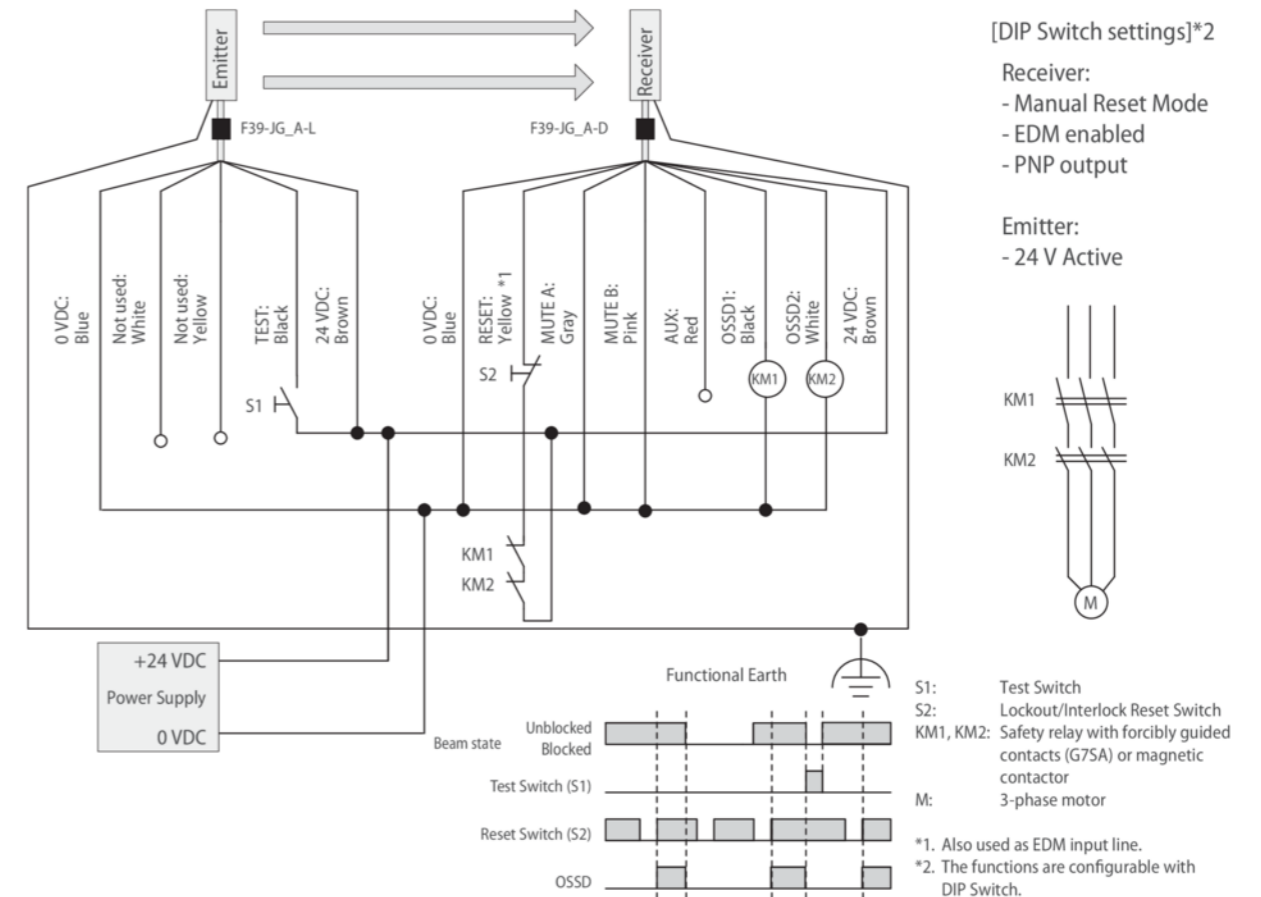
Specifications

Item	F3SG-4RA -14 F3SG-2RA -14	F3SG-4RA -30 F3SG-2RA -30
Type of ESPE (IEC 61496-1)	Type 4 Type 2	F3SG-4RA -14/-30 F3SG-2RA -14/-30
Detection capability (Opaque objects)	14 mm dia.	30 mm dia.
Protective height	160 to 2080 mm	190 to 2510 mm
Operating range (Dip switch option)	0.3 to 3.0 m or 0.3 to 10.0 m	0.3 to 7.0 m or 0.3 to 20.0 m
Effective aperture angle (EAA) (IEC 61496-2)	Type 4: ±2.5° max., emitter and receiver at operating range of 3 m or greater Type 2: ±5.0° max., emitter and receiver at operating range of 3 m or greater	
Light source	Infrared LEDs, Wavelength: 870 nm	
Power supply voltage (Vs)	SELV/PELV 24 VDC ±20% (ripple p-p 10% max.)	
Safety outputs (OSSD)	2 PNP or NPN transistor outputs (PNP or NPN selectable by DIP switch), load current of 300 mA max.	
Cascade connection	Number of cascaded segments: 3 max., total number of beams: 255 max. Total sum of cable lengths between sensors: 10 m max.	
Test function	Self-test (at power-on, and during operation), External test (light emission stop function by test input)	
Safety-related functions	Interlock, pre-reset, external device monitoring (EDM), fixed blanking/floating blanking, reduced resolution, muting/override, scan code selection, PNP/NPN selection, response time adjustment	
Response time	ON to OFF (normal mode): 8 to 18 ms max., OFF to ON: 40 to 90 ms max.	
Ambient temperature	Operating: -10 to 55°C (non-icing) Storage: -25 to 70°C	
Ambient humidity	Operating: 35% to 85% (non-condensing) Storage: 35% to 95%	
Degree of protection (IEC 60529)	IP65 and IP67	
Material	Housing: Aluminum, Cap: PBT, Front window: PMMA, Cable: Oil resistant PVC, Mounting bracket: ZDC2, FE plate: SUS	
Performance level (PL)/ Safety category	Type 4: PLe/Category 4 (EN ISO 13849-1:2008) Type 2: PLc/Category 2 (EN ISO 13849-1:2008)	
PFHd	≤ 9.9 × 10 <sup>-8</sup> (IEC 61508)	
Proof test interval T <sub>M</sub>	Every 20 years (IEC 61508)	

Note: For more information, please check the user manual Z352-E1

Connections (Basic wiring diagram)

Standalone F3SG-RA using PNP outputs





Easy type for simple ON/OFF detection applications

The F3SG-RE easy safety light curtain provides simplicity in mounting, operation and maintenance.

- Torsion-resistant for fast and simple alignment
- Smart-click cable connection for fast set-up and correct torque to ensure IP67
- QR code indication for easy online troubleshooting

Ordering information

Sensors

Application	Type	Detection capability	Operating range	Protective height	Order code
Finger detection	Type 4 / Type 2	14 mm	0.3 to 10 m	160 to 2,080 mm	F3SG-RE__-14
Hand detection	Type 4 / Type 2	30 mm	0.3 to 20 m	190 to 2,510 mm	F3SG-RE__-30

F3SG-RE\_P14 models (PNP and 14 mm detection capability)

Protective height	Number of beams	Order code	
		Type 4	Type 2
160 mm	15	F3SG-4RE0160P14	F3SG-2RE0160P14
240 mm	23	F3SG-4RE0240P14	F3SG-2RE0240P14
320 mm	31	F3SG-4RE0320P14	F3SG-2RE0320P14
400 mm	39	F3SG-4RE0400P14	F3SG-2RE0400P14
480 mm	47	F3SG-4RE0480P14	F3SG-2RE0480P14
560 mm	55	F3SG-4RE0560P14	F3SG-2RE0560P14
640 mm	62	F3SG-4RE0640P14	F3SG-2RE0640P14
720 mm	71	F3SG-4RE0720P14	F3SG-2RE0720P14
800 mm	79	F3SG-4RE0800P14	F3SG-2RE0800P14
880 mm	87	F3SG-4RE0880P14	F3SG-2RE0880P14
960 mm	95	F3SG-4RE0960P14	F3SG-2RE0960P14
1040 mm	103	F3SG-4RE1040P14	F3SG-2RE1040P14
1120 mm	111	F3SG-4RE1120P14	F3SG-2RE1120P14
1200 mm	119	F3SG-4RE1200P14	F3SG-2RE1200P14
1280 mm	127	F3SG-4RE1280P14	F3SG-2RE1280P14
1360 mm	135	F3SG-4RE1360P14	F3SG-2RE1360P14
1440 mm	143	F3SG-4RE1440P14	F3SG-2RE1440P14
1520 mm	151	F3SG-4RE1520P14	F3SG-2RE1520P14
1600 mm	159	F3SG-4RE1600P14	F3SG-2RE1600P14
1680 mm	167	F3SG-4RE1680P14	F3SG-2RE1680P14
1760 mm	175	F3SG-4RE1760P14	F3SG-2RE1760P14
1840 mm	183	F3SG-4RE1840P14	F3SG-2RE1840P14
1920 mm	191	F3SG-4RE1920P14	F3SG-2RE1920P14
2000 mm	199	F3SG-4RE2000P14	F3SG-2RE2000P14
2080 mm	207	F3SG-4RE2080P14	F3SG-2RE2080P14

F3SG-RE\_P30 models (PNP and 30 mm detection capability)

Protective height	Number of beams	Order code	
		Type 4	Type 2
190 mm	8	F3SG-4RE0190P30	F3SG-2RE0190P30
270 mm	12	F3SG-4RE0270P30	F3SG-2RE0270P30
350 mm	16	F3SG-4RE0350P30	F3SG-2RE0350P30
430 mm	20	F3SG-4RE0430P30	F3SG-2RE0430P30
510 mm	24	F3SG-4RE0510P30	F3SG-2RE0510P30
590 mm	28	F3SG-4RE0590P30	F3SG-2RE0590P30
670 mm	32	F3SG-4RE0670P30	F3SG-2RE0670P30
750 mm	36	F3SG-4RE0750P30	F3SG-2RE0750P30
830 mm	40	F3SG-4RE0830P30	F3SG-2RE0830P30
910 mm	44	F3SG-4RE0910P30	F3SG-2RE0910P30
990 mm	48	F3SG-4RE0990P30	F3SG-2RE0990P30
1070 mm	52	F3SG-4RE1070P30	F3SG-2RE1070P30
1150 mm	56	F3SG-4RE1150P30	F3SG-2RE1150P30
1230 mm	60	F3SG-4RE1230P30	F3SG-2RE1230P30
1310 mm	64	F3SG-4RE1310P30	F3SG-2RE1310P30
1390 mm	68	F3SG-4RE1390P30	F3SG-2RE1390P30
1470 mm	72	F3SG-4RE1470P30	F3SG-2RE1470P30
1550 mm	76	F3SG-4RE1550P30	F3SG-2RE1550P30
1630 mm	80	F3SG-4RE1630P30	F3SG-2RE1630P30
1710 mm	84	F3SG-4RE1710P30	F3SG-2RE1710P30
1790 mm	88	F3SG-4RE1790P30	F3SG-2RE1790P30
1870 mm	92	F3SG-4RE1870P30	F3SG-2RE1870P30
1950 mm	96	F3SG-4RE1950P30	F3SG-2RE1950P30
2030 mm	100	F3SG-4RE2030P30	F3SG-2RE2030P30
2110 mm	104	F3SG-4RE2110P30	F3SG-2RE2110P30
2190 mm	108	F3SG-4RE2190P30	F3SG-2RE2190P30
2270 mm	112	F3SG-4RE2270P30	F3SG-2RE2270P30
2350 mm	116	F3SG-4RE2350P30	F3SG-2RE2350P30
2420 mm	120	F3SG-4RE2430P30	F3SG-2RE2430P30
2510 mm	124	F3SG-4RE2510P30	F3SG-2RE2510P30

Note: Optional NPN models are available for the F3SG-RE easy types. Please contact your OMRON representative.

Accessories (Sold separately)

Single-end connector cable

Appearance	Type	Specification	Cable length	Order code																				
	Emitter/receiver cable M12 connector 4-Pin Color: Gray	 Female <table border="1"> <thead> <tr> <th>PIN</th> <th>Emitter</th> <th>Receiver</th> <th>Color</th> </tr> </thead> <tbody> <tr><td>1</td><td>+24 VDC</td><td>+24 VDC</td><td>Brown</td></tr> <tr><td>2</td><td>Range setting</td><td>OSSD 2</td><td>White</td></tr> <tr><td>3</td><td>0 VDC</td><td>0 VDC</td><td>Blue</td></tr> <tr><td>4</td><td>Not used</td><td>OSSD 1</td><td>Black</td></tr> </tbody> </table>	PIN	Emitter	Receiver	Color	1	+24 VDC	+24 VDC	Brown	2	Range setting	OSSD 2	White	3	0 VDC	0 VDC	Blue	4	Not used	OSSD 1	Black	1 m 2 m 3 m 5 m 10 m	XSSF-D421-C80-F XSSF-D421-D80-F XSSF-D421-E80-F XSSF-D421-G80-F XSSF-D421-J80-F
PIN	Emitter	Receiver	Color																					
1	+24 VDC	+24 VDC	Brown																					
2	Range setting	OSSD 2	White																					
3	0 VDC	0 VDC	Blue																					
4	Not used	OSSD 1	Black																					

Double-end connector cable

Appearance	Type	Specification	Cable length	Order code								
	Emitter/receiver cable M12 connector 4-Pin Color: Gray	 Female Male <table border="1"> <thead> <tr> <th>1</th> <th>2</th> <th>3</th> <th>4</th> </tr> </thead> <tbody> <tr><td>Brown</td><td>White</td><td>Blue</td><td>Black</td></tr> </tbody> </table>	1	2	3	4	Brown	White	Blue	Black	1 m 2 m 3 m 5 m 10 m	XSSW-D421-C81-F XSSW-D421-D81-F XSSW-D421-E81-F XSSW-D421-G81-F XSSW-D421-J81-F
1	2	3	4									
Brown	White	Blue	Black									

Y-joint Plug/Socket Connector

Appearance	Type	Specification	Cable length	Order code
	M12 connector (4-pin) on both ends	 Using the Y-joint connector the F3SG-RE is set to long operation mode	0.5 m	F39-GCNY1

Mounting brackets

Appearance	Type	Specification	Order code
	Standard fixed bracket set (Two brackets per set)	Bracket to mount the F3SG-R. Side mounting and backside mounting possible. (Included in the F3SG-R product package <sup>1)</sup> )	F39-LGF
	Standard adjustable bracket set (Two brackets per set)	Bracket to mount the F3SG-R. Beam alignment after mounting possible. The angle adjustment range is ±15°. Side mounting and backside mounting possible.	F39-LGA
	Top/Bottom adjustable bracket set <sup>2)</sup> (Four brackets per set)	Bracket to mount the F3SG-R at the top and bottom position. Beam alignment after mounting possible. The angle adjustment range is ±22.5°. Can be used in combination with the standard adjustable brackets.	F39-LGTB

<sup>1)</sup> F3SG-RA\_\_-14: Protective height of 0160 to 1200: 2 sets, protective height of 1280 to 2080: 3 sets  
F3SG-RA\_\_-30: Protective height of 0190 to 1230: 2 sets, protective height of 1310 to 2270: 3 sets, protective height of 2350 to 2510: 4 sets  
<sup>2)</sup> Optional available F39-LGTB-1 Top/Bottom adjustable bracket set (4 pcs.) without angle bracket to mount to the wall.

Test rod

Appearance	Type	Specification	Order code
	Test rod 14mm	14 mm diameter	F39-TRD14
	Test rod 30mm	30 mm diameter	F39-TRD30

Spatter protection cover (Two covers per set, for emitter and receiver)

Spatter protection covers include mounting brackets.

For safety light curtain models of the protective height of 2,000 mm or longer, use two spatter protection covers of different lengths.

Appearance	Safety light curtain model		Order code
	Finger protection	Hand and arm protection	
	F3SG_RE0160-14	F3SG_RE0190-30	F39-HGB0180
	F3SG_RE0240-14	F3SG_RE0270-30	F39-HGB0260
	F3SG_RE0320-14	F3SG_RE0350-30	F39-HGB0340
	F3SG_RE0400-14	F3SG_RE0430-30	F39-HGB0420
	F3SG_RE0480-14	F3SG_RE0510-30	F39-HGB0500
	F3SG_RE0560-14	F3SG_RE0590-30	F39-HGB0580
	F3SG_RE0640-14	F3SG_RE0670-30	F39-HGB0660
	F3SG_RE0720-14	F3SG_RE0750-30	F39-HGB0740
	F3SG_RE0800-14	F3SG_RE0830-30	F39-HGB0820
	F3SG_RE0880-14	F3SG_RE0910-30	F39-HGB0900
	F3SG_RE0960-14	F3SG_RE0990-30	F39-HGB0980
	F3SG_RE1040-14	F3SG_RE1070-30	F39-HGB1060
	F3SG_RE1120-14	F3SG_RE1150-30	F39-HGB1140
	F3SG_RE1200-14	F3SG_RE1230-30	F39-HGB1220
	F3SG_RE1280-14	F3SG_RE1310-30	F39-HGB1300
	F3SG_RE1360-14	F3SG_RE1390-30	F39-HGB1380
	F3SG_RE1440-14	F3SG_RE1470-30	F39-HGB1460
	F3SG_RE1520-14	F3SG_RE1550-30	F39-HGB1540
	F3SG_RE1600-14	F3SG_RE1630-30	F39-HGB1620
	F3SG_RE1680-14	F3SG_RE1710-30	F39-HGB1700
	F3SG_RE1760-14	F3SG_RE1790-30	F39-HGB1780
	F3SG_RE1840-14	F3SG_RE1870-30	F39-HGB1860
	F3SG_RE1920-14	F3SG_RE1950-30	F39-HGB1940
	F3SG_RE2000-14	F3SG_RE2030-30	F39-HGB1460
			F39-HGA0550
	F3SG_RE2080-14	F3SG_RE2110-30	F39-HGB1540
			F39-HGA0550
		F3SG_RE2190-30	F39-HGB1620
			F39-HGA0550
		F3SG_RE2270-30	F39-HGB1700
			F39-HGA0550
		F3SG_RE2350-30	F39-HGB1780
			F39-HGA0550
		F3SG_RE2430-30	F39-HGB1860
			F39-HGA0550
		F3SG_RE2510-30	F39-HGB1940
			F39-HGA0550

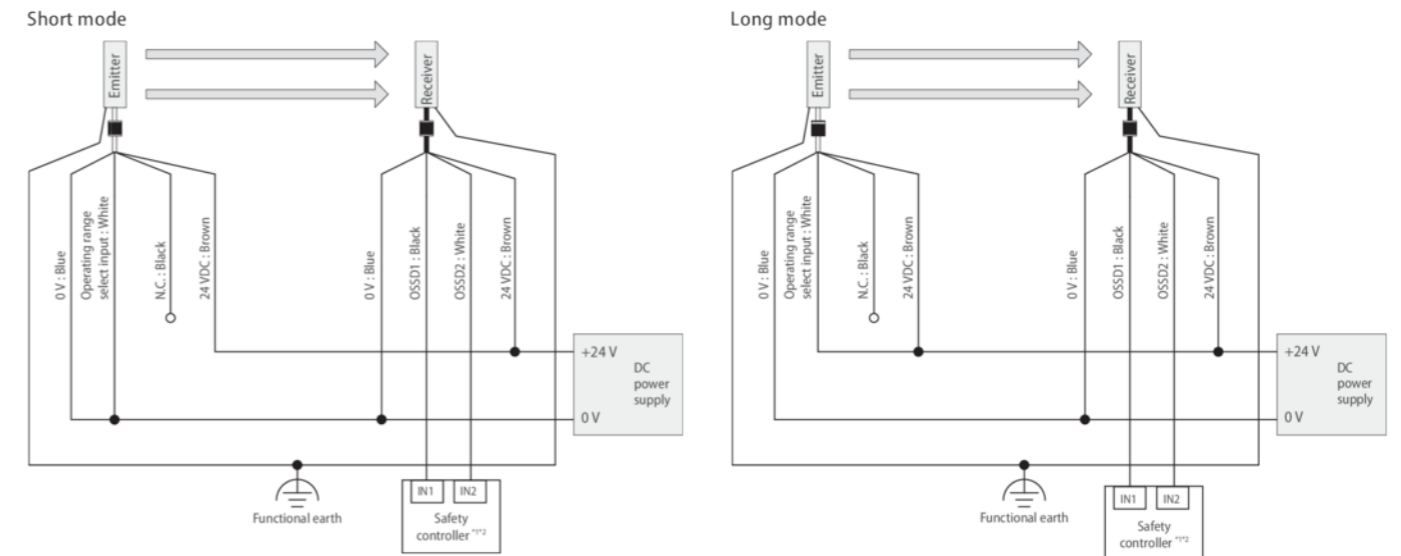


Specifications

Item	F3SG-4RE -14 F3SG-2RE -14	F3SG-4RE -30 F3SG-2RE -30
Type of ESPE (IEC 61496-1)	Type 4 Type 2	F3SG-4RE -14/30 F3SG-2RE -14/30
Detection capability (Opaque objects)	14 mm dia.	30 mm dia.
Protective height	160 to 2080 mm	190 to 2510 mm
Operating range (Wiring connection option)	0.3 to 3.0 m or 0.3 to 10.0 m	0.3 to 7.0 m or 0.3 to 20.0 m
Effective aperture angle (EAA) (IEC 61496-2)	Type 4: ±2.5° max., emitter and receiver at operating range of 3 m or greater Type 2: ±5.0° max., emitter and receiver at operating range of 3 m or greater	
Light source	Infrared LEDs, Wavelength: 870 nm	
Power supply voltage (Vs)	SELV/PELV 24 VDC±20% (ripple p-p 10% max.)	
Safety outputs (OSSD)	F3SG_RE_P: 2 PNP transistor outputs, load current of 300 mA max. F3SG_RE_N: 2 NPN transistor outputs, load current of 300 mA max.	
Test function	Self-test (at power-on, and during operation)	
Response time	ON to OFF (normal mode): 5 to 15ms, OFF to ON: 25 to 75ms	
Ambient temperature	Operating: -10 to 55°C (non-icing) Storage: -25 to 70°C	
Ambient humidity	Operating: 35% to 85% (non-condensing) Storage: 35% to 95%	
Degree of protection (IEC 60529)	IP65 and IP67	
Material	Housing: Aluminum, Cap: PBT, Front window: PMMA, Cable: Oil resistant PVC, Mounting bracket: ZDC2, FE plate: SUS	
Performance level (PL)/ Safety category	Type 4: PLe/Category 4 (EN ISO 13849-1:2008) Type 2: PLc/Category 2 (EN ISO 13849-1:2008)	
PFHd	≤ 9.9 × 10 <sup>-8</sup> (IEC 61508)	
Proof test interval T <sub>M</sub>	Every 20 years (IEC 61508)	

Note: For more information, please check the user manual Z352-E1

Connections (Basic wiring diagram)



\*1 Refer to user's manual Z352-E1 for more information.

\*2 The safety controller and the F3SG-R must share the power supply or be connected to the common terminal of the power supply.

Smart actuator for muting applications

The F3W-MA smart muting actuator is an integrated sensor system utilizing multiple-beam sensor technology to configure muting systems in combination with the safety light curtain.

- Point-to-point detection mode for workpieces with constant shape
- Chattering/void space prevention mode to prevent impact of small object holes


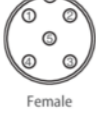




Ordering information


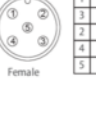
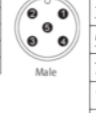

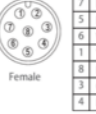
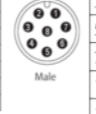
Application	Type	Specification	Order code
	Smart muting actuator for small objects detection	100 mm beam gap between muting trigger beams	F3W-MA0100P
	Smart muting actuator for objects detection	300 mm beam gap between muting trigger beams in accordance with EN/IEC TS 62046	F3W-MA0300P

Accessories (Sold separately)


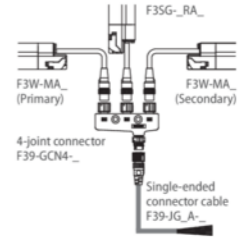
Single-end connector cable

Appearance	Type	Specification	Cable length	Order code		
	Emitter cable M12 connector 5-Pin Color: Gray		1 +24 VDC	Brown	3 m	F39-JG3A-L
			2 TEST	Black	7 m	F39-JG7A-L
			3 0 VDC	Blue	10 m	F39-JG10A-L
			4 Not used	White	15 m	F39-JG15A-L
			5 Not used	Yellow	20 m	F39-JG20A-L
	Receiver cable M12 connector 8-Pin Color: Black		1 Reset	Yellow	3 m	F39-JG3A-D
			2 +24 VDC	Brown	7 m	F39-JG7A-D
			3 MUTE A	Gray	10 m	F39-JG10A-D
			4 MUTE B	Pink	15 m	F39-JG15A-D
			5 OSSD 1	Black	20 m	F39-JG20A-D
			6 OSSD 2	White		
			7 0 VDC	Blue		
			8 AUX(Lamp)	Red		




Double-end connector cable

Appearance	Type	Specification	Cable length	Order code			
	Emitter cable M12 connector 5-Pin Color: Gray	Connected to power cable or double-ended cable  Connected to single-ended cable, or double-ended cable 	0.5 m	F39-JGR5B-L			
			1 m	F39-JG1B-L			
			3 m	F39-JG3B-L			
			5 m	F39-JG5B-L			
			7 m	F39-JG7B-L			
			10 m	F39-JG10B-L			
			15 m	F39-JG15B-L			
			20 m	F39-JG20B-L			
				Receiver cable M12 connector 8-Pin Color: Black	Connected to power cable or double-ended cable  Connected to single-ended cable, or double-ended cable 	0.5 m	F39-JGR5B-D
						1 m	F39-JG1B-D
3 m	F39-JG3B-D						
5 m	F39-JG5B-D						
7 m	F39-JG7B-D						
10 m	F39-JG10B-D						
15 m	F39-JG15B-D						
20 m	F39-JG20B-D						

4-joint plug/socket connector for connection of F3W-MA and F3SG-RA

Appearance	Type	Specification	Order code
	4 joint connector set  Includes one each of: F39-GCN4-D for receiver F39-GCN4-L for emitter		F39-GCN4

Mounting brackets

Appearance	Type	Specification	Order code
	Standard fixed bracket set (Two brackets per set)	Bracket to mount the F3SG-R. Side mounting and backside mounting possible. (Included in the F3SG-R product package)	F39-LGF
	Standard adjustable bracket set (Two brackets per set)	Bracket to mount the F3SG-R. Beam alignment after mounting possible. The angle adjustment range is ±15°. Side mounting and backside mounting possible.	F39-LGA
	Top/Bottom adjustable bracket set* <sup>1</sup> (Four brackets per set)	Bracket to mount the F3SG-R at the top and bottom position. Beam alignment after mounting possible. The angle adjustment range is ±22.5°. Can be used in combination with the standard adjustable brackets.	F39-LGTB

\*<sup>1</sup> Optional available F39-LGTB-1 Top/Bottom adjustable bracket set (4 pcs.) without angle bracket to mount to the wall.

Specifications

Item	F3W-MA0300P	F3W-MA0100P
Beam gap between muting trigger beams	300 mm	100 mm
Operating range (Dip switch option)	0.3 to 7.0 m or 0.3 to 20.0 m	
Light source	Infrared LEDs, Wavelength: 870 nm	
Power supply voltage (Vs)	SELV/PELV 24 VDC ±20% (ripple p-p 10% max.)	
Functions	Scan code selection, operation mode selection (Point to point detection/chattering and void space prevention), Off-delay, muting enable, muting trigger beam allocation, operating range selection	
Ambient temperature	Operating	-10 to 55°C (non-icing)
	Storage	-25 to 70°C
Ambient humidity	Operating	35% to 85% (non-condensing)
	Storage	35% to 95%
Degree of protection (IEC 60529)	IP65 and IP67	
Material	Housing: Aluminum, Cap: PBT, Front window: PMMA, Cable: Oil resistant PVC, Mounting bracket: ZDC2, FE plate: SUS	

Note: For more information, please check the user manual Z355-E1



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Top ranking in Dow Jones Sustainability Index  
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11,000 + issued and pending patents

# 37,000

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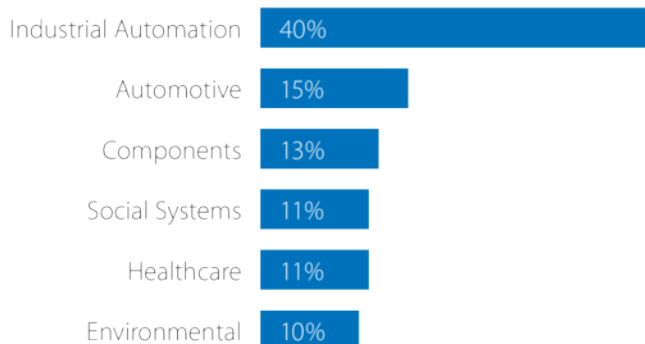
# 210

Locations worldwide

# 22

Countries in EMEA

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