

# Safety Light Curtain Easy type

# F3SG-RE

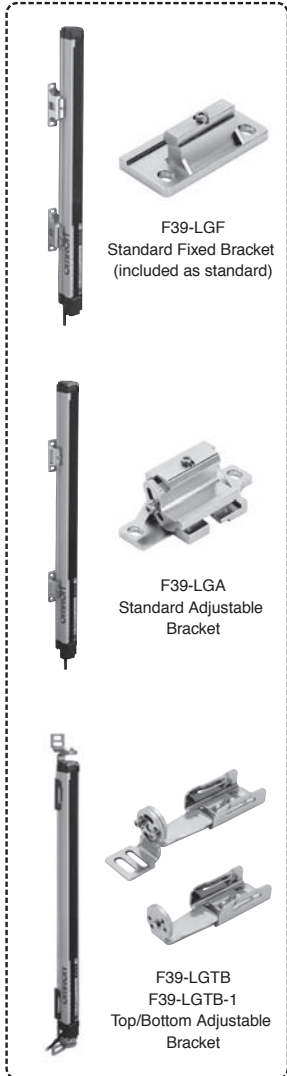
## Easy-to-use Safety Sensor Ideal for Simple On/Off Detection Applications

- Provides simple safety functions by reducing errors
- Simple wiring with only 4 wires
- Fast response time of 5 ms

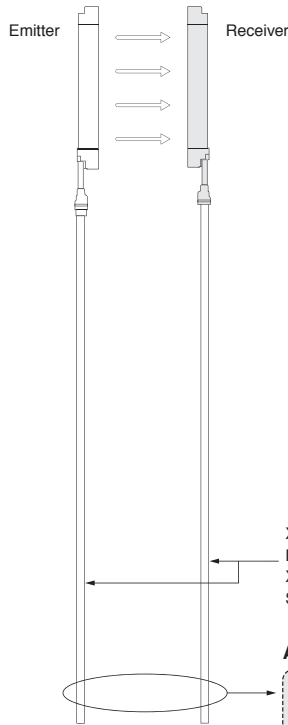


## System Configuration

### Mounting bracket



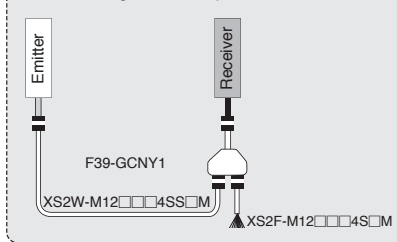
### Accessory



XS2W-M12□□□4SS□M  
Double-Ended Cable  
XS2F-M12□□□4S□M  
Single-Ended Cable  
or

### Accessory

F39-GCNY1  
XS2W-M12□□□4SS□M  
XS2F-M12□□□4S□M  
Reduced wiring connector system



### Recommended safety controller \*

**NX/NE1A-series**  
Safety Network Controller

**G9SP-series**  
Safety Controller

**G9SE/G9SA-series**  
Safety Relay Unit

**G9SX-series**  
Flexible Safety Unit

**G7SA/G7S-E**  
Relays with Forcibly Guided Contacts

\* The recommended safety controller is required to build a safety circuit using emergency stop switches and door switches.

## Main Units

Safety Light Curtain  
Finger protection

Number of beams	Protective height (mm)	Model	
		PNP output	NPN output
15	160	F3SG-4RE0160P14	F3SG-4RE0160N14
23	240	F3SG-4RE0240P14	F3SG-4RE0240N14
31	320	F3SG-4RE0320P14	F3SG-4RE0320N14
39	400	F3SG-4RE0400P14	F3SG-4RE0400N14
47	480	F3SG-4RE0480P14	F3SG-4RE0480N14
55	560	F3SG-4RE0560P14	F3SG-4RE0560N14
63	640	F3SG-4RE0640P14	F3SG-4RE0640N14
71	720	F3SG-4RE0720P14	F3SG-4RE0720N14
79	800	F3SG-4RE0800P14	F3SG-4RE0800N14
87	880	F3SG-4RE0880P14	F3SG-4RE0880N14
95	960	F3SG-4RE0960P14	F3SG-4RE0960N14
103	1,040	F3SG-4RE1040P14	F3SG-4RE1040N14
111	1,120	F3SG-4RE1120P14	F3SG-4RE1120N14
119	1,200	F3SG-4RE1200P14	F3SG-4RE1200N14
127	1,280	F3SG-4RE1280P14	F3SG-4RE1280N14
135	1,360	F3SG-4RE1360P14	F3SG-4RE1360N14
143	1,440	F3SG-4RE1440P14	F3SG-4RE1440N14
151	1,520	F3SG-4RE1520P14	F3SG-4RE1520N14
159	1,600	F3SG-4RE1600P14	F3SG-4RE1600N14
167	1,680	F3SG-4RE1680P14	F3SG-4RE1680N14
175	1,760	F3SG-4RE1760P14	F3SG-4RE1760N14
183	1,840	F3SG-4RE1840P14	F3SG-4RE1840N14
191	1,920	F3SG-4RE1920P14	F3SG-4RE1920N14
199	2,000	F3SG-4RE2000P14	F3SG-4RE2000N14
207	2,080	F3SG-4RE2080P14	F3SG-4RE2080N14

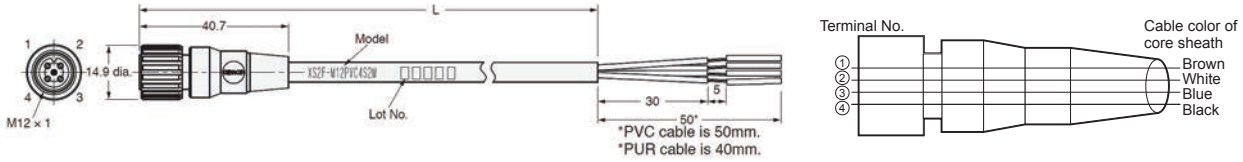
## Hand and arm protection

Number of beams	Protective height (mm)	Model	
		PNP	NPN
8	190	F3SG-4RE0190P30	F3SG-4RE0190N30
12	270	F3SG-4RE0270P30	F3SG-4RE0270N30
16	350	F3SG-4RE0350P30	F3SG-4RE0350N30
20	430	F3SG-4RE0430P30	F3SG-4RE0430N30
24	510	F3SG-4RE0510P30	F3SG-4RE0510N30
28	590	F3SG-4RE0590P30	F3SG-4RE0590N30
32	670	F3SG-4RE0670P30	F3SG-4RE0670N30
36	750	F3SG-4RE0750P30	F3SG-4RE0750N30
40	830	F3SG-4RE0830P30	F3SG-4RE0830N30
44	910	F3SG-4RE0910P30	F3SG-4RE0910N30
48	990	F3SG-4RE0990P30	F3SG-4RE0990N30
52	1,070	F3SG-4RE1070P30	F3SG-4RE1070N30
56	1,150	F3SG-4RE1150P30	F3SG-4RE1150N30
60	1,230	F3SG-4RE1230P30	F3SG-4RE1230N30
64	1,310	F3SG-4RE1310P30	F3SG-4RE1310N30
68	1,390	F3SG-4RE1390P30	F3SG-4RE1390N30
72	1,470	F3SG-4RE1470P30	F3SG-4RE1470N30
76	1,550	F3SG-4RE1550P30	F3SG-4RE1550N30
80	1,630	F3SG-4RE1630P30	F3SG-4RE1630N30
84	1,710	F3SG-4RE1710P30	F3SG-4RE1710N30
88	1,790	F3SG-4RE1790P30	F3SG-4RE1790N30
92	1,870	F3SG-4RE1870P30	F3SG-4RE1870N30
96	1,950	F3SG-4RE1950P30	F3SG-4RE1950N30
100	2,030	F3SG-4RE2030P30	F3SG-4RE2030N30
104	2,110	F3SG-4RE2110P30	F3SG-4RE2110N30
108	2,190	F3SG-4RE2190P30	F3SG-4RE2190N30
112	2,270	F3SG-4RE2270P30	F3SG-4RE2270N30
116	2,350	F3SG-4RE2350P30	F3SG-4RE2350N30
120	2,430	F3SG-4RE2430P30	F3SG-4RE2430N30
124	2,510	F3SG-4RE2510P30	F3SG-4RE2510N30

### Accessories (Sold separately)

Single-Ended Cable (Round Water-resistant Connector: Connected to Cable, Socket on One Cable End)  
(XS2F-M12□□□4S□M, sold separately)

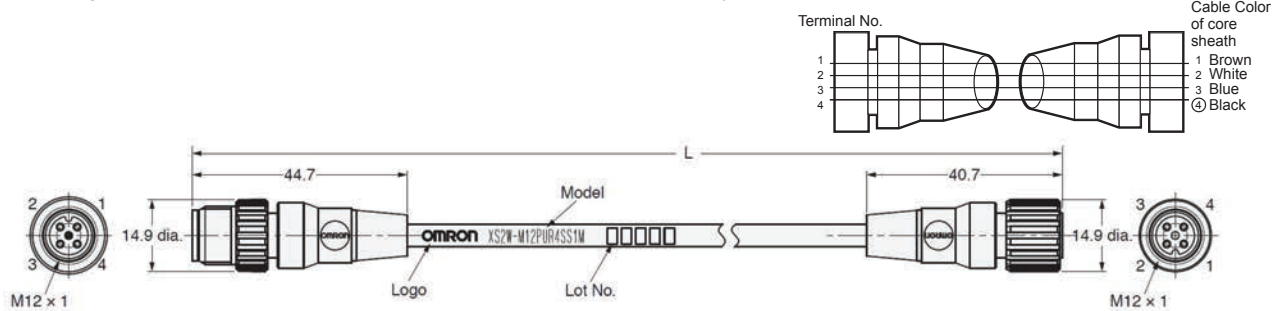
(Unit: mm)



Appearance	Sheath material	Cable length	Model	Specifications
	PVC	2 m	<b>XS2F-M12PVC4S2M</b>	M12 connector (4-pin), 4 wires
	PVC	5 m	<b>XS2F-M12PVC4S5M</b>	
	PVC	10 m	<b>XS2F-M12PVC4S10M</b>	
	PUR	2 m	<b>XS2F-M12PUR4S2M</b>	
	PUR	5 m	<b>XS2F-M12PUR4S5M</b>	
	PUR	10 m	<b>XS2F-M12PUR4S10M</b>	

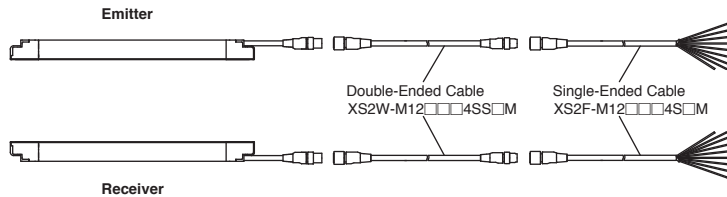
Double-Ended Cable (Round Water-resistant Connector: Connectors Connected to Cable, Socket and Plug on Cable Ends) (XS2W-M12□□□4SS□M, sold separately)

(Unit: mm)



Appearance	Sheath material	Cable length	Model	Specifications
	PVC	2 m	<b>XS2W-M12PVC4SS2M</b>	M12 connector (4-pin), on both ends
	PVC	5 m	<b>XS2W-M12PVC4SS5M</b>	
	PVC	10 m	<b>XS2W-M12PVC4SS10M</b>	
	PUR	2 m	<b>XS2W-M12PUR4SS2M</b>	
	PUR	5 m	<b>XS2W-M12PUR4SS5M</b>	
	PUR	10 m	<b>XS2W-M12PUR4SS10M</b>	





<Connection example>



### Y-Joint Plug/Socket Connector for Easy type F3SG-RE

Appearance	Type	Cable length	Specifications	Model
	M12 connectors. Used for reduced wiring.	0.5 m	<p>When using the reduced wiring connector system F39-GCNY1, the Operating Range Selection is fixed to Long Mode.</p>	<b>F39-GCNY1</b>

## Sensor Mounting Brackets

Appearance	Specification	Application	Model
	Standard Fixed Bracket	Bracket to mount the F3SG-R. Side mounting and backside mounting possible. (This is included as a standard accessory with the product. It comes as a set of two Brackets. Refer to note *1 for the number of sets provided with each model.)	F39-LGF
	Standard Adjustable Bracket	Bracket to mount the F3SG-R. Beam alignment after mounting possible. The angle adjustment range is $\pm 15^\circ$ . Side mounting and backside mounting possible. (Sold separately as a set of two Brackets. Refer to note *1 for the number of sets required for each model.)	F39-LGA
	Top/Bottom Adjustable Bracket *2	Bracket to mount the F3SG-R. Use this bracket at the top and bottom positions of the F3SG-R. Beam alignment after mounting possible. The angle adjustment range is $\pm 22.5^\circ$ . Side mounting and backside mounting possible. (Sold separately. 4 brackets per set.)	F39-LGTB
	Top/Bottom Adjustable Bracket *2 (For user-made mounting part)	Top/Bottom Adjustable Bracket without a bracket to mount to the wall. Use the user's own wall mounting part to suit the machine. (Sold separately. 4 brackets per set.)	F39-LGTB-1

\*1. [for F3SG-4RE□□□□□14] Protective height of 0160 to 1200: 2 sets, Protective height of 1280 to 2080: 3 sets  
[for F3SG-4RE□□□□□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. Top/Bottom Adjustable Bracket cannot be used with the Standard Fixed Bracket. Use with the Standard Adjustable Bracket.

Using Top/Bottom Adjustable Brackets with Standard Adjustable Brackets

F3SG-4RE□□□□□14: Protective height of 1120 to 1920: 1 set of Top/Bottom Adjustable Brackets and 1 set of Standard Adjustable Brackets  
Protective height of 2000 to 2080: 1 set of Top/Bottom Adjustable Brackets and 2 sets of Standard Adjustable Brackets  
Protective height of 1040 or lower: Standard Adjustable Brackets cannot be used.

F3SG-4RE□□□□□30: Protective height of 1150 to 1950: 1 set of Top/Bottom Adjustable Brackets and 1 set of Standard Adjustable Brackets  
Protective height of 2030 to 2510: 1 set of Top/Bottom Adjustable Brackets and 2 sets of Standard Adjustable Brackets  
Protective height of 1070 or lower: Standard Adjustable Brackets cannot be used.


## Laser Pointer for F3SG-R

Appearance	Specifications	Model
	The laser pointer is attached on the optical surface of the F3SG-R to help coarse adjustment of beams.	F39-PTG

## Spatter Protection Cover (2 covers per set, one for emitter and one for receiver)

Spatter Protection Covers include the 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		Model
	Finger protection	Hand and arm protection	
	F3SG-4RE0160□14	F3SG-4RE0190□30	F39-HGB0180
	F3SG-4RE0240□14	F3SG-4RE0270□30	F39-HGB0260
	F3SG-4RE0320□14	F3SG-4RE0350□30	F39-HGB0340
	F3SG-4RE0400□14	F3SG-4RE0430□30	F39-HGB0420
	F3SG-4RE0480□14	F3SG-4RE0510□30	F39-HGB0500
	F3SG-4RE0560□14	F3SG-4RE0590□30	F39-HGB0580
	F3SG-4RE0640□14	F3SG-4RE0670□30	F39-HGB0660
	F3SG-4RE0720□14	F3SG-4RE0750□30	F39-HGB0740
	F3SG-4RE0800□14	F3SG-4RE0830□30	F39-HGB0820
	F3SG-4RE0880□14	F3SG-4RE0910□30	F39-HGB0900
	F3SG-4RE0960□14	F3SG-4RE0990□30	F39-HGB0980
	F3SG-4RE1040□14	F3SG-4RE1070□30	F39-HGB1060
	F3SG-4RE1120□14	F3SG-4RE1150□30	F39-HGB1140
	F3SG-4RE1200□14	F3SG-4RE1230□30	F39-HGB1220
	F3SG-4RE1280□14	F3SG-4RE1310□30	F39-HGB1300
	F3SG-4RE1360□14	F3SG-4RE1390□30	F39-HGB1380
	F3SG-4RE1440□14	F3SG-4RE1470□30	F39-HGB1460
	F3SG-4RE1520□14	F3SG-4RE1550□30	F39-HGB1540
	F3SG-4RE1600□14	F3SG-4RE1630□30	F39-HGB1620
	F3SG-4RE1680□14	F3SG-4RE1710□30	F39-HGB1700
	F3SG-4RE1760□14	F3SG-4RE1790□30	F39-HGB1780
	F3SG-4RE1840□14	F3SG-4RE1870□30	F39-HGB1860
	F3SG-4RE1920□14	F3SG-4RE1950□30	F39-HGB1940
	F3SG-4RE2000□14	F3SG-4RE2030□30	F39-HGB1460 F39-HGA0550
	F3SG-4RE2080□14	F3SG-4RE2110□30	F39-HGB1540 F39-HGA0550
	-	F3SG-4RE2190□30	F39-HGB1620 F39-HGA0550
	-	F3SG-4RE2270□30	F39-HGB1700 F39-HGA0550
	-	F3SG-4RE2350□30	F39-HGB1780 F39-HGA0550
-	F3SG-4RE2430□30	F39-HGB1860 F39-HGA0550	
-	F3SG-4RE2510□30	F39-HGB1940 F39-HGA0550	

Note: The operating range of the Safety Light Curtain attached with the product is 10% shorter than the rating.

### Test Rod

Diameter	Model
14 mm dia.	STI-TO14
30 mm dia.	STI-TO30

## Ratings/Specifications

### Main unit

The □□□□ in the model names indicate the protective heights in millimeters.

		F3SG-4RE□□□□-14	F3SG-4RE□□□□-30	
Performance	Type of ESPE (IEC 61496-1)	Type 4	F3SG-4RE□□□□14/30	
	Object Resolution (Detection Capability)	Opaque objects		
	Beam Gap	10mm	30-mm dia.	
	Number of Beams	15 to 207	8 to 124	
	Lens Size	5.2 × 3.4 (W×H) mm		
	Protective Height	160 to 2080 mm (6.3 to 81.9 inch)	190 to 2510 mm (7.3 to 98.7 inch)	
	Operating Range	Long	0.3 to 10.0 m (1 to 32 ft.)	0.3 to 20.0 m (1 to 65 ft.)
		Short	0.3 to 3.0 m (1 to 10 ft.)	0.3 to 7.0 m (1 to 23 ft.)
	Response Time	ON to OFF	5 to 15ms *1	
		OFF to ON	25 to 75ms *1	
*1. Response time when used in one segment system Refer to page 96.				
Effective Aperture Angle (EAA) (IEC61496-2)	Type 4	±2.5° max., emitter and receiver at operating range of 3 m or greater		

		F3SG-4RE□□□□-14	F3SG-4RE□□□□-30	
Performance	Light Source	Infrared LEDs, Wavelength: 870 nm		
	Startup Waiting Time	2 s max.		
Electrical	Power Supply Voltage (Vs)	SELV/PELV 24 VDC±20% (ripple p-p 10% max.)		
	Current Consumption	Refer to page 96		
	Safety Outputs (OSSD)	F3SG-□RE□□□□P□□: Two PNP transistor outputs		
		F3SG-□RE□□□□N□□: Two NPN transistor outputs		
	Load current of 300 mA max., Residual voltage of 2 V max. (except for voltage drop due to cable extension), Capacitive load of 1 μF max., Inductive load of 2.2 H max. *1			
	Leakage current of 1 mA max. (PNP), 2 mA max. (NPN) *2			
	*1.The load inductance is the maximum value when the safety output frequently repeats ON and OFF. When you use the safety output at 4 Hz or less, the usable load inductance becomes larger.			
	*2.These values must be taken into consideration when connecting elements including a capacitive load such as a capacitor.			
	Output Operation Mode	Safety Output	Light-ON (Safety output is enabled when the receiver receives an emitting signal.)	
	Input Voltage	ON Voltage	Operating Range Select Input: Long: 9 V to Vs (sink current 3 mA max.) *	
		OFF Voltage	Short: 0 to 3 V (source current 3 mA max.)	
		* The Vs indicates a supply voltage value in your environment.		
Overvoltage Category (IEC60664-1)		II		
Indicators		Refer to page 97		
Protective Circuit		Output short protection, Power supply reverse polarity protection		
Insulation Resistance		20 MΩ or higher (500 VDC megger)		
Dielectric Strength		1,000 VAC, 50/60 Hz (1 min)		
Functional	Test Function	Self-test (at power-on, and during operation)		
Environmental	Ambient Temperature	Operating	-10 to 55°C (14 to 131°F) (non-icing)	
		Storage	-25 to 70°C (-13 to 158°F)	
	Ambient Humidity	Operating	35% to 85% (non-condensing)	
		Storage	35% to 95%	
	Ambient Illuminance	Incandescent lamp: 3,000 lx max. on receiver surface Sunlight: 10,000 lx max. on receiver surface		
	Degree of Protection (IEC 60529)	IP65 and IP67		
	Vibration Resistance (IEC 61496-1)	10 to 55 Hz, Multiple amplitude of 0.7 mm, 20 sweeps for all 3 axes		
	Shock Resistance (IEC 61496-1)	100 m/s <sup>2</sup> , 1000 shocks for all 3 axes		
Pollution Degree (IEC 60664-1)	Pollution Degree 3			
Connections	Power cable	Type of Connection	M12 connectors: 4-pin, IP67 rated when mated,Cables prewired to the sensors	
		Number of Wires	Emitter: 4, Receiver: 4	
		Cable Length	0.3 m	
		Cable Diameter	6 mm	
		Minimum Bending Radius	R5 mm	
	Extension cable - Single-Ended Cable - Double-Ended Cable	Type of Connection	Use the XS2□-M12□□□4S□□M	
		Number of Wires		
Cable Length				
Extension of Power Cable	Cable Diameter	100 m max.		
	Minimum Bending Radius			
Material	Material	Housing: Aluminum Cap: PBT Front window: PMMA Cable: Oil resistant PVC Mounting Bracket: ZDC2 FE plate: SUS		
	Weight (packaged)	Refer to page 96.		
	Included Accessories	Safety Precautions, Quick Installation Manual, Standard Fixed Bracket*1, Troubleshooting Guide Sticker  *1.The quantity of Standard Fixed Brackets included varies depending on the protective height. [F3SG-□RE□□□□14] - Protective height of 0160 to 1200: 2 sets - Protective height of 1280 to 2080: 3 sets [F3SG-□RE□□□□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		
Conformity	Conforming standards		Refer to page 26	
	Performance Level (PL)/Safety category	Type 4	PL e/Category 4 (EN ISO 13849-1:2008)	
	PFHd	9.1 × 10 <sup>-9</sup> (IEC 61508)		
	Proof test interval T <sub>M</sub>	Every 20 years (IEC 61508)		
	SFF	99% (IEC 61508)		
	HFT	1 (IEC 61508)		
Classification		Type B (IEC 61508-2)		

## List of Models/Response Time/Current Consumption/Weight

## F3SG-RE□□□□□□-14

Model	Number of Beams	Protective Height [mm]	Response Time [ms] *1			Current Consumption [mA]		Weight [kg] *2
			ON→OFF	OFF (Synchronized) →ON	OFF (Not synchronized) →ON	Emitter	Receiver	
F3SG-RE0160□14	15	160	5	25	125	45	50	1.7
F3SG-RE0240□14	23	240	5	25	125	55	55	1.9
F3SG-RE0320□14	31	320	7	35	135	55	55	2.1
F3SG-RE0400□14	39	400	7	35	135	65	60	2.6
F3SG-RE0480□14	47	480	7	35	135	70	60	2.8
F3SG-RE0560□14	55	560	7	35	135	80	60	3.1
F3SG-RE0640□14	63	640	7	35	135	85	65	3.3
F3SG-RE0720□14	71	720	9	45	145	80	65	3.8
F3SG-RE0800□14	79	800	9	45	145	85	70	4.0
F3SG-RE0880□14	87	880	9	45	145	90	70	4.2
F3SG-RE0960□14	95	960	9	45	145	95	75	4.4
F3SG-RE1040□14	103	1040	9	45	145	100	75	4.6
F3SG-RE1120□14	111	1120	11	55	155	90	75	4.7
F3SG-RE1200□14	119	1200	11	55	155	95	80	4.9
F3SG-RE1280□14	127	1280	11	55	155	100	80	5.1
F3SG-RE1360□14	135	1360	11	55	155	105	85	5.6
F3SG-RE1440□14	143	1440	11	55	155	110	85	5.7
F3SG-RE1520□14	151	1520	13	65	165	100	90	5.9
F3SG-RE1600□14	159	1600	13	65	165	105	90	6.5
F3SG-RE1680□14	167	1680	13	65	165	110	95	6.7
F3SG-RE1760□14	175	1760	13	65	165	115	95	6.9
F3SG-RE1840□14	183	1840	13	65	165	115	95	7.1
F3SG-RE1920□14	191	1920	15	75	175	110	100	7.3
F3SG-RE2000□14	199	2000	15	75	175	115	100	7.4
F3SG-RE2080□14	207	2080	15	75	175	115	105	8.0

\*1. The maximum speed of movement of a test rod up to which the detection capability is maintained is 2.0 m/s.

\*2. The weight includes an emitter, a receiver and included brackets in a product package.

## F3SG-RE□□□□□□30

Model	Number of Beams	Protective Height [mm]	Response Time [ms] *1			Current Consumption [mA]		Weight [kg] *2
			ON→OFF	OFF (Synchronized) →ON	OFF (Not synchronized) →ON	Emitter	Receiver	
F3SG-RE0190□30	8	190	5	25	125	40	50	1.7
F3SG-RE0270□30	12	270	5	25	125	45	50	1.9
F3SG-RE0350□30	16	350	5	25	125	50	50	2.1
F3SG-RE0430□30	20	430	5	25	125	55	55	2.6
F3SG-RE0510□30	24	510	5	25	125	60	55	2.8
F3SG-RE0590□30	28	590	7	35	135	50	55	3.0
F3SG-RE0670□30	32	670	7	35	135	55	55	3.2
F3SG-RE0750□30	36	750	7	35	135	60	60	3.8
F3SG-RE0830□30	40	830	7	35	135	65	60	4.0
F3SG-RE0910□30	44	910	7	35	135	65	60	4.2
F3SG-RE0990□30	48	990	7	35	135	70	60	4.4
F3SG-RE1070□30	52	1070	7	35	135	75	60	4.5
F3SG-RE1150□30	56	1150	7	35	135	80	65	4.7
F3SG-RE1230□30	60	1230	7	35	135	85	65	4.9
F3SG-RE1310□30	64	1310	7	35	135	85	65	5.1
F3SG-RE1390□30	68	1390	9	45	145	75	65	5.5
F3SG-RE1470□30	72	1470	9	45	145	80	65	5.7
F3SG-RE1550□30	76	1550	9	45	145	80	70	5.9
F3SG-RE1630□30	80	1630	9	45	145	85	70	6.4
F3SG-RE1710□30	84	1710	9	45	145	85	70	6.6
F3SG-RE1790□30	88	1790	9	45	145	90	70	6.8
F3SG-RE1870□30	92	1870	9	45	145	95	75	7.0
F3SG-RE1950□30	96	1950	9	45	145	95	75	7.2
F3SG-RE2030□30	100	2030	9	45	145	100	75	7.3
F3SG-RE2110□30	104	2110	9	45	145	100	75	7.9
F3SG-RE2190□30	108	2190	11	55	155	90	75	8.1
F3SG-RE2270□30	112	2270	11	55	155	95	80	8.2
F3SG-RE2350□30	116	2350	11	55	155	95	80	8.7
F3SG-RE2430□30	120	2430	11	55	155	95	80	8.8
F3SG-RE2510□30	124	2510	11	55	155	100	80	9.0

\*1. The maximum speed of movement of a test rod up to which the detection capability is maintained is 2.0 m/s.

\*2. The weight includes an emitter, a receiver and included brackets in a product package.

## LED Indicator Status

### Emitter

Name of Indicator		Color	Illuminated	Blinking
Operating range	LONG	Green	Long range mode is selected	Lockout state due to Operating range selection setting error
Power	POWER	Green	Power is ON.	Error due to noise
Lockout	LOCKOUT	Red	–	Lockout state due to error in emitter

### Receiver

Name of Indicator		Color	Illuminated	Blinking
Top-beam-state	TOP	Blue	The top beam is unblocked	–
Internal error	INTERNAL	Red	–	Lockout state due to Internal error, or error due to abnormal power supply or noise
Lockout	LOCKOUT	Red	–	Lockout state due to error in receiver
Stable-state	STB	Green	Incident light level is 170% or higher of ON threshold	Safety output is instantaneously turned OFF due to ambient light or vibration
ON/OFF	ON/OFF	Green	Safety output is in ON state	–
		Red	Safety output is in OFF state	Lockout state due to Safety Output error, or error due to abnormal power supply or noise
Communication	COM	Green	Synchronization between emitter and receiver is maintained	Lockout state due to Communication error, or error due to abnormal power supply or noise
Bottom-beam-state	BTM	Blue	The bottom beam is unblocked	–