

Safety Light Curtain Advanced type

F3SG-RA

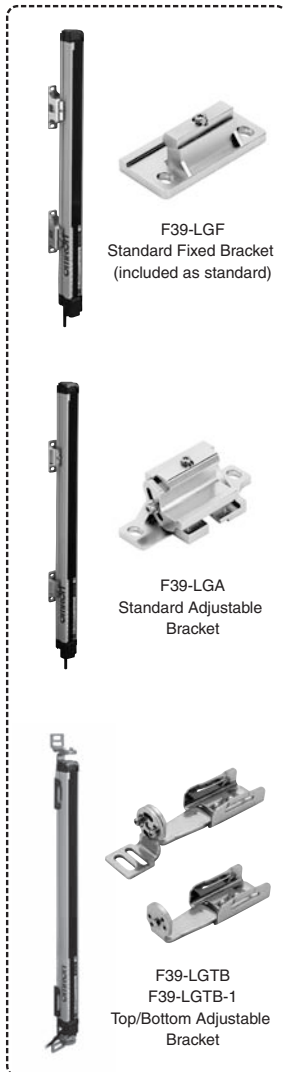
Offers Both Durability and Reliability

- Rugged and compact
- New muting function to increase both productivity and safety
- All models designed for global use. PNP/NPN selection by DIP switch
- Conforming to major international standards including Chinese standard GB/T 4584

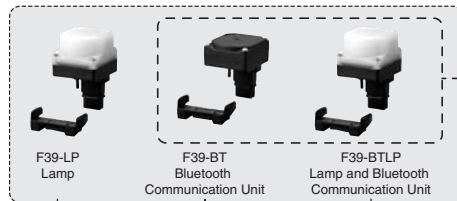


System Configuration

Mounting bracket

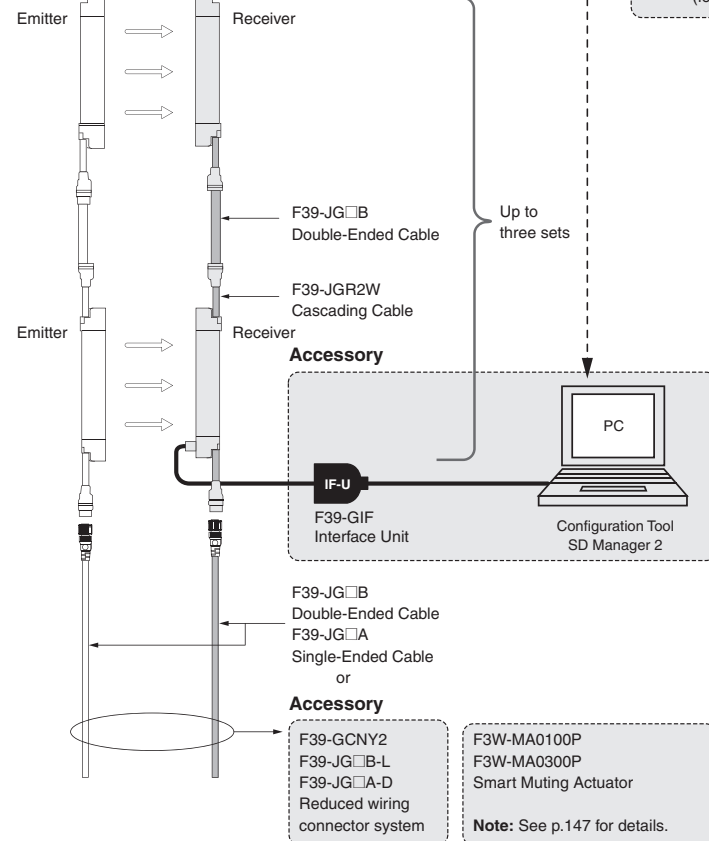
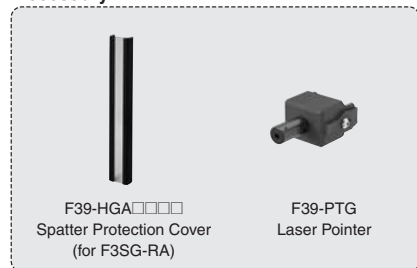


Accessory



Bluetooth

Accessory



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.

Ordering Information

Main Units

Safety Light Curtain

Finger protection

Number of beams	Protective height (mm)	Model
15	160	F3SG-4RA0160-14
23	240	F3SG-4RA0240-14
31	320	F3SG-4RA0320-14
39	400	F3SG-4RA0400-14
47	480	F3SG-4RA0480-14
55	560	F3SG-4RA0560-14
63	640	F3SG-4RA0640-14
71	720	F3SG-4RA0720-14
79	800	F3SG-4RA0800-14
87	880	F3SG-4RA0880-14
95	960	F3SG-4RA0960-14
103	1040	F3SG-4RA1040-14
111	1120	F3SG-4RA1120-14
119	1200	F3SG-4RA1200-14
127	1280	F3SG-4RA1280-14
135	1360	F3SG-4RA1360-14
143	1440	F3SG-4RA1440-14
151	1520	F3SG-4RA1520-14
159	1600	F3SG-4RA1600-14
167	1680	F3SG-4RA1680-14
175	1760	F3SG-4RA1760-14
183	1840	F3SG-4RA1840-14
191	1920	F3SG-4RA1920-14
199	2000	F3SG-4RA2000-14
207	2080	F3SG-4RA2080-14



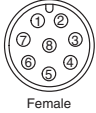
Hand and arm protection

Number of beams	Protective height (mm)	Model
8	190	F3SG-4RA0190-30
12	270	F3SG-4RA0270-30
16	350	F3SG-4RA0350-30
20	430	F3SG-4RA0430-30
24	510	F3SG-4RA0510-30
28	590	F3SG-4RA0590-30
32	670	F3SG-4RA0670-30
36	750	F3SG-4RA0750-30
40	830	F3SG-4RA0830-30
44	910	F3SG-4RA0910-30
48	990	F3SG-4RA0990-30
52	1070	F3SG-4RA1070-30
56	1150	F3SG-4RA1150-30
60	1230	F3SG-4RA1230-30
64	1310	F3SG-4RA1310-30
68	1390	F3SG-4RA1390-30
72	1470	F3SG-4RA1470-30
76	1550	F3SG-4RA1550-30
80	1630	F3SG-4RA1630-30
84	1710	F3SG-4RA1710-30
88	1790	F3SG-4RA1790-30
92	1870	F3SG-4RA1870-30
96	1950	F3SG-4RA1950-30
100	2030	F3SG-4RA2030-30
104	2110	F3SG-4RA2110-30
108	2190	F3SG-4RA2190-30
112	2270	F3SG-4RA2270-30
116	2350	F3SG-4RA2350-30
120	2430	F3SG-4RA2430-30
124	2510	F3SG-4RA2510-30

Accessories (Sold separately)

Safety light curtain connecting cable

Single-Ended Cable *

Appearance	Type	Cable length	Specifications	Model																							
	For emitter M12 connector (5-pin), 5 wires Color: Gray	3 m	Connected to Power Cable or Double-Ended Cable  Female <table border="1" data-bbox="922 385 1129 488"> <tr><td>1</td><td>+24 VDC</td><td>Brown</td></tr> <tr><td>2</td><td>TEST</td><td>Black</td></tr> <tr><td>3</td><td>0 VDC</td><td>Blue</td></tr> <tr><td>4</td><td>Not used</td><td>White</td></tr> <tr><td>5</td><td>Not used</td><td>Yellow</td></tr> </table>	1	+24 VDC	Brown	2	TEST	Black	3	0 VDC	Blue	4	Not used	White	5	Not used	Yellow	F39-JG3A-L								
		1		+24 VDC	Brown																						
		2		TEST	Black																						
		3		0 VDC	Blue																						
		4		Not used	White																						
	5	Not used	Yellow																								
	7 m	F39-JG7A-L																									
	10 m	F39-JG10A-L																									
	15 m	F39-JG15A-L																									
	20 m	F39-JG20A-L																									
For receiver M12 connector (8-pin), 8 wires Color: Black	3 m	Connected to Power Cable or Double-Ended Cable  Female <table border="1" data-bbox="922 564 1129 712"> <tr><td>1</td><td>RESET</td><td>Yellow</td></tr> <tr><td>2</td><td>+24 VDC</td><td>Brown</td></tr> <tr><td>3</td><td>MUTE A</td><td>Gray</td></tr> <tr><td>4</td><td>MUTE B</td><td>Pink</td></tr> <tr><td>5</td><td>OSSD 1</td><td>Black</td></tr> <tr><td>6</td><td>OSSD 2</td><td>White</td></tr> <tr><td>7</td><td>0 VDC</td><td>Blue</td></tr> <tr><td>8</td><td>AUX</td><td>Red</td></tr> </table>	1	RESET	Yellow	2	+24 VDC	Brown	3	MUTE A	Gray	4	MUTE B	Pink	5	OSSD 1	Black	6	OSSD 2	White	7	0 VDC	Blue	8	AUX	Red	F39-JG3A-D
	1		RESET	Yellow																							
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15 m	F39-JG15A-D																										
20 m	F39-JG20A-D																										


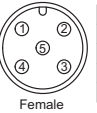

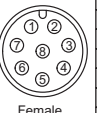

* A set of two Single-Ended Cables (one for emitter and one for receiver) is also available.

Model: Model number without the -L/-D at the end (F39-JG□A)

Note: To extend the cable length to more than 20 m, add the F39-JG□B Double-Ended Cable.

Double-Ended Cable *

For cable extension and simple wiring

Appearance	Type	Cable length	Specifications	Model																																
	For emitter M12 connector (5-pin) on both ends Color: Gray	0.5 m	Connected to Power Cable or Double-Ended Cable  Female <table border="1" data-bbox="817 1025 1098 1137"> <tr><td>1</td><td>Brown</td></tr> <tr><td>2</td><td>Black</td></tr> <tr><td>3</td><td>Blue</td></tr> <tr><td>4</td><td>White</td></tr> <tr><td>5</td><td>Yellow</td></tr> </table> Connected to Single-Ended Cable, or Double-Ended Cable  Male <table border="1" data-bbox="1104 1025 1200 1137"> <tr><td>1</td><td>Brown</td></tr> <tr><td>2</td><td>Black</td></tr> <tr><td>3</td><td>Blue</td></tr> <tr><td>4</td><td>White</td></tr> <tr><td>5</td><td>Yellow</td></tr> </table>	1	Brown	2	Black	3	Blue	4	White	5	Yellow	1	Brown	2	Black	3	Blue	4	White	5	Yellow	F39-JGR5B-L												
		1		Brown																																
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		2		Black																																
		3		Blue																																
		4		White																																
5	Yellow																																			
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																																			
	For receiver M12 connector (8-pin) on both ends Color: Black	0.5 m	Connected to Power Cable or Double-Ended Cable  Female <table border="1" data-bbox="817 1258 1098 1429"> <tr><td>2</td><td>Brown</td></tr> <tr><td>7</td><td>Blue</td></tr> <tr><td>5</td><td>Black</td></tr> <tr><td>6</td><td>White</td></tr> <tr><td>1</td><td>Yellow</td></tr> <tr><td>8</td><td>Red</td></tr> <tr><td>3</td><td>Gray</td></tr> <tr><td>4</td><td>Pink</td></tr> </table> Connected to Single-Ended Cable, or Double-Ended Cable  Male <table border="1" data-bbox="1104 1258 1200 1429"> <tr><td>2</td><td>Brown</td></tr> <tr><td>7</td><td>Blue</td></tr> <tr><td>5</td><td>Black</td></tr> <tr><td>6</td><td>White</td></tr> <tr><td>1</td><td>Yellow</td></tr> <tr><td>8</td><td>Red</td></tr> <tr><td>3</td><td>Gray</td></tr> <tr><td>4</td><td>Pink</td></tr> </table>	2	Brown	7	Blue	5	Black	6	White	1	Yellow	8	Red	3	Gray	4	Pink	2	Brown	7	Blue	5	Black	6	White	1	Yellow	8	Red	3	Gray	4	Pink	F39-JGR5B-D
		2		Brown																																
		7		Blue																																
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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																																			

* A set of two Double-Ended Cables (one for emitter and one for receiver) is also available.

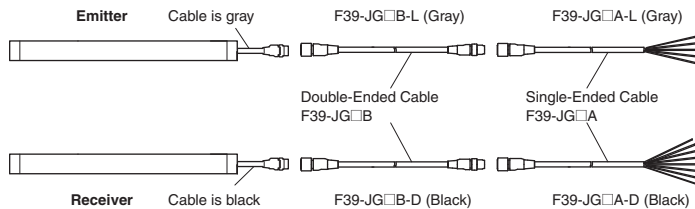
Model: Model number without the -L/-D at the end (F39-JG□B)

Note: To extend the cable length to more than 20 m, add the F39-JG□B Double-Ended Cable to the F39-JG□A Single-Ended Cable.

To extend the cable length to more than 40 m, add several Double-Ended Cables to the Single-Ended Cable.


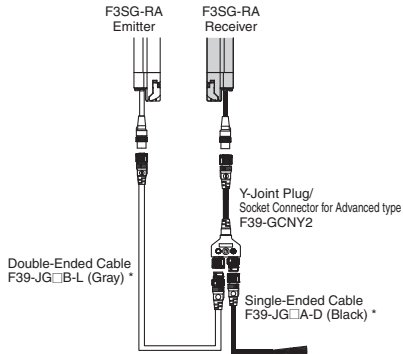
Example: To extend the cable length to 50 m, connect two F39-JG20B (20 m) cables and one F39-JG10A (10 m) cable.

<Connection example>




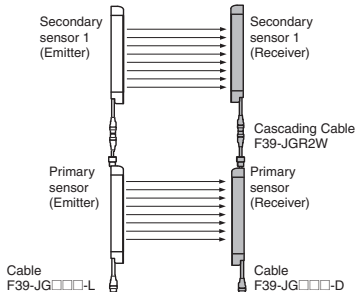
Y-Joint Plug/Socket Connector for F3SG-4RA□□□□-14/-4RA□□□□-30

For reduced wiring

Appearance	Type	Cable length	Specifications	Model
	M12 connectors. Used for reduced wiring.	0.5 m	 <p>F39-GCNY2</p>	F39-GCNY2

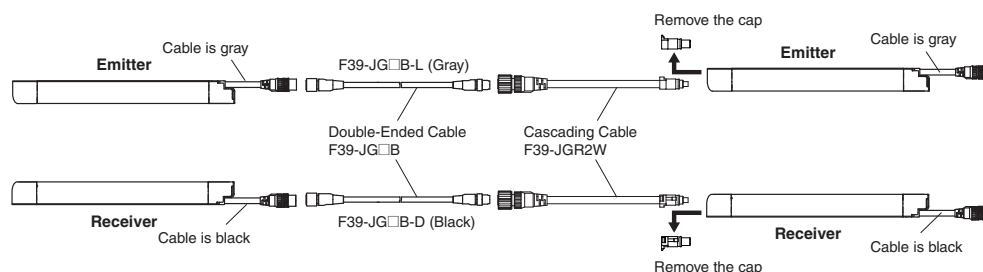
* Order the cable for emitter (end of model: -L) and the cable for receiver (end of model: -D).

Cascading Cable (2 cables per set, for emitter and receiver)





Appearance	Type	Cable length	Specifications	Model
	Emitter cable: Cap (5-pin), M12 connector (5-pin) Receiver cable: Cap (8-pin), M12 connector (8-pin)	0.2 m	 <p>F39-JGR2W</p>	F39-JGR2W

Note: The Double-Ended Cable (up to 10 m: F39-JG10B) can be added to extend the cable length between the series-connected sensors.
Cable length between sensors: 10 m max. (not including cascading cable (F39-JGR2W) and power cable)

<Connection example>



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-4RA□□□□-14]

- Protective height of 0160 to 1200: 2 sets, Protective height of 1280 to 2080: 3 sets

[for F3SG-4RA□□□□-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-4RA□□□□-14: Protective height of 1040 or less: The Standard Adjustable Bracket is not required. Please purchase 1 set of Top/Bottom Adjustable Brackets (F39-LGTB(-1)).

Protective height of 1120 to 1920: Please purchase 1 set of Top/Bottom Adjustable Brackets (F39-LGTB(-1)) and 1 set of Standard Adjustable Brackets (F39-LGA).




Protective height of 2000 to 2080: Please purchase 1 set of Top/Bottom Adjustable Brackets (F39-LGTB(-1)) and 2 sets of Standard Adjustable Brackets (F39-LGA).

F3SG-4RA□□□□-30: Protective height of 1070 or less: The Standard Adjustable Bracket is not required. Please purchase 1 set of Top/Bottom Adjustable Brackets (F39-LGTB(-1)).


Protective height of 1150 to 1950: Please purchase 1 set of Top/Bottom Adjustable Brackets (F39-LGTB(-1)) and 1 set of Standard Adjustable Brackets (F39-LGA).

Protective height of 2030 to 2510: Please purchase 1 set of Top/Bottom Adjustable Brackets (F39-LGTB(-1)) and 2 sets of Standard Adjustable Brackets (F39-LGA).


Interface units and configuration tool SD Manager 2

Appearance	Type	Specifications	Model
	SD Manager 2	The Configuration Tool SD Manager 2 is available to download from our website at http://www.ia.omron.com/f3sg-r_tool . 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 Accessories: 0.3-m Dedicated Cable 1 (1), 2-m Dedicated Cable 2 (1), Instruction Manual	F39-GIF
	Bluetooth Communication Unit	F39-BT bluetooth unit to enable bluetooth on the F3SG-RA IP67 rated when mated.	F39-BT


Lamp

Appearance	Type	Specifications	Model
	Lamp	The lamp can be connected to a receiver and turned ON based on the operation of F3SG-RA/RR.	F39-LP
	Lamp and Bluetooth Communication Unit	The lamp can indicate red, orange, and green colors, to which three different states can be assigned. IP67 rated when mated.	F39-BTLP

End Cap

Appearance	Specifications	Model
	Housing color: Black For both emitter and receiver (Attached to the F3SG-RA. The End Cap can be purchased if lost.) IP67 rated when mated.	F39-CNM

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

F3SG-RA

Spatter Protection Cover (2 covers per set, one for emitter and one for 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		Model
	Finger protection	Hand and arm protection	
	F3SG-4RA0160-14	F3SG-4RA0190-30	F39-HGA0200
	F3SG-4RA0240-14	F3SG-4RA0270-30	F39-HGA0280
	F3SG-4RA0320-14	F3SG-4RA0350-30	F39-HGA0360
	F3SG-4RA0400-14	F3SG-4RA0430-30	F39-HGA0440
	F3SG-4RA0480-14	F3SG-4RA0510-30	F39-HGA0520
	F3SG-4RA0560-14	F3SG-4RA0590-30	F39-HGA0600
	F3SG-4RA0640-14	F3SG-4RA0670-30	F39-HGA0680
	F3SG-4RA0720-14	F3SG-4RA0750-30	F39-HGA0760
	F3SG-4RA0800-14	F3SG-4RA0830-30	F39-HGA0840
	F3SG-4RA0880-14	F3SG-4RA0910-30	F39-HGA0920
	F3SG-4RA0960-14	F3SG-4RA0990-30	F39-HGA1000
	F3SG-4RA1040-14	F3SG-4RA1070-30	F39-HGA1080
	F3SG-4RA1120-14	F3SG-4RA1150-30	F39-HGA1160
	F3SG-4RA1200-14	F3SG-4RA1230-30	F39-HGA1240
	F3SG-4RA1280-14	F3SG-4RA1310-30	F39-HGA1320
	F3SG-4RA1360-14	F3SG-4RA1390-30	F39-HGA1400
	F3SG-4RA1440-14	F3SG-4RA1470-30	F39-HGA1480
	F3SG-4RA1520-14	F3SG-4RA1550-30	F39-HGA1560
	F3SG-4RA1600-14	F3SG-4RA1630-30	F39-HGA1640
	F3SG-4RA1680-14	F3SG-4RA1710-30	F39-HGA1720
	F3SG-4RA1760-14	F3SG-4RA1790-30	F39-HGA1800
	F3SG-4RA1840-14	F3SG-4RA1870-30	F39-HGA1880
	F3SG-4RA1920-14	F3SG-4RA1950-30	F39-HGA1960
	F3SG-4RA2000-14	F3SG-4RA2030-30	F39-HGA1480
			F39-HGA0550
	F3SG-4RA2080-14	F3SG-4RA2110-30	F39-HGA1560
			F39-HGA0550
	-	F3SG-4RA2190-30	F39-HGA1640
			F39-HGA0550
	-	F3SG-4RA2270-30	F39-HGA1720
F39-HGA0550			
-	F3SG-4RA2350-30	F39-HGA1800	
		F39-HGA0550	
-	F3SG-4RA2430-30	F39-HGA1880	
		F39-HGA0550	
-	F3SG-4RA2510-30	F39-HGA1960	
		F39-HGA0550	

Note: 1. The operating range of the Safety Light Curtain attached with the product is 10% shorter than the rating.

2. The product extends over the DIP Switch cover of the Safety Light Curtain. Be sure to use the product only after all required settings are made to the DIP Switch.

Test Rod

Diameter	Model
14 mm dia.	F39-TRD14
30 mm dia.	F39-TRD30

Ratings and Specifications

Main unit

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

		F3SG-4RA□□□□-14 F3SG-2RA□□□□-14	F3SG-4RA□□□□-30 F3SG-2RA□□□□-30	
Type of ESPE (IEC 61496-1)	Type 4	F3SG-4RA□□□□-14/-30		
	Type 2	F3SG-2RA□□□□-14/-30		
Performance	Object Resolution (Detection Capability)	Opaque objects		
	Beam Gap	14-mm dia.	30-mm dia.	
	Number of Beams	10 mm	20 mm	
	Lens Size	15 to 207	8 to 124	
	Protective Height	5.2 × 3.4 (W × H) mm	7-mm dia.	
	Operating Range	Long	160 to 2080 mm (6.3 to 81.9 inch)	190 to 2510 mm (7.3 to 98.7 inch)
		Short	0.3 to 10.0 m (1 to 32 ft.)	0.3 to 20.0 m (1 to 65 ft.)
	Response Time	ON to OFF	0.3 to 3.0 m (1 to 10 ft.)	0.3 to 7.0 m (1 to 23 ft.)
		OFF to ON	Normal mode: 8 to 18 ms max. *1 Slow mode: 16 to 36 ms max. *1 *2	
	Effective Aperture Angle (EAA) (IEC 61496-2)	Type 4	40 to 90 ms max. *1	
		Type 2	*1. Response time when used in one segment system or in cascaded connection. Refer to page 25 for the one segment system. Refer to <i>Safety Light Curtain F3SG-R Series User's Manual (ManNo.: Z352)</i> for cascaded connection. *2. Selectable by Configuration Tool.	
	Light Source	Type 4	±2.5° max., emitter and receiver at operating range of 3 m or greater	
	Startup Waiting Time	Type 2	±5.0° max., emitter and receiver at operating range of 3 m or greater	
Power Supply Voltage (Vs)	Infrared LEDs, Wavelength: 870 nm			
Current Consumption	2 s max.			
Safety Outputs (OSSD)	SELV/PELV 24 VDC±20% (ripple p-p 10% max.)			
Auxiliary Output	Refer to page 25.			
Output Operation Mode	Two PNP or NPN transistor outputs (PNP or NPN is selectable by DIP Switch.) 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			
Input Voltage	*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.			
Overvoltage Category (IEC 60664-1)	One PNP or NPN transistor output (PNP or NPN is selectable by DIP Switch.) Load current of 100 mA max., Residual voltage of 2 V max.			
Indicators	Light-ON (Safety output is enabled when the receiver receives an emitting signal.)			
Protective Circuit	Safety output (Inverted signal output:Enable) (default) (Configurable by Configuration Tool)			
Insulation Resistance	TEST: 24 V Active: 9 V to Vs (sink current 3 mA max.) * 0 V Active: 0 to 3 V (source current 3 mA max.) MUTE A/B: PNP: Vs to Vs-3 V (sink current 3 mA max.) * NPN: 0 to 3 V (source current 3 mA max.) RESET: PNP: Vs to Vs-3 V (sink current 5 mA max.) * NPN: 0 to 3 V (source current 5 mA max.)			
Dielectric Strength	TEST: 24 V Active : 0 to 1.5 V or open 0 V Active : 9 V to Vs or open MUTE A/B, RESET: PNP: 0 to 1/2 Vs, or open * NPN: 1/2 Vs to Vs, or open *			
Mutual Interference Prevention (Scan Code)	* The Vs indicates a supply voltage value in your environment.			
Cascade Connection	II			
Test Function	Refer to page 27.			
Safety-Related Functions	Output short protection, Power supply reverse polarity protection			
	20 MΩ or higher (500 VDC megger)			
Functional	1,000 VAC, 50/60 Hz (1 min)			
	This function prevents mutual interference in up to two F3SG-RA systems.			
	Number of cascaded segments: 3 max. Total number of beams: 255 max. Cable length between sensors: 10 m max. (not including cascading cable (F39-JGR2W) and power cable)			
	Self-test (at power-on, and during operation) External test (light emission stop function by test input)			
Interlock External device monitoring (EDM) Pre-reset Fixed blanking/Floating blanking Reduced resolution Muting/Override Scan code selection PNP/NPN selection Response time adjustment				

			F3SG-4RA□□□□-14 F3SG-2RA□□□□-14	F3SG-4RA□□□□-30 F3SG-2RA□□□□-30
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 ² , 1000 shocks for all 3 axes		
Pollution Degree (IEC 60664-1)		Pollution Degree 3		
Connections	Power cable	Type of Connection	M12 connectors: 5-pin emitter and 8-pin receiver, IP67 rated when mated, Cables prewired to the sensors	
		Number of Wires	Emitter: 5, Receiver: 8	
		Cable Length	0.3 m	
		Cable Diameter	6 mm	
		Minimum Bending Radius	R5 mm	
	Cascading cable	Type of Connection	M12 connectors: 5-pin emitter and 8-pin receiver, IP67 rated when mated	
		Number of Wires	Emitter: 5, Receiver: 8	
		Cable Length	0.2 m	
		Cable Diameter	6 mm	
	Extension cable - Single-Ended Cable - Double-Ended Cable	Type of Connection	M12 connectors: 5-pin emitter and 8-pin receiver, IP67 rated when mated	
		Number of Wires	Emitter: 5, Receiver: 8	
		Cable Length	Refer to page 18.	
		Cable Diameter	6.6 mm	
Extension of Power Cable	Minimum Bending Radius	R36 mm		
			100 m max.	
Material	Material	Housing: Aluminum alloy Cap: PBT resin Front window: Acrylic resin Cable: Oil-resistant PVC resin Standard Fixed Bracket (F39-LGF): Zinc alloy FE plate: Stainless steel		
	Weight	Refer to page 25.		
	Included Accessories	Safety Precautions, Quick Installation Manual, Standard Fixed Bracket *, Troubleshooting Guide Sticker, Warning Zone Label * The quantity of Standard Fixed Brackets included varies depending on the protective height. [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		
Conformity	Conforming standards		Refer to page 26.	
	Type of ESPE (IEC 61496-1)		Type 4	
	Performance Level (PL)/Safety category	Type 4	PL e/Category 4 (EN ISO 13849-1:2015)	
		Type 2	PL c/Category 2 (EN ISO 13849-1:2015)	
	PFH ₀		1.1 × 10 ⁻⁸ (IEC 61508)	
	Proof test interval T _M		Every 20 years (IEC 61508)	
	SFF		99% (IEC 61508)	
HFT		1 (IEC 61508)		
Classification		Type B (IEC 61508-2)		

Bluetooth Communication Unit

Communication System	Bluetooth Version 3.0
Communication Profile	SPP (Serial Port Profile)
Transmission Distance	Approx. 10 m max. (Output power: Class 2) *

* It depends on use environment conditions.

List of Models/Response Time/Current Consumption/Weight

F3SG-4RA□□□□-14/F3SG-2RA□□□□-14

Model		Number of Beams	Protective Height [mm]	Response Time [ms] *1			Current Consumption [mA]		Weight [kg]	
				ON → OFF *2	OFF (Synchronized) → ON	OFF (Not synchronized) → ON	Emitter	Receiver	Net *3	Gross *4
F3SG-4RA0160-14	F3SG-2RA0160-14	15	160	8	40	140	40	75	0.7	2.0
F3SG-4RA0240-14	F3SG-2RA0240-14	23	240	8	40	140	45	75	0.9	2.3
F3SG-4RA0320-14	F3SG-2RA0320-14	31	320	8	40	140	55	75	1.1	2.6
F3SG-4RA0400-14	F3SG-2RA0400-14	39	400	8	40	140	60	80	1.3	2.9
F3SG-4RA0480-14	F3SG-2RA0480-14	47	480	13	65	165	50	80	1.5	3.2
F3SG-4RA0560-14	F3SG-2RA0560-14	55	560	13	65	165	55	80	1.7	3.5
F3SG-4RA0640-14	F3SG-2RA0640-14	63	640	13	65	165	60	85	1.9	3.9
F3SG-4RA0720-14	F3SG-2RA0720-14	71	720	13	65	165	65	85	2.1	4.2
F3SG-4RA0800-14	F3SG-2RA0800-14	79	800	13	65	165	65	90	2.3	4.5
F3SG-4RA0880-14	F3SG-2RA0880-14	87	880	13	65	165	70	90	2.6	4.8
F3SG-4RA0960-14	F3SG-2RA0960-14	95	960	13	65	165	75	90	2.8	5.1
F3SG-4RA1040-14	F3SG-2RA1040-14	103	1040	13	65	165	80	95	3.0	5.4
F3SG-4RA1120-14	F3SG-2RA1120-14	111	1120	13	65	165	85	95	3.2	5.7
F3SG-4RA1200-14	F3SG-2RA1200-14	119	1200	13	65	165	90	100	3.4	6.0
F3SG-4RA1280-14	F3SG-2RA1280-14	127	1280	13	65	165	95	100	3.6	6.4
F3SG-4RA1360-14	F3SG-2RA1360-14	135	1360	13	65	165	95	105	3.8	6.7
F3SG-4RA1440-14	F3SG-2RA1440-14	143	1440	18	90	190	85	105	4.0	7.0
F3SG-4RA1520-14	F3SG-2RA1520-14	151	1520	18	90	190	90	105	4.2	7.3
F3SG-4RA1600-14	F3SG-2RA1600-14	159	1600	18	90	190	90	110	4.4	7.6
F3SG-4RA1680-14	F3SG-2RA1680-14	167	1680	18	90	190	95	110	4.7	7.9
F3SG-4RA1760-14	F3SG-2RA1760-14	175	1760	18	90	190	100	115	4.9	8.2
F3SG-4RA1840-14	F3SG-2RA1840-14	183	1840	18	90	190	100	115	5.1	8.5
F3SG-4RA1920-14	F3SG-2RA1920-14	191	1920	18	90	190	105	120	5.3	8.8
F3SG-4RA2000-14	F3SG-2RA2000-14	199	2000	18	90	190	105	120	5.5	9.2
F3SG-4RA2080-14	F3SG-2RA2080-14	207	2080	18	90	190	110	125	5.7	9.5

*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 response times are values when Scan Code is set at Code B. The response times for Code A are 1 ms shorter than these values.

*3. The net weight is the weight of an emitter and a receiver.

*4. The gross weight is the weight of an emitter, a receiver, included accessories and a package.

F3SG-4RA□□□□-30/F3SG-2RA□□□□-30

Model		Number of Beams	Protective Height [mm]	Response Time [ms] *1			Current Consumption [mA]		Weight [kg]	
				ON → OFF *2	OFF (Synchronized) → ON	OFF (Not synchronized) → ON	Emitter	Receiver	Net *3	Gross *4
F3SG-4RA0190-30	F3SG-2RA0190-30	8	190	8	40	140	35	75	0.6	2.1
F3SG-4RA0270-30	F3SG-2RA0270-30	12	270	8	40	140	35	75	0.9	2.4
F3SG-4RA0350-30	F3SG-2RA0350-30	16	350	8	40	140	40	75	1.1	2.7
F3SG-4RA0430-30	F3SG-2RA0430-30	20	430	8	40	140	45	75	1.3	3.0
F3SG-4RA0510-30	F3SG-2RA0510-30	24	510	8	40	140	50	75	1.5	3.3
F3SG-4RA0590-30	F3SG-2RA0590-30	28	590	8	40	140	50	75	1.7	3.6
F3SG-4RA0670-30	F3SG-2RA0670-30	32	670	8	40	140	55	75	1.9	3.9
F3SG-4RA0750-30	F3SG-2RA0750-30	36	750	8	40	140	60	80	2.1	4.2
F3SG-4RA0830-30	F3SG-2RA0830-30	40	830	8	40	140	65	80	2.3	4.5
F3SG-4RA0910-30	F3SG-2RA0910-30	44	910	13	65	165	50	80	2.5	4.8
F3SG-4RA0990-30	F3SG-2RA0990-30	48	990	13	65	165	50	80	2.7	5.1
F3SG-4RA1070-30	F3SG-2RA1070-30	52	1070	13	65	165	55	80	2.9	5.4
F3SG-4RA1150-30	F3SG-2RA1150-30	56	1150	13	65	165	55	85	3.1	5.7
F3SG-4RA1230-30	F3SG-2RA1230-30	60	1230	13	65	165	55	85	3.3	6.0
F3SG-4RA1310-30	F3SG-2RA1310-30	64	1310	13	65	165	60	85	3.5	6.3
F3SG-4RA1390-30	F3SG-2RA1390-30	68	1390	13	65	165	60	85	3.8	6.6
F3SG-4RA1470-30	F3SG-2RA1470-30	72	1470	13	65	165	65	85	4.0	6.9
F3SG-4RA1550-30	F3SG-2RA1550-30	76	1550	13	65	165	65	90	4.2	7.2
F3SG-4RA1630-30	F3SG-2RA1630-30	80	1630	13	65	165	70	90	4.4	7.5
F3SG-4RA1710-30	F3SG-2RA1710-30	84	1710	13	65	165	70	90	4.6	7.8
F3SG-4RA1790-30	F3SG-2RA1790-30	88	1790	13	65	165	70	90	4.8	8.1
F3SG-4RA1870-30	F3SG-2RA1870-30	92	1870	13	65	165	75	90	5.0	8.4
F3SG-4RA1950-30	F3SG-2RA1950-30	96	1950	13	65	165	75	95	5.2	8.7
F3SG-4RA2030-30	F3SG-2RA2030-30	100	2030	13	65	165	80	95	5.4	9.0
F3SG-4RA2110-30	F3SG-2RA2110-30	104	2110	13	65	165	80	95	5.6	9.3
F3SG-4RA2190-30	F3SG-2RA2190-30	108	2190	13	65	165	85	95	5.8	9.6
F3SG-4RA2270-30	F3SG-2RA2270-30	112	2270	13	65	165	85	100	6.0	9.9
F3SG-4RA2350-30	F3SG-2RA2350-30	116	2350	13	65	165	85	100	6.2	10.2
F3SG-4RA2430-30	F3SG-2RA2430-30	120	2430	13	65	165	90	100	6.4	10.5
F3SG-4RA2510-30	F3SG-2RA2510-30	124	2510	13	65	165	90	100	6.7	10.8

*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 response times are values when Scan Code is set at Code B. The response times for Code A are 1 ms shorter than these values.

*3. The net weight is the weight of an emitter and a receiver.

*4. The gross weight is the weight of an emitter, a receiver, included accessories and a package.

Legislation and Standards

1. The F3SG-R does not receive type approval provided by Article 44-2 of the Industrial Safety and Health Act of Japan. When using the F3SG-R in Japan as a "safety system for pressing or shearing machines" prescribed in Article 42 of that law, the machine control system must receive type approval.
2. The F3SG-R is electro-sensitive protective equipment (ESPE) in accordance with European Union (EU) Machinery Directive Index Annex V, Item 2.
3. EC Declaration of Conformity
OMRON declares that the F3SG-R is in conformity with the requirements of the following EC Directives:
Machinery Directive 2006/42/EC
EMC Directive 2014/30/EU
4. Conforming Standards
 - (1) European standards
EN61496-1 (Type 4 and Type 2 ESPE), EN 61496-2 (Type 4 and Type 2 AOPD), EN61508-1 through -4 (SIL 3 for Type 4 and SIL 1 for Type 2), EN ISO 13849-1:2015 (PL e, Category 4 for Type 4 and PL c, Category 2 for Type 2)
 - (2) International standards
IEC61496-1 (Type 4 and Type 2 ESPE), IEC61496-2 (Type 4 and Type 2 AOPD), IEC61508-1 through -4 (SIL 3 for Type 4 and SIL 1 for Type 2), ISO 13849-1:2015 (PL e, Category 4 for Type 4 and PL c, Category 2 for Type 2)
 - (3) JIS standards
JIS B 9704-1 (Type 4 and Type 2 ESPE), JIS B 9704-2 (Type 4 and Type 2 AOPD)
 - (4) North American standards
UL61496-1 (Type 4 and Type 2 ESPE), UL61496-2 (Type 4 and Type 2 AOPD), UL508, UL1998, CAN/CSA C22.2 No.14, CAN/CSA C22.2 No.0.8
 - (5) Chinese standards
GB/T 4584 (Specification of active opto-electronic protective devices for presses)
5. Third-Party Certifications
 - (1) TÜV SÜD
 - EC Type-Examination certificate:
EU Machinery Directive, Type 4 and Type 2 ESPE (EN61496-1), Type 4 and Type 2 AOPD (EN 61496-2)
 - Certificate:
Type 4 and Type 2 ESPE (EN61496-1), Type 4 and Type 2 AOPD (EN61496-2), EN 61508-1 through -4 (SIL 3 for Type 4 and SIL 1 for Type 2), EN ISO 13849-1:2015 (PL e, Category 4 for Type 4, and PL c, Category 2 for Type 2)
 - (2) UL
 - UL Listing:
Type 4 and Type 2 ESPE (UL61496-1), Type 4 and Type 2 AOPD (UL61496-2), UL508, UL1998, CAN/CSA C22.2 No.14, CAN/CSA C22.2 No.0.8
 - (3) China National Casting and Forging Machines Quality Supervision and Inspection Center
 - Certificate:
GB/T 4584 (Specification of active opto-electronic protective devices for presses)
6. Other Standards
The F3SG-R is designed according to the standards listed below. To make sure that the final system complies with the following standards and regulations, you are asked to design and use it in accordance with all other related standards, laws, and regulations. If you have any questions, consult with specialized organizations such as the body responsible for prescribing and/or enforcing machinery safety regulations in the location where the equipment is to be used.
 - European Standards: EN415-4, EN691-1, EN692, EN693, IEC 62046
 - U.S. Occupational Safety and Health Standards: OSHA 29 CFR 1910.212
 - U.S. Occupational Safety and Health Standards: OSHA 29 CFR 1910.217
 - American National Standards: ANSI B11.1 to B11.19
 - American National Standards: ANSI/RIA R15.06
 - Canadian Standards Association CSA Z142, Z432, Z434
 - SEMI Standards SEMI S2
 - Japan Ministry of Health, Labour and Welfare "Guidelines for Comprehensive Safety Standards of Machinery", Standard Bureau's Notification No. 0731001 dated July 31, 2007.rms and Conditions Agreement
 - Chinese National Standards: GB17120, GB27607

Indicator

Emitter

Name of Indicator		Color	Illuminated	Blinking
Test	TEST	Green	–	External Test is being performed
Operating range	LONG	Green	Long range mode is selected	Lockout state due to DIP Switch setting error or 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	Muting/Override state, or Lockout state due to Cap error or Other sensor error
PNP/NPN mode	NPN	Green	NPN mode is selected by DIP Switch	–
Response time	SLOW	Green	Response Time Adjustment is enabled	–
Sequence error	SEQ	Yellow	–	Sequence error in Muting or Pre-reset mode
Blanking	BLANK	Green	Blanking, Warning Zone or Reduced Resolution is enabled	Teach-in mode, or Blanking Monitoring error
Configuration	CFG	Green	–	Teach-in mode, zone measurement being performed by Dynamic Muting, or Lockout state due to Parameter error or Cascading Configuration error
Interlock	INT-LK	Yellow	Interlock state	Pre-reset mode
External device monitoring	EDM	Green	RESET input is in ON state *	Lockout state due to EDM error
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, or the sensor is in Setting 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	Muting/Override state, or Lockout state due to DIP Switch setting error

* The LED is illuminated when the EDM input is in ON state regardless of wiring with EDM used or unused.

Interface Unit

Main unit	PC/AT compatible machine (computer that runs Microsoft Windows)
Operating system (OS)	Windows 7 (32-bit/64-bit), Windows 8, 8.1 (32-bit/64-bit), Windows 10 (32-bit/64-bit)
Communication port	USB port ×1
Ambient temperature	Operating: -10 to 55°C, Storage: -30 to 70°C (non-icing and non-condensing)
Ambient humidity	Operating: 35% to 85%, Storage: 35% to 95% (non-condensing)

Lamp

Item	F39-LP
Applicable Sensor	F3SG-□RA/RR Series Safety Light Curtain (Receiver)
LED Light Color	Red/Orange/Green
Power Supply Voltage	24 VDC±20%, ripple p-p 10% max. (shares sensor's power supply)
Current Consumption	25 mA max. (shares sensor's power supply.)
Ambient Temperature	Operating: -10 to 55°C, Storage: -25 to 70°C
Ambient Humidity	Operating: 35% to 85%, Storage: 35% to 95%
Vibration Resistance	10 to 55 Hz, Multiple amplitude of 0.7 mm, 20 sweeps for all 3 axes
Shock Resistance	100 m/s ² , 1000 shocks for all 3 axes
Degree of Protection	IP65 and IP67 (When attached to F3SG)
Type of Connection	Connectable to F3SG-RA's terminal connector
Material	Lighting element: PC, Other body parts: PBT
Weight	45 g (when packaged)

F3SG-RA

Connections (Basic Wiring Diagram)

Standalone F3SG-RA using PNP Outputs

Standard Muting Mode/Exit-Only Muting Mode using PNP Outputs

The following is the example of External Device Monitoring disabled, Auto Reset mode, PNP output and External Test in 24 V Active.

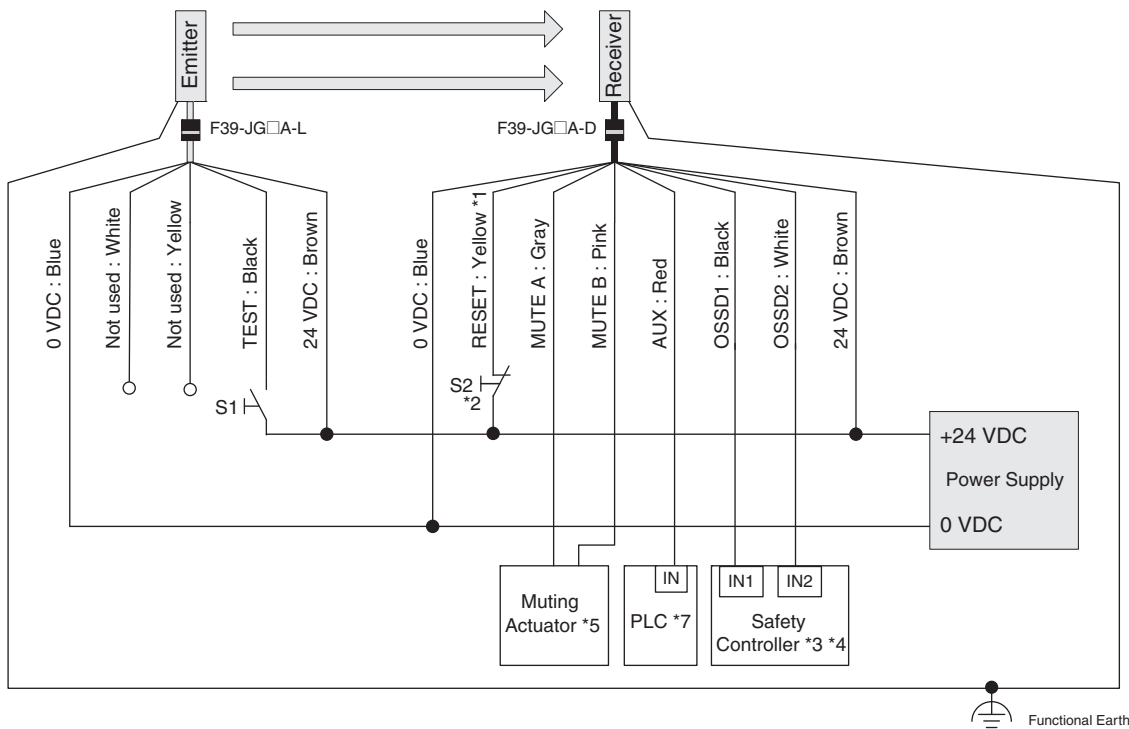
DIP Switch settings *6

	Function	DIP-SW1	DIP-SW2
Receiver	EDM Disabled (factory default setting)	2 <input checked="" type="checkbox"/> ON	2 <input checked="" type="checkbox"/> ON
	Auto Reset (factory default setting)	3 <input checked="" type="checkbox"/> ON	3 <input checked="" type="checkbox"/> ON
		4 <input checked="" type="checkbox"/> ON	4 <input checked="" type="checkbox"/> ON
	PNP (factory default setting)	7 <input checked="" type="checkbox"/> ON	7 <input checked="" type="checkbox"/> ON
Emitter	External Test: 24 V Active (factory default setting)	4 <input checked="" type="checkbox"/> ON	

: Indicates a switch position.

Configure functions with the DIP Switches before wiring.

Wiring Example



S1: Test Switch (Connect the line to 0 V if this switch is not required)

S2: Lockout/Interlock Reset Switch, Override Switch or Override Cancel Switch

*1. Also used as Override input line.

*2. Make sure to connect an override cancel switch to the Reset line when using the override function. Otherwise the override state may not be released by the override cancel switch, resulting in serious injury.

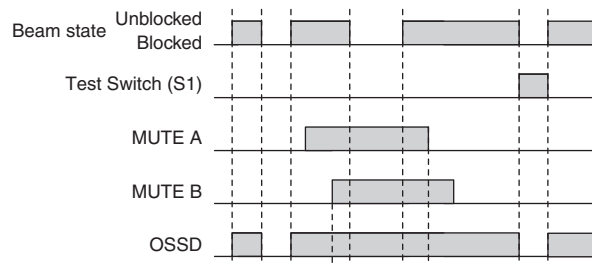
*3. Refer to page 30 for more information.

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

*5. Refer to *Smart Muting Actuator F3W-MA Series User's Manual* for more information.

*6. The functions are configurable with DIP Switch. Refer to *Safety Light Curtain F3SG-R Series User's Manual* for more information on setting the functions by the DIP Switch.

*7. When connecting to the PLC, the output mode must be changed with the Configuration Tool according to your application.



Note: Functional earth connection is unnecessary when you use the F3SG-RA in a general industrial environment where noise control or stable power supply is considered. However, when you use the F3SG-RA in an environment where there may be excessive noise from surroundings or stable power supply may be interfered, it is recommended the F3SG-RA be connected to functional earth. The wiring examples in later examples do not indicate functional earth. To use functional earth, wire an earth cable according to the example above. Refer to *Safety Light Curtain F3SG-R Series User's Manual* for more information.

Standalone F3SG-RA using NPN Outputs

Standard Muting Mode/Exit-Only Muting Mode using NPN Outputs

The following is the example of External Device Monitoring enabled, Auto Reset mode, NPN output and External Test in 0 V Active.

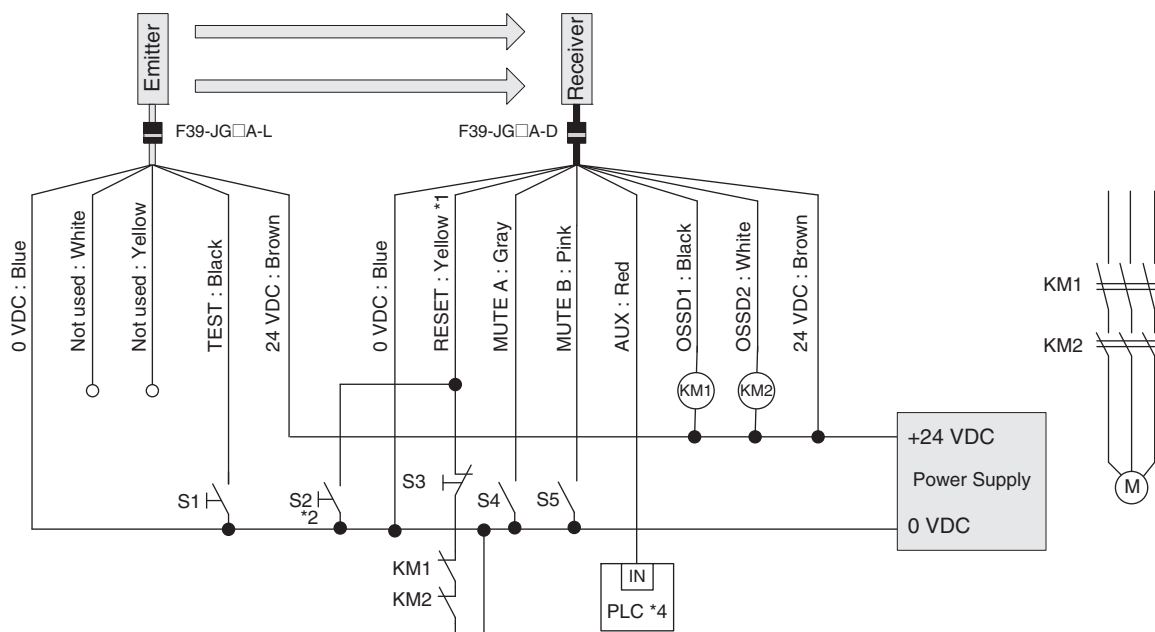
DIP Switch settings *3

	Function	DIP-SW1	DIP-SW2
Receiver	EDM Enabled	2 <input checked="" type="checkbox"/> ON	2 <input checked="" type="checkbox"/> ON
	Auto Reset (factory default setting)	3 <input checked="" type="checkbox"/> ON	3 <input checked="" type="checkbox"/> ON
		4 <input checked="" type="checkbox"/> ON	4 <input checked="" type="checkbox"/> ON
		7 <input checked="" type="checkbox"/> ON	7 <input checked="" type="checkbox"/> ON
Emitter	External Test: 0 V Active	4 <input checked="" type="checkbox"/> ON	

: Indicates a switch position.

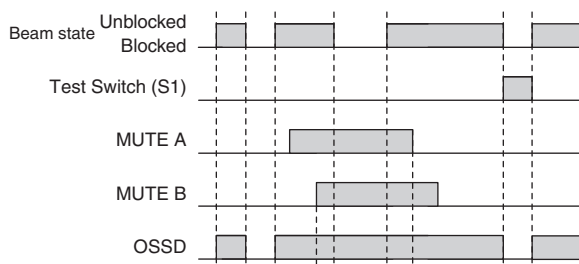
Configure functions with the DIP Switches before wiring.

Wiring Example



- S1: Test Switch (Connect the line to 24 V if this switch is not required)
- S2: Override Cancel Switch
- S3: Lockout/Interlock Reset Switch or Override Switch
- S4, S5: Muting sensor
- KM1, KM2: Safety relay with forcibly guided contacts (G7SA) or magnetic contactor
- M: Motor

- *1. Also used as Override input line.
- *2. Make sure to connect an override cancel switch to the Reset line when using the override function. Otherwise the override state may not be released by the override cancel switch, resulting in serious injury.
- *3. The functions are configurable with DIP Switch. Refer to *Safety Light Curtain F3SG-R Series User's Manual* for more information on setting the functions by the DIP Switch.
- *4. When connecting to the PLC, the output mode must be changed with the Configuration Tool according to your application.



Note: For the functional earth connection, refer to page 28.

Connectable Safety Control Units

The F3SG-RA with PNP output can be connected to the safety control units listed in the table below.

Connectable Safety Control Units (PNP output)		
Safety Relay Units	Flexible Safety Units	Safety Controllers
G9SA-301 G9SA-321-T□ G9SA-501 G9SB-200-B G9SB-200-D G9SB-301-B G9SB-301-D G9SE-201 G9SE-401 G9SE-221-T□	G9SX-AD322-T G9SX-ADA222-T G9SX-BC202 G9SX-GS226-T15	G9SP-N10S G9SP-N10D G9SP-N20S NE0A-SCPU01 NE1A-SCPU01 NE1A-SCPU02 DST1-ID12SL-1 DST1-MD16SL-1 DST1-MRD08SL-1 NX-SIH400 NX-SID800 F3SP-T01

The F3SG-R with NPN output can be connected to the safety control unit listed in the table below.

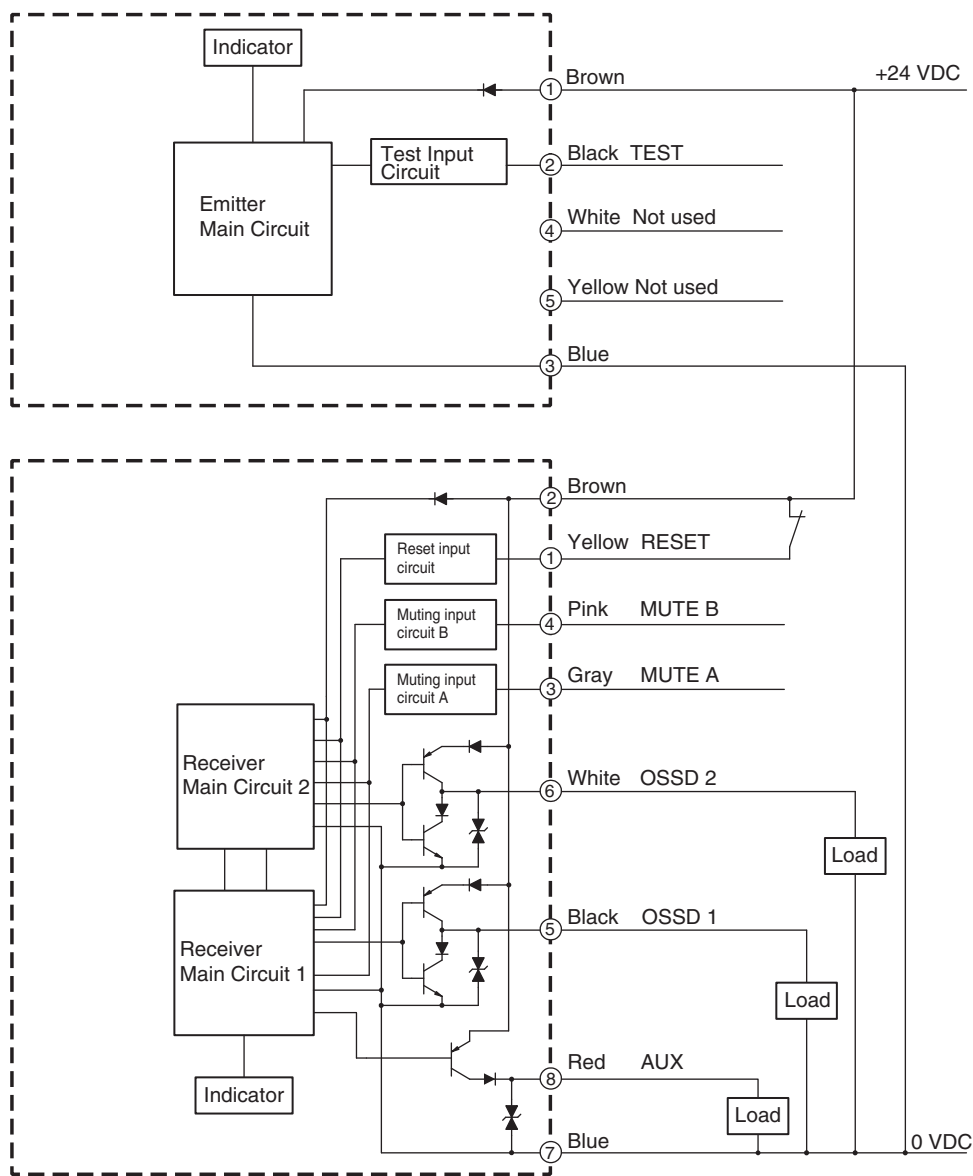
Connectable Safety Control Units (NPN output)
Safety Relay Units
G9SA-301-P

Input/Output Circuit

Entire Circuit Diagram

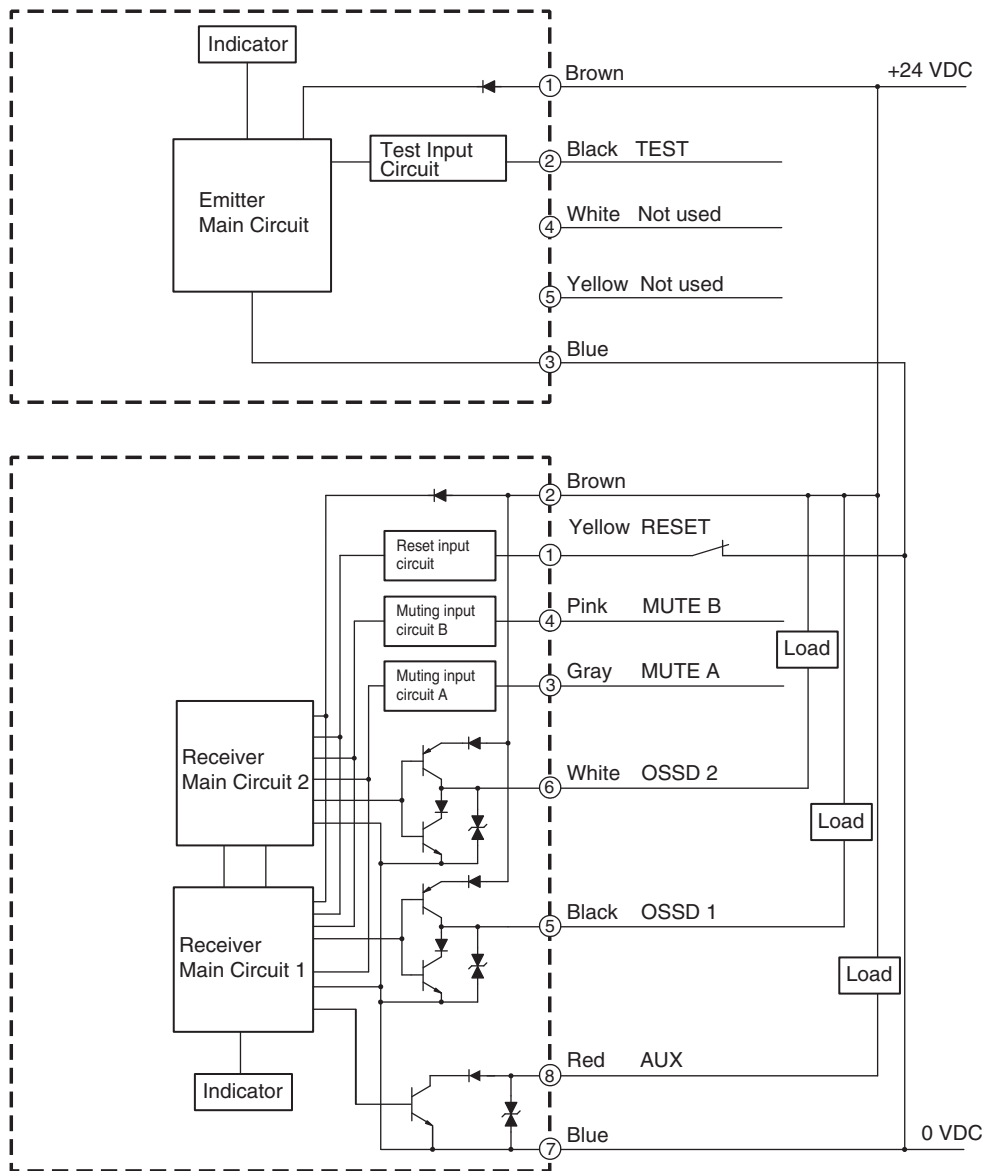
The entire circuit diagram of the F3SG-RA is shown below.
The numbers in the circles indicate the connector's pin numbers.

PNP Output



F3SG-RA

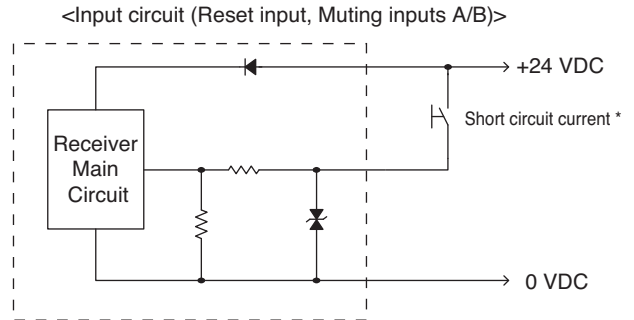
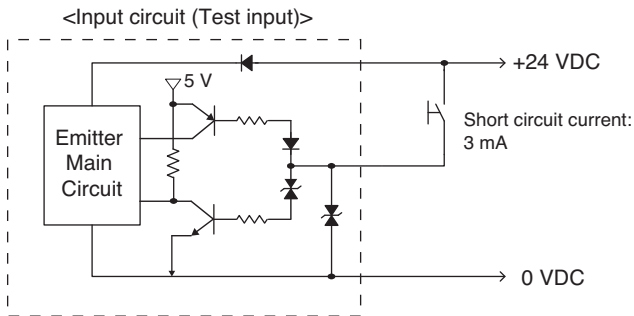
NPN Output



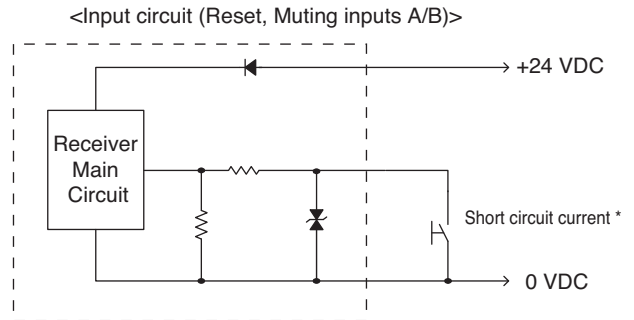
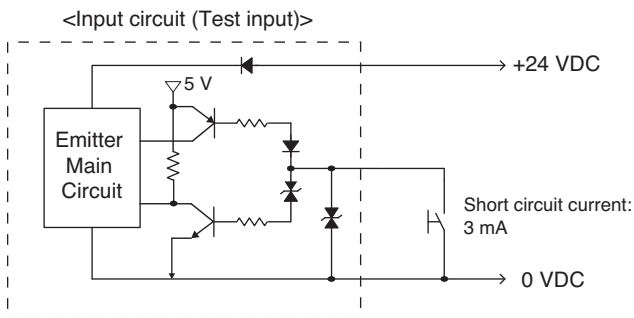
Input Circuit Diagram by Function

The input circuit diagrams of by function are shown below.

PNP Output



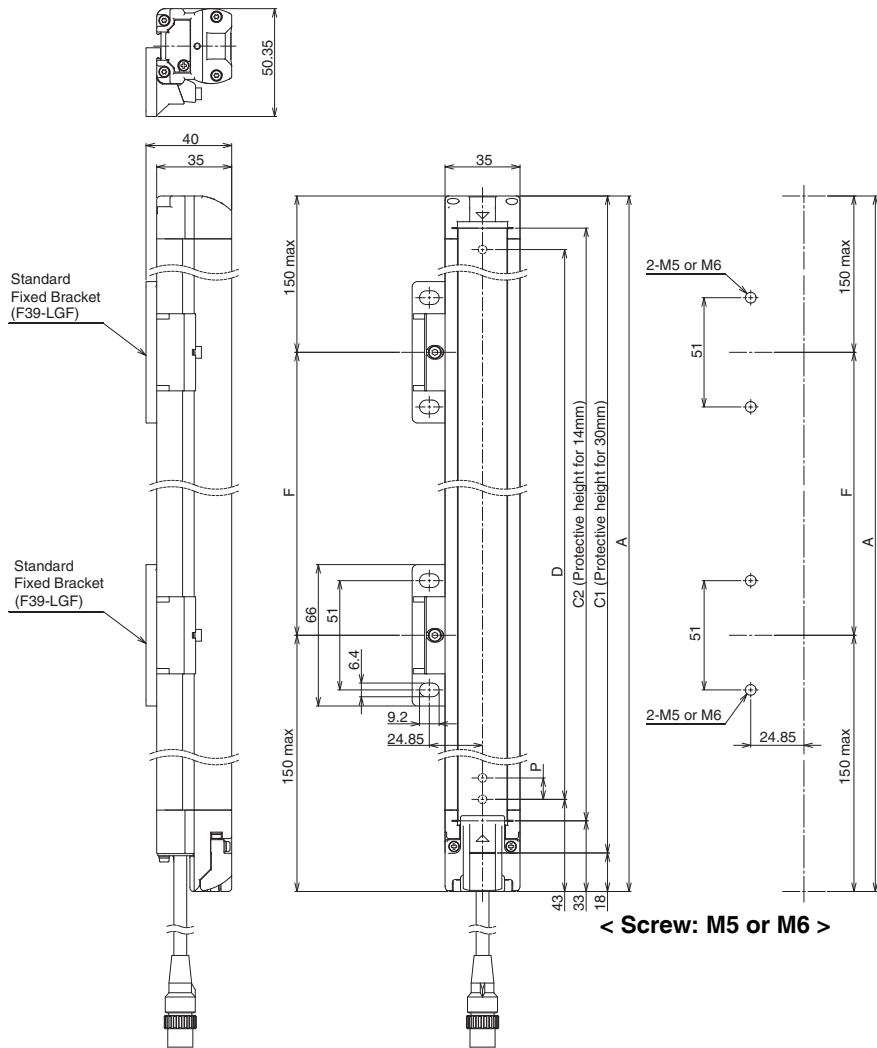
NPN Output



*Short circuit current: 5mA (Reset input), 3mA (Muting inputs A/B)

Mounted with Standard Fixed Brackets (F39-LGF)

Backside Mounting



F3SG-□RA□□□□-30 Series

Dimension A	C1+18
Dimension C1	4-digit number of the type name (Protective height)
Dimension D	C1-50
Dimension P	20

F3SG-□RA□□□□-14 Series

Dimension A	C2+48
Dimension C2	4-digit number of the type name (Protective height)
Dimension D	C2-20
Dimension P	10

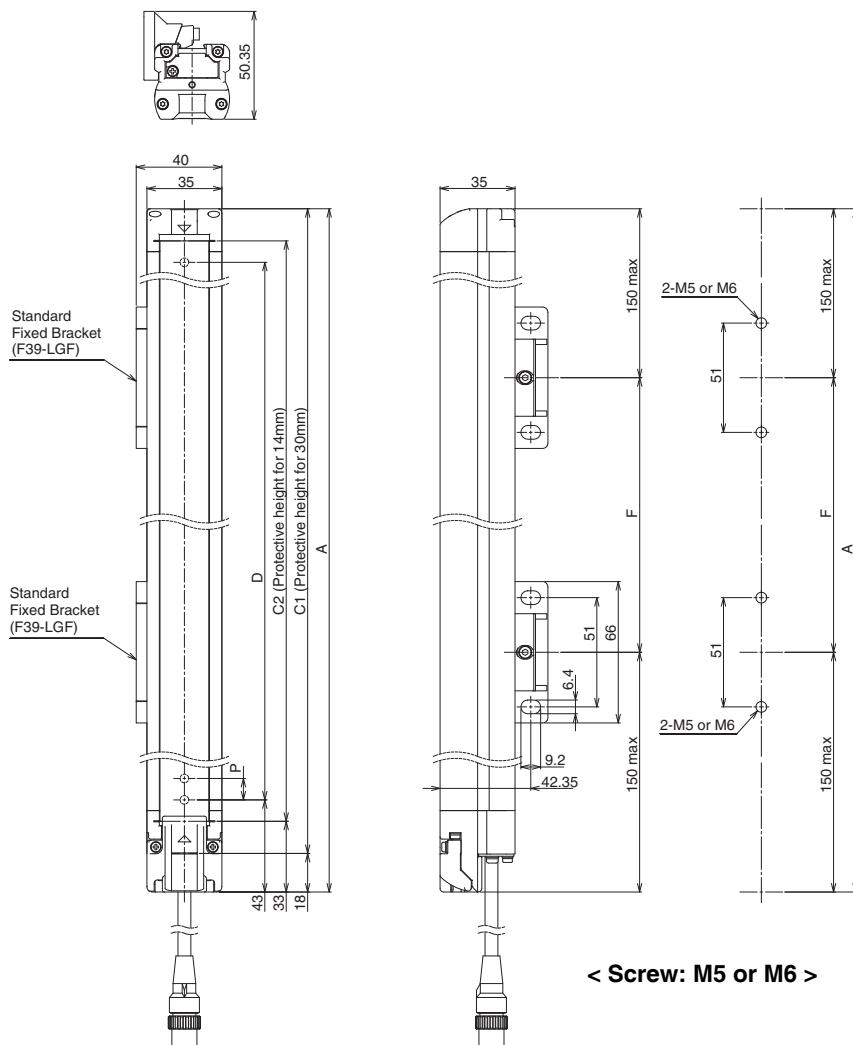
Protective height (C1)	Number of Standard Fixed Brackets *1	Dimension F
0190 to 1230	2 *2	1000 mm max.
1310 to 2270	3	1000 mm max.
2350 to 2510	4	1000 mm max.

Protective height (C2)	Number of Standard Fixed Brackets *1	Dimension F
0160 to 1200	2 *2	1000 mm max.
1280 to 2080	3	1000 mm max.

*1. The number of brackets required to mount either one of emitter and receiver.

*2. Mounting an emitter or receiver with one bracket is possible for the models of protective height of 0160 to 0270. In this case, locate this bracket at half the Dimension A (or at the center of the sensor length).

Side Mounting



F3SG-□RA□□□□-30 Series

Dimension A	C1+18
Dimension C1	4-digit number of the type name (Protective height)
Dimension D	C1-50
Dimension P	20

F3SG-□RA□□□□-14 Series

Dimension A	C2+48
Dimension C2	4-digit number of the type name (Protective height)
Dimension D	C2-20
Dimension P	10

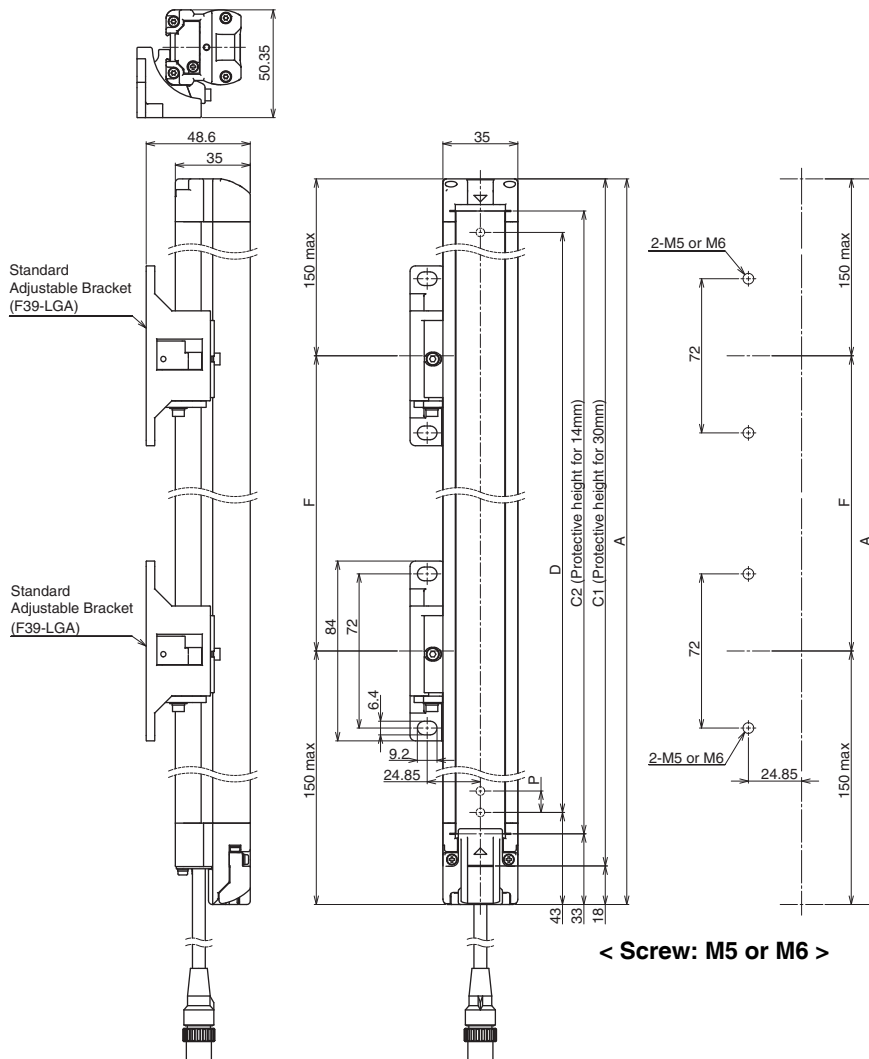
Protective height (C1)	Number of Standard Fixed Brackets *1	Dimension F
0190 to 1230	2 *2	1000 mm max.
1310 to 2270	3	1000 mm max.
2350 to 2510	4	1000 mm max.

Protective height (C2)	Number of Standard Fixed Brackets *1	Dimension F
0160 to 1200	2 *2	1000 mm max.
1280 to 2080	3	1000 mm max.

*1. The number of brackets required to mount either one of emitter and receiver.

*2. Mounting an emitter or receiver with one bracket is possible for the models of protective height of 0160 to 0270. In this case, locate this bracket at half the Dimension A (or at the center of the sensor length).

Mounted with Standard Adjustable Brackets (F39-LGA) Backside Mounting



F3SG-□RA□□□□-30 Series

Dimension A	C1+18
Dimension C1	4-digit number of the type name (Protective height)
Dimension D	C1-50
Dimension P	20

F3SG-□RA□□□□-14 Series

Dimension A	C2+48
Dimension C2	4-digit number of the type name (Protective height)
Dimension D	C2-20
Dimension P	10

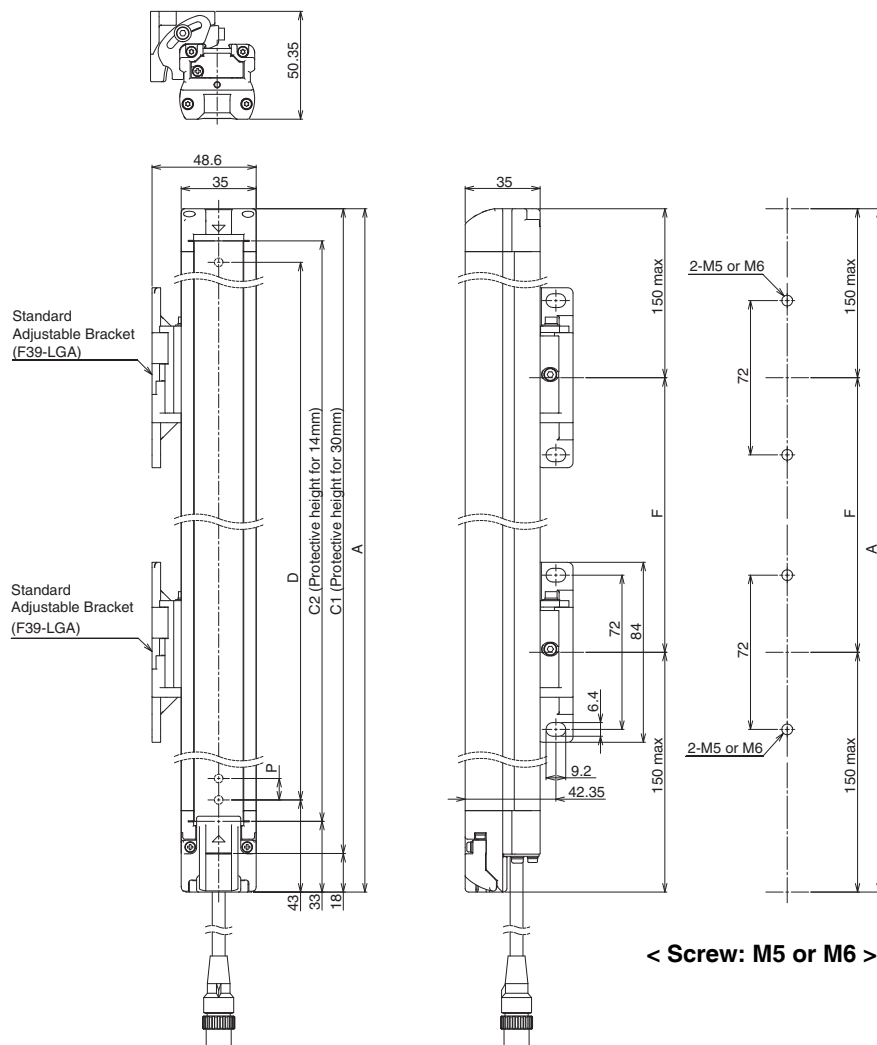
Protective height (C1)	Number of Standard Adjustable Brackets *1	Dimension F
0190 to 1230	2 *2	1000 mm max.
1310 to 2270	3	1000 mm max.
2350 to 2510	4	1000 mm max.

Protective height (C2)	Number of Standard Adjustable Brackets *1	Dimension F
0160 to 1200	2 *2	1000 mm max.
1280 to 2080	3	1000 mm max.

*1. The number of brackets required to mount either one of emitter and receiver.

*2. Mounting an emitter or receiver with one bracket is possible for the models of protective height of 0160 to 0270. In this case, locate this bracket at half the Dimension A (or at the center of the sensor length).

Side Mounting



F3SG-□RA□□□□-30 Series

Dimension A	C1+18
Dimension C1	4-digit number of the type name (Protective height)
Dimension D	C1-50
Dimension P	20

Protective height (C1)	Number of Standard Adjustable Brackets *1	Dimension F
0190 to 1230	2 *2	1000 mm max.
1310 to 2270	3	1000 mm max.
2350 to 2510	4	1000 mm max.

F3SG-□RA□□□□-14 Series

Dimension A	C2+48
Dimension C2	4-digit number of the type name (Protective height)
Dimension D	C2-20
Dimension P	10

Protective height (C2)	Number of Standard Adjustable Brackets *1	Dimension F
0160 to 1200	2 *2	1000 mm max.
1280 to 2080	3	1000 mm max.

*1. The number of brackets required to mount either one of emitter and receiver.

*2. Mounting an emitter or receiver with one bracket is possible for the models of protective height of 0160 to 0270. In this case, locate this bracket at half the Dimension A (or at the center of the sensor length).

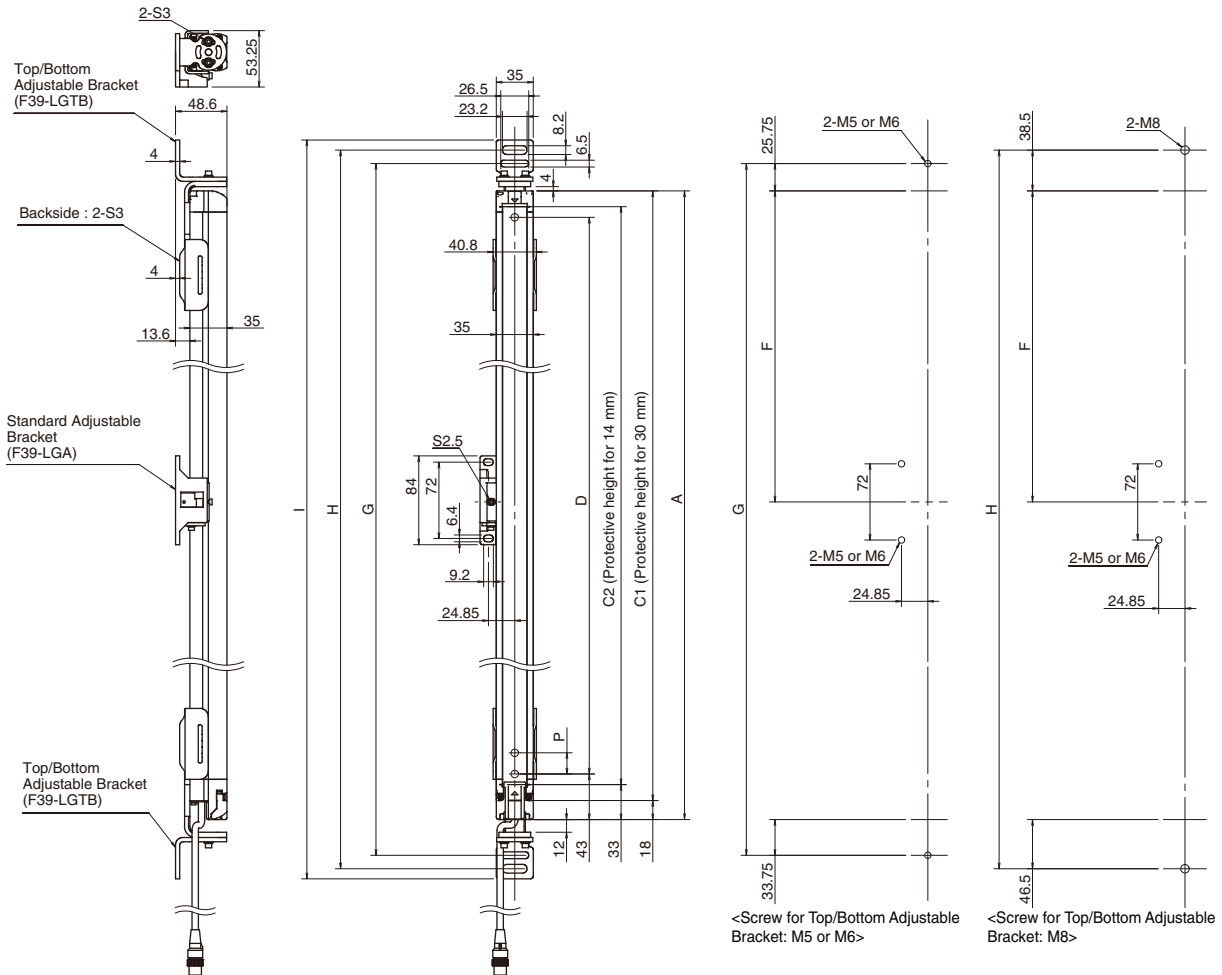
F3SG-RA

Mounted with Top/Bottom Adjustable Brackets (F39-LGTB) and Standard Adjustable Brackets (F39-LGA)

Dimensions when using the F3SG-RA Series except the F3SG-4RA0190-30 and F3SG-4RA0160-14

Refer to *Safety Light Curtain F3SG-R Series User's Manual* for the dimensions when using the F3SG-4RA0190-30 and F3SG-4RA0160-14.

Backside Mounting



F3SG-□RA□□□□-30 Series

Dimension A	C1+18
Dimension C1	4-digit number of the type name (Protective height)
Dimension D	C1-50
Dimension G	C1+77.5
Dimension H	C1+103
Dimension I	C1+122
Dimension P	20

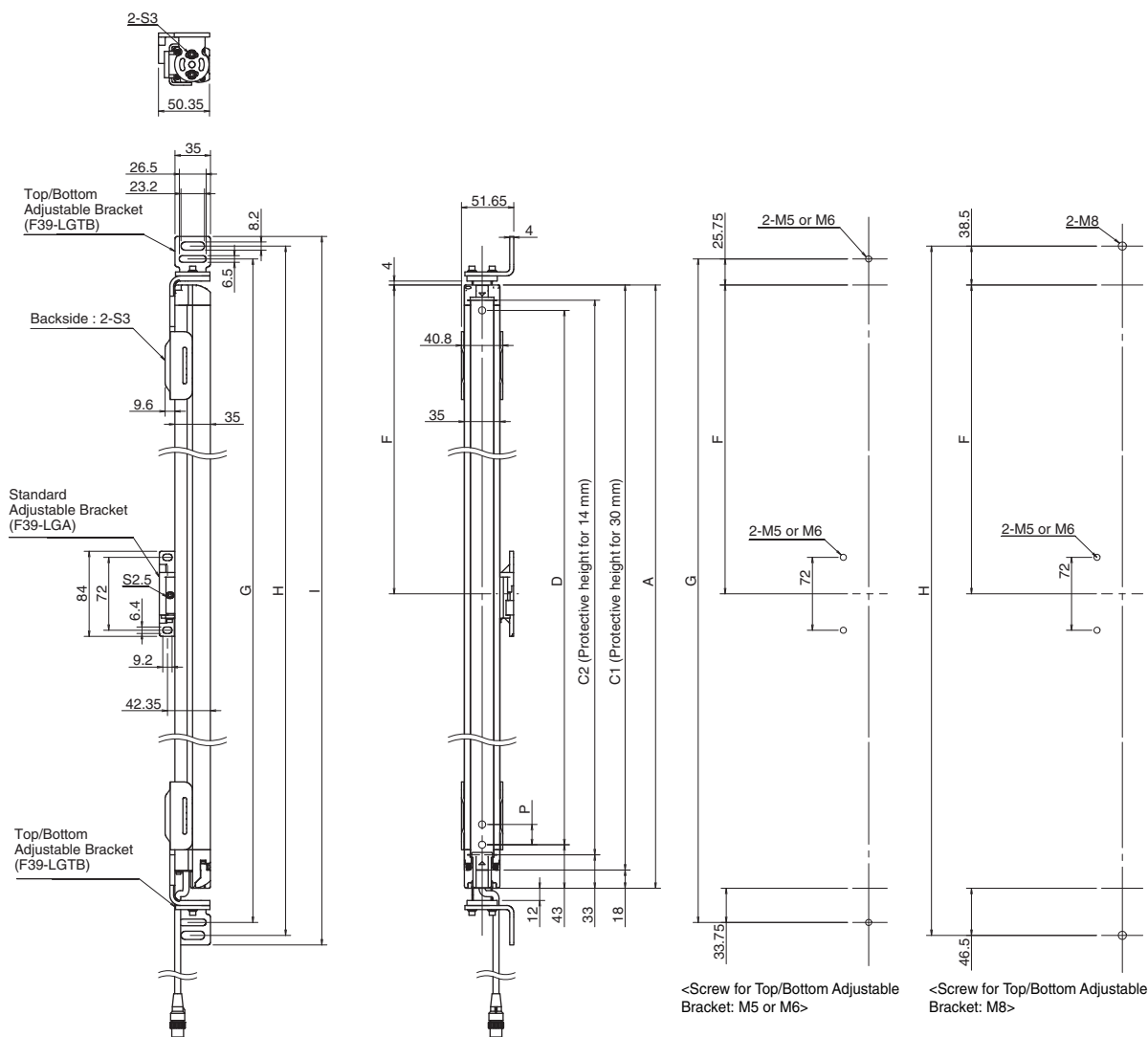
Protective height (C1)	Number of Top/Bottom Adjustable Brackets	Number of Standard Adjustable Brackets	Dimension F
0270 to 1070	2	0	-
1150 to 1950	2	1	1000 mm max.
2030 to 2510	2	2	1000 mm max.

F3SG-□RA□□□□-14 Series

Dimension A	C2+48
Dimension C2	4-digit number of the type name (Protective height)
Dimension D	C2-20
Dimension G	C2+107.5
Dimension H	C2+133
Dimension I	C2+152
Dimension P	10

Protective height (C2)	Number of Top/Bottom Adjustable Brackets	Number of Standard Adjustable Brackets	Dimension F
0240 to 1040	2	0	-
1120 to 1920	2	1	1000 mm max.
2000 to 2080	2	2	1000 mm max.

Side Mounting



F3SG-□RA□□□□-30 Series

Dimension A	C1+18
Dimension C1	4-digit number of the type name (Protective height)
Dimension D	C1-50
Dimension G	C1+77.5
Dimension H	C1+103
Dimension I	C1+122
Dimension P	20

F3SG-□RA□□□□-14 Series

Dimension A	C2+48
Dimension C2	4-digit number of the type name (Protective height)
Dimension D	C2-20
Dimension G	C2+107.5
Dimension H	C2+133
Dimension I	C2+152
Dimension P	10

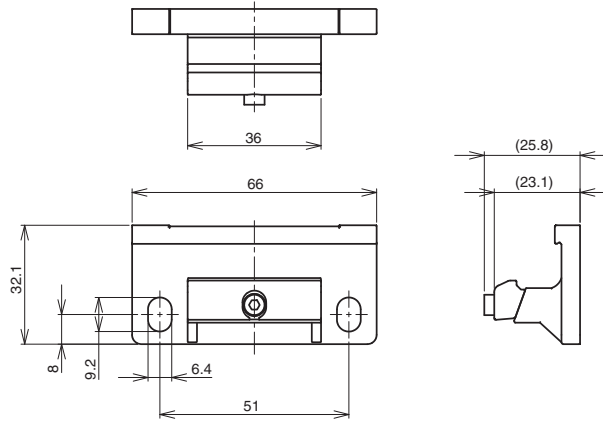
Protective height (C1)	Number of Top/Bottom Adjustable Brackets	Number of Standard Adjustable Brackets	Dimension F
0270 to 1070	2	0	-
1150 to 1950	2	1	1000 mm max.
2030 to 2510	2	2	1000 mm max.

Protective height (C2)	Number of Top/Bottom Adjustable Brackets	Number of Standard Adjustable Brackets	Dimension F
0240 to 1040	2	0	-
1120 to 1920	2	1	1000 mm max.
2000 to 2080	2	2	1000 mm max.

Accessories

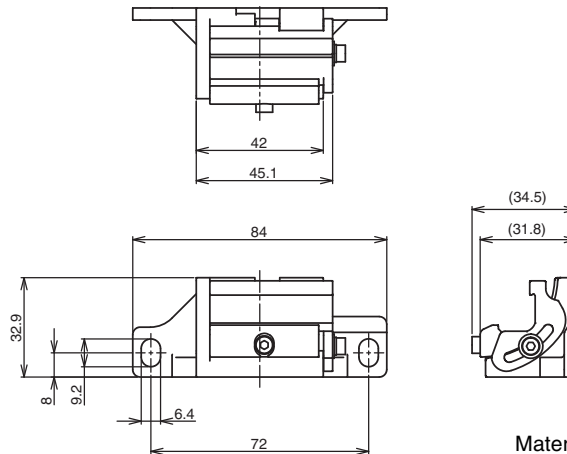
Sensor Mounting Brackets

Standard Fixed Bracket (F39-LGF)



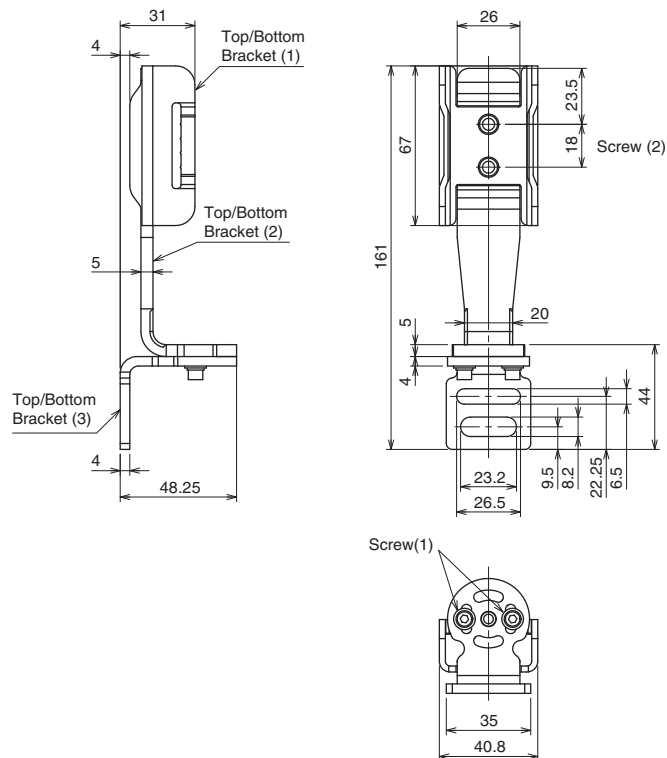
Material: Zinc alloy

Standard Adjustable Bracket (F39-LGA, sold separately)



Material: Zinc alloy ,Fluorochemical lubricant oil

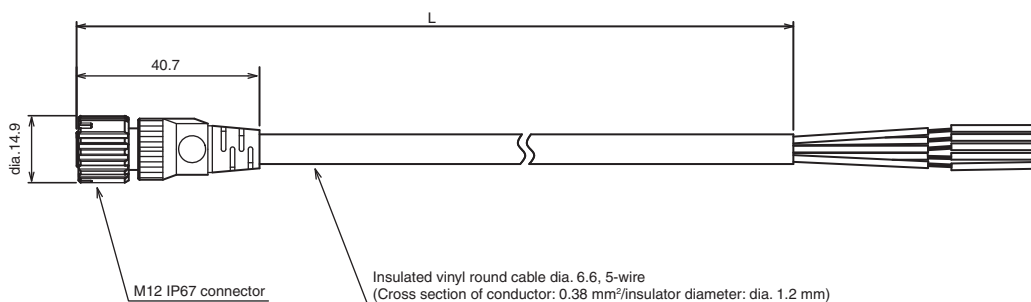
Top/Bottom Adjustable Bracket (F39-LGTB, sold separately)



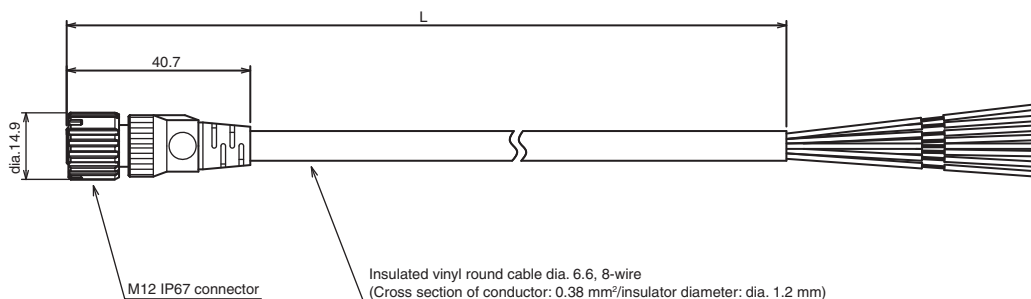
Material: Stainless steel

Safety light curtain connecting cable

Single-Ended Cable for Emitter (F39-JG□A-L, sold separately)

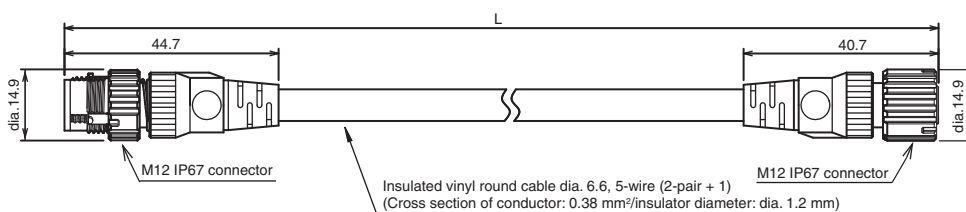


Single-Ended Cable for Receiver (F39-JG□A-D, sold separately)

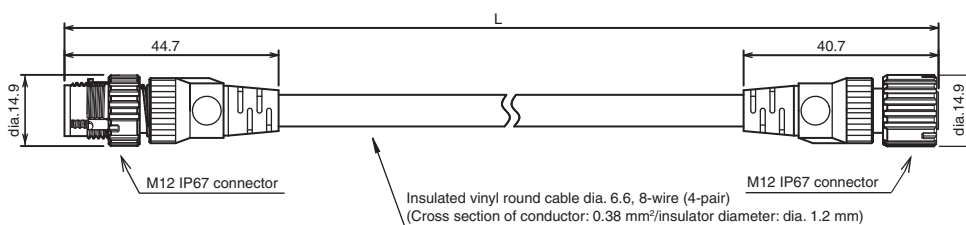


Emitter cable (Gray)	Receiver cable (Black)	L (m)
F39-JG3A-L	F39-JG3A-D	3
F39-JG7A-L	F39-JG7A-D	7
F39-JG10A-L	F39-JG10A-D	10
F39-JG15A-L	F39-JG15A-D	15
F39-JG20A-L	F39-JG20A-D	20

Double-Ended Cable for Emitter: Cable for extension (F39-JG□B-L, sold separately)

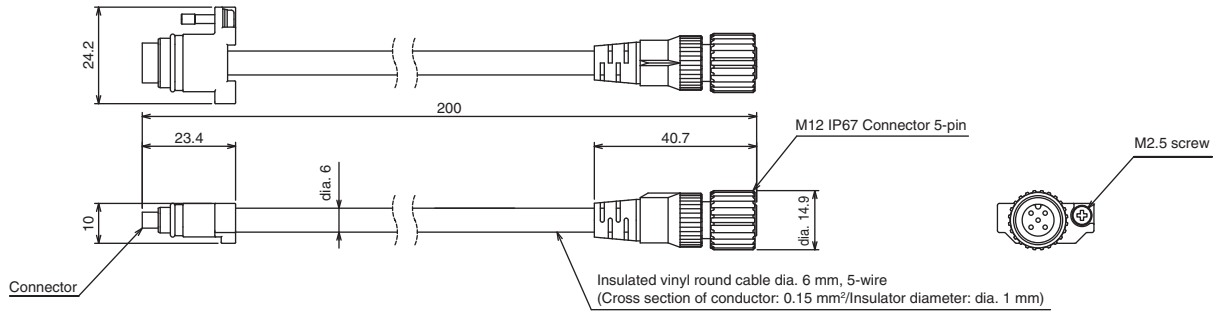


Double-Ended Cable for Receiver: Cable for extension (F39-JG□B-D, sold separately)

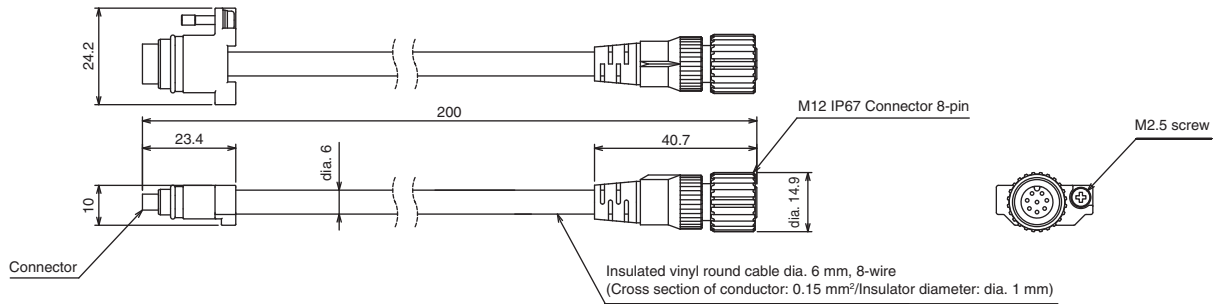


Emitter cable (Gray)	Receiver cable (Black)	L (m)
F39-JGR5B-L	F39-JGR15B-D	0.5
F39-JG1B-L	F39-JG1B-D	1
F39-JG3B-L	F39-JG3B-D	3
F39-JG5B-L	F39-JG5B-D	5
F39-JG7B-L	F39-JG7B-D	7
F39-JG10B-L	F39-JG10B-D	10
F39-JG15B-L	F39-JG15B-D	15
F39-JG20B-L	F39-JG20B-D	20

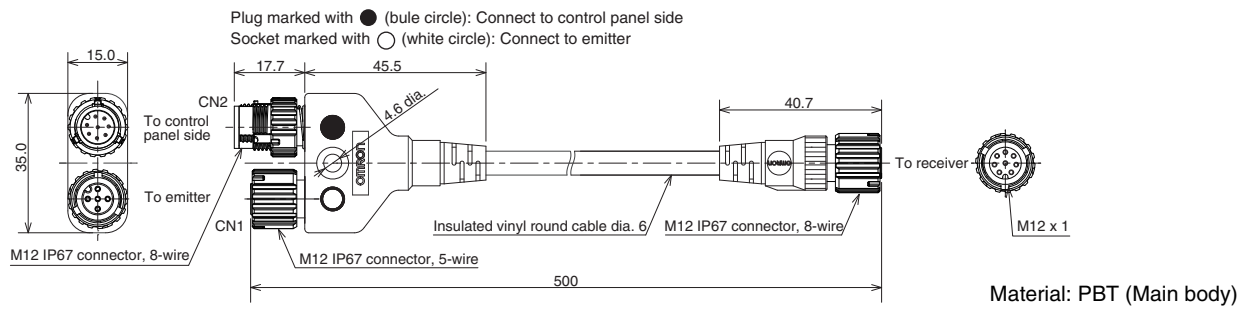
Cascading Cable for Emitter (F39-JGR2W-L, sold separately)



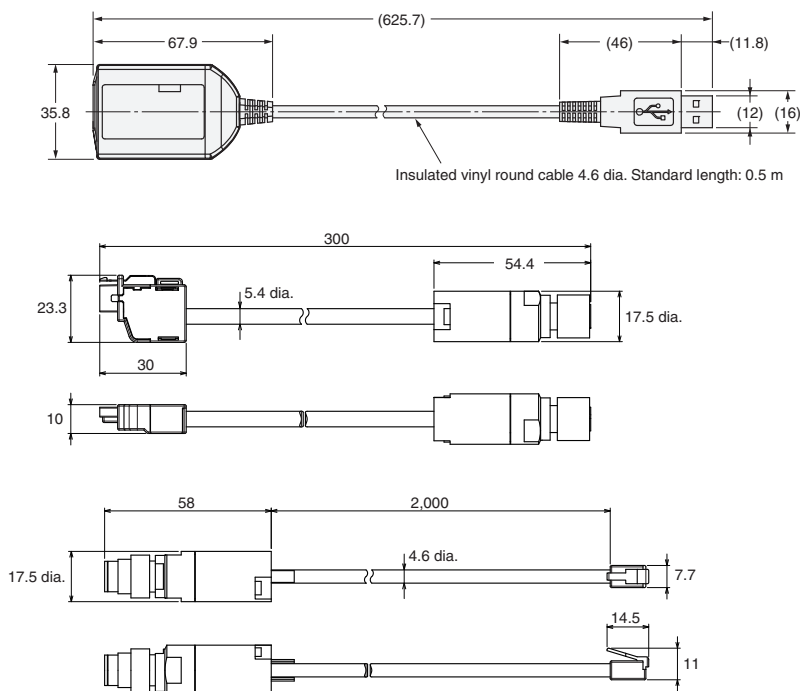
Cascading Cable for Receiver (F39-JGR2W-D, sold separately)



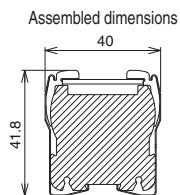
Y-Joint Plug/Socket Connector (F39-GCNY2, sold separately)



Interface Unit (F39-GIF, sold separately)



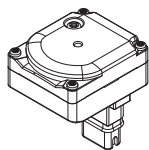
Spatter Protection Cover (F39-HGA, sold separately)



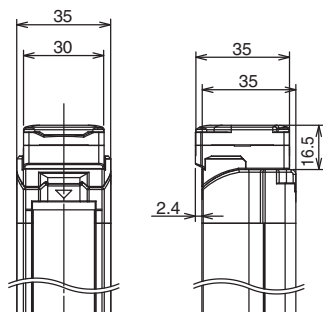
Model	Total length
F39-HGA□□□□	□□□□+4
F39-HGA0550	558

Material: PC (Transparent cover)
 ABS (Side wall)
 Stainless steel (Bracket)
 Aluminum adhesive tape
 (Fixing sticker)

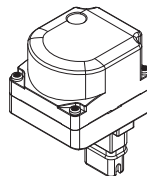
Bluetooth Communication Unit (F39-BT, sold separately)



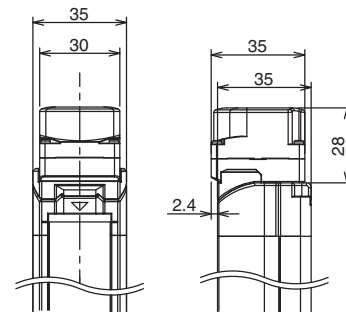
Material: PBT



**Lamp and Bluetooth Communication Unit (F39-BTLP, sold separately)
 Lamp (F39-LP, sold separately)**



Material:
 PC (Lighting element)
 PBT (Other body parts)



Related Manuals

ManNo.	Model	Manual name
Z352	F3SG-R□□□□□□□□	Safety Light Curtain F3SG-□R Series User's Manual