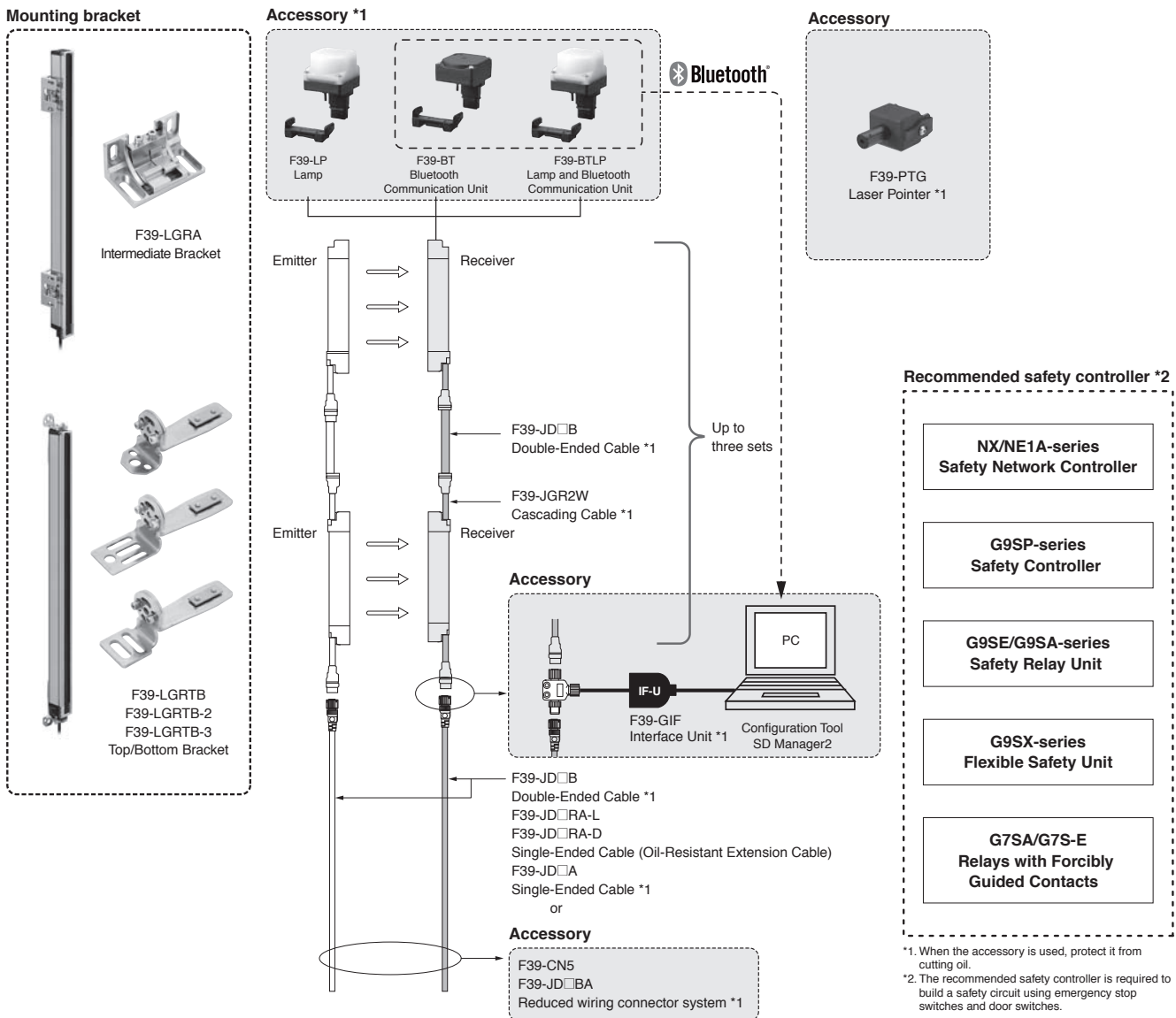# Safety Light Curtain Rugged type
F3SG-RR

Enhanced Oil Resistance

- Mechanical seal structure prevents cutting oil from getting inside
- Special materials and cables significantly enhance oil resistance
- Rugged and compact housing. Perfect fit installation
- IP67G (JIS C 0920 Annex 1) rated

System Configuration

NEW

Mounting bracket

F39-LGRA
Intermediate Bracket

F39-LGRTB
F39-LGRTB-2
F39-LGRTB-3
Top/Bottom Bracket

Accessory *1

F39-LP
Lamp

F39-BT
Bluetooth
Communication Unit

F39-BTLP
Lamp and Bluetooth
Communication Unit

Bluetooth®

Accessory

F39-PTG
Laser Pointer *1

Emitter → Receiver

Emitter → Receiver

F39-JD☐B
Double-Ended Cable *1

F39-JGR2W
Cascading Cable *1

Up to
three sets

Accessory

IF-U

F39-GIF
Interface Unit *1

PC

Configuration Tool
SD Manager2

F39-JD☐B
Double-Ended Cable *1
F39-JD☐RA-L
F39-JD☐RA-D
Single-Ended Cable (Oil-Resistant Extension Cable)
F39-JD☐A
Single-Ended Cable *1
or

Accessory

F39-CN5
F39-JD☐BA
Reduced wiring connector system *1

Recommended safety controller *2

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

*1. When the accessory is used, protect it from cutting oil.
*2. The recommended safety controller is required to build a safety circuit using emergency stop switches and door switches.

OMRON

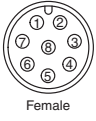# Ordering Information

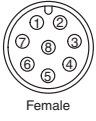## Main Units
Safety Light Curtain

Finger protection

Number of beams	Protective height (mm)	Model
23	240	**F3SG-4RR0240-14**
31	320	**F3SG-4RR0320-14**
39	400	**F3SG-4RR0400-14**
47	480	**F3SG-4RR0480-14**
55	560	**F3SG-4RR0560-14**
63	640	**F3SG-4RR0640-14**
71	720	**F3SG-4RR0720-14**
79	800	**F3SG-4RR0800-14**
87	880	**F3SG-4RR0880-14**
95	960	**F3SG-4RR0960-14**
103	1040	**F3SG-4RR1040-14**
111	1120	**F3SG-4RR1120-14**
119	1200	**F3SG-4RR1200-14**
127	1280	**F3SG-4RR1280-14**
135	1360	**F3SG-4RR1360-14**
143	1440	**F3SG-4RR1440-14**
151	1520	**F3SG-4RR1520-14**
159	1600	**F3SG-4RR1600-14**
167	1680	**F3SG-4RR1680-14**
175	1760	**F3SG-4RR1760-14**
183	1840	**F3SG-4RR1840-14**
191	1920	**F3SG-4RR1920-14**

Hand and arm protection

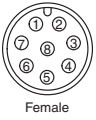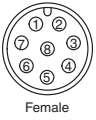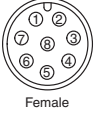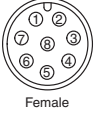| Number of beams	Protective height (mm)	Model
12	240	**F3SG-4RR0240-25**
16	320	**F3SG-4RR0320-25**
20	400	**F3SG-4RR0400-25**
24	480	**F3SG-4RR0480-25**
28	560	**F3SG-4RR0560-25**
32	640	**F3SG-4RR0640-25**
36	720	**F3SG-4RR0720-25**
40	800	**F3SG-4RR0800-25**
44	880	**F3SG-4RR0880-25**
48	960	**F3SG-4RR0960-25**
52	1040	**F3SG-4RR1040-25**
56	1120	**F3SG-4RR1120-25**
60	1200	**F3SG-4RR1200-25**
64	1280	**F3SG-4RR1280-25**
68	1360	**F3SG-4RR1360-25**
72	1440	**F3SG-4RR1440-25**
76	1520	**F3SG-4RR1520-25**
80	1600	**F3SG-4RR1600-25**
84	1680	**F3SG-4RR1680-25**
88	1760	**F3SG-4RR1760-25**
92	1840	**F3SG-4RR1840-25**
96	1920	**F3SG-4RR1920-25**

Accessories (Sold separately)

Single-Ended Cable (Oil-Resistant Extension Cable)

Appearance	Type	Cable length	Specifications	Model
	For emitter M12 connector (8-pin), 5 wires Color: Gray	3 m	For emitter, M12 connector (8-pin), Color: Gray Connected to Power Cable or Double-Ended Cable Female 1 | – | Not used 2 | Brown | +24 VDC 3 | Black | TEST 4 | – | Not used 5 | Gray | Not used 6 | Pink | Not used 7 | Blue | 0 VDC 8 | – | Not used	**F39-JD3RA-L**
		7 m	For receiver, M12 connector (8-pin), Color: Black Connected to Power Cable or Double-Ended Cable Female 1 | White | OSSD 2 2 | Brown | +24 VDC 3 | Black | OSSD 1 4 | Yellow | AUX 5 | Gray | PC COM (+) /MUTE A 6 | Pink | PC COM (-) /MUTE B 7 | Blue | 0 VDC 8 | Red | RESET/EDM	**F39-JD7RA-L**
	For receiver M12 connector (8-pin), 8 wires Color: Black	3 m		**F39-JD3RA-D**
		7 m	IP67 and IP67G (JIS C 0920 Annex 1)* rated when mated. * F3SG-RR meets the degree of protection when this cable is correctly connected with the power cable of the F3SG-RR. The degree of protection is not satisfied with the part where cable wires are uncovered.	**F39-JD7RA-D**

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

Single-Ended Cable (2 cables per set, one for emitter and one for receiver) *
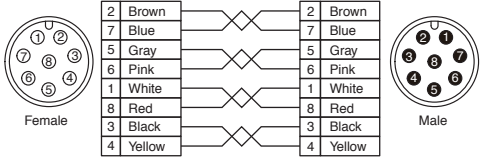
Appearance	Cable length	Specifications	Model
	3 m	For emitter M12 connector (8-pin), Color: Gray Connected to Power Cable or Double-Ended Cable Female 1 | White | Not used 2 | Brown | +24 VDC 3 | Black | TEST 4 | Yellow | Not used 5 | Gray | Not used 6 | Pink | Not used 7 | Blue | 0 VDC 8 | Red | Not used	**F39-JD3A**
	7 m		**F39-JD7A**
	10 m	For receiver M12 connector (8-pin), Color: Black Connected to Power Cable or Double-Ended Cable Female 1 | White | OSSD 2 2 | Brown | +24 VDC 3 | Black | OSSD 1 4 | Yellow | AUX 5 | Gray | PC COM (+) /MUTE A 6 | Pink | PC COM (-) /MUTE B 7 | Blue | 0 VDC 8 | Red | RESET/EDM	**F39-JD10A**
	15 m		**F39-JD15A**
	20 m	IP67* rated when mated. * When the accessory is used, protect it from cutting oil.	**F39-JD20A**

* The cable for emitter and the cable for receiver are available separately. Add '-L' for emitter or '-D' for receiver to the end of the model number when you order.
  Single-Ended Cable for Emitter: F39-JD□A-L, Single-Ended Cable for Receiver: F39-JD□A-D
Note: To extend the cable length to more than 20 m, add the F39-JD□B Double-Ended Cable.

Double-Ended Cable (2 cables per set, one for emitter and one for receiver) *

Appearance	Cable length	Specifications	Model
	0.5 m	**For emitter M12 connector (8-pin), Color: Gray**	**F39-JDR5B**
	1 m		**F39-JD1B**
	3 m		**F39-JD3B**
	5 m		**F39-JD5B**
	7 m	**For receiver, M12 connector(8-pin) Color: Black**	**F39-JD7B**
	10 m		**F39-JD10B**
	15 m		**F39-JD15B**
	20 m	IP67* rated when mated. * When the accessory is used, protect it from cutting oil.	**F39-JD20B**

For emitter M12 connector (8-pin), Color: Gray

Connected to Power Cable or Double-Ended Cable — Female

Connected to Single-Ended Cable, or Double-Ended Cable — Male

2	Brown
7	Blue
5	Gray
6	Pink
1	White
8	Red
3	Black
4	Yellow

For receiver, M12 connector(8-pin) Color: Black

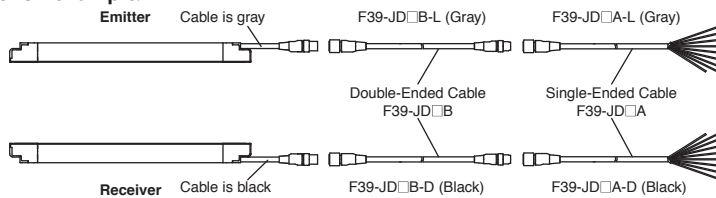| 2 | Brown |
7	Blue
5	Gray
6	Pink
1	White
8	Red
3	Black
4	Yellow

* The cable for emitter and the cable for receiver are available separately. Add '-L' for emitter or '-D' for receiver to the end of the model number when you order.
   Double-Ended Cable for Emitter: F39-JD☐B-L, Double-Ended Cable for Receiver: F39-JD☐B-D
Note: To extend the cable length to more than 20 m, use the F39-JD☐B Double-Ended Cables in combination.
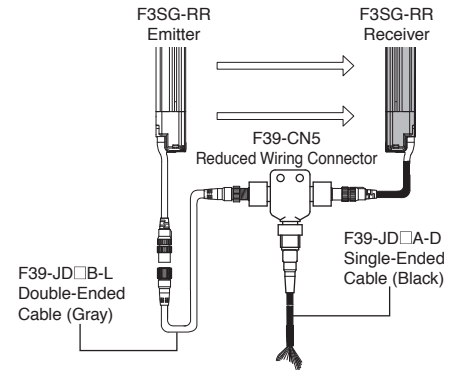Example: When using a cable of 30 m, connect the F39-JD10B Double-Ended Cable with the F39-JD20B Double-Ended Cable.

<Connection example>

Emitter — Cable is gray — F39-JD☐B-L (Gray) — F39-JD☐A-L (Gray)

Double-Ended Cable F39-JD☐B — Single-Ended Cable F39-JD☐A

Receiver — Cable is black — F39-JD☐B-D (Black) — F39-JD☐A-D (Black)

Reduced Wiring Connector System (Order the F39-CN5 and Cables for Reduce Wiring.)
Reduced Wiring Connector

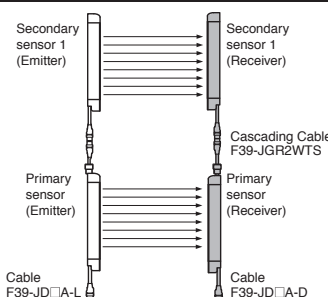| Appearance	Specifications	Model
	IP67* rated when mated. * When the accessory is used, protect it from cutting oil.	**F39-CN5**

Note: When using the Reduced Wiring Connector (F39-CN5), the following functions are not available.
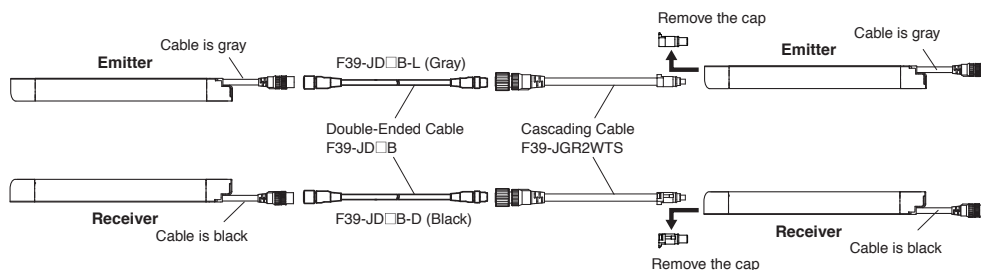- Manual Reset
- External Device Monitoring
- Auxiliary Output
Make sure to keep the settings in the factory default.

F3SG-RR Emitter

F3SG-RR Receiver

F39-CN5 Reduced Wiring Connector

F39-JD☐A-D Single-Ended Cable (Black)

F39-JD☐B-L Double-Ended Cable (Gray)

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

Appearance	Type	Cable length	Specifications	Model
	Cap (8-pin), M12 connector (8-pin)	0.2 m	Secondary sensor 1 (Emitter) → Secondary sensor 1 (Receiver); Cascading Cable F39-JGR2WTS; Primary sensor (Emitter) → Primary sensor (Receiver); Cable F39-JD□A-L; Cable F39-JD□A-D. IP67* rated when mated. * When the accessory is used, protect it from cutting oil.	**F39-JGR2WTS**

Note: The Double-Ended Cable (up to 10 m: F39-JD10B) 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-JGR2WTS) and power cable)

Emitter — Cable is gray — F39-JD□B-L (Gray) — Double-Ended Cable F39-JD□B — Cascading Cable F39-JGR2WTS — Remove the cap — **Emitter** — Cable is gray

Receiver — Cable is black — F39-JD□B-D (Black) — **Receiver** — Remove the cap — Cable is black

Sensor Mounting Brackets

Appearance	Specifications	Application	Model
	Intermediate Bracket	Beam alignment after mounting possible. The angle adjustment range is ±15°. Side mounting and backside mounting possible. (Sold separately as a set of 2 brackets. Refer to note *1 for the number of sets required for each model.)	**F39-LGRA**
	Top/Bottom Bracket *2	Use this bracket at the top and bottom positions of the F3SG-RR. Beam alignment after mounting possible. The angle adjustment range is ±22.5°. Side mounting and backside mounting possible. (Sold separately as a set of 4 brackets.)	**F39-LGRTB**
	Top/Bottom Bracket *2	The part of this bracket to contact with a wall surface has a different shape from the F39-LGRTB Top/Bottom Bracket. Use this bracket when replacing an existing safety light curtain with the F3SG-RR. (Sold separately as a set of 4 brackets.)	**F39-LGRTB-2**
	Top/Bottom Bracket *2	The part of this bracket to contact with a wall surface has a different shape from the F39-LGRTB Top/Bottom Bracket. Use this bracket when replacing an existing safety light curtain with the F3SG-RR. (Sold separately as a set of 4 brackets.)	**F39-LGRTB-3**

*1. Protective height of 0240 to 1200 mm: 2 sets, Protective height of 1280 to 1920 mm: 3 sets
*2. Use the Top/Bottom Bracket in combination with the Intermediate Bracket.
   Protective height of 1120 to 1920 mm: 1 set of Top/Bottom Bracket and 1 set of Intermediate Bracket
   Protective height of 1040 mm or less: The Intermediate Bracket is not required.

Interface units and configuration tool SD Manager 2

Appearance	Type	Specifications	Model
	SD Manager2	The Configuration Tool SD Manager 2 is available to download from our website at http://www.ia.omron.com/f3sg-r_tool	–
	Interface Unit	F39-GIF-1 interface unit to connect the F3SG-RR receiver to a USB port of the PC	**F39-GIF-1**
	Bluetooth Communication Unit	F39-BT bluetooth unit to enable bluetooth on the F3SG-RR IP67* rated when mated.	**F39-BT**

* When the accessory is used, protect it from cutting oil.

Lamp

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

* When the accessory is used, protect it from cutting oil.

End Cap

Appearance	Specifications	Model
	Housing color: Black For both emitter and receiver (Attached to the F3SG-R. The End Cap can be purchased if lost.) IP67*1 *2 rated when mated.	**F39-CNM**

*1. This accessory can also be used with the F3SG-RA.
*2. When the accessory is used, protect it from cutting oil.

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**

Test Rod

Diameter	Model
14 mm dia.	**STI-TO14**
25 mm dia.	**STI-TO24**

Ratings and Specifications

Main unit

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

			F3SG-4RR□□□□-14	F3SG-4RR□□□□-25
Performance	**Object Resolution (Detection Capability)**		Opaque objects	
			14-mm dia.	25-mm dia.
	Beam Gap		10 mm	20 mm
	Number of Beams		23 to 191	12 to 96
	Lens Size		5.2 × 3.4 (W × H) mm	6.0 × 5.0 (W × H) mm
	Protective Height		240 to 1920 mm	
	Operating Range		0.3 to 10.0 m	0.3 to 17.0 m
	Response Time	**ON to OFF**	Normal mode: 8 to 18 ms *1 Slow mode: 16 to 36 ms *1 *2	
		OFF to ON	Normal mode: 40 to 90ms (synchronized), 140 to 190ms (not synchronized) *1	
			*1. Response time when used in one segment system or in cascaded connection. 📖 Refer to page 63. *2. Selectable by Configuration Tool.	
	Effective Aperture Angle (EAA) (IEC 61496-2)		±2.5° max., emitter and receiver at operating range of 3 m or greater	
	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 63 .	
	Safety Outputs (OSSD)		Two PNP or NPN transistor outputs (PNP or NPN is selectable by Configuration Tool.)	
			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.	
	Auxiliary Output		One PNP or NPN transistor output (PNP or NPN is selectable by Configuration Tool.)	
			Load current of 100 mA max., Residual voltage of 2 V max .	
	Output Operation Mode	**Safety Output**	Light-ON (Safety output is enabled when the receiver receives an emitting signal.)	
		Auxiliary Output	Safety output (Inverted signal output:Enable) (default) (Cofigurable by Configuration Tool)	
	Input Voltage	**External device monitoring input (Lockout reset input)**	PNP ON voltage: Vs-3 V to Vs (short circuit current: approx. 6.5 mA) * OFF voltage: 0 V to 1/2 Vs, or open (short circuit current: approx. 8.0 mA) * NPN ON voltage: 0 V to 3 V (short circuit current: approx. 8.0 mA) OFF voltage: 1/2 Vs to Vs, or open (short circuit current: approx. 6.5 mA) *	
		Muting input A/B	PNP ON voltage: Vs-3 V to Vs (short circuit current: approx. 3.0 mA) * OFF voltage: 0 V to 1/2 Vs, or open (short circuit current: approx. 5.0 mA) * NPN ON voltage: 0 V to 3 V (short circuit current: approx. 5.0 mA) OFF voltage: 1/2 Vs to Vs, or open (short circuit current: approx. 3.0 mA) *	
		Test input	24 V Active setting: ON voltage: 9 V to Vs (short circuit current: approx. 2.5 mA) * OFF voltage: 0 V to 1.5 V or open (short circuit current: approx. 2.0 mA) 0 V Active setting: ON voltage: 0 V to 3 V (short circuit current: approx. 2.0 mA) OFF voltage: 9 V to Vs or open (short circuit current: approx. 2.5 mA) *	
			* The Vs indicates a supply voltage value in your environment.	
	Overvoltage Category (IEC 60664-1)		II	
	Indicators		📖 Refer to page 65.	
	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	**Mutual Interference Prevention (Scan Code)**		This function prevents mutual interference in up to two F3SG-RR systems.	
	Cascade Connection		Number of cascaded segments: 3 max.	
			Total number of beams: 255 max. Cable length between sensors: 10 m max. (not including cascading cable (F39-JGR2WTS) and power cable)	
	Test Function		Self-test (at power-on, and during operation) External test (light emission stop function by test input)	
	Safety-Related Functions		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-4RR□□□□-14	F3SG-4RR□□□□-25
Environ-mental	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)		IEC 60529: IP65 and IP67, JIS C 0920 Annex 1: IP67G * *The IP67G is the degree of protection which is defined according to the JIS (Japanese Industrial Standards). The IP67 indicates the same level of protection as defined by the IEC, and the G indicates that a device has resistance to oil.	
	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	
Connec-tions	Power cable	Type of Connection	M12 connectors: 8-pin emitter and receiver. Cables prewired to the sensors. IP67 and IP67G (JIS C 0920 Annex 1) * rated when mated. *F3SG-RR meets the degree of protection when it is correctly connected with an F39-JD□□RA-□ Oil-resistant extension cable.	
		Number of Wires	Emitter: 5, Receiver: 8	
		Cable Length	0.3 m	
		Cable Diameter	6 mm	
		Minimum Bending Radius	R36 mm	
	Cascading cable	Type of Connection	M12 connectors: 8-pin emitter and receiver. IP67 rated when mated.	
		Number of Wires	Emitter: 5, Receiver: 8	
		Cable Length	0.3 m	
		Cable Diameter	6 mm	
		Minimum Bending Radius	R5 mm	
	F39-JD□RA-□ Oil-resistant extension cable - Single-Ended Cable	Type of Connection	M12 connectors: 8-pin emitter and receiver. Cables prewired to the sensors. IP67 and IP67G (JIS C 0920 Annex 1)* rated when mated. * F3SG-RR meets the degree of protection when it is correctly connected with the power cable. The degree of protection is not satisfied with the part where cable wires are uncovered.	
		Number of Wires	Emitter: 5, Receiver: 8	
		Cable Length	🗐 Refer to page 57.	
		Cable Diameter	6 mm	
		Minimum Bending Radius	R36 mm	
	Extension cable - Single-Ended Cable (F39-JD□A) - Double-Ended Cable (F39-JD□B)	Type of Connection	M12 connectors: 8-pin emitter and receiver. IP67 rated when mated.	
		Number of Wires	Emitter: 8, Receiver: 8	
		Cable Length	🗐 Refer to page 57.	
		Cable Diameter	6.6 mm	
		Minimum Bending Radius	R36 mm	
	Extension of Power Cable		100 m max. (Emitter/Receiver)	
Material	Material		Housing: Aluminum Cap: PBT Front window: PMMA Cable: Fluororesin cable FE plate: SUS	
	Weight (packaged)		🗐 Refer to page 63 .	
	Included Accessories		Safety Precautions, Quick Installation Manual, Troubleshooting Guide Sticker, Warning Zone Label, End Cap (for switching External Test Input function)	
Conformity	Conforming standards		🗐 Refer to page 64.	
	Performance Level (PL)/Safety category		PL e/Category 4 (EN ISO 13849-1:2015)	
	PFHd		9.9×10^{-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-4RR□□□□-14

Model	Number of Beams	Protective Height [mm] (Overall length)	Response Time [ms] *1			Current Consumption [mA]		Weight [kg] *3
			ON → OFF *2	OFF (Synchronized) → ON	OFF (Not synchronized) → ON	Emitter	Receiver	
F3SG-4RR0240-14	23	240	8	40	140	45	75	1.3
F3SG-4RR0320-14	31	320	8	40	140	55	75	1.7
F3SG-4RR0400-14	39	400	8	40	140	60	80	1.9
F3SG-4RR0480-14	47	480	13	65	165	50	80	2.1
F3SG-4RR0560-14	55	560	13	65	165	55	80	2.3
F3SG-4RR0640-14	63	640	13	65	165	60	85	2.7
F3SG-4RR0720-14	71	720	13	65	165	65	85	2.9
F3SG-4RR0800-14	79	800	13	65	165	65	90	3.1
F3SG-4RR0880-14	87	880	13	65	165	70	90	3.3
F3SG-4RR0960-14	95	960	13	65	165	75	90	3.4
F3SG-4RR1040-14	103	1040	13	65	165	80	95	4.1
F3SG-4RR1120-14	111	1120	13	65	165	85	95	4.2
F3SG-4RR1200-14	119	1200	13	65	165	90	100	4.4
F3SG-4RR1280-14	127	1280	13	65	165	95	100	4.6
F3SG-4RR1360-14	135	1360	13	65	165	95	105	4.8
F3SG-4RR1440-14	143	1440	18	90	190	85	105	4.9
F3SG-4RR1520-14	151	1520	18	90	190	90	105	5.1
F3SG-4RR1600-14	159	1600	18	90	190	90	110	5.8
F3SG-4RR1680-14	167	1680	18	90	190	95	110	6.0
F3SG-4RR1760-14	175	1760	18	90	190	100	115	6.1
F3SG-4RR1840-14	183	1840	18	90	190	100	115	6.3
F3SG-4RR1920-14	191	1920	18	90	190	105	120	6.5

*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 weight includes an emitter, a receiver and included accessories in a product package.

F3SG-4RR□□□□-25

Model	Number of Beams	Protective Height [mm] (Overall length)	Response Time [ms] *1			Current Consumption [mA]		Weight [kg] *3
			ON → OFF *2	OFF (Synchronized) → ON	OFF (Not synchronized) → ON	Emitter	Receiver	
F3SG-4RR0240-25	12	240	8	40	140	35	75	1.3
F3SG-4RR0320-25	16	320	8	40	140	40	75	1.7
F3SG-4RR0400-25	20	400	8	40	140	45	75	1.9
F3SG-4RR0480-25	24	480	8	40	140	50	75	2.1
F3SG-4RR0560-25	28	560	8	40	140	50	75	2.3
F3SG-4RR0640-25	32	640	8	40	140	55	75	2.7
F3SG-4RR0720-25	36	720	8	40	140	60	80	2.9
F3SG-4RR0800-25	40	800	8	40	140	65	80	3.1
F3SG-4RR0880-25	44	880	13	65	165	50	80	3.2
F3SG-4RR0960-25	48	960	13	65	165	50	80	3.4
F3SG-4RR1040-25	52	1040	13	65	165	55	80	4.0
F3SG-4RR1120-25	56	1120	13	65	165	55	85	4.2
F3SG-4RR1200-25	60	1200	13	65	165	55	85	4.4
F3SG-4RR1280-25	64	1280	13	65	165	60	85	4.5
F3SG-4RR1360-25	68	1360	13	65	165	60	85	4.7
F3SG-4RR1440-25	72	1440	13	65	165	65	85	4.9
F3SG-4RR1520-25	76	1520	13	65	165	65	90	5.1
F3SG-4RR1600-25	80	1600	13	65	165	70	90	5.7
F3SG-4RR1680-25	84	1680	13	65	165	70	90	5.9
F3SG-4RR1760-25	88	1760	13	65	165	70	90	6.1
F3SG-4RR1840-25	92	1840	13	65	165	75	90	6.3
F3SG-4RR1920-25	96	1920	13	65	165	75	95	6.4

*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 weight includes an emitter, a receiver and included accessories in a product package.

Legislation and Standards

1. The F3SG-RR does not receive type approval provided by Article 44-2 of the Industrial Safety and Health Act of Japan. When using the F3SG-RR 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-RR is electro-sensitive protective equipment (ESPE) in accordance with European Union (EU) Machinery Directive Index Annex V, Item 2.
3. EC/EU Declaration of Conformity
   OMRON declares that the F3SG-RR is in conformity with the requirements of the following EC/EU Directives:
   Machinery Directive 2006/42/EC
   EMC Directive 2014/30/EU
4. Conforming Standards
   (1) European standards
      EN61496-1 (Type 4 ESPE), EN 61496-2 (Type 4 AOPD), EN61508-1 through -4 (SIL 3), EN ISO 13849-1:2015 (PL e, Category 4)
   (2) International standards
      IEC61496-1 (Type 4 ESPE), IEC61496-2 (Type 4 AOPD), IEC61508-1 through -4 (SIL 3), ISO 13849-1:2015 (PL e, Category 4)
   (3) JIS standards
      JIS B 9704-1 (Type 4 ESPE), JIS B 9704-2 (Type 4 AOPD)
   (4) North American standards
      UL61496-1 (Type 4 ESPE), UL61496-2 (Type 4 AOPD), UL508, UL1998,
      CAN/CSA C22.2 No.14, CAN/CSA C22.2 No.0.8
5. Third-Party Certifications
   (1) TÜV SÜD
      • EC Type-Examination certificate:
        EU Machinery Directive, Type 4 ESPE (EN61496-1), Type 4 AOPD (EN 61496-2)
      • Certificate:
        Type 4 ESPE (EN61496-1), Type 4 AOPD (EN61496-2), EN 61508-1 through -4 (SIL 3), EN ISO 13849-1:2015 (PL e, Category 4)
   (2) UL
      • UL Listing:
        Type 4 and ESPE (UL61496-1), Type 4 AOPD (UL61496-2), UL508, UL1998, CAN/CSA C22.2 No.14, CAN/CSA C22.2 No.0.8
6. Other Standards
   The F3SG-RR 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/TS 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

Indicator

Emitter

Name of Indicator		Color	Illuminated	Blinking
Test	TEST	Green	–	External Test is being performed
Operating range	LONG	Green	Always illuminated	–
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	–
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	Blanking Monitoring error
Configuration	CFG	Green	–	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 *2
External device monitoring	EDM	Green	RESET input is in ON state *1	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	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 Scan code setting error

Note: TOP, CFG, LOCKOUT, STB and ON/OFF indicators are illuminated when the receiver of the F3SG-RR is in Setting mode.
*1. The EDM indicator is illuminated when the EDM input is in the ON state regardless of the use of the EDM function.
*2. Refer to *Safety Light Curtain F3SG-□RR Series User's Manual (ManNo.: Z383)* for more information of blinking patterns.

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/Green/Orange
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)

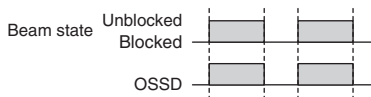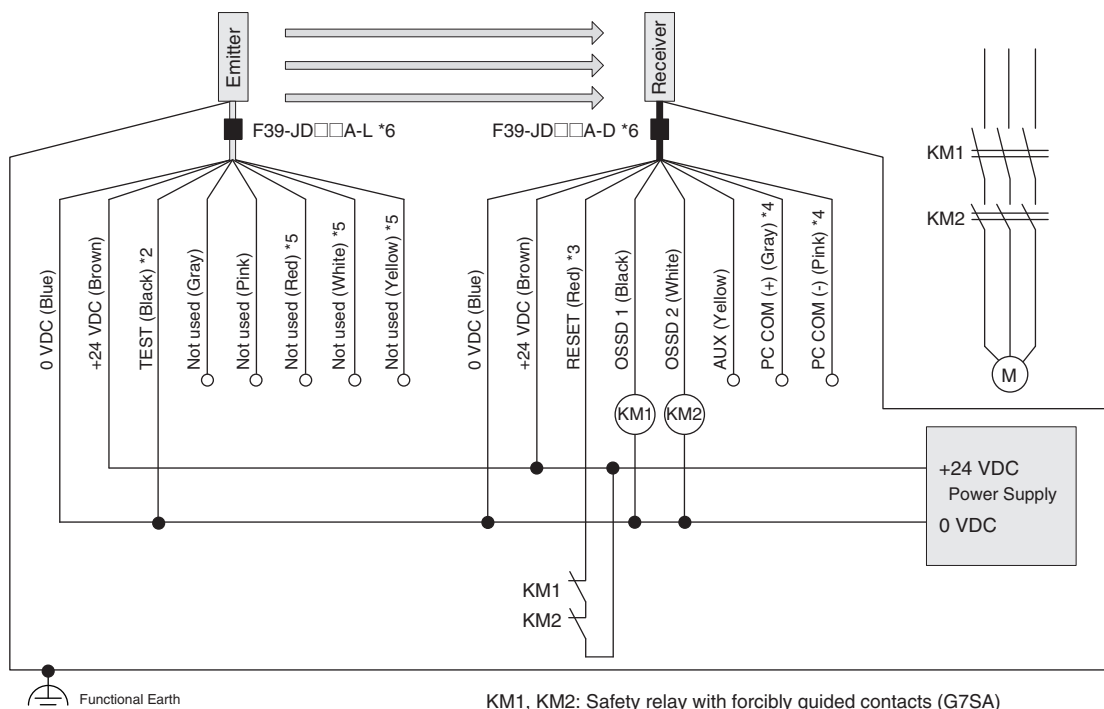# Standalone F3SG-RR using PNP Outputs

Auto Reset Mode, EDM enabled and PNP Outputs

The following is the example of Muting not used, External Device Monitoring enabled, Auto Reset Mode, PNP outputs and External Test in 24 V Active (not used).

Settings

	Function
Receiver	EDM Enabled (factory default setting) *1
	Auto Reset (factory default setting) *1
	PNP (factory default setting) *1
Emitter	External Test: 24 V Active (End Cap: Black) (factory default setting)

Wiring Example

KM1, KM2: Safety relay with forcibly guided contacts (G7SA)
M: 3-phase motor

*1.The functions are configurable with Configuration Tool. Refer to *Safety Light Curtain Configuration Tool for Model F3SG (SD Manager 2) User's Manual* for more information on setting the functions by the Configuration Tool.
*2.Connect the line to 24 V via a test switch (N.O. contact) if External Test is used.
*3.Connect a lockout reset switch (N.C. contact) to this line in series with the KM1 and KM2 if Lockout Reset is used.
*4.Used as MUTE A and B lines when Muting is used.
*5.The F39-JD□RA-L Single-Ended Cable for Emitter (Oil-Resistant Extension Cable) does not have the red, white and yellow wires.
*6.For the F39-JD□A-□ Single-Ended Cable, connect the shield line to 0 V.

Note: Functional earth connection is unnecessary when you use the F3SG-RR in a general industrial environment where noise control or stable power supply is considered. However, when you use the F3SG-RR in an environment where there may be excessive noise from surroundings or stable power supply may be interfered, it is recommended the F3SG-RR 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-RR Series User's Manual* for more information.
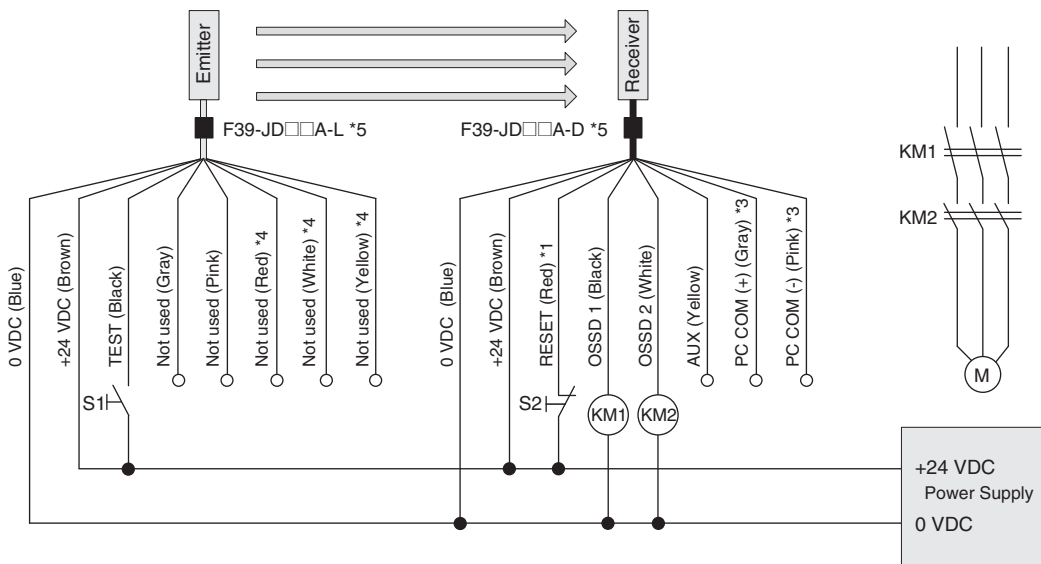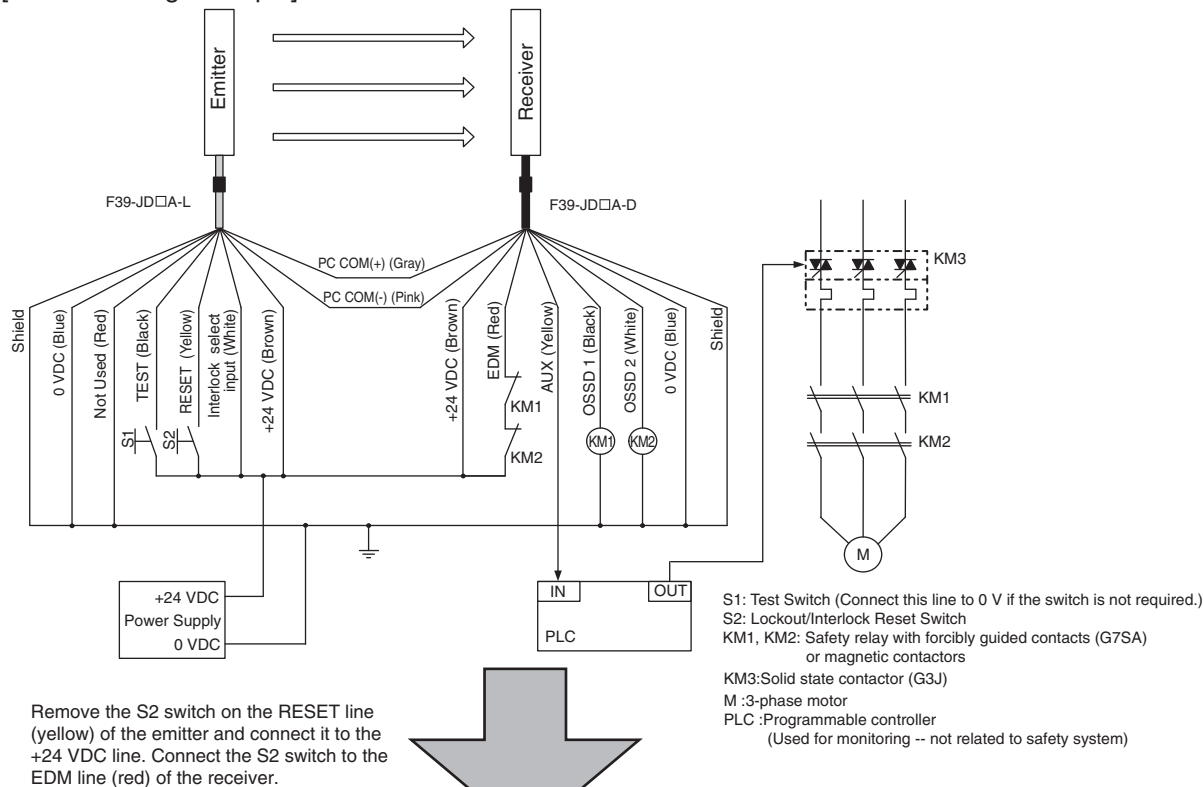
Manual Reset Mode, EDM disabled and PNP Outputs

The following is the example of Muting not used, External Device Monitoring disabled, Manual Reset Mode, PNP outputs and External Test in 24 V Active (used).

Settings

	Function
Receiver	EDM Disabled *2
	Manual Reset *2
	PNP (factory default setting) *2
Emitter	External Test: 24 V Active (End Cap: Black) (factory default setting)

Wiring Example

S1: Test Switch (Connect the line to 0 V if this switch is not required)
S2: Lockout/Interlock Reset Switch
KM1, KM2: Safety relay with forcibly guided contacts (G7SA)
M: 3-phase motor

*1. Also used as EDM line.
*2. The functions are configurable with Configuration Tool. Refer to *Safety Light Curtain Configuration Tool for Model F3SG (SD Manager 2) User's Manual* for more information on setting the functions by the Configuration Tool.
*3. Used as MUTE A and B lines when Muting is used.
*4. The F39-JD□RA-L Single-Ended Cable for Emitter (Oil-Resistant Extension Cable) does not have the red, white and yellow wires.
*5. For the F39-JD□A-□ Single-Ended Cable, connect the shield line to 0 V.

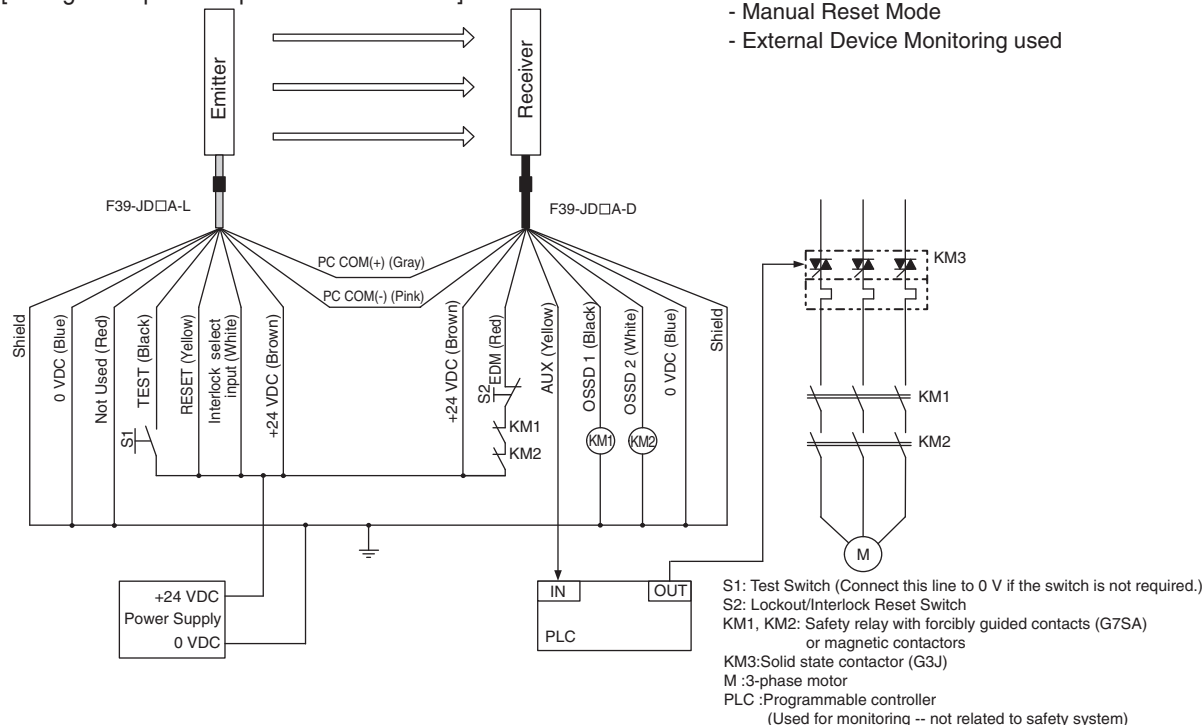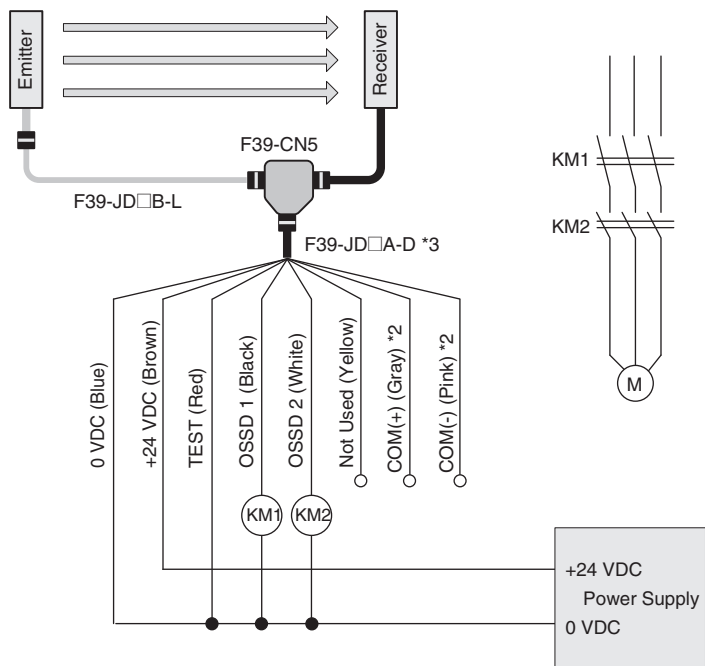**Note:** For the functional earth connection, refer to page 66.

Replacing the F3SJ-B Safety Light Curtain with F3SG-RR
The following is the example of External Device Monitoring enabled, Manual Reset Mode, PNP outputs and External Test in 24 V Active (used).
When replacing the F3SJ-B with F3SG-RR, change the wiring as shown below if using the Interlock/Lockout Reset function with the RESET line (yellow) of the F3SJ-B emitter.

[F3SJ-B Wiring Example]

S1: Test Switch (Connect this line to 0 V if the switch is not required.)
S2: Lockout/Interlock Reset Switch
KM1, KM2: Safety relay with forcibly guided contacts (G7SA)
          or magnetic contactors
KM3:Solid state contactor (G3J)
M :3-phase motor
PLC :Programmable controller
     (Used for monitoring -- not related to safety system)

Remove the S2 switch on the RESET line (yellow) of the emitter and connect it to the +24 VDC line. Connect the S2 switch to the EDM line (red) of the receiver.

[Wiring Example to Replace with F3SG-RR]

- Manual Reset Mode
- External Device Monitoring used

S1: Test Switch (Connect this line to 0 V if the switch is not required.)
S2: Lockout/Interlock Reset Switch
KM1, KM2: Safety relay with forcibly guided contacts (G7SA)
          or magnetic contactors
KM3:Solid state contactor (G3J)
M :3-phase motor
PLC :Programmable controller
     (Used for monitoring -- not related to safety system)

Note: 1. Connect the RESET line (yellow) used for the F3SJ-B emitter to +24 VDC line directly. This connection is not needed when using the Auto Rest Mode.
   2. For the functional earth connection, refer to page 66.

F3SG-RR with Reduced Wiring Connector and PNP Outputs

The following is the example of Muting not used, External Device Monitoring enabled, Auto Reset Mode, PNP outputs and External Test in 24 V Active (not used).

Settings

	Function
Receiver	EDM Enabled (factory default setting) *1
	Auto Reset (factory default setting) *1
	PNP (factory default setting) *1
Emitter	External Test: 24 V Active (End Cap: Black) (factory default setting)

The reduced wiring system can be achieved by using the Reduced Wiring Cables (F39-JD☐BA) and the Reduced Wiring Connector (F39-CN5).

Wiring Example

KM1, KM2: Safety relay with forcibly guided contacts (G7SA)
M: 3-phase motor

*1. The functions are configurable with Configuration Tool. Refer to *Safety Light Curtain Configuration Tool for Model F3SG (SD Manager 2) User's Manual* for more information on setting the functions by the Configuration Tool.
*2. Used as MUTE A and B lines when Muting is used.
*3. Connect the shield line to 0 V.

Note: 1. When using the Reduced Wiring Connector (F39-CN5), the following functions are not available.
- Manual Reset
- External Device Monitoring
- Auxiliary Output
Make sure to keep the settings in the factory default.
2. For the functional earth connection, refer to page 66.
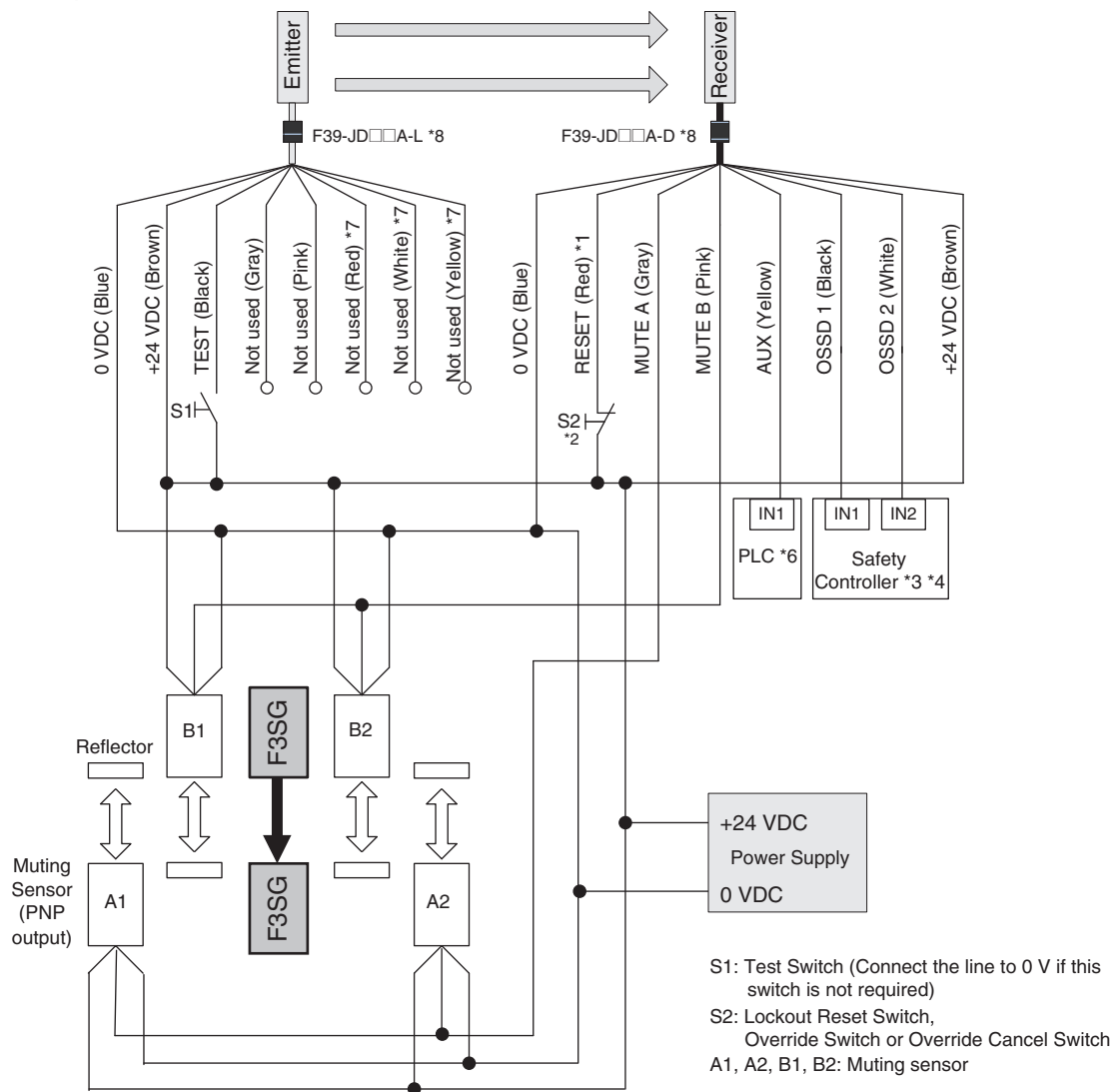
Muting using PNP Outputs

Standard Muting Mode with four Muting Sensors using PNP Outputs

The following is the example of External Device Monitoring disabled, Auto Reset Mode, PNP outputs and External Test in 24 V Active (used).

Settings

	Function
Receiver	EDM Disabled *5
	Auto Reset (factory default setting) *5
	PNP Output (factory default setting) *5
Emitter	External Test: 24 V Active (End Cap: Black) (factory default setting)

Wiring Example

S1: Test Switch (Connect the line to 0 V if this switch is not required)
S2: Lockout Reset Switch, Override Switch or Override Cancel Switch
A1, A2, B1, B2: Muting sensor
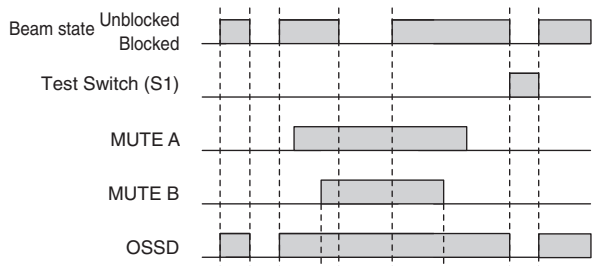
*1. Also used as Override input line.
*2. Make sure to connect an override cancel switch to the RESET line when using the override function. Otherwise the override state may not be released by the override cancel switch, resulting in serious injury.
*3. Refer to 74 page "Connectable Safety Control Units" for more information.
*4. The safety controller and the F3SG-RR must share the power supply or be connected to the common terminal of the power supply.
*5. The functions are configurable with Configuration Tool. Refer to *Safety Light Curtain Configuration Tool for Model F3SG (SD Manager 2) User's Manual* for more information on setting the functions by the Configuration Tool.
*6. When connecting to the PLC, the output mode must be changed with the Configuration Tool according to your application.
*7. The F39-JD☐RA-L Single-Ended Cable for Emitter (Oil-Resistant Extension Cable) does not have the red, white and yellow wires.
*8. For the F39-JD☐A-☐ Single-Ended Cable, connect the shield line to 0 V.

Note: For the functional earth connection, refer to page 66.

Standalone F3SG-RR using NPN Outputs

Auto Reset Mode, EDM enabled and NPN Outputs

The following is the example of Muting not used, External Device Monitoring enabled, Auto Reset Mode, NPN outputs and External Test in 0 V Active (not used).
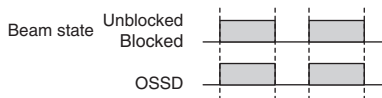
Settings

	Function
Receiver	EDM Enabled (factory default setting) *1
	Auto Reset (factory default setting) *1
	NPN *1
Emitter	External Test: 0 V Active (End Cap: White)

Wiring Example
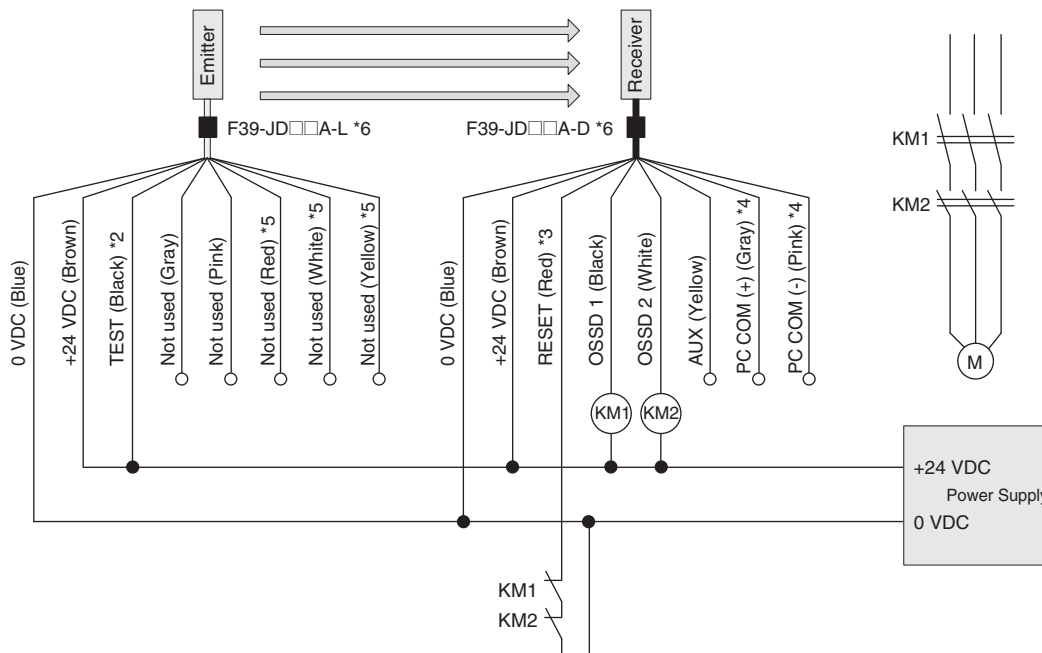
KM1, KM2: Safety relay with forcibly guided contacts (G7SA)
M: 3-phase motor

*1.The functions are configurable with Configuration Tool. Refer to *Safety Light Curtain Configuration Tool for Model F3SG (SD Manager 2) User's Manual* for more information on setting the functions by the Configuration Tool.
*2.Connect the line to 0 V via a test switch (N.O. contact) if External Test is used.
*3.Connect a lockout reset switch (N.C. contact) to this line in series with the KM1 and KM2 if Lockout Reset is used.
*4.Used as MUTE A and B lines when Muting is used.
*5.The F39-JD☐RA-L Single-Ended Cable for Emitter (Oil-Resistant Extension Cable) does not have the red, white and yellow wires.
*6.For the F39-JD☐A-☐ Single-Ended Cable, connect the shield line to 0 V.

Note: For the functional earth connection, refer to page 66.
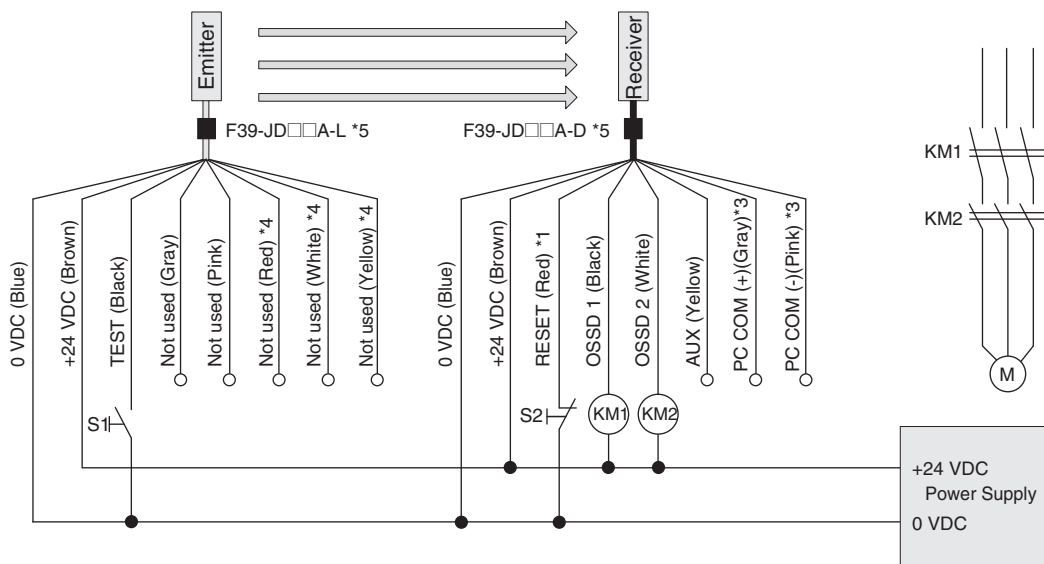
Manual Reset Mode, EDM disabled and NPN Outputs

The following is the example of Muting not used, External Device Monitoring disabled, Manual Reset Mode, NPN outputs and External Test in 0 V Active (used).
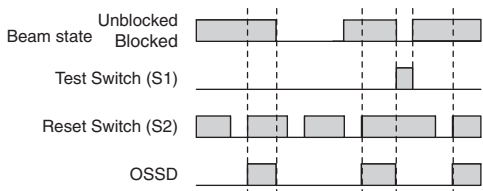
Settings

	Function
Receiver	EDM Disabled *2
	Manual Reset *2
	NPN *2
Emitter	External Test: 0 V Active (End Cap: White)

Wiring Example

S1: Test Switch (Connect the line to 24 V if this switch is not required)
S2: Lockout/Interlock Reset Switch
KM1, KM2: Safety relay with forcibly guided contacts (G7SA)
M: 3-phase motor

*1.Also used as EDM line.
*2.The functions are configurable with Configuration Tool.
   Refer to *Safety Light Curtain Configuration Tool for Model F3SG (SD Manager 2) User's Manual* for more information on setting the functions by the Configuration Tool.
*3.Used as MUTE A and B lines when Muting is used.
*4.The F39-JD□RA-L Single-Ended Cable for Emitter (Oil-Resistant Extension Cable) does not have the red, white and yellow wires.
*5. For the F39-JD□A-□ Single-Ended Cable, connect the shield line to 0 V.

Note: For the functional earth connection, refer to page 66.

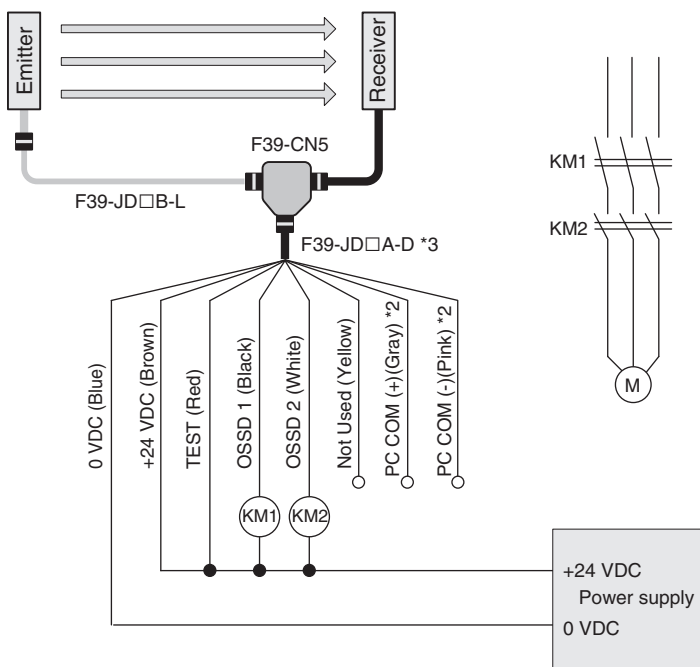## F3SG-RR with Reduced Wiring Connector and NPN Outputs

The following is the example of Muting not used, External Device Monitoring enabled, Auto Reset Mode, NPN outputs and External Test in 0 V Active (not used).

Settings

	Function
Receiver	EDM Enabled (factory default setting) *1
	Auto Reset (factory default setting) *1
	NPN *1
Emitter	External Test: 0 V Active (End Cap: White)

The reduced wiring system can be achieved by using the Reduced Wiring Cables (F39-JD□BA) and the Reduced Wiring Connector (F39-CN5).
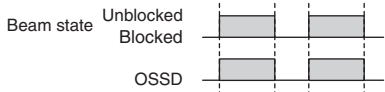
Wiring Example

KM1, KM2: Safety relay with forcibly guided contacts (G7SA)
M: 3-phase motor

*1.The functions are configurable with Configuration Tool.
Refer to *Safety Light Curtain Configuration Tool for Model F3SG (SD Manager 2) User's Manual* for more information on setting the functions by the Configuration Tool.
*2.Used as MUTE A and B lines when Muting is used.
*3.Connect the shield line to 0 V.

Note: 1. When using the Reduced Wiring Connector (F39-CN5), the following functions are not available.
- Manual Reset
- External Device Monitoring
- Auxiliary Output
Make sure to keep the settings in the factory default.
2. For the functional earth connection, refer to page 66.

Connectable Safety Control Units

The F3SG-RR 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 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-RR with NPN output can be connected to the safety control units listed in the table below.
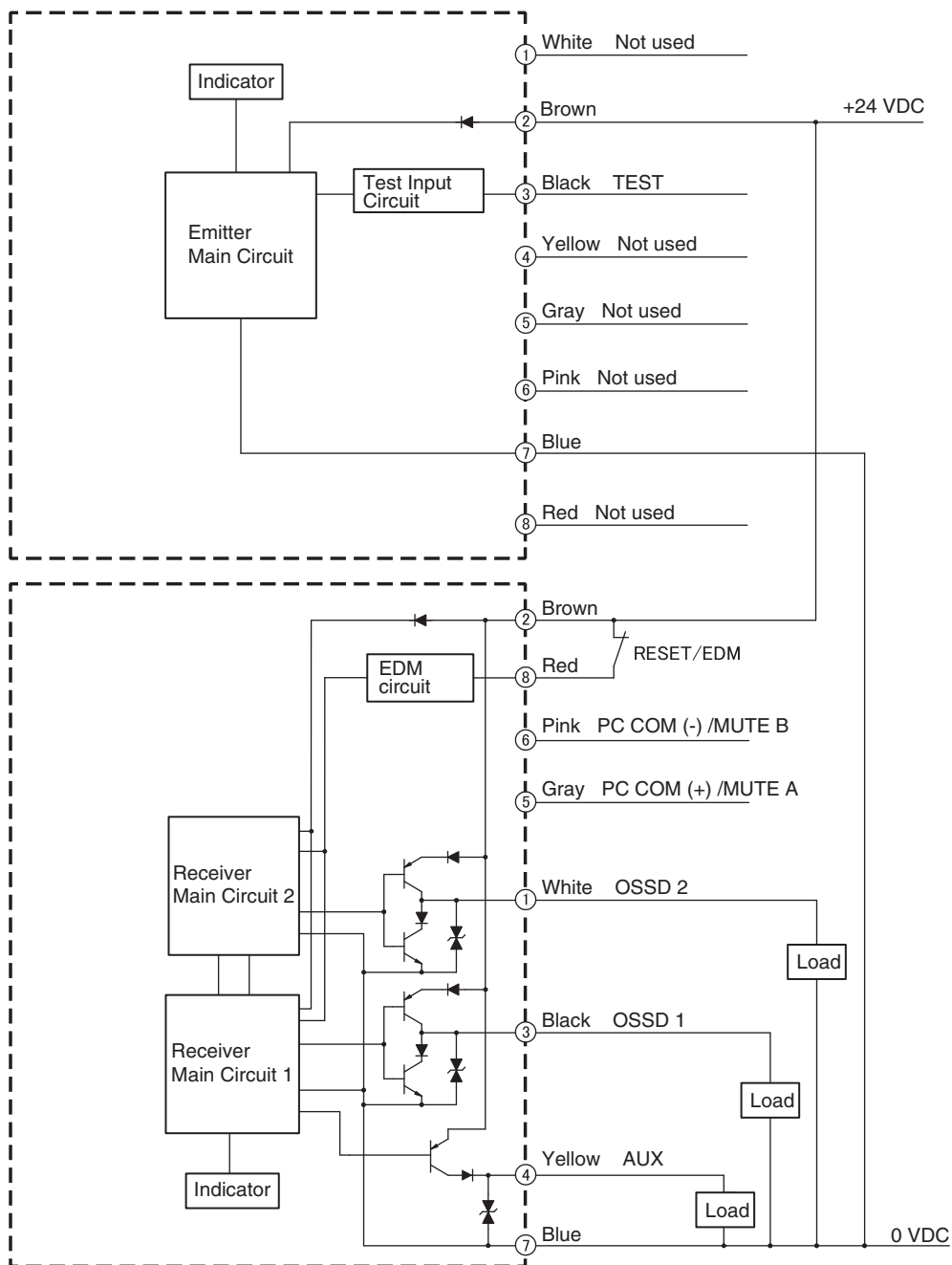
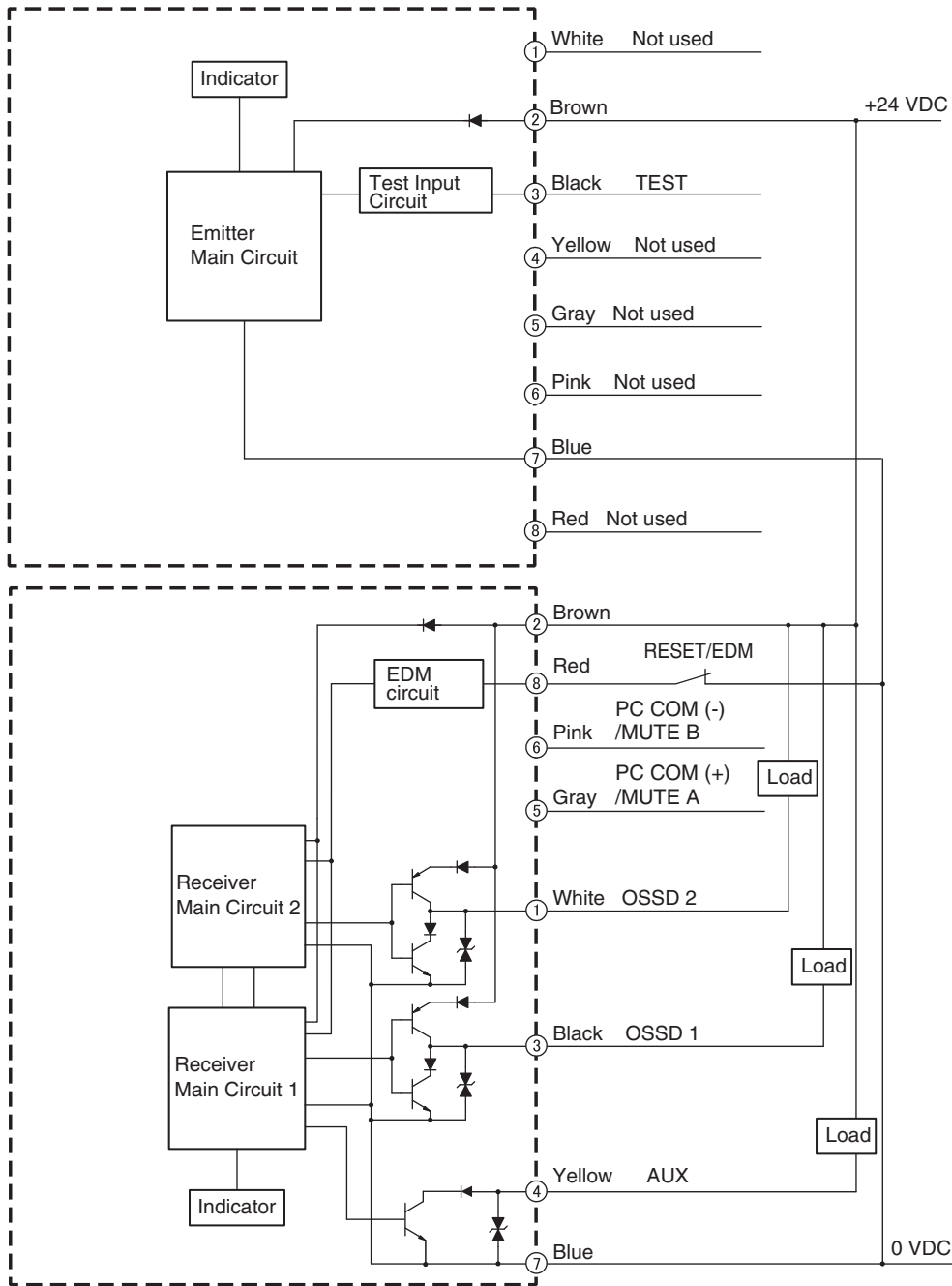| Connectable Safety Control Units (NPN output) |
|---|
| Safety Relay Units |
| G9SA-301-P |

OMRON

Input/Output Circuit

Entire Circuit Diagram

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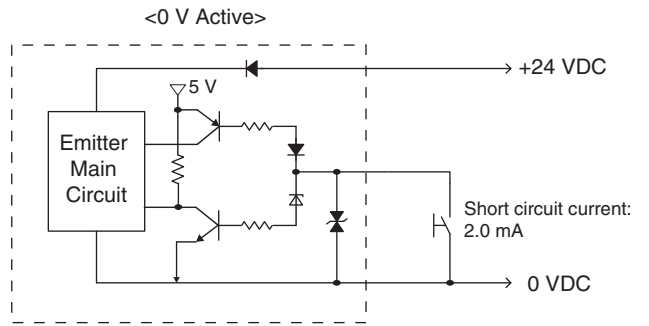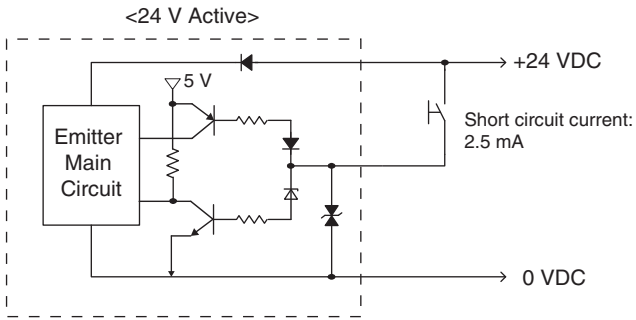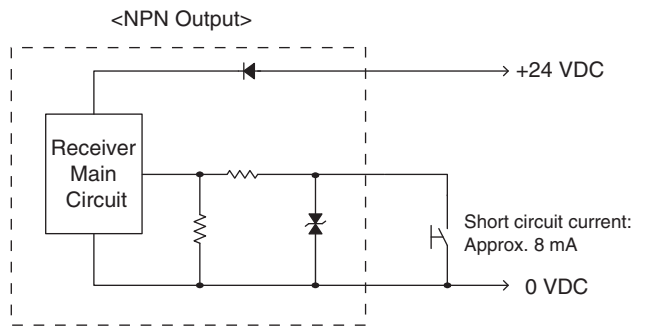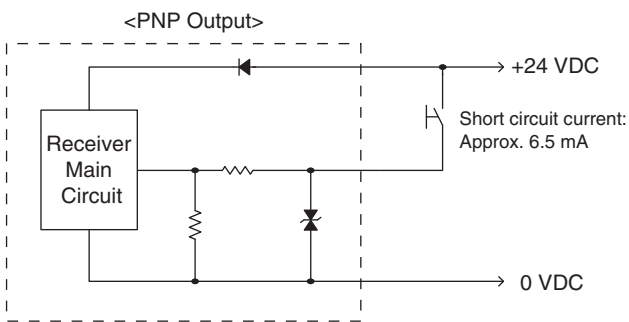The numbers in the circles indicate the connector's pin numbers.

PNP Output

Pin	Wire	Function
1	White	Not used
2	Brown	+24 VDC
3	Black	TEST
4	Yellow	Not used
5	Gray	Not used
6	Pink	Not used
7	Blue	
8	Red	Not used

Indicator
Test Input Circuit
Emitter Main Circuit

Pin	Wire	Function
2	Brown	
8	Red	RESET/EDM
6	Pink	PC COM (-) /MUTE B
5	Gray	PC COM (+) /MUTE A
1	White	OSSD 2
3	Black	OSSD 1
4	Yellow	AUX
7	Blue	0 VDC

EDM circuit
Receiver Main Circuit 2
Receiver Main Circuit 1
Indicator
Load

NPN Output

Input Circuit Diagram by Function

The input circuit diagrams of by function are shown below.

Test Input

<24 V Active>

Emitter Main Circuit

5 V

+24 VDC

Short circuit current: 2.5 mA

0 VDC

<0 V Active>

Emitter Main Circuit

5 V

+24 VDC

Short circuit current: 2.0 mA

0 VDC

Reset/EDM

<PNP Output>

Receiver Main Circuit

+24 VDC

Short circuit current: Approx. 6.5 mA

0 VDC

<NPN Output>

Receiver Main Circuit

+24 VDC

Short circuit current: Approx. 8 mA
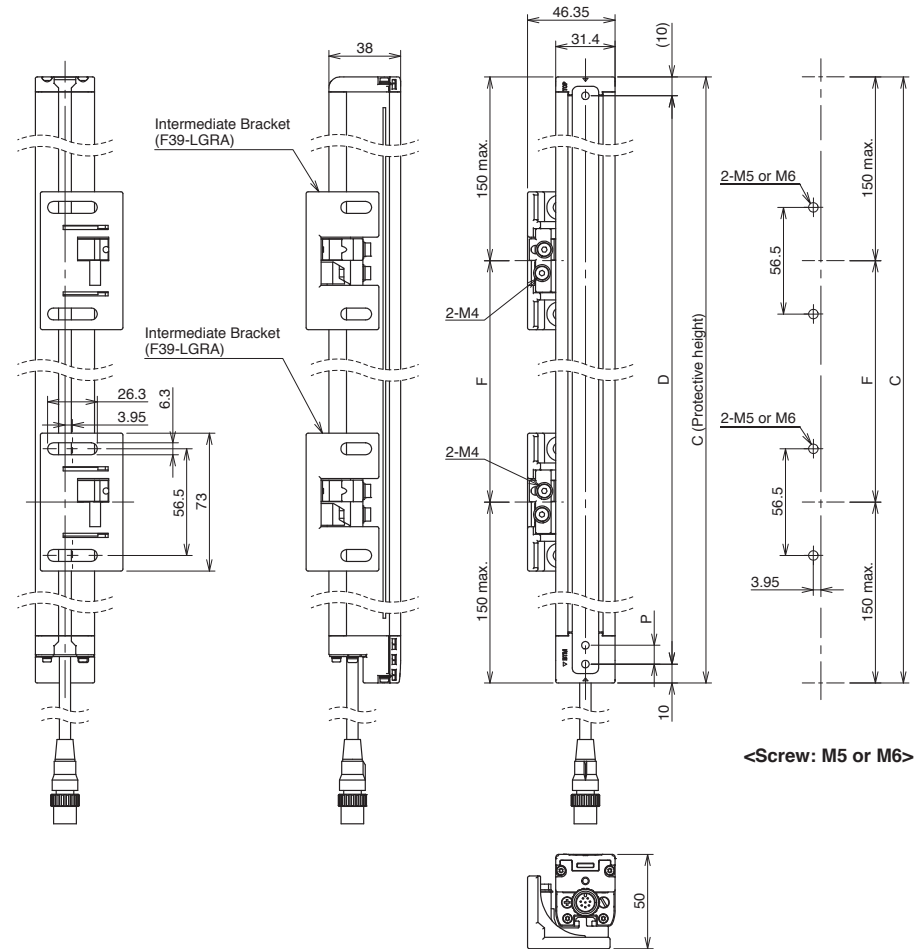
0 VDC

Dimensions (Unit: mm)

Mounted with Intermediate Brackets (F39-LGRA)
Backside Mounting

<Screw: M5 or M6>

Dimension C	4-digit number of the type name (Protective height)	
Dimension D	C-20	
Dimension P	F3SG-4RR□□□□-14	10
	F3SG-4RR□□□□-25	20

Protective height (C)	Number of Free-Location Brackets *1	Dimension F
0240 to 1200	2 *2	1000 mm max.
1280 to 1920	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 model of protective height of 0240. In this case, locate this bracket at half the Dimension C (or at the center of the sensor length).
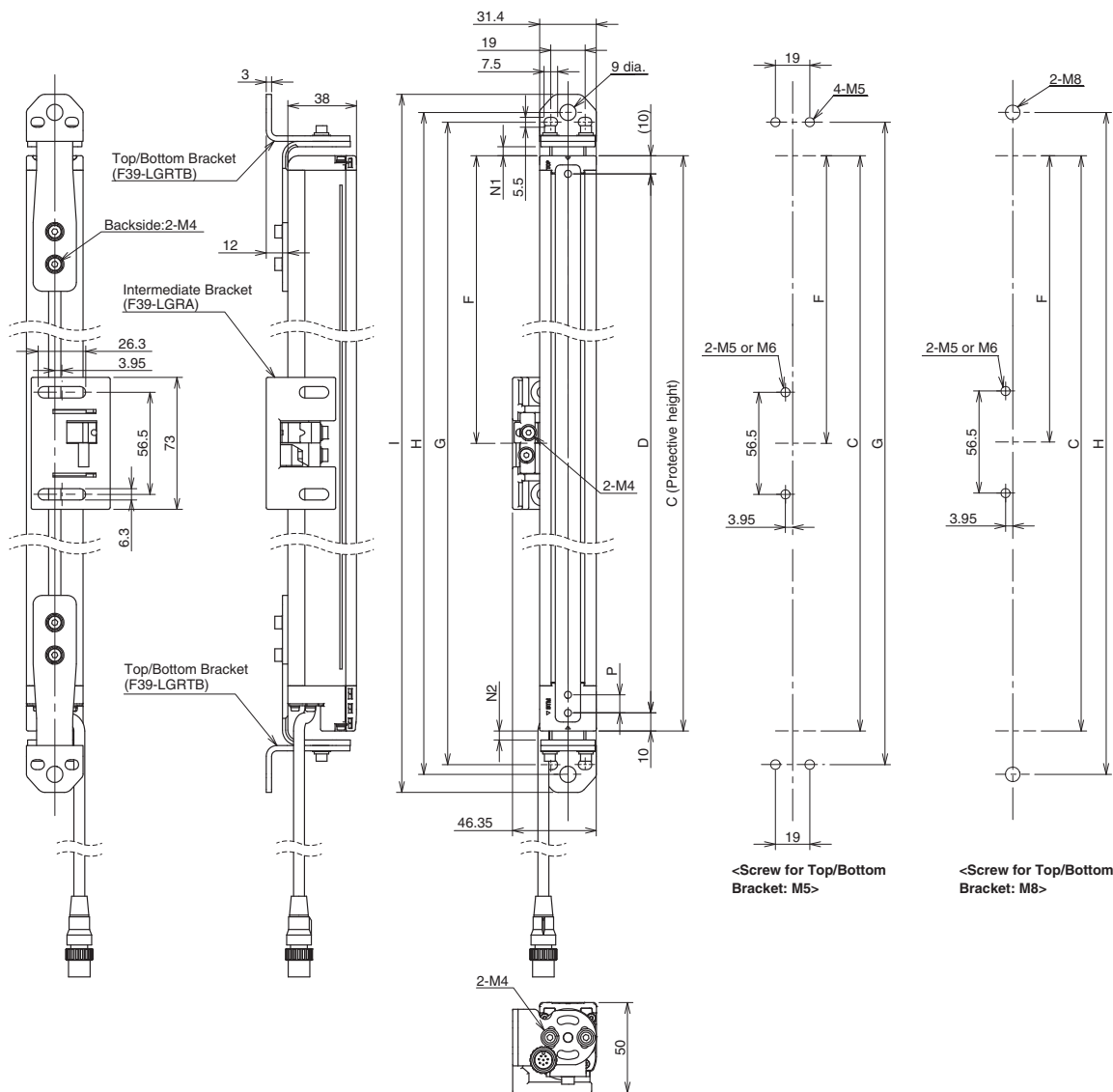
Side Mounting

Intermediate Bracket (F39-LGRA)

Intermediate Bracket (F39-LGRA)

2-M4

2-M4

2-M5 or M6

2-M5 or M6

C (Protective height)

<Screw: M5 or M6>

Dimension C	4-digit number of the type name (Protective height)	
Dimension D	C-20	
Dimension P	F3SG-4RR□□□□-14	10
	F3SG-4RR□□□□-25	20

Protective height (C)	Number of Free-Location Brackets *1	Dimension F
0240 to 1200	2 *2	1000 mm max.
1280 to 1920	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 model of protective height of 0240. In this case, locate this bracket at half the Dimension C (or at the center of the sensor length).

Mounted with Top/Bottom Brackets (F39-LGRTB) and Intermediate Bracket (F39-LGRA)
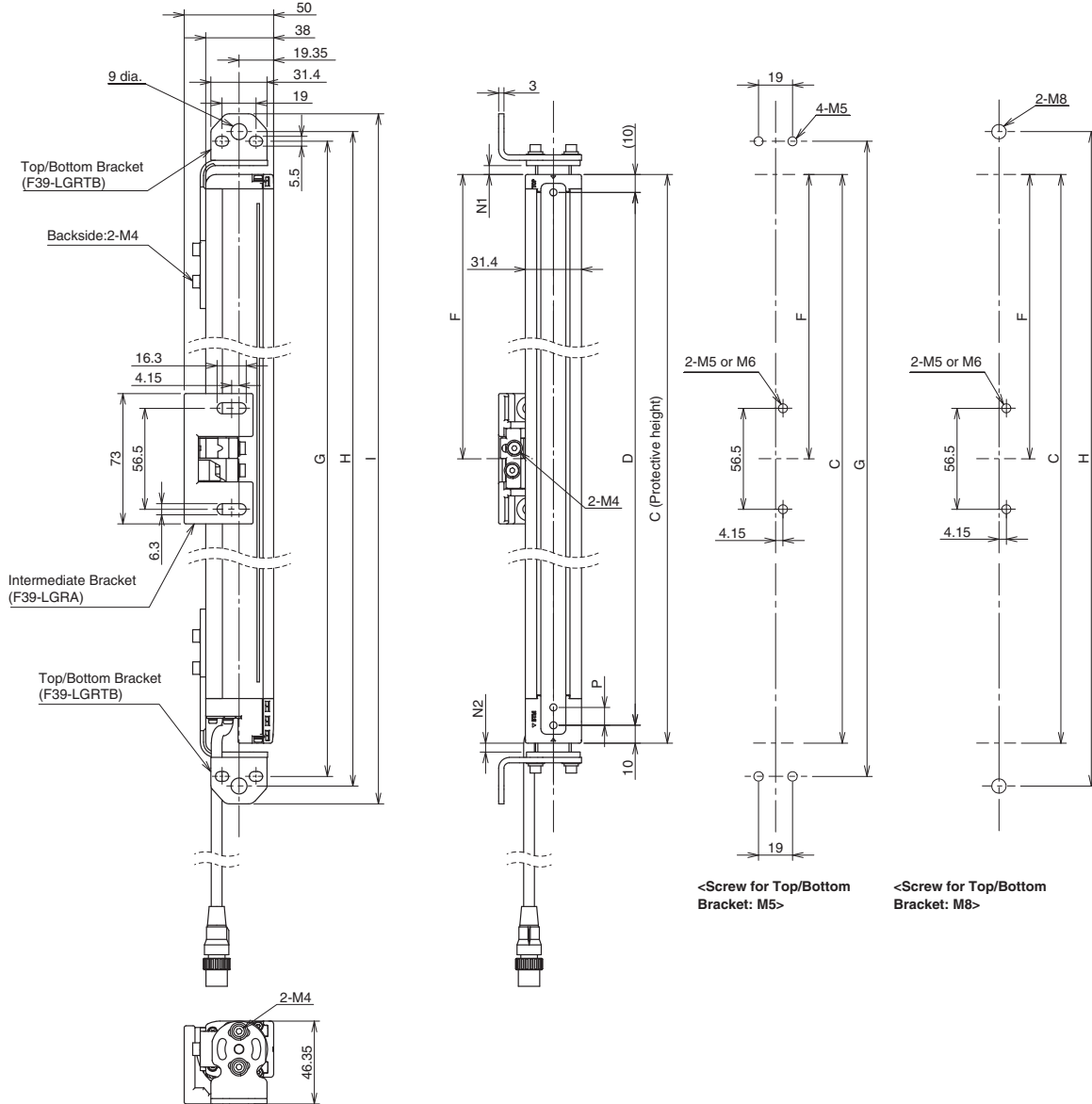### Backside Mounting

Top/Bottom Bracket (F39-LGRTB)

Backside:2-M4

Intermediate Bracket (F39-LGRA)

Top/Bottom Bracket (F39-LGRTB)

2-M4

2-M4

4-M5

2-M5 or M6

<Screw for Top/Bottom Bracket: M5>

2-M8

2-M5 or M6

<Screw for Top/Bottom Bracket: M8>

Dimension C	4-digit number of the type name (Protective height)	
Dimension D	C-20	
Dimension G	C+27.2+N1+N2	
Dimension H	C+38+N1+N2	
Dimension I	C+58+N1+N2	
Dimension N1	0 to 30	
Dimension N2	0 to 13	
Dimension P	F3SG-4RR□□□□-14	10
	F3SG-4RR□□□□-25	20

Protective height (C)	Number of Top/ Bottom Brackets *	Number of Intermediate Brackets *	Dimension F
0240 to 1040	2	0	–
1120 to 1920	2	1	1000 mm max.

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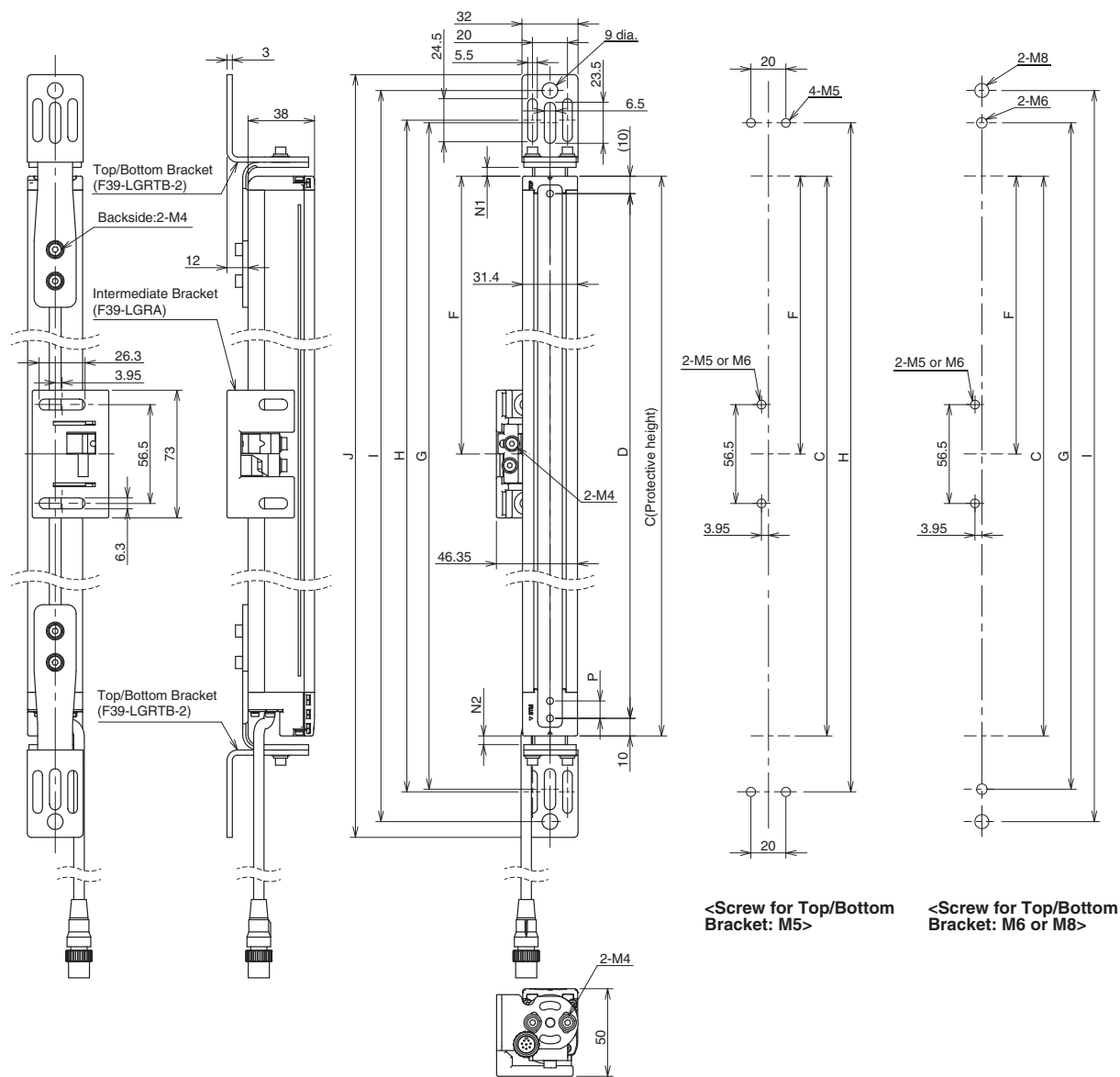
Side Mounting

Top/Bottom Bracket (F39-LGRTB)

Backside:2-M4

Intermediate Bracket (F39-LGRA)

Top/Bottom Bracket (F39-LGRTB)

9 dia.

2-M4

<Screw for Top/Bottom Bracket: M5>

<Screw for Top/Bottom Bracket: M8>

Dimension C	4-digit number of the type name (Protective height)	
Dimension D	C-20	
Dimension G	C+27.2+N1+N2	
Dimension H	C+38+N1+N2	
Dimension I	C+58+N1+N2	
Dimension N1	0 to 30	
Dimension N2	0 to 13	
Dimension P	F3SG-4RR□□□□-14	10
	F3SG-4RR□□□□-25	20

Protective height (C)	Number of Top/Bottom Brackets *	Number of Intermediate Brackets *	Dimension F
0240 to 1040	2	0	–
1120 to 1920	2	1	1000 mm max.

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

Mounted with Top/Bottom Brackets (F39-LGRTB-2) and Intermediate Bracket (F39-LGRA)
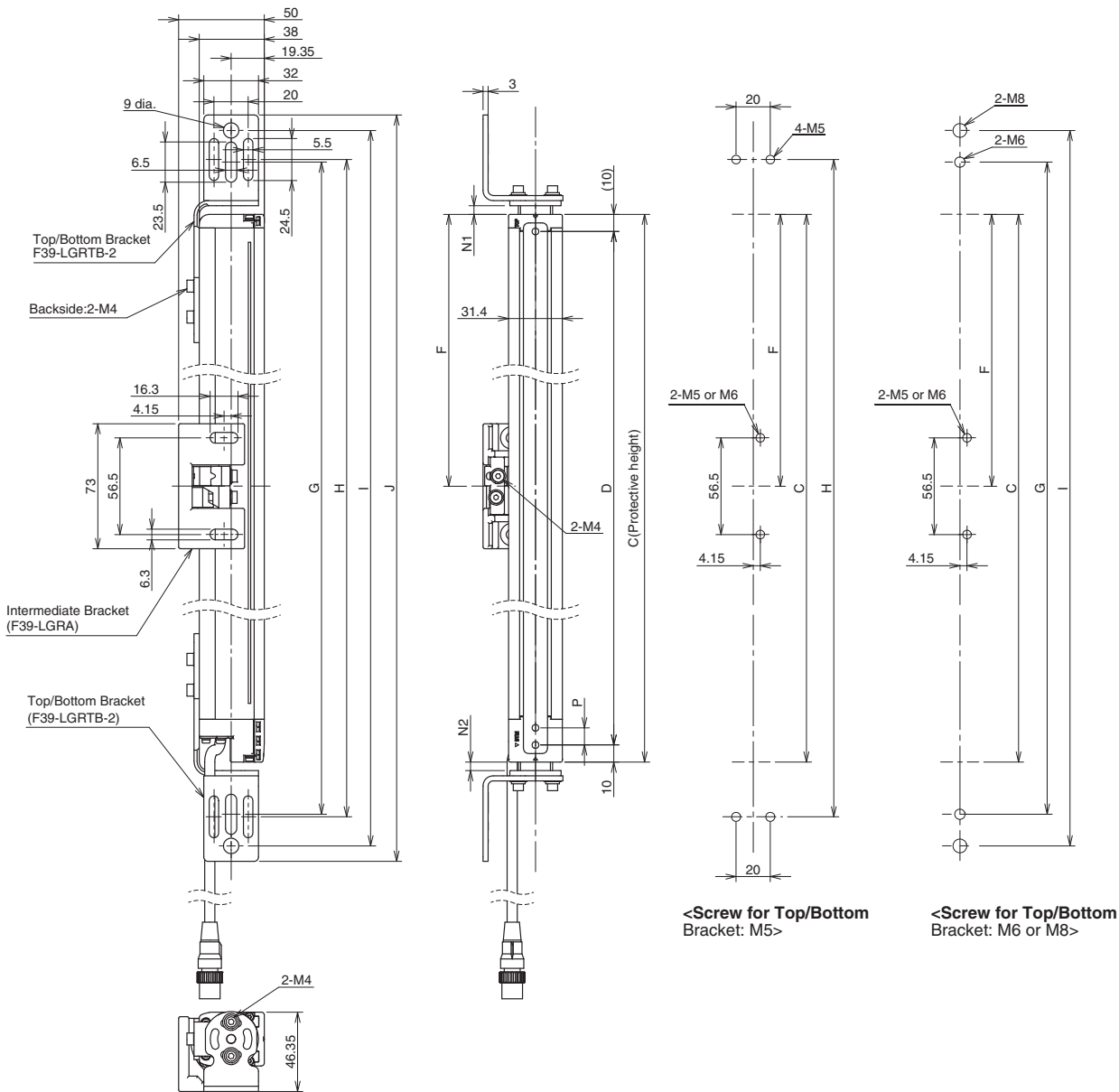### Backside Mounting

<Screw for Top/Bottom Bracket: M5>

<Screw for Top/Bottom Bracket: M6 or M8>

Dimension C	4-digit number of the type name (Protective height)	
Dimension D	C-20	
Dimension G	C+51+N1+N2	
Dimension H	C+54+N1+N2	
Dimension I	C+88+N1+N2	
Dimension J	C+106+N1+N2	
Dimension N1	0 to 30	
Dimension N2	0 to 13	
Dimension P	F3SG-4RR□□□□-14	10
	F3SG-4RR□□□□-25	20

Protective height (C)	Number of Top/Bottom Brackets *	Number of Intermediate Brackets *	Dimension F
0240 to 1040	2	0	–
1120 to 1920	2	1	1000 mm max.

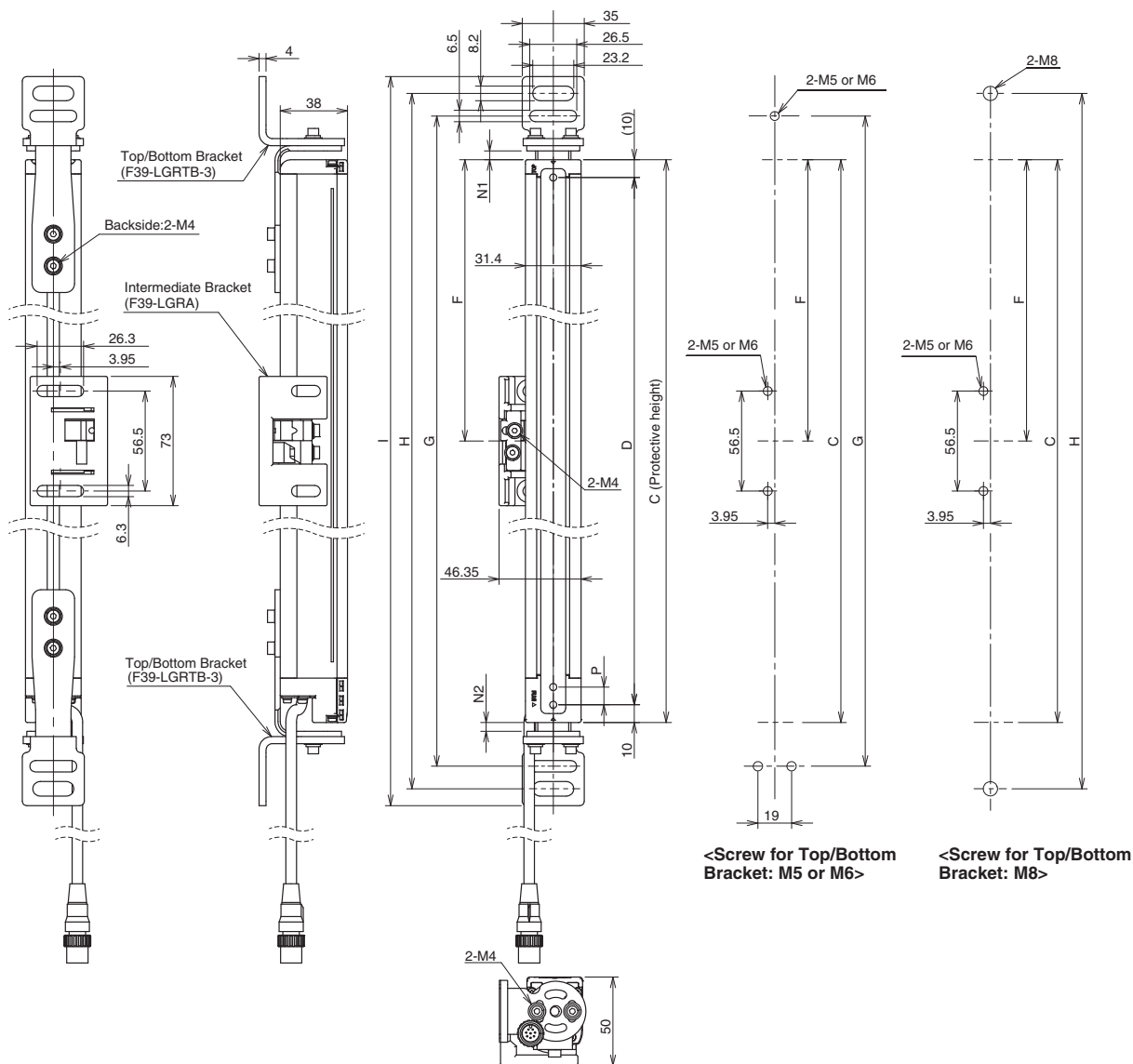* The number of brackets required to mount either one of emitter and receiver.

Side Mounting

Dimension C	4-digit number of the type name (Protective height)	
Dimension D	C-20	
Dimension G	C+51+N1+N2	
Dimension H	C+54+N1+N2	
Dimension I	C+88+N1+N2	
Dimension J	C+106+N1+N2	
Dimension N1	0 to 30	
Dimension N2	0 to 13	
Dimension P	F3SG-4RR□□□□-14	10
	F3SG-4RR□□□□-25	20

Protective height (C)	Number of Top/ Bottom Brackets *	Number of Intermediate Brackets *	Dimension F
0240 to 1040	2	0	–
1120 to 1920	2	1	1000 mm max.

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

Mounted with Top/Bottom Brackets (F39-LGRTB-3) and Intermediate Bracket (F39-LGRA)
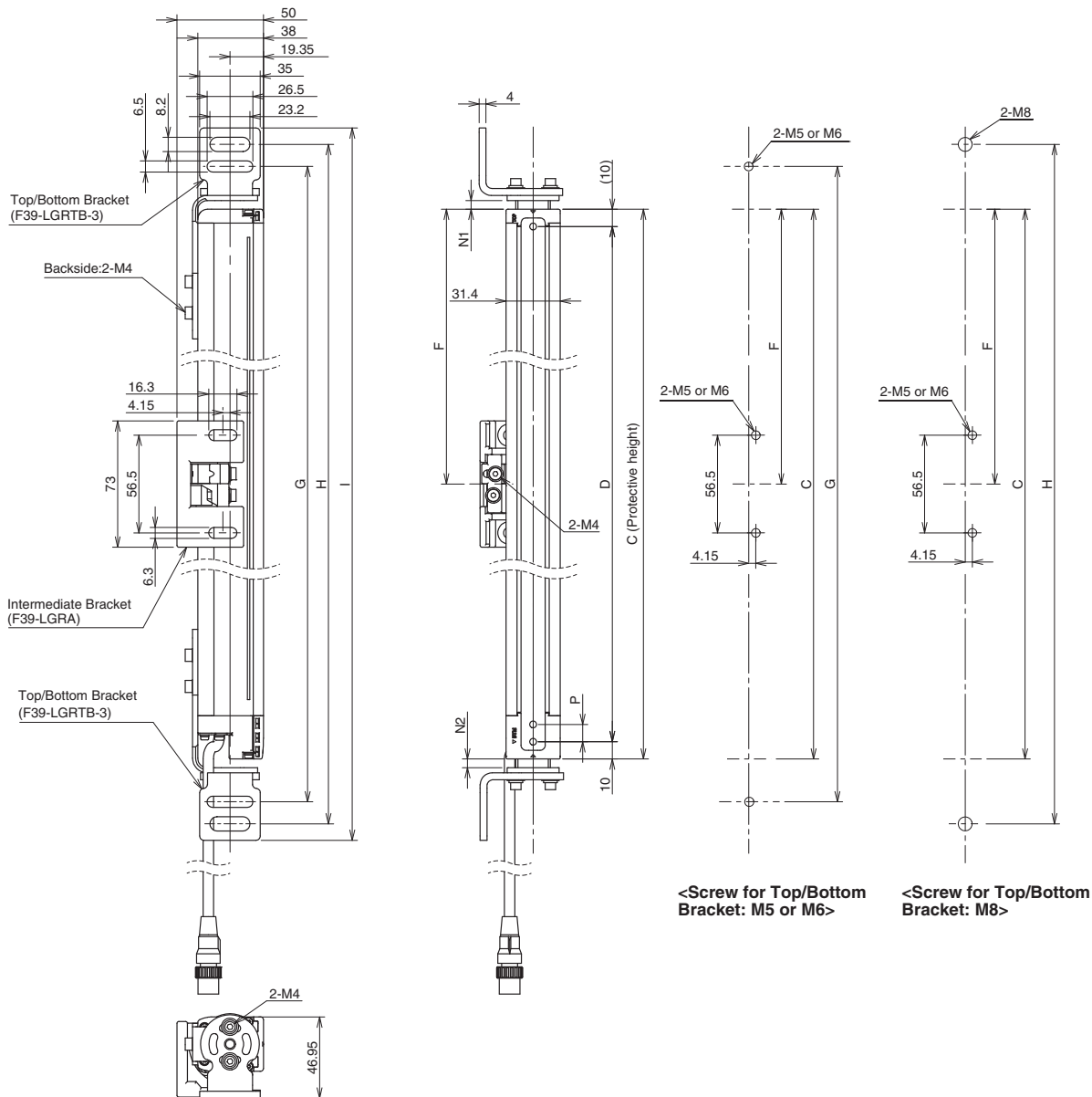### Backside Mounting

Top/Bottom Bracket (F39-LGRTB-3)

Backside:2-M4

Intermediate Bracket (F39-LGRA)

Top/Bottom Bracket (F39-LGRTB-3)

2-M4

2-M4

2-M5 or M6

2-M8

2-M5 or M6

2-M5 or M6

<Screw for Top/Bottom Bracket: M5 or M6>

<Screw for Top/Bottom Bracket: M8>

Dimension C	4-digit number of the type name (Protective height)	
Dimension D	C-20	
Dimension G	C+39.5+N1+N2	
Dimension H	C+65+N1+N2	
Dimension I	C+84+N1+N2	
Dimension N1	0 to 30	
Dimension N2	0 to 13	
Dimension P	F3SG-4RR□□□□-14	10
	F3SG-4RR□□□□-25	20

Protective height (C)	Number of Top/ Bottom Brackets *	Number of Intermediate Brackets *	Dimension F
0240 to 1040	2	0	–
1120 to 1920	2	1	1000 mm max.

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

Side Mounting

Top/Bottom Bracket (F39-LGRTB-3)

Backside:2-M4

Intermediate Bracket (F39-LGRA)

Top/Bottom Bracket (F39-LGRTB-3)

2-M4

<Screw for Top/Bottom Bracket: M5 or M6>

<Screw for Top/Bottom Bracket: M8>

Dimension C	4-digit number of the type name (Protective height)	
Dimension D	C-20	
Dimension G	C+39.5+N1+N2	
Dimension H	C+65+N1+N2	
Dimension I	C+84+N1+N2	
Dimension N1	0 to 30	
Dimension N2	0 to 13	
Dimension P	F3SG-4RR□□□□-14	10
	F3SG-4RR□□□□-25	20

Protective height (C)	Number of Top/ Bottom Brackets *	Number of Intermediate Brackets *	Dimension F
0240 to 1040	2	0	–
1120 to 1920	2	1	1000 mm max.

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

Accessories

Sensor Mounting Brackets
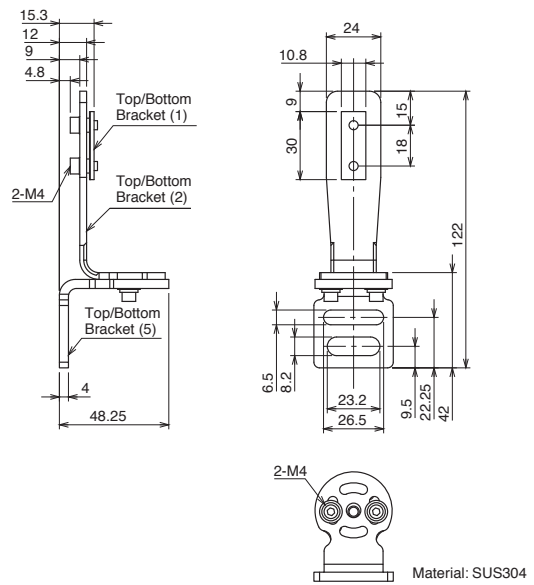**Intermediate Bracket**
(F39-LGRA, sold separately)

Material: ZDC2
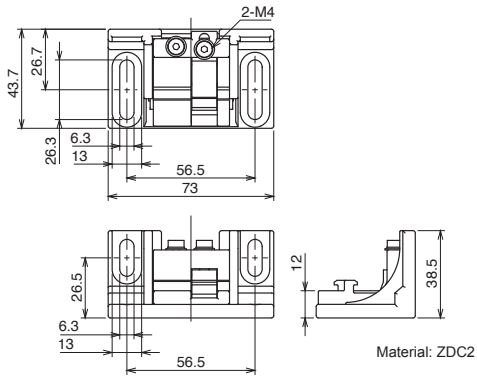
Top/Bottom Bracket
(F39-LGRTB, sold separately)

Material: SUS304
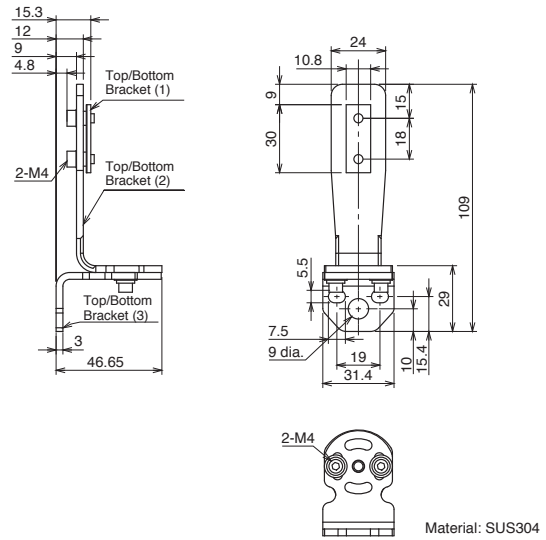
Top/Bottom Bracket
(F39-LGRTB-2, sold separately)

Material: SUS304
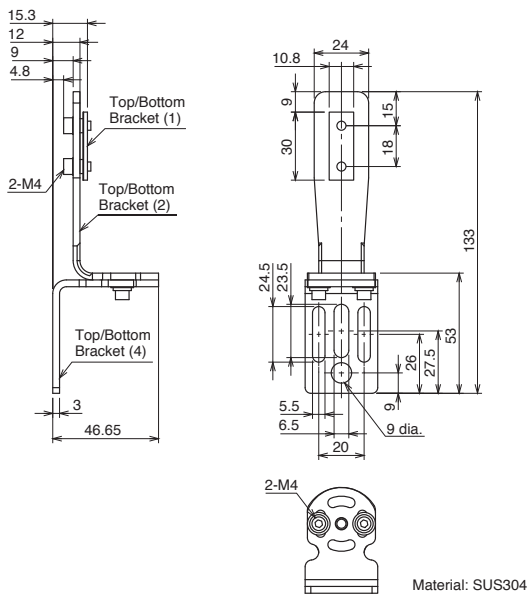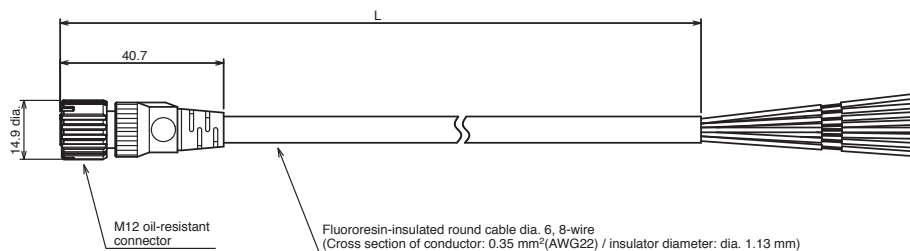
Top/Bottom Bracket
(F39-LGRTB-3, sold separately)

Material: SUS304

Single-Ended Cable for Emitter (Oil-Resistant Extension Cable) (F39-JD□RA-L, sold separately)
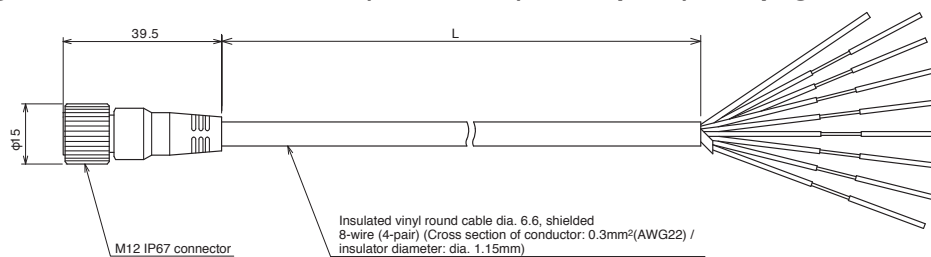
40.7

L

14.9 dia.

M12 oil-resistant connector

Fluororesin-insulated round cable dia. 6, 5-wire
(Cross section of conductor: 0.35 mm²(AWG22) / insulator diameter: dia. 1.13 mm)
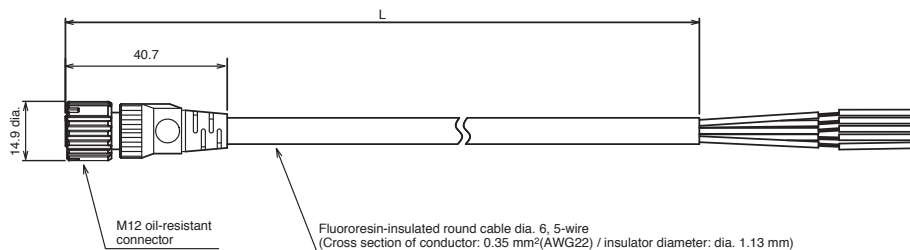
Single-Ended Cable for Receiver (Oil-Resistant Extension Cable) (F39-JD□RA-D, sold separately)

40.7

L

14.9 dia.

M12 oil-resistant connector

Fluororesin-insulated round cable dia. 6, 8-wire
(Cross section of conductor: 0.35 mm²(AWG22) / insulator diameter: dia. 1.13 mm)

Emitter cable (Gray)	Receiver cable (Black)	L (m)
F39-JD3RA-L	F39-JD3RA-D	3
F39-JD7RA-L	F39-JD7RA-D	7

Single-Ended Cable for Emitter (F39-JD□A (sold in pairs), see page 43 for details)
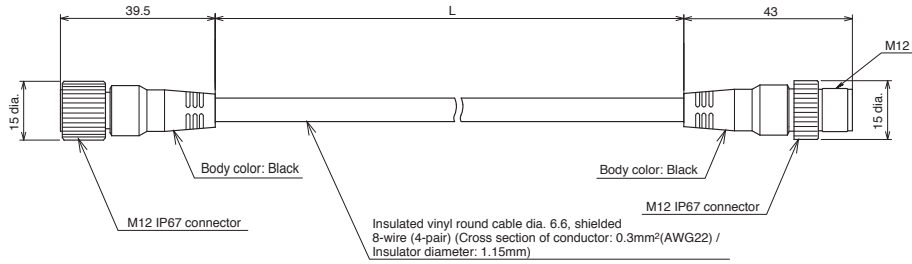
39.5

L

φ15

M12 IP67 connector

Insulated vinyl round cable dia. 6.6, shielded
8-wire (4-pair) (Cross section of conductor: 0.3mm²(AWG22) /
insulator diameter: dia. 1.15mm)

Single-Ended Cable for Receiver (F39-JD□A (sold in pairs), see page 43 for details)

39.5

L

φ15

M12 IP67 connector

Insulated vinyl round cable dia. 6.6, shielded
8-wire (4-pair) (Cross section of conductor: 0.3mm²(AWG22) /
insulator diameter: dia. 1.15mm)
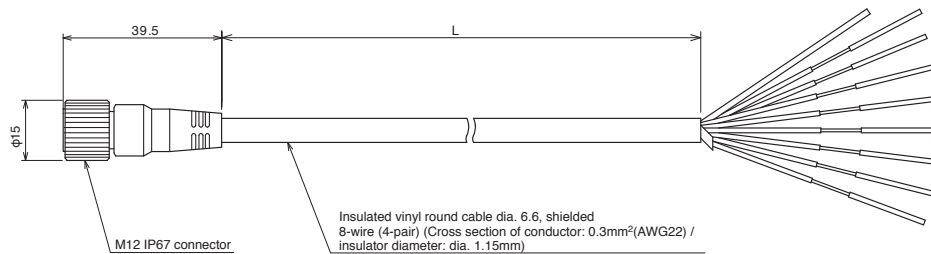
Double-Ended Cable for Emitter: Cable for extension (F39-JD□B (sold in pairs), see page 44 for details)

39.5

L

43

M12

15 dia.

15 dia.

Body color: Black

Body color: Black

M12 IP67 connector

M12 IP67 connector

Insulated vinyl round cable dia. 6.6, shielded
8-wire (4-pair) (Cross section of conductor: 0.3mm²(AWG22) /
Insulator diameter: 1.15mm)
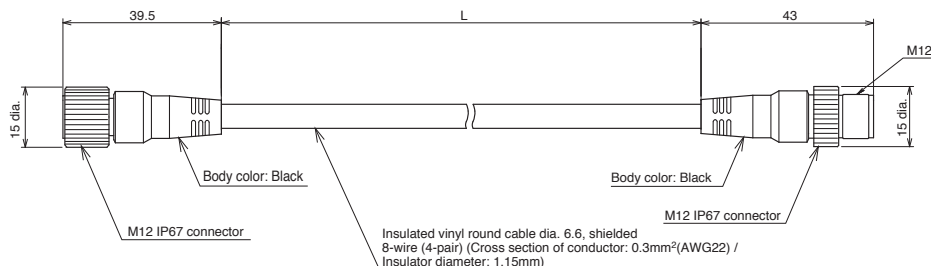
Double-Ended Cable for Receiver: Cable for extension (F39-JD□B (sold in pairs), see page 44 for details)

39.5   L   43

M12

15 dia.

15 dia.

Body color: Black

Body color: Black

M12 IP67 connector

M12 IP67 connector

Insulated vinyl round cable dia. 6.6, shielded
8-wire (4-pair) (Cross section of conductor: 0.3mm²(AWG22) /
Insulator diameter: 1.15mm)

Reduced Wiring Connector (F39-CN5, sold separately)

(52)

13.6   24.7   13.6   8 dia. (SPOT FACING 2)

12   4.5 dia.

32.1   10

17.7

18
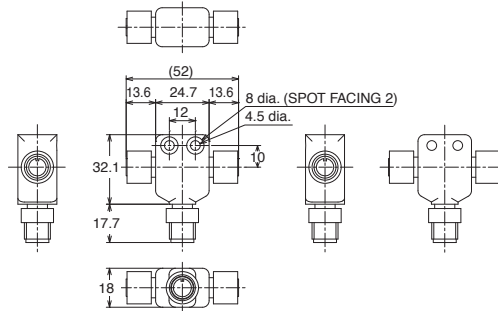
Cascading Cable (F39-JGR2WTS, sold in pairs)

24.2

200

23.4   40.7   M12 IP67 connector

M2.5 screw

6 dia.

10   14.9 dia.

Connector

Insulated vinyl round cable dia. 6 mm, 5-wire
(Cross section of conductor: 0.15 mm² (AWG26) /
Insulator diameter: dia. 1 mm)
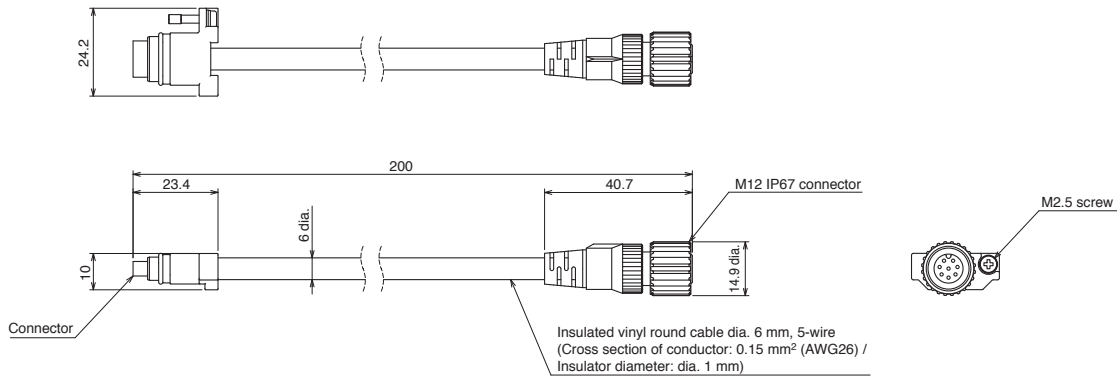
Set model name	Emitter cable (Gray)	Receiver cable (Black)	L (m)
F39-JGR2WTS	F39-JGR2WTS-L	F39-JGR2WTS-D	0.2

OMRON

Interface Unit (F39-GIF-1, sold separately)

(625.7)
67.9 (46) (11.8)
35.8 (12) (16)

Insulated vinyl round cable 4.6 dia.
Standard length: 0.5 m

(52)
13.6 24.7 13.6 8 dia. (SPOT FACING 2)
12 4.5 dia.
32.1 10
17.7
18

58 2,000
17.5 dia. 4.6 dia. 7.7

14.5
11
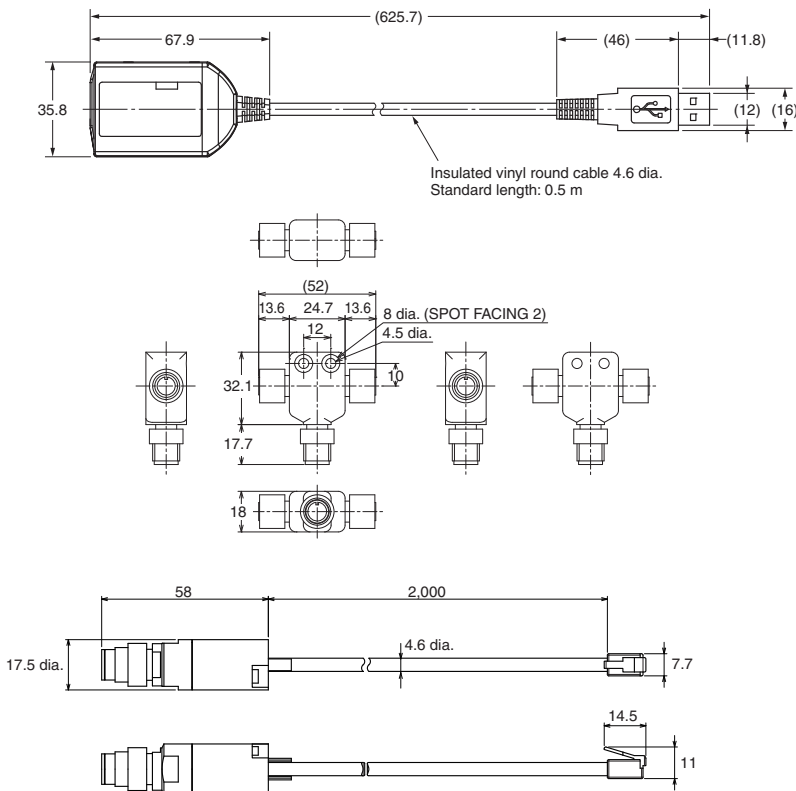
Bluetooth Communication Unit (F39-BT, sold separately)
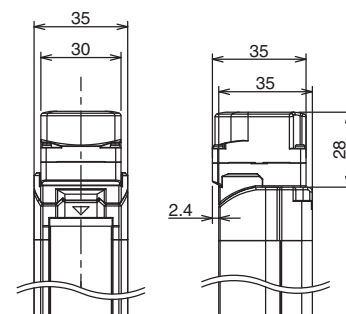
35
30
35
35
16.5
2.4
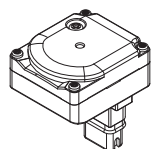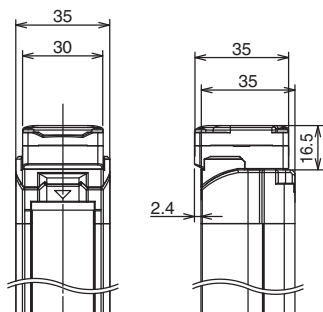
Material: PBT

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

35
30
35
35
28
2.4
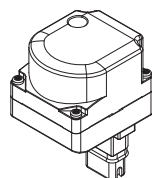
Material:
PC (Lighting element)
PBT (Other body parts)

Related Manuals

ManNo.	Model	Manual name
Z383	**F3SG-☐RR☐☐☐☐☐☐☐☐☐☐☐☐**	Safety Light Curtain F3SG-☐RR Series User's Manual