

New

Safety Light Curtain
F3SG-R Series



OMRON

Advanced Features in a Robust, Compact Housing

All models designed for global use

- Conforming to major international standards including Chinese standard GB 4584

- PNP/NPN selection

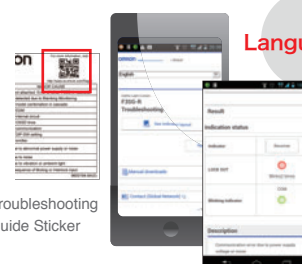
Global

Multilingual troubleshooting

In order to minimize downtime of the machine due to safety light curtain errors, troubleshooting in eight languages*2 will be published on the website to find causes and solutions of errors that occur during operation. Operators across the world can check the error details in their local languages, which will help them minimize time to troubleshoot.

*2 English, Chinese, Italian, Korean, French, German, Spanish, and Japanese. (Website in English and Japanese will be launched in October 2014, and other languages will be in November 2014.)

8 Languages*2



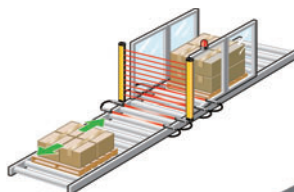
Troubleshooting Guide Sticker

Muting

80% less adjustment time

The F3SG-R provides the muting function that can use bypass performance to increase safety and productivity. Special software is also provided to record the muting status in the safety light curtain and analyze the logged status to find optimal settings. This can minimize trial and error in adjustment, so adjustment time can be reduced by 80%*. This function is more effective for the production lines where configurations are frequently changed.

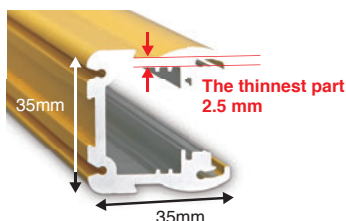
*1. Compared to the previous OMRON safety light curtain (Based on OMRON investigation in September 2014)



Tough

Robust and compact

Safety light curtains can be used to implement the safety measures without using protective guards around the conveyor systems. However, contact with a product or tool may cause malfunction of a safety light curtain. The housing structure of the new F3SG-R is significantly improved to enhance resistance against shock and vibration and to reduce the thickness of the thinnest part of the housing material from 3 mm to 2.5 mm. The cross-section of the housing is reduced to approximately 60% of that of the previous model.



realizing

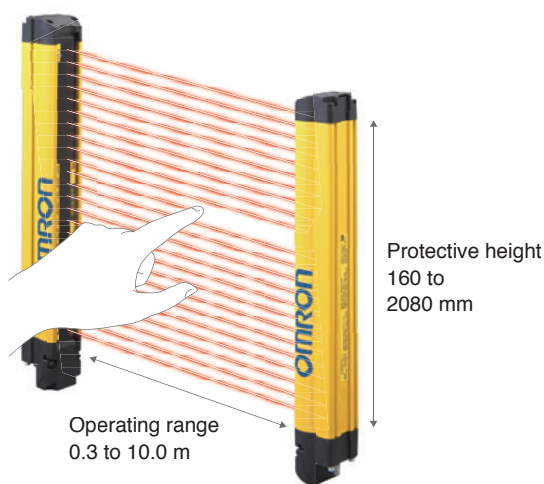
sti SAFETY, TECHNOLOGY & INNOVATION

F3SG-R Series Product Line-up

High performance in a compact and robust design for reliable use in a wide variety of environments

Detection capability: Dia. 14 mm
Ideal for finger protection

F3SG-4RA□□□□-14



Detection capability: Dia. 30 mm
Ideal for hand and arm protection

F3SG-4RA□□□□-30



Optical
synchronization

Smart click

Water-
proof
IP65/IP67

Muting function

Shock +
vibration
resistance

Configuration
Tool

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Refer to the data sheet (Cat. No. F093) for details.

Note: Do not use this document to operate the Unit.

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In the interest of product improvement,
specifications are subject to change without notice.

Cat. No. F092-E1-01

0614(0614)

Safety Light Curtain F3SG-RA

Advanced Safety Light Curtain in Rugged, IP67 Rated Housing

- Rugged, IP67 rated housing resists washdown
- Space-saving slim profile of 35x35 mm (1.37 in.)
- Scan QR code with smart phone for local language support and troubleshooting guide
- Built-in muting; requires no external muting controller
- All models designed for global use. PNP/NPN output selection by DIP switch
- Resolution: 14 mm (finger protection) and 30 mm (hand and arm protection) models
- Cascaded designs possible: 3 segments, up to 255 beams
- "Smart click" 1/8 turn quick connect M12 cables: for fast installation and proper torque to ensure IP67 connection
- 14mm resolution up to 10.0 m (32 ft.) range in 160 to 2080 mm (6.3 to 81.9 inch) protective heights
- 30mm resolution up to 20.0 m (65 ft.) range in 190 to 2510 mm (7.3 to 98.7 inch) protective heights



Online Multilanguage Support



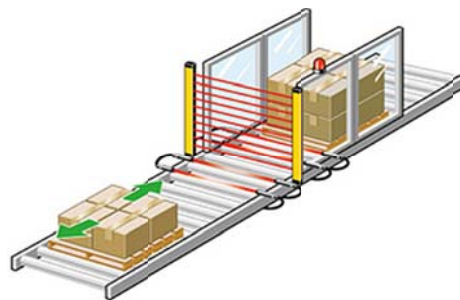
To access troubleshooting support for safety light curtain errors in your local language use your tablet or smartphone to scan a QR code sticker that can be applied to the machine.

Also accessible by computer, operators can check the error details in 8 languages and download manuals from a dedicated website.

The interactive diagnostics ask about error indicator color, indicator flashing frequency and DIP switch settings to thoroughly analyze the cause of an error.

Languages include English, Spanish, French, Chinese, Korean, Japanese, German, and Italian.

Built-in Muting and Blanking



Built-in muting to pass through materials into the hazard zone requires no external muting controller. The blanking function disables specific beams of the safety light curtain. A warning zone can be set to alert people before they enter a danger zone using single or series-connected units when horizontally mounted.

Reduced Wiring Work



"Smart click" 1/8 turn quick-connect M12 cables allow fast installation and proper torque to ensure IP67 connection.

F3SG-R

Ordering Information

Main Units

Safety Light Curtain

Finger protection

Model	Number of beams	Protective height (mm)
F3SG-4RA0160-14	15	160
F3SG-4RA0240-14	23	240
F3SG-4RA0320-14	31	320
F3SG-4RA0400-14	39	400
F3SG-4RA0480-14	47	480
F3SG-4RA0560-14	55	560
F3SG-4RA0640-14	63	640
F3SG-4RA0720-14	71	720
F3SG-4RA0800-14	79	800
F3SG-4RA0880-14	87	880
F3SG-4RA0960-14	95	960
F3SG-4RA1040-14	103	1,040
F3SG-4RA1120-14	111	1,120
F3SG-4RA1200-14	119	1,200
F3SG-4RA1280-14	127	1,280
F3SG-4RA1360-14	135	1,360
F3SG-4RA1440-14	143	1,440
F3SG-4RA1520-14	151	1,520
F3SG-4RA1600-14	159	1,600
F3SG-4RA1680-14	167	1,680
F3SG-4RA1760-14	175	1,760
F3SG-4RA1840-14	183	1,840
F3SG-4RA1920-14	191	1,920
F3SG-4RA2000-14	199	2,000
F3SG-4RA2080-14	207	2,080

Hand and arm protection

Model	Number of beams	Protective height (mm)
F3SG-4RA0190-30	8	190
F3SG-4RA0270-30	12	270
F3SG-4RA0350-30	16	350
F3SG-4RA0430-30	20	430
F3SG-4RA0510-30	24	510
F3SG-4RA0590-30	28	590
F3SG-4RA0670-30	32	670
F3SG-4RA0750-30	36	750
F3SG-4RA0830-30	40	830
F3SG-4RA0910-30	44	910
F3SG-4RA0990-30	48	990
F3SG-4RA1070-30	52	1,070
F3SG-4RA1150-30	56	1,150
F3SG-4RA1230-30	60	1,230
F3SG-4RA1310-30	64	1,310
F3SG-4RA1390-30	68	1,390
F3SG-4RA1470-30	72	1,470
F3SG-4RA1550-30	76	1,550
F3SG-4RA1630-30	80	1,630
F3SG-4RA1710-30	84	1,710
F3SG-4RA1790-30	88	1,790
F3SG-4RA1870-30	92	1,870
F3SG-4RA1950-30	96	1,950
F3SG-4RA2030-30	100	2,030
F3SG-4RA2110-30	104	2,110
F3SG-4RA2190-30	108	2,190
F3SG-4RA2270-30	112	2,270
F3SG-4RA2350-30	116	2,350
F3SG-4RA2430-30	120	2,430
F3SG-4RA2510-30	124	2,510

Accessories (Sold separately)

Single-ended Connector Cable

Appearance	Type	Cable length	Model	Specifications
	For emitter	3 m	F39-JG3A-L	Emitter cable: M12 connector (5-pin), 5 wires Color: Gray
		7 m	F39-JG7A-L	
		10 m	F39-JG10A-L	
		15 m	F39-JG15A-L	
		20 m	F39-JG20A-L	
	For receiver	3 m	F39-JG3A-D	M12 connector (8-pin), 8 wires Color: Black
		7 m	F39-JG7A-D	
		10 m	F39-JG10A-D	
		15 m	F39-JG15A-D	
		20 m	F39-JG20A-D	

Double-ended Cable

Appearance	Type	Cable length	Model	Specifications
	For emitter	0.5 m	F39-JGR5B-L	M12 connector (5-pin) on both ends Color: Gray
		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	0.5 m	F39-JGR5B-D	M12 connector (8-pin) on both ends Color: Black
		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	

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

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

Sensor Mounting Brackets

Appearance	Specification	Model	Application	Remarks
	Standard Fixed Bracket	F39-LGF	Bracket to mount the F3SG-R. Side mounting and backside mounting possible. (Included in the F3SG-R product package.)	Two brackets per set
	Standard Adjustable Bracket	F39-LGA	Bracket to mount the F3SG-R. Beam alignment after mounting possible. Side mounting and backside mounting possible.	Two brackets per set

F3SG-R

Ratings and Specifications

Main unit

		F3SG-4RA□□□□-14	F3SG-4RA□□□□-30
Type of ESPE (IEC 61496-1)		Type 4	
		F3SG-4RA□□□□-14/-30	
Performance	Object Resolution (Detection Capability)	Opaque objects	
		14-mm dia.	30-mm dia.
	Beam Gap	10 mm	20 mm
	Number of Beams	15 to 207	8 to 124
	Lens Size	5.2 × 3.4 (W × H) mm	7-mm dia.
	Protective Height	160 to 2080 mm (6.3 to 81.9 inch)	190 to 2510 mm (7.3 to 98.7 inch)
	Operating Range	Long	0.3 to 10.0 m (1 to 32 ft.)
		Short	0.3 to 3.0 m (1 to 10 ft.)
	Response Time	ON to OFF	Normal mode: 20 ms max. *1 Slow mode: 40 ms max. *1 *2
		OFF to ON	Normal mode: 100 ms max. *1 Slow mode: 200 ms max. *1 *2
		*1 Response time when used in one segment system or in cascaded connection. *2 Selectable by Configuration Tool.	
Electrical	Effective Aperture Angle (EAA) (IEC 61496-2)	Type 4	±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.	
	Power Supply Voltage (Vs)	SELV/PELV 24 VDC±20% (ripple p-p 10% max.)	
	Current Consumption	Refer to page 5.	
	Safety Outputs (OSSD)	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 *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 DIP Switch.) 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	Muting or Override output (default) (Configurable by Configuration Tool)
	Input Voltage	ON Voltage	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.)
			PNP: 0 to 1/2 Vs, or open * NPN: 1/2 Vs to Vs, or open *
		OFF Voltage	PNP: 0 to 1/2 Vs, or open * NPN: 1/2 Vs to Vs, or open *
	* The Vs indicates a supply voltage value in your environment.		
	Overvoltage Category (IEC 60664-1)	II	
	Indicators	Refer to page 7.	
	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-RA systems.	
	Cascade Connection	Number of cascaded segments: 3 max. Total number of beams: 255 max. Total sum of cable lengths between sensors: 10 m max.	
	Test Function	Self-test (at power-on, and during operation) External test (light emission stop function by test input)	
	Safety-Related Functions	Interlock 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-4RA□□□□-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/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	
		Minimum Bending Radius	R5 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 2.	
		Cable Diameter	6.6 mm	
		Minimum Bending Radius	R36 mm	
	Total Length of Cable Extension		100 m max. (This is the total sum of extension cable lengths.)	
Material	Material		Housing: Aluminum Cap: PBT Front window: PMMA Cable: Oil resistant PVC Mounting Bracket: ZDC2 FE plate: SUS	
	Weight (packaged)		 Refer to page 5.	
	Included Accessories		Safety Precautions (7 languages), Quick Installation Manual, Standard Fixed Bracket*, Trouble-shooting Guide Sticker, Warning Zone Label * The quantity of Standard Fixed Brackets included varies depending on the protective height. [F3SG-4RA□□□□-14] - Protective height of 0160 to 1200: 2 sets - Protective height of 1280 to 2080: 3 sets [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	
Conformity	Conforming standards		 Refer to page 6.	
	Performance Level (PL)/Safety category	Type 4	PL e/Category 4 (EN ISO 13849-1:2008)	
	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)	

F3SG-R

List of Models/Response Time/Current Consumption/Weight

F3SG-4RA□□□□-14

Model	Number of Beams	Protective Height [mm]	Response Time [ms]			Current Consumption [mA]		Weight [kg]
			ON → OFF*	OFF (Synchronized) → ON	OFF (Not synchronized) → ON	Emitter	Receiver	
F3SG-4RA0160-14	15	160	8	40	140	40	75	1.8
F3SG-4RA0240-14	23	240	8	40	140	45	75	2.0
F3SG-4RA0320-14	31	320	8	40	140	55	75	2.2
F3SG-4RA0400-14	39	400	8	40	140	60	80	2.7
F3SG-4RA0480-14	47	480	13	65	165	50	80	2.9
F3SG-4RA0560-14	55	560	13	65	165	55	80	3.1
F3SG-4RA0640-14	63	640	13	65	165	60	85	3.3
F3SG-4RA0720-14	71	720	13	65	165	65	85	3.9
F3SG-4RA0800-14	79	800	13	65	165	65	90	4.1
F3SG-4RA0880-14	87	880	13	65	165	70	90	4.3
F3SG-4RA0960-14	95	960	13	65	165	75	90	4.5
F3SG-4RA1040-14	103	1040	13	65	165	80	95	4.7
F3SG-4RA1120-14	111	1120	13	65	165	85	95	4.8
F3SG-4RA1200-14	119	1200	13	65	165	90	100	5.0
F3SG-4RA1280-14	127	1280	13	65	165	95	100	5.2
F3SG-4RA1360-14	135	1360	13	65	165	95	105	5.6
F3SG-4RA1440-14	143	1440	18	90	190	85	105	5.8
F3SG-4RA1520-14	151	1520	18	90	190	90	105	6.0
F3SG-4RA1600-14	159	1600	18	90	190	90	110	6.6
F3SG-4RA1680-14	167	1680	18	90	190	95	110	6.8
F3SG-4RA1760-14	175	1760	18	90	190	100	115	7.0
F3SG-4RA1840-14	183	1840	18	90	190	100	115	7.2
F3SG-4RA1920-14	191	1920	18	90	190	105	120	7.3
F3SG-4RA2000-14	199	2000	18	90	190	105	120	7.5
F3SG-4RA2080-14	207	2080	18	90	190	110	125	8.1

* 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.

F3SG-4RA□□□□-30

Model	Number of Beams	Protective Height [mm]	Response Time [ms]			Current Consumption [mA]		Weight [kg]
			ON → OFF*	OFF (Synchronized) → ON	OFF (Not synchronized) → ON	Emitter	Receiver	
F3SG-4RA0190-30	8	190	8	40	140	35	75	1.8
F3SG-4RA0270-30	12	270	8	40	140	35	75	2.0
F3SG-4RA0350-30	16	350	8	40	140	40	75	2.2
F3SG-4RA0430-30	20	430	8	40	140	45	75	2.7
F3SG-4RA0510-30	24	510	8	40	140	50	75	2.9
F3SG-4RA0590-30	28	590	8	40	140	50	75	3.1
F3SG-4RA0670-30	32	670	8	40	140	55	75	3.3
F3SG-4RA0750-30	36	750	8	40	140	60	80	3.9
F3SG-4RA0830-30	40	830	8	40	140	65	80	4.0
F3SG-4RA0910-30	44	910	13	65	165	50	80	4.2
F3SG-4RA0990-30	48	990	13	65	165	50	80	4.4
F3SG-4RA1070-30	52	1070	13	65	165	55	80	4.6
F3SG-4RA1150-30	56	1150	13	65	165	55	85	4.8
F3SG-4RA1230-30	60	1230	13	65	165	55	85	4.9
F3SG-4RA1310-30	64	1310	13	65	165	60	85	5.1
F3SG-4RA1390-30	68	1390	13	65	165	60	85	5.6
F3SG-4RA1470-30	72	1470	13	65	165	65	85	5.8
F3SG-4RA1550-30	76	1550	13	65	165	65	90	6.0
F3SG-4RA1630-30	80	1630	13	65	165	70	90	6.5
F3SG-4RA1710-30	84	1710	13	65	165	70	90	6.7
F3SG-4RA1790-30	88	1790	13	65	165	70	90	6.9
F3SG-4RA1870-30	92	1870	13	65	165	75	90	7.1
F3SG-4RA1950-30	96	1950	13	65	165	75	95	7.3
F3SG-4RA2030-30	100	2030	13	65	165	80	95	7.4
F3SG-4RA2110-30	104	2110	13	65	165	80	95	8.0
F3SG-4RA2190-30	108	2190	13	65	165	85	95	8.2
F3SG-4RA2270-30	112	2270	13	65	165	85	100	8.4
F3SG-4RA2350-30	116	2350	13	65	165	85	100	8.8
F3SG-4RA2430-30	120	2430	13	65	165	90	100	8.9
F3SG-4RA2510-30	124	2510	13	65	165	90	100	9.1

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

Legislation and Standards

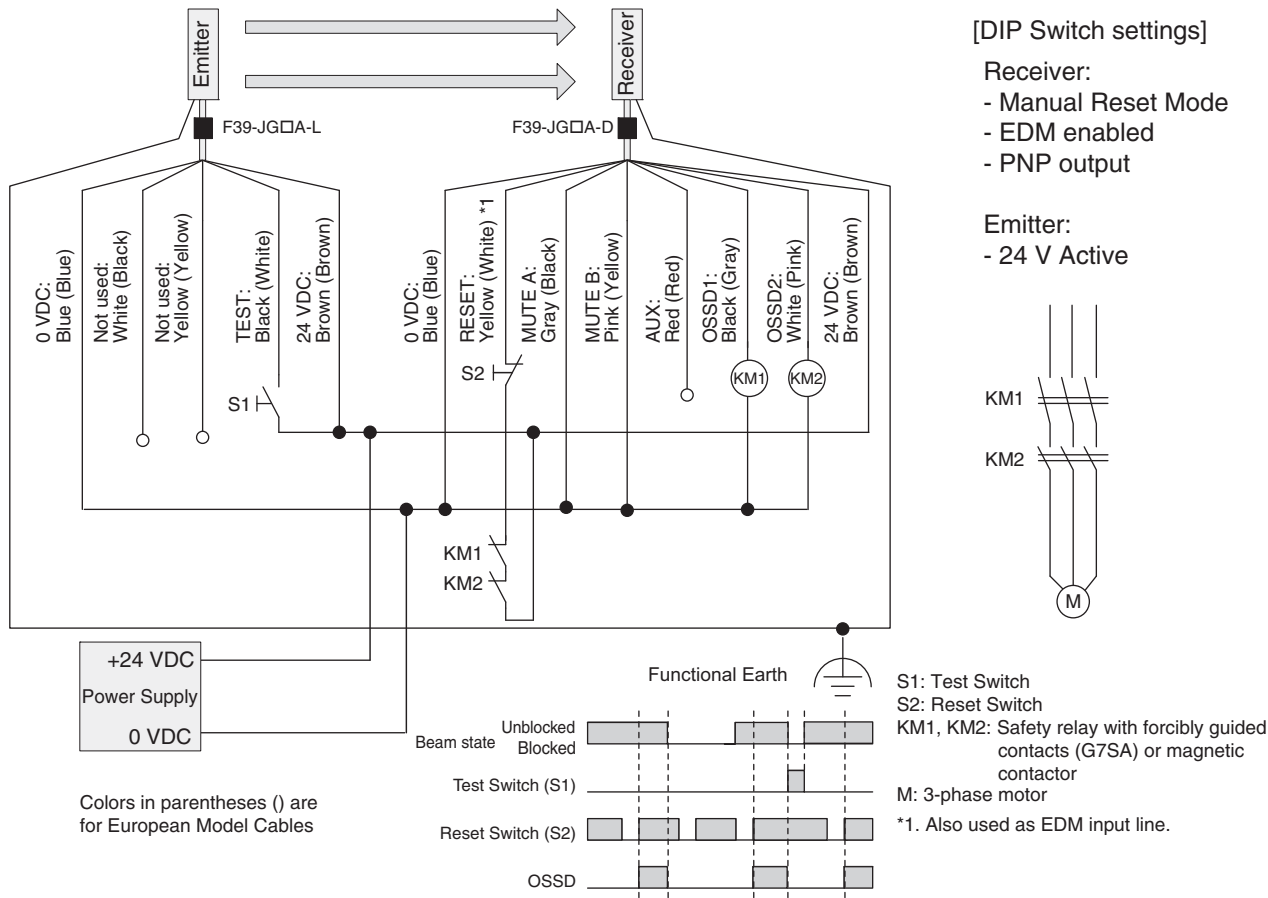
1. The F3SG-R does not receive type approval provided by Article 44-2 of the Industrial Safety and Health Act of Japan. When using the F3SG-R in Japan as a "safety system for pressing or shearing machines" prescribed in Article 42 of that law, the machine control system must receive type approval.
2. 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 2004/108/EC
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 13849-1:2008 (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 13849-1:2006 (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
GB4584
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 13849-1:2006 (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:
GB4584 (Type 4)
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/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
 - Chinese National Standards: GB17120, GB27607

F3SG-R

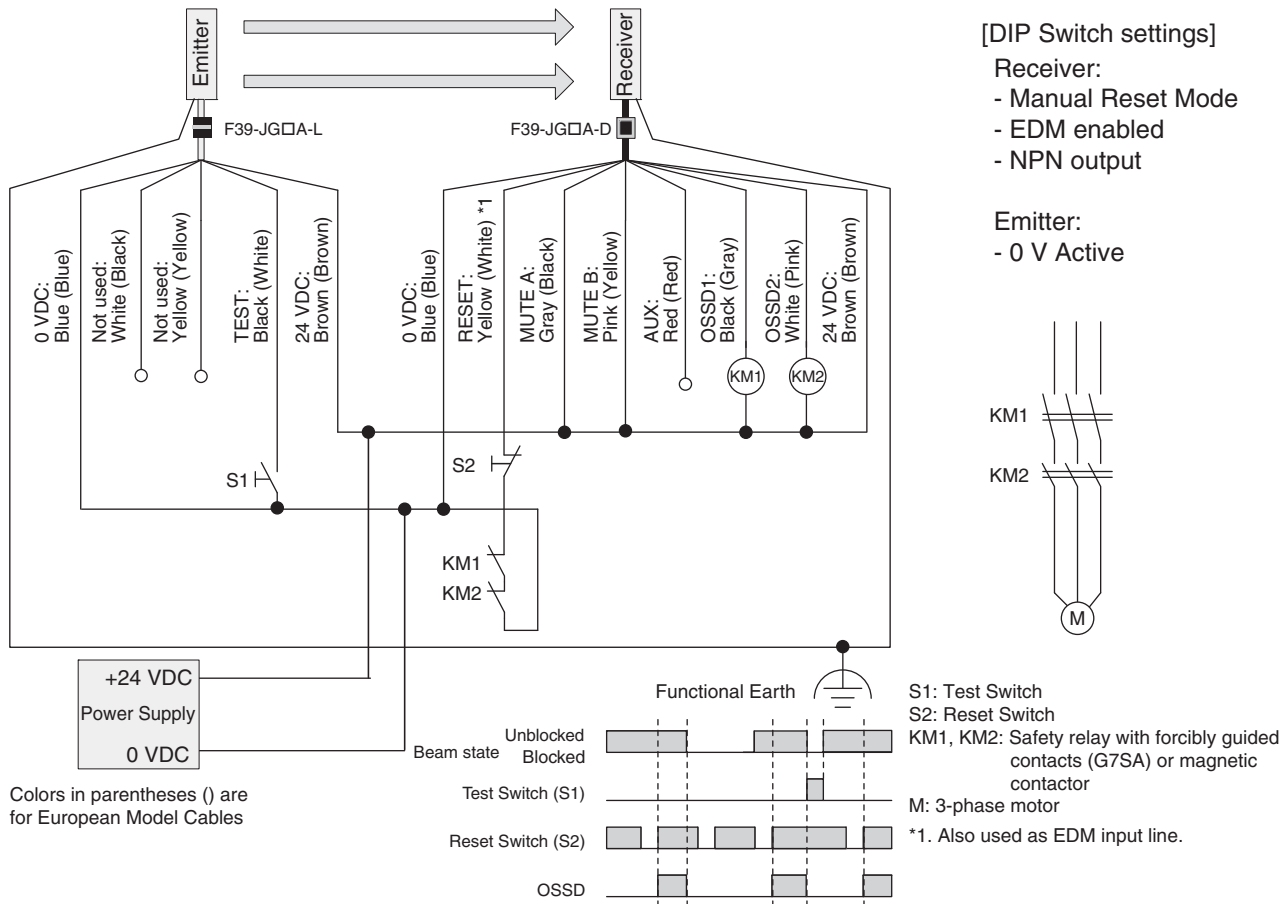
Indicator Emitter				
Name of Indicator		Color	Illuminated	Blinking
Test	TEST	Green	–	External Test is being performed
Operating range	LONG	Green	Long range mode is selected by DIP Switch	Lockout state due to DIP Switch setting error
Power	POWER	Green	Power is ON.	–
Lockout	LOCKOUT	Red	–	Lockout state 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 beng 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
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
		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
Communication	COM	Green	Synchronization between emitter and receiver is maintained	Lockout state due to Communication error
Bottom-beam-state	BTM	Blue	The bottom beam is unblocked	Muting/Override state, or Lockout state due to DIP Switch setting error

Connections (Basic Wiring Diagram)

Standalone F3SG-R using PNP Outputs

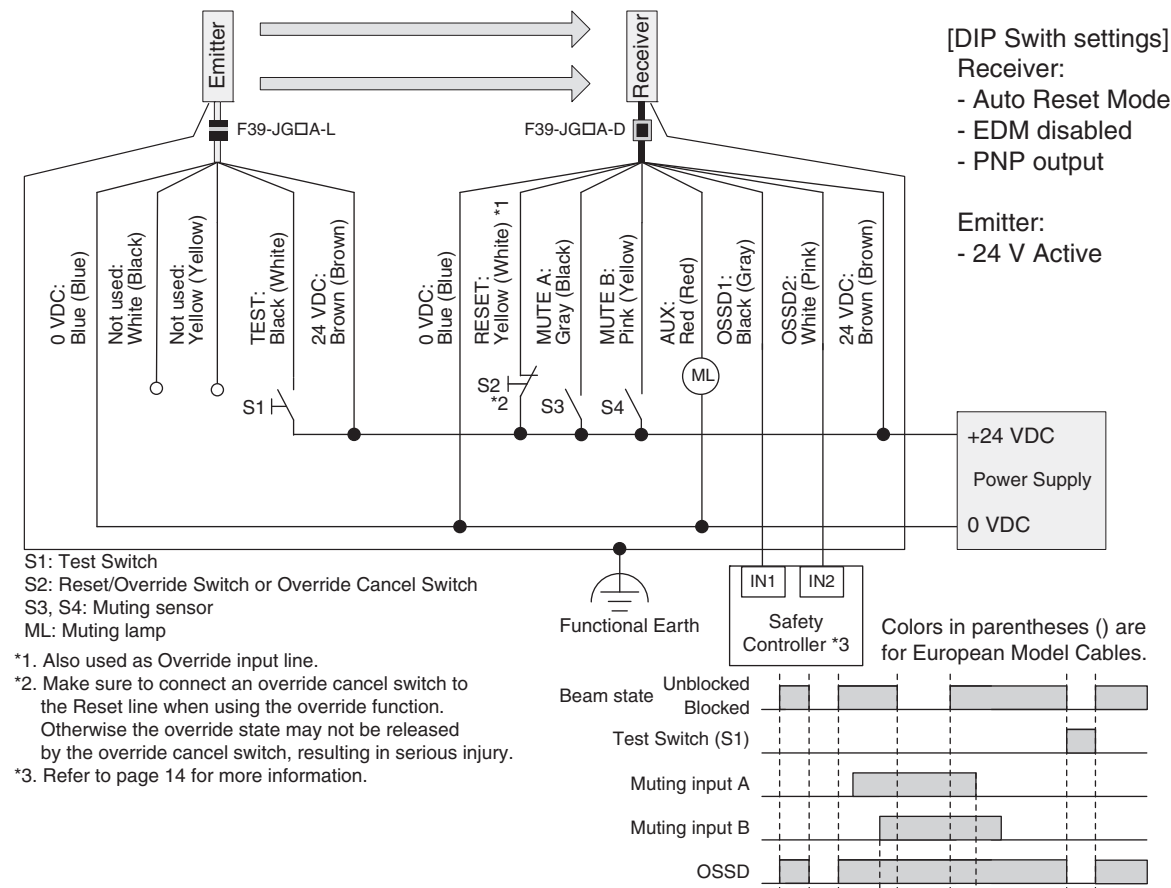


Standalone F3SG-R using NPN Outputs

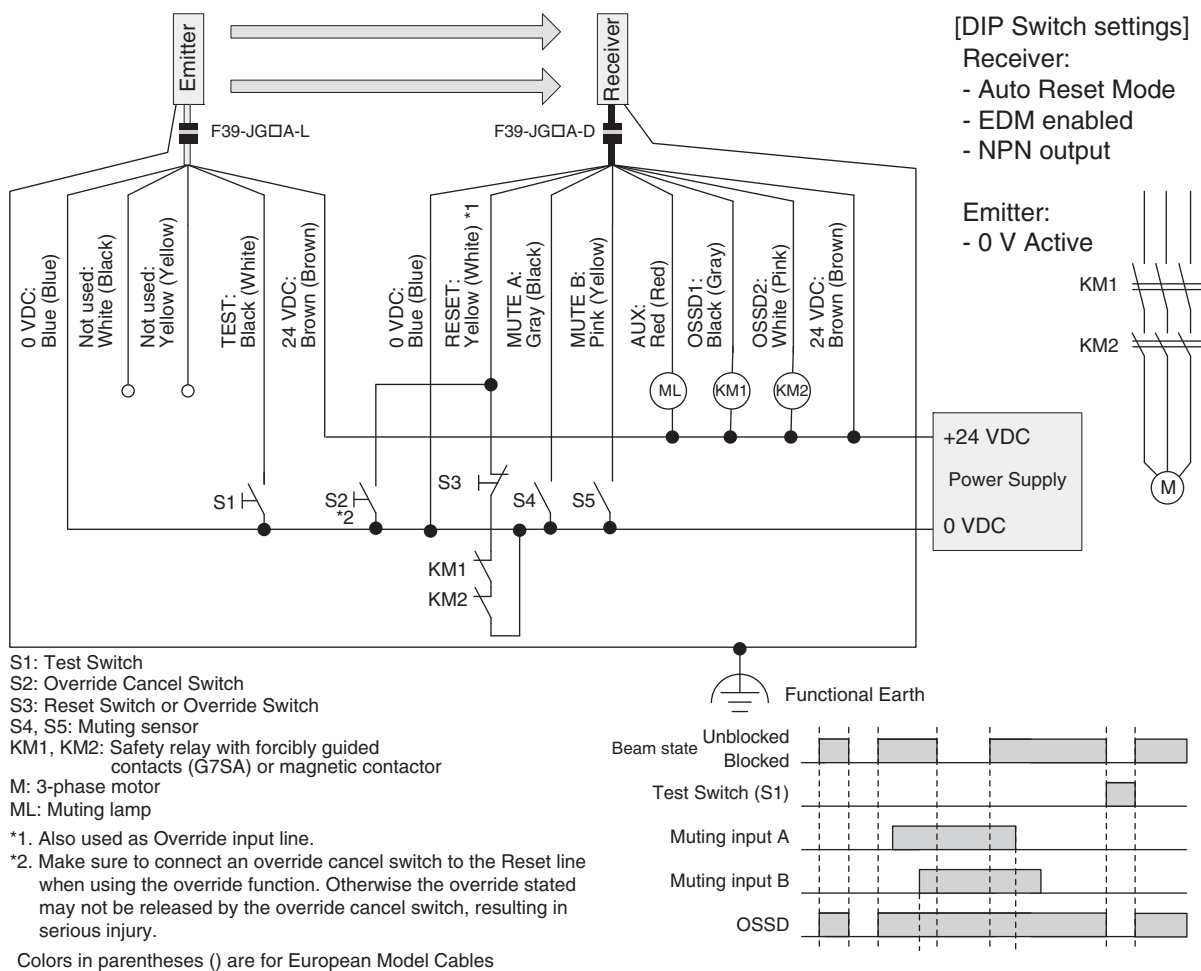


F3SG-R

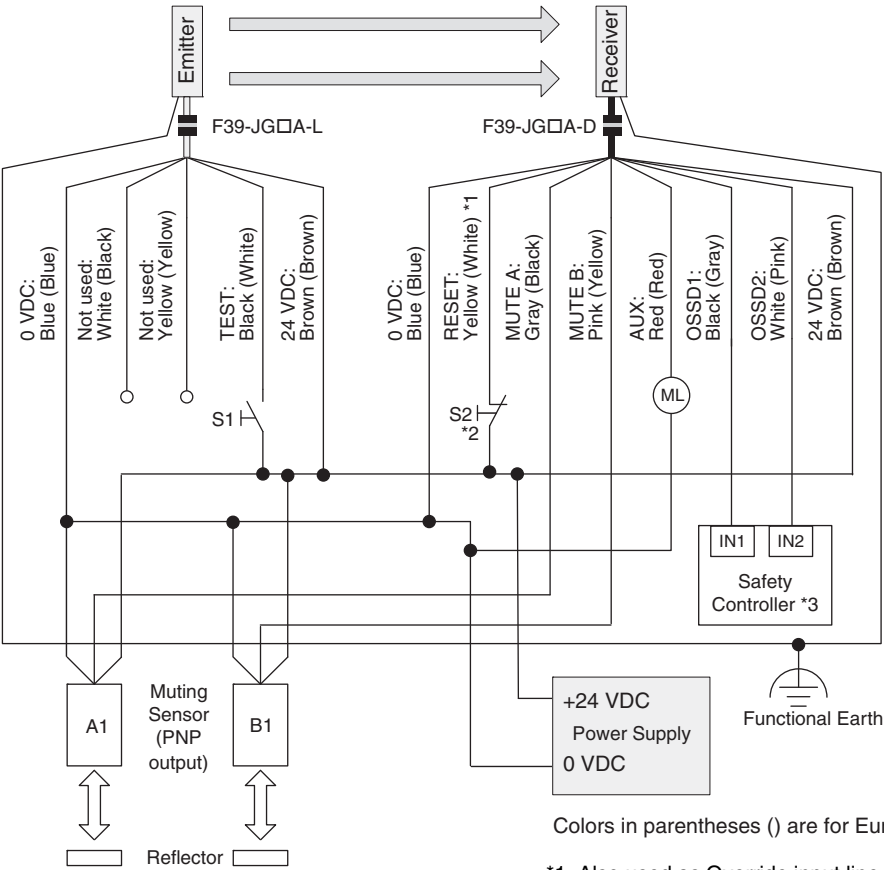
Standard Muting Mode/Exit-Only Muting Mode using PNP Outputs



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



Standard Muting Mode/Exit-Only Muting Mode with two Muting Sensors using PNP Outputs



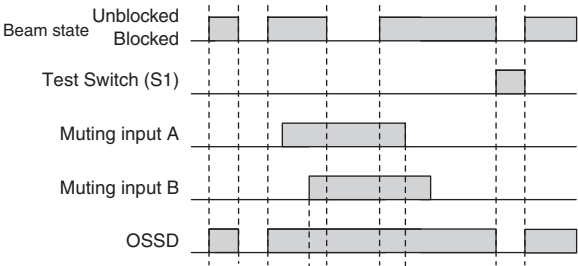
[DIP Switch settings]
Receiver:
- Auto Reset Mode
- EDM disabled
- PNP output

Emitter:
- 24 V Active

S1: Test Switch
S2: Reset/Override Switch or Override Cancel Switch
ML: Muting lamp
A1, B1: Muting sensor

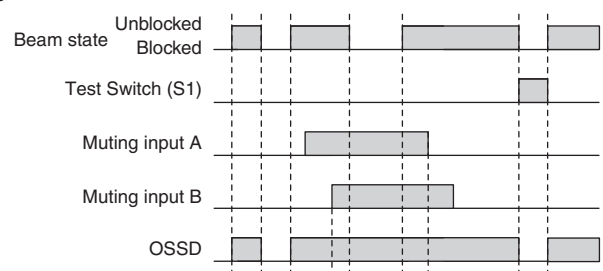
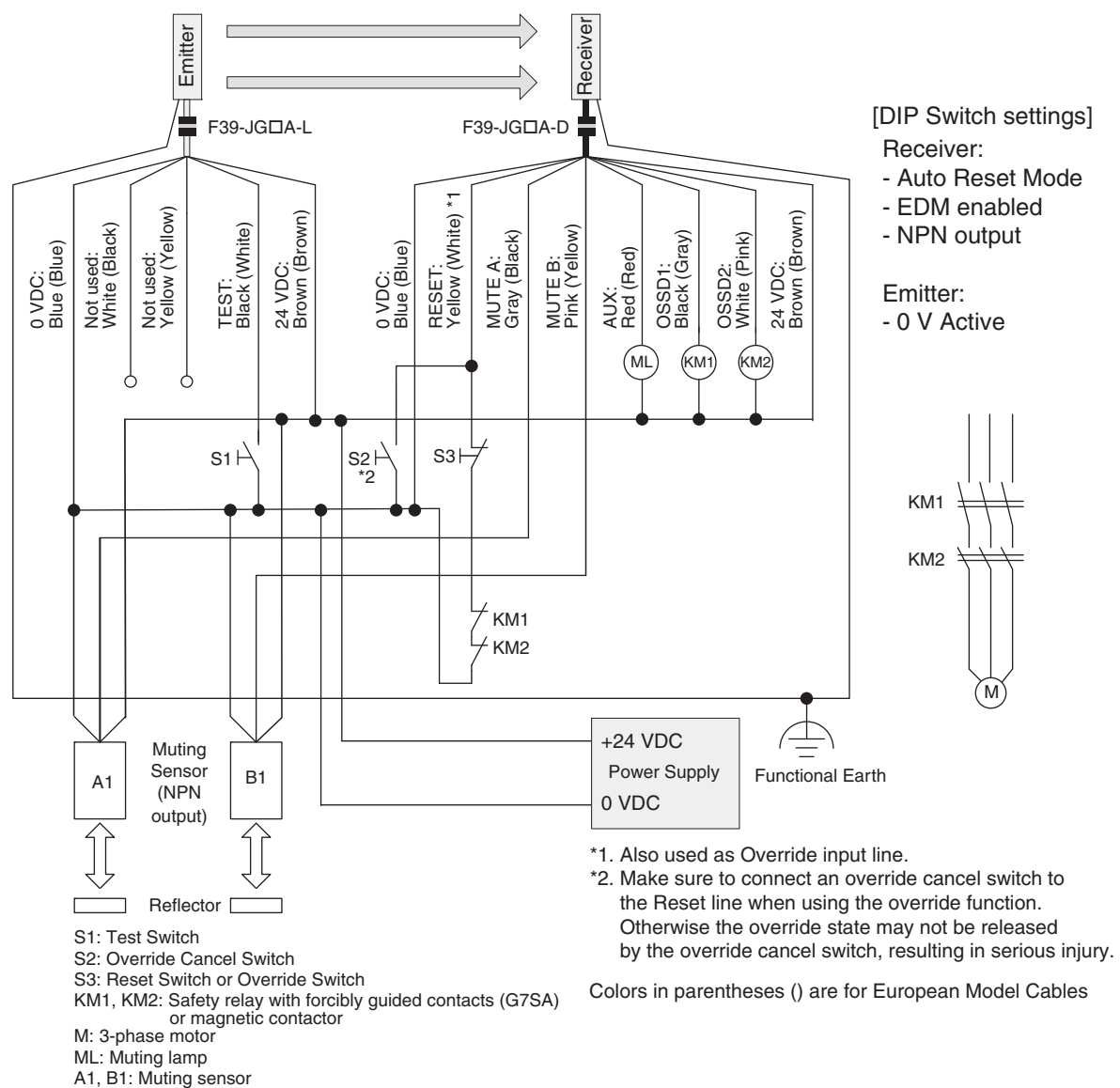
Colors in parentheses () are for European Model Cables

*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 14 for more information.

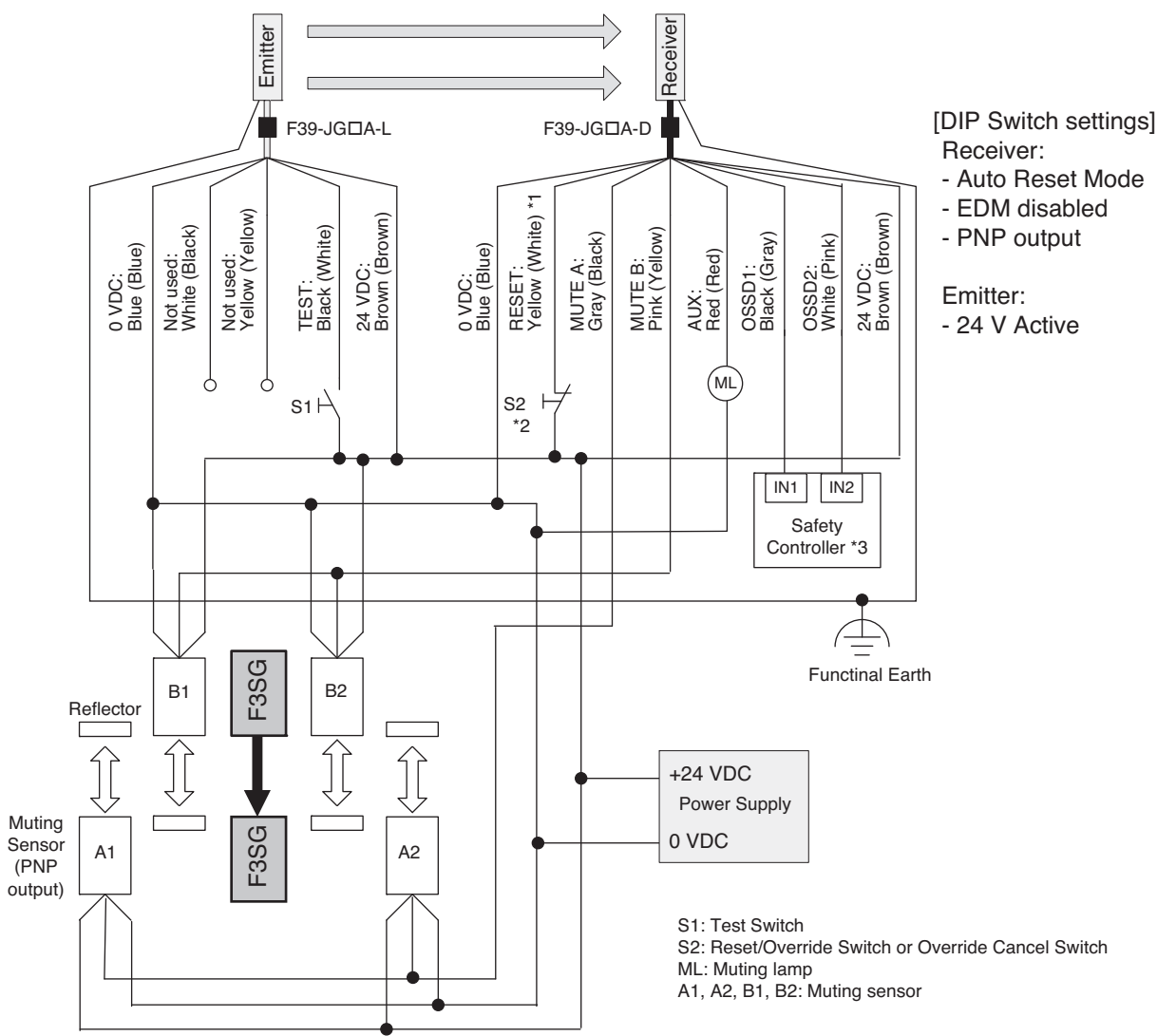


F3SG-R

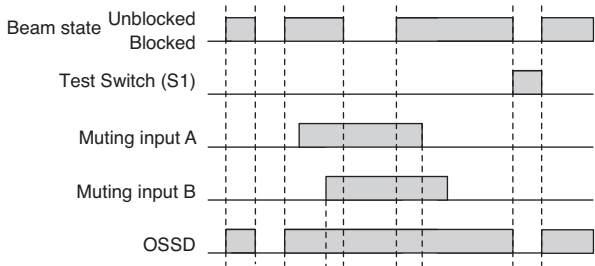
Standard Muting Mode/Exit-Only Muting Mode with two Muting Sensors using NPN Outputs



Standard Muting Mode/Exit-Only Muting Mode with four Muting Sensors using PNP Outputs

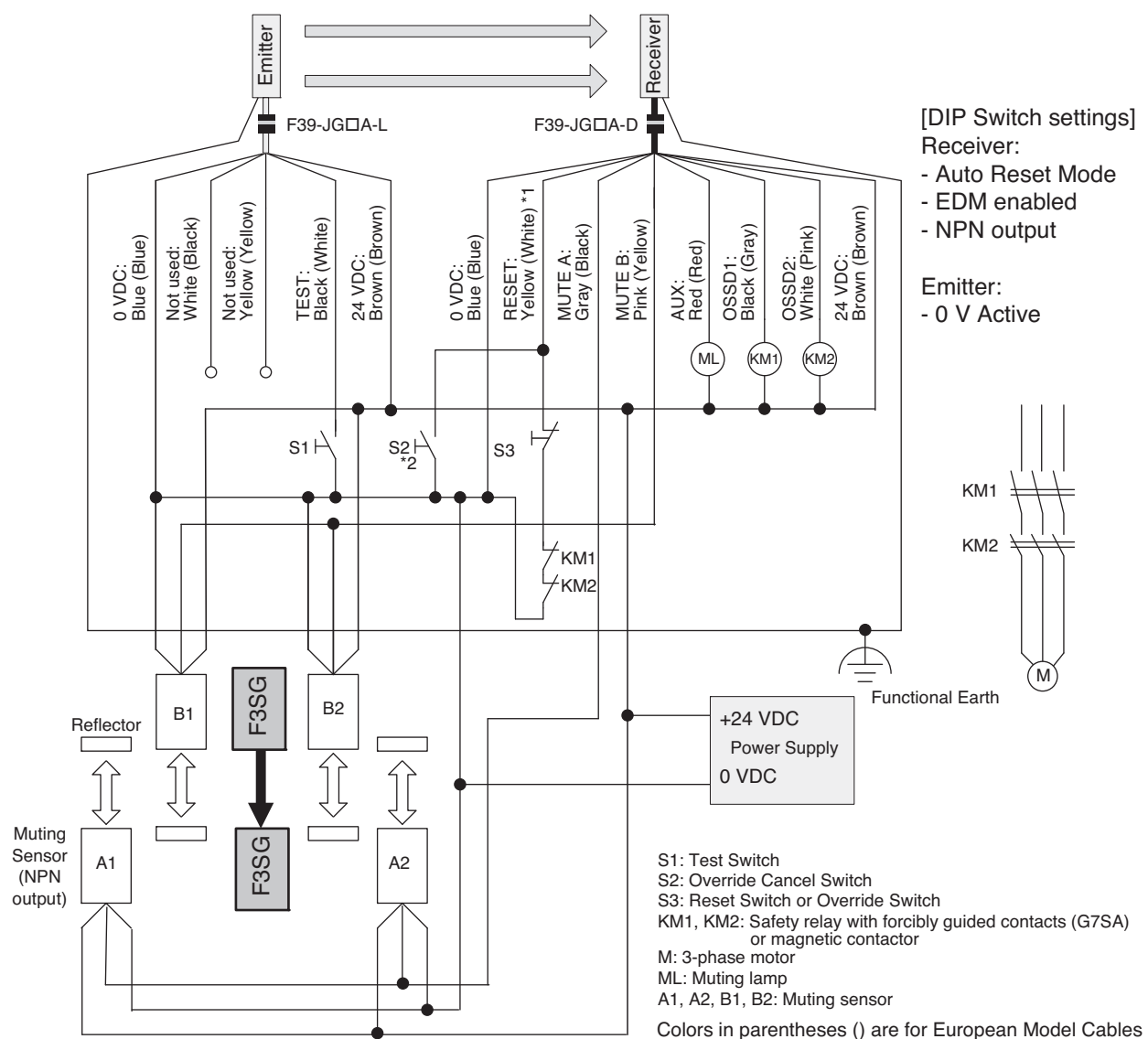


*1. Also used as Override input line.
*2. Make sure to connect an override cancel switch to the Reset line when using the override function. Otherwise the override state may not be released by the override cancel switch, resulting in serious injury.
*3. Refer to page 14 for more information.

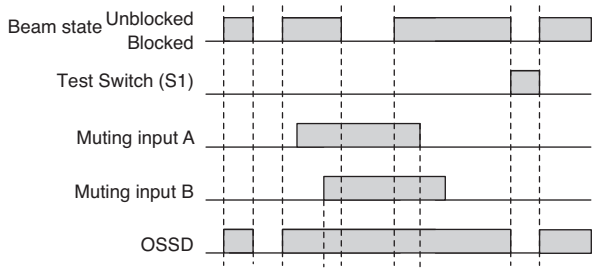


F3SG-R

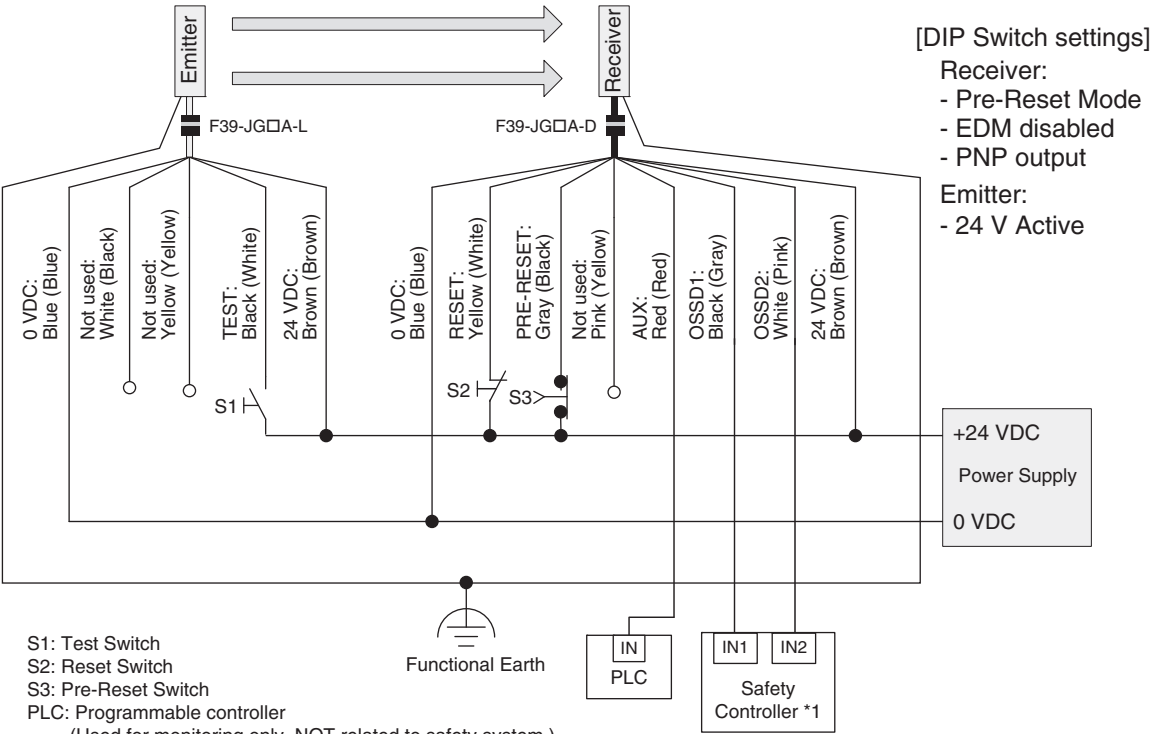
Standard Muting Mode/Exit-Only Muting Mode with four Muting Sensors using NPN Outputs



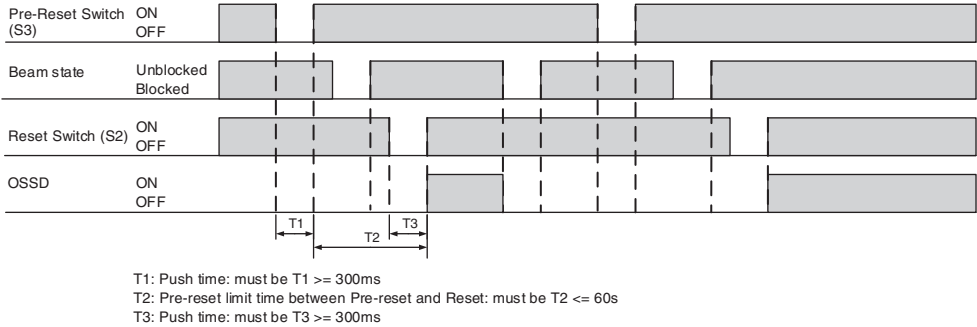
*1. Also used as Override input line.
*2. Make sure to connect an override cancel switch to the Reset line when using the override function. Otherwise the override state may not be released by the override cancel switch, resulting in serious injury.



Pre-Reset Mode using PNP Output



Refer to the following list "Connectable Safety Control Units" on this page.



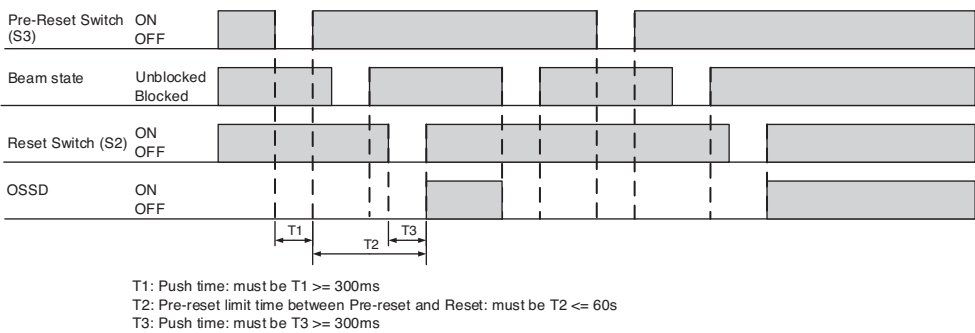
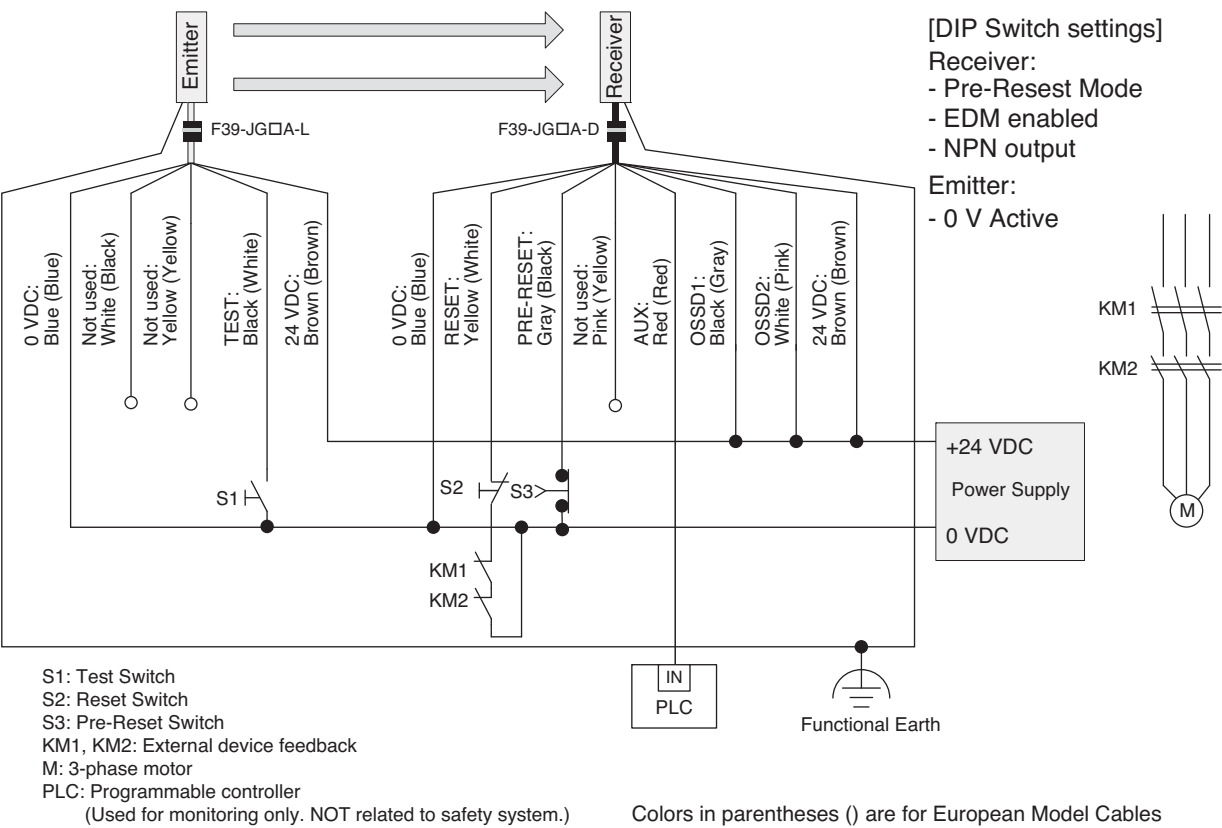
Connectable Safety Control Units

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

Connectable Safety Control Units (PNP output)		
G9SA-301 G9SA-321 G9SA-501 G9SB-200-B G9SB-200-D G9SB-301-B G9SB-301-D	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 DST1-MD16SL DST1-MRD08SL NX-SIH400 F3SP-T01

F3SG-R

Pre-Reset Mode using PNP Output

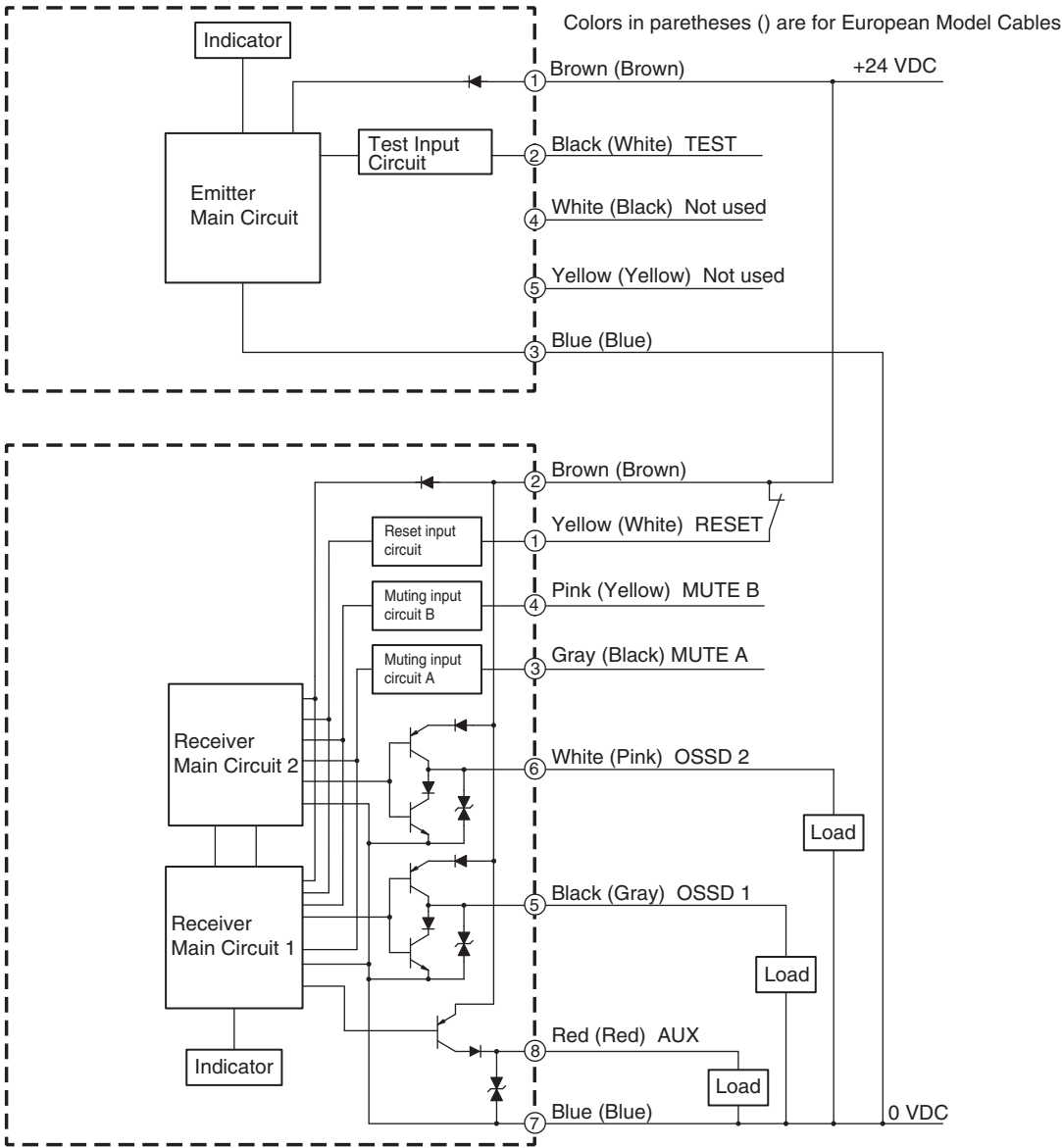


Input/Output Circuit

Entire Circuit Diagram

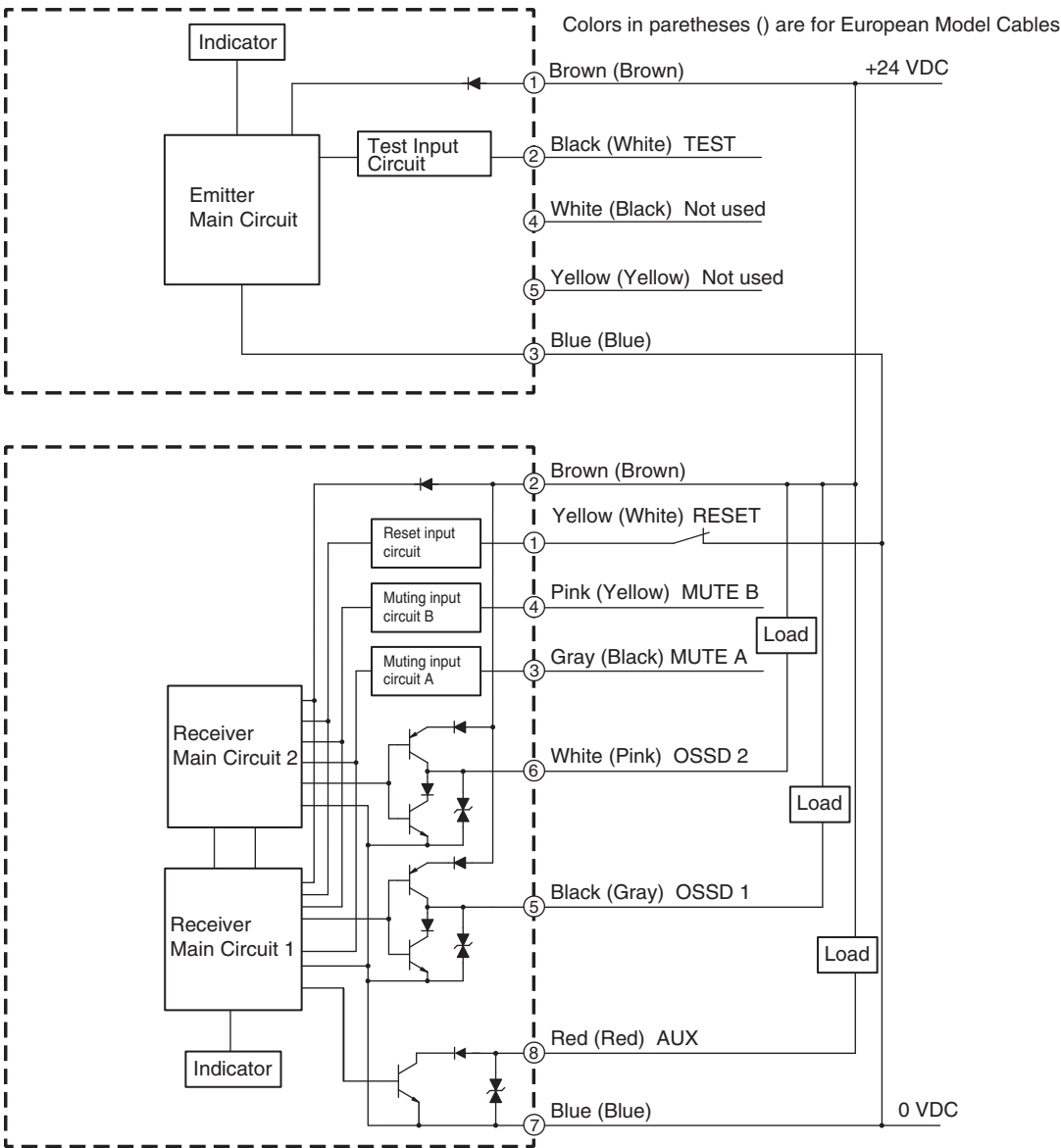
The entire circuit diagram of the F3SG-R is shown below.
The numbers in the circles indicate the connector's pin numbers.

PNP Output



F3SG-R

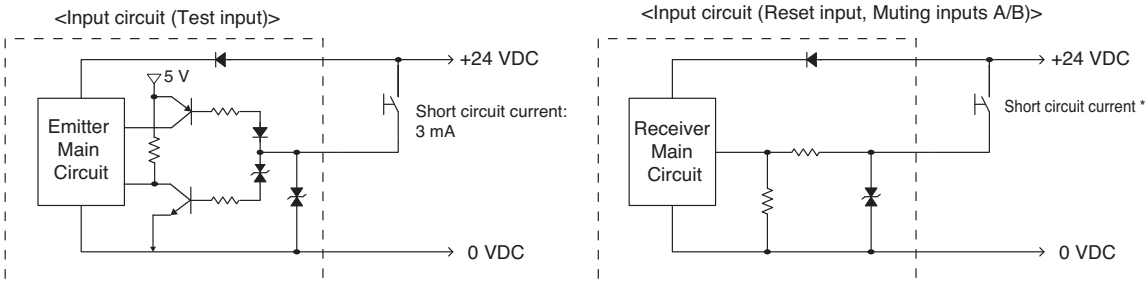
NPN Output



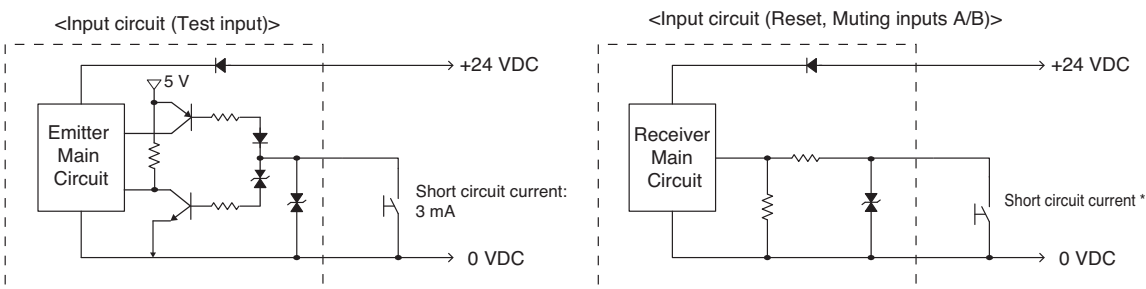
Input Circuit Diagram by Function

The input circuit diagrams of by function are shown below.

PNP Output



NPN Output

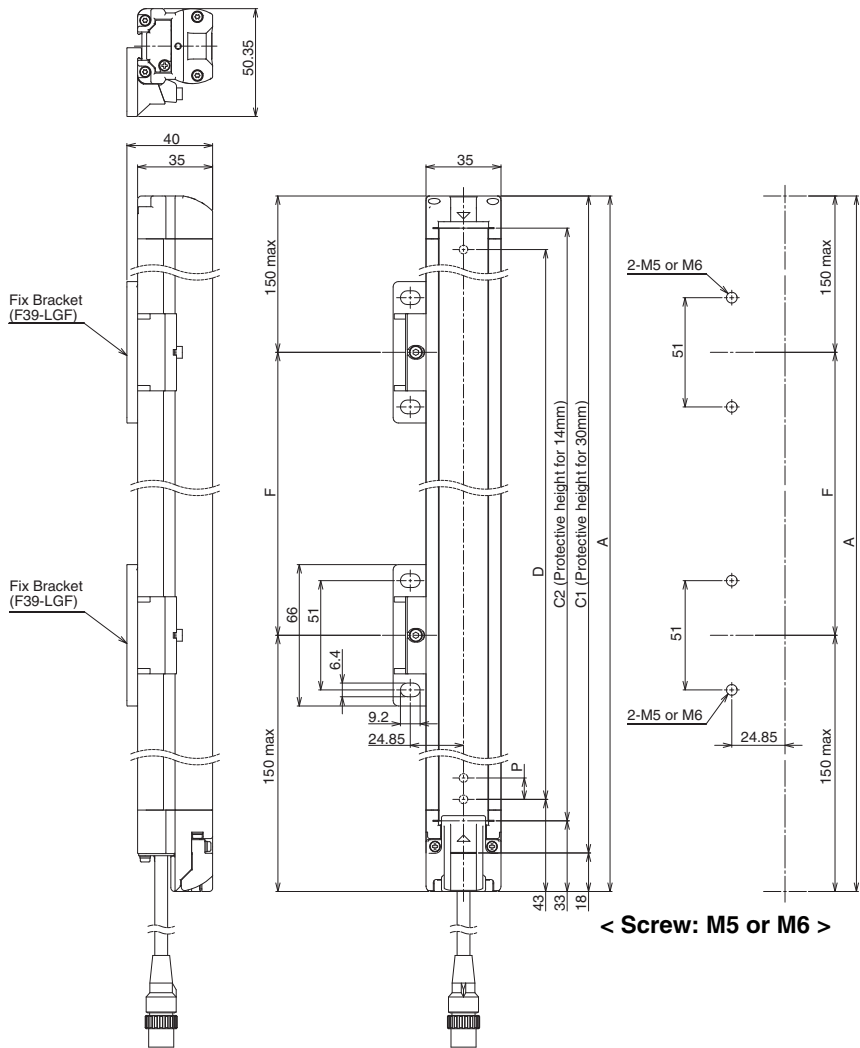


*Short circuit current: 5mA (Reset input), 3mA (Muting inputs A/B)

(Unit: mm)

Dimensions

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

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

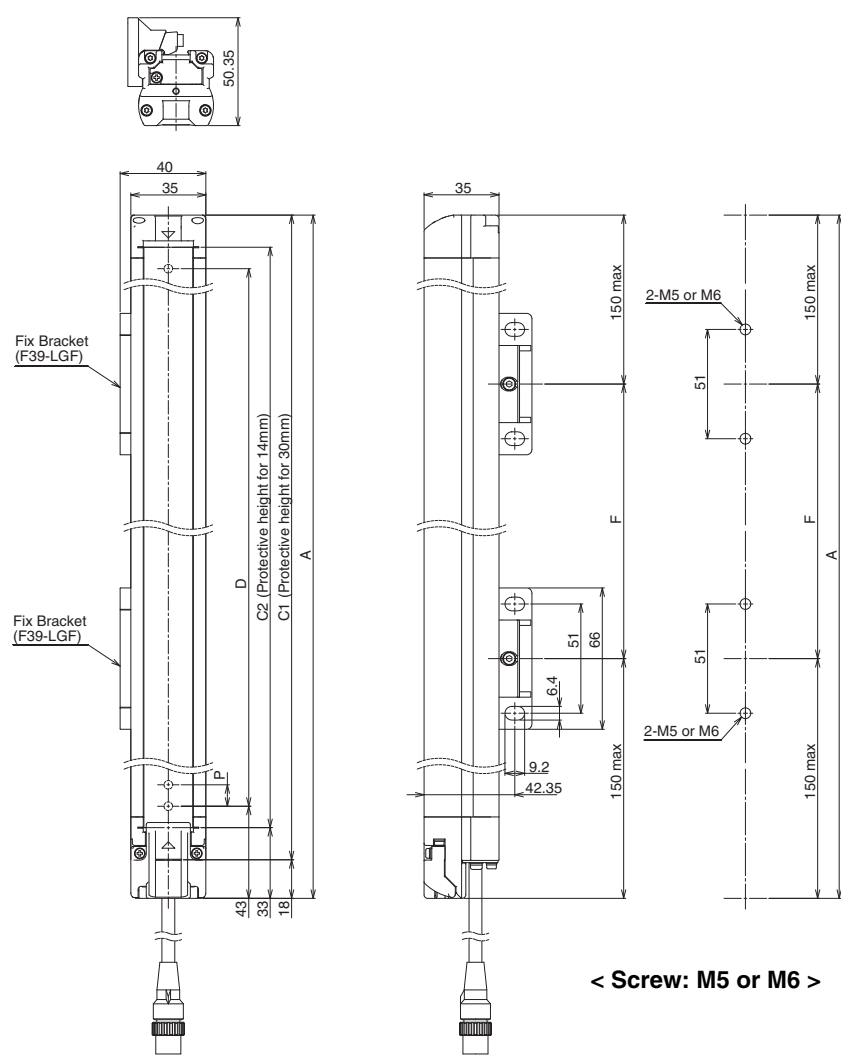
F3SG-□RA□□□□-14 Series

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 Fixed Brackets	Dimension F
0160 to 1200	2	1000 mm max.
1280 to 2080	3	1000 mm max.

F3SG-R

Side Mounting



< Screw: M5 or M6 >

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

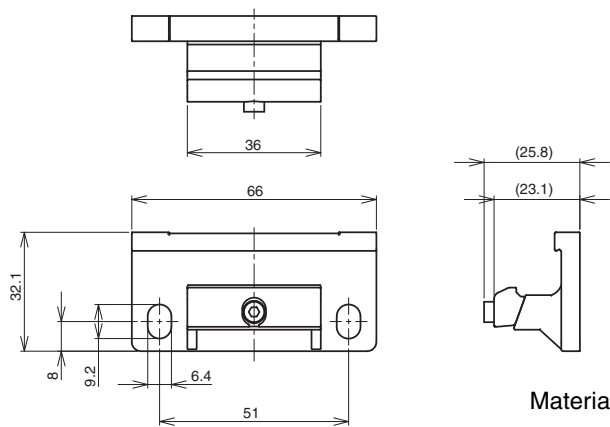
Protective height (C1)	Number of Standard Fixed Brackets	Dimension F
0190 to 1230	2	1000 mm max.
1310 to 2270	3	1000 mm max.
2350 to 2510	4	1000 mm max.

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

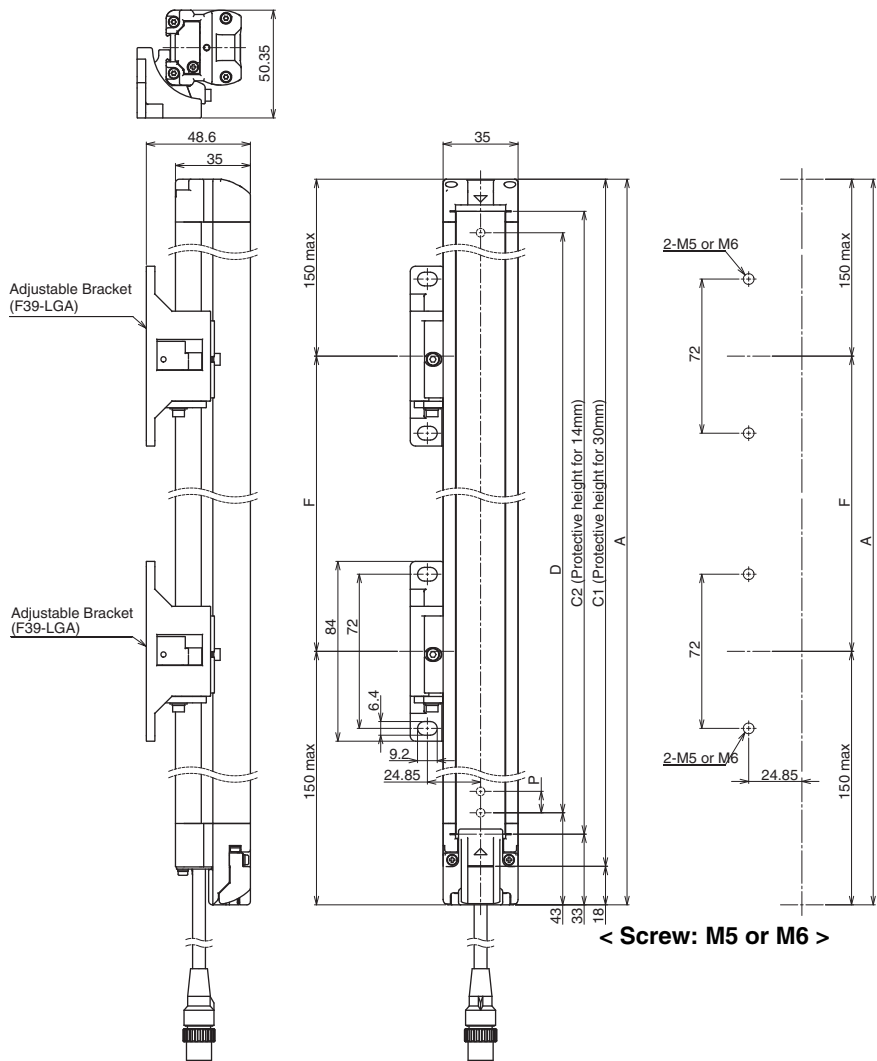
Protective height (C2)	Number of Standard Fixed Brackets	Dimension F
0160 to 1200	2	1000 mm max.
1280 to 2080	3	1000 mm max.

Standard Fixed Bracket



Material: ZDC2

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

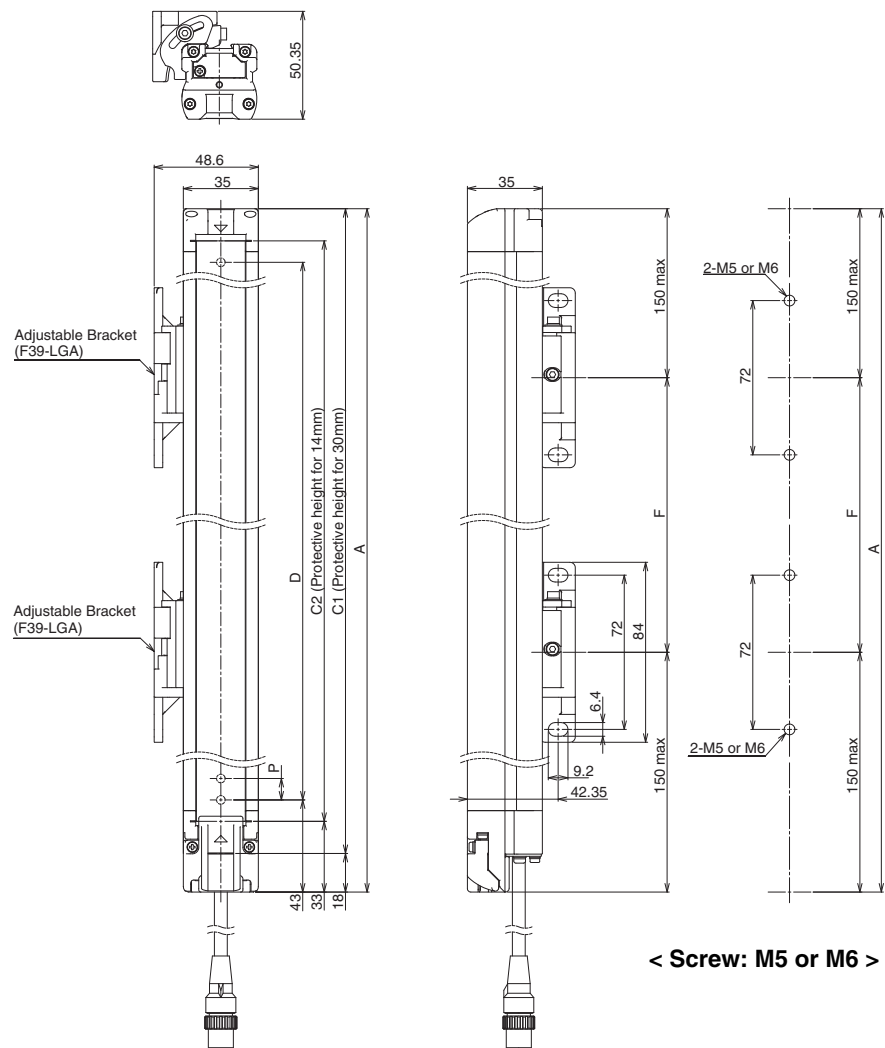
Protective height (C1)	Number of Standard Adjustable Brackets	Dimension F
0190 to 1230	2	1000 mm max.
1310 to 2270	3	1000 mm max.
2350 to 2510	4	1000 mm max.

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	Dimension F
0160 to 1200	2	1000 mm max.
1280 to 2080	3	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 P	20

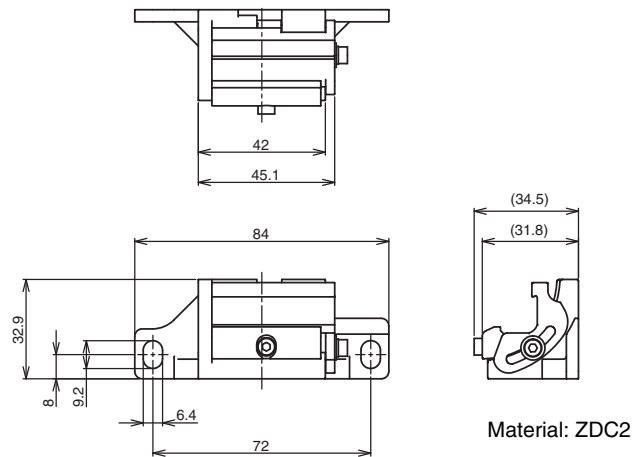
Protective height (C1)	Number of Standard Adjustable Brackets	Dimension F
0190 to 1230	2	1000 mm max.
1310 to 2270	3	1000 mm max.
2350 to 2510	4	1000 mm max.

F3SG-□RA□□□□-14 Series

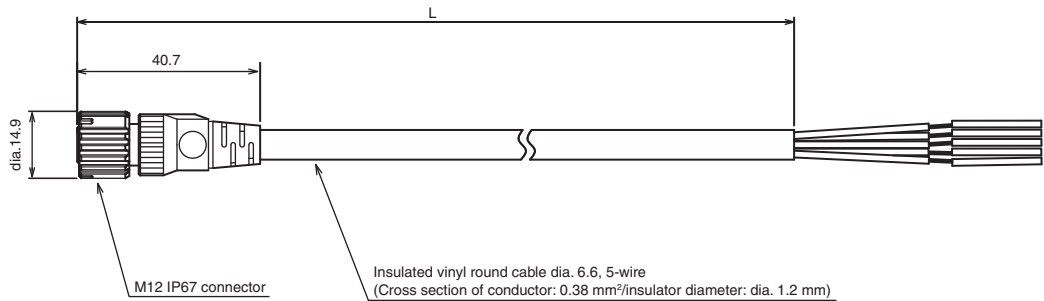
Dimension A	C2+48
Dimension C2	4-digit number of the type name (Protective height)
Dimension D	C2-20
Dimension P	10

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

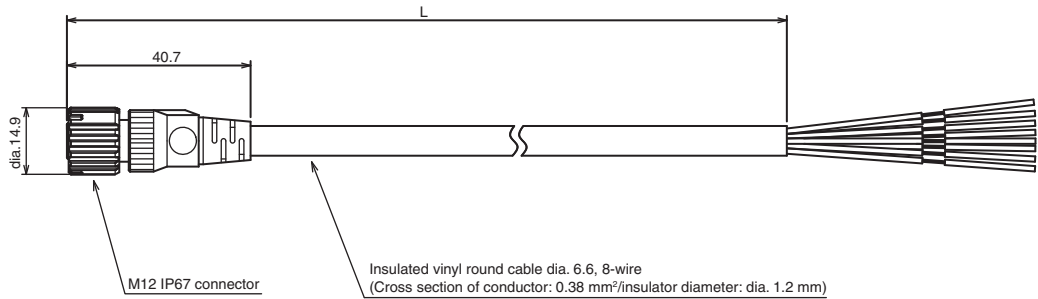
Standard Adjustable Bracket



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



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

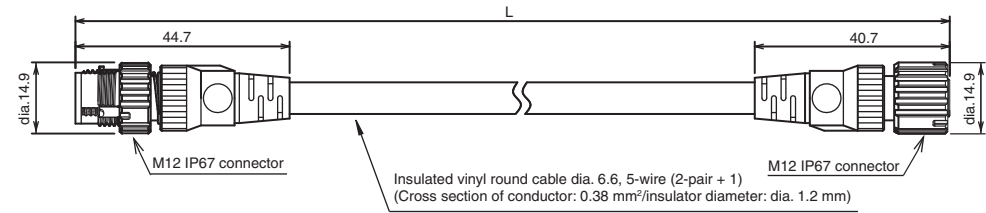


Emitter cable (Gray)	Receiver cable (Black)	L (m)
F39-JG3A-L/F39-JG3A-L-E	F39-JG3A-D/F39-JG3A-D-E	3
F39-JG7A-L/F39-JG7A-L-E	F39-JG7A-D/F39-JG7A-D-E	7
F39-JG10A-L/F39-JG10A-L-E	F39-JG10A-D/F39-JG10A-D-E	10
F39-JG15A-L/F39-JG15A-L-E	F39-JG15A-D/F39-JG15A-D-E	15
F39-JG20A-L/F39-JG20A-L-E	F39-JG20A-D/F39-JG20A-D-E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

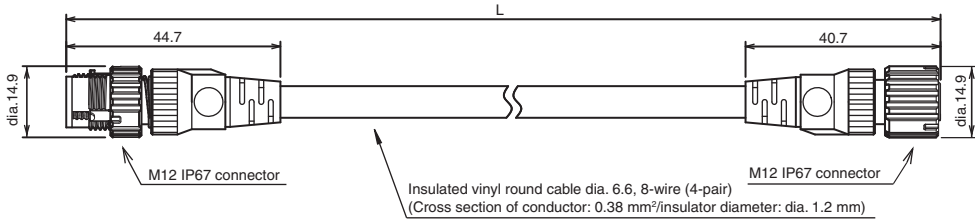
Note:F39-JG□A(-□)-E are European Model Cables.

F3SG-R

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

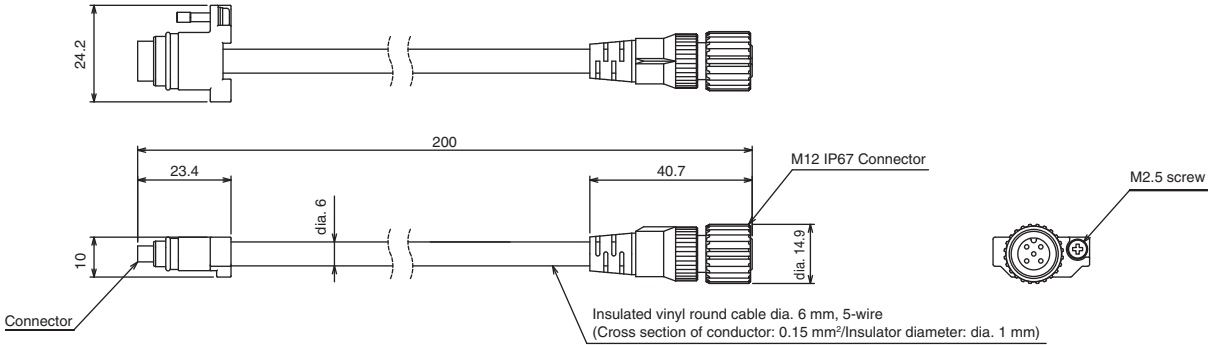


Double-Ended Cable for Receiver: Cable for extension (F39-JG□B-D, sold separately)

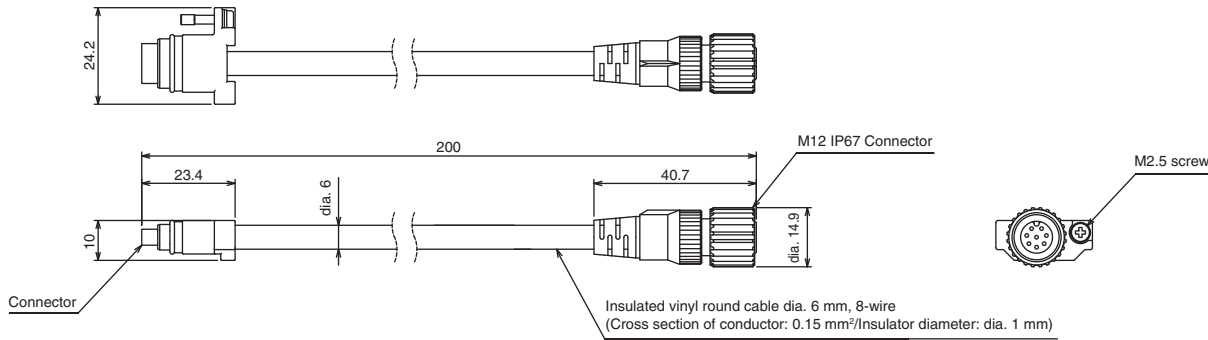


Emitter cable (Gray)	Receiver cable (Black)	L (m)
F39-JGR5B-L	F39-JGR15B-D	0.5
F39-JG1B-L	F39-JG1B-D	1
F39-JG3B-L	F39-JG3B-D	3
F39-JG5B-L	F39-JG5B-D	5
F39-JG7B-L	F39-JG7B-D	7
F39-JG10B-L	F39-JG10B-D	10
F39-JG15B-L	F39-JG15B-D	15
F39-JG20B-L	F39-JG20B-D	20

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



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



Related Manuals

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

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 - d. Delivery and shipping dates are estimates only; and
 - e. Omron will package Products as it deems proper for protection against normal handling and extra charges apply to special conditions.
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