Basic Type with a combination of performance and functionality

- Up to three sets of series-connected sensors.
- The muting function is enabled simply with Muting Key Cap.
- Comes standard with interlock and auxiliary output functions.

Related information
Dimensions : Page 56 to 65
Function List : Page 99 to 100
Safety Precautions : Page 101
Precautions on Safety : Page 102 to 107

Ordering Information

Main Units

Safety Light Curtain

Application	Detection capability	Beam gap	Operating range	Protective height (mm)	Model	
					PNP output	NPN output
Hand protection	Dia. 25 mm	20 mm	0.2 to 7 m	185 to 2,065	F3SJ-B□□□□P25 ∗1	F3SJ-B□□□□N25
Hand protection	Dia. 25 mm	20 mm	0.2 to 7 m	185 to 2,065	F3SJ-B□□□□P25-01TS ∗2	---
Environmental resistance	Dia. 25 mm	20 mm	0.2 to 6 m	225 to 1,985	F3SJ-B□□□□P25-02TS ∗2	---

∗1. For S-mark compatible model, the suffix "-S" is added to the model name. (except for models with the suffix "-01TS" or "-02TS".)
(Example) F3SJ-E0185P25-S
∗2. The F3SJ-B series with the suffix "-01TS" or "02TS" have different functions. Refer to page 37 for details.

Safety Light Curtain Model List

Please contact our sales representative.

F3SJ-B Series (20 mm pitch)
F3SJ-B-01TS Series (20 mm pitch)
F3SJ-B-02TS Series (20 mm pitch)

Model				Number of beams	Protective height [mm] ∗
PNP output	NPN output	PNP output	PNP output		
F3SJ-B0185P25	F3SJ-B0185N25	F3SJ-B0185P25-01TS	-	8	185
F3SJ-B0225P25	F3SJ-B0225N25	F3SJ-B0225P25-01TS	F3SJ-B0225P25-02TS	10	225
F3SJ-B0305P25	F3SJ-B0305N25	F3SJ-B0305P25-01TS	F3SJ-B0305P25-02TS	14	305
F3SJ-B0385P25	F3SJ-B0385N25	F3SJ-B0385P25-01TS	F3SJ-B0385P25-02TS	18	385
F3SJ-B0465P25	F3SJ-B0465N25	F3SJ-B0465P25-01TS	F3SJ-B0465P25-02TS	22	465
F3SJ-B0545P25	F3SJ-B0545N25	F3SJ-B0545P25-01TS	F3SJ-B0545P25-02TS	26	545
F3SJ-B0625P25	F3SJ-B0625N25	F3SJ-B0625P25-01TS	F3SJ-B0625P25-02TS	30	625
F3SJ-B0705P25	F3SJ-B0705N25	F3SJ-B0705P25-01TS	F3SJ-B0705P25-02TS	34	705
F3SJ-B0785P25	F3SJ-B0785N25	F3SJ-B0785P25-01TS	F3SJ-B0785P25-02TS	38	785
F3SJ-B0865P25	F3SJ-B0865N25	F3SJ-B0865P25-01TS	F3SJ-B0865P25-02TS	42	865
F3SJ-B0945P25	F3SJ-B0945N25	F3SJ-B0945P25-01TS	F3SJ-B0945P25-02TS	46	945
F3SJ-B1025P25	F3SJ-B1025N25	F3SJ-B1025P25-01TS	F3SJ-B1025P25-02TS	50	1,025
F3SJ-B1105P25	F3SJ-B1105N25	F3SJ-B1105P25-01TS	F3SJ-B1105P25-02TS	54	1,105
F3SJ-B1185P25	F3SJ-B1185N25	F3SJ-B1185P25-01TS	F3SJ-B1185P25-02TS	58	1,185
F3SJ-B1265P25	F3SJ-B1265N25	F3SJ-B1265P25-01TS	F3SJ-B1265P25-02TS	62	1,265
F3SJ-B1345P25	F3SJ-B1345N25	F3SJ-B1345P25-01TS	F3SJ-B1345P25-02TS	66	1,345
F3SJ-B1425P25	F3SJ-B1425N25	F3SJ-B1425P25-01TS	F3SJ-B1425P25-02TS	70	1,425
F3SJ-B1505P25	F3SJ-B1505N25	F3SJ-B1505P25-01TS	F3SJ-B1505P25-02TS	74	1,505
F3SJ-B1585P25	F3SJ-B1585N25	F3SJ-B1585P25-01TS	F3SJ-B1585P25-02TS	78	1,585
F3SJ-B1665P25	F3SJ-B1665N25	F3SJ-B1665P25-01TS	F3SJ-B1665P25-02TS	82	1,665
F3SJ-B1745P25	F3SJ-B1745N25	F3SJ-B1745P25-01TS	F3SJ-B1745P25-02TS	86	1,745
F3SJ-B1825P25	F3SJ-B1825N25	F3SJ-B1825P25-01TS	F3SJ-B1825P25-02TS	90	1,825
F3SJ-B1905P25	F3SJ-B1905N25	F3SJ-B1905P25-01TS	F3SJ-B1905P25-02TS	94	1,905
F3SJ-B1985P25	F3SJ-B1985N25	F3SJ-B1985P25-01TS	F3SJ-B1985P25-02TS	98	1,985
F3SJ-B2065P25	F3SJ-B2065N25	F3SJ-B2065P25-01TS	-	102	2,065

∗ Protective height (mm) = Total sensor length

Note: 1. The models with the suffix "-01TS" or "-02TS are the PNP type only.
2. The test input logic is inverted for the models with the suffix "-01TS".
3. Reset mode is fixed with auto reset mode for the models with the suffix "-01TS" or "-02TS".

Accessories (Sold separately)

Single-Ended Cable (2 covers per set, one for emitter and one for receiver) ✻

For wiring with safety circuit such as single safety relay, safety relay unit, and safety controller

Appearance	Cable length	Specifications	Model
	3 m	M12 connector (8-pin)	**F39-JD3A**
	7 m		**F39-JD7A**
	10 m		**F39-JD10A**
	15 m		**F39-JD15A**
	20 m		**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 20 m or more, add the F39-JD□B Double-Ended Cable.
Example: When using a cable of 30 m, connect the F39-JD10A Single-Ended Cable with the F39-JD20B Double-Ended Cable.

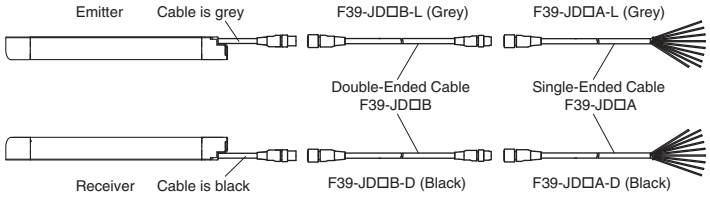
Double-Ended Cable (2 covers per set, one for emitter and one for receiver) ✻

Control unit for connection with F3SP-B1P, to extend the length under series connection

Appearance	Cable length	Specifications	Model
	0.5 m	M12 connector (8-pin)	**F39-JDR5B**
	1 m		**F39-JD1B**
	3 m		**F39-JD3B**
	5 m		**F39-JD5B**
	7 m		**F39-JD7B**
	10 m		**F39-JD10B**
	15 m		**F39-JD15B**
	20 m		**F39-JD20B**

✻ 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 20 m or more, use the 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.



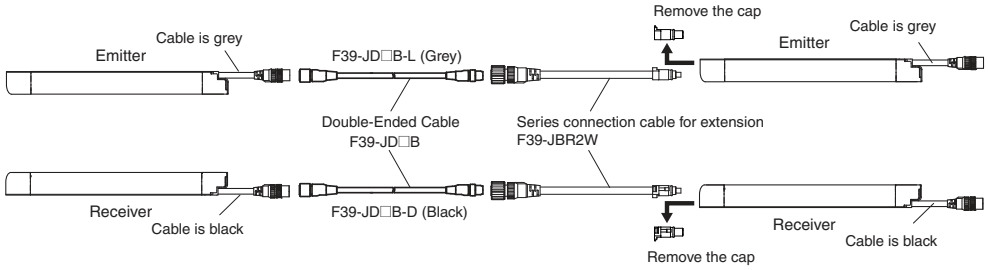
Series-connection Cable (2 covers per set, one for emitter and one for receiver)

Type	Appearance	Cable length	Model	Application
Series connection cable for extension		0.2 m	**F39-JBR2W ✻**	For series connection

✻ This product is for F3SJ-B only.

Note: The Double-Ended Cable (up to 7 m: F39-JD7B) can be added to extend the cable length between the series-connected sensors.
Cable length between sensors: 7 m max. (not including series connection cable (F39-JBR2W) and power cable)

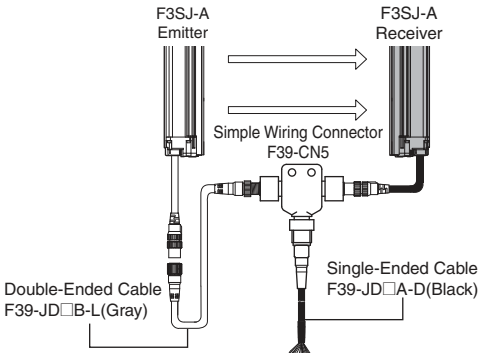
<Connection example>



Simple wiring connector system (Order the F39-CN5 and Cables for Simple Wiring.)

Simple wiring connector

Appearance	Model	Application
	**F39-CN5**	To reduce wiring



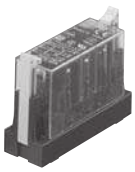
Cable for simple wiring ✻ (2 cables per set, one double-ended cable and one single-ended cable)

Appearance	Contents		Cable length	Model
 	Double-Ended Cable	F39-JD3B-L	3 m	**F39-JD0303BA**
	Single-Ended Cable	F39-JD3A-D	3 m	
	Double-Ended Cable	F39-JD3B-L	3 m	**F39-JD0307BA**
	Single-Ended Cable	F39-JD7A-D	7 m	
	Double-Ended Cable	F39-JD3B-L	3 m	**F39-JD0310BA**
	Single-Ended Cable	F39-JD10A-D	10 m	
	Double-Ended Cable	F39-JD5B-L	5 m	**F39-JD0503BA**
	Single-Ended Cable	F39-JD3A-D	3 m	
	Double-Ended Cable	F39-JD5B-L	5 m	**F39-JD0507BA**
	Single-Ended Cable	F39-JD7A-D	7 m	
	Double-Ended Cable	F39-JD5B-L	5 m	**F39-JD0510BA**
	Single-Ended Cable	F39-JD10A-D	10 m	
	Double-Ended Cable	F39-JD10B-L	10 m	**F39-JD1003BA**
	Single-Ended Cable	F39-JD3A-D	3 m	
	Double-Ended Cable	F39-JD10B-L	10 m	**F39-JD1007BA**
	Single-Ended Cable	F39-JD7A-D	7 m	
	Double-Ended Cable	F39-JD10B-L	10 m	**F39-JD1010BA**
	Single-Ended Cable	F39-JD10A-D	10 m	

Note: A double-ended cable and single-ended cable with other cable lengths than those listed above can also be used in combination. Please contact your OMRON sales representative for details.

✻ Although the double-ended cable for the emitter is used for the emitter in the above figure, it can also be used for the receiver.

Relays with Forcibly Guided Contacts

Type	Appearance	Specifications	Model	Remarks
G7SA Relays with Forcibly Guided Contacts		• Nodes: 4 • Contact type: 2NO+2NC • Rated switch load: 250 VAC 6A, 30 VDC 6A	**G7SA-2A2B**	For details on other models or socket models, refer to the OMRON's website.
		• Nodes: 4 • Contact type: 3NO+1NC • Rated switch load: 250 VAC 6A, 30 VDC 6A	**G7SA-3A1B**	
G7S-□-E Relays with Forcibly Guided Contacts		• Nodes: 6 • Contact type: 4NO+2NC • Rated switch load: 250 VAC 10 A, 30 VDC 10 A	**G7S-4A2B-E**	For details on other models or socket models, refer to the OMRON's website.
		• Nodes: 6 • Contact type: 3NO+3NC • Rated switch load: 250 VAC 10 A, 30 VDC 10 A	**G7S-3A3B-E**	

Test rod (Sold separately)

Diameter	Model
14mm dia.	**F39-TRD14**
20mm dia.	**F39-TRD20**
25mm dia.	**F39-TRD25**
30mm dia.	**F39-TRD30**

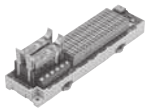
Control Unit (Can not be used as a muting system)

(Dedicated PNP output type)

Appearance	Output	Model	Remarks
	Relay, 3NO+1NC	**F3SP-B1P ✻**	For connection with F3SJ-B, use a double-ended cable F39-JD□B.

✻ F3SJ for NPN output type cannot be connected.

Wire-saving Devices

Type	Appearance	Specifications	Model	Remarks
Connector Terminal Box/ Muting Terminals ✻2		Model with PNP Muting Sensor Output	**F39-TC5P01**	Significantly reduces amount of wiring between Safety Light Curtains and Muting Sensors. IP67 model for mounting at Sensor installation site. For details, refer to the OMRON's website.
		Model with PNP Override Input	**F39-TC5P02**	
		Model with NPN Muting Sensor Output	**F39-TC5N01**	
		Model with NPN Override Input	**F39-TC5N02**	
Safety Terminal Relays ✻2		PNP output relay, SPDT-NO	**F3SP-T01 ✻1**	Significantly reduces amount of wiring between Safety Light Curtains and Muting Sensors. For details, refer to the OMRON's website.

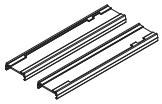
✻1. F3SJ for NPN output type cannot be connected.
✻2. The models with the suffix "-01TS" cannot be connected.

Laser Pointer

Appearance	Output	Model
	Laser Pointer for F3SJ	**F39-PTJ ✻**

✻ It cannot be mounted to the models with the suffix "-02TS".

Spatter Protection Cover (2 covers per set, one for emitter and one for receiver) (10% Operating Range Attenuation)

Appearance	Model
	**F39-HB□□□□ ✻1 ✻2**

✻1. The same 4-digit numbers as the protective heights (□□□□ in the light curtain model names) are substituted by in the model names.
✻2. It cannot be mounted to the models with the suffix "-02TS".

Protective Bar

Appearance	Model	Remarks
	**F39-PB□□□□ ✻1**	• 2 Light Curtain brackets • 4 mounting brackets • 0 to 4 intermediate brackets for backside mounting (quantity required for the sensing width) • 0 to 4 intermediate brackets for mounting to the sides (quantity required for the sensing width)
	F39-PB□□□□-S ✻1 ✻2	• 1 Light Curtain bracket • 2 mounting brackets • 0 to 2 intermediate brackets for backside mounting (quantity required for the sensing width) • 0 to 2 intermediate brackets for mounting to the sides (quantity required for the sensing width)

Note: The following are not provided with the Protective Bars.
•Safety Light Curtain
•Safety Light Curtain Top/Bottom Brackets
•Wall Mounting Screw Unit

✻1. The same four digits indicating protective height that are used in the Sensor model number (□□□□) are used in the part of the Protector model number.
✻2. Purchase the F39-PB□□□□ (which contains two sets of brackets) to use Protective Bars for both the Emitter and Receiver.

Mirrors (12% Operating Range Attenuation)

Appearance	Mirror material	Width (mm)	Thickness (mm)	Length L (mm)	Model	Remarks
	Glass mirror	145	32	445	**F39-MLG0406**	2 sets of cylinder mounting brackets and 4 screws are included.
				648	**F39-MLG0610**	
				749	**F39-MLG0711**	
				953	**F39-MLG0914**	
				1,105	**F39-MLG1067**	
				1,257	**F39-MLG1219**	
				1,499	**F39-MLG1422**	
				1,702	**F39-MLG1626**	
				1,905	**F39-MLG1830**	
				2,210	**F39-MLG2134**	

Sensor mounting bracket (Sold separately)

Appearance	Specifications	Model	Application	Remarks
	Top/bottom bracket	**F39-LJB1**	Top/bottom bracket for F3SJ-E/B	2 for an emitter, 2 for a receiver, total of 4 per set
	Intermediate bracket	**F39-LJB2 ✻1 ✻2**	In combination use with top/bottom bracket for F3SJ-E/B Can be used as free-location bracket.	1 set with 2 pieces
	One-touch bracket	**F39-LJB3-M6 ✻1**	One-touch bracket for F3SJ-E/B Supports M6 slide nut for aluminum frame.	1 set with 2 pieces
		F39-LJB3-M8 ✻2	One-touch bracket for F3SJ-E/B Supports M8 slide nut for aluminum frame.	
	One-touch M6 bracket One-touch M8 bracket	**F39-LJB3-M6K ✻1**	Bracket to mount an intermediate bracket to the aluminum frame with a single touch.	Hexagon socket head cap screws (M6 x 10) are included.
		F39-LJB3-M8K ✻2		Hexagon socket head cap screws (M8 x 14) are included.
	Compatible mounting bracket	**F39-LJB4**	Mounting bracket used when replacing existing area sensors (F3SJ-A or F3SN) with the F3SJ-E/B.	2 for an emitter, 2 for a receiver, total of 4 per set
	Contact mount bracket	**F39-LJB5**	Bracket to closely contact the back side of the Sensor.	2 for an emitter, 2 for a receiver, total of 4 per set

✻1. Combining F39-LJB2 and F39-LJB3-M6K makes F39-LJB3-M6.
✻2. Combining F39-LJB2 and F39-LJB3-M8K makes F39-LJB3-M8.

End Cap

Appearance	Model	Remarks
	**F39-CN11** ✻	For both emitter and receiver. The End Cap can be purchased if lost. (Case: Black)

✻ This product is for F3SJ-B only.

Key Cap for Muting

Appearance	Model	Remarks
	**F39-CN10** **✻1 ✻2**	A cap to be attached to the main unit to enable muting function. Attach it to either an emitter or a receiver. (Case: orange)

✻1. This product is for F3SJ-B only.
✻2. The models with the suffix "-01TS" cannot be connected.

Specifications (For details, refer to the instruction manual or User's manual.)

Main Units

F3SJ-B□□□□P25/N25

Model		F3SJ-B□□□□P25 / F3SJ-B□□□□N25
Sensor type		Type 4 safety light curtain
Setting tool connection ✻1		Parameter settings: Not available
Safety category		Safety purpose of category 4, 3, 2, 1, or B
Detection capability		Opaque objects 25mm in diameter
Beam gap (P)		20 mm
Number of beams (n)		8 to 102
Protective height (PH)		185 to 2,065 mm
Lens diameter		Diameter 5 mm
Operating range ✻2		0.2 to 7 m
Response time (under stable light incident condition)	ON to OFF	15 ms max. (response time at 1 set connection, series connection of 2 sets or 3 sets)
	OFF to ON	70 ms max. (response time at 1 set connection, series connection of 2 sets or 3 sets)
Startup waiting time		2 s max.
Power supply voltage (Vs)		SELV/PELV 24 VDC±20% (ripple p-p 10% max.)
Consumption current (no load)	PNP output	Emitter : Up to 22 beams: 52 mA max., 26 to 42 beams: 68 mA max., 46 to 62 beams: 75 mA max., 66 to 82 beams: 88 mA max., 86 to 102 beams: 101 mA max. Receiver : Up to 22 beams: 45 mA max., 26 to 42 beams: 50 mA max., 46 to 62 beams: 56 mA max., 66 to 82 beams: 61 mA max., 86 to 102 beams: 67 mA max.
	NPN output	Emitter : Up to 22 beams: 52 mA max., 26 to 42 beams: 68 mA max., 46 to 62 beams: 75 mA max., 66 to 82 beams: 88 mA max., 86 to 102 beams: 101 mA max. Receiver : Up to 22 beams: 47 mA max., 26 to 42 beams: 52 mA max., 46 to 62 beams: 58 mA max., 66 to 82 beams: 63 mA max., 86 to 102 beams: 69 mA max.
Light source (emitted wavelength)		Infrared LED (870 nm)
Effective aperture angle (EAA)		Based on IEC 61496-2.Within +/-2.5° for both emitter and receiver when the detection distance is 3 m or over
Safety outputs (OSSD)	PNP output	Two PNP transistor outputs, load current 200 mA max., residual voltage 2 V max. (except for voltage drop due to cable extension), Leakage current 1 mA max., load inductance 2.2 H max. ✻3, Maximum capacity load 1 μF ✻4
	NPN output	Two NPN transistor outputs, load current 200 mA max., residual voltage 2 V max. (except for voltage drop due to cable extension), Leakage current 1 mA max., load inductance 2.2 H max. ✻3, Maximum capacity load 1 μF ✻4
Auxiliary output	PNP output	One PNP transistor outputs, load current 100 mA max., residual voltage 2 V max. (except for voltage drop due to cable extension), leak current 1 mA max.
	NPN output	One NPN transistor outputs, load current 100 mA max., residual voltage 2 V max. (except for voltage drop due to cable extension), leak current 1 mA max.
Output operation mode		Safety output: On when receiving light Auxiliary output: - Reverse output of safety output for a basic system - ON when muting/override for a muting system
Input voltage	PNP output	Test input, Interlock select input, Reset input, Muting input: ON voltage: Vs-3 V to Vs (short circuit current: approx. 3.0 mA) ✻5, OFF voltage: 0 V to 1/2 Vs or open (short circuit current: approx. 4.0 mA) ✻5 External device monitoring input: ON voltage: Vs-3 V to Vs (short circuit current: approx. 6.0 mA) ✻5, OFF voltage: open
	NPN output	Test input, Interlock select input, Reset input, Muting input: ON voltage: 0 to 3 V (short circuit current: approx. 4.0 mA), OFF voltage:1/2 Vs to Vs or open (short circuit current: approx. 3.0 mA) ✻5 External device monitoring input: ON voltage: 0 to 3 V (short circuit current: approx. 5.5 mA) ✻5, OFF voltage: open
Mutual interference prevention function		Mutual interference prevention algorithm prevents interference in up to 3 sets.
Series connection		Time division emission by series connection • Number of connections: up to 3 sets (between F3SJ-Bs only)Other models cannot be connected. • Total number of beams: up to 192 beams • Cable length between sensors: 7 m max. (not including series connection cable (F39-JBR2W) and power cable)
Test function		• Self test (at power-ON and at power distribution) • External test (emission stop function by test input)
Safety-related functions		• Interlock (basic system) • External device monitoring (basic system) • Muting (muting system) • Override (muting system)
Connection type		Connector method (M12, 8-pin)
Protection circuit		Output short-circuit protection, and power supply reverse polarity protection
Ambient temperature		Operating: -10 to 55°C (non-freezing), Storage: -25 to 70°C
Ambient humidity		Operating: 35% to 85% (no condensation), Storage: 35% to 95% RH
Operating ambient light intensity		Incandescent lamp: 3,000 lx max., Sunlight: 10,000 lx max.
Insulation resistance		20 MΩ min. (at 500 VDC)
Dielectric strength		1,000 VAC 50/60 Hz, 1 min
Degree of protection		IP65 (IEC 60529)
Vibration resistance		Malfunction: 10 to 55 Hz, Multiple amplitude of 0.7 mm, 20 sweeps in X, Y, and Z directions
Shock resistance		Malfunction: 100 m/s², 1,000 times each in X, Y, and Z directions
Pollution degree		Pollution degree 3 (IEC 60664-1)

Power cable	Connection method: Prewired connector cable, cable length 0.3 m, connector type (M12, 8-pin), connector: IP67 rated (when mated) Number of wires: 8 wires Cable diameter: Dia. 6 mm Allowable bending radius: R5 mm
Extension cable	30 m max.
Material	Case: Aluminum Cap: ABS resin, PBT Optical cover: PMMA resin (acrylic) Cable: Oil resistant PVC
Net Weight ✻6	Weight (g) = (protective height) x 1.62 + 110
Gross Weight ✻7	Weight (g) = (protective height) x 2.7 + 500
Accessories	Instruction Manual, Quick Installation Manual (QIM) **✻8**
Applicable standards	IEC 61496-1, EN 61496-1, UL 61496-1, Type 4 ESPE (Electro-Sensitive Protective Equipment) IEC 61496-2, EN 61496-2, UL 61496-2, Type 4 AOPD (Active Opto-electronic Protective Devices) IEC 61508-1 to -3, EN 61508-1 to -3 SIL3 ISO 13849-1: 2006, EN ISO 13849-1: 2008 (PLe/Safety Category 4) UL 508, UL 1998, CAN/CSA C22.2 No.14, CAN/CSA C22.2 No.0.8

✻1. Do not use the Support Software and Setting Console for F3SJ-A. Operation cannot be guaranteed.
✻2. Use of the Spatter Protection Cover causes a 10% maximum sensing distance attenuation.
✻3. 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.
✻4. These values must be taken into consideration when connecting elements including a capacitive load such as capacitor.
✻5. The Vs indicates a voltage value in your environment.
✻6. The net weight is the weight of an emitter and a receiver.
✻7. The gross weight is the weight of an emitter, a receiver, included accessories and a package.
✻8. Mounting brackets are sold separately.

Indicator (F3SJ-B□□□□P25/N25)

Emitter

Name of indicator	Label	ON	Blinking
Top-beam-state indicator	TOP	Turns ON when the top beam is receiving light.	Blinks during muting/override, or when cap error or connection error occurs.
Stable-state indicator	STB	Turns ON when incidence level is more than 170% of the output ON threshold.	Blinks when the safety output is turned OFF due to disturbance light or vibration.
ON/OFF-state indicator	ON OFF	Green: Turns ON when safety output is ON. Red: Turns OFF when safety output is OFF.	Red: Blinks when the F3SJ-B enters a lockout due to a safety output error.
Lockout indicator	LOCKOUT	Turns ON when the F3SJ-B enters a lockout on the receiver.	Blinks when the F3SJ-B enters a lockout on the emitter.
Power indicator	POWER	Turns ON while the power of the emitter is ON.	Blinks when the F3SJ-B enters a lockout due to power voltage/noise.
Test indicator	TEST	---	Blinks when external test is being performed.
Muting error indicator	MUTING ERROR	---	Blinks during a muting error.
Muting input 1 indicator	MUTE1	Turns ON when muting input 1 is ON under the muting system.	---
Muting input 2 indicator	MUTE2	Turns ON when muting input 2 is ON under the muting system.	---
Bottom-beam-state indicator	BTM	Turns ON when the bottom beam is receiving light.	Blinks during muting/override.

Receiver

Name of indicator	Label	ON	Blinking
Top-beam-state indicator	TOP	Turns ON when the top beam is receiving light.	Blinks during muting/override, or when cap error or connection error occurs.
Stable-state indicator	STB	Turns ON when incidence level is more than 170% of the output ON threshold.	Blinks when the safety output is turned OFF due to disturbance light or vibration.
ON/OFF-state indicator	ON OFF	Green: Turns ON when safety output is ON. Red: Turns OFF when safety output is OFF.	Red: Blinks when the F3SJ-B enters a lockout due to a safety output error.
Lockout indicator	LOCKOUT	Turns ON when the F3SJ-B enters a lockout on the emitter.	Blinks when the F3SJ-B enters a lockout on the receiver.
Communication indicator	COM	Turns ON when communication between emitter and receiver is established.	Blinks when the F3SJ-B enters lockout due to a communication error between receiver and emitter.
Configuration indicator	CFG	---	Blinks when the F3SJ-B enters lockout due to a model type error between receiver and emitter.
Internal error indicator	INTERNAL	---	Blinks when the F3SJ-B enters a lockout due to an internal error.
Interlock indicator	INT -LK	Turns ON when the F3SJ-B is in interlock state.	Blinks when the F3SJ-B enters a lockout due to a wiring error.
External device monitoring indicator	EDM	Turns ON when an input is given to external device monitoring input. **✻1 ✻2**	Blinks when the F3SJ-B enters a lockout due to an external device monitoring error.
Bottom-beam-state indicator	BTM	Turns ON when the bottom beam is receiving light.	Blinks during muting/override.

✻1. It turns ON when there is an external device monitoring input regardless of the availability of the external device monitoring.
✻2. The meanings of the indicators are different for the models with the suffix "-01TS". Refer to the F3SJ-B□□□□P25-01TS Safety Light Curtain User's Manual (SCHG-734) or the specifications of the models with the suffix "-01TS".

Main Units

F3SJ-B□□□□P25-01TS/-02TS

Model		F3SJ-B□□□□P25-01TS	F3SJ-B□□□□P25-02TS
Sensor type		Type 4 safety light curtain	
Setting tool connection ✻1		Parameter settings: Not available	
Safety category		Safety purpose of category 4, 3, 2, 1, or B	
Detection capability		Opaque objects 25mm in diameter	
Beam gap (P)		20 mm	
Number of beams (n)		8 to 102	10 to 98
Protective height (PH)		185 to 2,065 mm	225 to 1,985 mm
Lens diameter		Diameter 5 mm	
Operating range		0.2 to 7 m ✻2	0.2 to 6 m
Response time (under stable light incident condition)	ON to OFF	15 ms max. (response time at 1 set connection, series connection of 2 sets or 3 sets)	
	OFF to ON	70 ms max. (response time at 1 set connection, series connection of 2 sets or 3 sets)	
Startup waiting time		2 s max.	
Power supply voltage (Vs)		SELV/PELV 24 VDC±20% (ripple p-p 10% max.)	
Consumption current (no load)	Emitter	Up to 22 beams: 52 mA max., 26 to 42 beams: 68 mA max., 46 to 62 beams: 75 mA max., 66 to 82 beams: 88 mA max., 86 to 102 beams: 101 mA max.	Up to 22 beams: 52 mA max., 26 to 42 beams: 68 mA max., 46 to 62 beams: 75 mA max., 66 to 82 beams: 88 mA max., 86 to 98 beams: 99 mA max.
	Receiver	Up to 22 beams: 45 mA max., 26 to 42 beams: 50 mA max., 46 to 62 beams: 56 mA max., 66 to 82 beams: 61 mA max., 86 to 102 beams: 67 mA max.	Up to 22 beams: 45 mA max., 26 to 42 beams: 50 mA max., 46 to 62 beams: 56 mA max., 66 to 82 beams: 61 mA max., 86 to 98 beams: 66 mA max.
Light source (emitted wavelength)		Infrared LED (870 nm)	
Effective aperture angle (EAA)		Based on IEC 61496-2.Within +/-2.5° for both emitter and receiver when the detection distance is 3 m or over	
Safety outputs (OSSD)		Two PNP transistor outputs, load current 200 mA max., residual voltage 2 V max. (except for voltage drop due to cable extension), Leakage current 1 mA max., load inductance 2.2 H max. ✻3, Maximum capacity load 1 μF ✻4	
Auxiliary output		One PNP transistor outputs, load current 100 mA max., residual voltage 2 V max. (except for voltage drop due to cable extension), leak current 1 mA max.	
Output operation mode		Safety output: On when receiving light Auxiliary output: Reverse output of safety output	Safety output: On when receiving light Auxiliary output: • Basic system Reverse output of safety output • Muting system On during muting/override
Input voltage		Test input ON voltage: 0 V to 1/2 Vs or open (short circuit current: approx. 4.0 mA) ✻5 OFF voltage: Vs-3 V to Vs (short circuit current: approx. 3.0 mA) ✻5 Reset input: ON voltage: Vs-3 V to Vs (short circuit current: approx. 3.0 mA) ✻5 OFF voltage: 0 V to 1/2 Vs or open (short circuit current: approx. 4.0 mA) ✻5 External device monitoring input: ON voltage: Vs-3 V to Vs (short circuit current: approx. 6.0 mA) ✻5 OFF voltage: open	Test input, Interlock select input, Reset input, Muting input: ON voltage: Vs-3 V to Vs (short circuit current: approx. 3.0 mA) ✻5 OFF voltage: 0 V to 1/2 Vs or open (short circuit current: approx. 4.0 mA) ✻5 External device monitoring input: ON voltage: Vs-3 V to Vs (short circuit current: approx. 6.0 mA) ✻5 OFF voltage: open
Mutual interference prevention function		Mutual interference prevention algorithm prevents interference in up to 3 sets.	
Series connection		Time division emission by series connection • Number of connections: up to 3 sets (between F3SJ-B□□□□P25-01TSs only) Other models cannot be connected. • Total number of beams: up to 192 beams • Cable length between sensors: 7 m max. (not including series connection cable (F39-JBR2W) and power cable)	Time division emission by series connection • Number of connections: up to 3 sets (between F3SJ-B□□□□P25-02TSs only) Other models cannot be connected. • Total number of beams: up to 192 beams • Cable length between sensors: 7 m max. (not including series connection cable (F39-JBR2W) and power cable)
Test function		• Self test (at power-ON and at power distribution) • External test (emission stop function by test input)	
Safety-related functions		External device monitoring	External device monitoring (basic system) Muting (muting system) Override (muting system)
Connection type		Connector method (M12, 8-pin)	
Protection circuit		Output short-circuit protection, and power supply reverse polarity protection	
Ambient temperature		Operating: -10 to 55°C (non-freezing), Storage: -25 to 70°C	
Ambient humidity		Operating: 35% to 85% (no condensation), Storage: 35% to 95% RH	
Operating ambient light intensity		Incandescent lamp: 3,000 lx max., Sunlight: 10,000 lx max.	
Insulation resistance		20 MΩ min. (at 500 VDC)	
Dielectric strength		1,000 VAC 50/60 Hz, 1 min	
Degree of protection		IP65 (IEC 60529)	
Vibration resistance		Malfunction: 10 to 55 Hz, Multiple amplitude of 0.7 mm, 20 sweeps in X, Y, and Z directions	
Shock resistance		Malfunction: 100 m/s^2, 1,000 times each in X, Y, and Z directions	

Pollution degree	Pollution degree 3 (IEC 60664-1)	
Power cable	Connection method: Prewired connector cable, cable length 0.3 m, connector type (M12, 8-pin), connector: IP67 rated (when mated) Number of wires: 8 wires Cable diameter: Dia. 6 mm Allowable bending radius: R5 mm	
Extension cable	30 m max.	
Material	Case: Aluminum Cap: ABS resin, PBT Optical cover: PMMA resin (acrylic) Cable: Oil resistant PVC	
Net Weight ✻6	Weight (g) = (protective height) x 1.62 + 110	Weight (g) = (protective height) x 1.83 + 122
Gross Weight ✻7	Weight (g) = (protective height) x 2.7 + 500	Weight (g) = (protective height) x 2.9 + 550
Accessories	Quick Installation Manual (QIM), Instruction Manual ✻8	
Applicable standards	IEC 61496-1, EN 61496-1, UL 61496-1, Type 4 ESPE (Electro-Sensitive Protective Equipment) IEC 61496-2, EN 61496-2, UL 61496-2, Type 4 AOPD (Active Opto-electronic Protective Devices) IEC 61508-1 to -3, EN 61508-1 to -3 SIL3 ISO 13849-1: 2006, EN ISO 13849-1: 2008 (PLe/Safety Category 4) UL 508, UL 1998, CAN/CSA C22.2 No.14, CAN/CSA C22.2 No.0.8	

Note: 1. The test input logic of the models with the suffix "-01TS" is inverted. Refer to the F3SJ-B□□□□P25-01TS Safety Light Curtain User's Manual (SCHG-734) for details.
2. Reset mode is fixed with auto reset mode.

✻**1.** Do not use the Support Software and Setting Console for F3SJ-A. Operation cannot be guaranteed.
✻**2.** Use of the Spatter Protection Cover causes a 10% maximum sensing distance attenuation.
✻**3.** 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.
✻**4.** These values must be taken into consideration when connecting elements including a capacitive load such as capacitor.
✻**5.** The Vs indicates a voltage value in your environment.
✻**6.** The net weight is the weight of an emitter and a receiver.
✻**7.** The gross weight is the weight of an emitter, a receiver, included accessories and a package.
✻**8.** Mounting brackets and test rod are sold separately.

Indicator (F3SJ-B□□□□P25-01TS)

Emitter

Name of indicator	Label	ON	Blinking
Top-beam-state indicator	TOP	Turns ON when the top beam is receiving light.	Blinks when cap error or connection error occurs.
Stable-state indicator	STB	Turns ON when incidence level is 170% or more of the output ON threshold.	Blinks when the safety output is turned OFF due to disturbance light or vibration.
ON/OFF-state indicator	ON OFF	Green: Turns ON when safety output is ON. Red: Turns ON when safety output is OFF.	Red: Blinks when the F3SJ-B enters a lockout due to a safety output error.
Lockout indicator	LOCKOUT	Turns ON when the F3SJ-B enters a lockout on the receiver.	Blinks when the F3SJ-B enters a lockout on the emitter.
Power indicator	POWER	Turns ON while the power of the emitter is ON.	Blinks when the F3SJ-B enters a lockout due to power voltage/noise.
Test indicator	TEST	---	Blinks when external test is being performed.
Bottom-beam-state indicator	BTM	Turns ON when the bottom beam is receiving light.	---

Receiver

Name of indicator	Label	ON	Blinking
Top-beam-state indicator	TOP	Turns ON when the top beam is receiving light.	Blinks when cap error or connection error occurs.
Stable-state indicator	STB	Turns ON when incidence level is 170% or more of the output ON threshold.	Blinks when the safety output is turned OFF due to disturbance light or vibration.
ON/OFF-state indicator	ON OFF	Green: Turns ON when safety output is ON. Red: Turns ON when safety output is OFF.	Red: Blinks when the F3SJ-B enters a lockout due to a safety output error.
Lockout indicator	LOCKOUT	Turns ON when the F3SJ-B enters a lockout on the emitter.	Blinks when the F3SJ-B enters a lockout on the receiver.
Communication indicator	COM	Turns ON when communication between emitter and receiver is established.	Blinks when the F3SJ-B enters lockout due to a communication error between receiver and emitter.
Configuration indicator	CFG	---	Blinks when the F3SJ-B enters lockout due to a model type error between receiver and emitter.
Internal error indicator	INTERNAL	---	Blinks when the F3SJ-B enters a lockout due to an internal error.
Interlock indicator	INT -LK	Not used	Not used
External device monitoring indicator	EDM	Turns ON when an input is given to external device monitoring input. ✻	Blinks when the F3SJ-B enters a lockout due to an external device monitoring error.
Bottom-beam-state indicator	BTM	Turns ON when the bottom beam is receiving light.	---

✻ It turns ON when there is an external device monitoring input regardless of the availability of the external device monitoring.

Indicator (F3SJ-B□□□□P25-02TS)

Emitter

Name of indicator	Label	ON	Blinking
Top-beam-state indicator	TOP	Turns ON when the top beam is receiving light.	Blinks during muting/override, or when cap error or connection error occurs.
Stable-state indicator	STB	Turns ON when incidence level is 170% or more of the output ON threshold.	Blinks when the safety output is turned OFF due to disturbance light or vibration.
ON/OFF-state indicator	ON OFF	Green: Turns ON when safety output is ON. Red: Turns ON when safety output is OFF.	Red: Blinks when the F3SJ-B enters a lockout due to a safety output error.
Lockout indicator	LOCKOUT	Turns ON when the F3SJ-B enters a lockout on the receiver.	Blinks when the F3SJ-B enters a lockout on the emitter.
Power indicator	POWER	Turns ON while the power of the emitter is ON.	Blinks when the F3SJ-B enters a lockout due to power voltage/noise.
Test indicator	TEST	---	Blinks when external test is being performed.
Muting error indicator	MUTING ERROR	---	Blinks during a muting error.
Muting input 1 indicator	MUTE1	Turns ON when muting input 1 is ON under the muting system.	---
Muting input 2 indicator	MUTE2	Turns ON when muting input 2 is ON under the muting system.	---
Bottom-beam-state indicator	BTM	Turns ON when the bottom beam is receiving light.	Blinks during muting/override.

Receiver

Name of indicator	Label	ON	Blinking
Top-beam-state indicator	TOP	Turns ON when the top beam is receiving light.	Blinks during muting/override, or when cap error or connection error occurs.
Stable-state indicator	STB	Turns ON when incidence level is 170% or more of the output ON threshold.	Blinks when the safety output is turned OFF due to disturbance light or vibration.
ON/OFF-state indicator	ON OFF	Green: Turns ON when safety output is ON. Red: Turns ON when safety output is OFF.	Red: Blinks when the F3SJ-B enters a lockout due to a safety output error.
Lockout indicator	LOCKOUT	Turns ON when the F3SJ-B enters a lockout on the emitter.	Blinks when the F3SJ-B enters a lockout on the receiver.
Communication indicator	COM	Turns ON when communication between emitter and receiver is established.	Blinks when the F3SJ-B enters lockout due to a communication error between receiver and emitter.
Configuration indicator	CFG	---	Blinks when the F3SJ-B enters lockout due to a model type error between receiver and emitter.
Internal error indicator	INTERNAL	---	Blinks when the F3SJ-B enters a lockout due to an internal error.
Interlock indicator	INT -LK	Not used	Not used
External device monitoring indicator	EDM	Turns ON when an input is given to external device monitoring input. ✻	Blinks when the F3SJ-B enters a lockout due to an external device monitoring error.
Bottom-beam-state indicator	BTM	Turns ON when the bottom beam is receiving light.	Blinks during muting/override.

✻ It turns ON when there is an external device monitoring input regardless of the availability of the external device monitoring.

Accessories

Control Unit

Item	Model	F3SP-B1P
Applicable sensor		F3SJ-B/A (Only for PNP output type) ✻
Power supply voltage		24 VDC±10%
Power consumption		DC1.7 W max. (not including sensor's current consumption)
Operation time		100 ms max. (not including sensor's response time)
Response time		100 ms max. (not including sensor's response time)
Relay output	Number of contacts	3NO+1NC
	Rated load	25 VAC 5 A (cos φ = 1), 30 VDC 5 A L/R = 0 ms
	Rated current	5 A
Connection type	Between sensors	M12 connector (8-pin)
	Others	Terminal block
Weight (packed state)		Approx. 280 g
Accessories		Instruction manual

✻ NPN output type cannot be connected. Also, the system cannot be used as a muting system.

Laser Pointer

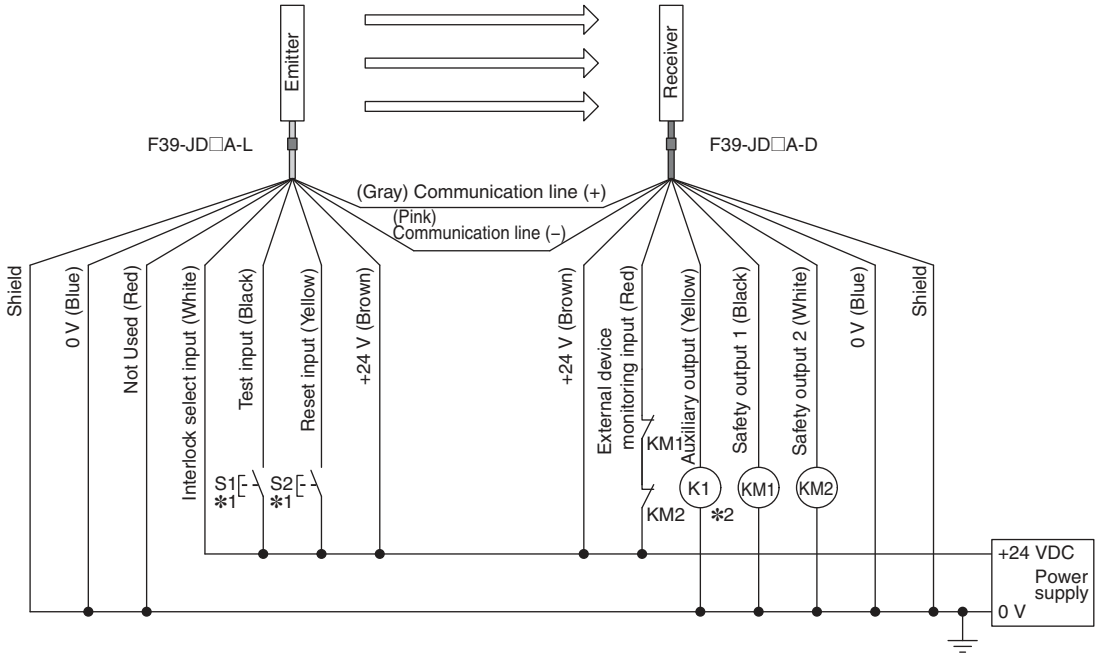
Item	Model	F39-PTJ
Applicable sensor		F3SJ Series ✻**1**
Power supply voltage		4.65 or 4.5 VDC
Battery		Three button batteries (SR44 or LR44)
Battery life ✻2		SR44: 10 hours of continuous operation, LR44: 6 hours of continuous operation
Light source		Red semiconductor laser (wavelength: 650 nm, 1 mW max. JIS class 2, EN/IEC class 2, FDA class II)
Spot diameter (typical value)		6.5 mm at 10 m
Ambient temperature		Operating: 0 to 40°C Storage: -15 to 60°C (with no icing or condensation)
Ambient humidity		Operating and storage: 35% to 85% (with no condensation)
Material		Laser module case: aluminum Mounting bracket: aluminum and stainless
Weight		Approx. 220 g (packed)
Accessories		Laser safety standard labels (EN: 1, FDA: 3) Button batteries (SR44: 3), instruction manual

✻**1.** It cannot be mounted to the models with the suffix "-02TS".
✻**2.** Battery life varies depending on a battery used.

Connections

Basic Wiring Diagram

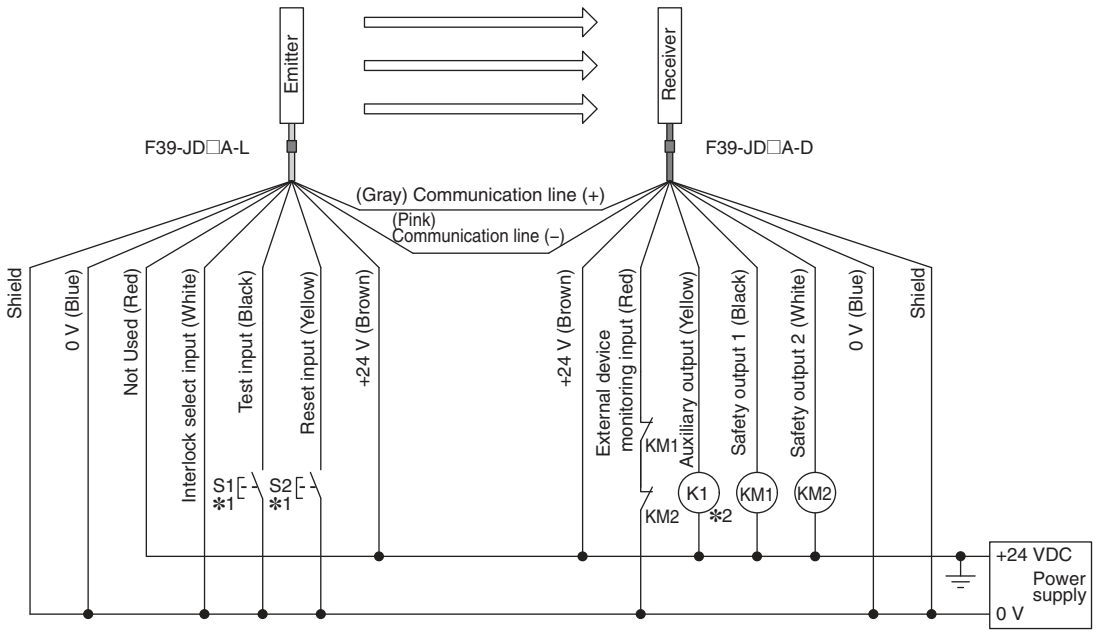
Wiring when using manual reset mode, external device monitoring (F3SJ-B□□□□P25) [PNP Output]



S1 : External test switch (connect to 0 V if a switch is not required)
S2 : Interlock/lockout reset switch
KM1, KM2 : Safety relay with force-guided contact (G7SA) or magnetic contactor
K1 : Load or PLC, etc. (for monitoring)

✻1. Use a switch for small loads (input specifications: 24 V, 1.0 mA max.).
✻2. F3SJ operates even when K1 is not connected.

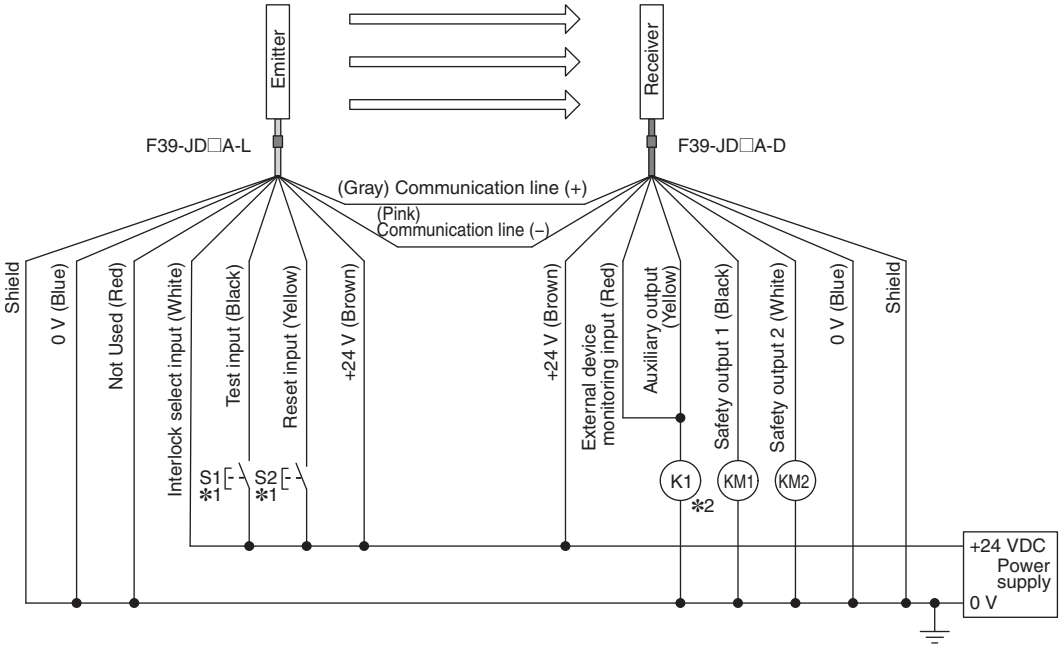
Wiring when using manual reset mode, external device monitoring (F3SJ-B□□□□N25) [NPN Output]



S1 : External test switch (connect to 24 V if a switch is not required)
S2 : Interlock/lockout reset switch
KM1, KM2 : Safety relay with force-guided contact (G7SA) or magnetic contactor
K1 : Load or PLC, etc. (for monitoring)

✻1. Use a switch for small loads (input specifications: 24 V, 1.0 mA max.).
✻2. F3SJ operates even when K1 is not connected.

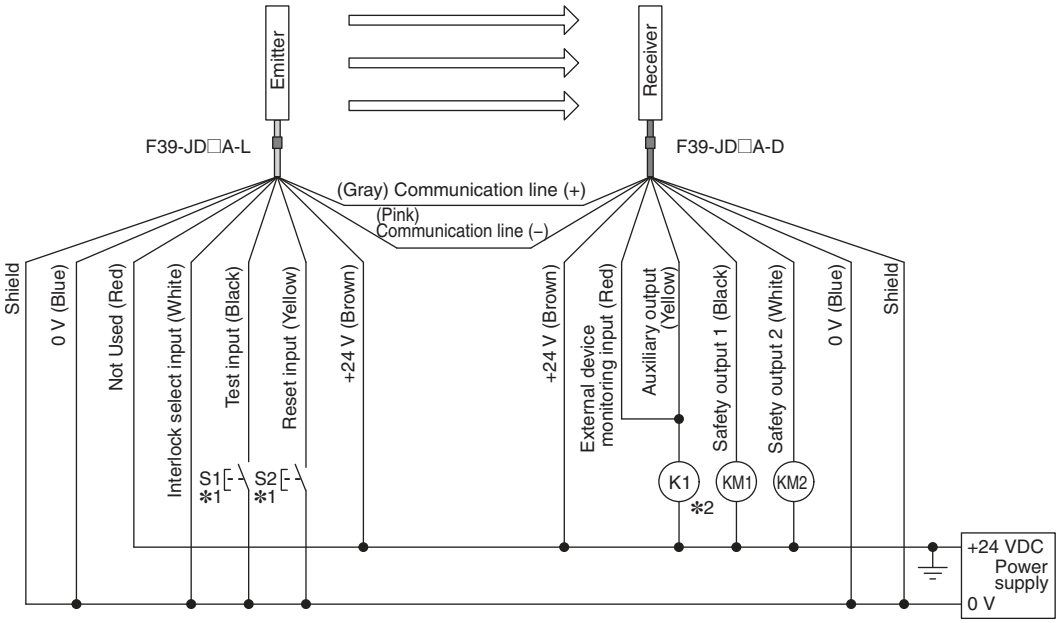
Wiring for manual reset mode and deactivated external device monitoring function (F3SJ-B□□□□P25) [PNP Output]



S1 : External test switch (connect to 0 V if a switch is not required)
S2 : Interlock/lockout reset switch
KM1, KM2 : Safety relay with force-guided contact (G7SA) or magnetic contactor
K1 : Load or PLC, etc. (for monitoring)

✻1. Use a switch for small loads (input specifications: 24 V, 1.0 mA max.).
✻2. F3SJ operates even when K1 is not connected.

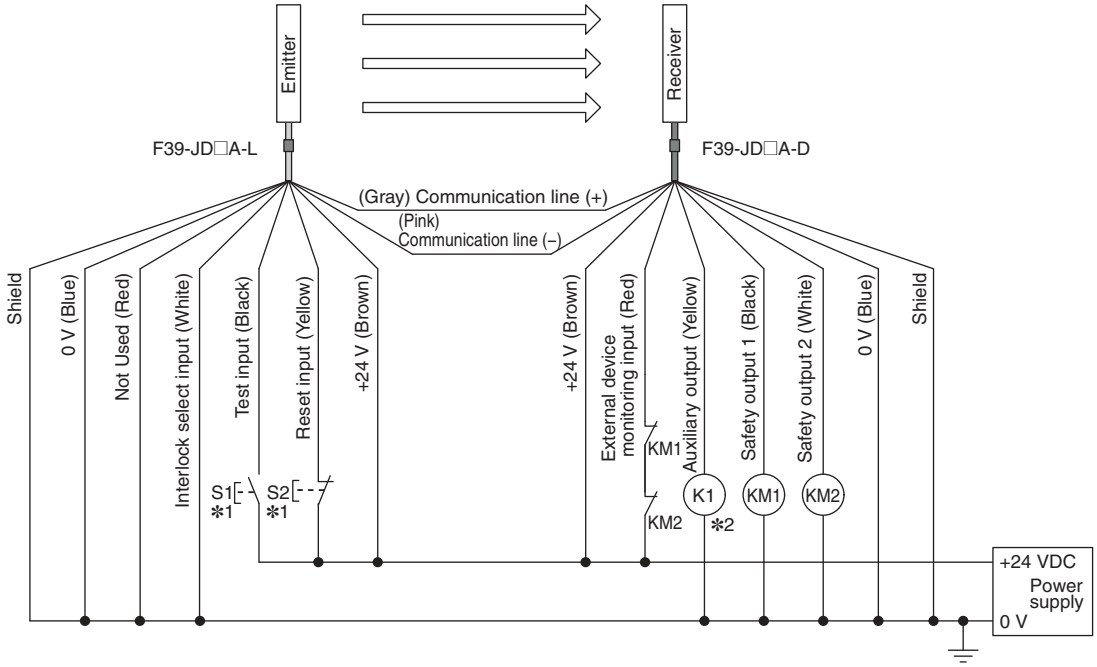
Wiring for manual reset mode and deactivated external device monitoring function (F3SJ-B□□□□N25) [NPN Output]



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K1 : Load or PLC, etc. (for monitoring)

✻1. Use a switch for small loads (input specifications: 24 V, 1.0 mA max.).
✻2. F3SJ operates even when K1 is not connected.

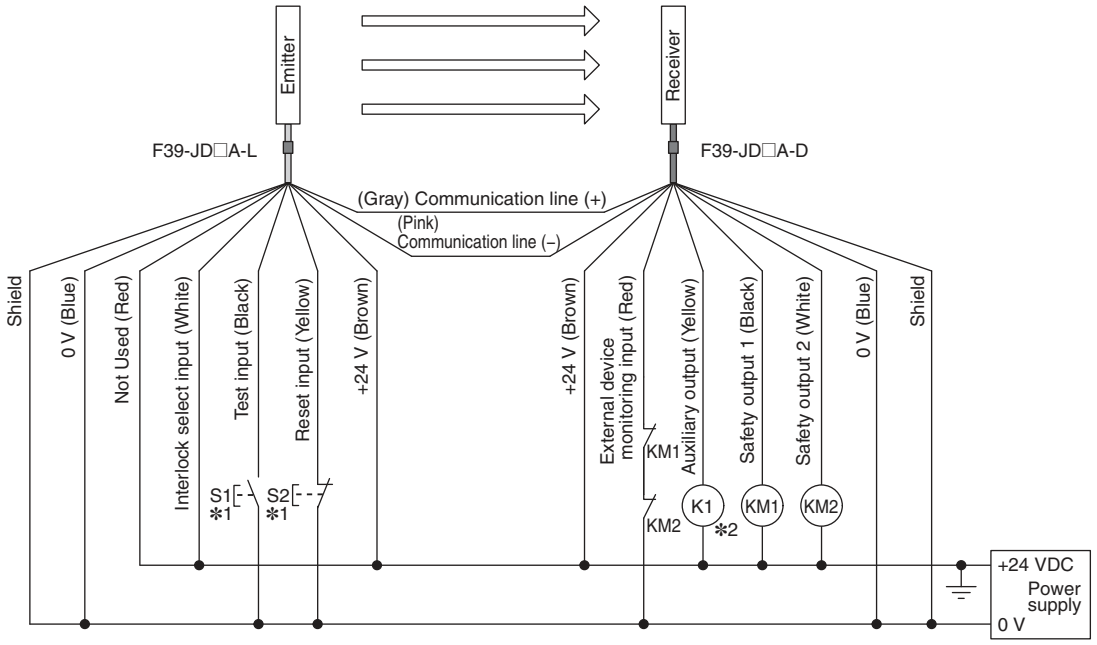
Wiring for auto reset mode and external device monitoring function (F3SJ-B□□□□P25) [PNP Output]



S1 : External test switch (connect to 0 V if a switch is not required)
S2 : Lockout reset switch (connect to 24 V if a switch is not required)
KM1, KM2 : Safety relay with force-guided contact (G7SA) or magnetic contactor
K1 : Load or PLC, etc. (for monitoring)

✻1. Use a switch for small loads (input specifications: 24 V, 1.0 mA max.).
✻2. F3SJ operates even when K1 is not connected.

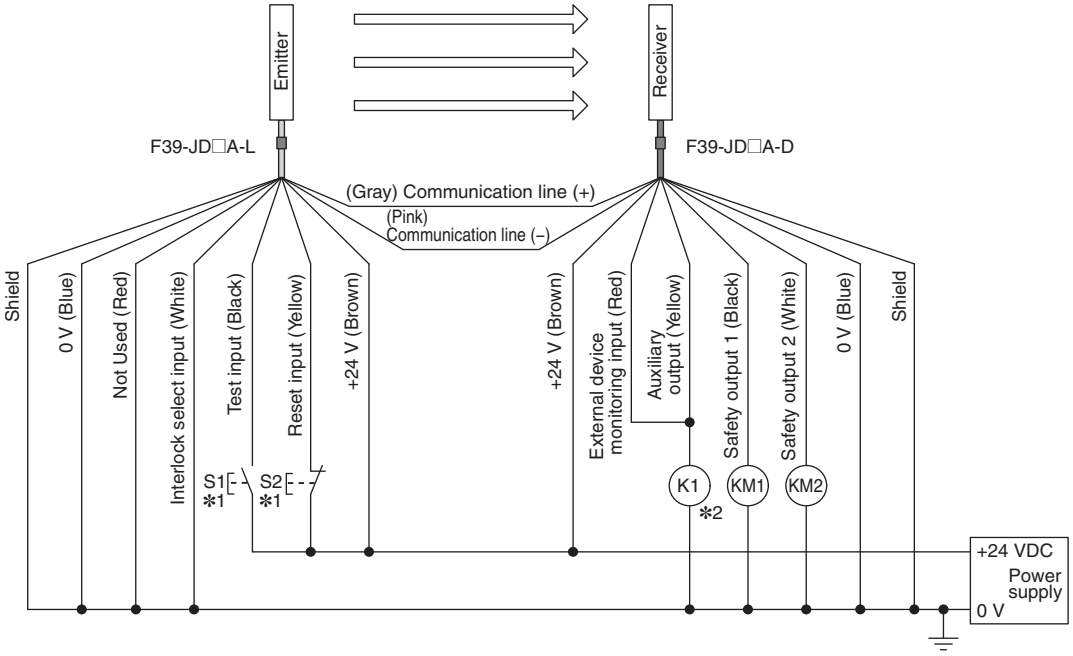
Wiring for auto reset mode and external device monitoring function (F3SJ-B□□□□N25) [NPN Output]



S1 : External test switch (connect to 24 V if a switch is not required)
S2 : Lockout reset switch (connect to 0 V if a switch is not required)
KM1, KM2 : Safety relay with force-guided contact (G7SA) or magnetic contactor
K1 : Load or PLC, etc. (for monitoring)

✻1. Use a switch for small loads (input specifications: 24 V, 1.0 mA max.).
✻2. F3SJ operates even when K1 is not connected.

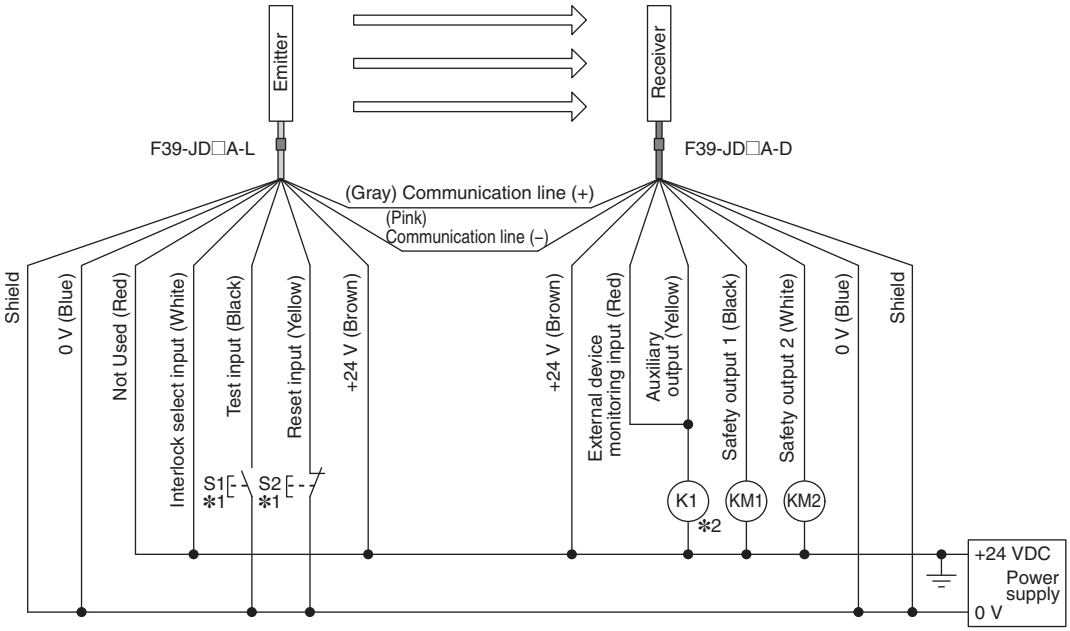
Wiring for auto reset mode and deactivated external device monitoring (F3SJ-B□□□□P25) [PNP Output]



S1 : External test switch (connect to 0 V if a switch is not required)
S2 : Lockout reset switch (connect to 24 V if a switch is not required)
KM1, KM2 : Safety relay with force-guided contact (G7SA) or magnetic contactor
K1 : Load or PLC, etc. (for monitoring)

✻1. Use a switch for small loads (input specifications: 24 V, 1.0 mA max.).
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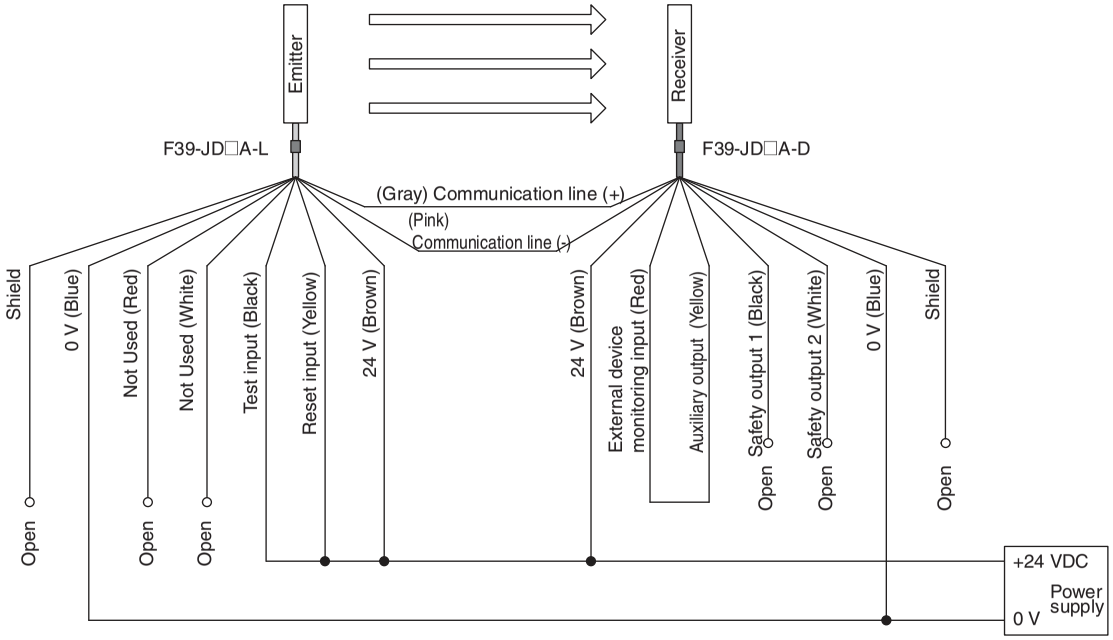
Wiring for auto reset mode and deactivated external device monitoring (F3SJ-B□□□□N25) [NPN Output]



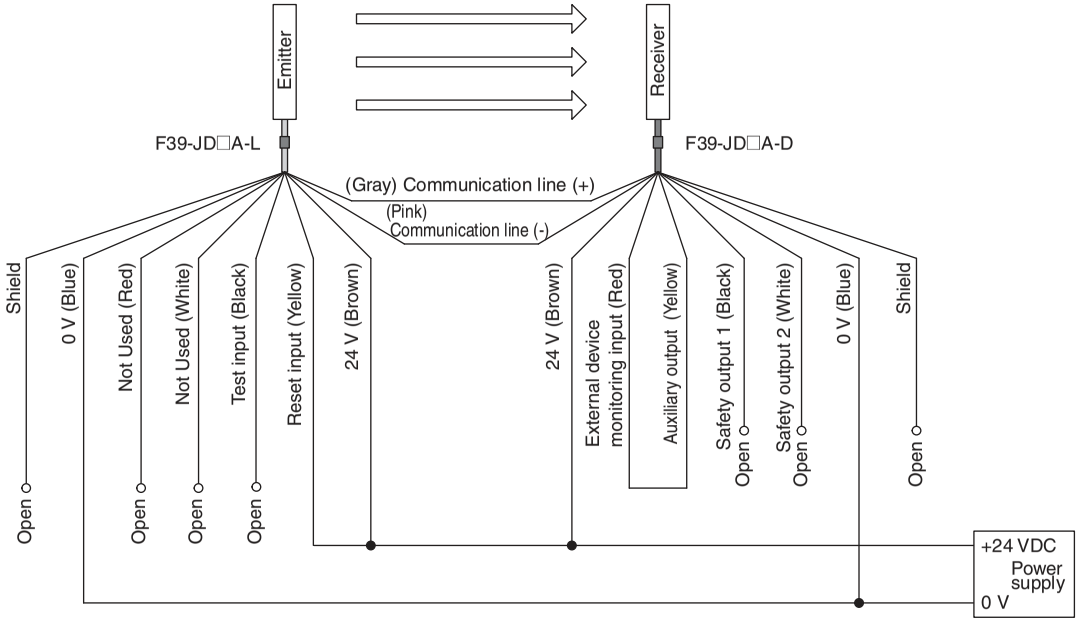
S1 : External test switch (connect to 24 V if a switch is not required)
S2 : Lockout reset switch (connect to 0 V if a switch is not required)
KM1, KM2 : Safety relay with force-guided contact (G7SA) or magnetic contactor
K1 : Load or PLC, etc. (for monitoring)

✻1. Use a switch for small loads (input specifications: 24 V, 1.0 mA max.).
✻2. F3SJ operates even when K1 is not connected.

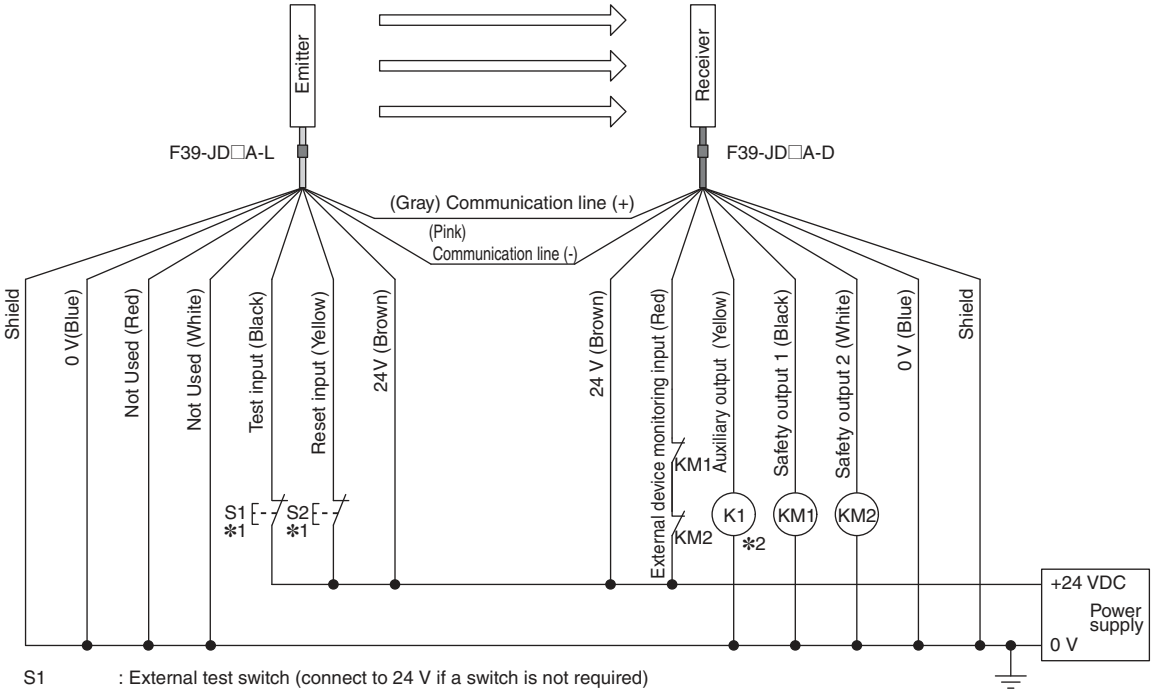
Minimum wiring required to check the operation of the F3SJ-B (Wiring for deactivated external device monitoring) (F3SJ-B□□□□P25-01TS) [PNP Output]



Minimum wiring required to check the operation of the F3SJ-B (Wiring for deactivated external device monitoring) (F3SJ-B□□□□P25-02TS) [PNP Output]



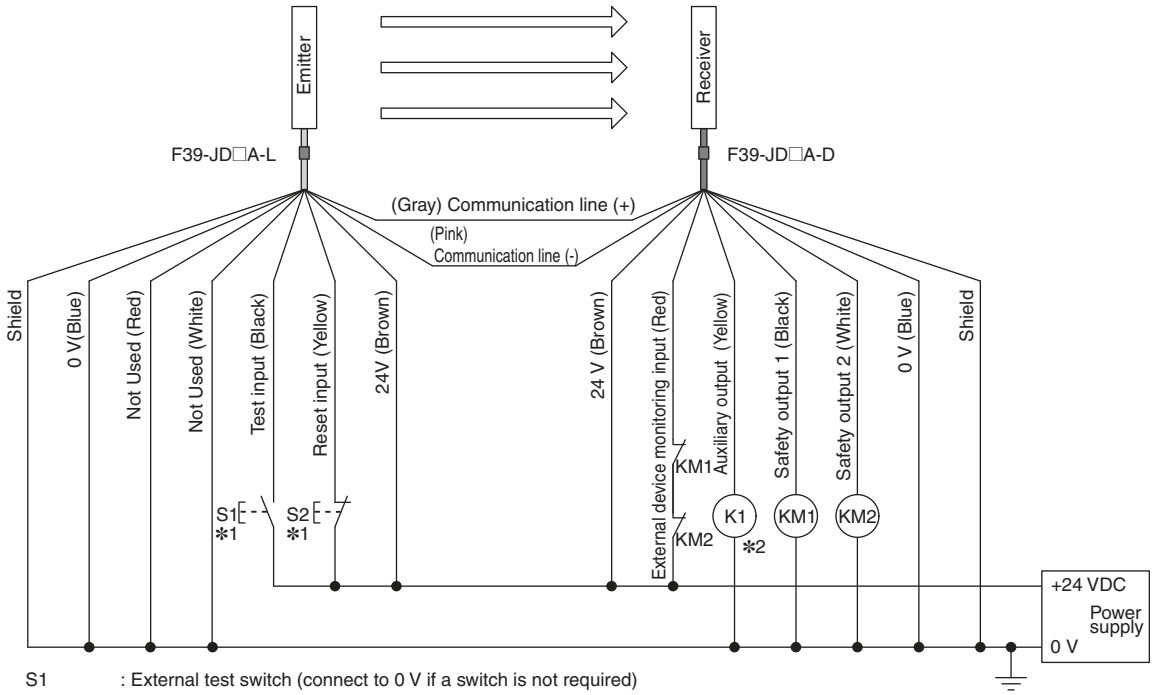
Wiring for external device monitoring function (F3SJ-B□□□□P25-01TS) [PNP Output]



S1 : External test switch (connect to 24 V if a switch is not required)
S2 : Lockout reset switch (connect to 24 V if a switch is not required)
KM1, KM2 : Safety relay with force-guided contact (G7SA) or magnetic contactor
K1 : Load or PLC, etc. (for monitoring)

***1.** Use a switch for small loads (input specifications: 24 V, 1.0 mA max.).
***2.** F3SJ operates even when K1 is not connected.

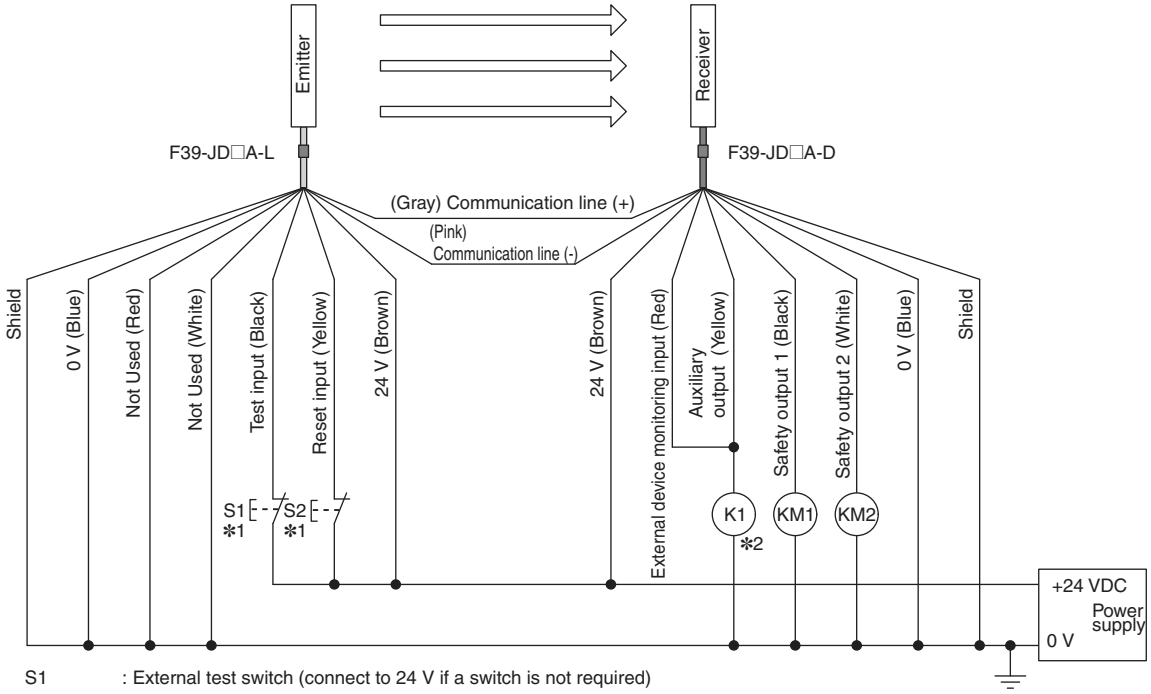
Wiring for external device monitoring function (F3SJ-B□□□□P25-02TS) [PNP Output]



S1 : External test switch (connect to 0 V if a switch is not required)
S2 : Lockout reset switch (connect to 24 V if a switch is not required)
KM1, KM2 : Safety relay with force-guided contact (G7SA) or magnetic contactor
K1 : Load or PLC, etc. (for monitoring)

***1.** Use a switch for small loads (input specifications: 24 V, 1.0 mA max.).
***2.** F3SJ operates even when K1 is not connected.

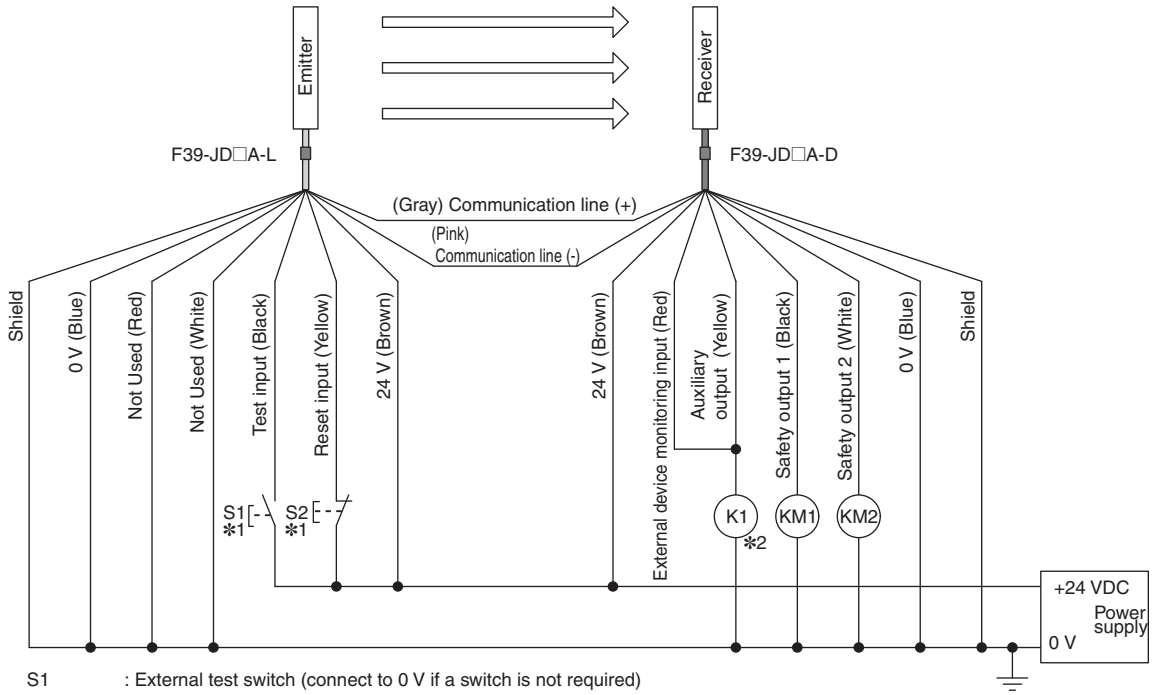
Wiring for deactivated external device monitoring function (F3SJ-B□□□□P25-01TS) [PNP Output]



S1 : External test switch (connect to 24 V if a switch is not required)
S2 : Lockout reset switch (connect to 24 V if a switch is not required)
KM1, KM2 : Safety relay with force-guided contact (G7SA) or magnetic contactor
K1 : Load or PLC, etc. (for monitoring)

✻1. Use a switch for small loads (input specifications: 24 V, 1.0 mA max.).
✻2. F3SJ operates even when K1 is not connected.

Wiring for deactivated external device monitoring function (F3SJ-B□□□□P25-02TS) [PNP Output]

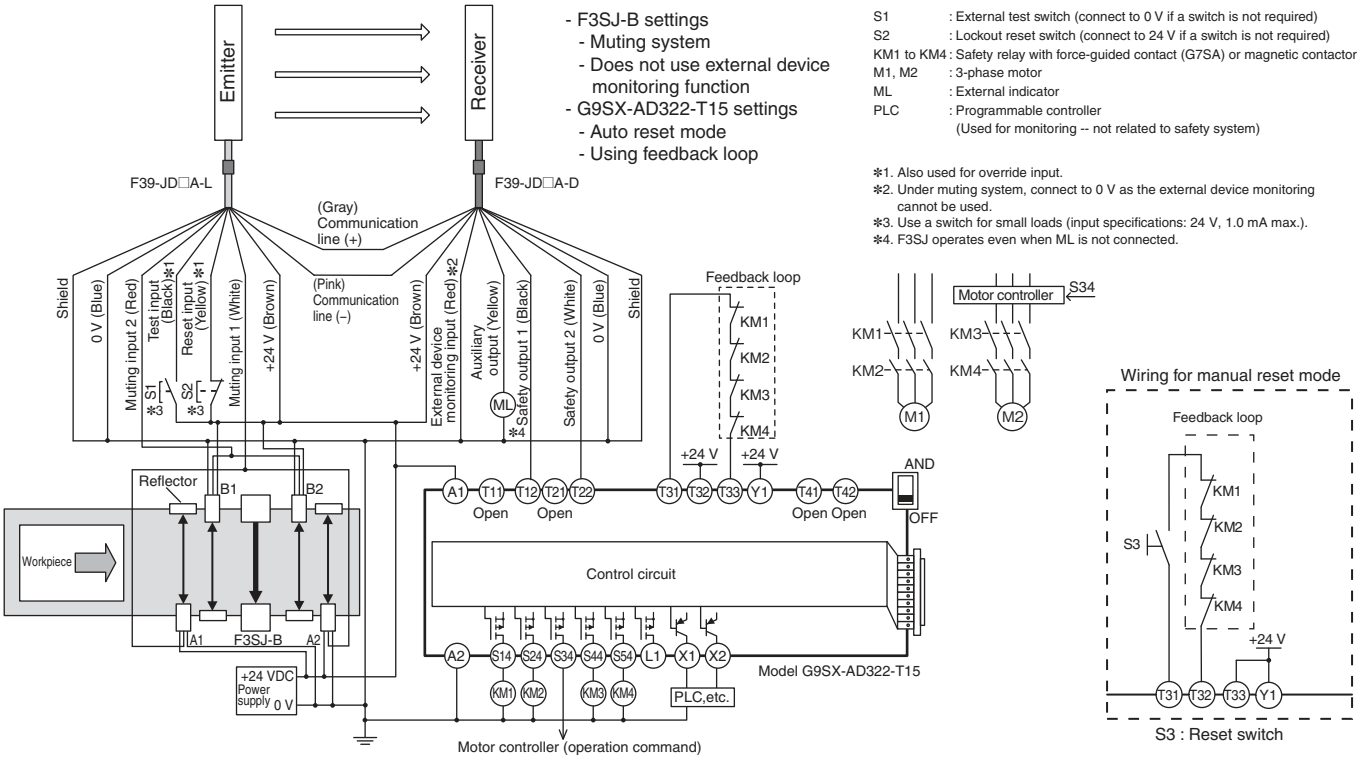


S1 : External test switch (connect to 0 V if a switch is not required)
S2 : Lockout reset switch (connect to 24 V if a switch is not required)
KM1, KM2 : Safety relay with force-guided contact (G7SA) or magnetic contactor
K1 : Load or PLC, etc. (for monitoring)

✻1. Use a switch for small loads (input specifications: 24 V, 1.0 mA max.).
✻2. F3SJ operates even when K1 is not connected.

Basic Wiring Diagram for Muting System

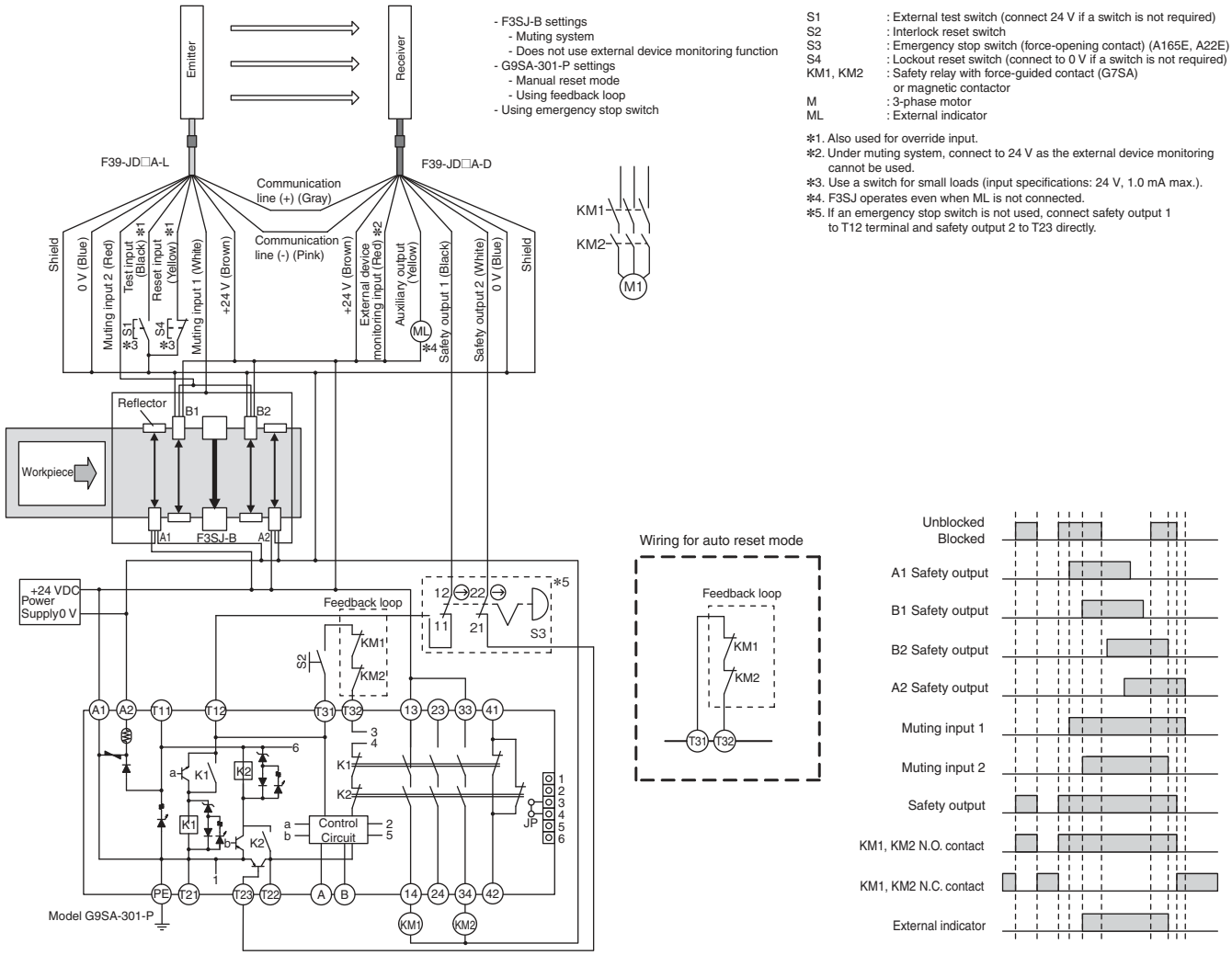
Wiring for muting function (F3SJ-B□□□□P25) [PNP Output]



S1 : External test switch (connect to 0 V if a switch is not required)
S2 : Lockout reset switch (connect to 24 V if a switch is not required)
KM1 to KM4 : Safety relay with force-guided contact (G7SA) or magnetic contactor
M1, M2 : 3-phase motor
ML : External indicator
PLC : Programmable controller
(Used for monitoring -- not related to safety system)

✻1. Also used for override input.
✻2. Under muting system, connect to 0 V as the external device monitoring cannot be used.
✻3. Use a switch for small loads (input specifications: 24 V, 1.0 mA max.).
✻4. F3SJ operates even when ML is not connected.

Wiring for muting function (F3SJ-B□□□□N25) [NPN Output]



S1 : External test switch (connect 24 V if a switch is not required)
S2 : Interlock reset switch
S3 : Emergency stop switch (force-opening contact) (A165E, A22E)
S4 : Lockout reset switch (connect to 0 V if a switch is not required)
KM1, KM2 : Safety relay with force-guided contact (G7SA) or magnetic contactor
M : 3-phase motor
ML : External indicator

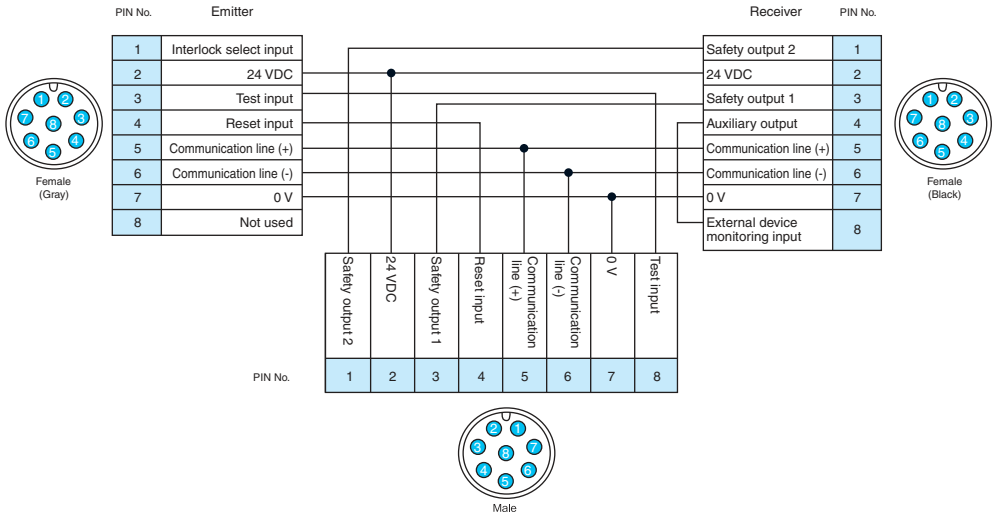
✻1. Also used for override input.
✻2. Under muting system, connect to 24 V as the external device monitoring cannot be used.
✻3. Use a switch for small loads (input specifications: 24 V, 1.0 mA max.).
✻4. F3SJ operates even when ML is not connected.
✻5. If an emergency stop switch is not used, connect safety output 1 to T12 terminal and safety output 2 to T23 directly.

Wiring Diagram When Using Simple Wiring System

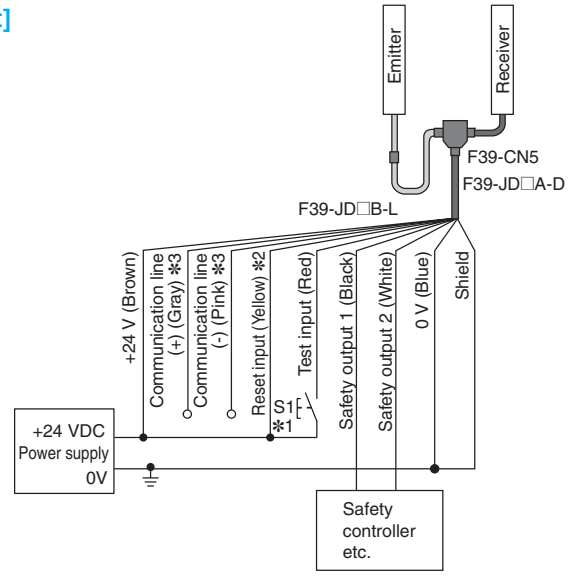
F39-CN5 simple wiring connector



Internal wiring of F39-CN5 simple wiring connector



[PNP Output]



S1 : External test switch (connect 0 V if a switch is not required)

✻1. Use a switch for small loads (input specifications: 24 V, 1.0 mA max.).

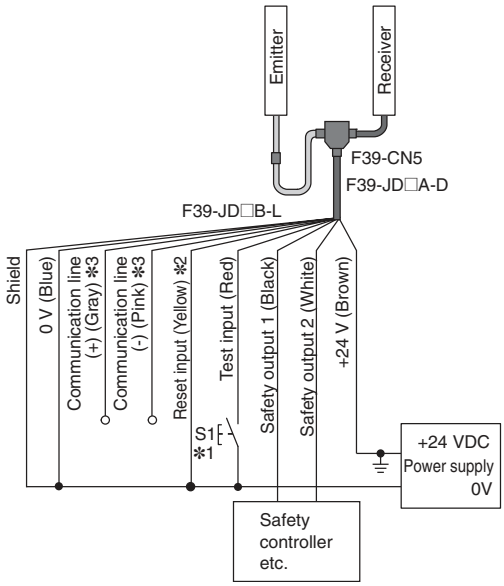
✻2. When the lockout reset function is used, connect to 24 V via a lockout reset switch (N.C. contact).

✻3. Make sure the Communication lines are insulated. If the lines are shorted, the F3SJ-B enters the lockout state.

Controllers connectable with PNP output F3SJ series

Safety controller	Model
Safety Network Controller	NE1A series
Safety Controller	G9SP series
Flexible Safety Unit	G9SX series
Safety Relay Unit	G9SA series

[NPN Output]



S1 : External test switch (connect 24 V if a switch is not required)

✻1. Use a switch for small loads (input specifications: 24 V, 1.0 mA max.).

✻2. When the lockout reset function is used, connect to 0 V via a lockout reset switch (N.C. contact).

✻3. Make sure the Communication lines are insulated. If the lines are shorted, the F3SJ-B enters the lockout state.

Controller connectable with NPN output F3SJ series

Safety controller	Model
Safety Relay Unit	G9SA-301-P

Note: When using the Simple Wiring Connector (F39-CN5), the following functions are not available.

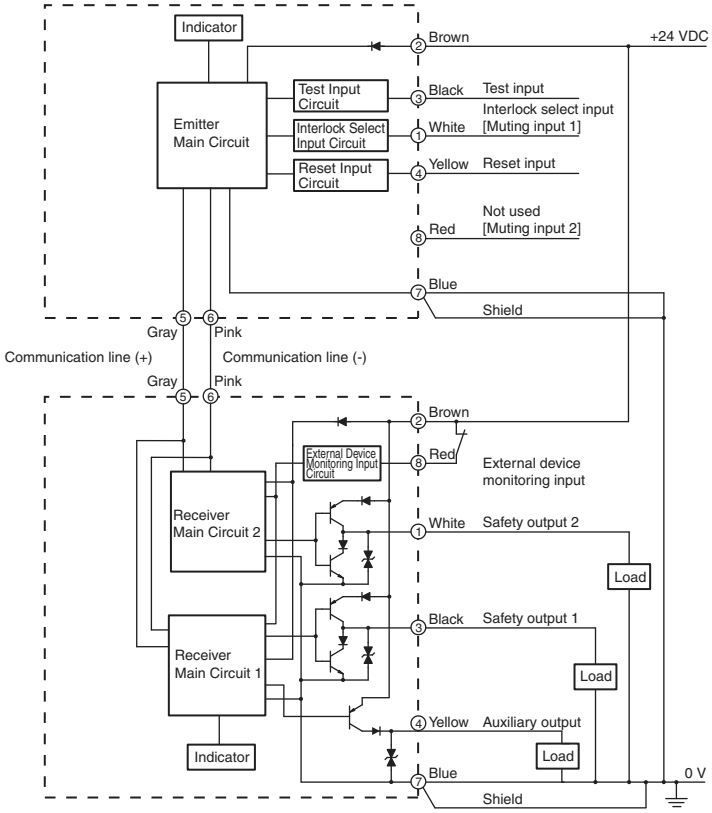
- Manual Reset
- External Device Monitoring
- Auxiliary Output
- Muting/Override

Input/Output Circuit Diagram

F3SJ-B□□□□P25 [PNP Output]

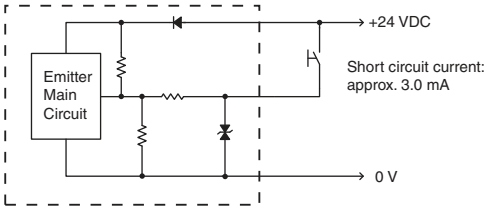
Entire Circuit Diagram

The numbers in circles indicate the connectors' pin numbers.
The words in brackets ([ ]) indicate the signal name for muting system.

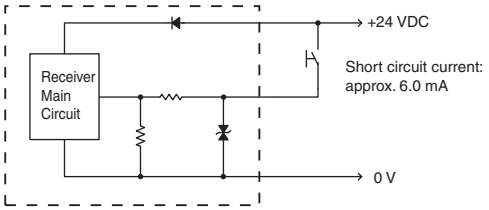


Input circuit diagram by function

<Input circuit (Test, Reset, Interlock Select or Muting input)>



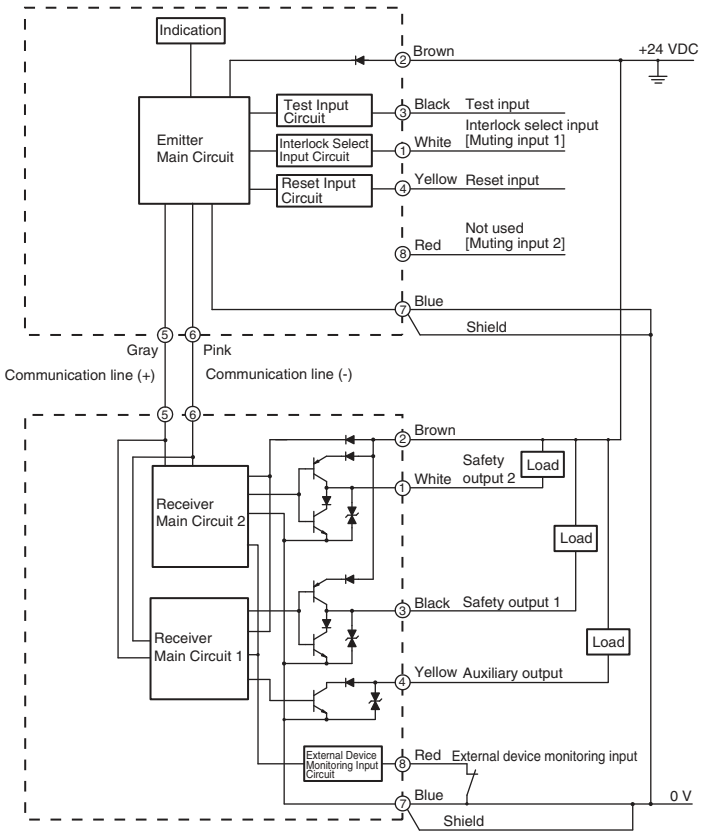
<Input circuit (External device monitoring input)>



F3SJ-B□□□□N25 [NPN Output]

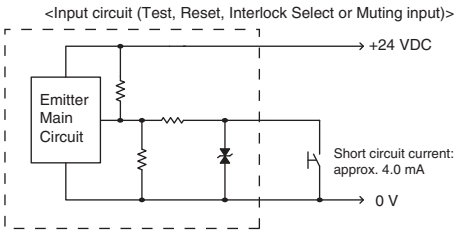
Entire Circuit Diagram

The numbers in circles indicate the connectors' pin numbers.
The words in brackets ([ ]) indicate the signal name for muting system.

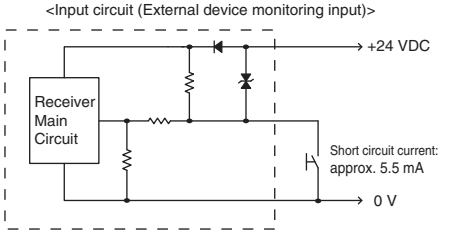


Input circuit diagram by function

<Input circuit (Test, Reset, Interlock Select or Muting input)>



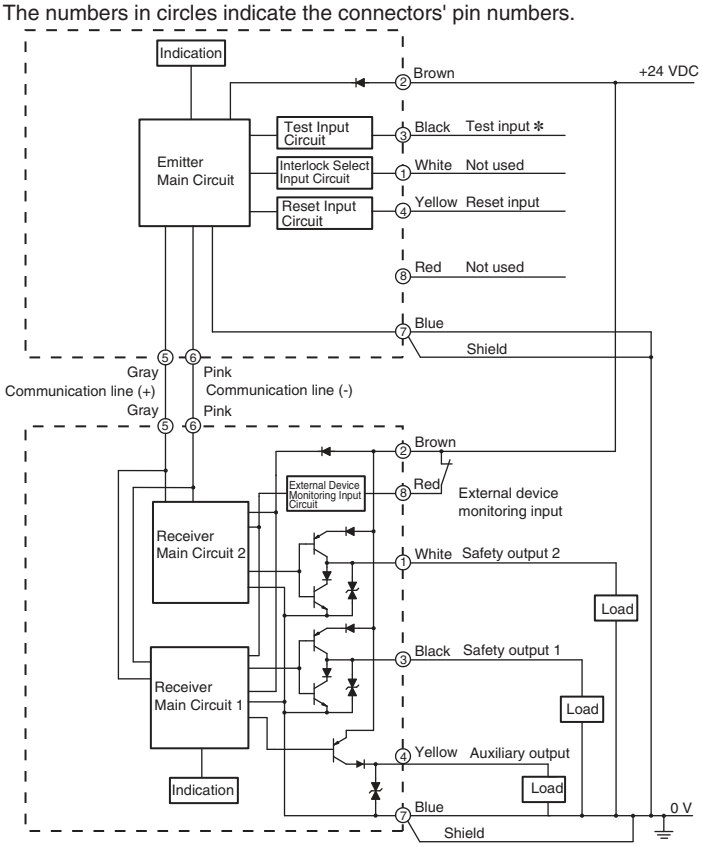
<Input circuit (External device monitoring input)>



F3SJ-B□□□□P25-01TS [PNP Output]

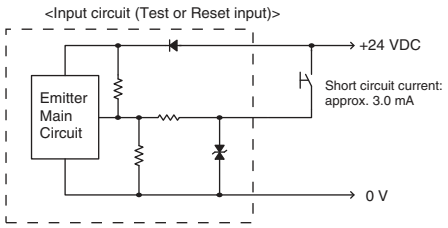
Entire Circuit Diagram

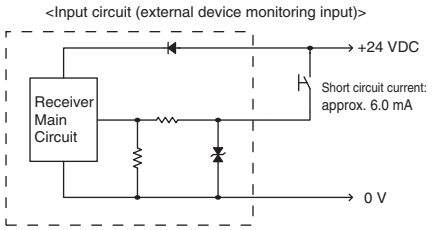
The numbers in circles indicate the connectors' pin numbers.



✻ The light emission stops when opening the test input line or applying voltage of 0 V to 1/2 Vs to the test input line.

Input circuit diagram by function

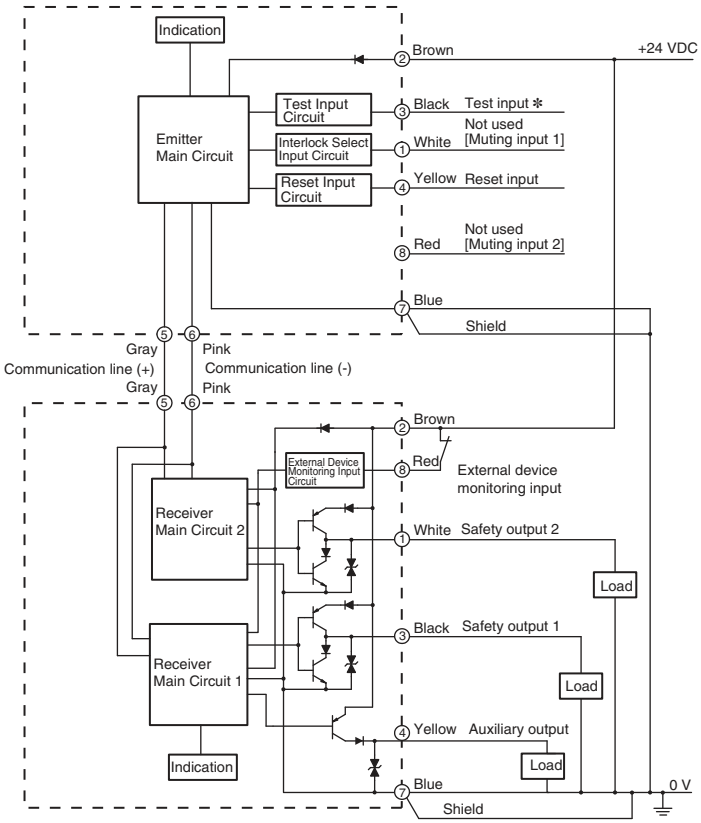




F3SJ-B□□□□P25-02TS [PNP Output]

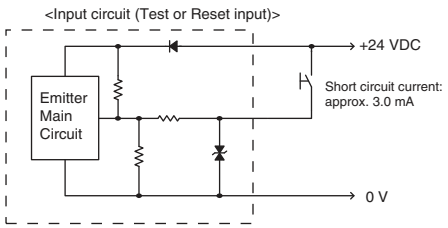
Entire Circuit Diagram

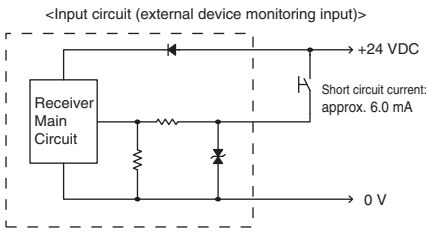
The numbers in circles indicate the connectors' pin numbers.
The words in brackets ([ ]) indicate the signal name for muting system.



✻ The light emission stops when applying voltage of Vs-3 V to Vs to the test input line.

Input circuit diagram by function





Connection Circuit Examples

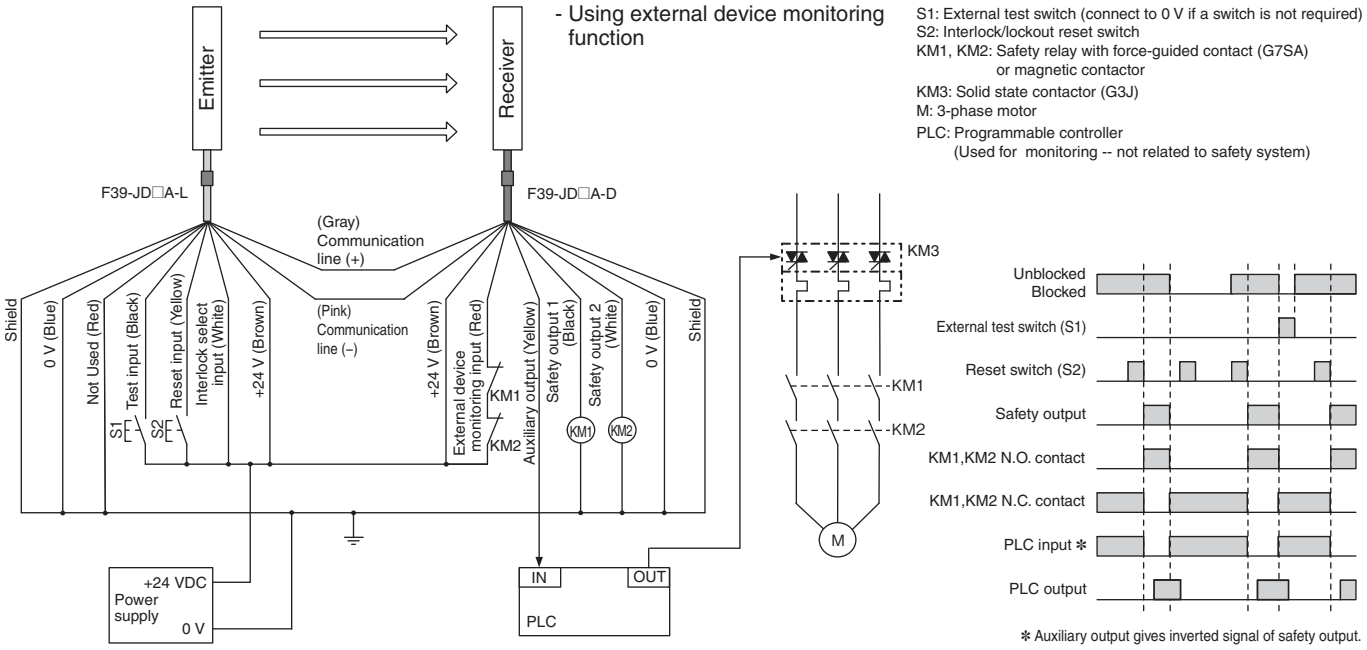
Wiring for single F3SJ-B application (F3SJ-B□□□□P25) [PNP Output]

Highest achievable PL/ safety category	Model	Stop category	Reset
PLe/4 equivalent	Safety Light Curtain F3SJ-B□□□□P25 Safety Relay G7SA	0	Manual

Note: The above PL is only the evaluation result of the example. The PL must be evaluated in an actual application by the customer after confirming the usage conditions.

● Application Overview

- The power supply to the motor M is turned OFF when the beam is blocked.
- The power supply to the motor M is kept OFF until the beams are unblocked and the reset switch S2 is pressed.



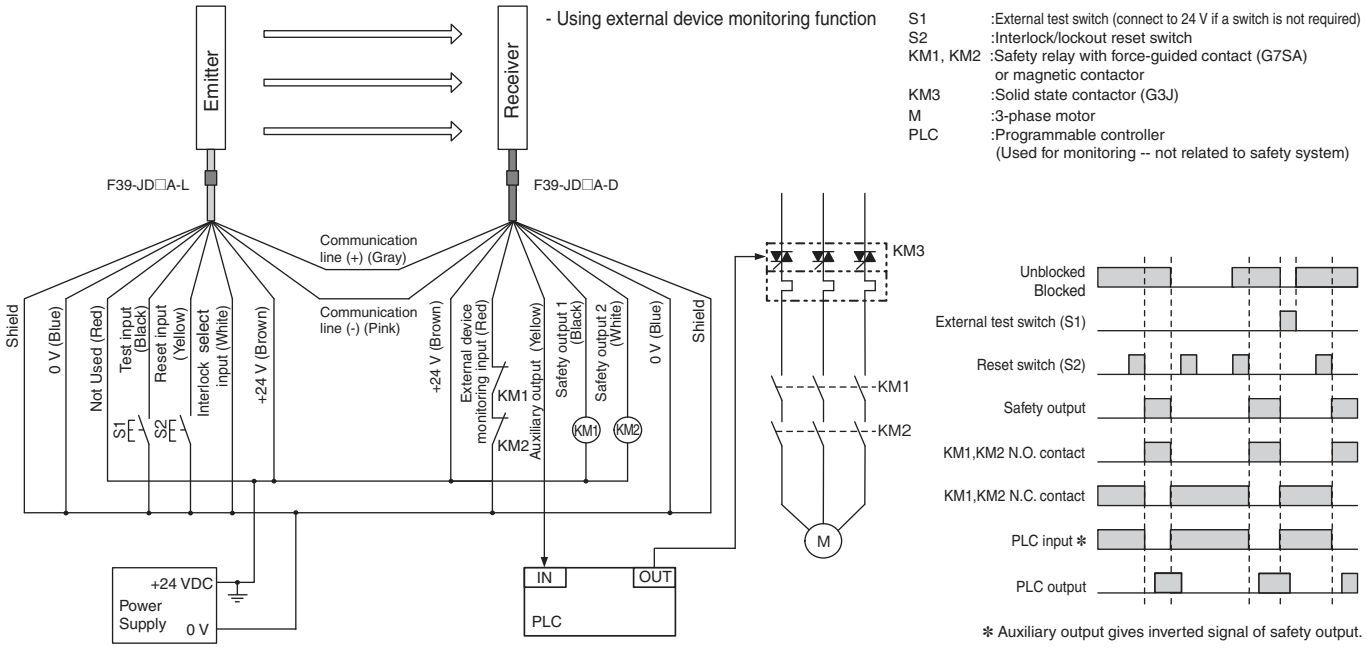
Wiring for single F3SJ-B application (F3SJ-B□□□□N25) [NPN Output]

Highest achievable PL/ safety category	Model	Stop category	Reset
PLe/4 equivalent	Safety Light Curtain F3SJ-B□□□□N25 Safety Relay G7SA	0	Manual

Note: The above PL is only the evaluation result of the example. The PL must be evaluated in an actual application by the customer after confirming the usage conditions.

● Application Overview

- The power supply to the motor M is turned OFF when the beam is blocked.
- The power supply to the motor M is kept OFF until the beams are unblocked and the reset switch S2 is pressed.



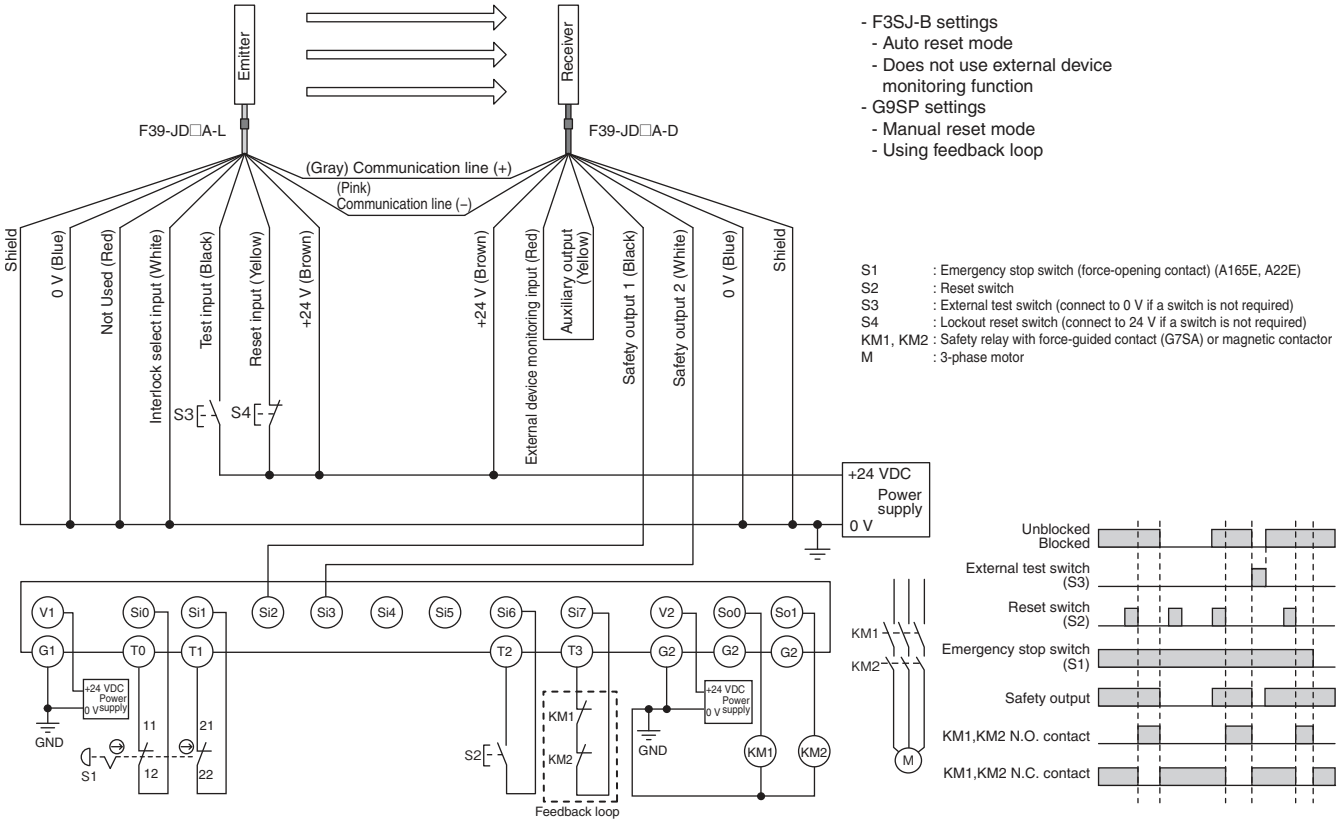
Wiring to connect a F3SJ-B with a controller G9SP (F3SJ-B□□□□P25) [PNP Output]

Highest achievable PL/ safety category	Model	Stop category	Reset
PLe/4 equivalent	Safety Light Curtain F3SJ-B□□□□P25 Safety Controller G9SP Safety Relay G7SA Emergency Stop Switch A165E/A22E	0	Manual

Note: The above PL is only the evaluation result of the example. The PL must be evaluated in an actual application by the customer after confirming the usage conditions.

● Application Overview

- The power supply to the motor M is turned OFF when the beam is blocked.
- The power supply to the motor M is turned OFF when the emergency stop switch is pressed.
- The power supply to the motor M is kept OFF until the beams are unblocked and the reset switch S2 is pressed while the emergency stop switch is released.



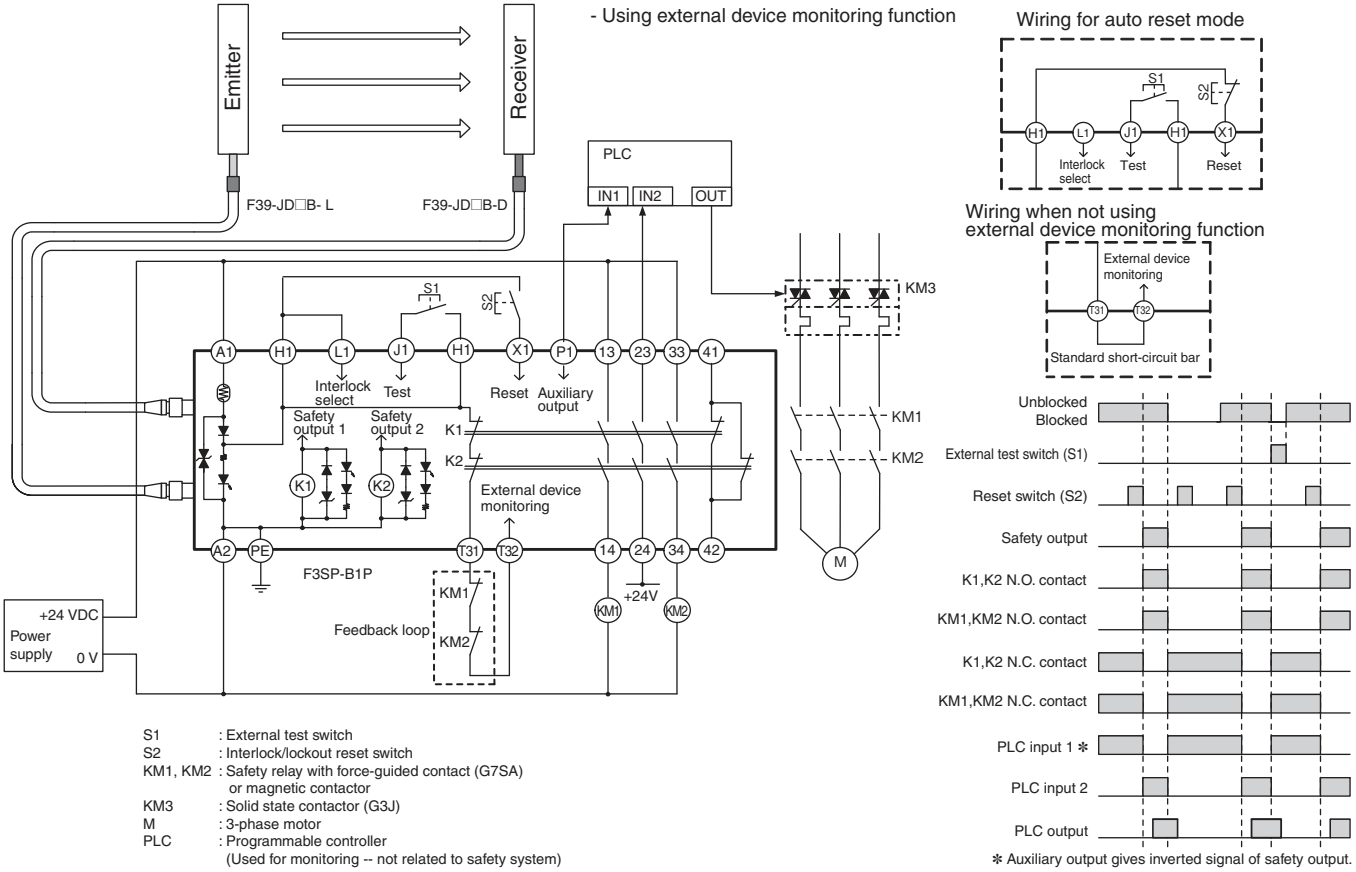
Wiring to connect a F3SJ-B with a controller F3SP-B1P (F3SJ-B□□□□P25) [PNP Output]

Highest achievable PL/ safety category	Model	Stop category	Reset
PLe/4 equivalent	Safety Light Curtain F3SJ-B□□□□P25 Control Unit F3SP-B1P Safety Relay G7SA	0	Manual

Note: The above PL is only the evaluation result of the example. The PL must be evaluated in an actual application by the customer after confirming the usage conditions.

● **Application Overview**

- The power supply to the motor M is turned OFF when the beam is blocked.
- The power supply to the motor M is kept OFF until the beams are unblocked and the reset switch S2 is pressed.



S1 : External test switch
S2 : Interlock/lockout reset switch
KM1, KM2 : Safety relay with force-guided contact (G7SA) or magnetic contactor
KM3 : Solid state contactor (G3J)
M : 3-phase motor
PLC : Programmable controller (Used for monitoring -- not related to safety system)

Note: It cannot be used as a muting system when F3SP-B1P is used.

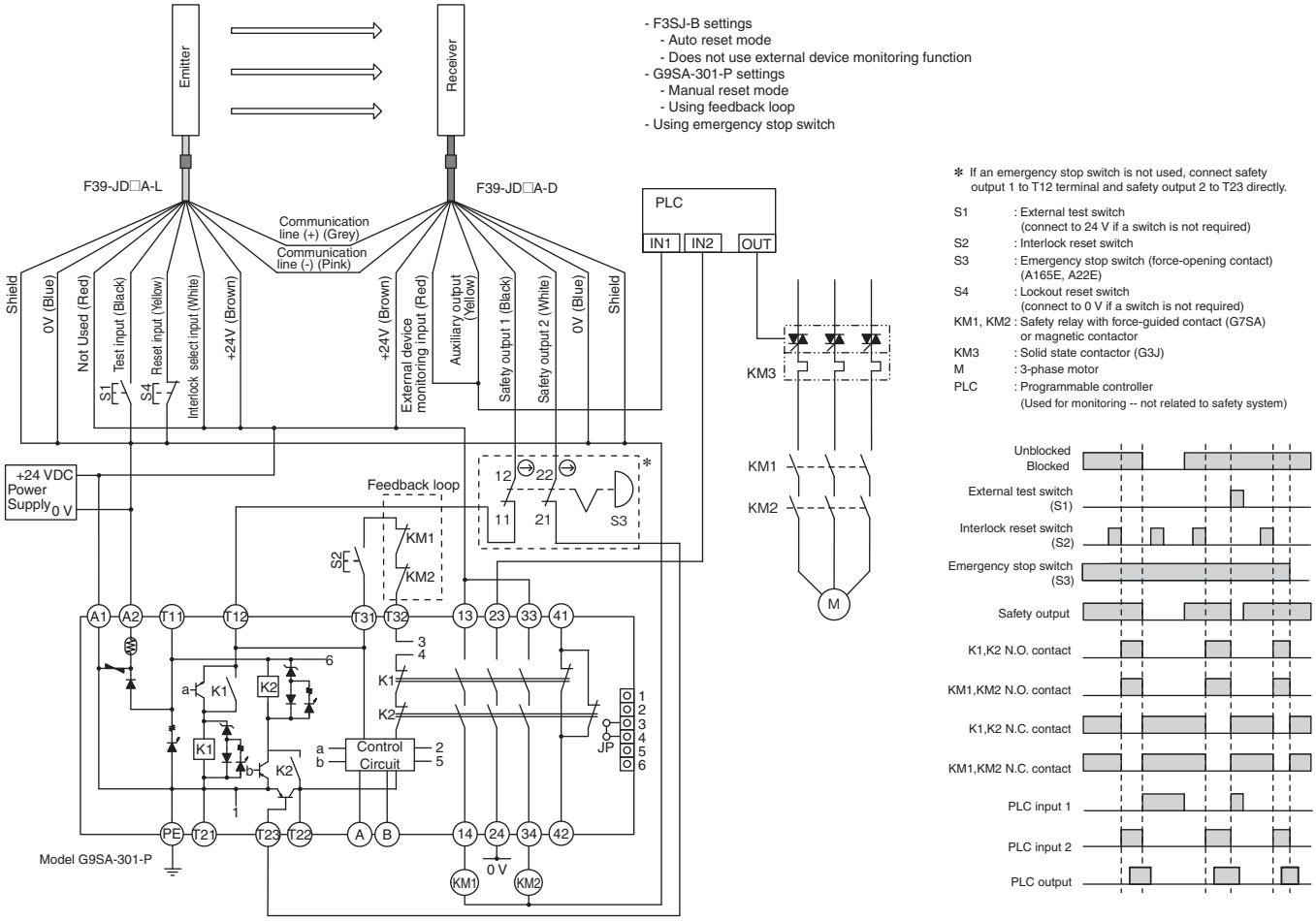
Wiring to connect a F3SJ-B with a controller G9SA-301-P (F3SJ-B□□□□N25) [NPN Output]

Highest achievable PL/ safety category	Model	Stop category	Reset
PLe/4 equivalent	Safety Light Curtain F3SJ-B□□□□N25 Safety Relay Unit G9SA-301-P 24V DC Safety Relay G7SA Emergency Stop Switch A165E/A22E	0	Manual

Note: The above PL is only the evaluation result of the example. The PL must be evaluated in an actual application by the customer after confirming the usage conditions.

● Application Overview

- The power supply to the motor M is turned OFF when the beam is blocked.
- The power supply to the motor M is turned OFF when the emergency stop switch is pressed.
- The power supply to the motor M is kept OFF until the beams are unblocked and the reset switch S2 is pressed while the emergency stop switch is released.



Note: 1. As the G9SP Safety Controller is a PNP output type, it cannot be connected to the F3SJ-B□□□□N25. Also, a Safety Controller with PNP output cannot be connected to the F3SJ-B□□□□N25.

2. The G9SA-301-P is a safety relay unit only for NPN output.