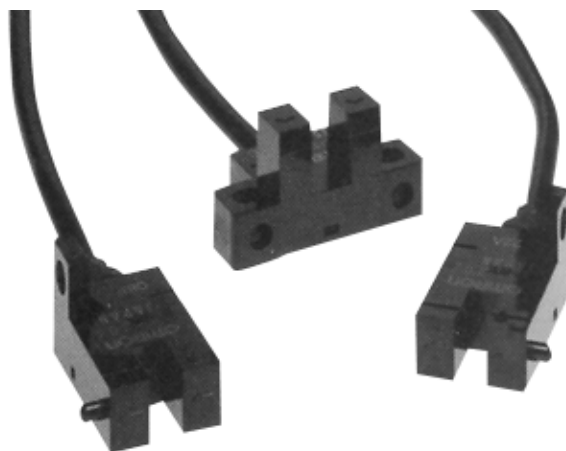





EE-SPX302/402/304/404/305/405-W2A

Prewired Compact Sensing Head
for Easy Mounting in
Space-Confined Areas

- Light modulation effectively reduces external light interference
- Easy-to-use photomicrosensor with cable attached
- Wide operating voltage range: 5 to 24 VDC
- Optical axis monitoring with a Light-ON indicator
- Amplifier output can be directly connected to a TTL and programmable controller (PLC)
- Incorporating dust-proof slit
- Detecting an object with 0.5 mm dia.



Ordering Information

Appearance	Sensing Method	Slot width	Output configuration	Weight	Part Number
	Transmissive	3.6 mm	Dark-ON	Approx. 18.5 g (including lead wires)	EE-SPX302-W2A
			Light-ON		EE-SPX402-W2A
		3.6 mm	Dark-ON		EE-SPX304-W2A
			Light-ON		EE-SPX404-W2A
		5 mm	Dark-ON		EE-SPX305-W2A
			Light-ON		EE-SPX405-W2A

Specifications

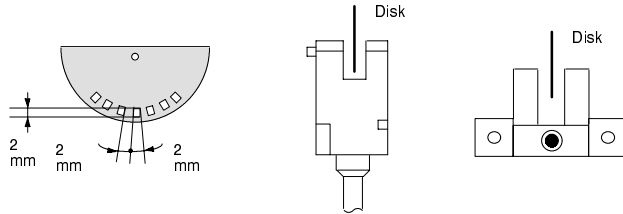
RATINGS

Model	EE-SPX302-W2A EE-SPX304-W2A	EE-SPX402-W2A EE-SPX404-W2A	EE-SPX305-W2A	EE-SPX405-W2A
Supply voltage	5 to 24 VDC ±10%, ripple (p-p): 5% max.			
Current consumption	Average: 15 mA max.; Peak: 50 mA max.			
Standard reference object	Opaque: 0.5 x 1 mm min.		Opaque: 0.8 x 2 mm min.	
Differential distance	0.05 mm max.			
Control output	At 5 to 24 VDC: 80-mA load current (I _C) with a residual voltage of 1.0 V max. When driving TTL: 10-mA load current (I _C) with a residual voltage of 0.4 V max.			

Model		EE-SPX302-W2A EE-SPX304-W2A	EE-SPX402-W2A EE-SPX404-W2A	EE-SPX305-W2A	EE-SPX405-W2A
Output configuration	Transistor on output stage without detecting object	OFF	ON	OFF	ON
	Transistor on output stage with detecting object	ON	OFF	ON	OFF
Indicator*	Without detecting object	ON			
	With detecting object	OFF			
Response frequency**		500 Hz			
Connecting method		Cable length: 1 m long cable (attached)			
Light source		GaAs infrared LED (pulse-modulated) with a wavelength of 940 nm			
Receiver		Si photodiode with a sensing wavelength of 850 nm max.			

*The indicator is made of a GaP red LED (peak emission wavelength: 700 nm).

**The response frequency was measured by detecting the following disks rotating.

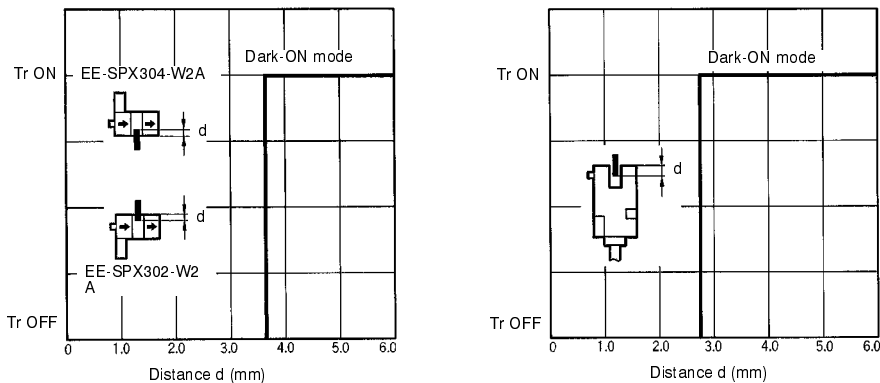


■ CHARACTERISTICS

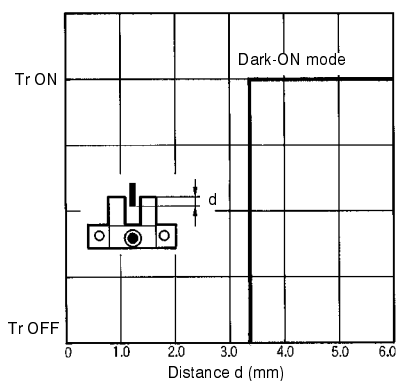
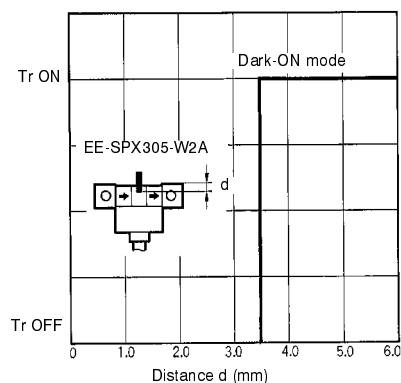
Ambient illumination		Sensing face: fluorescent light/incandescent light: 3,000 lx max.
Enclosure ratings		IP50 (except terminals)
Ambient temperature	Operating	-10° to 55°C
	Storage	-25° to 65°C
Ambient humidity	Operating	35% to 85%
	Storage	35% to 95%
Vibration resistance	Destruction	10 to 55 Hz, 1.5-mm double amplitude for 2 hrs each in X, Y, and Z directions
Shock resistance	Destruction	500 m/s ² (approx. 50G) for 3 times each in X, Y, and Z directions
Cable length		2 m max. (including attached cable, AWG22 min.)

Engineering Data

■ SENSING POSITION CHARACTERISTICS (TYPICAL)



Note: The sensing position characteristics of the EE-SPX402/404-W2A are opposite to those of EE-SPX302/304-W2A.

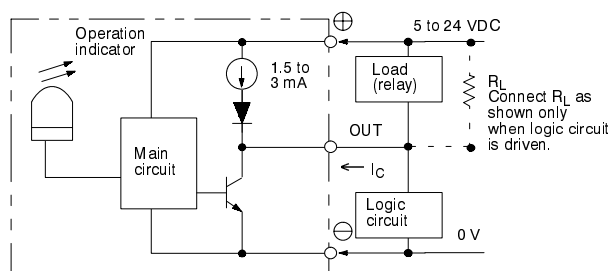


Note: The sensing position characteristics of the EE-SPX405-W2A are opposite to those of EE-SPX305-W2A.

Operation

INTERNAL/EXTERNAL CIRCUIT DIAGRAM

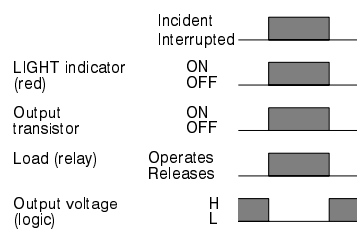
Light-ON/Dark-ON



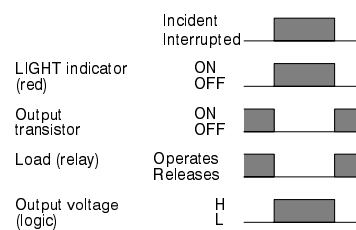
Connect a diode in parallel to the load when an inductive load is connected between + and OUT.

TIMING CHART

Light-ON



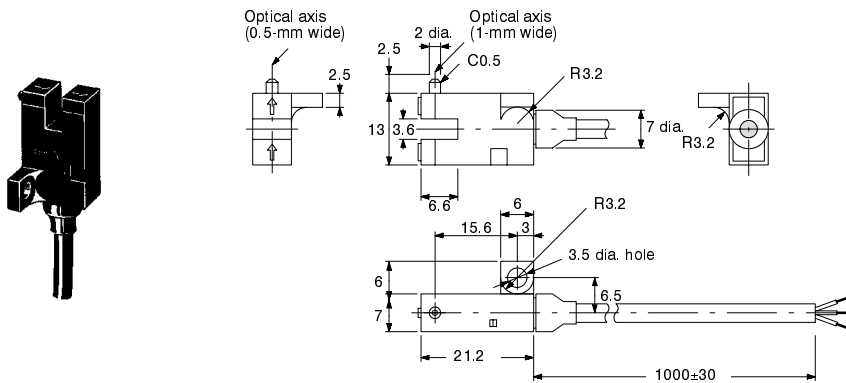
Dark-ON



Dimensions

Unit: mm

■ EE-SPX302-W2A, EE-SPX402-W2A

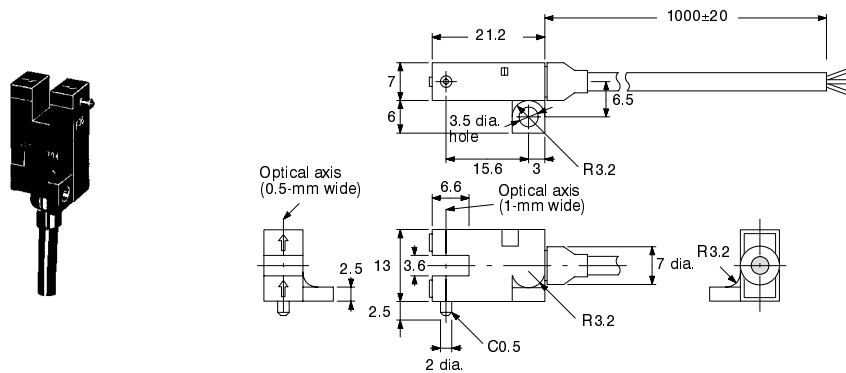


Terminal Arrangement

Red (Brown)	V _{CC}
White (Black)	OUTPUT
Black (Blue)	GND (0 V)

Note: IEC colors are shown in parentheses.

■ EE-SPX304-W2A, EE-SPX404-W2A

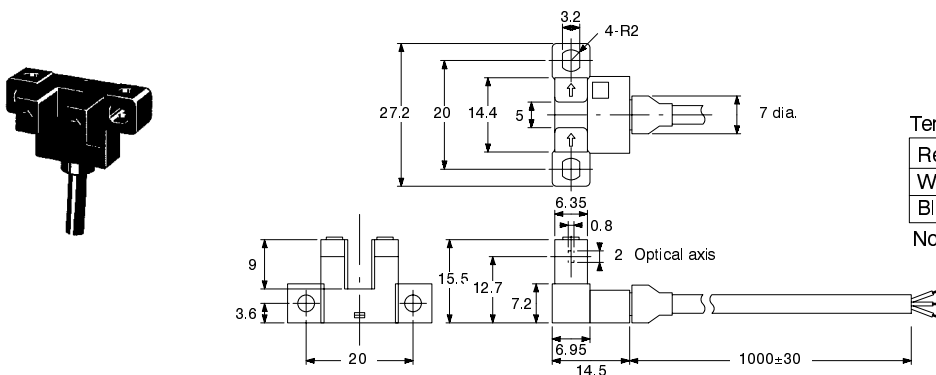


Terminal Arrangement

Red (Brown)	V _{CC}
White (Black)	OUTPUT
Black (Blue)	GND (0 V)

Note: IEC colors are shown in parentheses.

■ EE-SPX305-W2A, EE-SPX405-W2A



Terminal Arrangement

Red (Brown)	V _{CC}
White (Black)	OUTPUT
Black (Blue)	GND (0 V)

Note: IEC colors are shown in parentheses.

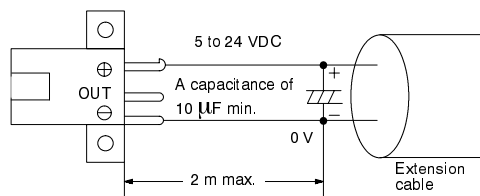
Precautions

Refer to the Technical Information Section for general precautions.

■ WIRING

A cable with a thickness of 0.3 mm² min. or AWG22 and a length of 2 m max. must be connected to the output terminals.

To use a cable longer than 2 m, attach a capacitor with a capacitance of approximately 10 μ F to the wires as shown below (the distance between the terminal and the capacitor must be 2 m or less):



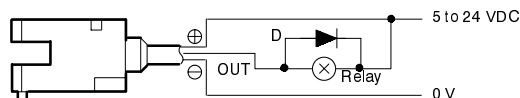
Avoid disconnecting from the photomicrosensor when power is supplied to the photomicrosensor or the photomicrosensor could be damaged.

If the metal mounting base is subjected to inductive electrical noise, the photomicrosensor can be activated accidentally. If noise is a problem, take the following countermeasures:

1. Connect the GND terminal to the mounting base so that there will be no difference in electric potential between the photomicrosensor and mounting base.
2. Connect the GND terminal to the mounting base via a 0.47- μ F capacitor.

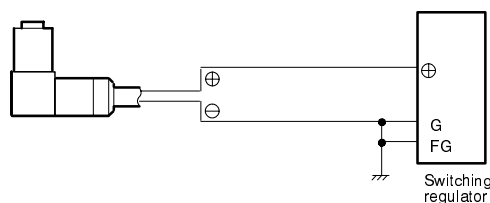
3. Insert a plastic insulating plate with a thickness of approximately 10 mm between the photomicrosensor and mounting base.

Wire as shown by the following illustration to connect a small inductive load (a relay for example) to the photomicrosensor. A diode must be connected parallel to the relay to absorb the reverse voltage.



■ POWER SUPPLY

When using a standard switching regulator, ground the FG and G terminal so that the photomicrosensor will be in a stable operating condition.



NOTE: DIMENSIONS SHOWN ARE IN MILLIMETERS. To convert millimeters to inches divide by 25.4.

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