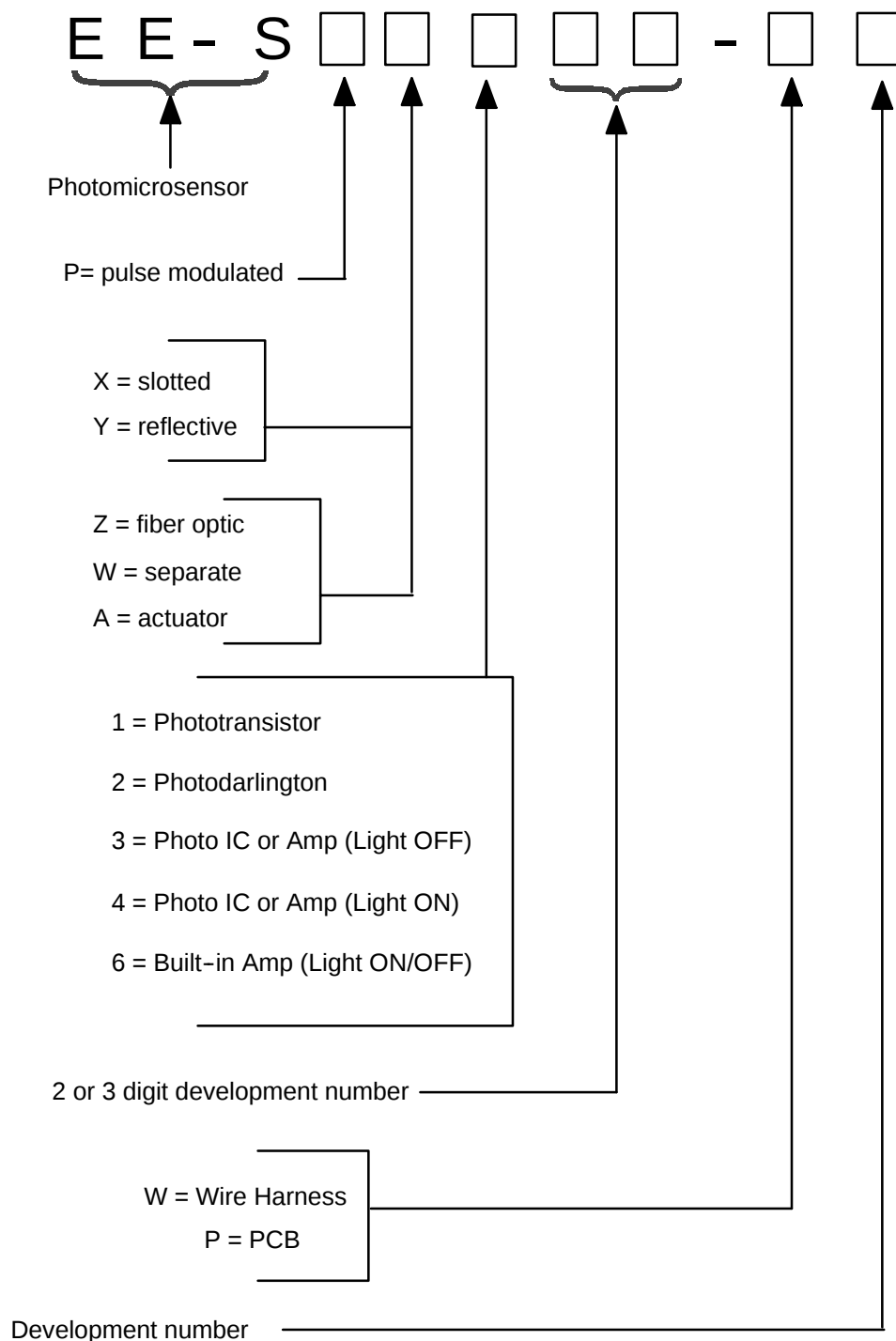


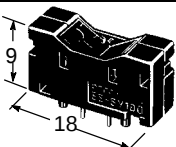
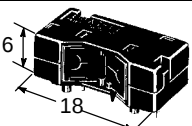
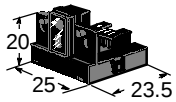
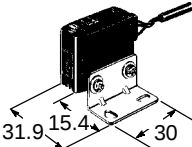
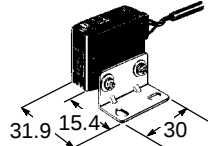
Introduction

The tables on the following pages provide information to assist in your selection of the Omron photomicrosensor that best meets your requirements. The part number key on this page provides a breakdown of component information included in the part number itself. For example, if your requirements call for a photomicrosensor that is pulse-modulated and slotted, you would limit your search to the EE-SPX numbers, and use the tables to find specific information about slot width, dimensions, and modulation types.



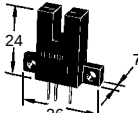
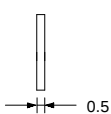
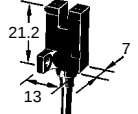
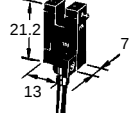
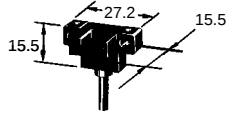
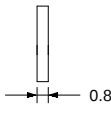
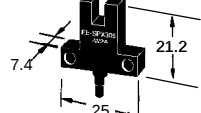
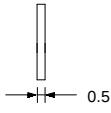
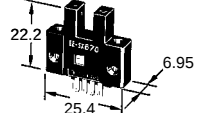
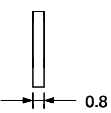
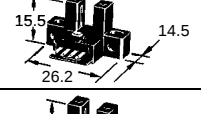
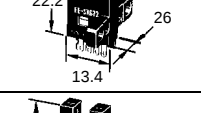
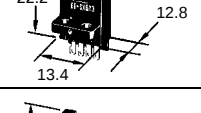
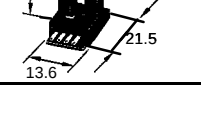
Microphotonic Photomicrosensors

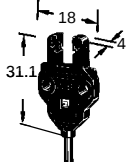
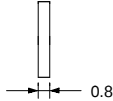
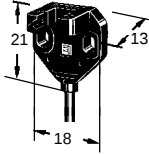
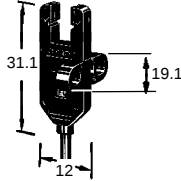
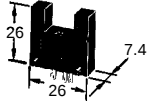
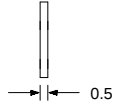
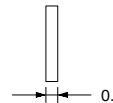
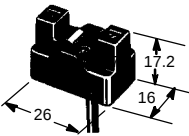
■ DIFFUSE OR REGULAR REFLECTIVE

Sensing Distance	Sensing Method	Appearance and dimensions (mm)	Model	Output	Optical modulation	Features
4.5 mm	Diffuse or regular reflective		EE-SY190	Phototransistor output	Non-modulated	Highly focused detection range makes this sensor useful for sensing paper without picking up background surfaces.
4.5 mm	Diffuse or regular reflective		EE-SY191	Phototransistor output		Horizontal sensing
6.5 mm	Diffuse reflective type		Z4D-A01	Analog voltage output - 2 signals (Used as input to microprocessor, which outputs a single digital voltage)		Used to detect changes as small as 10 µm. Used for applications such as money changers and copiers.
4 mm	Reflective		Z4D-F04A	Analog output		Resolution down to 5 µm.
4 mm	Reflective		Z4D-F04D	ON/OFF output		Resolution down to 5 µm.

Amplified Photomicrosensors



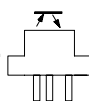
Slot width	Appearance and dimensions (mm)	Model	Output	Optical modulation	Aperture width (mm) and orientation
3.6 mm		EE-SPX301	Dark-ON	Modulated	
		EE-SPX401	Light-ON		
		EE-SPX302-W2A	Dark-ON		
		EE-SPX402-W2A	Light-ON		
		EE-SPX304-W2A	Dark-ON		
		EE-SPX404-W2A	Light-ON		
5.0 mm		EE-SPX305-W2A	Dark-ON	Modulated	
		EE-SPX405-W2A	Light-ON		
3.6 mm		EE-SPX306-W2A	Dark-ON		
		EE-SPX406-W2A	Light-ON		
5.0 mm		EE-SX670	Light-ON/Dark-ON	Non-modulated	
		EE-SX670A			
		EE-SX470	Light-ON		
		EE-SX671	Light-ON/Dark-ON		
		EE-SX671A			
		EE-SX471	Light-ON		
		EE-SX672	Light-ON/Dark-ON		
		EE-SX672A			
		EE-SX472	Light-ON		
		EE-SX673	Light-ON/Dark-ON		
		EE-SX673A			
		EE-SX473	Light-ON		
		EE-SX674	Light-OFF/ON		
		EE-SX674A			
		EE-SX474	Light-ON		

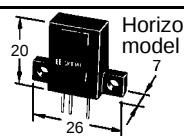
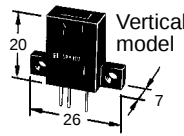
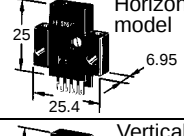
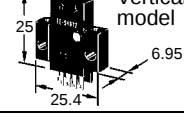
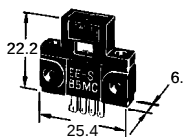
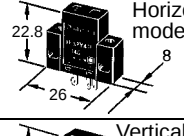
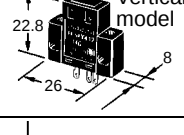
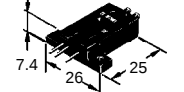
Slot width	Appearance and dimensions (mm)	Model	Output	Optical modulation	Aperture width (mm) and orientation
5.0 mm		EE-SX770	Dark-ON	Non-modulated	
		EE-SX770A	Dark-ON		
		EE-SX870	Light-ON		
		EE-SX870A	Light-ON		
		EE-SX771	Dark-ON		
		EE-SX771A	Dark-ON		
		EE-SX871	Light-ON		
		EE-SX871A	Light-ON		
		EE-SX772	Dark-ON		
		EE-SX772A	Dark-ON		
		EE-SX872	Light-ON		
		EE-SX872A	Light-ON		
13.0 mm		EE-SX303	Dark-ON	Modulated	
		EE-SX303-1	Dark-ON		
		EE-SX403	Light-ON		
		EE-SPX613	Light-ON/Dark-ON		

SELECTION GUIDE



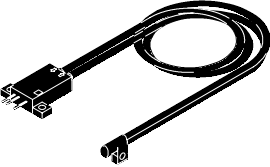
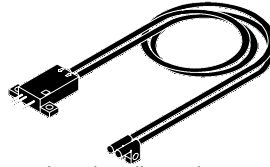
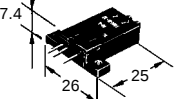
REFLECTIVE



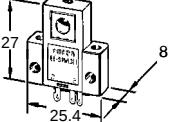
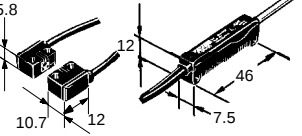
Sensing distance	Sensing method	Appearance and dimensions (mm)	Model	Output	Optical modulation	Features
5.0 mm	Diffuse reflective	 Horizontal model	EE-SPY301	Dark-ON	Modulated	Wide operating voltage range (5 to 24 VDC) Built-in LED indicator Control output: 80 mA
			EE-SPY401	Light-ON		
		 Vertical model	EE-SPY302	Dark-ON		
			EE-SPY402	Light-ON		
1 to 5 mm	Diffuse reflective	 Horizontal model	EE-SY671	Light-ON/Dark-ON	Non-modulated	Built-in sensitivity adjuster Wide operating voltage range (5 to 24 VDC) Output mode selectable
		 Vertical model	EE-SY672	Light-ON/Dark-ON		
			EE-SB5M	Light-ON		Incorporated filter cuts off visible light Sensitivity adjustment terminals incorporated
			EE-SB5MC	Dark-ON		
			EE-SB5V	Light-ON		
			EE-SB5VC	Dark-ON		
19 mm (3/4")			EE-SB5V-E	Light-ON		
2 to 6 mm (approx. 1/4")	Convergent reflective	 Horizontal model	EE-SPY311	Dark-ON	Modulated	Detects objects against mirror-like surfaces at a distance of 20 mm or more. Detects minute or black objects.
			EE-SPY411	Light-ON		
		 Vertical model	EE-SPY312	Dark-ON		
			EE-SPY412	Light-ON		
200 mm	Diffuse reflective		EE-SPZ301-A	Dark-ON		Long-distance detection with the E39-R1 Reflector
			EE-SPZ401-A	Light-ON		

Note: The maximum detectable distance of each reflective photomicrosensor is based on detecting a piece of white paper with a reflection factor of 90%.

■ FIBER-OPTIC

Sensing distance	Sensing method	Appearance and dimensions (mm)	Model	Output	Optical modulation	Features
1 to 3 mm	Reflective	 For housing dimensions, see EE-SPZ301/SPZ401 below.	EE-SPZ301Y-01	Dark-ON	Modulated	Wide operating voltage range (5 to 24 VDC) Built-in LED indicator Control output: 80 mA
			EE-SPZ401Y-01	Light-ON		
5.0 mm	Transmissive	 For housing dimensions, see EE-SPZ301/SPZ401 below.	EE-SPZ301W-02	Dark-ON		
			EE-SPZ401W-02	Light-ON		
30.0 mm		 For housing dimensions, see EE-SPZ301/SPZ401 below.	EE-SPZ301W-01	Dark-ON		
			EE-SPZ401W-01	Light-ON		
Transmissive: 150 mm Reflective: 1 to 6 mm	Standard fiber connection		EE-SPZ301	Dark-ON		Standard fiber (with length adjustable) can be connected.
			EE-SPZ401	Light-ON		

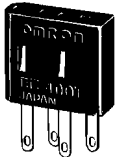
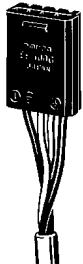
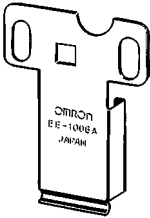
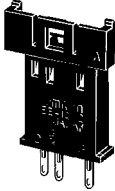
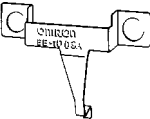
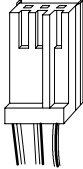
■ SEPARATE

Sensing distance	Appearance and dimensions (mm)	Model	Output	Optical modulation	Detectable object (mm)
1 m		EE-SPW311	Dark-ON	Modulated	Opaque: 5 dia. min.
		EE-SPW411	Light-ON		
30 cm		EE-SPW321(-A)	Dark-ON		Opaque: 2 dia. min.
		EE-SPW421(-A)	Light-ON		

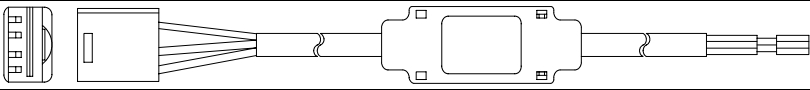
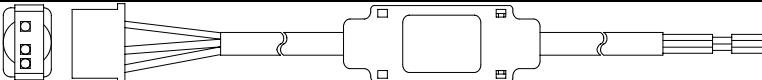
SELECTION GUIDE



CONNECTORS

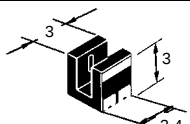
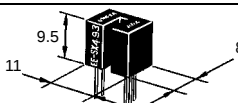
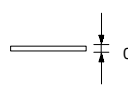
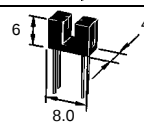
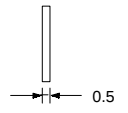
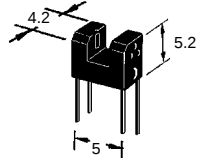
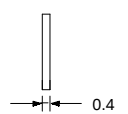
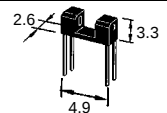
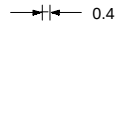
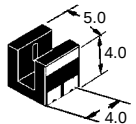
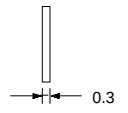
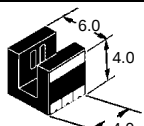
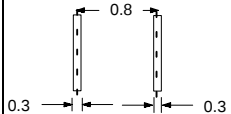
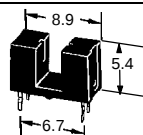
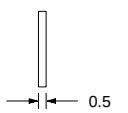
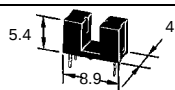
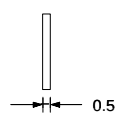
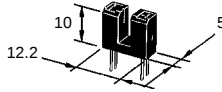
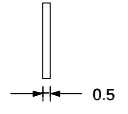
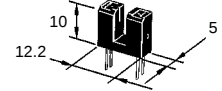
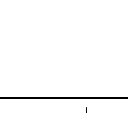
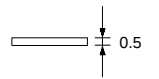
Model	Appearance	Applicable sensors
EE-1001		EE-SX470/470P/670/670P EE-SX471/471P/671/671P EE-SX472/472P/672/672P EE-SX473/473P/673/673P EE-SX474/474P/674/674P EE-SX670A/670R EE-SX671A/671R EE-SX672A/672R EE-SX673A/673R EE-SX674A/674R EE-SPX303/303-1/403 EE-SY671/672 EE-SB5M(C)/SB5V(C) EE-SB5V-E EE-SPY311/411/312/412 EE-SPW311/411
EE-1006	 The connector incorporates a 2-m wire harness.	
EE-1006A Connector Holder		When using the EE-1006 connector
EE-1002		EE-SPX301/-SPX401, EE-SPY301/-SPY401, EE-SPY302/-SPY402, EE-SPZ301-A/-SPZ401-A, EE-SPZ301Y-01/-SPZ401Y-01, EE-SPZ301W-01/-SPZ401W-01, EE-SPZ301W-02/-SPZ401W-02, EE-SPZ301/-SPZ401
EE-1003	 The connector incorporates a 1-m wire harness.	
EE-1003A Connector Holder		
EE-1005		EE-SX460-P1/SX461-P11, EE-SA401-P2

NPN-PNP OUTPUT CONVERTER

Model	Appearance
EE-2001	
EE-2002	

Non-amplified Photomicrosensors

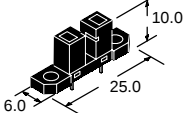
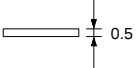
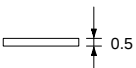
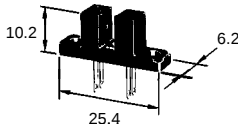
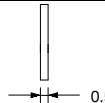
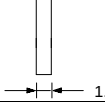
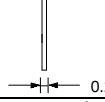
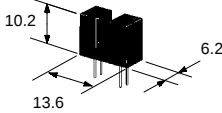
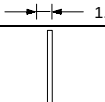
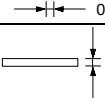
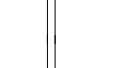
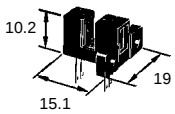
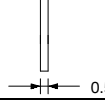
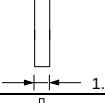
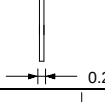
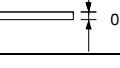
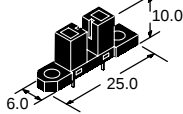
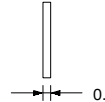
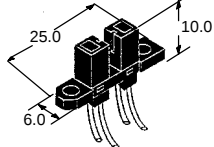
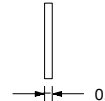


Slot width	Appearance and dimensions (mm)	Model	Output	Aperture width (mm) and orientation	Terminals
1.0 mm		EE-SX1107	Phototransistor		Surface Mount
2.0 mm		EE-SX493	Photo IC (Light-ON)		PCB
		EE-SX1018	Phototransistor		
		EE-SX1103			
		EE-SX1105			
		EE-SX1108			Surface Mount
		EE-SX1131			
2.8 mm		EE-SX1055			PCB
		EE-SX1025			
3.0 mm		EE-SX198			
		EE-SX199			
		EE-SX1046			

SELECTION GUIDE



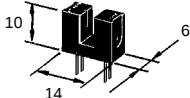
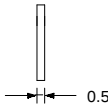
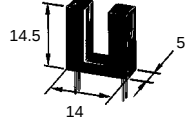
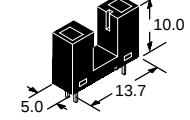
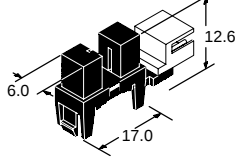
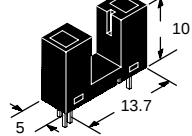
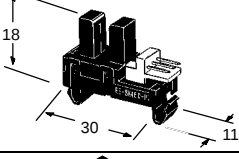
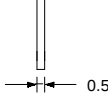
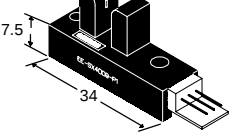
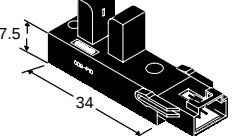
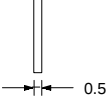
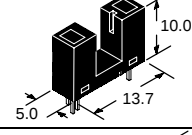
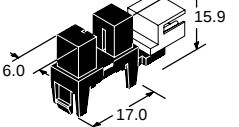
Slot width	Appearance and dimensions (mm)	Model	Output	Aperture width (mm) and orientation	Terminals
3.0 mm		EE-SX1106	Phototransistor		PCB
		EE-SX1109			Surface Mount
		EE-SJ3W-B	Photodarlington transistor		PCB
		EE-SK3W-B			
		EE-SM3			
		EE-SM3B			
		EE-SX298			
		EE-SX398	Photo IC (Dark-ON)		
		EE-SX498	Photo IC (Light-ON)		
3.4 mm		EE-SX1031	Phototransistor (dual channel)		
		EE-SX1071	Phototransistor		
		EE-SX1088			
		EE-SX1088(-W1)			

Slot width	Appearance and dimensions (mm)	Model	Output	Aperture width (mm) and orientation	Terminals
3.4 mm		EE-SX1096	Phototransistor		PCB
		EE-SX1096(-W1)			PCB
		EE-SH3			Soldering
		EE-SH3-B			PCB
		EE-SH3-CS			Soldering
		EE-SH3-C			PCB
		EE-SH3-DS			Soldering
		EE-SH3-D			PCB
		EE-SH3-GS			Soldering
		EE-SH3-G			PCB
		EE-SJ3-C			
		EE-SJ3-D			
		EE-SJ3-G			
		EE-SV3			Soldering
		EE-SV3-B			PCB
		EE-SV3-CS			Soldering
		EE-SV3-C			PCB
		EE-SV3-DS			Soldering
		EE-SV3-D			PCB
		EE-SV3-GS			Soldering
		EE-SV3-G			PCB
		EE-SX2088	Photodarlington transistor		
		EE-SX2088(-W1)	Same as EE-SX2088 with wire harness.		

SELECTION GUIDE

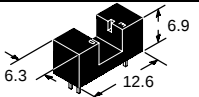
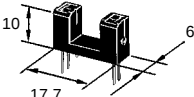
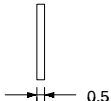
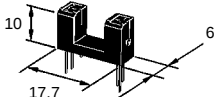
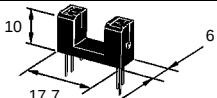
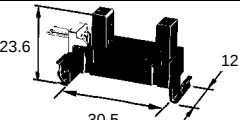
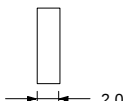


Slot width	Appearance and dimensions (mm)	Model	Output	Aperture width (mm) and orientation	Terminals
3.4 mm		EE-SX301	Photo IC (Dark-ON)		PCB
		EE-SX401	Photo IC (Light-ON)		
		EE-SX305	Photo IC (Dark-ON)		
		EE-SX405	Photo IC (Light-ON)		
		EE-SX3088	Photo IC (Dark-ON)		
		EE-SX3088(-W1)	Same as EE-SX3088 with wire harness.		
		EE-SX4088	Photo IC (Light-ON)		
			EE-SX4088(-W1)	Same as EE-SX4088 with wire harness.	
3.5 mm		EE-SX384	Photo IC (Dark-ON)		PCB
		EE-SX484	Photo IC (Light-ON)		
3.6 mm		EE-SG3	Phototransistor		Soldering
		EE-SG3-B			PCB
4.6 mm		EE-SX1061			

Slot width	Appearance and dimensions (mm)	Model	Output	Aperture width (mm) and orientation	Terminals
5.0 mm		EE-SX1041	Phototransistor		PCB
		EE-SX1042			
		EE-SX1081			
		EE-SX1235A-P2	Photo IC (Dark-ON)		Connector
		EE-SX3081			PCB
		EE-SX460-P1	Photo IC (Light-ON)		Connector
		EE-SX4009-P1			
		EE-SX4009-P10		Connector	
		EE-SX4081		PCB	
		EE-SX4235A-P2		Connector	

SELECTION GUIDE



Slot width	Appearance and dimensions (mm)	Model	Output	Aperture width (mm) and orientation	Terminals
5.2 mm		EE-SX1035	Phototransistor		PCB
8.0 mm		EE-SX1070			
		EE-SX3070			
		EE-SX4070			
15.0 mm		EE-SX461-P11			Connector



Sensing distance	Appearance and dimensions (mm)	Model	Output	Terminals
1.0 mm		EE-SMR1-1	Phototransistor	PCB
		EE-SY124		
		EE-SY125		Surface mount
3.5 mm		EE-SY171	Photodarlington transistor	PCB
4.0 mm		EE-SY169		
		EE-SY169A		
		EE-SY201		
4.4 mm		EE-SY113	Phototransistor	
		EE-SY313	Photo IC (Dark-ON)	
		EE-SY413	Photo IC (Light-ON)	

Sensing distance	Appearance and dimensions (mm)	Model	Output	Terminals
5.0 mm		EE-SB5	Phototransistor	Soldering
		EE-SB5-B		PCB
		EE-SF5		Soldering
		EE-SF5-B		PCB
		EE-SY110		Photo IC (Dark-ON)
		EE-SY310		
11.0 mm		EE-SY410	Photo IC (Light-ON)	
		EE-SPY415	Photo IC (Light-ON)	

■ ACTUATOR

Appearance and dimensions (mm)	Model	Output	Terminals
	EE-SA102	Phototransistor	PCB
	EE-SA103		
	EE-SA104		
	EE-SA105		
	EE-SA401-P2	Photo IC (Light-ON)	Connector
	EE-SA407-P2		
	EE-SA107-P2	Phototransistor	

SELECTION GUIDE



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

OMRON[®]
OMRON ELECTRONICS, INC.
One East Commerce Drive
Schaumburg, IL 60173
1-800-55-OMRON

OMRON CANADA, INC.
885 Milner Avenue
Scarborough, Ontario M1B 5V8
416-286-6465