



Digitized Automation for a Changing World

Delta Smart Sensors



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 **DELTA**
Smarter. Greener. Together.

Photoelectric Sensor PS-R Series

Standard rectangular design, available in trimmer and TEACH types.
Senses light-absorption for positioning, counting and object detection, applicable in all industries

- Different range adjustment (Trimmer or TEACH)
- M3 mounting hole, easy to assemble
- IP67
- CE certification
- Electrical circuit protection

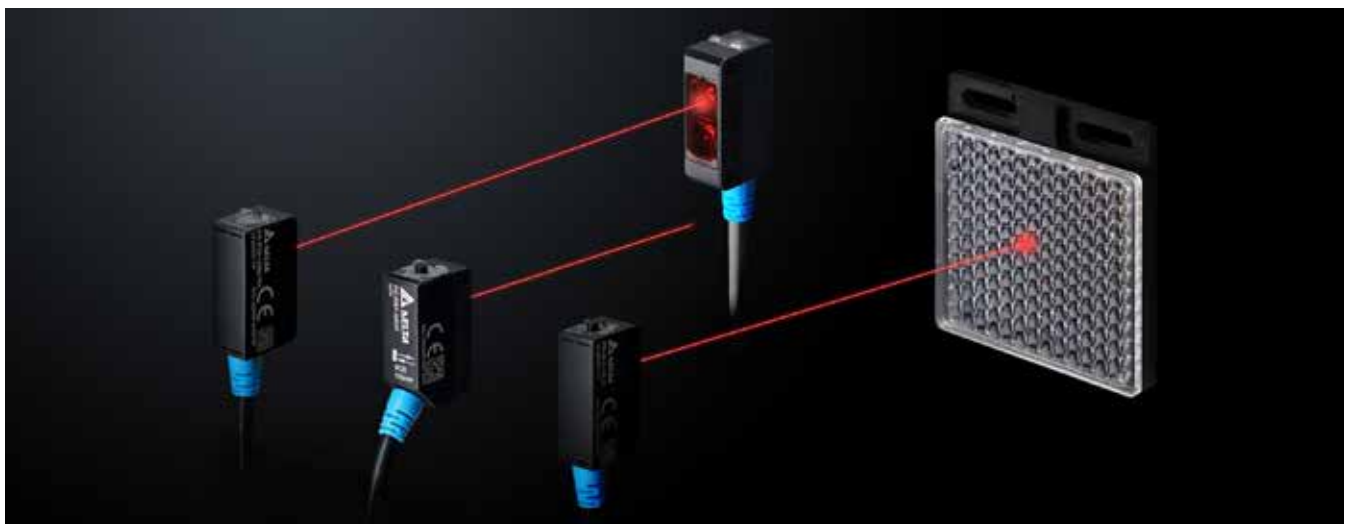


Appearance	Sensing Method	Sensing Distance	NPN	PNP	Connection
 Rectangular Type (Trimmer^{*1})	Small Spot Reflective ^{*2}	5~100 mm	PS-RS1-NS12	PS-RS1-PS12	2 m cable (3 wires)
	Diffuse Reflective	5~300 mm	PS-RR3-NS12	PS-RR3-PS12	
		1 m	PS-RR9-NS12	PS-RR9-PS12	
	Retro-reflective ^{*3}	4.2 m	PS-RL4-NS12	PS-RL4-PS12	
Through-beam	12 m	PS-RT9-NS12	PS-RT9-PS12		
Appearance	Sensing Method	Sensing Distance	NPN	PNP	Connection
 Rectangular Type (TEACH^{*1})	Small Spot Reflective ^{*2}	5~100 mm	PS-RS1-NS22	PS-RS1-US22	2 m cable (4 wires)
	Diffuse Reflective	5~300 mm	PS-RR3-NS22	PS-RR3-US22	
		5~1,000 mm	PS-RR9-NS22	PS-RR9-US22	
	Retro-reflective ^{*3}	4.2 m	PS-RL4-NS22	PS-RL4-US22	
Through-beam	10 m (Fixed)	PS-RT9-NSB2	PS-RT9-USB2		

*Note 1: Trimmer: Standard bracket included; TEACH: Optional bracket available (BK-PSR02)

*Note 2: Minimum spot 5mm in 100mm sensing distance

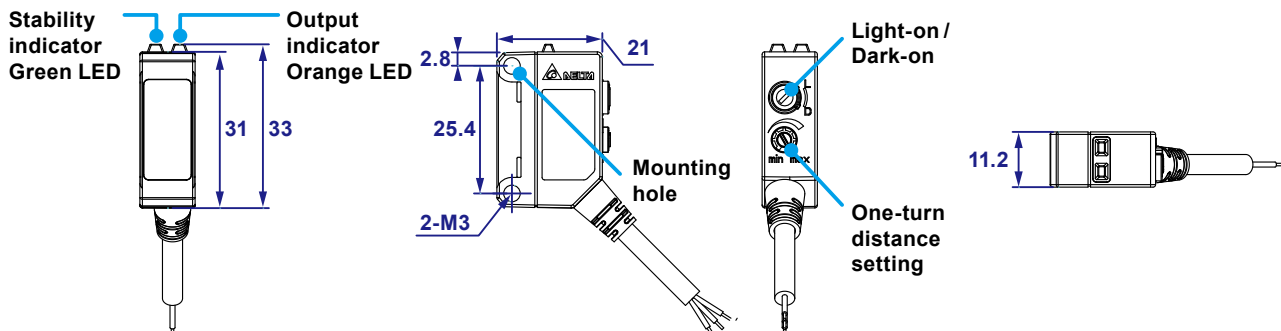
*Note 3: Retro-reflective: reflector included



Dimensions

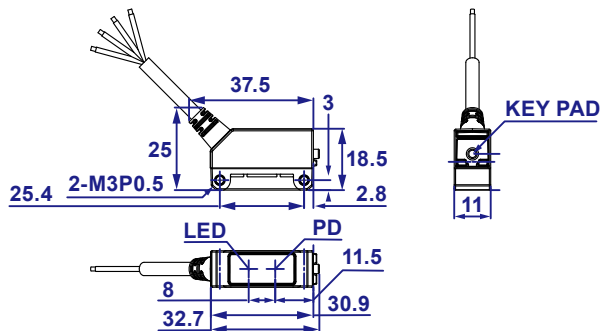
Unit : mm

Trimmer

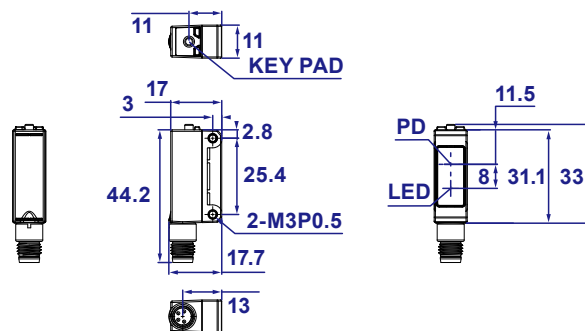


TEACH

Cable Type



Connector Type

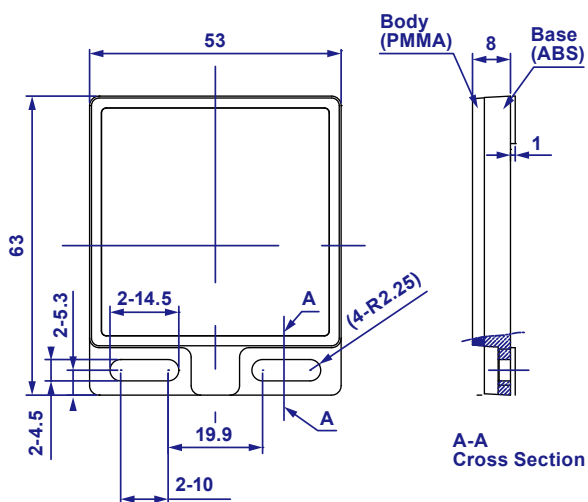


Accessories

Unit : mm

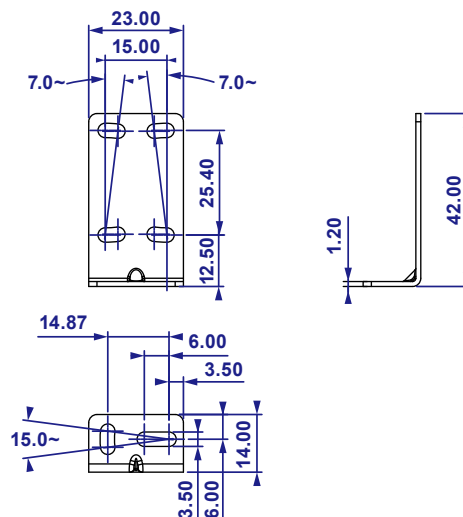
Reflector

Model RM-01



Bracket (Optional)

Model BK-PSR02





Photoelectric Sensor PS-F / PS-L Series

Lateral and flat designs meet the need for installation in small spaces. Senses light-absorption for positioning, counting, and object detection, applicable in all industries

- Slim and small, easy to assemble
- IP67
- CE certification
- Electrical circuit protection



Appearance	Sensing Method	Sensing Distance (Fixed)	NPN		PNP		Connection
			Light-on	Dark-on	Light-on	Dark-on	
 Flat Type	Diffuse Reflective	5~50 mm	PS-FR2-NLB2	PS-FR2-NDB2	PS-FR2-PLB2	PS-FR2-PDB2	2 m cable (3 wires)
	Diffuse Reflective BGS	5~30 mm	PS-FB1-NLB2	PS-FB1-NDB2	PS-FB1-PLB2	PS-FB1-PDB2	
	Retro-reflective*	1 m	PS-FL3-NLB2	PS-FL3-NDB2	PS-FL3-PLB2	PS-FL3-PDB2	
	Through-beam	1 m	PS-FT3-NLB2	PS-FT3-NDB2	PS-FT3-PLB2	PS-FT3-PDB2	
Appearance	Sensing Method	Sensing Distance (Fixed)	NPN		PNP		Connection
			Light-on	Dark-on	Light-on	Dark-on	
 Flat Type	Diffuse Reflective	5~50 mm	PS-LR2-NSB2		PS-LR2-USB2		2 m cable (4 wires)*
	Retro-reflective*	1 m	PS-LL3-NSB2		PS-LL3-USB2		
	Through-beam	1 m	PS-LT3-NSB2		PS-LT3-USB2		

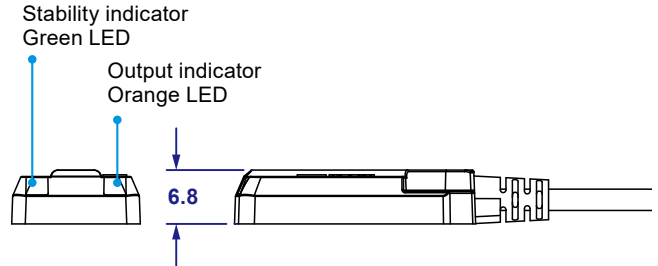
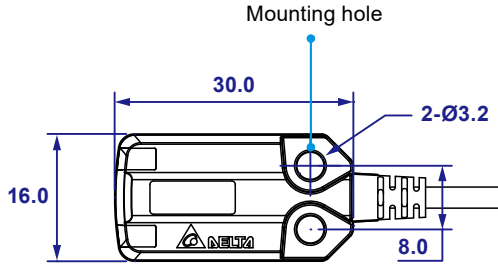
*Note: Retro-reflective: reflector included

*Note: 4 wires: Light-on, dark-on are switched by white wire.

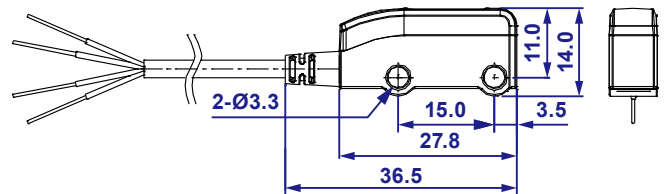
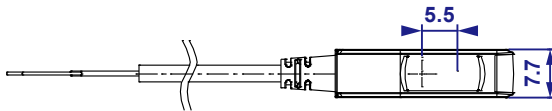
Dimensions

Unit : mm

Flat Type (PS-F)



Lateral Type (PS-L)

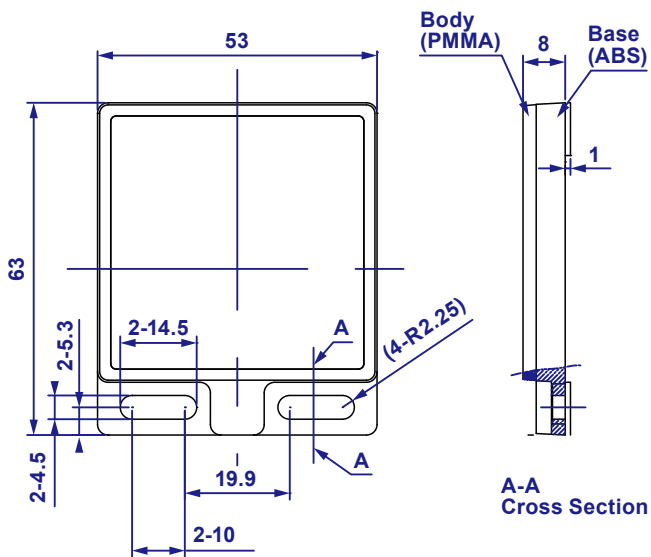


Accessories

Unit : mm

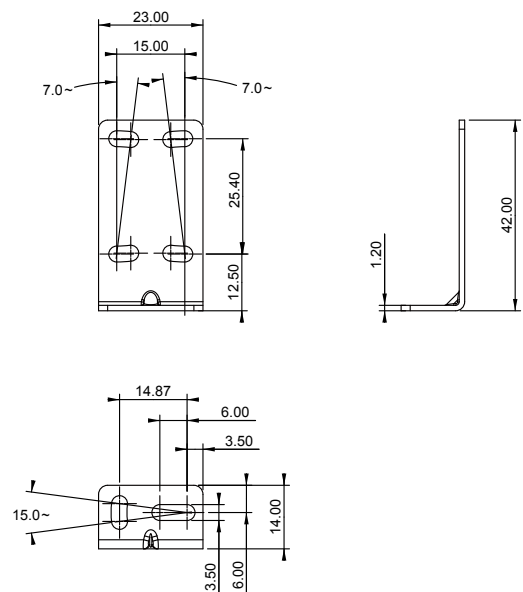
Reflector

Model RM-01



Bracket (Optional)

Model BK-PSR02




Photoelectric Sensor PS-M Series

Cylindrical design meets the need for installation in irregular shaped spaces. Senses the light-absorption for positioning, counting and object detection; applicable in all industries

- Standard size for mounting (M18)
- Setting via button
- IP67
- CE certification
- Electrical circuit protection



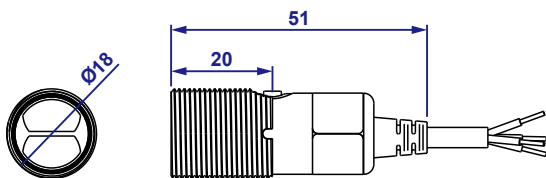
Appearance	Sensing Method	Sensing Distance	NPN	Push-pull	Connection
 Cylindrical Type (TEACH)	Diffuse Reflective	5~100 mm (Fixed)	PS-MR1-NSB2	PS-MR1-USB2	2 m cable (4 wires)*
			PS-MR1-NSBD	PS-MR1-USB2	M12 connector
		5~300 mm	PS-MR3-NS22	PS-MR3-US22	2 m cable (4 wires)*
			PS-MR3-NS2D	PS-MR3-US2D	M12 connector
		5~1,000 mm	PS-MR9-NS22	PS-MR9-US22	2 m cable (4 wires)*
			PS-MR9-NS2D	PS-MR9-US2D	M12 connector
	Retro-reflective*	4.2m	PS-ML4-NS22	PS-ML4-US22	2 m cable (4 wires)*
			PS-ML4-NS2D	PS-ML4-US2D	M12 connector
	Through-beam	5m (Fixed)	PS-MT5-NSB2	PS-MT5-USB2	2 m cable (4 wires)*
			PS-MT5-NSBD	PS-MT5-USB2	M12 connector

*Note: Retro-reflective: reflector included
 *Note: 4 wires: Light-on, dark-on are switched by white wire.

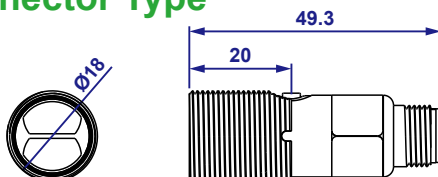
Dimensions

Unit : mm

Cable Type



Connector Type

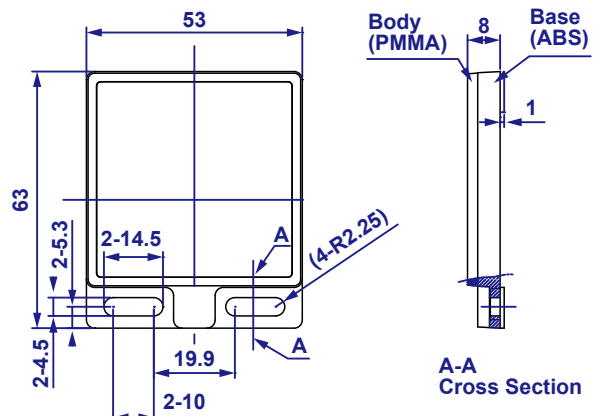


Accessories

Unit : mm

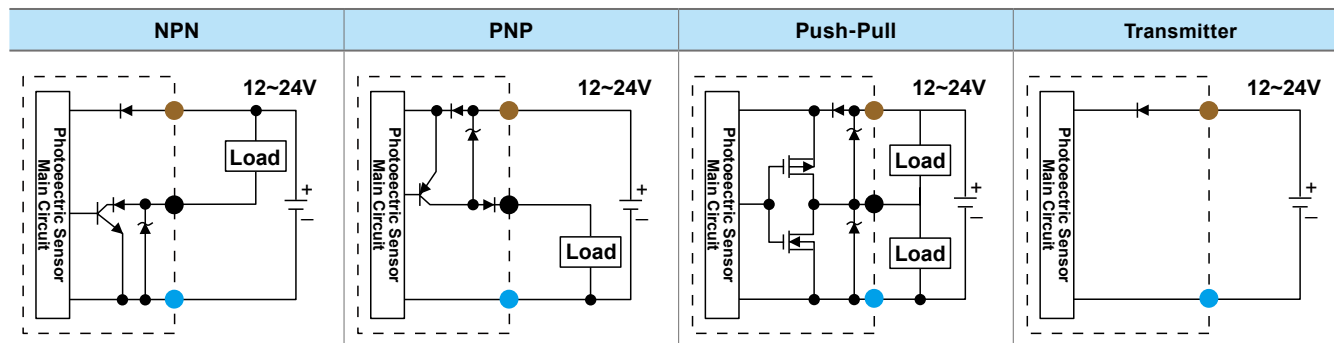
Reflector

Model RM-01

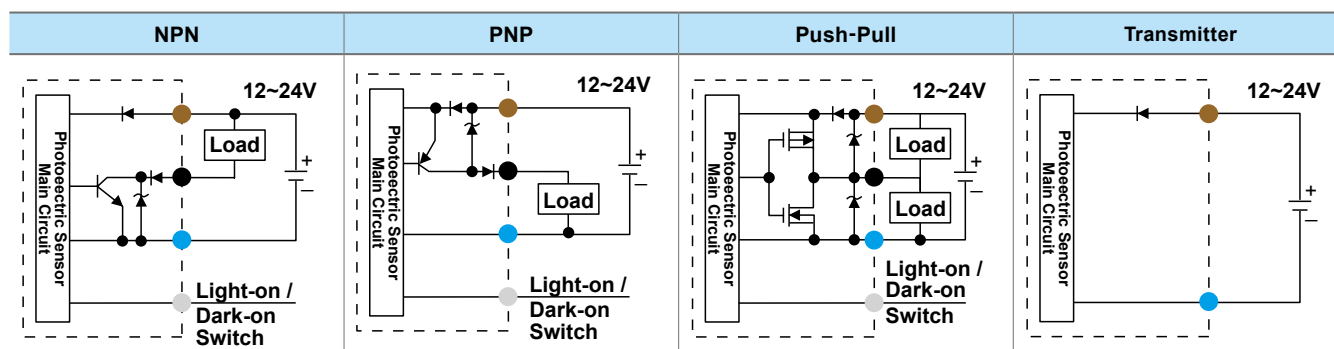


Input/Output Circuits

3 Wires



4 Wires





General Specifications


Model	PS-R	PS-M	PS-F	PS-L
Voltage Range	12~24 V _{DC} ± 10%			
Response Time	ON → OFF: 0.5ms; OFF → ON: 0.5ms			
Indicator	Output indicator (orange), stable operation indicator (green)			
Protection Circuit	Protection against reverse power connection, output overcurrent, power supply surge, output surge			
Operating Temperature	-25~55°C			
Storage Temperature	-25~75°C			
Ambient Humidity	30~85%			
Enclosure Rating	IP67			
Ambient Light Resistance	5,000lux or less			
Vibration Resistance	10~55Hz, 1.5 mm, 3 axes for 2 hours			
Shock Resistance	Max. 1,000 m/s ² , 3 axes, 6 directions and 3 times in each.			
Insulating Resistance	> 20MΩ (500 V _{DC})			
Withstand Voltage	1,000 V _{AC} 50/60Hz, 1 min			
Certifications	CE			

Photoelectric Sensor Specifications


Rectangular Type PS-R

Sensing Method			Diffuse Reflective			Retro-reflective	Through-beam
Type	Connection	Output	Small Spot	Standard	Long Distance	Standard	Standard
 Rectangular Type (Trimmer)	Cable	NPN	PS-RS1-NS12	PS-RR3-NS12	PS-RR9-NS12	PS-RL4-NS12	PS-RT9-NS12
		PNP	PS-RS1-PS12	PS-RR3-PS12	PS-RR9-PS12	PS-RL4-PS12	PS-RT9-PS12
 Rectangular Type (TEACH)	Cable	NPN	PS-RS1-NS22	PS-RR3-NS22	PS-RR9-NS22	PS-RL4-NS22	PS-RT9-NSB2 (Infrared)
		Push-pull	PS-RS1-US22	PS-RR3-US22	PS-RR9-US22	PS-RL4-US22	PS-RT9-USB2 (Infrared)
Sensing Distance			5~100mm	5~300mm	5~1,000mm	4.2m	10m
Output			Light-on/Dark-on				
Lighting Source			Red LED	Red LED	Infrared	Red LED	Red LED/Infrared
Power Consumption			Max. 20mA				Transmitter: Max. 6mA Receiver: Max.14mA
Material			Lens: PC ; Case: PBT				
Cable			PS-R Trimmer: 3 wires 2m PVC Cable (Through-beam: transmitter- 2 wires 2m PVC Cable) PS-R TEACH: 4 wires 2m PVC Cable (Through-beam: transmitter- 2 wires 2m PVC Cable), M8 water-proof connector				
Dimensions			Trimmer: 11.2 × 21 × 33mm TEACH (Cable Type): 11 × 17 × 41.5mm TEACH (M8 Connector Type): 11 × 17 × 44.2mm				
Weight			55g				


Cylindrical Type PS-M

Sensing Method			Diffuse Reflective			Retro-reflective	Through-beam
Type	Connection	Output	Small Spot	Standard	Long Distance	Standard	Standard
 Cylindrical Type (TEACH)	Cable	NPN	PS-MR1-NSB2	PS-MR3-NS22	PS-MR9-NS22	PS-ML4-NS22	PS-MT5-NSB2
		Push-pull	PS-MR1-USB2	PS-MR3-US22	PS-MR9-US22	PS-ML4-US22	PS-MT5-USB2
	M12 Connector	NPN	PS-MR1-NSBD	PS-MR3-NS2D	PS-MR9-NS2D	PS-ML4-NS2D	PS-MT5-NSBD
		Push-pull	PS-MR1-USBD	PS-MR3-US2D	PS-MR9-US2D	PS-ML4-US2D	PS-MT5-USBD
Sensing Distance			5~100mm	5~300mm	5~1,000mm	4.2m	5m
Output			Light-on/Dark-on				
Lighting Source			Infrared (850nm)				Red LED (630nm)
Power Consumption			Max. 20mA				Transmitter: Max. 6mA Receiver: Max.14mA
Material			Lens: PC ; Case: PBT				
Cable			4 wires 2m PVC Cable (Through-beam: transmitter - 2 wires 2m PVC Cable), M12 water-proof connector				
Dimensions			Cable: M18 × 51.0mm M12 Connector: M18 × 49.3mm				
Weight			Cable Connection: 67g; M8 Connector: 19g				

Flat Type PS-F

Sensing Method			Diffuse Reflective				Retro-reflective		Through-beam	
Type	Connection	Output	Standard		Background Suppression		Standard		Standard	
 Flat Type (Fixed)	Cable	NPN	PS-FR2- NLB2	PS-FR2- NDB2	PS-FB1- NLB2	PS-FB1- NDB2	PS-FL3- NLB2	PS-FL3- NDB2	PS-FT3- NLB2	PS-FT3- NDB2
		PNP	PS-FR2- PLB2	PS-FR2- PDB2	PS-FB1- PLB2	PS-FB1- PDB2	PS-FL3-- PLB2	PS-FL3-- PDB2	PS-FT3-- PLB2	PS-FT3-- PDB2
Sensing Distance			5~50mm		5~30mm		25~1,000mm		1m	
Output			Light-on	Dark-on	Light-on	Dark-on	Light-on	Dark-on	Light-on	Dark-on
Lighting Source			Red LED (630nm)							
Power Consumption			Max. 20mA		Max. 30mA		Max. 20mA		Transmitter: Max. 6mA Receiver: Max.14mA	
Material			Lens: PC ; Case: PBT							
Cable			3 wires 2m PVC Cable (Through-beam: transmitter - 2 wires 2m PVC Cable)							
Dimensions			16 × 30 × 6.8mm							
Weight			25g							

Lateral Type PS-L

Sensing Method			Diffuse Reflective	Retro-reflective	Through-beam
Type	Connection	Output	Standard	Standard	Standard
 Lateral Type (Fixed)	Cable	NPN	PS-LR2-NSB2	PS-LL3-NSB2	PS-LT3-NSB2
		Push-pull	PS-LR2-USB2	PS-LL3-USB2	PS-LT3-USB2
Sensing Distance			5~50mm	25~1,000mm	1m
Output			Light-on/Dark-on	Light-on/Dark-on	Light-on/Dark-on
Lighting Source			Red LED (630nm)		
Power Consumption			Max. 20mA		Transmitter: Max. 6mA Receiver: Max.14mA
Material			Lens: PC ; Case: PBT		
Cable			4 wires 2m PVC Cable (Through-beam: transmitter - 2 wires 2m PVC Cable)		
Dimensions			14 × 27 × 7mm		
Weight			26g		