



Automation for a Changing World

Delta Smart Sensors



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DELTA
Smarter. Greener. Together.

Inductive Proximity Sensor M12 / M18 Series

- ▶ Nickel coated brass
- ▶ Standard sensors for detecting ferrous metals
- ▶ IP67
- ▶ CE certification
- ▶ Electrical circuit protection

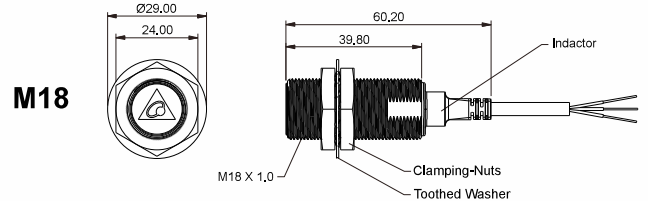
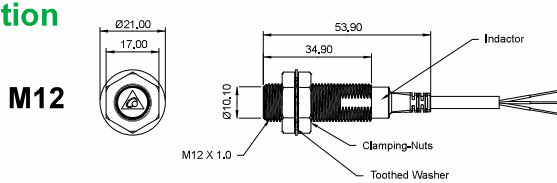


Appearance	Sensing Distance	NPN		PNP	
		NO	NC	NO	NC
M12 Isolation	2 mm	IS-E1202-BNOB2	IS-E1202-BNCB2	IS-E1202-BPOB2	IS-E1202-BPCB2
	4 mm	IS-E1204-BNOB2	IS-E1204-BNCB2	IS-E1204-BPOB2	IS-E1204-BPCB2
M12 Non-isolation	4 mm	IS-N1204-BNOB2	IS-N1204-BNCB2	IS-N1204-BPOB2	IS-N1204-BPCB2
	8 mm	IS-N1208-BNOB2	IS-N1208-BNCB2	IS-N1208-BPOB2	IS-N1208-BPCB2
M18 Isolation	5 mm	IS-E1805-BNOB2	IS-E1805-BNCB2	IS-E1805-BPOB2	IS-E1805-BPCB2
	8 mm	IS-E1808-BNOB2	IS-E1808-BNCB2	IS-E1808-BPOB2	IS-E1808-BPCB2
M18 Non-isolation	8 mm	IS-N1808-BNOB2	IS-N1808-BNCB2	IS-N1808-BPOB2	IS-N1808-BPCB2
	12 mm	IS-N1812-BNOB2	IS-N1812-BNCB2	IS-N1812-BPOB2	IS-N1812-BPCB2

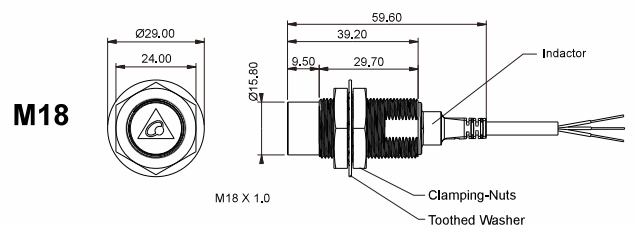
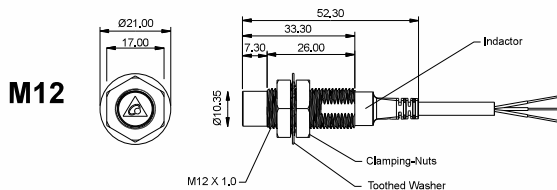
Dimensions

Unit : mm

• Isolation



• Non-Isolation



Specifications

Inductive Proximity Sensor	M12				M18			
	Isolation		Non-Isolation		Isolation		Non-Isolation	
Type	Isolation		Non-Isolation		Isolation		Non-Isolation	
Model	IS-E1202	IS-E1204	IS-N1204	IS-N1208	IS-E1805	IS-E1808	IS-N1808	IS-N1812
Sensing Distance	2 mm ± 10%	4 mm ± 10%	4 mm ± 10%	8 mm ± 10%	5 mm ± 10%	8 mm ± 10%	8 mm ± 10%	12 mm ± 10%
Standard Target	Iron, 12 × 12 × 1 mm			Iron, 24 × 24 × 1 mm	Iron, 18 × 18 × 1 mm	Iron, 24 × 24 × 1 mm		Iron, 36 × 36 × 1 mm
Response Frequency	1.0kHz	1.0kHz	1.0kHz	1.0kHz	1.0kHz	1.0kHz	1.0kHz	1.0kHz
Weight	65 g				85 g			

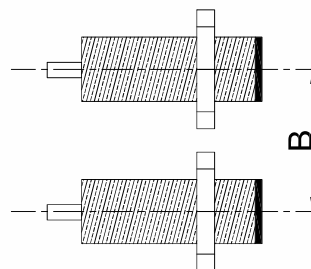
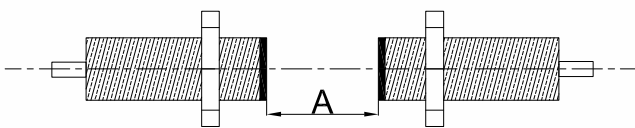
Inductive Proximity Sensor	M12 / M18 Common Specifications				
Voltage Range	12 ~ 24 V _{DC} ± 10%				
Different Travel	10% max. of sensing distance	Detectable Object	Ferrous metal (the sensing distance decreases with no-ferrous metal)		
Current Consumption	15 mA max.	Vibration Resistance	10 ~ 55 Hz, 1.5mm, 3 axes for 2 hours		
Control Output	Load Current	200 mA max.	Shock Resistance	Max. 1000 m/s ² , 3 axes, 6 directions and 3 times in each	
	Residual Voltage	2 V max. (load current: 200 mA, cable length: 2m)	Insulating Resistance	50 MΩ or more (500VDC) between current-carrying parts and case	
Indicators	Operation indicator (red)		Withstand Voltage	1,000 V _{AC} 50 / 60 Hz 1 min	
Operation Mode	NPN: NO / NC; PNP: NO / NC		Cables	3 Wires 2m PVC cable M12 connector with 200mm cable	
Protection Circuits	Protection against reverse power connection, output overcurrent, power supply surge, output surge		Materials	Case	Nickel coated brass
Ambient Temperature	Operating: -25 ~ 70 °C / Storage: -40 ~ 80 °C (with no icing or condensation)			Sensing Surface	PBT
Ambient Humidity	≤ 50% RH (at 70 °C)			Clamping Nuts	Nickel coated brass
Temperature Influence	±10% max. of sensing distance at + 23°C in the temperature range of -25 ~ +70°C			Toothed Washer	Zinc-plated iron
Enclosure Rating	IP67		Certifications	CE	

Mutual Interference

	Isolation	Non-Isolation
A	≥ 3d	≥ 5d
B	≥ 3d	≥ 5d

▶ When installing sensors face to face or in parallel, be sure to maintain the minimum distances in the following table to avoid mutual interference.



d: Outside DIM. Sn: Sensing distance Units: mm



Photoelectric Sensor PS-R Series

- ▶ 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 / Push-pull	Connection
 Rectangular Type (Trimmer)	Small Spot Reflective	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	2 m cable (3 wires)
		1 m	PS-RR9-NS12	PS-RR9-PS12	
	Retro-reflective	4.2 m	PS-RL4-NS12	PS-RL4-PS12	2 m cable (3 wires)
Through-beam	12 m	PS-RT9-NS12	PS-RT9-PS12	2 m cable (3 wires)	
 Rectangular Type (TEACH)	Small Spot Reflective	5 ~ 100 mm	PS-RS1-NS22	PS-RS1-US22	2 m cable (4 wires)
			PS-RS1-NS2B	PS-RS1-US2B	M8 connector
	Diffuse Reflective	5 ~ 300 mm	PS-RR3-NS22	PS-RR3-US22	2 m cable (4 wires)
			PS-RR3-NS2B	PS-RR3-US2B	M8 connector
		5 ~ 1,000 mm	PS-RR9-NS22	PS-RR9-US22	2 m cable (4 wires)
			PS-RR9-NS2B	PS-RR9-US2B	M8 connector
	Retro-reflective	4.2 m	PS-RL4-NS22	PS-RL4-US22	2 m cable (4 wires)
			PS-RL4-NS2B	PS-RL4-US2B	M8 connector
	Through-beam	10 m (Fixed)	PS-RT5-NSB2	PS-RT5-USB2	2 m cable (4 wires)
			PS-RT5-NSBB	PS-RT5-USBB	M8 connector

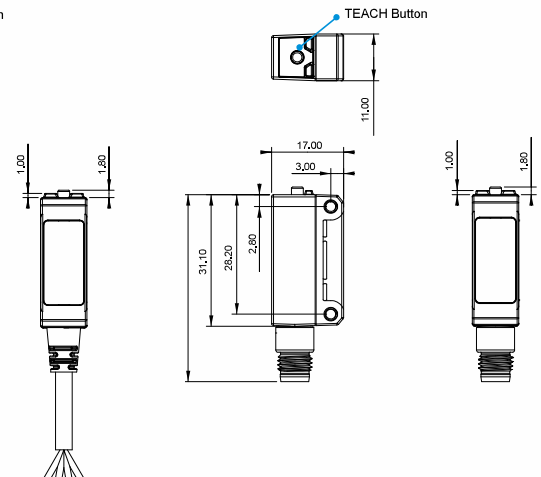
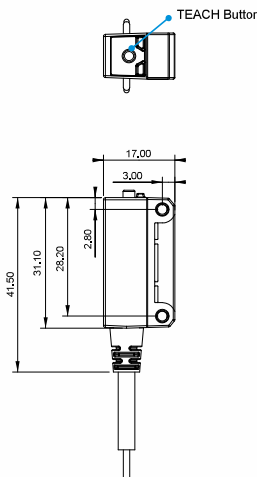
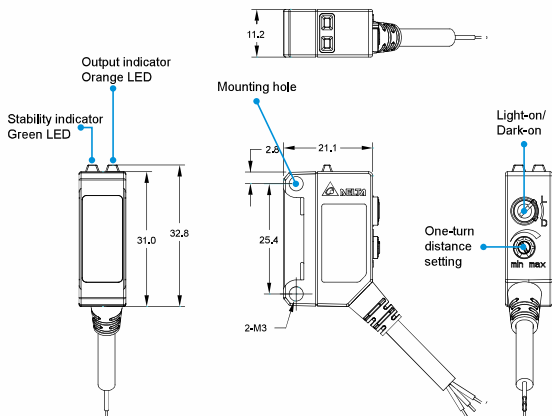
Dimensions Unit : mm

• Trimmer

• TEACH

Cable Type



Connector Type



Photoelectric Sensor PS-F / PS-L Series

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



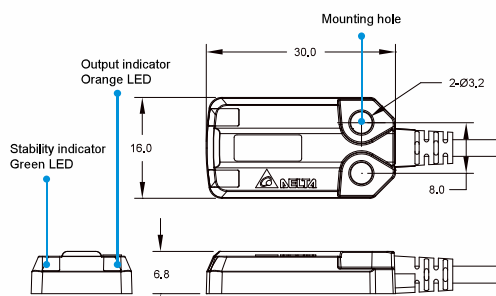
Appearance	Sensing Method	Sensing Distance (Fixed)	NPN		PNP		Connection
			Light-on	Dark-on	Light-on	Dark-on	
 Flat Type	Diffuse Reflective	5~50 mm	PS-FR2-NLB2	PS-FR2-NDB2	PS-FR2-PLB2	PS-FR2-PDB2	2 m cable (3 wires)
	Diffuse Reflective BGS	5~30 mm	PS-FB1-NLB2	PS-FB1-NDB2	PS-FB1-PLB2	PS-FB1-PDB2	2 m cable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

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

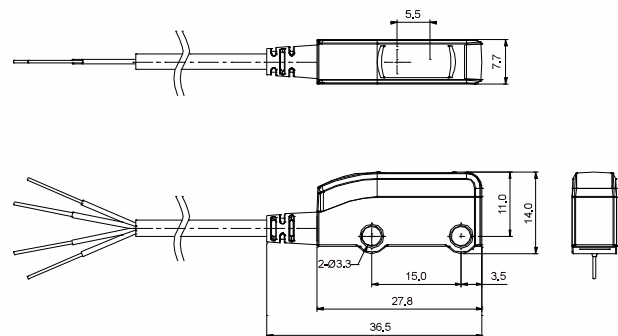
Dimensions

Unit : mm

Flat Type (PS-F)




Lateral Type (PS-L)



Photoelectric Sensor PS-M Series

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



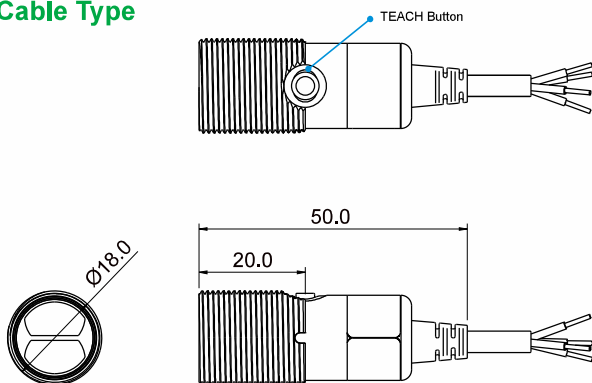
Appearance	Sensing Method	Sensing Distance	NPN	Push-pull	Connection
 Cylindrical Type (TEACH)	Diffuse Reflective	5 ~ 100mm (Fixed)	PS-MR1-NSB2	PS-MR1-USB2	2 m cable (4 wires)*
			PS-MR1-NSBD	PS-MR1-USBD	M12 connector
		5 ~ 300mm	PS-MR3-NS22	PS-MR3-US22	2 m cable (4 wires)*
			PS-MR3-NS2D	PS-MR3-US2D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

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

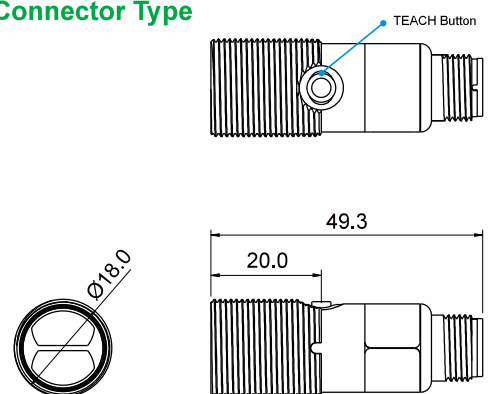
Dimensions

Unit : mm

• Cable Type

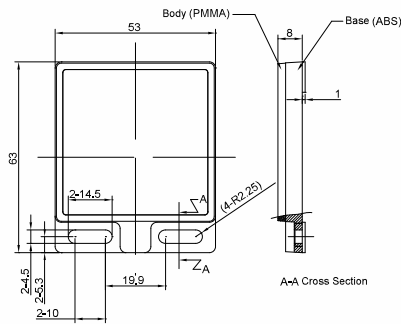


• Connector Type

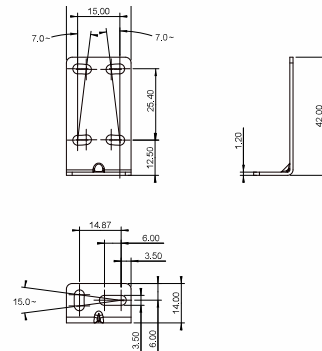


Accessories

- Reflector

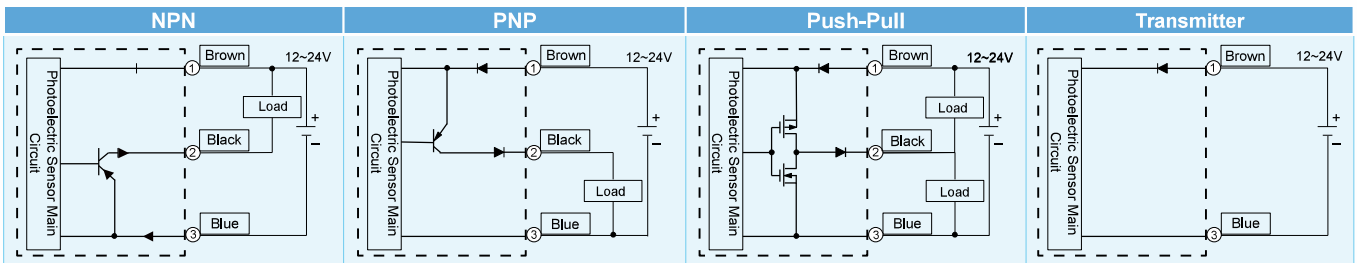


- Bracket (Rectangular type)

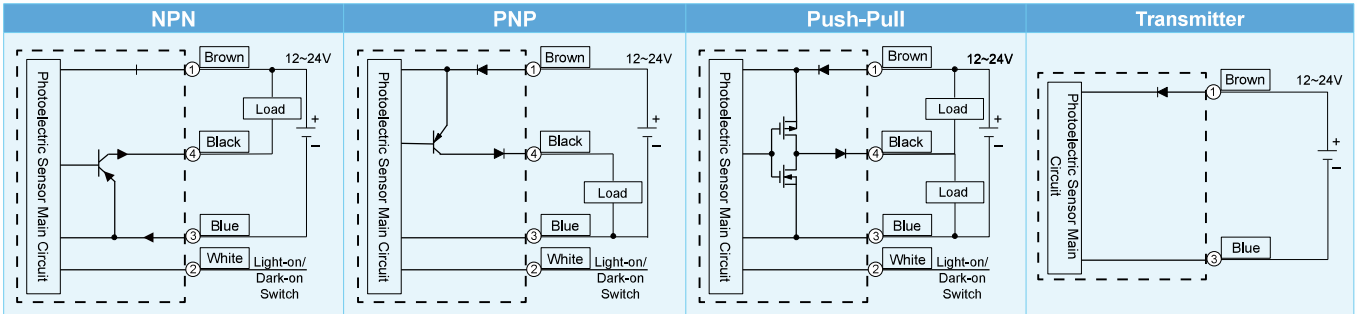


Input / Output Circuits

- 3 Wires




- 4 Wires





Common Specifications


Photoelectric Sensor	
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 °C ~ 55°C
Storage Temperature	-25 °C ~ 75°C
Ambient Humidity	30 ~ 85%
Enclosure Rating	IP67
Ambient Light Resistance	5,000 lux or less
Vibration Resistance	10~55 Hz, 1.5mm, 3 axes for 2 hours
Shock Resistance	Max. 1,000 m/s ² , 3 axes, 6 directions and 3 times in each.
Insulating Resistance	20 MΩ or more (500V _{DC})
Withstand Voltage	1,000 VAC 50 / 60 Hz 1min
Certifications	CE


Photoelectric Sensor Specifications

Appearance		Small Spot Reflective				Diffuse Reflective			
	Sensing Method	Small Spot Reflective				Diffuse Reflective			
	Model	2 m Cable		PS-RS1-NS12	PS-RS1-PS12	PS-RR3-NS12	PS-RR3-PS12		
	Sensing Distance	5 ~ 100 mm				5 ~ 300 mm			
	Operation Output	NPN		PNP		NPN		PNP	
		Light-on / Dark-on				Light-on / Dark-on			
	Light Source	Red LED (630 nm)							
	Power Consumption	20 mA MAX							
	Material								
	Cables	3 Wires 2 m PVC Cable (Through)							
	Dimensions								
Weight									

Appearance		Small Spot Reflective				Diffuse Reflective			
	Sensing Method	Small Spot Reflective				Diffuse Reflective			
	Model	2 m Cable		PS-RS1-NS22	PS-RS1-US22	PS-RR3-NS22	PS-RR3-US22		
		M8 Connector		PS-RS1-NS2B	PS-RS1-US2B	PS-RR3-NS2B	PS-RR3-US2B		
	Sensing Distance	5 ~ 100 mm				5 ~ 300 mm			
	Operation Output	NPN		Push-pull		NPN		Push-pull	
		Light-on / Dark-on				Light-on / Dark-on			
	Light Source	Red LED (630 nm)							
	Power Consumption	20 mA MAX							
	Material								
	Cables	4 Wires 2 m PVC Cable							
Dimensions	Cable Type: 3								
Weight									

Appearance		Diffuse Reflective				Diffuse Reflective - Background Suppress					
	Sensing Method	Diffuse Reflective				Diffuse Reflective - Background Suppress					
	Model	2 m Cable		PS-FR2-NLB2	PS-FR2-NDB2	PS-FR2-PLB2	PS-FR2-PDB2	PS-FB1-NLB2	PS-FB1-NDB2	PS-FB1-PLB2	PS-FB1-PDB2
	Sensing Distance	5 ~ 50 mm				5 ~ 30 mm					
	Operation Output	NPN		PNP		NPN		PNP			
		Light-on	Dark-on	Light-on	Dark-on	Light-on	Dark-on	Light-on	Dark-on		
	Light Source										
	Power Consumption	20 mA MAX				30 mA MAX					
	Material										
	Cables	3 Wires 2 m PVC Cable (Through)									
	Dimensions										
Weight											

Appearance		Diffuse Reflective					
	Sensing Method	Diffuse Reflective					
	Model	2 m Cable (4 Wires)		PS-LR2-NSB2	PS-LR2-USB2	PS-LR2-NSB2	PS-LR2-USB2
	Sensing Distance	5 ~ 50 mm					
	Operation Output	NPN		Push-pull			
		Light-on / Dark-on					
	Light Source						
	Power Consumption	20 mA MAX					
	Material						
	Cables	4 Wires 2 m PVC Cable					
	Dimensions						
Weight							

Appearance		Diffuse Reflective						
	Sensing Method	Diffuse Reflective						
	Model	2 m Cable		PS-MR1-NSB2	PS-MR1-USB2	PS-MR3-NS22	PS-MR3-US22	
		M12 Connector		PS-MR1-NSBD	PS-MR1-USBD	PS-MR3-NS2D	PS-MR3-US2D	
	Sensing Distance	5 ~ 100 mm				5 ~ 300 mm		
	Operation Output	NPN		Push-pull		NPN		Push-pull
		Light-on / Dark-on				Light-on / Dark-on		
	Light Source							
	Power Consumption	20 mA MAX						
	Material							
	Cables	4 Wires 2 m PVC Cable						
Dimensions	M18, Cable							
Weight								

Rectangular Type (Trimmer) PS-R					
Type		Retro-reflective		Through-beam	
PS-RR9-NS12	PS-RR9-PS12	PS-RL4-NS12	PS-RL4-PS12	PS-RT9-NS12	PS-RT9-PS12
5 ~ 1,000 mm		4.2 m		5 m	
NPN	PNP	NPN	PNP	NPN	PNP
Light-on / Dark-on		Light-on / Dark-on		Light-on / Dark-on	
Infrared LED (850 nm)		Red LED (630 nm)		Red LED (630 nm)	
Lens: PC; Case: PBT; Wire: PC		Transmitter: 6 mA Max; Receiver: 14 mA Max		Transmitter: 6 mA Max; Receiver: 14 mA Max	
Through-beam: Transmitter- 2 Wires 2 m PVC Cable), M8 Connector (200 mm Cable)					
32.8 × 11.2 × 21.1 mm					
55g					

Rectangular Type (TEACH) PS-R					
Type		Retro-reflective		Through-beam	
PS-RR9-NS22	PS-RR9-US22	PS-RL4-NS22	PS-RL4-US22	PS-RT5-NSB2	PS-RT5-USB2
PS-RR9-NS2B	PS-RR9-US2B	PS-RL4-NS2B	PS-RL4-US2B	PS-RT5-NSBB	PS-RT5-USBB
5 ~ 1,000 mm		4.2 m		5 m	
NPN	Push-pull	NPN	Push-pull	NPN	Push-pull
Light-on / Dark-on		Light-on / Dark-on		Light-on / Dark-on	
Infrared LED (850 nm)		Red LED (630 nm)		Infrared LED (850 nm)	
Lens: PC; Case: PBT; Wire: PC		Transmitter: 6 mA Max; Receiver: 14 mA Max		Transmitter: 6 mA Max; Receiver: 14 mA Max	
Through-beam: Transmitter- 2 Wires 2 m PVC Cable), M8 Connector					
32.8 × 11.2 × 17 mm; Connector Type: 32.8 × 11.2 × 17 mm					
Cable Type: 67g; Connector Type: 19g					

Flat Type (Fixed)								
Type			Retro-reflective			Through-beam		
PS-FB1-PDB2	PS-FL3-NLB2	PS-FL3-NDB2	PS-FL3-PLB2	PS-FL3-PDB2	PS-FT3-NLB2	PS-FT3-NDB2	PS-FT3-PLB2	PS-FT3-PDB2
25 ~ 1,000 mm			20 mA MAX			1 m		
NPN	NPN	PNP	NPN	PNP	NPN	NPN	PNP	PNP
Dark-on	Light-on	Dark-on	Light-on	Dark-on	Light-on	Dark-on	Light-on	Dark-on
Red LED (630nm)			Transmitter: 6 mA Max; Receiver: 14 mA Max			Transmitter: 6 mA Max; Receiver: 14 mA Max		
Lens: PC; Case: PBT; Wire: PC			Transmitter: 6 mA Max; Receiver: 14 mA Max			Transmitter: 6 mA Max; Receiver: 14 mA Max		
Through-beam: Transmitter- 2 Wires 2 m PVC Cable), M8 Connector (200mm Cable)								
16 × 30 × 6.8mm								
25g								

Lateral Type (Fixed)			
Retro-reflective		Through-beam	
PS-LL3-NSB2	PS-LL3-USB2	PS-LT3-NSB2	PS-LT3-USB2
25 ~ 1,000 mm		1 m	
NPN	Push-pull	NPN	Push-pull
Light-on / Dark-on		Light-on / Dark-on	
Red LED (630 nm)		Transmitter: 6 mA Max; Receiver: 14 mA Max	
Lens: PC; Case: PBT		Transmitter: 6 mA Max; Receiver: 14 mA Max	
Through-beam: Transmitter- 2 Wires 2 m PVC Cable)			
14 × 27 × 7 mm			
26g			

Cylindrical Type (TEACH)					
Type		Retro-reflective		Through-beam	
PS-MR9-NS22	PS-MR9-US22	PS-ML4-NS22	PS-ML4-US22	PS-MT5-NSB2	PS-MT5-USB2
PS-MR9-NS2D	PS-MR9-US2D	PS-ML4-NS2D	PS-ML4-US2D	PS-MT5-NSBD	PS-MT5-USBD
5 ~ 1,000 mm		4.2 m		5 m	
NPN	Push-pull	NPN	Push-pull	NPN	Push-pull
Light-on / Dark-on		Light-on / Dark-on		Light-on / Dark-on	
Infrared LED (850 nm)		Red LED (630 nm)		Red LED (630 nm)	
Lens: PC; Case: PBT; Wire: PC		Transmitter: 6 mA Max; Receiver: 14 mA Max		Transmitter: 6 mA Max; Receiver: 14 mA Max	
Through-beam: Transmitter- 2 Wires 2 m PVC Cable), M12 Connector					
Type (Length): 50 mm; Connector Type (Length):50 mm					
Cable Type: 67g; Connector Type: 19g					