



Photoelectric Sensors

Ultra Slim · Ultra Compact · Compact Long Sensing Distance, Built-in Amplifier Type Photoelectric Sensor / Compact · Slim · General-Purpose, Built-in Amplifier Type Photoelectric Sensor / Cylindrical · Cylindrical, Long Sensing Distance, One-push Mount Type Photoelectric Sensor /

Series	Sensing Type	Sensing Distance	Sensing Target	Light Source	Response Time	Power Supply	Current Consumption And Power Consumption	Sensitivity Adjustment	Operation Mode
Ultra Slim, Built-in Amplifier Type Photoelectric Sensor BTF Series <Diffuse reflective/ BGS reflective type>  Through-beam type : W13×H19×L4.6mm Diffuse reflective type/ BGS reflective type : W13×H24×L4.6mm	Through-beam type	1m	Opaque material of min. Ø2mm	Red LED (650nm)	Max. 1ms	12-24VDC	Emitter/Receiver : Max. 20mA	—	Light ON
									Dark ON
	Diffuse reflective type	5 to 30mm	Opaque, Translucent material (min. sensing target: Ø0.2mm) ^{※1}	Red LED (650nm)	Max. 1ms	12-24VDC	Max. 20mA	—	Light ON
									Dark ON
	BGS reflective type	1 to 15mm	Opaque, Translucent material (min. sensing target: non-illuminated objects of Ø0.2mm) ^{※1}	Red LED (650nm)	Max. 1ms	12-24VDC	Max. 20mA	—	Light ON
									Dark ON

※1. Based on 10mm sensing distance.

Ultra Compact, Built-in Amplifier Type Photoelectric Sensor BTS Series <Retroreflective/ Convergent reflective type>  Through-beam type : W7.2×H18.6×L9.5mm Retroreflective type/ Convergent reflective type : W7.2×H24.6×L10.8mm	Through-beam type	1m	Opaque material of min. Ø2mm	Red LED (650nm)	Max. 1ms	12-24VDC	Emitter/Receiver : Max. 20mA	—	Light ON
									Dark ON
	Retroreflective type	10 to 200mm (MS-6)	Opaque material of min. Ø27mm (min. sensing target: opaque material of Ø2mm) ^{※1}	Red LED (650nm)	Max. 1ms	12-24VDC	Max. 20mA	—	Light ON
									Dark ON
	Convergent reflective type	5 to 30mm	Opaque, Translucent material (min. sensing target: Ø0.15mm) ^{※2}	Red LED (650nm)	Max. 1ms	12-24VDC	Max. 20mA	—	Light ON
									Dark ON
5 to 15mm		Opaque, Translucent material (min. sensing target: Ø0.15mm) ^{※2}	Red LED (650nm)	Max. 1ms	12-24VDC	Max. 20mA	—	Light ON	
								Dark ON	



※1. Based on 100mm sensing distance.

※2. Based on 10mm sensing distance.

Control Output	Timer Function	Connection	Environment		Protection Structure	Approval	Model
			Ambient Illumination	Ambient Temperature			
■: Type No-mark: NPN open collector P: PNP open collector	—	Cable type (Ø2.5, 2m)	Sunlight : Max. 10,000lx, Incandescent lamp : Max. 3,000lx (received illumination)	-25 to 55°C	IP67	CE	BTF1M-TDTL-■
							BTF1M-TDTD-■
■: Type No-mark: NPN open collector P: PNP open collector	—	Cable type (Ø2.5, 2m)	Sunlight : Max. 10,000lx, Incandescent lamp : Max. 3,000lx (received illumination)	-25 to 55°C	IP67	CE	BTF30-DDTL-■
							BTF30-DDTD-■
■: Type No-mark: NPN open collector P: PNP open collector	—	Cable type (Ø2.5, 2m)	Sunlight : Max. 10,000lx, Incandescent lamp : Max. 3,000lx (received illumination)	-25 to 55°C	IP67	CE	BTF15-BDTL-■
							BTF15-BDTD-■
■: Type No-mark: NPN open collector P: PNP open collector	—	Cable type (Ø2.5, 2m)	Sunlight : Max. 10,000lx, Incandescent lamp : Max. 3,000lx (received illumination)	-20 to 55°C	IP67	CE	BTS1M-TDTL-■
							BTS1M-TDTD-■
■: Type No-mark: NPN open collector P: PNP open collector	—	Cable type (Ø2.5, 2m)	Sunlight : Max. 10,000lx, Incandescent lamp : Max. 3,000lx (received illumination)	-20 to 55°C	IP67	CE	BTS200-MDTL-■
							BTS200-MDTD-■
■: Type No-mark: NPN open collector P: PNP open collector	—	Cable type (Ø2.5, 2m)	Sunlight : Max. 10,000lx, Incandescent lamp : Max. 3,000lx (received illumination)	-20 to 55°C	IP67	CE	BTS30-LDTL-■
							BTS30-LDTD-■
■: Type No-mark: NPN open collector P: PNP open collector	—	Cable type (Ø2.5, 2m)	Sunlight : Max. 10,000lx, Incandescent lamp : Max. 3,000lx (received illumination)	-20 to 55°C	IP67	CE	BTS15-LDTL-■
							BTS15-LDTD-■

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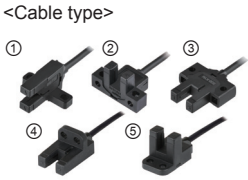
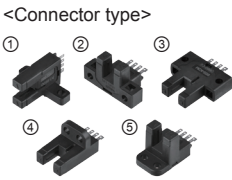

Ultra Slim · Ultra Compact · Compact Long Sensing Distance, Built-in Amplifier Type Photoelectric Sensor / Compact · Slim · General-Purpose, Built-in Amplifier Type Photoelectric Sensor / Cylindrical · Cylindrical, Long Sensing Distance, One-push Mount Type Photoelectric Sensor /

Series	Sensing Type	Sensing Distance	Sensing Target	Light Source	Response Time	Power Supply	Current Consumption And Power Consumption	Sensitivity Adjustment	Operation Mode
Compact, Long Sensing Distance, Built-in Amplifier Type Photoelectric Sensor BJ Series <Cable type>  <Connector type>  Through-beam type/ Retroreflective type/ Diffuse reflective type/ BGS reflective type/ Narrow beam reflective type : W10.6×H32×L20mm	Through-beam type	15m	Opaque material of min. Ø12mm	Infrared LED (850nm)	Max. 1ms	12-24VDC	Emitter/Receiver : Max. 20mA	Built-in VR	Light ON/Dark ON (set by volume)
		10m	Opaque material of min. Ø12mm	Red LED (660nm)					
		7m	Opaque material of min. Ø8mm	Red LED (650nm)					
	Retroreflective type (built-in polarizing filter)	0.1 to 3m (MS-2A)	Opaque material of min. Ø75mm	Red LED (660nm)	Max. 1ms	12-24VDC	Max. 30mA	Built-in VR	Light ON/Dark ON (set by volume)
	Diffuse reflective type	1m	Opaque, Translucent material	Infrared LED (850nm)	Max. 1ms	12-24VDC	Max. 30mA	Built-in VR	Light ON/Dark ON (set by volume)
		300mm	Opaque, Translucent material	Red LED (660nm)					
		100mm	Opaque, Translucent material	Infrared LED (850nm)					
		30mm	Opaque, Translucent material	Infrared LED (850nm)	Max. 1ms	12-24VDC	Max. 30mA	—	Light ON
		15mm	Translucent material (glass)						
	BGS reflective type	10 to 30mm	Opaque, Translucent material	Red LED (660nm)	Max. 1.5ms	12-24VDC	Max. 30mA	Built-in VR	Light ON/Dark ON (set by volume)
		10 to 50mm							
	Narrow beam reflective type	30 to 70mm	Opaque, Translucent material (min. sensing target: min. Ø0.2mm (copper wire))	Red LED (650nm)	Max. 1.5ms	12-24VDC	Max. 30mA	Built-in VR	Light ON/Dark ON (set by volume)
		70 to 130mm							

Control Output	Timer Function	Connection	Environment		Protection Structure	Approval	Model
			Ambient Illumination	Ambient Temperature			
■: Type No-mark: NPN open collector P: PNP open collector	—	Cable type (Ø3.5, 2m)	Sunlight : Max. 11,000lx, Incandescent lamp : Max. 3,000lx (received illumination)	-25 to 55°C	IP65 (connector type: IP67)	CE	BJ15M-TDT-■
		Connector type (M8)					BJ15M-TDT-C-■
		Cable type (Ø3.5, 2m)					BJ10M-TDT-■
		Connector type (M8)					BJ10M-TDT-C-■
		Cable type (Ø3.5, 2m)					BJ7M-TDT-■
■: Type No-mark: NPN open collector P: PNP open collector	—	Cable type (Ø3.5, 2m)	Sunlight : Max. 11,000lx, Incandescent lamp : Max. 3,000lx (received illumination)	-25 to 55°C	IP65 (connector type: IP67)	CE	BJ3M-PDT-■
		Connector type (M8)					BJ3M-PDT-C-■
■: Type No-mark: NPN open collector P: PNP open collector	—	Cable type (Ø3.5, 2m)	Sunlight : Max. 11,000lx, Incandescent lamp : Max. 3,000lx (received illumination)	-25 to 55°C	IP65 (connector type: IP67)	CE	BJ1M-DDT-■
		Connector type (M8)					BJ1M-DDT-C-■
		Cable type (Ø3.5, 2m)					BJ300-DDT-■
		Connector type (M8)					BJ300-DDT-C-■
		Cable type (Ø3.5, 2m)					BJ100-DDT-■
		Connector type (M8)					BJ100-DDT-C-■
NPN open collector	—	Cable type (Ø3.5, 2m)	Sunlight : Max. 11,000lx, Incandescent lamp : Max. 3,000lx (received illumination)	-25 to 55°C	IP65	CE	BJG30-DDT
■: Type No-mark: NPN open collector P: PNP open collector	—	Cable type (Ø3.5, 2m)	Sunlight : Max. 11,000lx, Incandescent lamp : Max. 3,000lx (received illumination)	-25 to 55°C	IP65	CE	BJ30-BDT-■
							BJ50-BDT-■
■: Type No-mark: NPN open collector P: PNP open collector	—	Cable type (Ø3.5, 2m)	Sunlight : Max. 11,000lx, Incandescent lamp : Max. 3,000lx (received illumination)	-25 to 55°C	IP65	CE	BJN50-NDT-■
							BJN100-NDT-■

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Series	Sensing Type	Sensing Distance	Sensing Target	Light Source	Response Time	Power Supply	Current Consumption And Power Consumption	Sensitivity Adjustment	Operation Mode
Photomicro Sensor BS5 Series  <p><Cable type></p> <p>① T type: W25×H13.5×L22.2mm ② L type: W26.5×H15.4×L16.3mm ③ K type: W25×H6.6×L27.6mm ④ V type: W13.5×H13×L27.6mm ⑤ Y type: W13.5×H15.4×L20mm</p>  <p><Connector type></p> <p>① T type: W25×H13.5×L22.2mm ② L type: W26.6×H15.4×L13.3mm ③ K type: W25×H6.6×L27.6mm ④ V type: W13.5×H13×L27.6mm ⑤ Y type: W13.5×H15.4×L20mm</p>	Through-beam type (not-modulated)	5mm fixed	Opaque material of min. Ø0.8×2mm	Infrared LED (940nm)	Light ON : Max. 20µs, Dark ON : Max. 100µs	5-24VDC	Max. 30mA	—	Light ON/Dark ON (set by control wire)
	Through-beam type (not-modulated)	5mm fixed	Opaque material of min. Ø0.8×2mm	Infrared LED (940nm)	Light ON : Max. 20µs, Dark ON : Max. 100µs	5-24VDC	Max. 30mA	—	Light ON/Dark ON (set by control wire)
	Through-beam type (not-modulated)	5mm fixed	Opaque material of min. Ø0.8×2mm	Infrared LED (940nm)	Light ON : Max. 20µs, Dark ON : Max. 100µs	5-24VDC	Max. 30mA	—	Light ON/Dark ON (set by control terminal block)
	Through-beam type (not-modulated)	5mm fixed	Opaque material of min. Ø0.8×2mm	Infrared LED (940nm)	Light ON : Max. 20µs, Dark ON : Max. 100µs	5-24VDC	Max. 30mA	—	Light ON/Dark ON (set by control terminal block)
※ Sold separately for connector type: Connector (CT-01), Connector cable (CT-02, 1m)									
Long Sensing Distance, Diffuse Reflective Type Photoelectric Sensor BA Series  <p>W19×H15.5×L48.5mm</p>	Diffuse reflective type	2m	Opaque, Translucent material	Infrared LED (850nm)	Max. 1ms	12-24VDC	Max. 15mA	Built-in VR	Light ON Dark ON Light ON Dark ON

Control Output	Timer Function	Connection	Environment		Protection Structure	Approval	Model
			Ambient Illumination	Ambient Temperature			
NPN open collector	—	Cable type (Ø3, 1m)	Fluorescent lamp : Max. 1,000lx (received illumination)	-20 to 55°C	IP50	CE	BS5-K1M
							BS5-T1M
							BS5-L1M
							BS5-Y1M
							BS5-V1M
PNP open collector	—	Cable type (Ø3, 1m)	Fluorescent lamp : Max. 1,000lx (received illumination)	-20 to 55°C	IP50	CE	BS5-K1M-P
							BS5-T1M-P
							BS5-L1M-P
							BS5-Y1M-P
							BS5-V1M-P
NPN open collector	—	Connector type	Fluorescent lamp : Max. 1,000lx (received illumination)	-20 to 55°C	IP50	CE	BS5-K2M
							BS5-T2M
							BS5-L2M
							BS5-Y2M
							BS5-V2M
PNP open collector	—	Connector type	Fluorescent lamp : Max. 1,000lx (received illumination)	-20 to 55°C	IP50	CE	BS5-K2M-P
							BS5-T2M-P
							BS5-L2M-P
							BS5-Y2M-P
							BS5-V2M-P
NPN open collector	—	Cable type (Ø3, 2m)	Sunlight : Max. 11,000lx, Incandescent lamp : Max. 3,000lx (received illumination)	-25 to 55°C	IP64	CE	BA2M-DDT
							BA2M-DDTD
PNP open collector	—	Cable type (Ø3, 2m)	Sunlight : Max. 11,000lx, Incandescent lamp : Max. 3,000lx (received illumination)	-25 to 55°C	IP64	CE	BA2M-DDT-P
							BA2M-DDTD-P

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Series	Sensing Type	Sensing Distance	Sensing Target	Light Source	Response Time	Power Supply	Current Consumption And Power Consumption	Sensitivity Adjustment	Operation Mode
Compact, Built-in Amplifier Type Photoelectric Sensor BY Series <Through-beam type (standard type)>  <Through-beam type (side sensing type)>  Standard type : W12×H16×L30mm Side sensing type : W12×H30×L16mm	Through-beam type (standard type)	500mm	Opaque material of min. Ø5mm	Infrared LED (940nm)	Max. 1ms	12-24VDC	Emitter/ Receiver : Max. 30mA	—	Dark ON
	Through-beam type (side sensing type)	500mm	Opaque material of min. Ø5mm	Infrared LED (940nm)	Max. 1ms	12-24VDC	Emitter/ Receiver : Max. 30mA	—	Dark ON
Compact, Built-in Amplifier Type Photoelectric Sensor BYD Series <Through-beam type>  Through-beam type/ Diffuse reflective type/ Convergent reflective type : W12×H32×L18mm	Through-beam type	3m	Opaque material of min. Ø6mm	Infrared LED	Max. 1ms	12-24VDC	Emitter/ Receiver : Max. 30mA	Fixed	Dark ON (option: Light ON)
	Diffuse reflective type	100mm	Opaque, Translucent material	Infrared LED	Operation : Max. 3ms, Return : Max. 100ms	12-24VDC	Max. 35mA	Built-in VR	Light ON
	Convergent reflective type	10 to 30mm	Opaque, Translucent material	Infrared LED	Operation : Max. 3ms, Return : Max. 100ms (in case of minimal VR setting)	12-24VDC	Max. 35mA	Fixed	Light ON
		10 to 50mm	Opaque, Translucent material	Infrared LED	Operation : Max. 3ms, Return : Max. 100ms (in case of minimal VR setting)	12-24VDC	Max. 35mA	Fixed	Light ON

Control Output	Timer Function	Connection	Environment		Protection Structure	Approval	Model
			Ambient Illumination	Ambient Temperature			
NPN open collector	—	Cable type (Ø4, 2m)	Sunlight : Max. 11,000lx, Incandescent lamp : Max. 3,000lx (received illumination)	-10 to 60°C	IP50	CE	BY500-TDT
NPN open collector	—	Cable type (Ø4, 2m)	Sunlight : Max. 11,000lx, Incandescent lamp : Max. 3,000lx (received illumination)	-10 to 60°C	IP50	CE	BYS500-TDT
NPN open collector	—	Cable type (Ø3.5, 2m)	Sunlight : Max. 11,000lx, Incandescent lamp : Max. 3,000lx (received illumination)	-20 to 65°C	IP64	CE	BYD3M-TDT
PNP open collector	—	Cable type (Ø3.5, 2m)	Sunlight : Max. 11,000lx, Incandescent lamp : Max. 3,000lx (received illumination)	-20 to 65°C	IP64	CE	BYD3M-TDT-P
NPN open collector	—	Cable type (Ø3.5, 2m)	Sunlight : Max. 11,000lx, Incandescent lamp : Max. 3,000lx (received illumination)	-20 to 65°C	IP50	CE	BYD100-DDT
NPN open collector	—	Cable type (Ø3.5, 2m)	Sunlight : Max. 11,000lx, Incandescent lamp : Max. 3,000lx (received illumination)	-20 to 65°C	IP64	CE	BYD30-DDT
					IP50	CE	BYD30-DDT-U (with upper operation indicator)
NPN open collector	●	Cable type (Ø3.5, 2m)	Sunlight : Max. 11,000lx, Incandescent lamp : Max. 3,000lx (received illumination)	-20 to 65°C	IP50	CE	BYD30-DDT-T
					IP64	CE	BYD50-DDT
NPN open collector	—	Cable type (Ø3.5, 2m)	Sunlight : Max. 11,000lx, Incandescent lamp : Max. 3,000lx (received illumination)	-20 to 65°C	IP64	CE	BYD50-DDT
					IP50	CE	BYD50-DDT-U (with upper operation indicator)
					IP50	CE	BYD50-DDT-T

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Series	Sensing Type	Sensing Distance	Sensing Target	Light Source	Response Time	Power Supply	Current Consumption And Power Consumption	Sensitivity Adjustment	Operation Mode
Slim, Built-in Amplifier Type Photoelectric Sensor BPS Series  W16×H7.5×L28mm	Through-beam type	3m	Opaque material of min. Ø5mm	Infrared LED (850nm)	Max. 1ms	12-24VDC	Emitter/ Receiver : Max. 20mA	Built-in VR	Dark ON
									Light ON
									Dark ON
									Light ON
General-Purpose, Built-in Amplifier Type Photoelectric Sensor BM Series <Through-beam type>  Through-beam type/ Retroreflective type/ Diffuse reflective type : W16×H28.4×L51.5mm	Through-beam type	3m	Opaque material of min. Ø8mm	Infrared LED (940nm)	Max. 3ms	12-24VDC	Emitter/ Receiver : Max. 45mA	Fixed	Dark ON
	Retroreflective type	0.1 to 1m (MS-2)	Opaque material of min. Ø60mm	Infrared LED (940nm)	Max. 3ms	12-24VDC	Max. 40mA	Fixed	Dark ON
	Diffuse reflective type	200mm	Opaque, Translucent material, Transparent material	Infrared LED (940nm)	Max. 3ms	12-24VDC	Max. 40mA	Built-in VR	Light ON (option: Dark ON)
Side Sensing Type Photoelectric Sensor BMS Series <Through-beam type>  Through-beam/ Retroreflective/ Diffuse reflective type : W16×H55×L29mm	Through-beam type	5m	Opaque material of min. Ø10mm	Infrared LED (940nm)	Max. 1ms	12-24VDC	Emitter/ Receiver : Max. 50mA	—	Light ON/Dark ON (set by control wire)
	Retroreflective type	0.1 to 2m (MS-2)	Opaque material of min. Ø60mm	Infrared LED (940nm)	Max. 1ms	12-24VDC	Max. 45mA	Built-in VR	Light ON/Dark ON (set by control wire)
	Diffuse reflective type	300mm	Opaque, Translucent material	Infrared LED (940nm)	Max. 1ms	12-24VDC	Max. 45mA	Built-in VR	Light ON/Dark ON (set by control wire)

Control Output	Timer Function	Connection	Environment		Protection Structure	Approval	Model
			Ambient Illumination	Ambient Temperature			
NPN open collector	—	Cable type (Ø3, 2m)	Sunlight : Max. 11,000lx, Incandescent lamp : Max. 3,000lx (received illumination)	-25 to 65°C	IP67	CE	BPS3M-TDT
NPN open collector	—	Cable type (Ø3, 2m)	Sunlight : Max. 11,000lx, Incandescent lamp : Max. 3,000lx (received illumination)	-25 to 65°C	IP67	CE	BPS3M-TDTL
PNP open collector	—	Cable type (Ø3, 2m)	Sunlight : Max. 11,000lx, Incandescent lamp : Max. 3,000lx (received illumination)	-25 to 65°C	IP67	CE	BPS3M-TDT-P
PNP open collector	—	Cable type (Ø3, 2m)	Sunlight : Max. 11,000lx, Incandescent lamp : Max. 3,000lx (received illumination)	-25 to 65°C	IP67	CE	BPS3M-TDTL-P
NPN open collector	—	Cable type (Ø4, 2m)	Sunlight : Max. 11,000lx, Incandescent lamp : Max. 3,000lx (received illumination)	-10 to 60°C	—	CE	BM3M-TDT
NPN open collector	—	Cable type (Ø4, 2m)	Sunlight : Max. 11,000lx, Incandescent lamp : Max. 3,000lx (received illumination)	-10 to 60°C	—	CE	BM1M-MDT
NPN open collector	—	Cable type (Ø4, 2m)	Sunlight : Max. 11,000lx, Incandescent lamp : Max. 3,000lx (received illumination)	-10 to 60°C	—	CE	BM200-DDT
NPN open collector	—	Cable type (Ø5, 2m)	Sunlight : Max. 11,000lx, Incandescent lamp : Max. 3,000lx (received illumination)	-10 to 60°C	—	CE	BMS5M-TDT
PNP open collector	—	Cable type (Ø5, 2m)	Sunlight : Max. 11,000lx, Incandescent lamp : Max. 3,000lx (received illumination)	-10 to 60°C	—	CE	BMS5M-TDT-P
NPN open collector	—	Cable type (Ø5, 2m)	Sunlight : Max. 11,000lx, Incandescent lamp : Max. 3,000lx (received illumination)	-10 to 60°C	—	CE	BMS2M-MDT
PNP open collector	—	Cable type (Ø5, 2m)	Sunlight : Max. 11,000lx, Incandescent lamp : Max. 3,000lx (received illumination)	-10 to 60°C	—	CE	BMS2M-MDT-P
NPN open collector	—	Cable type (Ø5, 2m)	Sunlight : Max. 11,000lx, Incandescent lamp : Max. 3,000lx (received illumination)	-10 to 60°C	—	CE	BMS300-DDT
PNP open collector	—	Cable type (Ø5, 2m)	Sunlight : Max. 11,000lx, Incandescent lamp : Max. 3,000lx (received illumination)	-10 to 60°C	—	CE	BMS300-DDT-P

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Series	Sensing Type	Sensing Distance	Sensing Target	Light Source	Response Time	Power Supply	Current Consumption And Power Consumption	Sensitivity Adjustment	Operation Mode		
AC/DC, Long Sensing Distance, Built-in Amplifier Type Photoelectric Sensor BEN Series <Diffuse reflective type>  Through-beam type/ Retroreflective type/ Diffuse reflective type : W18×H50×L50mm	Through-beam type	10m	Opaque material of min. Ø16mm	Infrared LED (850nm)	Max. 1ms	12-24VDC	Emitter/Receiver : Max. 50mA	—	Light ON/Dark ON (set by volume)		
					Max. 20ms	24-240VAC 24-240VDC	Emitter/Receiver : Max. 4VA				
	Retroreflective type (standard type)	0.1 to 5m (MS-2)	Opaque material of min. Ø60mm	Infrared LED (850nm)	Max. 1ms	12-24VDC	Max. 50mA	Built-in VR	Light ON/Dark ON (set by volume)		
					Max. 20ms	24-240VAC 24-240VDC	Max. 4VA				
	Retroreflective type (built-in polarizing filter)	0.1 to 3m (MS-2)	Opaque material of min. Ø60mm	Red LED (660nm)	Max. 1ms	12-24VDC	Max. 50mA	Built-in VR	Light ON/Dark ON (set by volume)		
					Max. 20ms	24-240VAC 24-240VDC	Max. 4VA				
	Diffuse reflective type	300mm	Opaque, Translucent material	Infrared LED (940nm)	Max. 1ms	12-24VDC	Max. 50mA	Built-in VR	Light ON/Dark ON (set by volume)		
					Max. 20ms	24-240VAC 24-240VDC	Max. 4VA				
	AC/DC, Long Sensing Distance, Built-in Amplifier Type Photoelectric Sensor BX Series <Diffuse reflective type>  Through-beam type/ Retroreflective type/ Diffuse reflective type : W25×H68×L80mm	Through-beam type	15m	Opaque material of min. Ø15mm	Infrared LED (850nm)	Max. 1ms	12-24VDC	Emitter/Receiver : Max. 50mA	Built-in VR	Light ON/Dark ON (set by switch)	
						Max. 20ms	24-240VAC 24-240VDC	Emitter/Receiver : Max. 3VA			
		Retroreflective type (standard type)	0.1 to 5m (MS-2)	Opaque material of min. Ø60mm	Infrared LED (850nm)	Max. 1ms	12-24VDC	Max. 50mA	Built-in VR	Light ON/Dark ON (set by switch)	
						Max. 20ms	24-240VAC 24-240VDC	Max. 3VA			
Retroreflective type (built-in polarizing filter)		0.1 to 2m (MS-2) 0.1 to 3m (MS-3)	Opaque material of min. Ø60mm	Red LED (660nm)	Max. 1ms	12-24VDC	Max. 50mA	Built-in VR	Light ON/Dark ON (set by switch)		
					Max. 20ms	24-240VAC 24-240VDC	Max. 3VA				
Diffuse reflective type		700mm	Opaque, Translucent material	Infrared LED (940nm)	Max. 1ms	12-24VDC	Max. 50mA	Built-in VR	Light ON/Dark ON (set by switch)		
					Max. 20ms	24-240VAC 24-240VDC	Max. 3VA				
Cylindrical Type Photoelectric Sensor BR Series <Cable type>  <Connector type>  Through-beam type/ Retroreflective type/ Diffuse reflective type/ Narrow beam reflective type : Ø18, L74mm		Through-beam type	4m	Opaque material of min. Ø15mm	Infrared LED (850nm)	Max. 1ms	12-24VDC	Emitter/Receiver : Max. 45mA	Fixed	Dark ON	
			Light ON								
		Retroreflective type	0.1 to 3m (MS-2)	Opaque material of min. Ø60mm	Red LED (660nm)	Max. 1ms	12-24VDC	Max. 45mA	Built-in VR	Light ON/Dark ON (set by control wire)	Dark ON
											Light ON
	Diffuse reflective type	100mm	Opaque, Translucent material	Infrared LED (940nm)	Max. 1ms	12-24VDC	Max. 45mA	Built-in VR	Light ON/Dark ON (set by control wire)	Light ON	
		400mm								Infrared LED (850nm)	Max. 1ms
	Narrow beam reflective type	200mm	Opaque, Translucent material	Infrared LED (850nm)	Max. 1ms	12-24VDC	Max. 45mA	Built-in VR	Light ON/Dark ON (set by control wire)	Light ON	
	Light ON										

Control Output	Timer Function	Connection	Environment		Protection Structure	Approval	Model
			Ambient Illumination	Ambient Temperature			
NPN, PNP open collector simultaneous output	—	Cable type (Ø5, 2m)	Sunlight : Max. 11,000lx, Incandescent lamp : Max. 3,000lx (received illumination)	-20 to 65°C	IP50	CE	BEN10M-TDT
Relay							BEN10M-TFR
NPN, PNP open collector simultaneous output	—	Cable type (Ø5, 2m)	Sunlight : Max. 11,000lx, Incandescent lamp : Max. 3,000lx (received illumination)	-20 to 65°C	IP50	CE	BEN5M-MDT
Relay							BEN5M-MFR
NPN, PNP open collector simultaneous output	—	Cable type (Ø5, 2m)	Sunlight : Max. 11,000lx, Incandescent lamp : Max. 3,000lx (received illumination)	-20 to 65°C	IP50	CE	BEN3M-PDT
Relay							BEN3M-PFR
NPN, PNP open collector simultaneous output	—	Cable type (Ø5, 2m)	Sunlight : Max. 11,000lx, Incandescent lamp : Max. 3,000lx (received illumination)	-20 to 65°C	IP50	CE	BEN300-DDT
Relay							BEN300-DFR
NPN, PNP open collector simultaneous output	— ●	Terminal block type	Sunlight : Max. 11,000lx, Incandescent lamp : Max. 3,000lx (received illumination)	-20 to 55°C	IP66	CE	BX15M-TDT
Relay	— ●						BX15M-TDT-T
							BX15M-TFR
							BX15M-TFR-T
NPN, PNP open collector simultaneous output	— ●	Terminal block type	Sunlight : Max. 11,000lx, Incandescent lamp : Max. 3,000lx (received illumination)	-20 to 55°C	IP66	CE	BX5M-MDT
Relay	— ●						BX5M-MDT-T
							BX5M-MFR
							BX5M-MFR-T
NPN, PNP open collector simultaneous output	— ●	Terminal block type	Sunlight : Max. 11,000lx, Incandescent lamp : Max. 3,000lx (received illumination)	-20 to 55°C	IP66	CE	BX3M-PDT
Relay	— ●						BX3M-PDT-T
							BX3M-PFR
							BX3M-PFR-T
NPN, PNP open collector simultaneous output	— ●	Terminal block type	Sunlight : Max. 11,000lx, Incandescent lamp : Max. 3,000lx (received illumination)	-20 to 55°C	IP66	CE	BX700-DDT
Relay	— ●						BX700-DDT-T
							BX700-DFR
							BX700-DFR-T
■: Type No-mark: NPN open collector P: PNP open collector	—	Cable type (Ø5, 2m)	Sunlight : Max. 11,000lx, Incandescent lamp : Max. 3,000lx (received illumination)	-10 to 60°C	IP66	CE	BR4M-TDTD-■
		Connector type (M12)					BR4M-TDTD-C-■
		Cable type (Ø5, 2m)					BR4M-TDTL-■
		Connector type (M12)					BR4M-TDTL-C-■
■: Type No-mark: NPN open collector P: PNP open collector	—	Cable type (Ø5, 2m)	Sunlight : Max. 11,000lx, Incandescent lamp : Max. 3,000lx (received illumination)	-10 to 60°C	IP67	CE	BR20M-TDTD-■
		Connector type (M12)					BR20M-TDTD-C-■
		Cable type (Ø5, 2m)					BR20M-TDTL-■
		Connector type (M12)					BR20M-TDTL-C-■
■: Type No-mark: NPN open collector P: PNP open collector	—	Cable type (Ø5, 2m)	Sunlight : Max. 11,000lx, Incandescent lamp : Max. 3,000lx (received illumination)	-10 to 60°C	IP66	CE	BR3M-MDT-■
		Connector type (M12)					BR3M-MDT-C-■
■: Type No-mark: NPN open collector P: PNP open collector	—	Cable type (Ø5, 2m)	Sunlight : Max. 11,000lx, Incandescent lamp : Max. 3,000lx (received illumination)	-10 to 60°C	IP66	CE	BR100-DDT-■
		Connector type (M12)					BR100-DDT-C-■
■: Type No-mark: NPN open collector P: PNP open collector	—	Cable type (Ø5, 2m)	Sunlight : Max. 11,000lx, Incandescent lamp : Max. 3,000lx (received illumination)	-10 to 60°C	IP66	CE	BR400-DDT-■
		Connector type (M12)					BR400-DDT-C-■
■: Type No-mark: NPN open collector P: PNP open collector	—	Cable type (Ø5, 2m)	Sunlight : Max. 11,000lx, Incandescent lamp : Max. 3,000lx (received illumination)	-10 to 60°C	IP66	CE	BR200-DDTN-■
		Connector type (M12)					BR200-DDTN-C-■

Photoelectric Sensors


Ultra Slim · Ultra Compact · Compact Long Sensing Distance, Built-in Amplifier Type Photoelectric Sensor /
 Compact · Slim · General-Purpose, Built-in Amplifier Type Photoelectric Sensor /
 Cylindrical · Cylindrical, Long Sensing Distance, One-push Mount Type Photoelectric Sensor /

Series	Sensing Type	Sensing Distance	Sensing Target	Light Source	Response Time	Power Supply	Current Consumption And Power Consumption	Sensitivity Adjustment	Operation Mode
Cylindrical Type Photoelectric Sensor (Plastic) BRP Series <Cable type>  <Connector type>  Retroreflective type/ Diffuse reflective type/ Narrow beam reflective type : Ø18, L74mm	Retroreflective type	0.1 to 3m (MS-2)	Opaque material of min. Ø60mm	Red LED (660nm)	Max. 1ms	12-24VDC	Max. 45mA	Built-in VR	Light ON/Dark ON (set by control wire)
	Diffuse reflective type	100mm	Opaque, Translucent material	Infrared LED (940nm)	Max. 1ms	12-24VDC	Max. 45mA	Built-in VR	Light ON/Dark ON (set by control wire)
		400mm	Opaque, Translucent material	Infrared LED (850nm)	Max. 1ms	12-24VDC	Max. 45mA	Built-in VR	Light ON/Dark ON (set by control wire)
	Narrow beam reflective type	200mm	Opaque, Translucent material	Infrared LED (850nm)	Max. 1ms	12-24VDC	Max. 45mA	Built-in VR	Light ON/Dark ON (set by control wire)
U-Shaped Type Photoelectric Sensor BUP Series <BUP30>  <BUP50>  BUP30: W52×H20×L72mm BUP50: W78.5×H20×L78.1mm	Through-beam type	30mm	Opaque material of min. Ø4mm	Infrared LED (940nm)	Max. 1ms	12-24VDC	Max. 30mA	Fixed	Light ON/Dark ON (set by control wire)
			Opaque material of min. Ø1.5mm	Infrared LED (940nm)	Max. 1ms	12-24VDC	Max. 30mA	Built-in VR	Light ON/Dark ON (set by control wire)
		50mm	Opaque material of min. Ø4mm	Infrared LED (940nm)	Max. 1ms	12-24VDC	Max. 30mA	Fixed	Light ON/Dark ON (set by control wire)
			Opaque material of min. Ø1.5mm	Infrared LED (940nm)	Max. 1ms	12-24VDC	Max. 30mA	Built-in VR	Light ON/Dark ON (set by control wire)


Control Output	Timer Function	Connection	Environment		Protection Structure	Approval	Model
			Ambient Illumination	Ambient Temperature			
■: Control Output Type No-mark: NPN open collector P: PNP open collector	—	Cable type (Ø5, 2m)	Sunlight : Max. 11,000lx, Incandescent lamp : Max. 3,000lx (received illumination)	-10 to 60°C	IP66	CE	BRP3M-MDT-■
		Connector type (M12)					BRP3M-MDT-C-■
■: Control Output Type No-mark: NPN open collector P: PNP open collector	—	Cable type (Ø5, 2m)	Sunlight : Max. 11,000lx, Incandescent lamp : Max. 3,000lx (received illumination)	-10 to 60°C	IP66	CE	BRP100-DDT-■
		Connector type (M12)					BRP100-DDT-C-■
■: Control Output Type No-mark: NPN open collector P: PNP open collector	—	Cable type (Ø5, 2m)	Sunlight : Max. 11,000lx, Incandescent lamp : Max. 3,000lx (received illumination)	-10 to 60°C	IP66	CE	BRP400-DDT-■
		Connector type (M12)					BRP400-DDT-C-■
■: Control Output Type No-mark: NPN open collector P: PNP open collector	—	Cable type (Ø5, 2m)	Sunlight : Max. 11,000lx, Incandescent lamp : Max. 3,000lx (received illumination)	-10 to 60°C	IP66	CE	BRP200-DDTN-■
		Connector type (M12)					BRP200-DDTN-C-■
NPN open collector	—	Cable type (Ø4, 2m)	Sunlight : Max. 11,000lx, Incandescent lamp : Max. 3,000lx (received illumination)	-25 to 65°C	IP66	CE	BUP-30
PNP open collector	—	Cable type (Ø4, 2m)	Sunlight : Max. 11,000lx, Incandescent lamp : Max. 3,000lx (received illumination)	-25 to 65°C	IP66	CE	BUP-30-P
NPN open collector	—	Cable type (Ø4, 2m)	Sunlight : Max. 11,000lx, Incandescent lamp : Max. 3,000lx (received illumination)	-25 to 65°C	IP66	CE	BUP-30S
PNP open collector	—	Cable type (Ø4, 2m)	Sunlight : Max. 11,000lx, Incandescent lamp : Max. 3,000lx (received illumination)	-25 to 65°C	IP66	CE	BUP-30S-P
NPN open collector	—	Cable type (Ø4, 2m)	Sunlight : Max. 11,000lx, Incandescent lamp : Max. 3,000lx (received illumination)	-25 to 65°C	IP66	CE	BUP-50
PNP open collector	—	Cable type (Ø4, 2m)	Sunlight : Max. 11,000lx, Incandescent lamp : Max. 3,000lx (received illumination)	-25 to 65°C	IP66	CE	BUP-50-P
NPN open collector	—	Cable type (Ø4, 2m)	Sunlight : Max. 11,000lx, Incandescent lamp : Max. 3,000lx (received illumination)	-25 to 65°C	IP66	CE	BUP-50S
PNP open collector	—	Cable type (Ø4, 2m)	Sunlight : Max. 11,000lx, Incandescent lamp : Max. 3,000lx (received illumination)	-25 to 65°C	IP66	CE	BUP-50S-P

Photoelectric Sensors

Ultra Slim · Ultra Compact · Compact Long Sensing Distance, Built-in Amplifier Type Photoelectric Sensor / Compact · Slim · General-Purpose, Built-in Amplifier Type Photoelectric Sensor / Cylindrical · Cylindrical, Long Sensing Distance, One-push Mount Type Photoelectric Sensor /

Series	Operation Method	Button Operation			Light Source	Power Supply	Current Consumption	Operation Load
		Stop Position	Output Switching Position	Operation Limit Position				
Push Button Type Photomicro Sensor BS5-P Series								
 W20×H14×L25mm	Push button type ^{※1}	5.0±0.4mm	4.0±0.5mm	Max. 0mm	Infrared LED (940nm)	12-24VDC	Max. 35mA	Max. 3N (max. 0.3kgf)

※1. Detection occurs when the button is pushed and the light source is blocked.

Series	Sensing Type	Applicable Pipe	Standard Sensing Target	Light Source	Response Time	Power Supply	Current Consumption
Liquid Level Sensor BL Series							
 W23×H14×L13mm	Through-beam type	Using binding band : Ø6 to 13mm, Using protection bracket : Ø12.7mm (1/2 inch) transparent pipe in 1mm thickness (FEP (fluoroplastic) or with equivalent transparency)	Liquid in a pipe ^{※1}	Infrared LED (950nm)	Max. 2ms	12-24VDC	Max. 30mA

※1. The unit may not detect the liquid with low transparent, with high viscosity, or with floating matters.

Series	Size	Applied Sensor
Retroreflective Tape MST Series	50×50mm	Retroreflective type: BM1M-MDT, BMS2M-MDT-□, BR3M-MDT-□-□, BEN5M-MDT, BEN5M-MFR, BX5M-MDT, BX5M-MDT-T, BX5M-MFR, BX5M-MFR-T, BTS200-MDT□-□ Retroreflective type (built-in polarizing filter): BJ3M-PDT-□-□, BEN3M-PDT, BEN3M-PFR, BX3M-PDT-□, BX3M-PFR-□
	100×100mm	
	200×200mm	

Operation Mode	Control Output	Connection	Environment		Protection Structure	Approval	Model
			Ambient Illumination	Ambient Temperature			
Light ON (output OFF when button is pushed)	NPN open collector	Cable type (Ø3, 1m)	Fluorescent lamp : Max. 1,000lx (received illumination)	-20 to 55°C	IP40	CE	BS5-P1ML
	PNP open collector	Cable type (Ø3, 1m)	Fluorescent lamp : Max. 1,000lx (received illumination)	-20 to 55°C	IP40	CE	BS5-P1ML-P
Dark ON (output ON when button is pushed)	NPN open collector	Cable type (Ø3, 1m)	Fluorescent lamp : Max. 1,000lx (received illumination)	-20 to 55°C	IP40	CE	BS5-P1MD
	PNP open collector	Cable type (Ø3, 1m)	Fluorescent lamp : Max. 1,000lx (received illumination)	-20 to 55°C	IP40	CE	BS5-P1MD-P

Operation Mode	Control Output	Connection	Environment		Protection Structure	Approval	Model
			Ambient Illumination	Ambient Temperature			
Light ON/Dark ON (set by button)	NPN open collector	Cable type (Ø2.5, 1m)	Sunlight/ Incandescent lamp : Max. 3,000lx for each (received illumination)	10 to 55°C	IP64	CE	BL13-TDT
	PNP open collector	Cable type (Ø2.5, 1m)	Sunlight/ Incandescent lamp : Max. 3,000lx for each (received illumination)	10 to 55°C	IP64	CE	BL13-TDT-P

Material	Ambient Temperature	Packing Unit	Model
Surface film: Polymethyl methacrylate Prism layer: Polycarbonate Adhesive layer: Acrylic	-35 to 65°C (attachment temperature: 10 to 30°C)	10	MST-50-10
		5	MST-100-5
		2	MST-200-2