Upgraded cylindrical photoelectric sensor

▣Features

- ●External sensitivity adjustment(Diffuse reflective type)
- ●IP66 rated waterproof structure(IEC standard)
- ●Detects up to 20m(Transmitted beam type)
- ●Noise resistant with digital signal processing
- ●Narrow beam type diffuse reflective sensor using in a narrow space
- ●Reverse power polarity and short−circuit(Overcurrent) protection circuit
- ●High environmental resistance BR4M Series with mirror lens

⚠ **Please read "Caution for your safety" in operation manual before using.**

CE

▣Specifications

Model									
	NPN open collector	BRP100-DDT	BR100-DDT	BRP400-DDT	BR400-DDT	BRP200-DDTN	BR200-DDTN	BR4M-TDTD BR20M-TDTD	BR4M-TDTL BR20M-TDTL
	PNP open collector	BRP100-DDT-P	BR100-DDT-P	BRP400-DDT-P	BR400-DDT-P	BRP200-DDTN-P	BR200-DDTN-P	BR4M-TDTD-P BR20M-TDTD-P	BR4M-TDTL-P BR20M-TDTL-P
Sensing type		Diffuse reflective(Diffusion type)				Diffuse reflective (Narrow beam type)		Transmitted beam	
Sensing distance		100mm(★1)		400mm(★2)		200mm(★2)		4m / 20m	
Sensing target		Transparent, Translucent, Opaque materials						Opaque materials of Min. ϕ15mm	
Hysteresis		Max. 20% at rated setting distance at rated setting distance						———	
Response time		Max. 1ms						Max. 3ms	
Power supply		12−24VDC ±10%(RippleP−P:Max. 10%)							
Current consumption		Max. 45mA							
Light source		Infrared LED(modulated)							
Sensitivity adjustment		Adjuster						Fixed	
Operation mode		Selectable Light ON or Dark ON by control wire						Dark ON	Light ON
Control output		NPN open collector output ☞ Load voltage:Max. 30VDC, Load current:Max. 200mA, Residual voltage:Max. 1VDC PNP open collector output ☞ Output voltage:Min. power voltage−2.5V, Load current:Max. 200mA							
Protection circuit		Short−circuit protection, Reverse polarity protection							
Indication		Power indicator(Emitter):Red LED, Operation indicator(Receiver):Red LED							
Connection		Outgoing cable							
Insulation resistance		Min. 20MΩ(at 500VDC mega)							
Noise strength		±240V the square wave noise(pulse width:1μs) by the noise simulator							
Dielectric strength		500VAC 50/60Hz for 1 minute							
Vibration		1.5mm amplitude at frequency of 10 ~ 55Hz in each of X, Y, Z directions for 2 hours							
Shock		500m/s² (50G) in X, Y, Z directions for 3 times							
Ambient illumination		Sunlight : Max. 11,000ℓx, Incandescent lamp : Max. 3,000ℓx							
Storage temperature		−10 ~ +60℃(at non−freezing status) Storage : −25 ~ +70℃							
Ambient humidity		35 ~ 85%RH, Storage : 35 ~ 85%RH							
Protection		IP66(IEC standard)							
Material		• BR ☞ Case : Brass(Chromium plating), Lens : PC • BRP ☞ Case : Plastic (Black), Lens : PC						• Case ☞ Brass (Chromium plating) • Lens ☞ BR4M−Glass BR2M−PC	
Cable		4P, ϕ5mm, Length : 2m						Emitter:2P, ϕ5mm, Length:2m Receiver:3P, ϕ5mm, Length:2m	
Accessory		BR : Fixing nuts, Washer / BRP : Fixing nuts							
Approval		CE							
Unit weight		• BR series : Approx. 120g • BRP series : Approx. 100g						Approx. 300g	

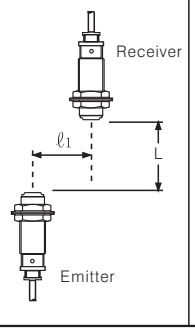
※(★1) (★2) It is for Non−glossy white paper(100×100mm).

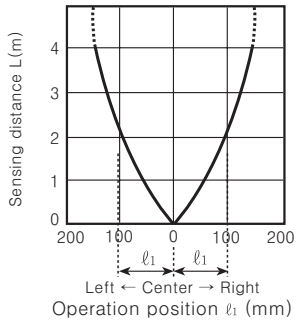
▣Feature data

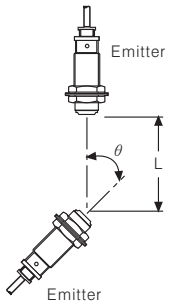
◎Transmitted beam

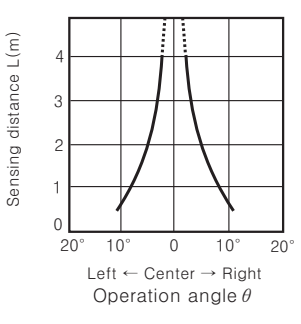
●BR4M-TDT□ / BR4M-TDT□-P

Parallel shifting characteristic		Angle Characteristic	
Measuring method	Data	Measuring method	Data



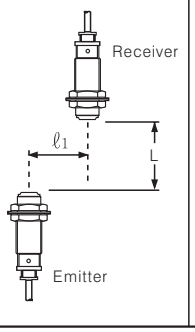


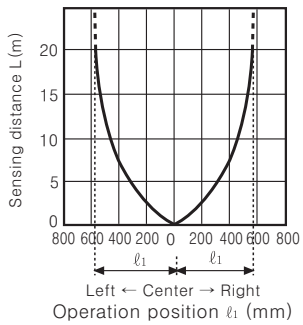


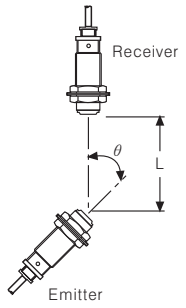


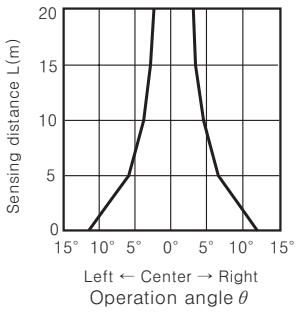
●BR20M-TDTD(-P) / BR20M-TDTL(-P)

Parallel shifting characteristic		Angle Characteristic	
Measuring method	Data	Measuring method	Data







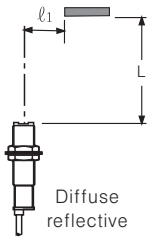


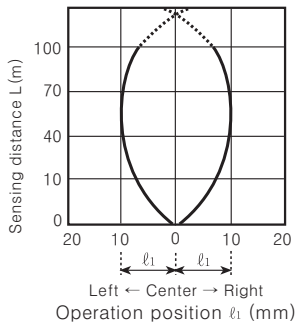
◎Diffuse reflective

●BR100-DDT(-P) / BRP100-DDT(-P)

Sensing area	
Measuring method	Data

Standard sensing target
: Non-glossy white paper
50×50mm

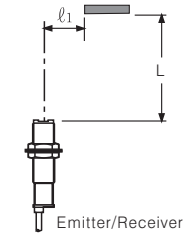


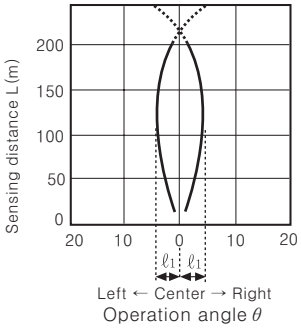


●BR200-DDTN(-P) / BRP200-DDTN(-P)

Sensing area	
Measuring method	Data

Standard sensing target
: Non-glossy white paper
50×50mm

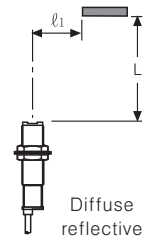


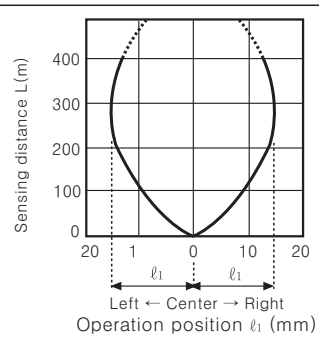


●BR400-DDT(-P) / BRP400-DDT(-P)

Sensing area	
Measuring method	Data

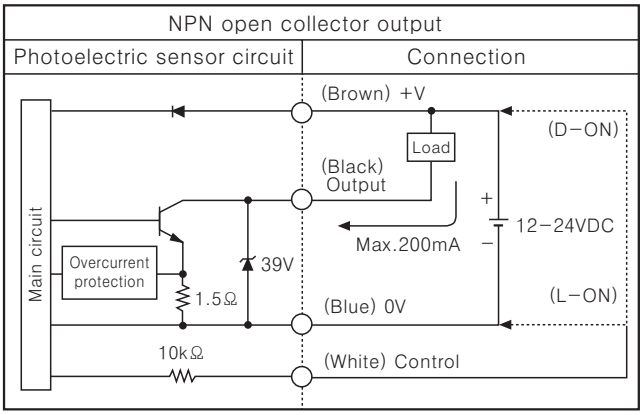
Standard sensing target
: Non-glossy white paper
100×100mm



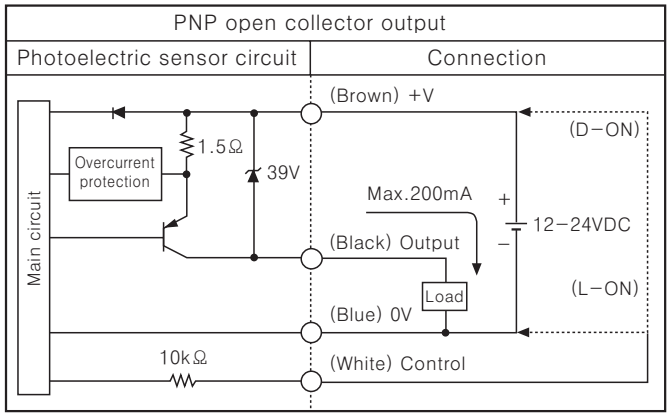


▣Control output diagram

●BR(P)100-DDT / BR(P)200-DDTN / BR(P)400-DDT
●BR20M-TDTD2 / BR20M-TDTL2 (Receiver)



●BR(P)100-DDT-P / BR(P)200-DDTN-P / BR(P)400-DDT-P
●BR20M-TDTD2-P / BR20M-TDTL2-P (Receiver)

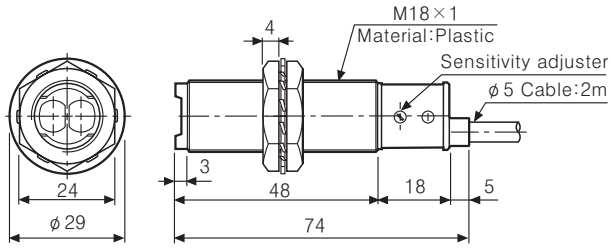


※Select Light ON / Dark ON by control wire. ┌ Light ON : Connect control wire to 0V
└ Dark ON : Connect control wire to +V

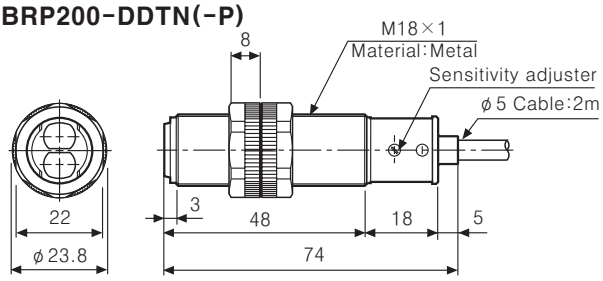
※Control wire is available only for diffuse reflective type.

▣Dimensions

●BR100-DDT(-P) / BR400-DDT(-P)
●BR200-DDTN(-P)

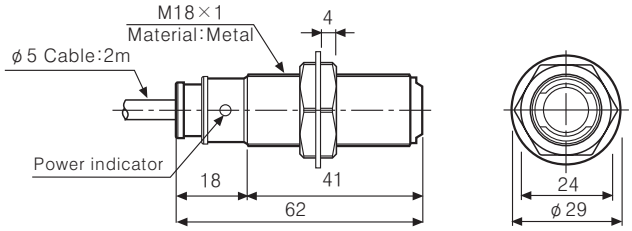


●BRP100-DDT(-P) / BRP400-DDT(-P)
●BRP200-DDTN(-P)

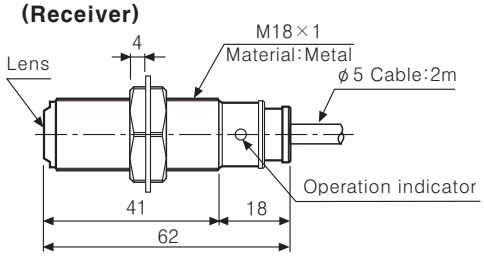


●BR20M-TDTD(L) / BR20M-TDTD(L)-P

(Emitter)

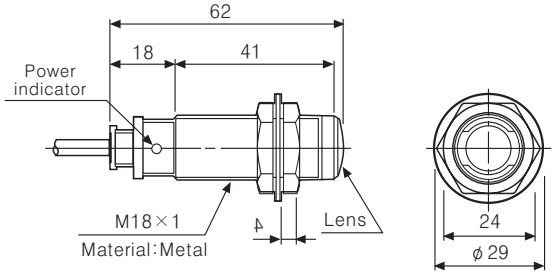


(Receiver)

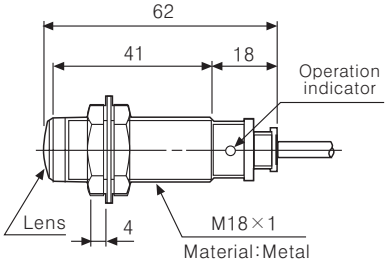


●BR4M-TDTD(L) / BR4M-TDTD(L)-P

(Emitter)



(Receiver)



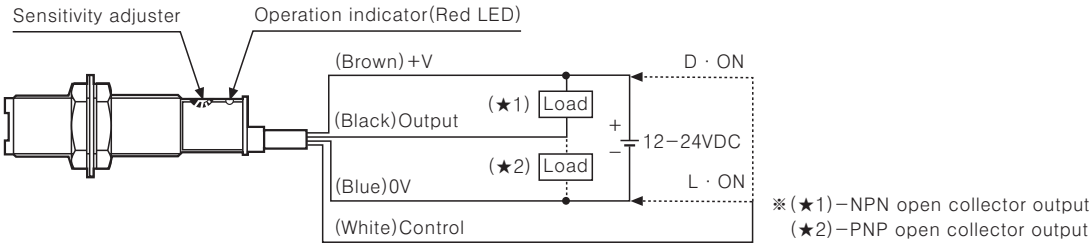
(Unit:mm)

▣Operation mode

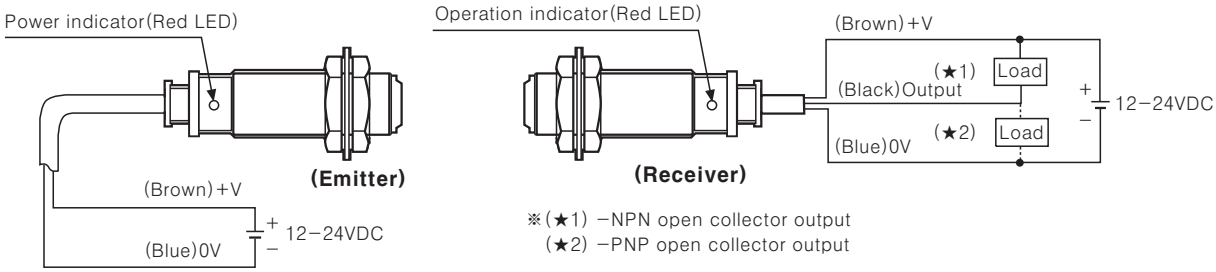
Light ON mode	Receiver	ON / OFF		Dark ON mode	Receiver	ON / OFF	
	Operation indicator (LED)	ON / OFF			Operation indicator (LED)	ON / OFF	
	TR output	ON / OFF			TR output	ON / OFF	

▣Connections

●Diffuse reflective



●Transmitted beam

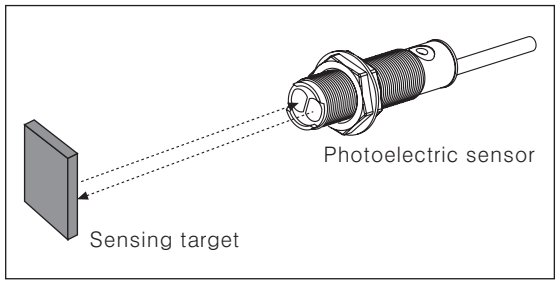


▣Mounting and sensitivity adjustment

Please supply the power to the sensor after mount the emitter and the receiver facing each other, and then adjust an optical axis and the sensitivity as follow;

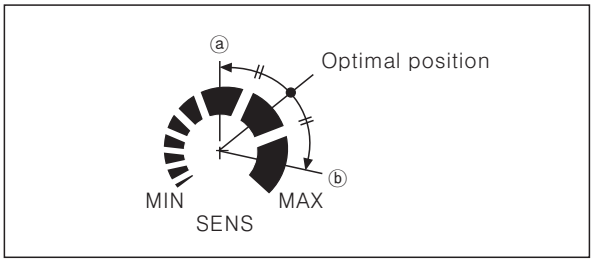
◎Diffuse Reflective type

1. The sensitivity should be adjusted depending on a sensing target or mounting place.



2. Set the target at a position to be detected by the beam, then turn the adjuster until position ⓐ in the middle of the operation range of indicator from Min. position of the adjuster.
3. Take the target out of the sensing area, then turn the adjuster until position ⓑ in the middle of the operation range of indicator. If the indicator does not turn on, max. position is position ⓑ.
4. Set the adjuster in the middle of two switching position ⓐ, ⓑ.

※The sensing distance indicated in the specification chart is that of non-glossy white paper in the target size 50×50mm. Be sure that it can be different by size, surface and gloss of target.



◎Transmitted Beam type

1. Supply the power to the photoelectric sensor, after mount the emitter and the receiver facing each other.
2. Set the receiver in center of position in the middle of the operation range of indicator adjusting the receiver and the emitter right and left, up and down.
3. Fix both units tightly after checking that the unit detect the target.