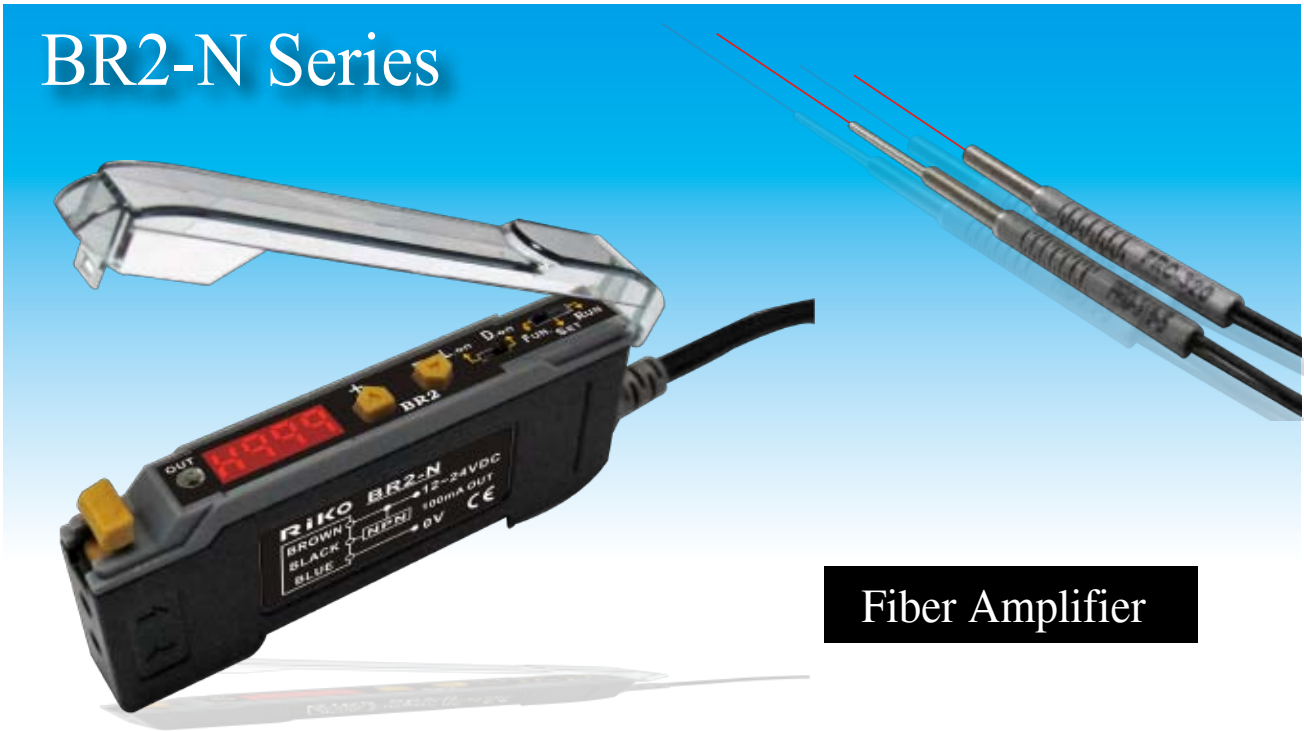


Digital Fiber Amplifier

BR2-N Series

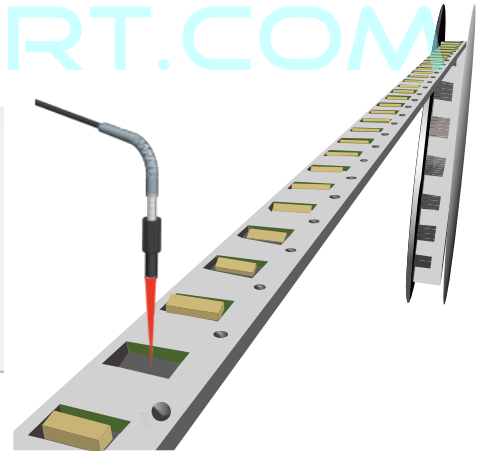
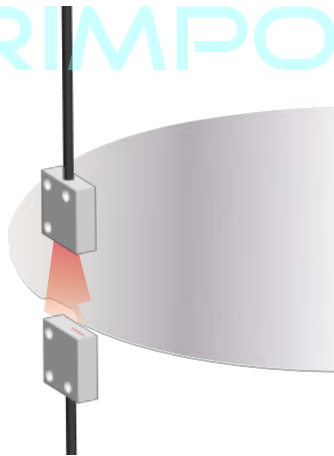
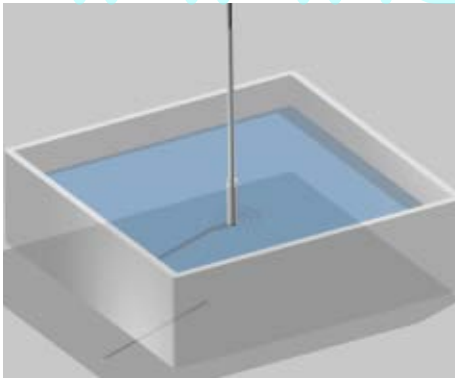


◆ Application :

Detecting the level of liquid.

Detecting if the wafer is broken.

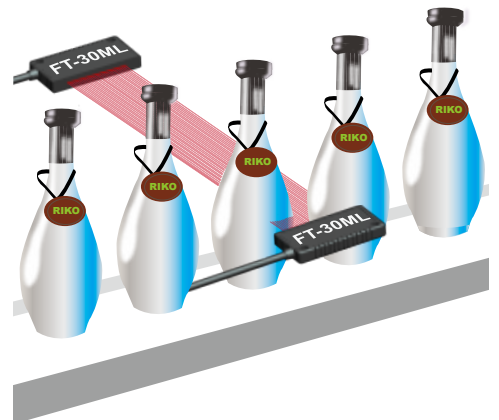
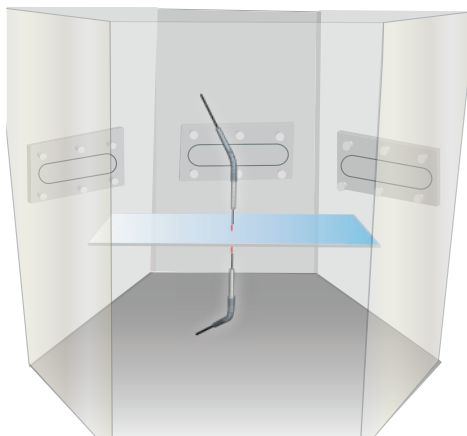
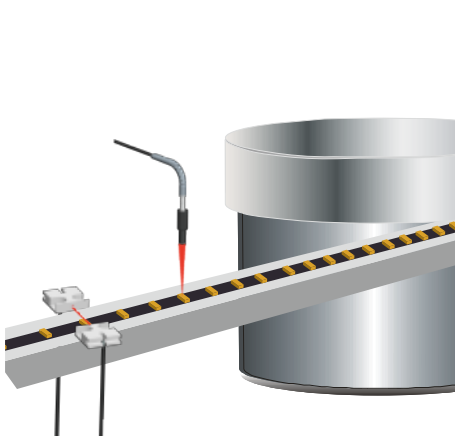
Detecting the objects on the conveyer.



Detecting if the right side of the objects on the feeder.

Detecting a glass in a vacuum room.

Measuring the quantity of bottles.



BR2

Digital Fiber Amplifier

◆Characteristic :

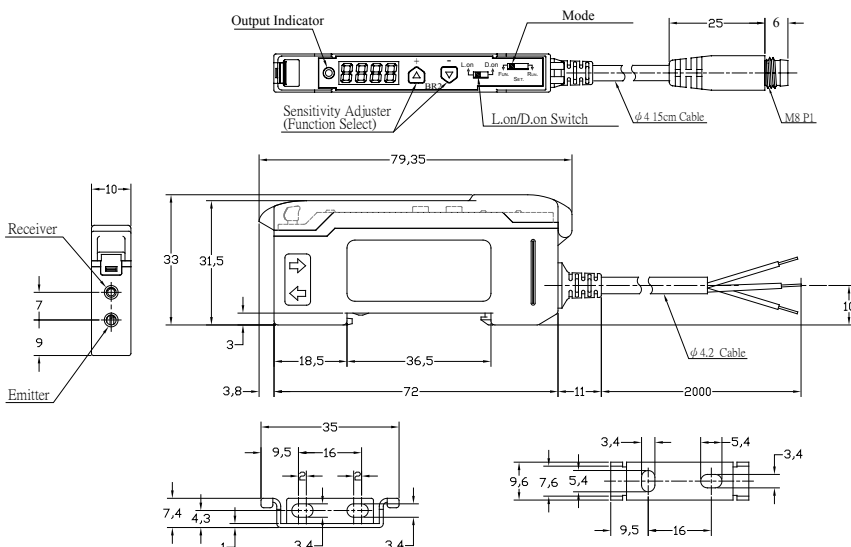
- Easy to install.
- Numeric displays, interactive prompts.
- Applications focus on many industries, such as semiconductor assembly, handling technology and packing.
- Depends on the mounting direction, the digital display of BR2 can be inverted.



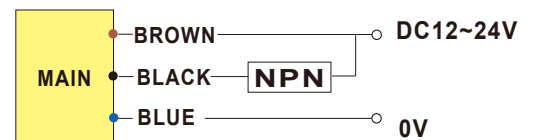
◆Specifications :

Model	Pre-wired ϕ 4.2	BR2-N	BR2-P
	M8 pigtailed type	BR2-ND	BR2-PD
Emitting light	Red LED 660nm		
Operating voltage	DC12 to 24 \pm 10%		
Current Consumption	45mA Max.		
Load current	100mA Max at DC 24V		
Output type	NPN L.on / D.on		PNP L.on / D.on
Protection circuit	Reversed polarity protection, over-current protection		
Response time	on 1 ms, off 1ms		
Indicators	Output indicator : Red LED		
Sensitivity adjustment	3 Digitals 000-999		
Insulation resistance	20M Ω min. (DC500V)		
Voltage withstandability	AC500V 60Hz for 60 Sec.		
Operating temperature	- 10 $^{\circ}$ C ~ + 60 $^{\circ}$ C		
Ambient humidity	35% ~ 85% RH		
Protection degree	IP64		
Material	ABS		
Wiring method /	BR2-□	Pre-wired ϕ 4.2 x 2M / 3-wires	
	BR2-□D	M8 pigtailed type	
Weight	BR2-□	Approx.63 g	
	BR2-□D	Approx.70 g	

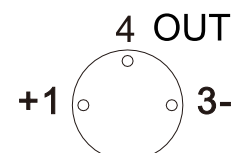
◆Dimensions :



BR2-□NPN Wiring diagram



BR2-□D



Manual

Output Indicator

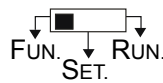
Mode Switch



Sensitivity Adjuster (Function Select)

L.on/D.on Switch

Please select FUN.



Mode Switch

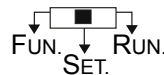


Function Switch



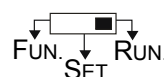
Mode Switch	
signal pulse	standard long pulse
power output	50% power standard
power saving	100% lightness 50% lightness 25% lightness
delay	no delay on delay off delay
	on one shot/ off one shot/
delay time	2ms 20ms 50ms 100ms
	500ms 1s 5s 10s
inverted display	obverse reverse

Please select SET



Please select to adjust sensing distance.

Please select RUN.

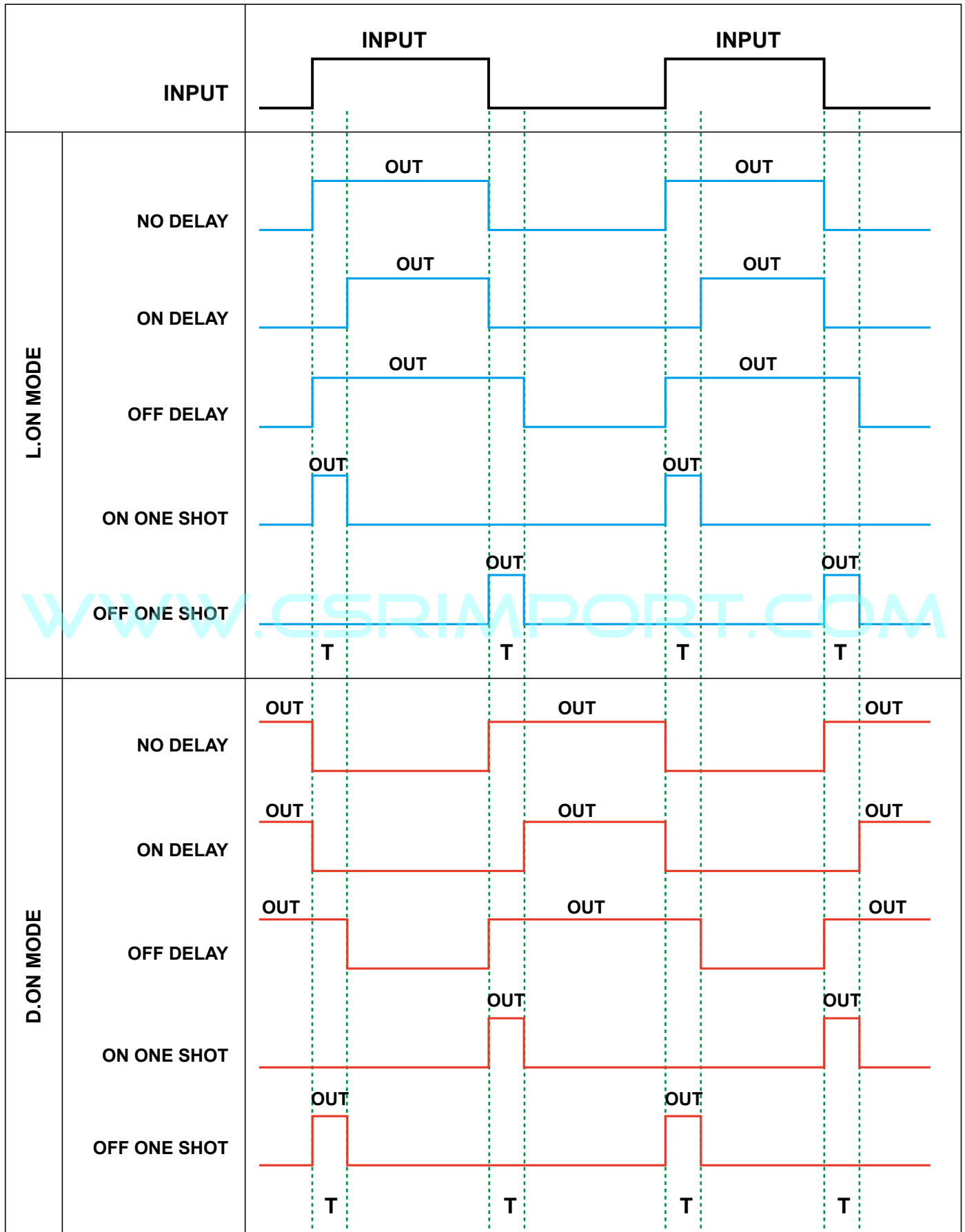


Operating mode

Example: To make BR2 on-delay 5 s, when it is in operating situation.

Step1 Please select FUN. FUN. 	Step2 Minus Button delay	Step3 Plus Button on delay	Step4 Minus Button delay time	Step5 Plus Button 5s
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◆ Operation timing chart :



DELAY TIME : 2ms ; 20ms ; 50ms ; 100ms ; 500ms

DELAY TIME : 1S ; 5S ; 10S

◆ Side mounting of amplifier :

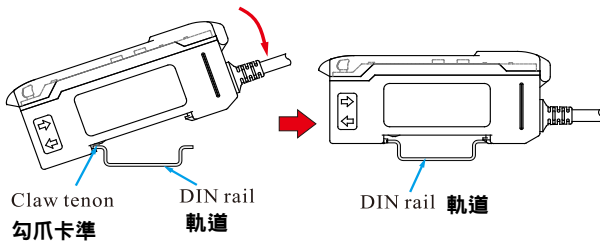
* Fixed by using the attached mounting bracket with screws. The torque must be 0.8Nm or less.



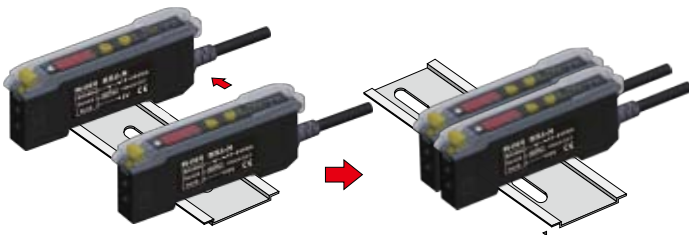
◆ Fiber amplifier mounting detaching operation

1. Mounting

(1) To mount each amplifier to the attached mounting bracket or DIN rail in sequence.



(2) To connect two amplifiers close together by sliding the amplifier bodies.



2. Detaching

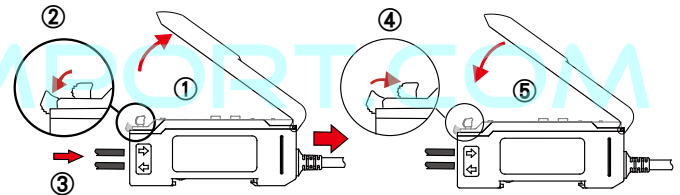
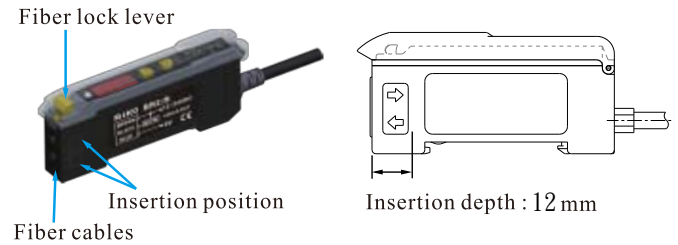
To detach the amplifiers in sequence by sliding the amplifier bodies. Don't detach two amplifiers at a time.

Be sure to switch off the power supply when mounting or detaching the amplifier.

◆ Fiber cables fixing operation :

1. Insert the fiber cables

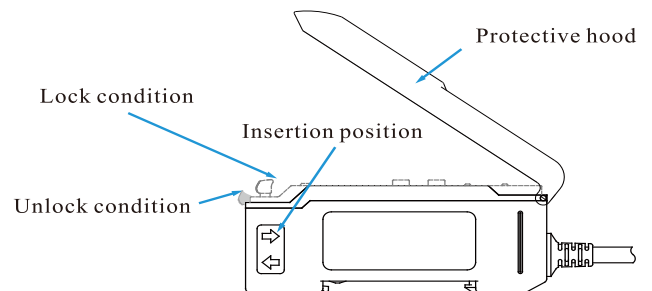
Open the protective hood and tilt the fiber lock lever to release the lock condition. Referring to the side seal of insertion position, fully insert the fiber cables into the mounting holes until the limit. Pull the fiber lock lever back to lock the cables.



- ① Open the protective hood.
- ② Tilt the fiber lock lever to release the lock condition.
- ③ Insert the fiber cables.
- ④ Pull the fiber lock lever back to lock the cables.
- ⑤ Close the protective hood.

2. Pull out the fiber cables

Open the protective hood and tilt the fiber lock lever to release the lock condition. Pull the fiber cables straight out from the mounting holes.



To protect the fiber cables from incorrect operation, be sure to tilt the fiber lock lever to release the lock condition before pulling out the fiber cables.

◆Characteristic :


- Small size, 10 mm thickness, can be mounted in a small space. Several amplifiers can be mounted side by side.
- 20-Turns Sensitivity Adjuster. The optimum sensitivity can be set easily.
- Off-delay timer adjustable for 0ms, 40ms and 400ms.




Ultra-Slim




L.on/D.on Switch
Easy selection to switch the output operation as either Light-ON or Dark-ON.



Off-delay Timer Switch
Three off-delay timers (0ms, 40ms, 400ms) adjustable.



20-turn Sensitivity Adjuster
Users can adjust the sensitivity more optimum according to different objects.



Fiber Lock Level
Special design for fiber cables fixed. Simple operation and easy maintenance.

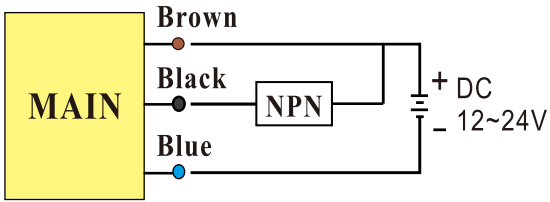


◆Specifications :

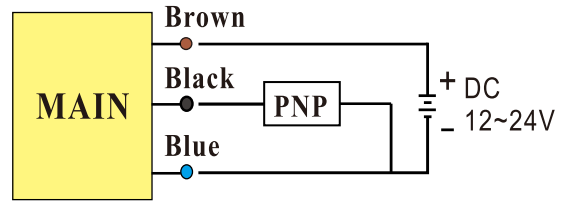
Model	Pre-wired Ø4.2	FZ1-N	FZ1-P	FZ1-NI	FZ1-PI
	M8 pigtailed type	FZ1-ND	FZ1-PD	-	-
Emitting light	Red LED 680 nm			Infrared LED 850nm	
Operating voltage	DC12~24V ± 5%				
Current Consumption	40mA Max.				
Load current	100mA Max.at DC24V				
Output type	NPN L.on / D.on	PNP L.on / D.on	NPN L.on / D.on	PNP L.on / D.on	
Protection circuit	Reversed polarity protection, over-current protection				
Response time	1 ms Max.				
Indicators	Output indicator : Red LED, Power indicator : Green LED				
Sensitivity adjustment	20 turns trimmer				
Insulation resistance	20MΩ min. (DC500V)				
Voltage withstandability	AC500V 60Hz for 60 Sec.				
Operating temperature	- 10 °C ~ + 60 °C				
Ambient humidity	35% ~ 85% RH				
Protection degree	IP64				
Material	ABS				
Wiring method	FZ1-□	Pre-wired Ø4.2 x 2 M / 3-wires			
	FZ1-□D	M8 pigtailed type / M8			
Weight	FZ1-□	Approx. 65g			
	FZ1-□D	Approx. 35g			

◆Wiring diagrams :

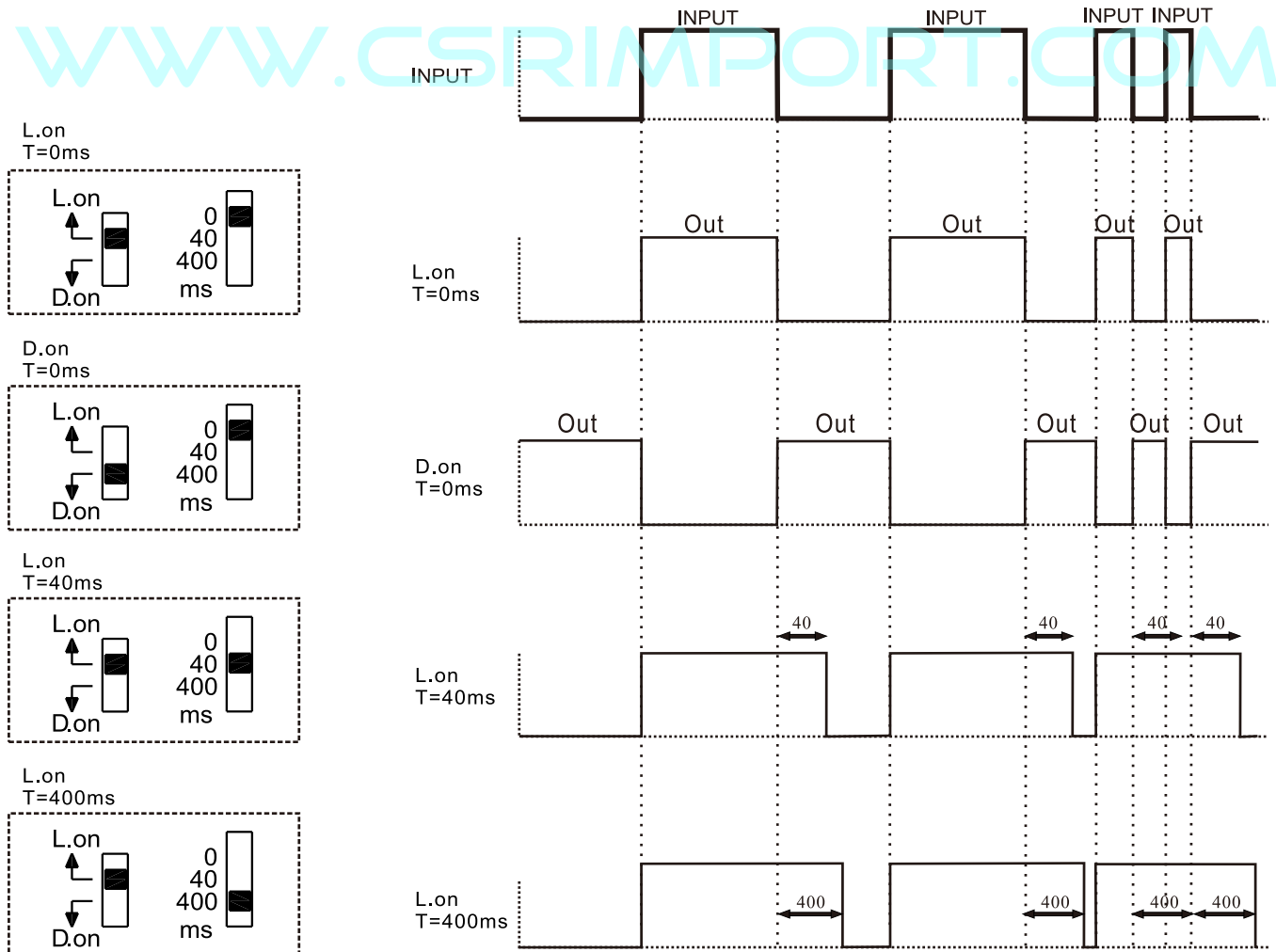
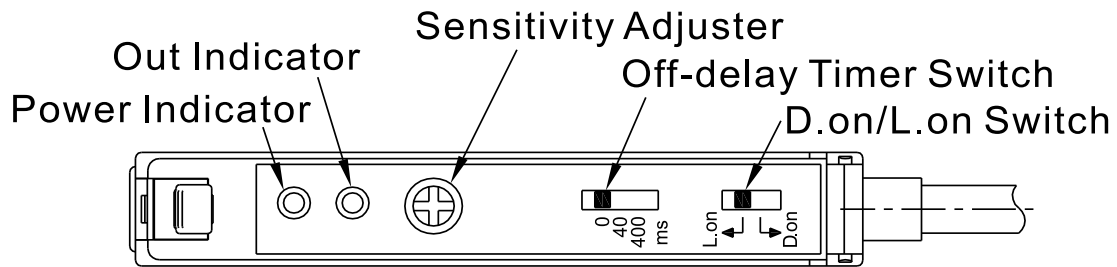
FZ1-N

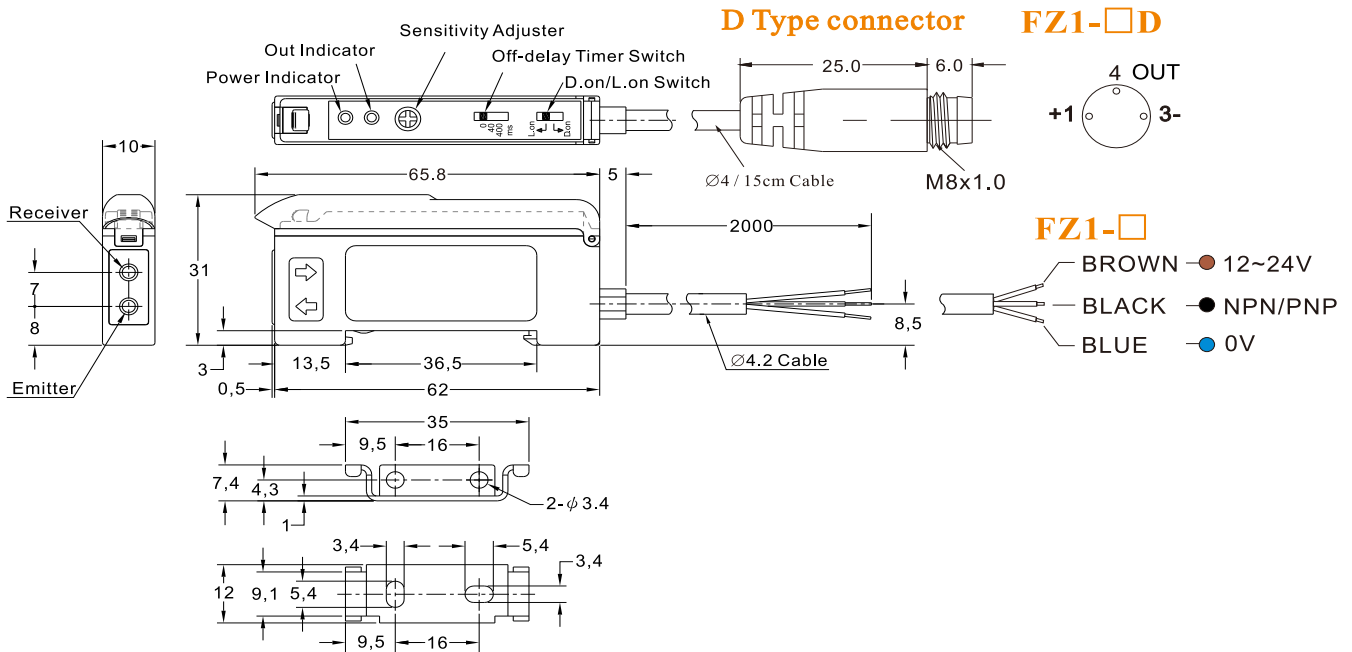


FZ1-P



◆Operation timing chart :

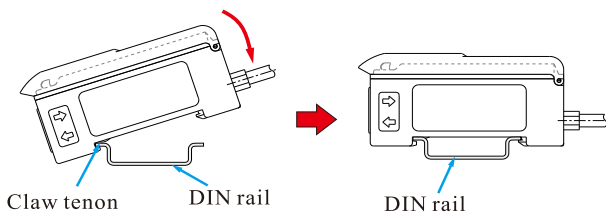




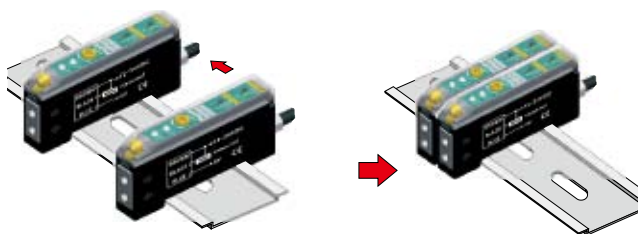
◆Fiber amplifier mounting/detaching operation :

1. Mounting

(1) To mount each amplifier to the attached mounting bracket or DIN rail in sequence.



(2) To connect two amplifiers close together by sliding the amplifier bodies.



2. Detaching

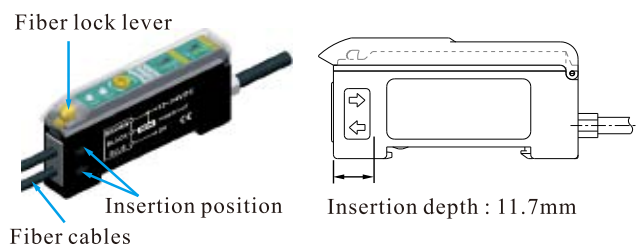
To detach the amplifiers in sequence by sliding the amplifier bodies. Don't detach two amplifiers at a time.

⚠ Be sure to switch off the power supply when mounting or detaching the amplifier.

◆Fiber cables fixing operation :

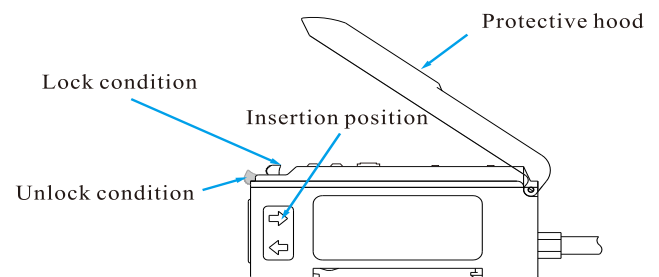
1. Insert the fiber cables

Open the protective hood and tilt the fiber lock lever to release the lock condition. Referring to the side seal of insertion position, fully insert the fiber cables into the mounting holes until the limit. Pull the fiber lock lever back to lock the cables.






















































2. Pull out the fiber cables

Open the protective hood and tilt the fiber lock lever to release the lock condition. Pull the fiber cables straight out from the mounting holes.



⚠ To protect the fiber cables from incorrect operation, be sure to tilt the fiber lock lever to release the lock condition before pulling out the fiber cables.

FZ1-N

Features	Shape	Detecting Distance (mm)	*FZ1-N	Smallest detectable object(metal wire)	Minimum bend radius	Weight(g)	Model
	 M6		90	Ø0.2	R25	43	PR-610
	 M4					40	FRB-410
	 Ø3					40	FRB-310-Q
	 M6		120	Ø0.5	R40	43	FRX-610
	 M6		70	Ø0.1	R25	40	PRC-610
	 M4		30	Ø0.05	R15	35	PRC-410
	 M3					33	PRC-310
	 Ø3					33	PRC-310-Q
	 Ø1					30	FRC7-110-Q20
	 Ø1		7	Ø0.05	R15	30	PRC4-110
	 M6		80	Ø0.02	R25	40	PRH-610
	 Ø5	40				FRH-510	
	 M4		70	Ø0.2	R2	40	FRZ-410
	 Ø3	40				FRZ-310-Q	
	 M4		20	Ø0.1	R1	40	FRW-410
	 Square		20	Ø0.1	R1	40	FRW-11
			70	Ø0.2	R2	35	PRY-67TZ
	 M6		70	Ø0.2	R2	45	PRY-610
	 M3		5	Ø0.05	R10	33	FTE-410
						35	FRA-410
	 M4					33	FRE-310
						33	FRE-310Q
	 Ø2					35	FRA-310
		33	FRE-210				
	 M4		25	Ø0.1	R15	33	FRS-410
						33	PRD-410
	 M3					33	FRS-310
						35	PRD-310
	 Ø2					33	PRS-210
	 M4		60	Ø0.05	R15	40	FRJ-410
	 M3	40				FRJ-310	
	 10x10		25	Ø1.0	R25	40	FR-10ML
 15x15		20	Ø1.0	R25	45	FR-15MLD	
 25 x 19		70	Ø1.0	R25	60	PR-20ML	
 38 x 19		70	Ø1.0	R25	36	FR-30ML	
 58 x 23		60	Ø2.0	R25	40	FR-50ML	

FIBER

Thrubeam Fiber Optics Specifications

FZ1-N

Features	Shape	Detecting Distance (mm)	*FZ1-N	Smallest detectable object(metal wire)	Minimum bend radius	Weight(g)	Model
	M6		500	Ø0.5	R25	52	FT-610
	M4					45	PT-410
	M3					45	PT-310
	M4					35	FTB-410
	M3					35	FTB-310
	Ø2					35	FTB-210
	M4		250	Ø0.2	R15	40	FTJ-410
	N4		700	Ø1.0	R40	42	FTX-410
	N4		600	Ø0.5	R25	40	PTH-410
	M3		30	Ø0.03	R10	35	FTA-310
	Ø2					33	FTA-210
	Ø1					32	FTE-110
	M6		300	Ø0.5	R2	47	FTY-610
	M4					45	PTY-410
	M3					40	PTY-310
	M4					40	FTZ-410
	M3					40	FTZ-310
	M4					80	Ø0.05
	Square	80	Ø0.05	R1	40	FTW2-11	
	M6		250	Ø0.5	R2	40	FTY-67TZ
	M4		250	Ø0.5	R2	42	FTY-77TZ
	Ø1.5		80	Ø0.05	R1	50	FTW2-475D
	M4		130	Ø0.05	R15	35	FTS-410
	M3					35	PTS2-310
	M3					35	PTD-310
	Ø2					33	PTS-210
	Ø2					33	PTD-210
	Ø1					30	PTC4-110
	Ø2		100	Ø0.1	R15	33	PTC4-210
	10x10		500	Ø1.0	R15	35	FT-10ML
	15x15		400	Ø1.0	R25	55	FT-15MLD
	19x25		500	Ø1.0	R60	95	PT-20ML
38x19		300	Ø1.0	R60	62	FT-30ML	
58x23		300	Ø2.0	R60	65	FT-50ML	