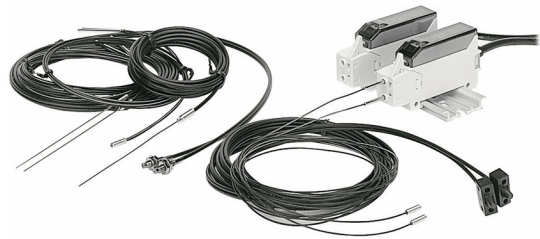


# BF3 Series

## High Accuracy Fiber Optic Amplifier with Twin Adjuster

### ■ Features

- Convenient DIN rail mounting type
- Response time: max. 1ms
- Enables to adjust sensitivity with high accuracy by dual adjuster
- Selectable Light ON/Dark ON operation mode by control wire
- Reverse power polarity protection and output short overcurrent protection circuit
- Enables to use for explosion proof (fiber part)
- Adjustable length with free cut type fiber optic cable



**⚠ Please read "Safety Considerations" in the instruction manual before using.**

### ■ Ordering Information

**BF 3 RX - P**

Item	BF	3	RX	-	P
		Series	Light source		Control output
				No mark	NPN open collector output
				P	PNP open collector output
			RX		Red LED
		3			Series
	BF				Fiber Sensor

### ■ Specifications

Model	BF3RX	BF3RX-P
Response time	Max. 1ms	
Power supply	12-24VDC ≒ ±10% (ripple P-P: max. 10%)	
Current consumption	Max. 40mA	
Light source	Red LED (660nm)	
Sensitivity adjustment	Sensitivity adjuster (dual adjustment: coarse adjustment, fine adjustment)	
Operation mode	Selectable Light ON or Dark ON by control cable	
Control output	NPN or PNP open collector output ●Load voltage: max. 30VDC ≒      ●Load current: max. 200mA, ●Residual voltage - NPN: max. 1V, PNP: max. 2.5V	
Protection circuit	Reverse power polarity protection circuit, output short overcurrent protection circuit	
Indication	Operation indicator: red LED	
Insulation resistance	Over 20MΩ (at 500VDC megger)	
Noise immunity	±240V the square wave noise (pulse width: 1μs) by the noise simulator	
Dielectric strength	1,000VAC 50/60Hz for 1minute	
Vibration	1.5mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 2 hours	
Shock	500m/s <sup>2</sup> (approx. 50G) in each X, Y, Z direction for 3 times	
Environment	Ambient illumination	Sunlight: max. 11,000lx, incandescent lamp: max. 3,000lx (receiver illumination)
	Ambient temperature	-10 to 50°C, storage: -25 to 70°C
	Ambient humidity	35 to 85%RH, storage: 35 to 85%RH
Material	Case: acrylonitrile butadiene styrene, cover: polycarbonate	
Cable	Ø5mm, 4-wire, 2m (AWG24, core diameter: 0.08mm, number of cores: 40, insulator out diameter: Ø1mm)	
Accessory	Adjustment screwdriver, bracket, bolts, nuts	
Unit weight	Approx. 90g	

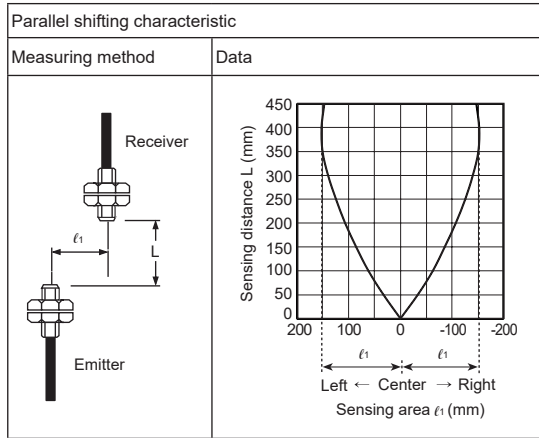
※The temperature or humidity mentioned in Environment indicates a non freezing or condensation environment.

# Fiber Optic Amplifier

## Feature Data

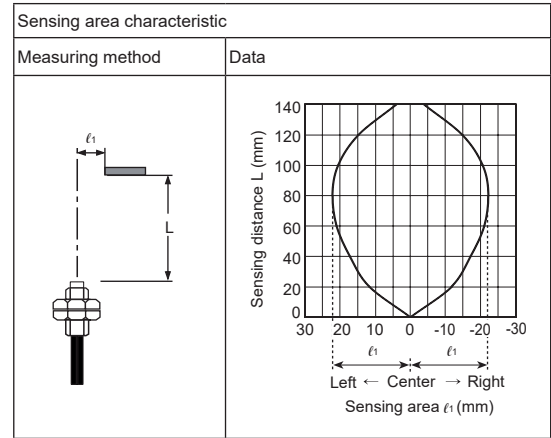
### Through-beam type

● Measurement: BF3RX + FT-420-10



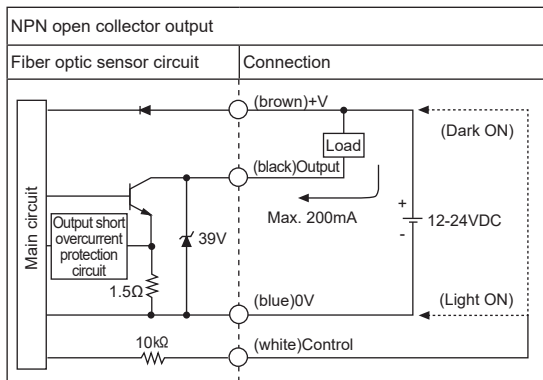
### Diffuse reflective type

● Measurement: BF3RX + FD-620-10

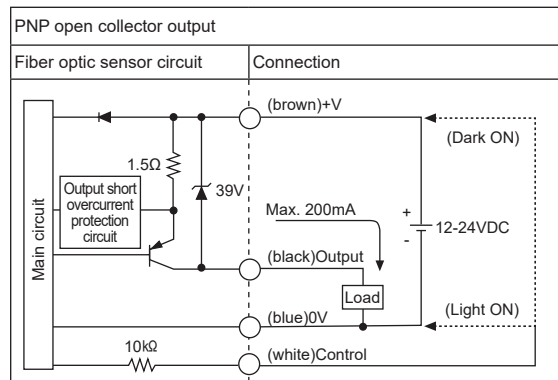


## Control Output Diagram

● BF3RX

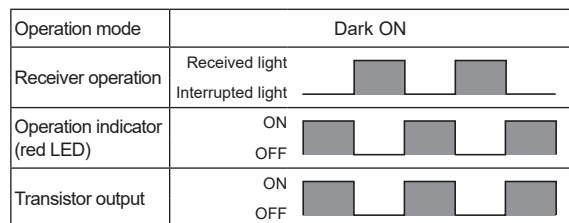
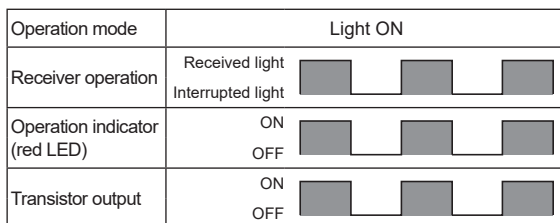


● BF3RX-P



※When selecting Dark ON or Light ON, please use control wire (White)   
 Light ON: Connect control wire to 0V   
 Dark ON: Connect control wire to +V

## Operation Mode



SENSORS

CONTROLLERS

MOTION DEVICES

SOFTWARE

(A) Photoelectric Sensors

(B) Fiber Optic Sensors

(C) LiDAR

(D) Door/Area Sensors

(E) Vision Sensors

(F) Proximity Sensors

(G) Pressure Sensors

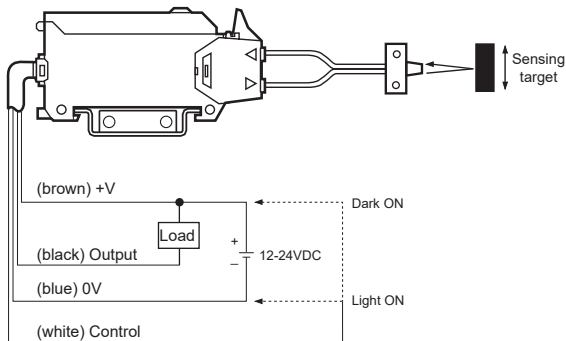
(H) Rotary Encoders

(I) Connectors/ Connector Cables/ Sensor Distribution Boxes/ Sockets

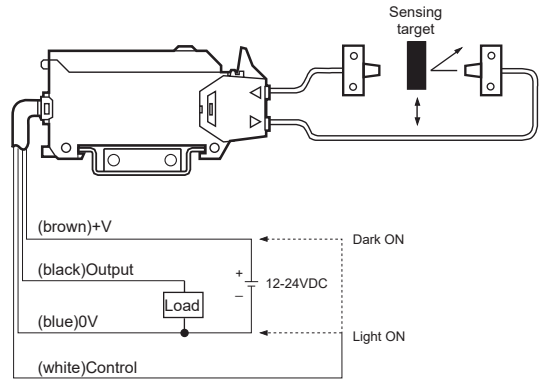
# BF3 Series

## ■ Connections

### ● BF3RX



### ● BF3RX-P



※ Enables to use diffuse reflective type or through-beam type according to the fiber optic cable.

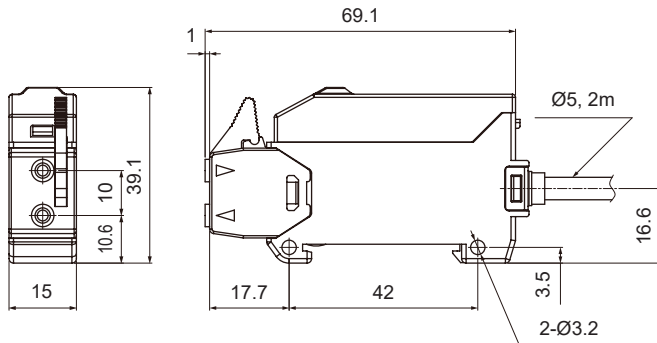
※ **Adapter** marked fiber optic cable should be used with adapter ( ).

※ GT-420-13H2 cannot be used because the length inserted into amp is too short.

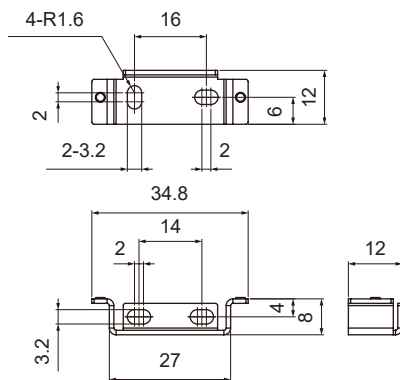
## ■ Dimensions

(unit: mm)

### ○ Amplifier



### ○ Bracket

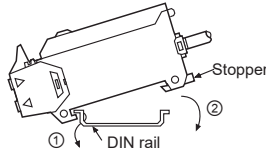


## ■ Installations

### ◎ Mounting amplifier unit

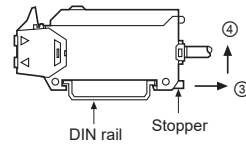
#### ● When mounting the amplifier

- ① Hook the front part of the amplifier on DIN rail (or bracket).
- ② Press the rear part of the amplifier on DIN rail (or bracket).



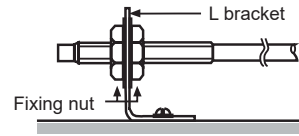
#### ● When releasing the amplifier

Push the back of amplifier toward ③ and lift the hole for fiber toward ④ up then simply take it out without tools.

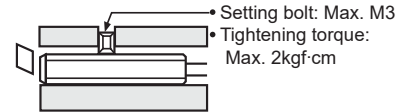


### ◎ Installation of fiber optic cable

#### ● In case of using L bracket

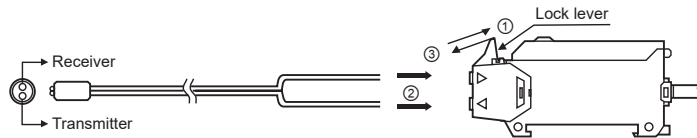


#### ● In case of using screw



※Notice: If setting bolt is tightened with over specified tightening torque, hood of fiber optic cable may be damaged.

### ◎ Connection of fiber optic cable & amplifier



- ① Open the lock lever to "↙" direction.
- ② Insert the fiber optic cable in the amplifier slowly. (depth: approx. 21mm)
- ③ Close the lock lever to "↗" direction.

## ■ Sensitivity Adjustment

### ◎ Adjustment by the sensitivity setting button (common)

- Adjust as the optimum sensitivity according to the order as below.
- Please observe below chart because operation lamp will be changed by sensing method.

Order	Sensing type		Adjustment	Adjuster	
	Reflective	Through-beam		COARSE	FINE
1	Initial setting		The adjuster (coarse) should be fixed at min and fixed at center (▼) for Fine adjustment.		
2	Light ON 	Light ON 	Fix the adjuster (coarse) to ON position by turning clockwise slowly when light is being received.		
3	Light ON 	Light ON 	Turn the adjuster (fine) until it is OFF toward (-), and turn until it is ON toward (+) again, then confirm that this will be A position.	The adjuster is not required to set afterward.	
4	Dark ON 	Dark ON 	And then turn the adjuster (fine) until it is ON toward (+), and turning until it is OFF toward (-) again when light is not received. Then confirm that this position will be B position. (When it will not be ON, max. position will be B.)		
5	—	—	Fix it at the middle of A and B position. This will be the best position to set.		
6	Light ON 	Light ON 	If you cannot adjust as above method, set the adjuster (fine) at max. position toward (+), then execute again.		

SENSORS

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