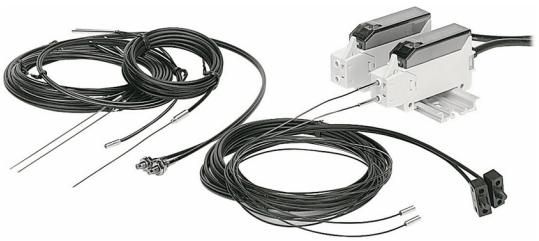
High Accuracy Fiber Optic Amplifier With Twin Adjuster

▣ 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 and short-circuit (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 operation manual before using.**

▣ Ordering Information

BF **3** **RX** - **P**

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, output short-circuit 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/s² (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℃, storage: -25 to 70℃	
	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		Sensitivity adjuster driver, bracket, bolts, nuts	
Unit weight		Approx. 90g	

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

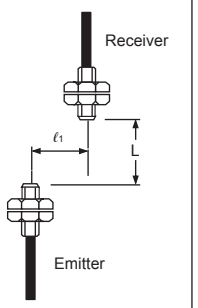
▣ Feature Data

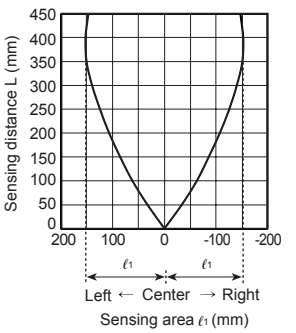
◎ Through-beam type

● Measurement: BF3RX + FT-420-10

Parallel shifting characteristic

Measuring method	Data



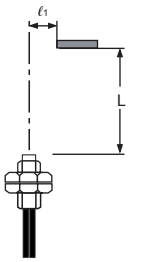


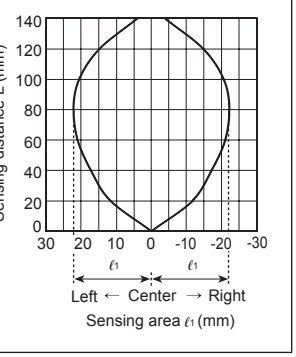
◎ Diffuse reflective type

● Measurement: BF3RX + FD-620-10

Sensing area characteristic

Measuring method	Data



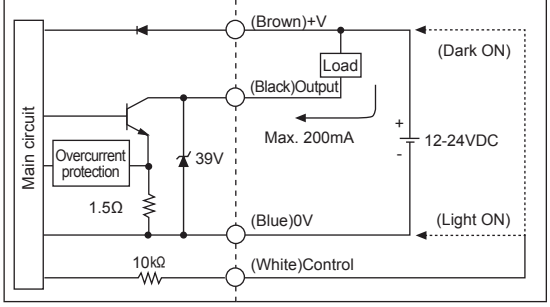


▣ Control Output Diagram

● BF3RX

NPN open collector output

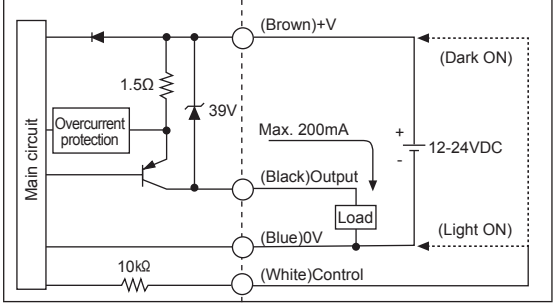
Fiber optic sensor circuit	Connection



● BF3RX-P

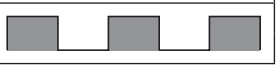
PNP open collector output

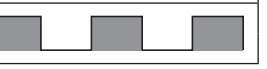
Fiber optic sensor circuit	Connection



※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

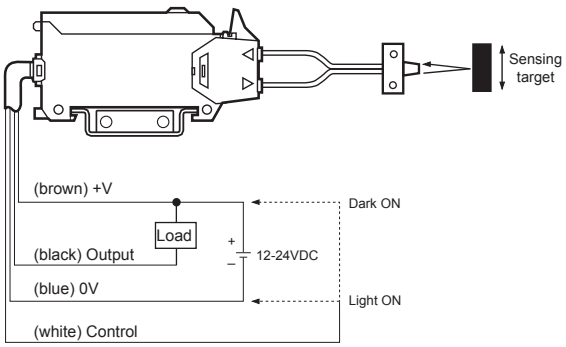
▣ Operation Mode

Operation mode	Light ON	
Receiver operation	Received light Interrupted light	
Operation indicator (red LED)	ON OFF	
Transistor output	ON OFF	

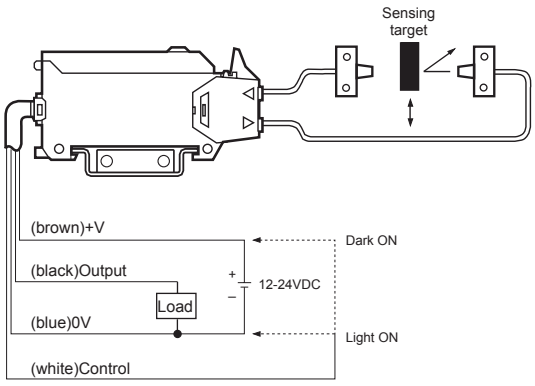
Operation mode	Dark ON	
Receiver operation	Received light Interrupted light	
Operation indicator (red LED)	ON OFF	
Transistor output	ON OFF	

▣ Connections

● **BF3RX**



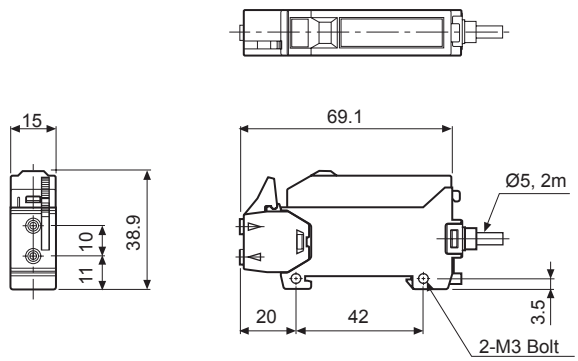
● **BF3RX-P**



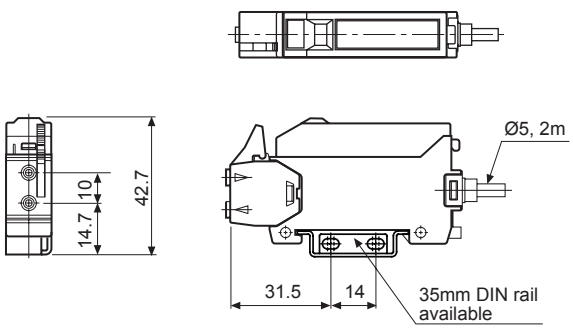
※Enables to use diffuse reflective type or through-beam type according to the fiber optic cable.
※Adapter marked fiber optic cable should be used with adapter ( ).
※GT-420-13H2 cannot be used because the length inserted into amp is too short.

▣ Dimensions

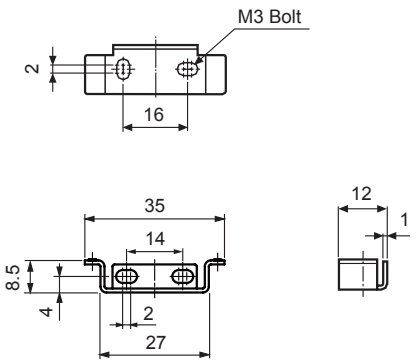
(unit: mm)



● **Connect the bracket**



● **Bracket**

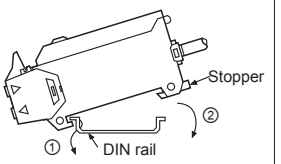


▣ Installations

◎ Mounting amplifier unit

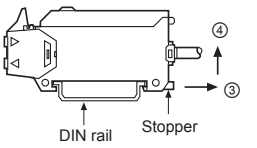
● When mounting the amplifier

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



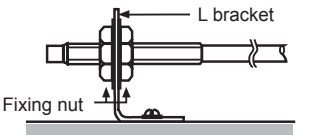
● When releasing the amplifier

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

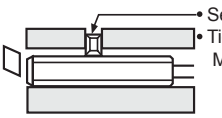


◎ Installation of fiber optic cable

● In case of using L bracket

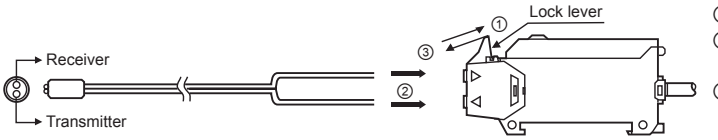


● In case of using screw



※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.	Min.	(-) (+)
2	Light ON	Light ON	Fix the adjuster (coarse) to ON position by turning clockwise slowly when light is being received.	ON Min.	(-) (+)
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.	ON A OFF (-) (+)
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.)		OFF B ON (-) (+)
5	—	—	Fix it at the middle of A and B position. This will be the best position to set.		A B (-) (+)
6	Light ON	Light ON	If you cannot adjust as above method, set the adjuster (fine) at max. position toward (+), then execute again.	Min.	(-) (+) Max.