Manual Setting Type

Twin volume built in, high accuracy type

▣Features

- ●Convenient DIN rail type
- ●High speed response : Max. 1ms
- ●Able to adjust high accuracy by Coarse and Fine sensitivity
- ●Selectable Light ON/Dark ON mode by control wire
- ●Over current protection and Reverse power polarity protection.
- ●Able to detect small targets
- ●Free cut type fiber optic cable

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

▣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(Modulated)	
Sensitivity adjustment	Adjustable VR(Double adjustment : Coarse adjustment, Fine adjustment)	
Operation mode	Selectable Light ON/Dark ON by control wire	
Control output	●NPN open collector output ☞ Load voltage : Max. 30VDC, Load current : Max. 200mADC, Residual voltage : Max. 1VDC	●PNP open collector output ☞ Output voltage : Min. (Power supply-2.5)VDC Load current : Max. 200mADC
Protection circuit	Reverse polarity protection, Output short-circuit protection	
Indication	Operation indicator : Red LED	
Connection	Outgoing cable	
Insulation resistance	Min. 20MΩ(at 500VDC)	
Noise strength	±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 ~ 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	
Ambient temperature	-10 ~ +50℃(at non-freezing status), Storage : -25 ~ +70℃	
Ambient humidity	35 ~ 85%RH, Storage : 35 ~ 85%RH	
Material	Case : ABS	
Accessory	4P, φ5mm, Length : 2m	
Cable	Adjustment driver, Mounting bracket, Bolts/Nuts	
Weight	Approx. 90g	

(A) Counter
(B) Timer
(C) Temp. controller
(D) Power controller
(E) Panel meter
(F) Tacho/ Speed/ Pulse meter
(G) Display unit
(H) Sensor controller
(I) Proximity sensor
(J) Photo electric sensor
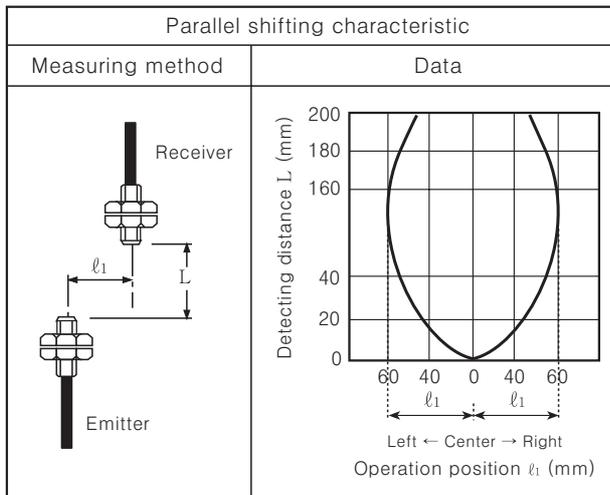(K) Pressure sensor
(L) Rotary encoder
(M) 5-Phase stepping motor & Driver & Controller
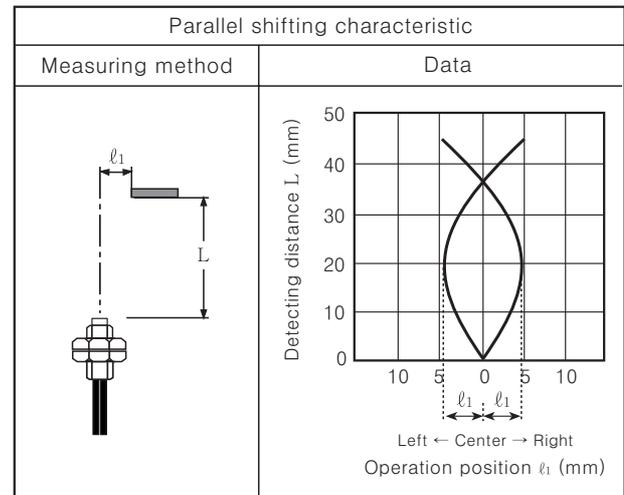
BF3RX

▣ Characteristic
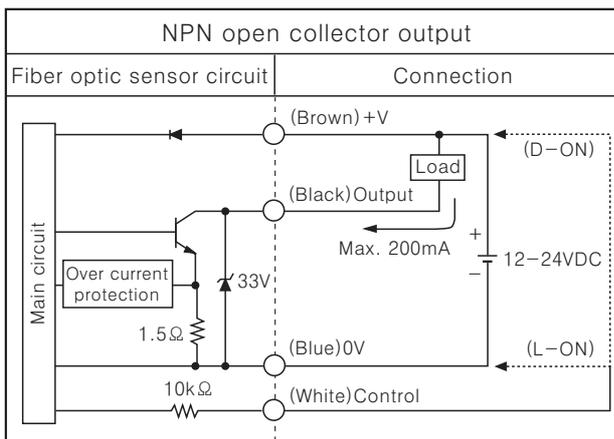
◎ Through-beam
● Measurment : BF3RX + FT-420-10

Parallel shifting characteristic	
Measuring method	Data

Receiver

ℓ_1

L

Emitter

Detecting distance L (mm)
200
180
160
40
20
0

60 40 0 40 60
ℓ_1 ℓ_1

Left ← Center → Right
Operation position ℓ_1 (mm)

◎ Diffuse reflective
● Measurment : BF3RX + FD-620-10

Parallel shifting characteristic	
Measuring method	Data

ℓ_1

L

Detecting distance L (mm)
50
40
30
20
10
0

10 5 0 5 10
ℓ_1 ℓ_1

Left ← Center → Right
Operation position ℓ_1 (mm)

▣ Control output diagram

● BF3RX

NPN open collector output	
Fiber optic sensor circuit	Connection

Main circuit

Over current protection

33V

1.5Ω

10kΩ

(Brown)+V
(Black)Output
Max. 200mA
(Blue)0V
(White)Control

Load
(D−ON)
12−24VDC
(L−ON)

● BF3RX-P

PNP open collector output	
Fiber optic sensor circuit	Connection

Main circuit

1.5Ω

Over current protection

39V

10kΩ

(Brown)+V
Max. 200mA
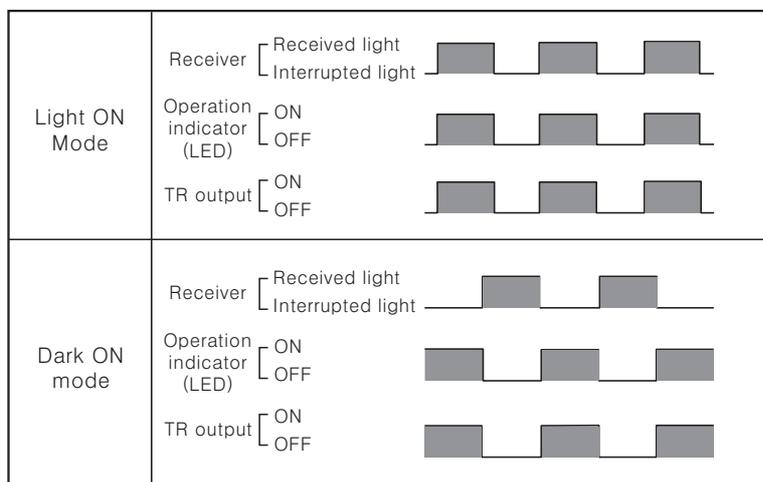(Black)Output
(Blue)0V
(White)Control

Load
(D−ON)
12−24VDC
(L−ON)

※When select Dark ON or Light ON, please use control wire(White)

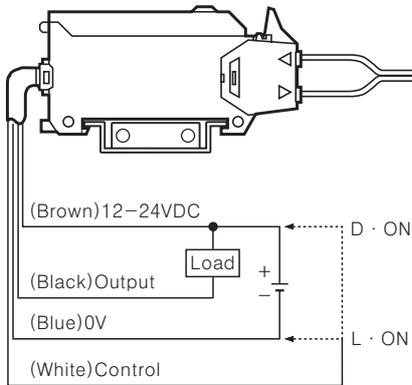Light ON : Connect control wire to 0V
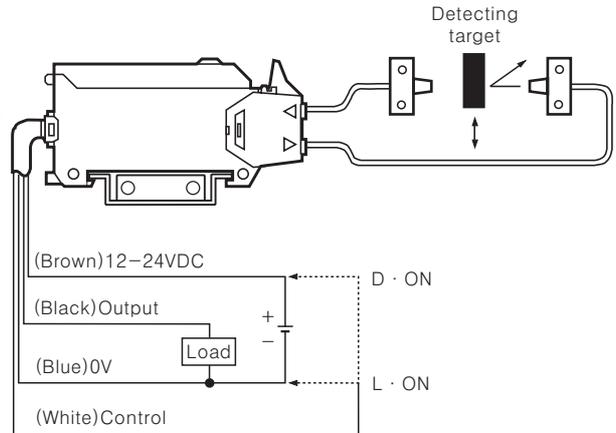Dark ON : Connect control wire to +V

▣ Operation mode

Light ON Mode	Receiver	Received light / Interrupted light	
	Operation indicator (LED)	ON / OFF	
	TR output	ON / OFF	
Dark ON mode	Receiver	Received light / Interrupted light	
	Operation indicator (LED)	ON / OFF	
	TR output	ON / OFF	

Manual Setting Type

▣ Connections

◎**BF3RX**

(Brown)12−24VDC — D·ON
(Black)Output — Load +−
(Blue)0V — L·ON
(White)Control

◎**BF3RX-P**

Detecting target

(Brown)12−24VDC — D·ON
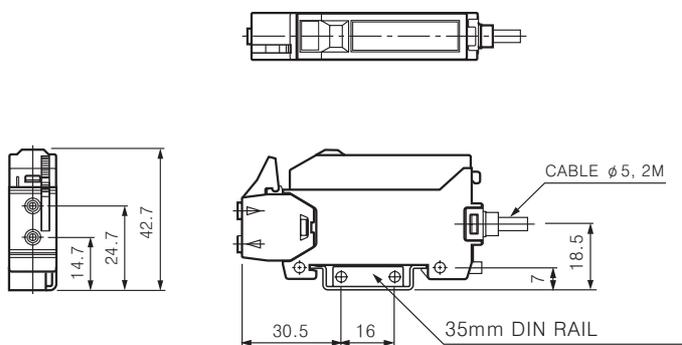(Black)Output
(Blue)0V — Load +− — L·ON
(White)Control

Detecting target
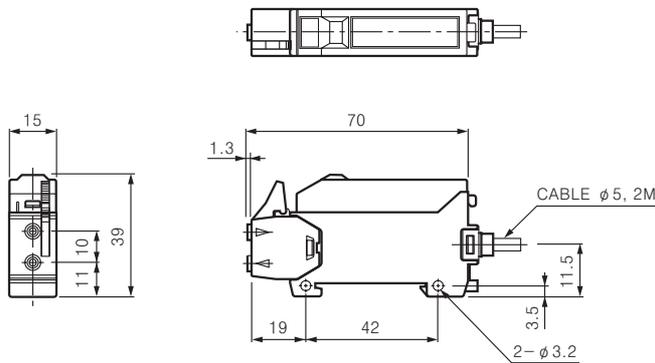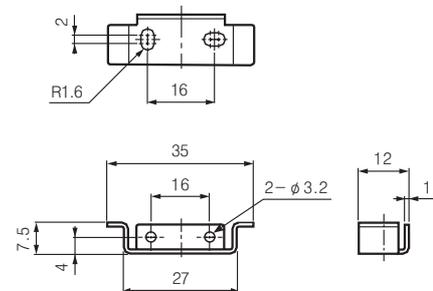
※Able to use as Diffuse type or Through beam type according to the fiber Optic Cable.
※ **Adapter** marked Fiber Optic Cable should be used with Adapter( ).
※ GT−420−14H2 can not be used becomes the length inserted into Amp is too short.

▣ Dimensions

Unit：mm

15 / 39 / 11 / 10
70 / 1.3 / CABLE φ5, 2M / 11.5 / 3.5 / 19 / 42 / 2−φ3.2

42.7 / 24.7 / 14.7
CABLE φ5, 2M / 18.5 / 7 / 30.5 / 16 / 35mm DIN RAIL

◎Bracket
2 / R1.6 / 16
35 / 16 / 2−φ3.2 / 12 / 1 / 7.5 / 4 / 27

Sidenavigation: (A) Counter, (B) Timer, (C) Temp. controller, (D) Power controller, (E) Panel meter, (F) Tacho/Speed/Pulse meter, (G) Display unit, (H) Sensor controller, (I) Proximi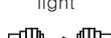ty sensor, (J) Photo electric sensor, (K) Pressure sensor, (L) Rotary encoder, (M) 5-Phase stepping motor & Driver & Controller

Autonics

J−56

▣ Sensitivity

- Use by adjusting the optimal sensitivity according to the order written on the below table.
- Please adjusting by observing operation lamp. Please observe below chart because operation lamp will be changed by detecting method.
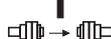
Order	Detection type		Adjusting	VR	
	Diffuse reflective	Through−beam		COARSE	FINE
1	Initial setting		VR(Coarse) should be fixed at min. and VR(Fine) should be fixed at center(▼).	MIN	(−) (+)
2	Received light	Received light	Adjust VR(Coarse) to ON position by turning clockwise slowly when light is being received.	ON MIN	(−) (+)
3	Received light	Received light	Turn VR(Fine) until it is OFF toward(−), and turn until it is ON toward(+) again, then confirm that this will be A position.		A ON OFF (−) (+)
4	Interrupted light	Interrupted light	And then turn VR(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.)	Coarse VR is not required to adjust afterwards	OFF B (−) (+) ON
5	———	———	Fix it at middle of A and B position. This will be the best position to set.		A B (−) (+)
6	Received light	Received light	If you cannot adjust as above method, set VR(Fine) at max. position toward(+), then execute again.	MIN	(−) (+) MAX