OPTEX FA

FIBER SENSOR

BRF SERIES

INSTRUCTION MANUAL

BRF-□ Standard	B2RF-□ Extension Amp. Standard
BRF-H□ Speed	B2RF-H□ Extension Amp. Speed
BGF-□ Mark sensing	B2GF-□ Extension Amp. Mark sensing
BIF-□ Moisture sensing	B2IF-□ Extension Amp. Moisture sensing

● Confirm if the item meets your needs.
● Before the use, you should first thoroughly read this manual and operate correctly as mentioned.
● You should keep this manual at hand for proper use.

Specification

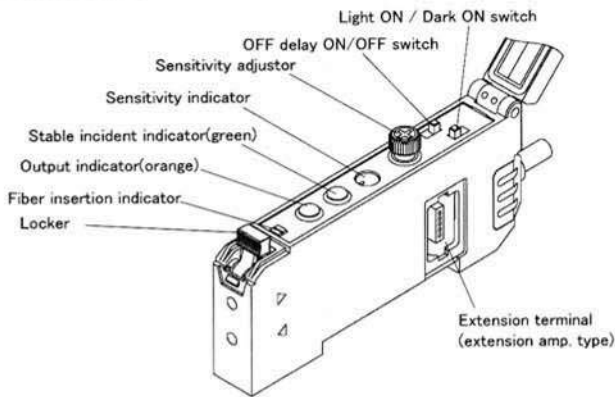| Type		Standard	High Speed	Mark Sensing	Moisture Sensing
Normal	Cable Type	BRF(N,P)	BRF-H(N,P)	BGF(N,P)	BIF-W(N,P)
	Connector Type	BRF-C(N,P)	BRF-CH(N,P)	BGF-C(N,P)	BIF-CW(N,P)
Extension	Cable Type	B2RF(N,P)	B2RF-H(N,P)	B2GF(N,P)	B2IF-W(N,P)
	Connector Type	B2RF-C(N,P)	B2RF-CH(N,P)	B2GF-C(N,P)	B2IF-CW(N,P)
Light Source		Red LED	Red LED	Green LED	Infrared LED
Supply Voltage		DC10 ~ 30V including 10% ripple(P-P)			
Current Consumption		normal type 25mA max.(12V) , extension amp. type 35mA max.(12V)			
Response Time		250 μ s	50 μ s	250 μ s	1ms
Timer Function		40ms Off delay timer			
Sensitivity Adjustment		10 rotation volume			
Indicator		Output indicator (orange LED)			
Control Output		NPN/PNP open collector DC30V 100mA max.			
Operation Mode		Light ON / Dark ON switch selectable			
Circuit Protection		Reverse polarity / output over current / short circuit protection			
Ambient Temp. / Humid.		-25~55℃ *1/ 35~85%			
Ambient Illuminance		sunlight: 10,000 lx max. incandescent light: 3,000 lx max.			
Protection Category / Material		normal type: IE Standard IP66, extension amp. type:IE Standard IP50 / housing : PBT cover : PC			
Weight		cable type: about 70g / connector type: about25g / extension amp. cable type: about 20g / extension amp. connector type: about 25g			

*1 extension 3~4pcs -25~50℃ Moisture Types (BIF-W, etc) are not connectable together with other types due to slower response time.

Warnings

○ Usage in the following environment must cause damages.

● Dusty and vaporous place
● Corrosive gas environment
● Water and oil scattering environment
● Intense shock and vibration

○ In case of switching regulator, frame ground (FG) must be grounded.

○ Warm-up period (approx. 100 ms.) must be secured.

○ Should avoid parallel wiring with high-voltage wire and/or power line. Never install in same conduit.

⚠ Must not use the item for the purpose of human body protection.

Parts name

Light ON / Dark ON switch
OFF delay ON/OFF switch
Sensitivity adjustor
Sensitivity indicator
Stable incident indicator(green)
Output indicator(orange)
Fiber insertion indicator
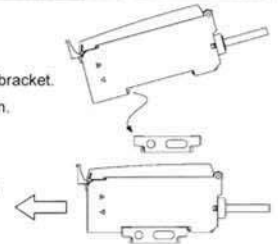Locker
Extension terminal (extension amp. type)

Set up amplifier unit

●Set up:
① Attach the front of the amplifier onto the DIN rail or bracket.
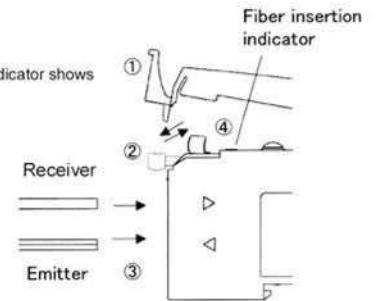② Push the back of the amplifier down until it snaps on.

●Removal:
Push the amplifier forward as shown by the arrow and lift the front to release.

Set up fiber unit

① Open the protective cover
② Push the fiber lock lever down to unlock.
③ Insert the fiber cables into the amplifier until the indicator shows
④ Lock the cables in by closing the fiber lock lever.

● To remove the cables, unlock the lever by pushing it down and pull the cables out.

Fiber insertion indicator
Receiver
Emitter

* Coaxial type - the cable with the white stripe or the single fiber core is the emitter, the cable with the multiple strands is the receiver.
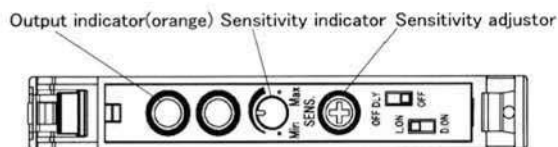
Cable In/Out (extension amp. type)

● Connecting: Push the cable until it snaps into the locked position.
● Removing: Press the lever down and pull back.

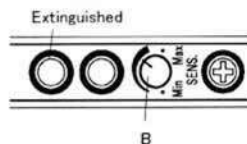Warning! Excessive pressure on the lever will damage it or the connector.

Lever
Snap!
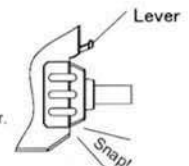
Adjusting the potentiometer

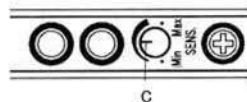Output indicator(orange) Sensitivity indicator Sensitivity adjustor

① Set the target at the position it is to be detected, turn the potentiometer from MIN towards MAX until the output indicator (orange) turns on. Call this position A.

Light up

A
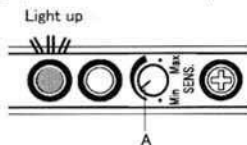
② Remove the target and turn the potentiometer from MAX towards MIN until the output indicator (orange) turns off. Call this position B.
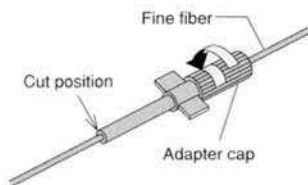
Extinguished

B

③ Turn the potentiometer to the point midway between points A and B (this is point C), this is the optimal sensitivity setting.

C

The position of points A and B may be reversed depending upon the type of fiber used and the detecting situation.

Amplifier extension (extension amp. type)

● Extension
  ① Attach the extension connector to the amplifier.
  ② Mount the amplifier onto the DIN rail and slide into position next to the amplifier that is to be connected to.

● Removal
 Slide apart and remove from DIN rail.

  ! Moisture Types (BIF-W, etc.) are not compatible with other types due to a slower response time.

  ! When connecting more than 3 amplifiers together the ambient temperature must be in the range of -25 to +50 degrees C.

  ! When connecting amplifiers together use the DIN rail stop BEF-EB01-W190 to hold the amplifiers in place.

  ! Turn the power off when connecting amplifiers together.

  ! Attach the protective cover the the amplifier openings at either end of the row.

Slide

Extension connector
Fit socket to
base amplifier

Protection cover
BF－WLL190-01

BEF-EB01-W190
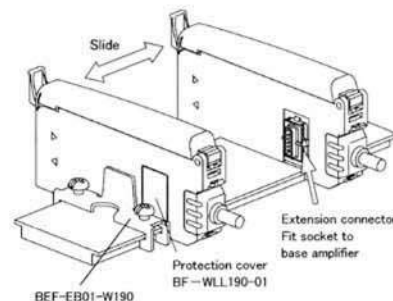
Check (extension amp. type)

● Interference protection
  The Interference prevention functions in groups of four amplifiers. You are requested to install the amplifiers in multiples of four when interference prevention is required.
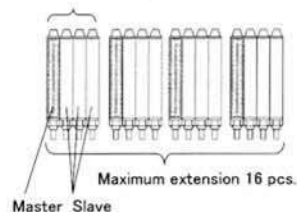 Any amplifier can be the Master or the Slave.

  ! Moisture Types (BIF-W, etc.) are not able to be connected with other types due to the slower response time.

  ! Interference prevention is not incorporated in the High Speed models.

● Ambient temp
  The ambient temperature rating is limited by the number of amplifiers used and the ambient temperature. We guarantee parallel installation of up to 16 amplifiers when following the temperature rating's listed in the table to the right.

4 amplifiers as a group
for interference prevention.

Maximum extension 16 pcs.

Master Slave

extension	ambient temp
2pcs	+55° max
3～10pcs	+50° max
11～16pcs	+45° max

※supply voltage 24V

Fiber unit:

○ Fine diameter adapter

Fine fiber

Cut position

Adapter cap

① Turn the fiber adapter cap fully counter-clockwise, insert the fiber cable to the desired position. Turn the fiber adapter cap back clockwise to lock.

② Use the fiber cutter to cut the cable to the desired length.

Caution: Repeated use of the fiber cutter will cause it to lose it's edge and result in poor performance.

Input/ Output circuit design

NPN	
(Brown) ①	10~30V DC
(Black) ④	Control output
(Blue) ③	0V

PNP	
(Brown) ①	10~30V DC
(Black) ④	Control output
(Blue) ③	0V

Pin configuration

② ④
① ③

① DC10~30V
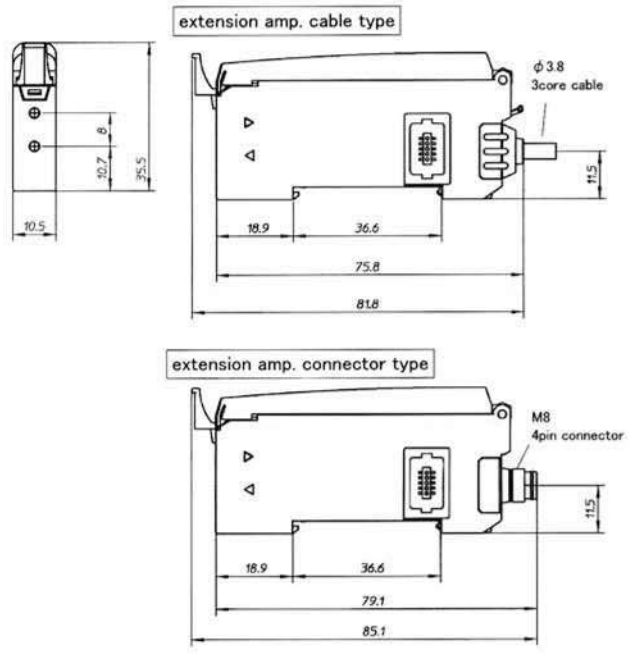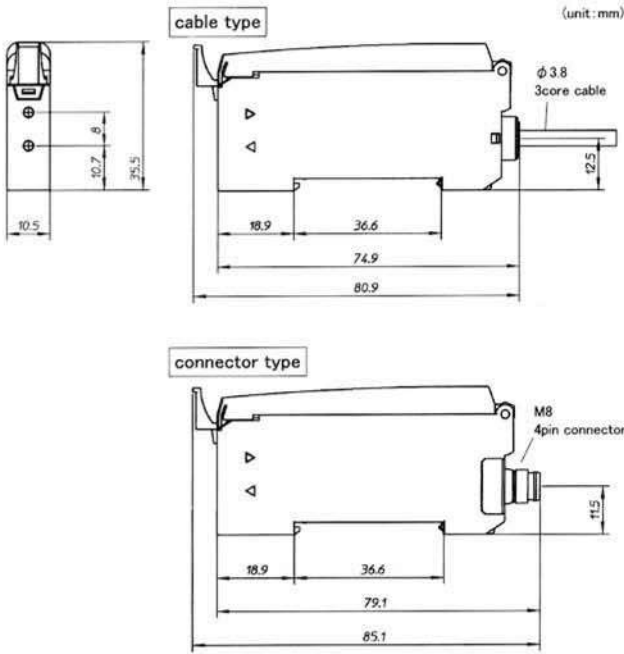② -
③ 0V
④ Control output
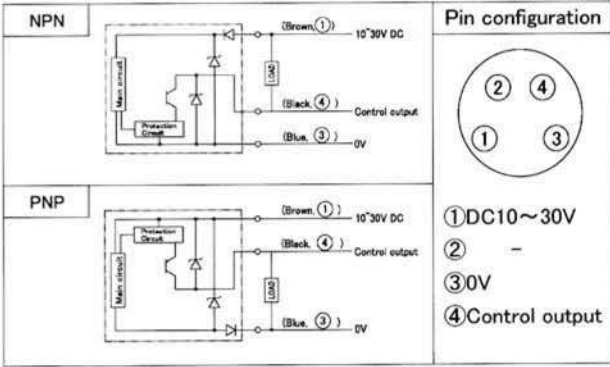
Options

○ Cable

Base cable   DOL-LL1903-02M
                    DOL-LL1903-05M

Sub cable   DOL-LL1901-02M
                   DOL-LL1901-05M

Attachment

○ Extension connector
for cable type   STE-WLL190-05P
for connector type STE-WLL190-03P

○ Protective cover for the
   extension type amplifiers
                            (2pcs)

BF-WLL190-01

○ DIN rail mounting fixture

BEF-EB01-W190

Dimensions

(unit: mm)

cable type

φ3.8
3core cable

35.5
8
10.7
10.5
18.9   36.6
74.9
80.9
12.5

connector type

M8
4pin connector

18.9   36.6
79.1
85.1
11.5

extension amp. cable type

φ3.8
3core cable

35.5
8
10.7
10.5
18.9   36.6
75.8
81.8
11.5

extension amp. connector type

M8
4pin connector

18.9   36.6
79.1
85.1
11.5

- Specifications and equipment are subject to change
  without any obligations on the part of manufacture.

- For more information, questions and comments
  regarding products, please contact us below.

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