Fiber Optic Sensor Amplifier Type FA1

- **Distance range is fiber dependent Please see the FUR, FUT datasheet**
- **Easy set-up using 3-ways adjustment switch**
- **2 X 4 digits display to show signal level and threshold**
- **Display direction can be inverted to suit different mounting**
- **Output 100mA NPN or PNP**
- **Light on and dark on switching selectable**
- **Operational voltage 12 to 24 VDC**
- **On, off, on one shot, off one shot delay timer**
- **Response time 200, 500, 1000, 5000µS**

Product Description

FA1 series amplifier is a fiber optic amplifier most suitable to be used with FUR/FUT fibers to achieve various detection distance.

FA1 has a 2 x 4 digits LED display to show the signal level and threshold respectively. Display direction can be inverted to suit different installation needs.

FA1 is also equipped with a 3-ways adjuster switch to adjust sensitivity and different response time.
The sensor output is either NPN or PNP and is selectable to be light on or dark on. There is also a timer for the output which can be selected to be on delay, off delay, on one shot and off one shot to suit most applications' needs.

Ordering Key

FA 1-N

Type
Series
Output

Type Selection

Housing W x H x D	Ordering no. NPN Light on or dark on switching	Ordering no. PNP Light on or dark on switching
10 x 33 x 80 mm	**FA1-N**	**FA1-P**

Specifications

Rated operating distance (S_n)	Fiber dependant Please see FUR, FUT datasheet
Sensitivity	Increase or decrease by 3-ways adjuster switch. Switch left/right to +/- and press down to confirm
Sensitivity Range	Depends on selected response time 27-3991 @200µs 27-3982 @500µs 27-9988 @1000µs 27-9990 @5000µs
Temperature drift	< 0.2%/C°
Hysteresis (H)	≤ 20% of sensing distance
Rated operational volt. (U_B)	12 to 24 VDC
Ripple (U_{rpp})	≤ 10%
Output current Continuous (I_e)	100 mA

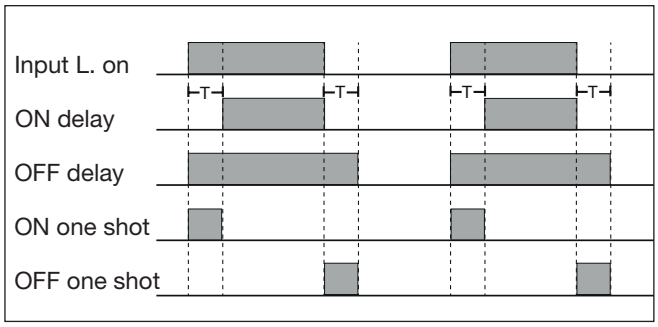
Output function Light on or dark on	NPN or PNP Selected via switch
Timer	
Type	On, off, on one shot, off one shot
Range	0-9999 ms
Current consumption (I_o)	< 40 mA @ 24 VDC
Voltage drop (U_d)	
FA1-N	≤1V (100 mA Load)
FA1-P	≤1.5V (100 mA Load)
Protection	Short-circuit, reverse polarity, transients
Light source	Red LED 660 nm
Ambient light	
Incandescent light	10'000 Lux
Sunlight	20'000 Lux
Operating frequency	Max. 2.5 kHz
Response time	Selectable 200, 500, 1000, 5000µs

Specifications (cont.)

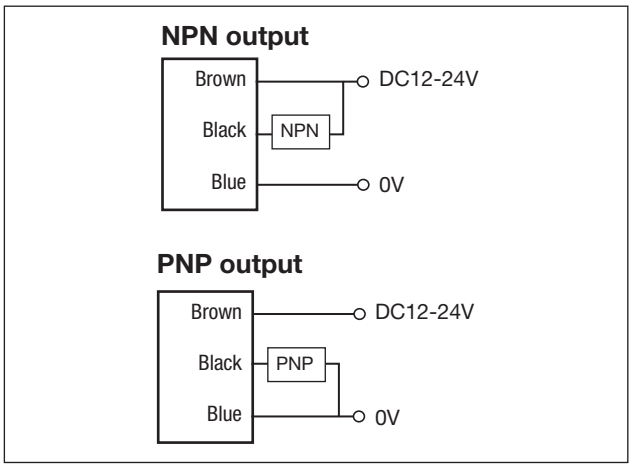
Power ON delay (t_v)	< 150 ms
Indication	
Output	Red LED
Sensitivity	2 X 4 digits display Red – signal level Green - threshold
Temperature	
Operating	0° to +60°C (32° to +140°F)

Housing material	
Body	ABS
Connection	
Cable	PVC, black, 2m, 3 wires
Weight	Approx. 65g
Approvals	CE (UL pending)
Environment	
Degree of protection	IP40

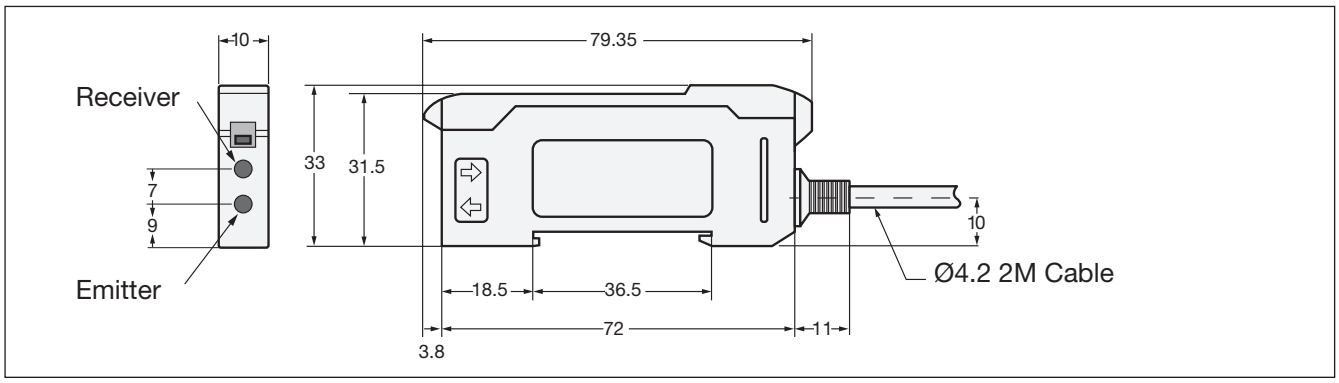
Operation Diagram



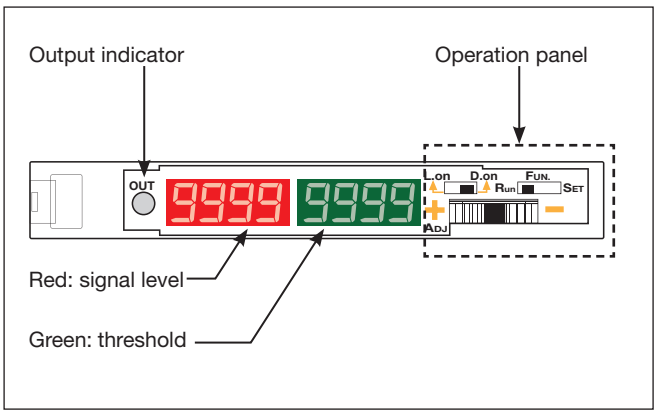
Wiring Diagram

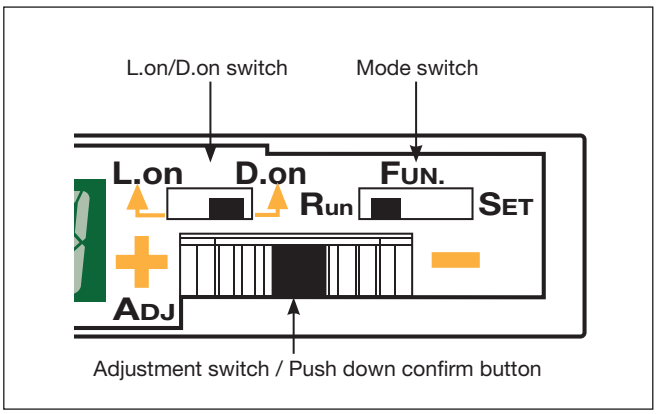


Dimensions

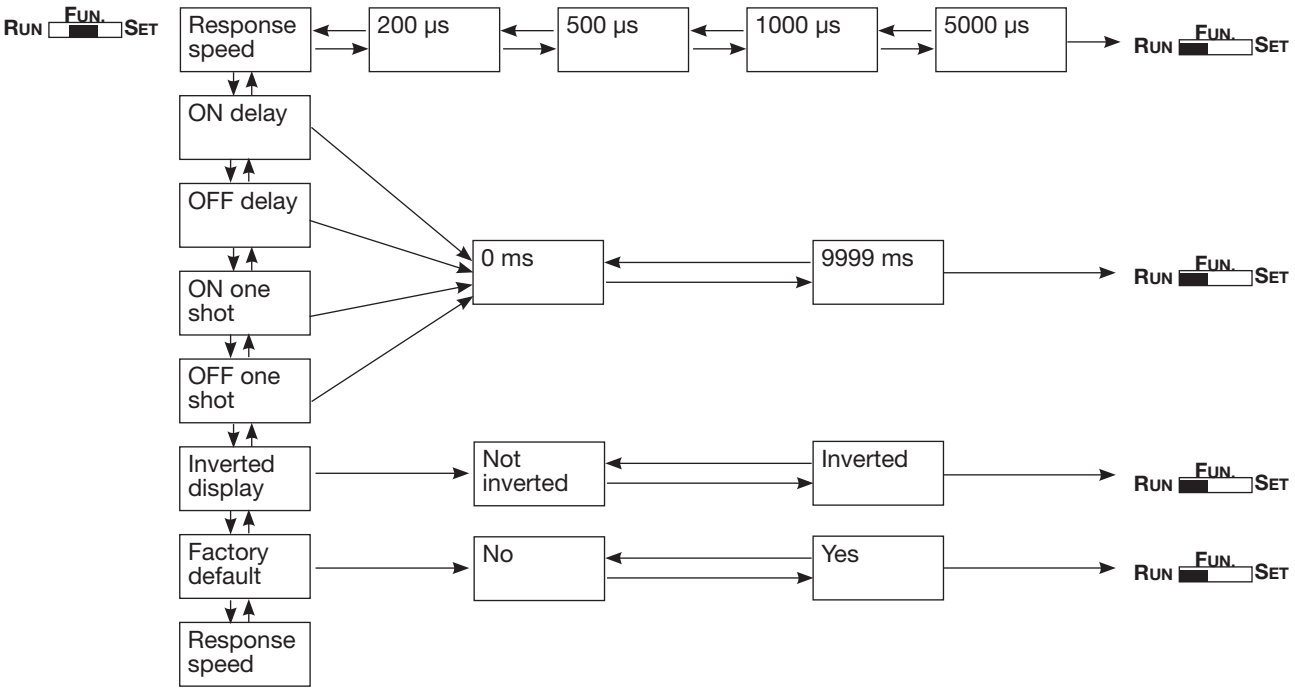


LED and Operation Panel





Block Diagram - Programming Settings



Programming Functions

Settings

Mode switch:
Select FUN.

RUN FUN. SET

Response speed

rESP SPd
Press ADJ for 2 sec.

Turn to '+' to increase or '-' to decrease response time

Higher response time: shorter sensing distance.
Lower response time: longer sensing distance.

200 u S ⇄ 500 u S

1000 u S ⇄ 5000 u S

Press ADJ for 2 sec.
Return to RUN

RUN FUN. SET

Setting delay time: 0-9999 ms

ON delay — On dEL

OFF delay — OFF dEL

ON one shot — On 1Sht

OFF one shot — OFF 1Sht

Turn to '+' to increase or '-' to decrease delay time

0 ⇄ 9999

Press ADJ for 2 sec.
Return to RUN

RUN FUN. SET

Inverted display

d 1SP rERd

Press ADJ for 2 sec.

Turn to '+' to increase or '-' to change between displays

d 1SP 1234 ⇄ hE2! dS'P

Press ADJ for 2 sec.
Return to RUN

RUN FUN. SET

Factory default

FctY dEF

Press ADJ for 2 sec.

Turn to '+' to increase or '-' to change between options (Yes/No)

no ⇄ YES

Press ADJ for 2 sec.
Return to RUN

RUN FUN. SET

Programming Functions - Example

Setting example
Set OFF delay to 2 sec.

1. Select FUN.

2. Turn to '+' to or '-' to go to OFF delay mode

3. Hold down for two sec.

The display shows '0'

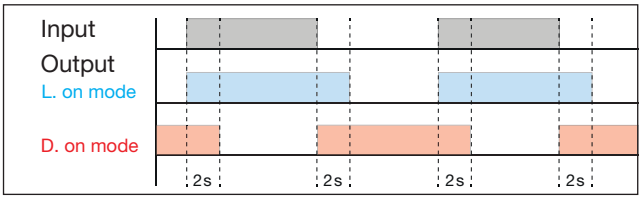
4. Turn to '+' to set to 2000

5. Hold down for two sec. to confirm setting (OFF delay)

6. Return to RUN

Working position is now:

OFF delay 2 sec.



Diffuse model settings

1. Set to L.on

2. Select SET

3. With target: hold down ADJ for 2 sec. Auto-teach-in function is performed when the blinking stops. (see fig. 1, p. 5)

4. Return to RUN

5. If reversed operation detection is required, change to D.on

Through-beam model settings

1. Set to D.on

2. Select SET

3. Without target; hold down ADJ for 2 sec. Auto-teach function is performed when the blinking stops. (see fig. 3, p. 5)

4. Return to RUN

5. If reversed operation detection is required, change to L.on

Diffuse model settings

Fig. 1 Detect ON

With target

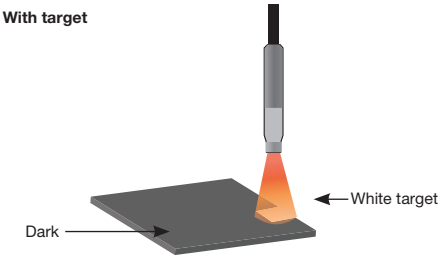
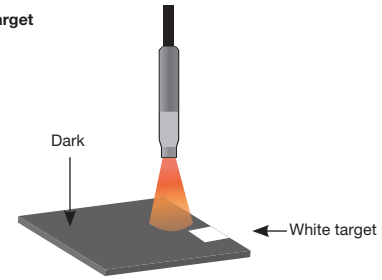


Fig. 2 Detect OFF

Without target



Through-beam model settings

Fig. 3

Without target

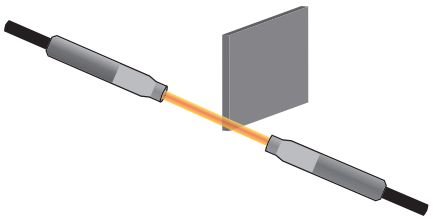
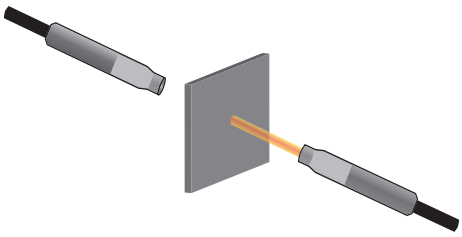


Fig. 4

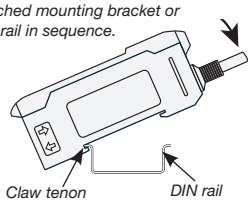
With target

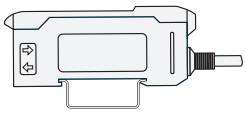


Installation Hints

Mounting the amplifier

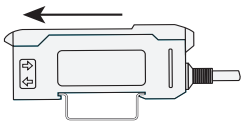
Mount each amplifier to the attached mounting bracket or DIN rail in sequence.



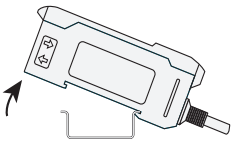


Detaching the amplifier

Detach the amplifiers in sequence by sliding the amplifier bodies.



Detach the amplifier,

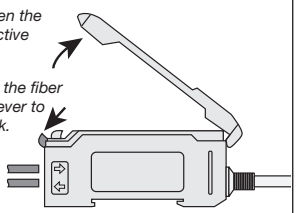


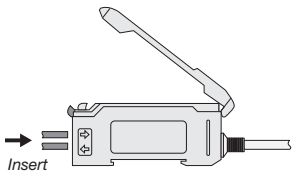
NB: Do not detach two amplifiers at a time.

Insert the fiber cables

1. Open the protective cover.

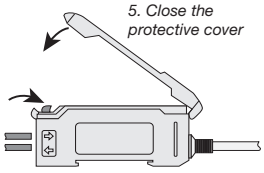
2. Tip the fiber lock lever to unlock.





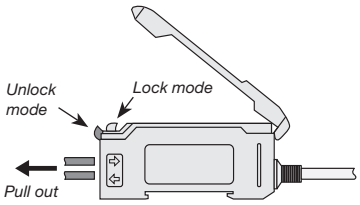
3. Insert the fiber cables into the mounting holes until the limit. Insertion depth 12 mm.

5. Close the protective cover



4. Pull the fiber lock lever back to lock the cables.

Remove the fiber cables



Open the protective cover and tip the fiber lock lever to unlock. Remove the cables by pulling them straight out of the mounting holes.

Delivery Contents

- Amplifier: FA1...
- Installation manual
- **Packaging:** Cardboard box

Accessories

- Fiber optic plastic type FUR, FUT

For further information refer to Fiber Optic Plastic Type FUR, FUT datasheets.