F&C® F&C electronic technology Co.,Ltd.

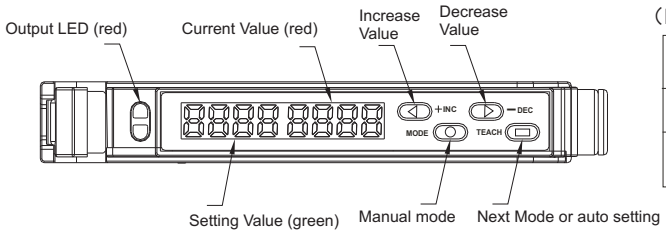
FF-403 SERIES FIBER SENSORS MANUAL

Thanks for you choose products of us , before using the product please read the manual carefully then make sure you using properly.

CAUTION

Don't use this products for human being protection purpose.

1 Functions Diagram



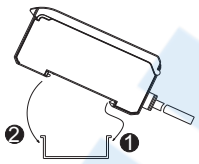
（Functions Of Panel）

Display Panel	Setting Button			
	MODE	+INC	−DEC	TEACH
Four numbers on left in green is set value, on right in red is current value.	Manual mode	Increase Value	Decrease Value	Next Mode or auto setting

2 Installation

Load On Din-Rail

1. Let the sensor mount on the din-rail which width is 35 mm.
2. Push the sensor forward so that it can reach the other side and lock on the din -rail.

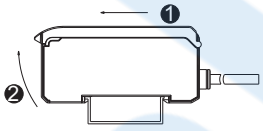


Push forward and let it mount the other side

PS.You can install the parts which packed with the sensor first

Unload From Din-Rail

1. Push the sensor forward so that it can unload the other side and sensor unloaded.



PS. Don't unload the NO.2 step first, you may let the sensor damage

Manual mode

Using With Optical Fiber

Before used with the optical fiber, please make sure connected part of optical fiber is suitable.

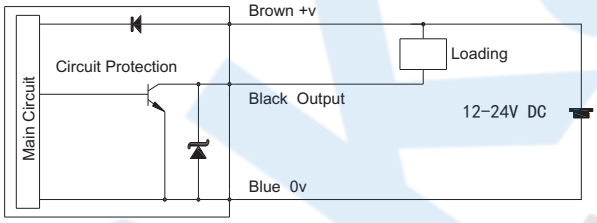
1. Release the lock of sensor, just pull it down.
2. Insert optical fiber cable into the install hole of fiber sensor slowly until the fiber cann't go any deeper. (note:1)
3. Pull the switch up in order to lock the fiber cable.

Note:1

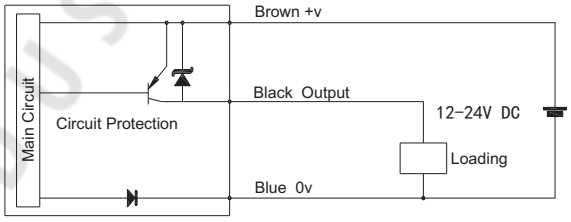
1. Fiber cable may easy to be damaged, so need to be careful. If the fiber installed not deeper enough in hole, the sensing range may be reduced.
2. For the diffuse type optical fiber install, such as, models FFRC-610, FFRC-310 etc. please insert to the receiving hole which is multi core and coaxial distribution, wrong install may reduce the sensing range.

3 Circuit Diagram

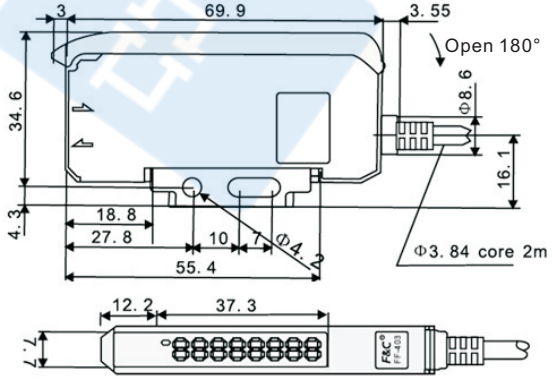
< NPN Type >



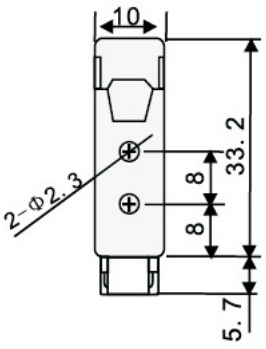
< PNP Type >

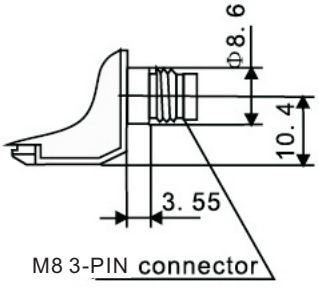


4 Dimensions



CABLE TYPE





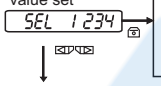
5 Specifications

Light Source	Red		Green	
Output	NPN	PNP	NPN	PNP
Models	FF-403	FF-403P	FF-403G	FF-403GP
M8 connector	FF-403/D	FF-403P/D	FF-403G/D	FF-403GP/D
Power	12-24VDC±10% Ripple P-P10% below			
Current consumption	40mA below			
Sensing Output	NPN output type: NPN open-collector transistor Maximum sink current: 100mA Voltage：30VDC or less (when detecting or between 0 to 30 VDC) Residual voltage: 1.0V or less (current 50mA) , 0.4 V (current 16mA)		PNP output type: PNP open collector transistor Maximum flow current：100mA Voltage：30VDC or less (when detecting or between 0 to 30 VDC) Surplus voltage: 2.0 V or less (current 100 mA), 1.0 V (current 16 mA)	
NO.NC Adjustment	adjusted via button			
Short Circuit Protection	Yes			
Auto Judgement	No			
Response & Frequency	universal type: switching frequency 1KHz, response time: 500us			
Sensing Range	Red light	Diffuse type: 200mm (diameter 1mm fiber cores) Through-beam type: 1200mm (diameter 1mm fiber cores)		
	Green light	Diffuse type: 70mm (diameter 1mm fiber cores) Through-beam type: 400mm (diameter 1mm fiber cores)		
Delay Function	0ms, 5ms, 50ms, 500ms can be set via button			
Lightness	light source power can be 100%、50%、25%、12% adjusted via button			
Temperature	Operation: −10+50℃ (no-frozen), storage: −20+70℃			
Humidity	Operation: 35~85%RH,storage: 35~85%RH			
Material	Housing : PC+ABS			
Accessories	DIn-rail stent : 1 piece			

6 Setting

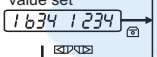
MANUAL MODE

1.Manual threshold value set



Keep pressing the key “MODE”(3S+) until “SEL” showed on panel. Now entered MANUAL MODE.

2.Manual threshold value set

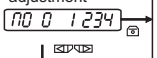


After entering MANUAL MODE, keep pressing ”Teach” to be here.

8888 + 8890 each time will increase 1

8888 - 8886 each time will decrease 1

3.NO NC adjustment



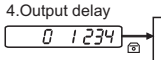
After entering MANUAL MODE, press ”Teach” to be here.

PS. keep doing press “Teach” button, you can enter different mode for setting this sensor until quit (END showed)

NO 0 normally opened (NO)

NC 0 normally closed (NC)

4.Output delay



After entering MANUAL MODE, keep pressing ”Teach” to be here.

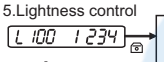
0005 delay 5ms

005 delay 50ms

05 delay 500ms

5 delay 5s

5.Lightness control



After entering MANUAL MODE, keep pressing ”Teach” to be here.

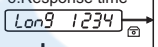
L 100 LED lightness 100%

L 50 LED lightness 50%

L 25 LED lightness 25%

L 12 LED lightness 12%

6.Response time



After entering MANUAL MODE, keep pressing ”Teach” to be here.

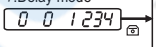
Lon9 2ms

SEnd 1ms

FASL 300μs

Hi9h 100μs

7.Delay mode

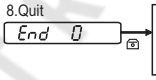


First fixed the optical fiber, diffuse type fiber choose diffuse mode, Through-beam type fibers select Through-beam mode.

0 0 1234 Diffuse mode

L 0 1234 Through-beam mode

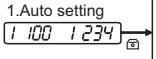
8.Quit



Quit MANUAL MODE.

AUTO MODE

1.Auto setting



First fixed the optical fiber, hold the “TEACH” key for 3 seconds , if the green value changed, setting done.

1 700 1234 Before setting

1 200 1234 After setting

If you haven’t any action on setting within 5s, the setting mode auto quit.

Press this two buttons in the same time for seconds to reset tobe default value

7 Caution

- Making sure power off before connecting to device.
- If the power supply is provided by commercially available switching regulator, make sure that the power supply ground terminal (F.G) connect to ground.
- Making sure working voltage range changed within rate voltage range of this goods.
- After power on at least wait for 0.5s, cann’t be used at once.
- Self-diagnosis output isn't with short circuit protection, please do not connect capacitance or any else capacitive load.
- Do not close to any high-voltage currents cable, it may let the sensor work failure.
- Keep away from dust, dirt and vapor.
- Do not use the sensor with water, oils, greases or organic solvents, such as thinners contact with it directly.