# PFD Series

## Various functions digital fiber sensor


- Sensitivity adjustment by the auto teaching
- 7 segments 4 digits LED indication
- Mark detection/counter/tachometer function (multi type)
- Output delay time setting(1 ~ 9999 ㎳)

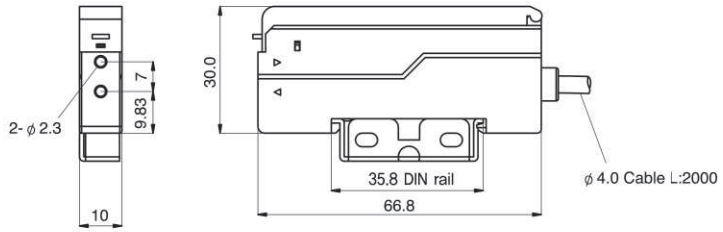
## Specification

| Model | NPN | PFD-RGN | PFD-RMN |
|---|---|---|---|
| | PNP | PFD-RGP | PFD-RMP |
| Function | Mark detection | General purpose (detect marks) | Multi type (Detect marks, Revolutions, Counter) |
| | Counter | - | 400 cps, Up/Down, 0-9999 |
| | Tachometer | - | 12 ~ 9999 rpm |
| Sensing method | | Through beam type, Reflection type (By the fiber cable) | |
| Sensing distance | | By the fiber sensor | |
| Power supply voltage | | 12 - 24 V DC ±10 % (Ripple less than 10 %) | |
| Current consumption | | max 50 ㎃ | |
| Output | Control | NPN/PNP open collector output, max 100 ㎃ (30 V DC) | |
| | Stable | | |
| Output action | | L.ON, D.ON selection (By the parameter) | |
| Timer function | | ON-Delay, OFF-Delay, One-shot time output (Set time : 1 ~ 9999 ㎳) | |
| Response time | | max 0.7 ㎳ | max 1 ㎳ |
| Hysteresis | | Reflection type : Less than 10 % of the sensing distance | |
| Light source (wave length) | | Infrared lightening LED (660 ㎚) | |
| LED | | 7 contacts state indicating LED, 7 segments LED 4 digits | |
| Sensitivity adjustment | | Auto teaching/Manual setting by using the set button | |
| Protective circuit | | Built in the reversed power supply connection protective circuit and output short protective circuit | |
| Ambient illumination | | Sunlight : max 10,000 Lux, Incandescent lamp : max 3,000 Lux | |
| Ambient temperature | | -10 ~ 55 ℃ (Surrounding storage temperature : -25 ~ 70 ℃) | |
| Ambient humidity | | 35 ~ 85 % RH (With no condensation) | |
| Protective structure | | IP 65 (IEC) | |
| Insulation resistance | | min 20 MΩ (500 V DC between the code and case, between the adjustment switch and case) | |
| Dielectric strength | | 500 V AC, 50/60 Hz for 1 min | |
| Vibration resistance | | 10 - 55 Hz double amplitude 1.5 ㎜, for 2 hours each in X, Y and Z directions | |
| Shock resistance | | 500 m/s, 3 times each in X, Y and Z directions | |
| Connection method | | Code extended type, Code length : 2 m, No. of lines : 5P, Thickness : Ø4 ㎜, DIN rail installation structure | |
| Material | | Case : heat resistance ABS | |
| Weight | | Approx. 150 g (Included the weight of box and fixing bracket) | |

## Counter and tachometer function

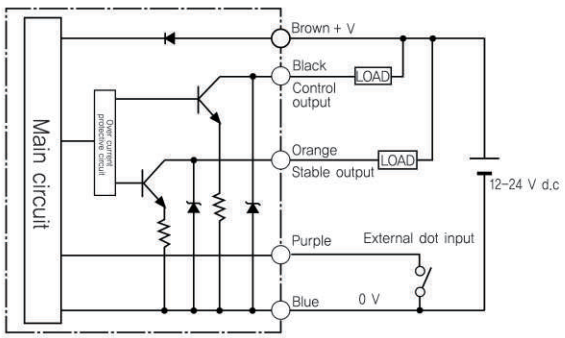
| | |
|---|---|
| Counter function | UP/DOWN setting pre-scale (1 ~ 999 Multiplication/Division setting)<br>Displaying range : 0 ~ 9999 Counting speed : 400 cps (50 % Duty)<br>Output mode : N, F, C, R, K, P, Q, A External reset : min 5 ㎳ |
| Tachometer function | Display range : 0 ~ 9999 Pre-scale : 0 ~ 1000 integer setting measuring cycle setting |

## Dimension (Unit : ㎜)




## Connection diagram

■ NPN




■ PNP

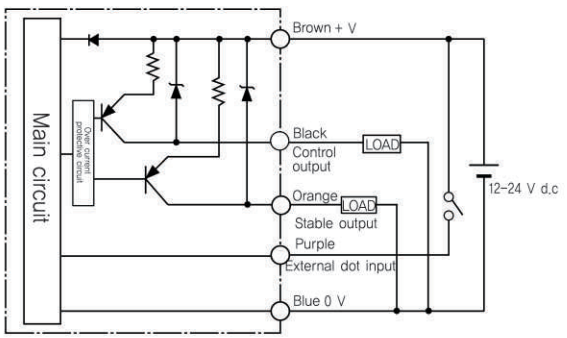



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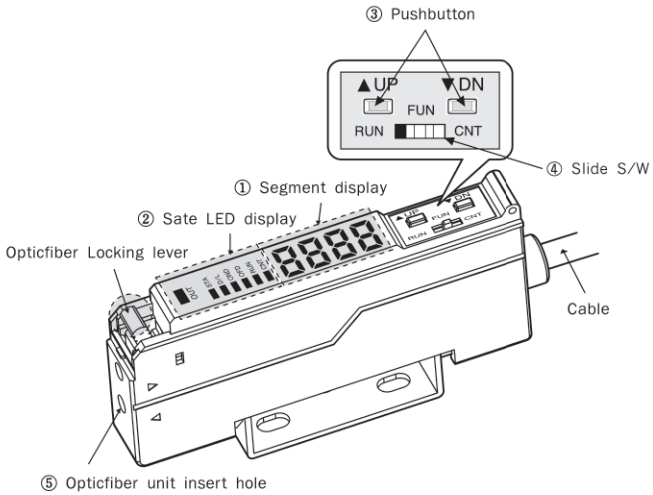
Photo Sensor

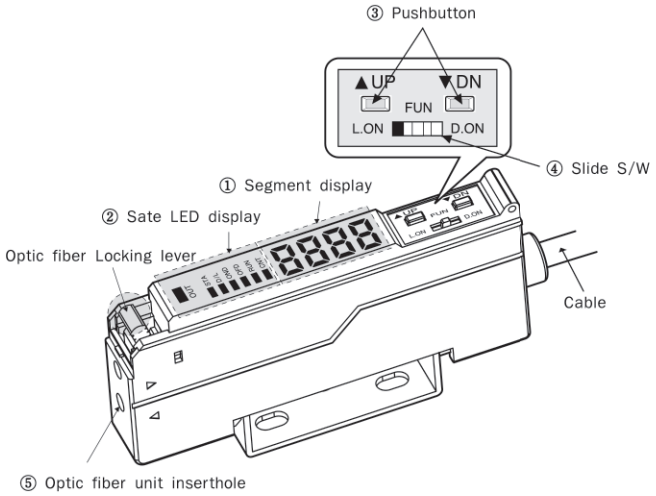
## Name of parts

■ PFD-RM□



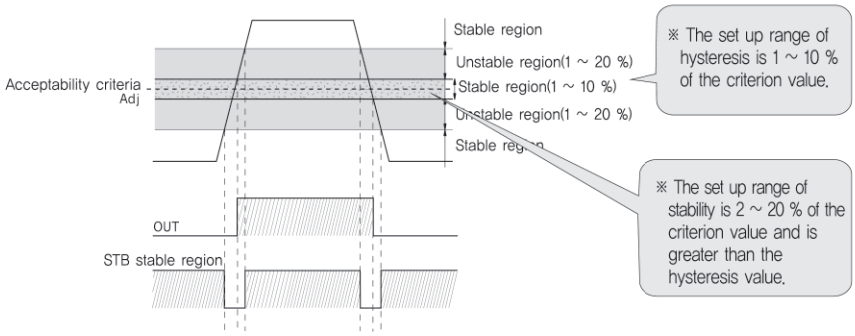

| | | |
|---|---|---|
| ① Segment indicator | | Display the numbers and alphabets such as an amount of light, mode, error message, set amount, set up lists and it also indicate the bar in the bar indication mode |
| ② LED state indicator | OUT | Light ON when the control output is ON |
| | STB | Displays safe regions at the RUN Mode (OUT2)<br>Display is on over the set up region at the Tachometer/Count Mode |
| | D/L | Lights ON for Light On and Lights ON for Dark On |
| | OND | Lights ON when On Delay is set at the Output |
| | OFD | Lights ON when Off Delay is set at the Output |
| | RUN | Lights ON when operating at RUN |
| | CNT | Light ON when operated as up counter/down counter.<br>RUN, CNT synchronously turned ON when operated as tachometer. |
| ③ Push button | ▲UP | Function changes and set value increases within each run mode |
| | ▼DN | Function changes and set value decreases within each run mode |
| ④ Slide S/W | RUN | Set various amount of the light and display it as general operation mode of fiber sensor(Display the general light amount, BAR, hold of Max. and Min. and percentage), displacement setting(offset), various auto teaching functions |
| | FUN | Parameter 1 : Sensor manual sensitivity setting page<br>Parameter 2 : Sensor output mode setting page<br>Parameter 3 : Counter/tachometer function setting page<br>Parameter 4 : Additional function setting page |
| | CNT | It has a single operation mode among up counter/down counter and tachometer. It is operated as counter or tachometer depending on the function set in the (FUN->[3-1])mode |
| ⑤ Optical fiber unit input hole | | Input the external diameter 2.2 ㎜ opticfiber unit |

■ PFD-RG



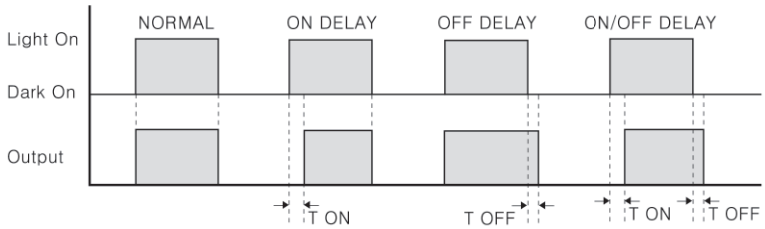

| | | |
|---|---|---|
| ① Segment indicator | | Display the numbers and alphabets such as an amount of light, mode, error message, set amount, set up lists and etc Also indicate Bar in the Bar mode |
| ② LED state indicator | | Display the state of optic fiber sensor |
| ③ Push button | ▲UP | Function changes and set value increases within each run mode<br>Sensitivity setting by the auto-teaching |
| | ▼DN | Function changes and set value decreases within each run mode<br>Sensitivity setting by the auto-teaching |
| ④ Slide S/W (L.ON/D.ON, FUN) | L.ON | Light ON mode (ON with L.ON) |
| | D.ON | Dark ON mode (ON with D.ON) |
| | FUNC | Parameter 1 : Page that sets the sensitivity manually<br>Parameter 2 : Page that sets the output mode<br>Parameter 4 : Page that sets additional function |
| ⑤ Optical fiber unit input hole | | External diameter 2.2mm fiber unit |

## Depending on receiving level, OUT, STB operation



## Delay setting and Output operation(in Light ON)

in Light ON




## Various indication functions

### 180° Rotation display


### An amount of light display

- Amount of light display by the digital number
- Bar display
- Max, min HOLD display
- Displacement setting function (OFFSET setting)
- Percent display

## Teaching Mode

● 2 Contact teaching

Perform the teaching in each of two points where the sensing object is present/absent and set the operation sensitivity. Generally this method is used for setting up.

● 1 Contact teaching

This is a method that sets the operation level due to the 1 contact teaching. This is a teaching method that sets the standard with the sensing object and the surface boundary of back ground.