

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 ms)



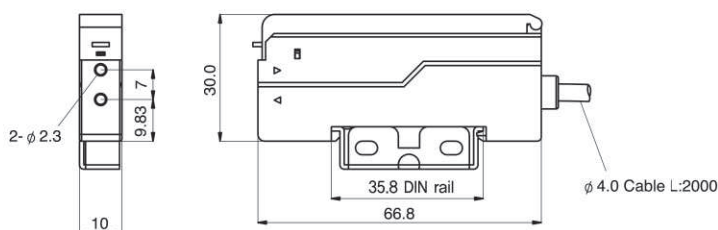
Specification

Model	NPN	PFD-RGN	
	PNP	PFD-RGP	
Function	Mark detection	General purpose (detect marks)	
	Counter	–	
	Tachometer	–	
Sensing method		Through beam type, Reflection type (By the fiber cable)	
Sensing distance		By the fiber sensor	
Power supply voltage		12 – 24 V DC $\pm 10\%$ (Ripple less than 10 %)	
Current consumption		max 50 mA	
Output	Control	NPN/PNP open collector output, max 100 mA (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 ms)	
Response time		max 0.7 ms	max 1 ms
Hysteresis		Reflection type : Less than 10 % of the sensing distance	
Light source (wave length)		Infrared lightening LED (660 nm)	
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 °C (Surrounding storage temperature : –25 ~ 70 °C)	
Ambient humidity		35 ~ 85 % RH (With no condensation)	
Protective structure		IP 65 (IEC)	
Insulation resistance		min 20 M Ω (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 mm, 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 : $\varnothing 4$ mm, 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

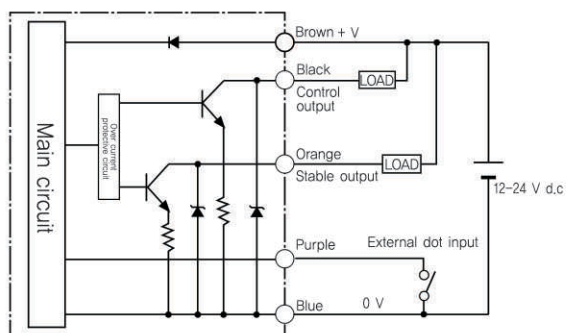
Counter function	UP/DOWN setting pre-scale (1 ~ 999 Multiplication/Division setting)
	Displaying range : 0 ~ 9999 Counting speed : 400 cps (50 % Duty)
	Output mode : N, F, C, R, K, P, Q, A External reset : min 5 ms
Tachometer function	Display range : 0 ~ 9999 Pre-scale : 0 ~ 1000 integer setting measuring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

Dimension (Unit : mm)

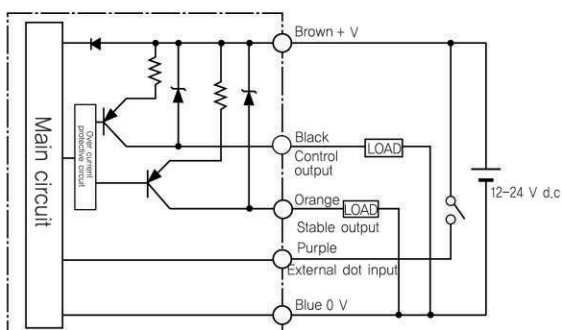


Connection diagram

■ NPN

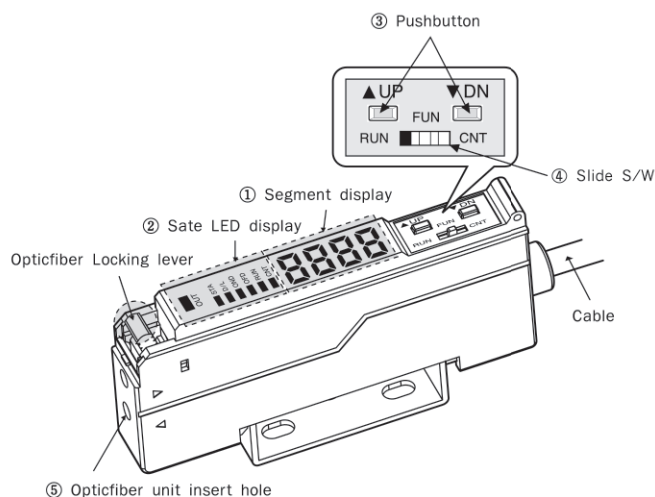


■ PNP



Name of parts

PFD-RM

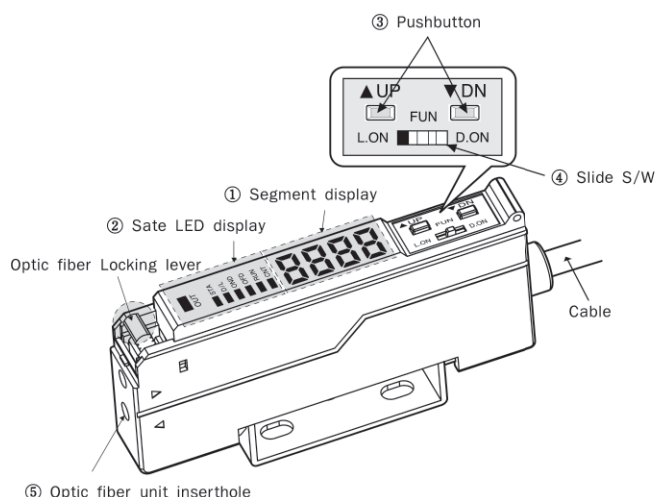


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Photo
Sensor

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) 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. 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 Parameter 2 : Sensor output mode setting page Parameter 3 : Counter/tachometer function setting page 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 mm opticfiber unit

PFD-RG

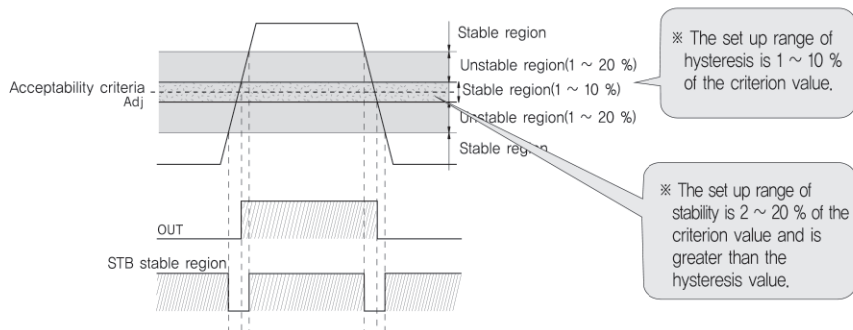


① Segment indicator	Display the numbers and alphabets such as an amount of light, mode, error message, set amount, set up lists and etc Also indicate Bar in the Bar mode
② LED state indicator	Display the state of optic fiber sensor
③ Push button	▲UP Function changes and set value increases within each run mode Sensitivity setting by the auto-teaching
	▼DN Function changes and set value decreases within each run mode 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 Parameter 2 : Page that sets the output mode Parameter 4 : Page that sets additional function
⑤ Optical fiber unit input hole	External diameter 2,2mm fiber unit

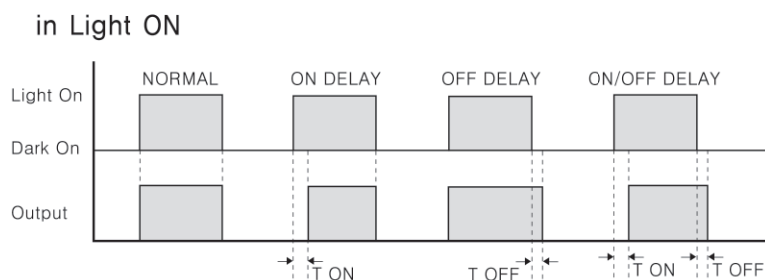
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Depending on receiving level, OUT, STB operation

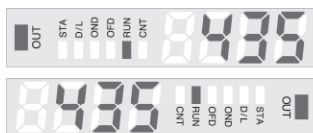


Delay setting and Output operation(in Light ON)



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

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Sensor

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.