Built-in amplifier type Photoelectric switch

PFX SERIES $C\epsilon$

Space-saving with thickness 3.5mm!
Ultra-small size!
5 kinds of sensors are lined-up!

- Thickness is 3.5mm and it is possible to install at the too narrow space.
- Stable lamp (green LED) and output lamp (orange LED) provides and it is easy to see them from the back side and to check when optical axis adjustment.
- Easy to make a wiring because cable from the sensor is tilting.
- High speed response, 0.5msec.
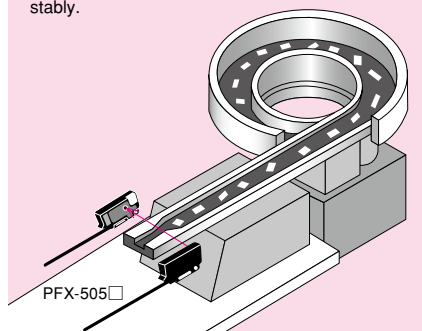- Water-proof structure, IP67.
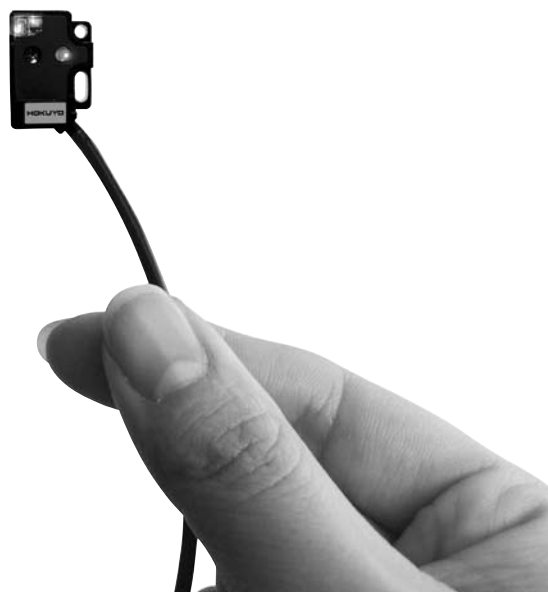
■ Typical applications

Through-beam type
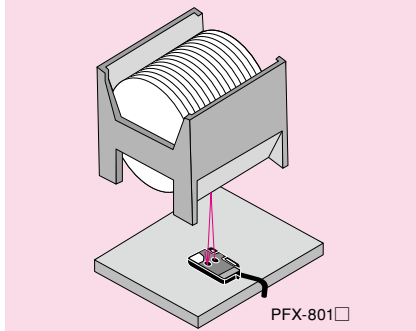
Detection of blocked parts on parts-feeder
It can detect the object with 2mm in diameter stably.

PFX-505□

Diffuse-reflection type

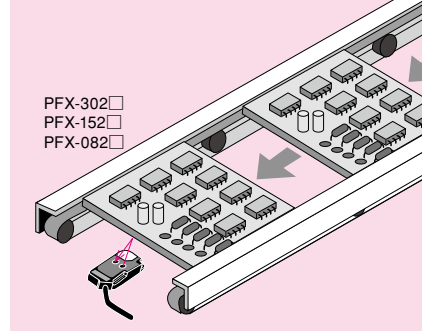Position detection of wafer cassette
It is possible to install at the plane position.

PFX-801□

Limited-reflection type
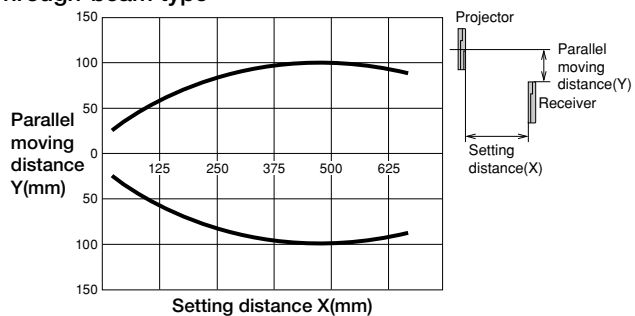
PCB existing detection
It is possible to install at the narrow.

PFX-302□
PFX-152□
PFX-082□

■ Specifications

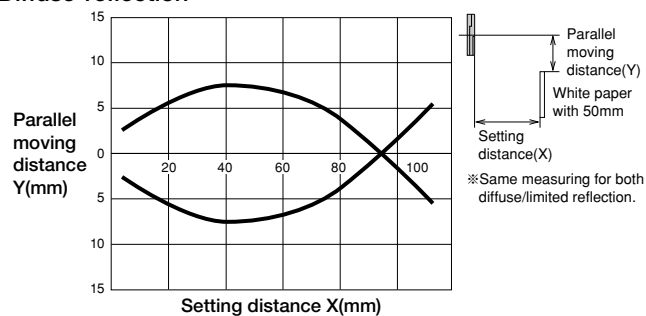| Kind		Through-beam		Diffuse-reflection		Limited-reflection					
						Long distance		Middle distance		Short distance	
Model No.	Light-ON	PFX-505T	PFX-505S	PFX-801T	PFX-801S	PFX-302T	PFX-302S	PFX-152T	PFX-152S	PFX-082T	PFX-082S
	Dark-ON	PFX-505N	PFX-505P	PFX-801N	PFX-801P	PFX-302N	PFX-302P	PFX-152N	PFX-152P	PFX-082N	PFX-082P
Power source		12 to 24VDC (±10%, ripple 10% or less)									
Current consumption		Projector:14mA or less Receiver:16mA or less		20mA or less							
Light source		Red LED									
Detecting distance		500mm		80mm*1		5 to 3mm*1		2 to 15mm*1		3 to 8mm*1	
Detecting objects		φ1.0mm (at 500m)		Transparent/opaque objects							
Hysteresis		—		15% or less				10% or less			
Response time		0.5msec or less									
Operating mode		Changeover of LIGHT-ON/DARK-ON, depending on the models									
Output		NPN	PNP	NPN	PNP	NPN	PNP	NPN	PNP	NPN	PNP
Control output		50mA 24VDC or less for both NPN & PNP, residual voltage 1.8V									
Indication lamps		Stable lamp: Green LED*2, Output lamp: Orange LED*2, Power lamp (only projector of through-beam type): Red LED									
Connection*3		Cable type (length 2m, φ2.5mm)									
Ambient illuminance		Sunlight: 10,000lx or less, incandescent lamp: 3,000lx or less									
Ambient temperature and humidity		-25 to +55℃ (-40 to +70℃ when stored), 35 to 85% (35 to 95% when stored), not icing/not condensing									
Vibration resistance		Double amplitude 1.5mm, 10 to 55Hz, each 2 hour in X, Y and Z directions									
Impact resistance		500m/s², each 3 time in X, Y and Z directions									
Protective structure		IP67 (IEC standard)									
Time for stable circuit		100msec or less									
Case material		polycarbonate									
Weight		Each approx. 18g		Approx. 18g							
Accessory		Fitting screw (M2×12), fitting metal									

*1. Detecting object is white paper with 50×50.   *2. Not provided with the projector of through-beam.   *3. Connector type is lined-up.
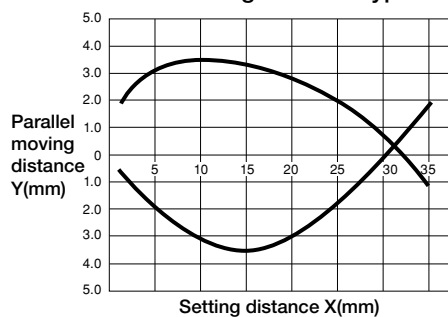
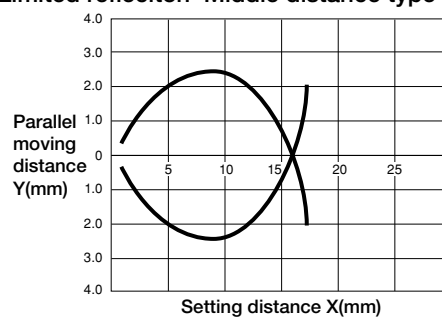## ■ Characteristic data (typical example)

Through-beam type

Parallel moving distance Y(mm)
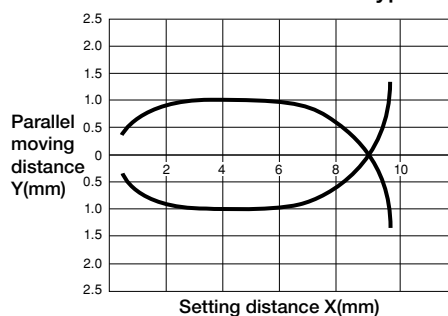
150 100 50 0 50 100 150

125 250 375 500 625

Setting distance X(mm)

Projector

Parallel moving distance(Y)

Receiver

Setting distance(X)

Diffuse-reflection

Parallel moving distance Y(mm)

15 10 5 0 5 10 15

20 40 60 80 100

Setting distance X(mm)

Parallel moving distance(Y)

White paper with 50mm

Setting distance(X)

※Same measuring for both diffuse/limited reflection.

Limited refleciton Long distance type

Parallel moving distance Y(mm)

5.0 4.0 3.0 2.0 1.0 0 1.0 2.0 3.0 4.0 5.0

5 10 15 20 25 30 35

Setting distance X(mm)

Limited refleciton Middle distance type

Parallel moving distance Y(mm)

4.0 3.0 2.0 1.0 0 1.0 2.0 3.0 4.0

5 10 15 20 25

Setting distance X(mm)

Limited refleciton Short distance type

Parallel moving distance Y(mm)

2.5 2.0 1.5 1.0 0.5 0 0.5 1.0 1.5 2.0 2.5

2 4 6 8 10

Setting distance X(mm)

■ Output circuit

NPN output

Main circuit

Protective circuit

Load

Brown(12 to 24V)

Black(output)

Blue(0V)

Power 12 to 24VDC

PNP output

Main circuit

Protective circuit

Load

Brown(12 to 24V)

Black(output)

Blue(0V)

Power 12 to 24VDC
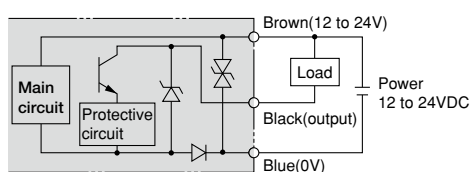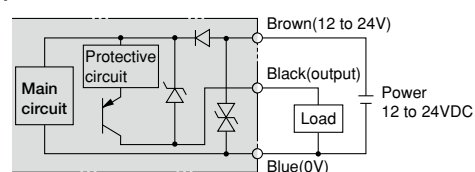
■ External dimensions

PFX-505 Projector

Power lamp(red)
Projecting lens

12 1.85 5.4 0.7 3.5
3.25 1.5 φ2.1
16.65 11 8 4 20
2-R1.05
φ2.5 3-core 2m cable

PFX-505 Receiver

Stable lamp(green)
Output lamp(orange)
Receiving lens

3.5 12 5.4 1.85
φ2.1 1.5 3.25
20 4 8 11 16.65
φ2.5 3-core 2m cable
2-R1.05

PFX-801・PFX-302・PFX-152・PFX-082

Stable lamp(green)
Output lamp(orange)
Receiving lens

3.5 14 B A 1.85
φ2.1 1.5 3.25
19.5 4 8 11 16.65
φ2.5 3-core 2m cable
Projecting lens
2-R1.05
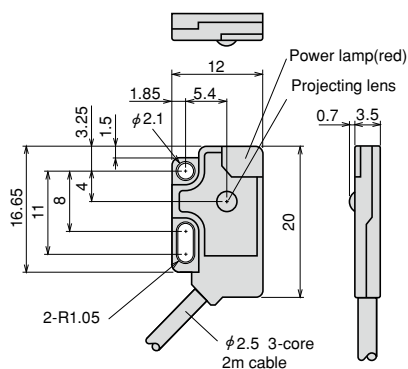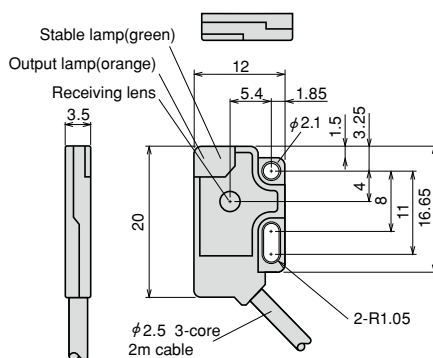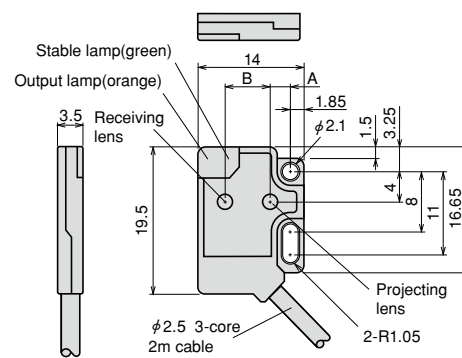
	PFX-801	PFX-302	PFX-152	PFX-082
A	2.75	3.25	3.45	3.65
B	5.7	5.0	4.6	4.2