

Photoelectric sensor



Features:

- High reliability
- Versatile object detection with millimeter accuracy
- Rugged | suitable for harsh environments

Model number

1	2	3		4	5	6		7	8	9	10	11		12
F	M	12	-	T	02	P	-	P	3	1	P	2	-	

1 Type

F Photoelectric sensor

2 Shape

M Threaded cylindrical
Q Rectangular
G Fork

3 Dimensions

12
18
30
40
.....

4 Detection type

T Diffuse
R Retro-reflective
L Through-beam
F Optical fiber amplifier
H Background suppression
J Laser TOF
.....

5 Sensing distance (mm)

005 50mm
02 200mm
05 500mm
10M 10m
15M 15m
.....

6 Output Function

P PNP
N NPN
D PNP/NPN
A AC
U AC/DC
R RS485

7 Housing material

C Brass,nickel-plated
V Stainless steel
P Plastic
F PTFE

8 Output Mode

1 N.O
2 N.C
3 N.O/N.C
4 SPDT relay
5 Emitter

9 Operating Voltage

1 DC10-30V
2 DC18-30V
3 DC10-60V
4 AC24-240V
5 24-240VAC/DC
6 DC12-24V
7 DC12-30V
8 DC24-48V

10 Connection

P PVC Cable
U PURCable
S8 M8 Connector
S12 M12 Connector
Z8 M8 Cable with connector
Z12 M12 Cable with connector
T Terminal

11 Cable length

2 2m
3 3m
5 5m
.....

12 Others

F With polarizing filter
D With time delay
.....

Cylindrical

Rectangular

Fork

Optical fiber

Type diagram

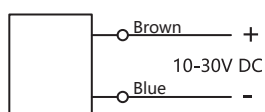
Through-beam photoelectric sensor



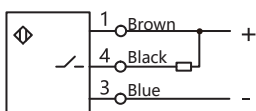
Through-beam photoelectric sensor is composed of independent emitter and receiver, which are separated from each other in structure. Emitter (E) directly transmits to the receiver (R). Please align the emitter and the receiver to establish a light path. Whatever object blocks the light route, the receiver voltage will drop and the switching condition will change.

Wiring

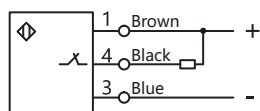
Emitter



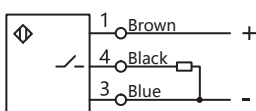
DC NPN-NO



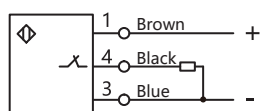
DC NPN-NC



DC PNP-NO



DC PNP-NC



EURO M12 Connector



FM12

Photoelectric sensor

Brass, nickel-plated PBT

Cylindrical

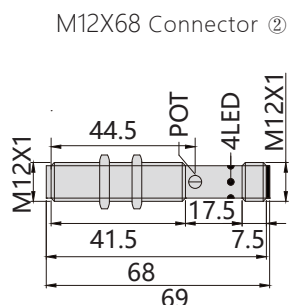
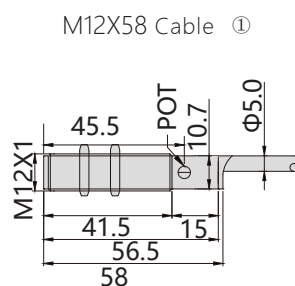
Through-beam

DC 2 wire DC 3 wire

Technical data

Model No	Appearance				
	Emitter	FM12-L52D-P51P2	FM12-L52D-C51P2	FM12-L52D-P51S12	FM12-L52D-C51S12
	NPN N.O	FM12-L52N-P11P2	FM12-L52N-C11P2	FM12-L52N-P11S12	FM12-L52N-C11S12
	NPN N.C	FM12-L52N-P21P2	FM12-L52N-C21P2	FM12-L52N-P21S12	FM12-L52N-C21S12
	PNP N.O	FM12-L52P-P11P2	FM12-L52P-C11P2	FM12-L52P-P11S12	FM12-L52P-C11S12
	PNP N.C	FM12-L52P-P21P2	FM12-L52P-C21P2	FM12-L52P-P21S12	FM12-L52P-C21S12
Exterior structure	M12*1mm				
Sensing distance	5.2m				
Detection type	Through-beam				
Switching frequency	500Hz				
Operating Voltage	10...30V DC				
Light source	Infrared light 880nm				
Response Time	≤2ms				
Load Current	≤150mA				
Power-on delay	<300ms				
Sensitivity adjustment	Multi-turn potentiometer				
Light immunity	<5000Lux.				
Ambient temperature	-25...55°C				
Ambient humidity	35...85%				
Ingress protection	IP66				
Housing material	PBT	Brass,nickel-plated	PBT	Brass,nickel-plated	
Lens material	PMMA				
Operation indicator	Yellow				
Connectors	2m PVC Cable, 3*0.35mm ² 2*0.5mm ²			M12 Connector	
Accessories	None			B12-4GV2/B12-4WV2	

Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ③)



Features:

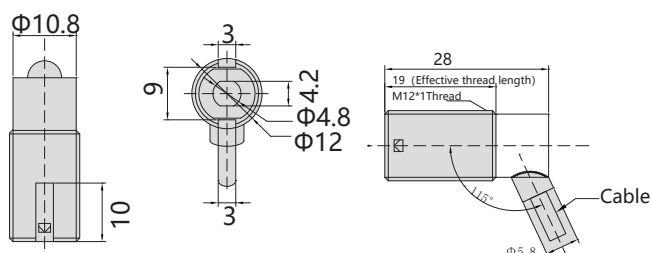
- Long detection distance;
- Wide detection objects range;
- Detect by light characteristics

Technical data

Appearance			
Model No	Emitter	FM12-L3D-P51P2-S	
	NPN N.O	FM12-L3N-P11P2-S	
	NPN N.C	FM12-L3N-P21P2-S	
	PNP N.O	FM12-L3P-P11P2-S	
	PNP N.C	FM12-L3P-P21P2-S	
Exterior structure		M12*1mm	
Sensing distance		3m	
Detection type		Through-beam	
Operating voltage		10...24V DC (±10%)	
Switching frequency		500Hz	
Light source		Infrared light 850nm	
Response time		≤2ms	
Load current		≤100mA	
Current consumption		Emitter below 25mA, receiver below 15mA	
Short circuit protection		Yes	
Operation indicator		Green:power indicator, Yellow:output indicator	
Output mode		NPN/PNP N.O/N.C	
Withstanding voltage		AC 1000V 1min (Between the power cord and the housing)	
Ambient temperature		-25...55°C	
Ambient humidity		35...85%	
Environmental pollution level		3 (Industrial environment)	
Ingress protection		IP66 (IEC)	
Housing material		PC	
Lens material		PMMA	
Insulation resistance		DC 250V high resistance meter above 20MΩ	
Connectors		2m PVC Cable, 3*0.35mm ² 2*0.5mm ²	
Accessories		None	

Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)

M12 Cable ①



Features:

- Long detection distance;
- Wide detection objects range;
- Infrared light with high light immunity capability



FM12 FM18 FQ18

Photoelectric sensors

Brass,nickel-plated PBT

Cylindrical

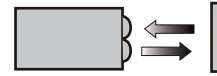
Diffuse

DC 4 wire

ISO9001 CE UKCA CQC RoHS

Type diagram

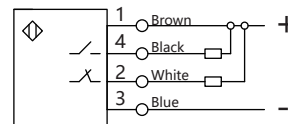
Diffuse reflection photoelectric sensor



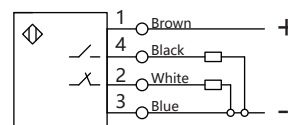
The working principle of diffuse reflection type photoelectric sensor is same with retro-reflective sensor, but without reflection mirror. The light of emitter is reflected by the target object, then received and evaluated by the receiver. Its positioning of the target object is not accurate. When target object enters into valid light-area, its output situation will change. Detection range depends on target object's shape, dimension, color and surface characteristics.

Wiring

DC NPN NO+NC



DC PNP NO+NC



EURO M12 Connector

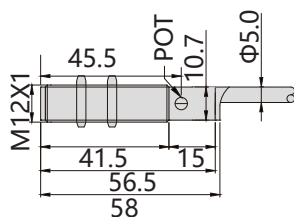


Technical data

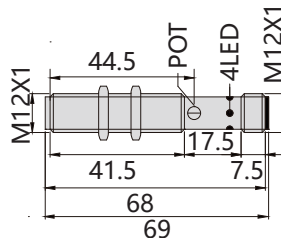
Model No	NPN N.O+N.C PNP N.O+N.C	①		②	
		FM12-T02N-P31P2	FM12-T02N-C31P2	FM12-T02N-P31S12	FM12-T02N-C31S12
Exterior structure		M12*1mm			
Sensing distance		200mm			
Detection type		Diffuse reflection			
Switching frequency		500Hz			
Operating Voltage		10...30V DC			
Light source		Infrared light 880nm			
Response time		<2ms			
Load Current		≤150mA			
Power-on delay		<300ms			
Sensitivity adjustment		Multi-turn potentiometer			
Light immunity		<5000Lux.			
Ambient temperature		-25...55°C			
Ambient humidity		35...85%			
Housing material		PBT	Brass,nickel-plated	PBT	Brass,nickel-plated
Ingress protection		IP66			
Lens material		PMMA			
Operation indicator		Yellow			
Connectors		2m PVC Cable, 4*0.25mm ²		M12 Connector	
Accessories		None		B12-4GV2/B12-4WV2	

Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)

M12X58 Cable ①



M12X69 Connector ②



Features:

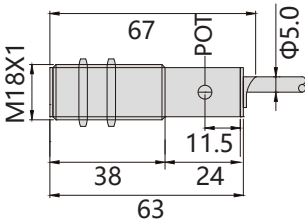
- Quick response time;
- Infrared light source;
- Strong light immunity capability

Technical data

Appearance					
Model No	NPN N.O+N.C	FM18-T015N-P31P2-E	FM18-T05N-P31P2-E	FM18-T015N-C31P2-E	FM18-T05N-C31P2-E
	PNP N.O+N.C	FM18-T015P-P31P2-E	FM18-T05P-P31P2-E	FM18-T015P-C31P2-E	FM18-T05P-C31P2-E
Exterior structure		M18*1mm	M18*1mm	M18*1mm	M18*1mm
Sensing distance		150mm	500mm	150mm	500mm
Detection type		Diffuse reflection			
Switching frequency		500Hz			
Operating Voltage		10...30V DC			
Light source		Infrared light 880nm			
Response time		<2ms			
Load Current		≤200mA			
Power-on delay		<300ms			
Sensitivity adjustment		Single-turn potentiometer			
Light immunity		<5000Lux.			
Ambient temperature		-25...55℃			
Ambient humidity		35...85%			
Housing material		PBT		Brass,nickel-plated	
Ingress protection		IP66			
Lens material		PMMA			
Operation indicator		Yellow			
Connectors		2m PVC Cable, 4*0.25mm ²			
Accessories		None			

Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ③)

M18X63 Cable ①



Features:

- Quick response time;
- Infrared light source;
- Strong light immunity capability

Technical data

Model No		①		①	
		Appearance			
					
		FM18-T015N-P31S12-E	FM18-T05N-P31S12-E	FM18-T015N-C31S12-E	FM18-T05N-C31S12-E
		FM18-T015P-P31S12-E	FM18-T05P-P31S12-E	FM18-T015P-C31S12-E	FM18-T05P-C31S12-E
Exterior structure		M18*1mm	M18*1mm	M18*1mm	M18*1mm
Sensing distance		150mm	500mm	150mm	500mm
Detection type		Diffuse reflection			
Switching frequency		500Hz			
Operating Voltage		10...30V DC			
Light source		Infrared light 880nm			
Response time		<2ms			
Load Current		≤200mA			
Power-on delay		<300ms			
Sensitivity adjustment		Single-turn potentiometer			
Light immunity		<5000Lux.			
Ambient temperature		-25...55℃			
Ambient humidity		35...85%			
Housing material		PBT		Brass,nickel-plated	
Ingress protection		IP66			
Lens material		PMMA			
Operation indicator		Yellow			
Connectors		M12 Connector			
Accessories		B12-4GV2/B12-4WV2			

Cylindrical

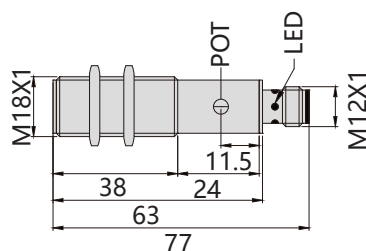
Rectangular

Fork

Optical fiber

Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)

M18X77 Connector ①



Features:

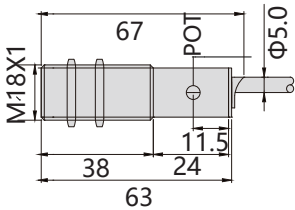
- Quick response time;
- Infrared light source;
- Strong light immunity capability

Technical data

Model No	Appearance		
		①	①
NPN N.O+N.C		FM18-T01N-P31P2-D	FM18-T01N-C31P2-D
PNP N.O+N.C		FM18-T01P-P31P2-D	FM18-T01P-C31P2-D
Exterior structure		M18*1mm	
Features		Large light spot	
Sensing distance		100mm	
Detection type		Diffuse reflection	
Switching frequency		500Hz	
Operating Voltage		10...30V DC	
Light source		Infrared light 880nm	
Response time		<2ms	
Load Current		≤200mA	
No-load current		≤25mA	
Power-on delay		<300ms	
Sensitivity adjustment		Single-turn potentiometer	
Light immunity		<5000Lux.	
Ambient temperature		-25...55°C	
Ambient humidity		35...85%	
Housing material		PBT	Brass,nickel-plated
Ingress protection		IP66	
Lens material		PMMA	
Operation indicator		Yellow	
Connectors		2m PVC Cable, 4*0.18mm ²	
Accessories		None	

Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)

M18X63 Cable ①



Features:

- Large light spot;
- Can detect carved hollow and transparent objects

Technical data

Appearance						
Model No	NPN N.O+N.C	FM18-T01N-P31P2-N	FQ18-T015N-P31P2-E	FQ18-T05N-P31P2-E	FQ18-T015N-P31S12-E	FQ18-T05N-P31S12-E
	PNP N.O+N.C	FM18-T01P-P31P2-N	FQ18-T015P-P31P2-E	FQ18-T05P-P31P2-E	FQ18-T015P-P31S12-E	FQ18-T05P-P31S12-E
Exterior structure		M18*1mm	M18*1mm	M18*1mm	M18*1mm	M18*1mm
Sensing distance		100mm	150mm	500mm	150mm	500mm
Detection type		Diffuse reflection	Diffuse reflection			
Switching frequency		1000Hz	500Hz			
Operating Voltage		10...30V DC	10...30V DC			
Light source		Red Light 650nm	Infrared light 880nm			
Response time		1 ms	<2ms			
Load Current		≤100mA	≤200mA			
Power-on delay		<300ms	<300ms			
Sensitivity adjustment		Single-turn potentiometer	Single-turn potentiometer			
Light immunity		<5000Lux.	<5000Lux.			
Ambient temperature		-25...55℃	-25...55℃			
Ambient humidity		35...85%	35...85%			
Housing material		ABS	PBT			
Ingress protection		IP65	IP66			
Lens material		PMMA	PMMA			
Operation indicator		Yellow: output/Green: power	Yellow			
Connectors		2m PVC Cable, 4*0.18mm ²	2m PVC Cable, 4*0.25mm ²		M12 Connector	
Accessories		None			B12-4GV2/B12-4WV2	

Cylindrical

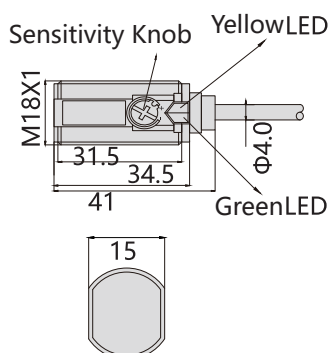
Rectangular

Fork

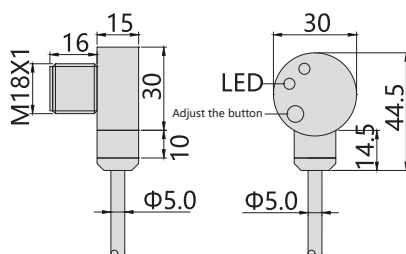
Optical fiber

Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)

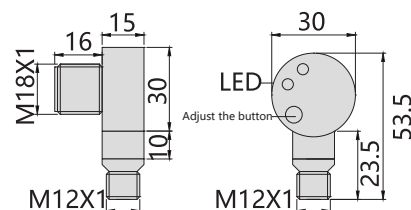
M18X41 Cable ①



Q18 Cable ②



Q18 Connector ③



Features:

- Quick response time;
- Wide application range;
- Can detect a variety of objects



FM12 FM18 FQ18

Photoelectric sensors

Brass, nickel-plated PBT

Cylindrical

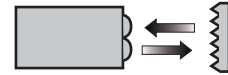
Retro-reflective

DC 4 wire

ISO9001 CE UKCA CQC RoHS

Type diagram

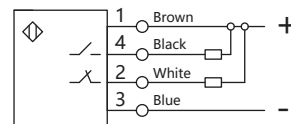
Retro-reflective photoelectric sensor



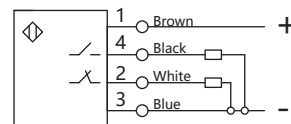
Retro-reflective photoelectric sensor encapsulate the emitter together with the receiver in the same housing, and then mount a reflective mirror on the opposite to the sensor. The light of emitter is reflected by the mirror and received by the receiver. When the light is blocked, there will be a switching point change.

Wiring

DC NPN NO+NC



DC PNP NO+NC



EURO M12 Connector



Technical data

Appearance		①		②	
Model No	NPN N.O+N.C	FM12-R2N-P31P2	FM12-R2N-C31P2	FM12-R2N-P31S12	FM12-R2N-C31S12
	PNP N.O+N.C	FM12-R2P-P31P2	FM12-R2P-C31P2	FM12-R2P-P31S12	FM12-R2P-C31S12
Exterior structure	M12*1mm				
Sensing distance	0.3...2m				
Detection type	Retro-reflective				
Switching frequency	500Hz				
Operating Voltage	10...30V DC				
Light source	Infrared light 880nm				
Response time	<2ms				
Load Current	≤150mA				
Power-on delay	<300ms				
Sensitivity adjustment	Multi-turn potentiometer				
Blind distance	< 30cm				
Light immunity	<5000Lux.				
Ambient temperature	-25...55°C				
Ambient humidity	35...85%				
Housing material	PBT	Brass,nickel-plated	PBT	Brass,nickel-plated	
Ingress protection	IP66				
Lens material	PMMA				
Operation indicator	Yellow				
Connectors	2m PVC Cable, 4*0.25mm ²			M12Connector	
Accessories	FR-D51			B12-4GV2/B12-4WV2/FR-D51	

Cylindrical

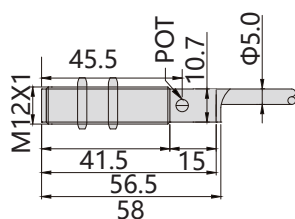
Rectangular

Fork

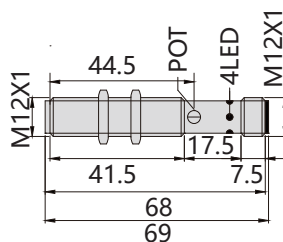
Optical fiber

Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)

M12X58 Cable ①



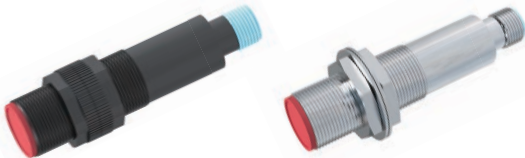
M12X69 Connector ②



Features:

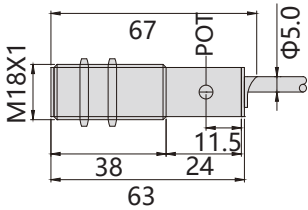
- Quick response time;
- Infrared light source;
- Strong light immunity capability

Technical data

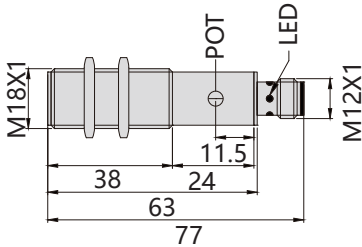
Appearance					
Model No	NPN N.O+N.C	FM18-R3N-P31P2-E	FM18-R3N-C31P2-E	FM18-R3N-P31S12-E	FM18-R3N-C31S12-E
	PNP N.O+N.C	FM18-R3P-P31P2-E	FM18-R3P-C31P2-E	FM18-R3P-P31S12-E	FM18-R3P-C31S12-E
Exterior structure		M18*1mm			
Sensing distance		0.1...3m			
Detection type		Retro-reflective			
Switching frequency		500Hz			
Operating Voltage		10...30V DC			
Light source		Infrared light 880nm			
Response time		<2ms			
Load Current		≤200mA			
Power-on delay		<300ms			
Sensitivity adjustment		Single-turn potentiometer			
Blind distance		< 10cm			
Light immunity		<5000Lux.			
Ambient temperature		-25...55°C			
Ambient humidity		35...85%			
Housing material		PBT	Brass,nickel-plated	PBT	Brass,nickel-plated
Ingress protection		IP66			
Lens material		PMMA			
Operation indicator		Yellow			
Connectors		2m PVC Cable, 4*0.25mm ²		M12Connector	
Accessories		FR-D51		B12-4GV2/B12-4WV2/FR-D51	

Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)

M18X63 Cable ①



M18X77Connector ②



Features:

- Quick response time;
- Infrared light source;
- Strong light immunity capability

Technical data

Appearance		①	②
Model No	NPN N.O+N.C	FQ18-R3N-P31P2-E	FQ18-R3N-P31S12-E
	PNP N.O+N.C	FQ18-R3P-P31P2-E	FQ18-R3P-P31S12-E
Exterior structure		M18*1mm	
Sensing distance		0.1...3m	
Detection type		Retro-reflective	
Switching frequency		500Hz	
Operating Voltage		10...30V DC	
Light source		Infrared light 880nm	
Response time		<2ms	
Load Current		≤200mA	
Power-on delay		<300ms	
Sensitivity adjustment		Single-turn potentiometer	
Light immunity		<5000Lux.	
Ambient temperature		-25...55°C	
Ambient humidity		35...85%	
Housing material		PBT	
Ingress protection		IP66	
Lens material		PMMA	
Operation indicator		Yellow	
Connectors		2m PVC Cable, 4*0.25mm ²	M12Connector
Accessories		FR-D51	B12-4GV2/B12-4WV2/FR-D51

Cylindrical

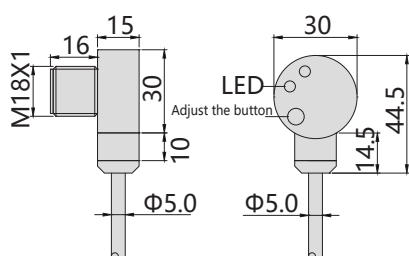
Rectangular

Fork

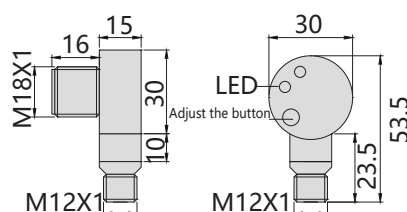
Optical fiber

Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)

Q18 Cable ①



Q18Connector ②



Features:

- Quick response time;
- Wide application range;
- Can detect a variety of objects

Bedook®



FM18 FQ18

Photoelectric sensors

Brass,nickel-plated PBT

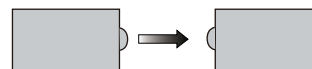
Cylindrical

Through-beam

DC 2 wire/DC 4 wire

Type diagram

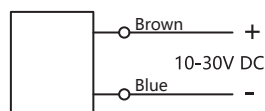
Through-beam photoelectric sensor



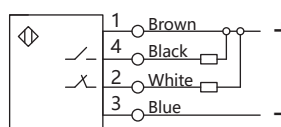
Through-beam photoelectric sensor is composed of independent emitter and receiver, which are separated from each other in structure. Emitter(E) directly transmit to the receiver(R). Please align the emitter and the receiver to establish light path. Whatever object blocks the light route, the receiver voltage will drop and switching condition will change.

Wiring

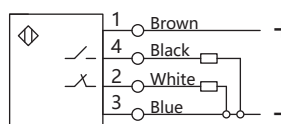
Emitter



DC NPN NO+NC



DC PNP NO+NC



EURO M12 Connector



Technical data

Appearance		①		②	
Model No	Emitter	FM18-L15MD-P51P2-E	FM18-L15MD-C51P2-E	FM18-L15MD-P51S12-E	FM18-L15MD-C51S12-E
	NPN N.O+N.C	FM18-L15MN-P31P2-E	FM18-L15MN-C31P2-E	FM18-L15MN-P31S12-E	FM18-L15MN-C31S12-E
	PNP N.O+N.C	FM18-L15MP-P31P2-E	FM18-L15MP-C31P2-E	FM18-L15MP-P31S12-E	FM18-L15MP-C31S12-E
Exterior structure		M18*1mm			
Sensing distance		15m			
Detection type		Through-beam			
Switching frequency		500Hz			
Operating Voltage		10...30V DC			
Light source		Infrared light 880nm			
Response time		<2ms			
Load Current		≤200mA			
Power-on delay		<300ms			
Sensitivity adjustment		No			
Light immunity		<5000Lux.			
Ambient temperature		-25...55°C			
Ambient humidity		35...85%			
Housing material		PBT	Brass,nickel-plated	PBT	Brass,nickel-plated
Ingress protection		IP66			
Lens material		PMMA			
Operation indicator		Yellow			
Connectors		2m PVC Cable, 2*0.5mm ² /4*0.25mm ²		M12 Connector	
Accessories		None		B12-4GV2/B12-4WV2	

Cylindrical

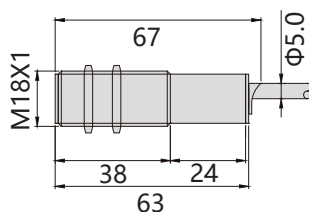
Rectangular

Fork

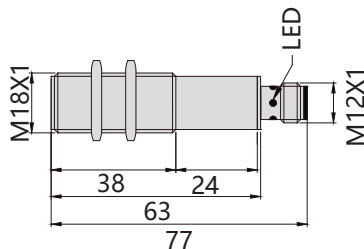
Optical fiber

Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)

M18X63 Cable ①



M18X77Connector ②



Features:

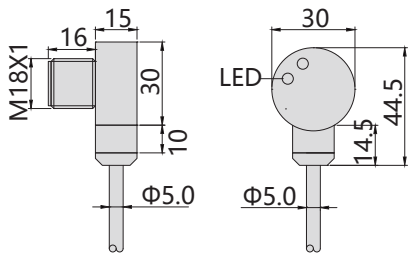
- Long detection distance;
- Wide detection range;
- Infrared light source;
- light immunity capability

Technical data

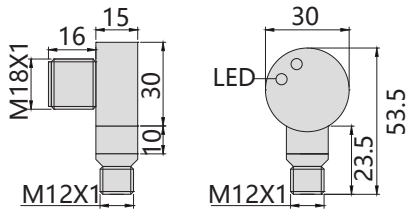
Model No	Appearance		
	Emitter	FQ18-L15MD-P51P2-E	FQ18-L15MD-P51S12-E
	NPN N.O+N.C	FQ18-L15MN-P31P2-E	FQ18-L15MN-P31S12-E
	PNP N.O+N.C	FQ18-L15MP-P31P2-E	FQ18-L15MP-P31S12-E
Exterior structure		M18*1mm	
Sensing distance		15m	
Detection type		Through-beam	
Switching frequency		500Hz	
Operating Voltage		10...30V DC	
Light source		Infrared light 880nm	
Response time		<2ms	
Load Current		≤200mA	
Power-on delay		<300ms	
Sensitivity adjustment		None	
Light immunity		<5000Lux.	
Ambient temperature		-25...55°C	
Ambient humidity		35...85%	
Housing material		PBT	
Ingress protection		IP66	
Lens material		PMMA	
Operation indicator		Yellow	
Connectors		2m PVC Cable, 2*0.25mm ² , 4*0.25mm ²	M12 Connector
Accessories		None	B12-4GV2/B12-4WV2

Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)

Q18 Cable ①



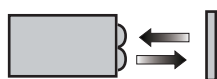
Q18 Connector ②



Features:

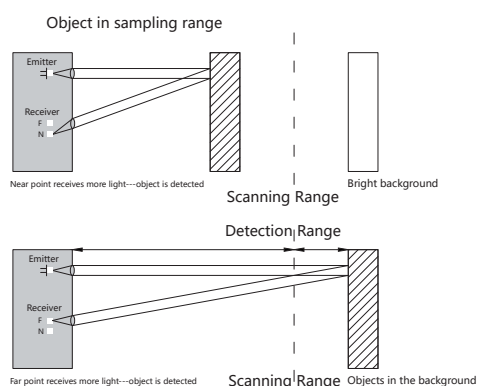
- Long detection distance;
- Wide application range;
- Can detect a variety of objects

Type diagram



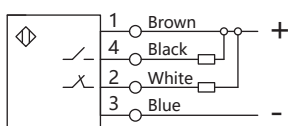
Diffuse reflection sensor with background suppression can detect any object within its effective detection range, regardless of the object's brightness, color or other characteristics, for example, background brightness. The light from the emitter is reflected from the target object to the receiver's lens where the reflection light will be focused. If the target object is within detection range, part of the focused reflection light from the receiver lens will reach near point (N) of the receiver. So the sensor will be "ON" signal.

As the distance increases between target object and sensor, the light spot will move to far point (F). Within the sensor's limit detection range, half of the reflection light is on near point and the other half is on far point. So the sensor will be "OFF" signal. If the distance proceeds to increase between the target object and sensor, all reflection light will be on far point. The sensor will stay "OFF" signal.

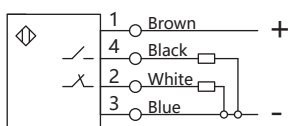


Wiring

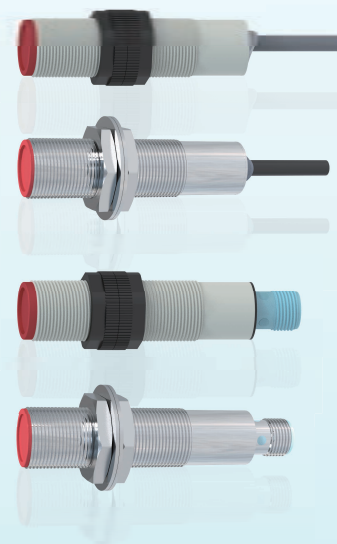
DC NPN NO+NC



DC PNP NO+NC



EURO M12 Connector



FM18

Photoelectric sensors

Brass, nickel-plated PBT

Cylindrical

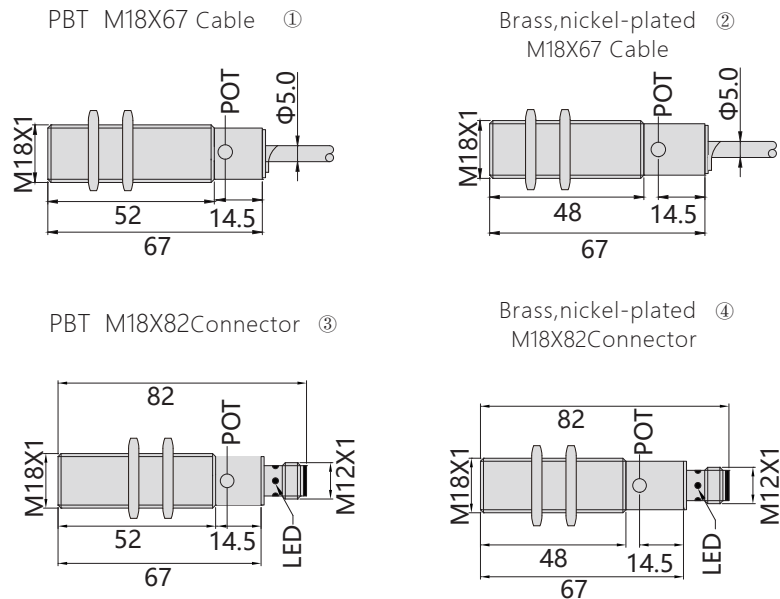
Background suppression

DC 4 wire

Technical data

Model No	NPN N.O+N.C	FM18-H01N-P31P2	FM18-H01N-C31P2	FM18-H01N-P31S12	FM18-H01N-C31S12
	PNP N.O+N.C	FM18-H01P-P31P2	FM18-H01P-C31P2	FM18-H01P-P31S12	FM18-H01P-C31S12
Exterior structure	M18*1mm				
Sensing distance	10...100mm				
Detection type	Background suppression				
Switching frequency	1000Hz				
Operating Voltage	10...30V DC				
Light source	Red Light 624nm				
Response time	≤1ms				
Load Current	≤200mA				
Power-on delay	<300ms				
Blind distance	< 1cm				
Sensitivity adjustment	Single-turn potentiometer				
Light immunity	<5000Lux.				
Ambient temperature	-25...55℃				
Ambient humidity	35...85%				
Housing material	PBT	Brass,nickel-plated	PBT	Brass,nickel-plated	
Ingress protection	IP66				
Lens material	PMMA				
LED indicator	Yellow				
Connectors	2m PVC Cable, 4*0.25mm ²			M12Connector	
Accessories	None			B12-4GV2/B12-4WV2	

Dimensioned drawing (Dimensional drawing ③ corresponds to technical parameters - appearance column ①)

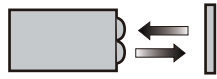


Features:

- No need to distinguish the target object color
- Quick response
- Reverse connection protection

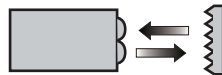
Type diagram

Diffuse reflection photoelectric sensor



The working principle of diffuse reflection type photoelectric sensor is same with retro-reflective sensor, but without reflection mirror. The light of emitter is reflected by the target object, then received and evaluated by the receiver. Its positioning of the target object is not accurate. When target object enters into valid light-area, its output situation will change. Detection range depends on target object's shape, dimension, color and surface characteristics.

Retro-reflective photoelectric sensor



Retro-reflective photoelectric sensor encapsulate the emitter together with the receiver in the same housing, and then mount a reflective mirror on the opposite to the sensor. The light of emitter is reflected by the mirror and received by the receiver. When the light is blocked, there will be a switching point change.

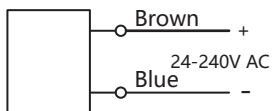
Through-beam photoelectric sensor



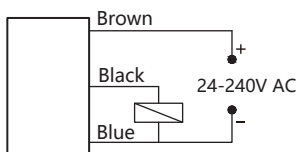
Through-beam photoelectric sensor is composed of independent emitter and receiver, which are separated from each other in structure. Emitter (E) directly transmit to the receiver (R). Please align the emitter and the receiver to establish light path. Whatever object blocks the light route, the receiver voltage will drop and switching condition will change.

Wiring

Emitter



PICO M8 Connector



FM18

Photoelectric sensors

Brass, nickel-plated PBT

Cylindrical

Diffuse, Retro-reflective

Through-beam

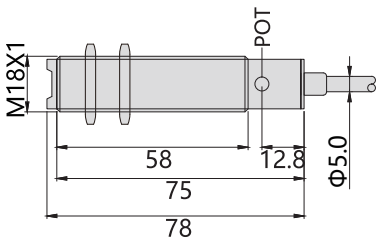
AC 3 wire

Technical data

Appearance					
Model No	N.O	FM18-T015A-P14P2	FM18-T05A-P14P2	FM18-T015A-C14P2	FM18-T05A-C14P2
	N.C	FM18-T015A-P24P2	FM18-T05A-P24P2	FM18-T015A-C24P2	FM18-T05A-C24P2
Exterior structure		M18*1mm	M18*1mm	M18*1mm	M18*1mm
Sensing distance		150mm	500mm	150mm	500mm
Detection type		Diffuse reflection			
Switching frequency		25Hz			
Operating Voltage		24...240V AC			
Light source		Infrared light 880nm			
Response time		≤40ms			
Load Current		≤300mA			
Power-on delay		<300ms			
Blind distance		< 1cm			
Sensitivity adjustment		Single-turn potentiometer			
Light immunity		<5000Lux.			
Ambient temperature		-25...55℃			
Ambient humidity		35...85%			
Housing material		PBT		Brass,nickel-plated	
Ingress protection		IP66			
Lens material		PMMA			
Operation indicator		Yellow			
Connectors		2m PVC Cable, 3*0.35mm²			
Accessories		None			

Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)

M18X78 Cable ①



Features:

- Quick response time;
- Infrared light source;
- Strong light immunity capability

Technical data

Appearance					
Model No	N.O	FM18-T015A-P14S12	FM18-T05A-P14S12	FM18-T015A-C14S12	FM18-T05A-C14S12
	N.C	FM18-T015A-P24S12	FM18-T05A-P24S12	FM18-T015A-C24S12	FM18-T05A-C24S12
Exterior structure		M18*1mm	M18*1mm	M18*1mm	M18*1mm
Sensing distance		150mm	500mm	150mm	500mm
Detection type		Diffuse reflection			
Switching frequency		25Hz			
Operating Voltage		24...240V AC			
Light source		Infrared light 880nm			
Response time		≤40ms			
Load Current		≤300mA			
Power-on delay		<300ms			
Blind distance		< 1cm			
Sensitivity adjustment		Single-turn potentiometer			
Light immunity		<5000Lux.			
Ambient temperature		-25...55℃			
Ambient humidity		35...85%			
Housing material		PBT		Brass,nickel-plated	
Ingress protection		IP66			
Lens material		PMMA			
Operation indicator		Yellow			
Connectors		M12 Connector			
Accessories		B12-4GV2/B12-4WV2			

Cylindrical

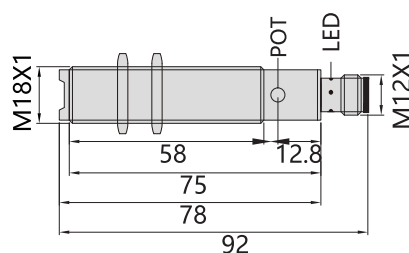
Rectangular

Fork

Optical fiber

Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)

M18X82 Connector ①



Features:

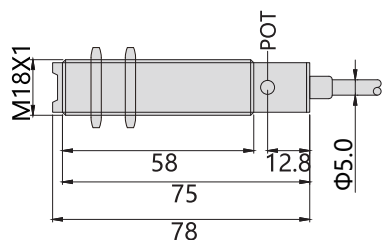
- Quick response time;
- Infrared light source;
- Strong light immunity capability

Technical data

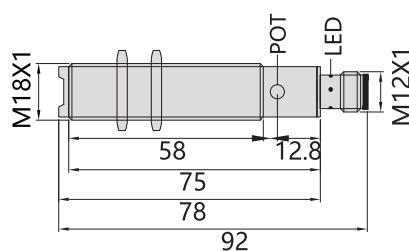
Appearance		①		②	
Model No	Emitter	FM18-L15MD-P54P2	FM18-L15MD-C54P2	FM18-L15MD-P54S12	FM18-L15MD-C54S12
	N.O+N.C	FM18-L15MA-P14P2	FM18-L15MA-C14P2	FM18-L15MA-P14S12	FM18-L15MA-C14S12
	N.O+N.C	FM18-L15MA-P24P2	FM18-L15MA-C24P2	FM18-L15MA-P24S12	FM18-L15MA-C24S12
Exterior structure		M18*1mm			
Sensing distance		15m			
Detection type		Through-beam			
Switching frequency		50Hz			
Operating Voltage		24...240V AC			
Light source		Infrared light 880nm			
Response time		≤20ms			
Load Current		≤300mA			
Power-on delay		<300ms			
Sensitivity adjustment		Single-turn potentiometer			
Light immunity		<5000Lux.			
Ambient temperature		-25...55°C			
Ambient humidity		35...85%			
Housing material		PBT	Brass,nickel-plated	PBT	Brass,nickel-plated
Ingress protection		IP66			
Lens material		PMMA			
Operation indicator		Yellow			
Connectors		2m PVC Cable, 3*0.35mm ²		M12Connector	
Accessories		None		B12-4GV2/B12-4WV2	

Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)

M18X75 Cable ①



M18X82Connector ②



Features:

- Long detection distance;
- Wide detection target objects range;
- Infrared light with high light immunity capability

Technical data

Appearance					
Model No	N.O	FM18-R3A-P14P2	FM18-R3A-C14P2	FM18-R3A-P14S12	FM18-R3A-C14S12
	N.C	FM18-R3A-P24P2	FM18-R3A-C24P2	FM18-R3A-P24S12	FM18-R3A-C24S12
Exterior structure		M18*1mm			
Sensing distance		0.1...3m			
Detection type		Retro-reflection			
Switching frequency		25Hz			
Operating Voltage		24...240V AC			
Light source		Infrared light 880nm			
Response time		≤40ms			
Load Current		≤300mA			
Power-on delay		<300ms			
Blind distance		< 10cm			
Sensitivity adjustment		Single-turn potentiometer			
Light immunity		<5000Lux.			
Ambient temperature		-25...55℃			
Ambient humidity		35...85%			
Housing material		PBT	Brass,nickel-plated	PBT	Brass,nickel-plated
Ingress protection		IP66			
Lens material		PMMA			
Operation indicator		Yellow			
Connectors		2m PVC Cable, 3*0.35mm ²		M12Connector	
Accessories		HL-08		B12-4GV2/B12-4WV2/HL-08	

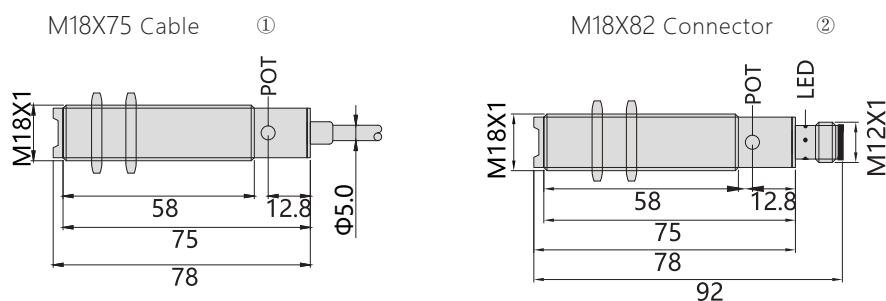
Cylindrical

Rectangular

Fork

Optical fiber

Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)



Features:

- Quick response time;
- Infrared light source;
- Strong light immunity capability

Bedook®

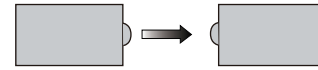


FQ20
Photoelectric sensors
ABS
Rectangular
Through-beam
DC2 wire/DC3 wire

ISO9001 CE UKCA CCC RoHS

Type diagram

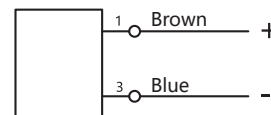
Through-beam photoelectric sensor



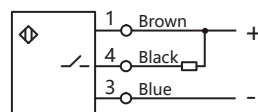
Through-beam photoelectric sensor is composed of independent emitter and receiver, which are separated from each other in structure. Emitter(E) directly transmit to the receiver(R). Please align the emitter and the receiver to establish light path. Whatever object blocks the light route, the receiver voltage will drop and switching condition will change.

Wiring

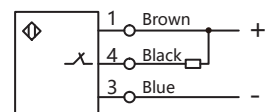
Emitter



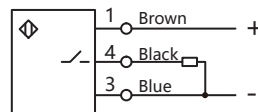
DC NPN-NO



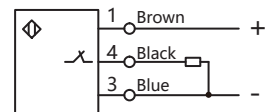
DC NPN-NC



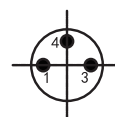
DC PNP-NO



DC PNP-NC



PICO M8 Connector(3pin)



PICO M8 Connector(4pin)



Technical data

Appearance					
Model No	Emitter	FQ20-L05D-P51P2		FQ20-L05D-P51P2-C	
	NPN N.O	FQ20-L05N-P11P2		FQ20-L05N-P11P2-C	
	NPN N.C	FQ20-L05N-P21P2		FQ20-L05N-P21P2-C	
	PNP N.O	FQ20-L05P-P11P2		FQ20-L05P-P11P2-C	
	PNP N.C	FQ20-L05P-P21P2		FQ20-L05P-P21P2-C	
Size		Emitter: 19.5*10.2*3.8mm Receiver: 20.5*10.2*3.8mm		Emitter: 19.1*10*4.8mm Receiver: 20.5*10*4.8mm	
Sensing direction		Front sensing		Side sensing	
Sensing distance		500mm		500mm	
Detecting Objects		φ2mm opaque objects			
Hysteresis		<15% of action distance			
Response time		1ms (Action/Reset)			
Light source		Red LED			
Operating Voltage		10-30VDC+10%			
Voltage drop		<2VDC			
Load Current		50mA			
Consumption		≤25mA			
LED indicator		Output:Yellow;/Power:Green			
Switth protection		Reverse protection, short-circuit protection			
Ingress protection		IP66			
Light immunity		Incandescent lamp: <3000lx, Sunlight: <10000lx			
Ambient temperature		-25~+55℃			
Ambient humidity		35-85%RH			
Vibration Resistance		Frequency 10~500HZ Dual amplitude 3mm(MAX:20G),X、Y、Z two hours in each direction			
Shock Resistance		Acceleration 500m/s ² (50G),X、Y、Z three times in each direction			
Connectors		Emitter: 2m PVC gray-white cable; Receiver: 2m PVC Black cable			
Housing material		ABS			

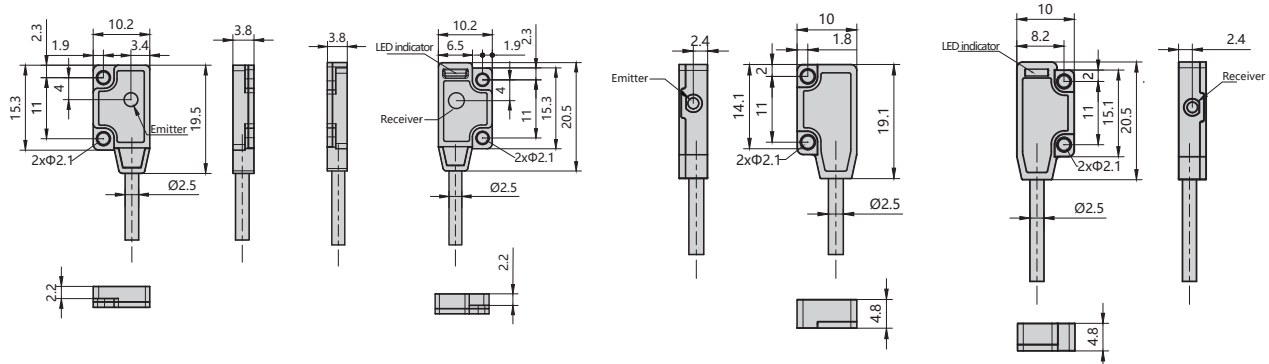
Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)

Emitter FQ20 Cable

Receiver FQ20 Cable ①

Emitter FQ20-C Cable

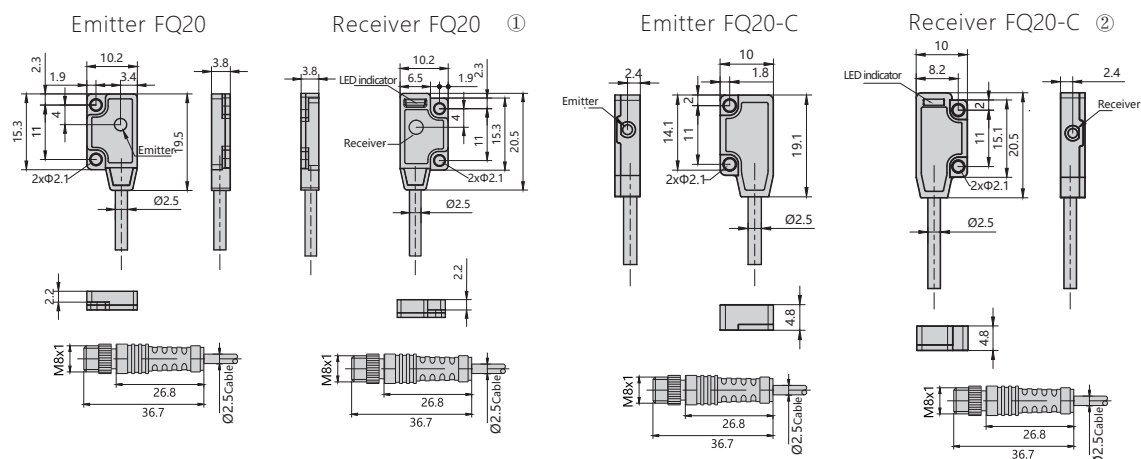
Receiver FQ20-C Cable ②



Technical data

Model No	Appearance	①	②
	Emitter	FQ20-L05D-P51Z8	FQ20-L05D-P51Z8-C
	NPN N.O	FQ20-L05N-P11Z8	FQ20-L05N-P11Z8-C
	NPN N.C	FQ20-L05N-P21Z8	FQ20-L05N-P21Z8-C
	PNP N.O	FQ20-L05P-P11Z8	FQ20-L05P-P11Z8-C
	PNP N.C	FQ20-L05P-P21Z8	FQ20-L05P-P21Z8-C
Size	Emitter: 19.5*10.2*3.8mm Receiver: 20.5*10.2*3.8mm		Emitter: 19.1*10*4.8mm Receiver: 20.5*10*4.8mm
Sensing direction	Front sensing		Side sensing
Sensing distance	500mm		500mm
Detecting Objects	φ2mm opaque objects		
Hysteresis	<15% of action distance		
Response time	1ms (Action/Reset)		
Light source	Red LED		
Operating Voltage	10-30VDC+10%		
Voltage drop	<2VDC		
Load Current	50mA		
Consumption	≤25mA		
LED indicator	Output:Yellow;/Power:Green		
Switth protection	Reverse protection, short-circuit protection		
Ingress protection	IP66		
Light immunity	Incandescent lamp: <3000lx、Sunlight: <10000lx		
Ambient temperature	-25~+55℃		
Ambient humidity	35-85%RH		
Vibration Resistance	Frequency 10~500HZ Dual amplitude 3mm(MAX:20G),X、Y、Z two hours in each direction		
Shock Resistance	Acceleration 500m/s ² (50G)X、Y、Z three times in each direction		
Connectors	Emitter: Gray M8,0.3m Cable with connector(4 pin); Receiver: Black M8,0.3m Cable with connector(4 pin)		
Housing material	ABS		

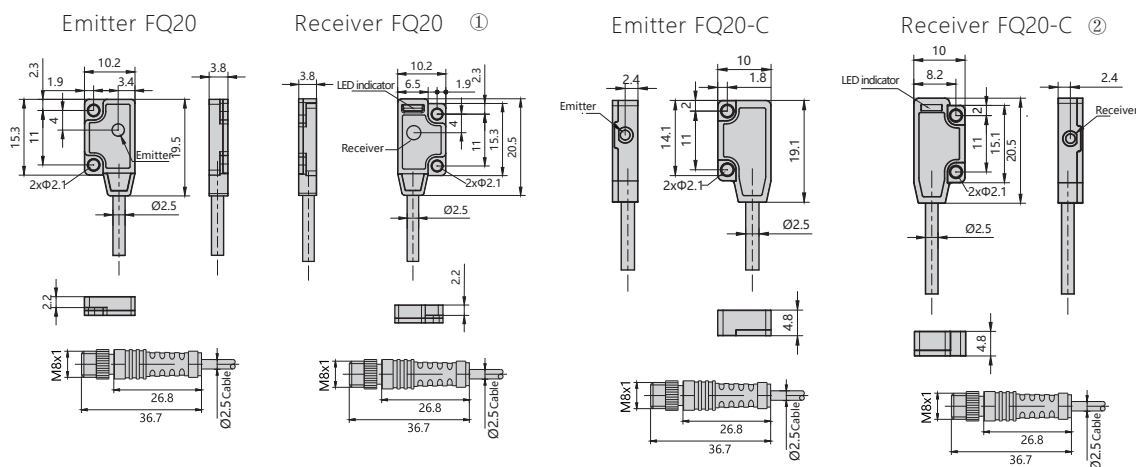
Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)



Technical data

Appearance		①	②
Model No	Emitter	FQ20-L05D-P51Z8/3P	FQ20-L05D-P51Z8-C/3P
	NPN N.O	FQ20-L05N-P11Z8/3P	FQ20-L05N-P11Z8-C/3P
	NPN N.C	FQ20-L05N-P21Z8/3P	FQ20-L05N-P21Z8-C/3P
	PNP N.O	FQ20-L05P-P11Z8/3P	FQ20-L05P-P11Z8-C/3P
	PNP N.C	FQ20-L05P-P21Z8/3P	FQ20-L05P-P21Z8-C/3P
Size		Emitter: 19.5*10.2*3.8mm Receiver: 20.5*10.2*3.8mm	Emitter: 19.1*10*4.8mm Receiver: 20.5*10*4.8mm
Sensing direction		Front sensing	Side sensing
Sensing distance		500mm	500mm
Detecting Objects		φ2mm opaque objects	
Hysteresis		<15% of action distance	
Response time		1ms (Action/Reset)	
Light source		Red LED	
Operating Voltage		10-30VDC+10%	
Voltage drop		<2VDC	
Load Current		50mA	
Consumption		≤25mA	
LED indicator		Output:Yellow;/Power:Green	
Switch protection		Reverse protection, short-circuit protection	
Ingress protection		IP66	
Light immunity		Incandescent lamp: <3000lx, Sunlight: <10000lx	
Ambient temperature		-25~+55°C	
Ambient humidity		35-85%RH	
Vibration Resistance		Frequency 10~500HZ Dual amplitude 3mm(MAX:20G),X、Y、Z two hours in each direction	
Shock Resistance		Acceleration 500m/s ² (50G)X、Y、Z three times in each direction	
Connectors		Emitter: Gray M8,0.3m Cable with connector(3 pin); Receiver: Black M8,0.3m Cable with connector(3 pin)	
Housing material		ABS	

Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)



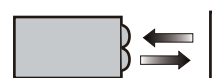


FQ21 FQ30 FQ31 FQ50
Photoelectric seneors
ABS
Rectangular
Diffuse 、 Retro-reflective
Through-beam
DC2wire/DC4wire

ISO9001 CE UKCA CQC RoHS

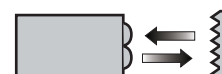
Type diagram

Diffuse reflection photoelectric sensor



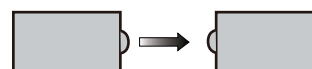
The working principle of diffuse reflection type photoelectric sensor is same with retro-reflective sensor, but without reflection mirror. The light of emitter is reflected by the target object, then received and evaluated by the receiver. Its positioning of the target object is not accurate. When target object enters into valid light-area, its output situation will change. Detection range depends on target object's shape, dimension, color and surface characteristics.

Retro-reflective photoelectric sensor



Retro-reflective photoelectric sensor encapsulate the emitter together with the receiver in the same housing, and then mount a reflective mirror on the opposite to the sensor. The light of emitter is reflected by the mirror and received by the receiver. When the light is blocked, there will be a switching point change.

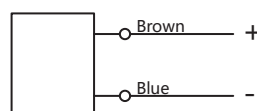
Through-beam photoelectric sensor



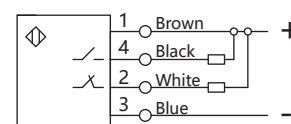
Through-beam photoelectric sensor is composed of independent emitter and receiver, which are separated from each other in structure. Emitter(E) directly transmit to the receiver(R). Please align the emitter and the receiver to establish light path. Whatever object blocks the light route, the receiver voltage will drop and switching condition will change.

Wiring

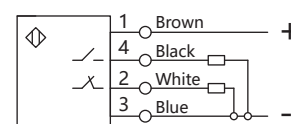
Emitter



DC NPN NO+NC



DC PNP NO+NC



EURO M12 Connector



PICO M8 Connector



Technical data

Appearance		①	②
Model No	Emitter	FQ21-L1D-P51P2	FQ21-LJ5D-P51P2
	NPN N.O.+N.C	FQ21-L1N-P31P2	FQ21-LJ5N-P31P2
	PNP N.O.+N.C	FQ21-L1P-P31P2	FQ21-LJ5P-P31P2
Size		21*14*8mm	21*15*8mm 21*14*8mm
Sensing distance		1m	5m 5m
Detection type		Through-beam	
Switching frequency		500Hz	
Operating Voltage		10-30V DC	
Light source		Red light 650nm	Laser 650nm
Response time		≤2s	
Load Current		50mA	
Power-on delay		≤300ms	
Sensitivity adjustment		None	
Light immunity		<5000Lux.	
Ambient temperature		-25...55°C	
Ambient humidity		35...85%	
Housing material		ABS	
Lens material		PC	
Ingress protection		IP67	
Operation indicator		Output: Yellow/Power: Green	
Connectors		2m PVC Cable, 4*0.09mm ² /2*0.08mm ²	
Accessories		None	

Cylindrical

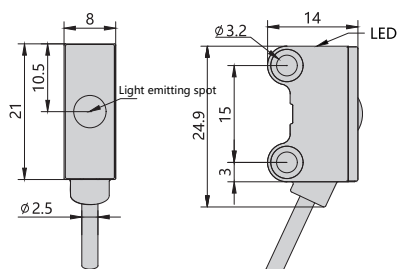
Rectangular

Fork

Optical fiber

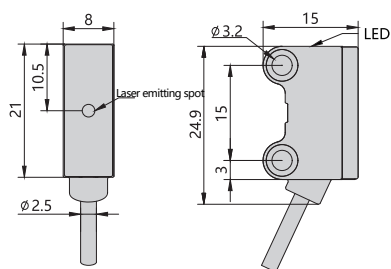
Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)

FQ21 Cable ①

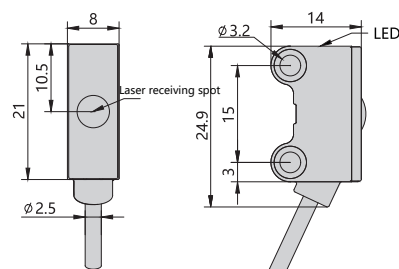


FQ21 Cable ②

Emitter



Receiver

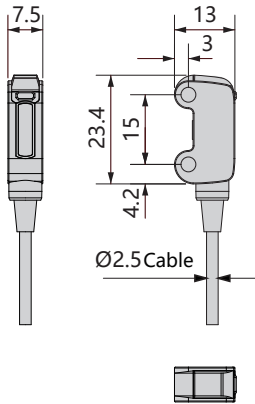


Technical data

Model No	Appearance	 ①
	Emitter	
	NPN N.O+N.C	
	PNP N.O+N.C	
Size		23.4*13*7.5mm
Sensing distance		1m
Detection type		Through-beam
Switching frequency		500Hz
Operating Voltage		10-30V DC
Light source		Red light 650nm
Response time		≤2s
Load Current		100mA
Power-on delay		≤300ms
Sensitivity adjustment		None
Light immunity		<5000Lux.
Ambient temperature		-25...55°C
Ambient humidity		35...85%
Housing material		Stainless Steel
Lens material		PC
Ingress protection		IP67
Operation indicator		Output: Yellow/Power: Green
Connectors		2m PVC Cable,4*0.09mm ² /2*0.08mm ²
Accessories		None

Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)

FQ21 Cable ①



Technical data

Appearance		①	②
Model No	Emitter	FQ30-L1D-P56P2	FQ30-L1D-V56P2
	NPN N.O+N.C	FQ30-L1N-P36P2	FQ30-L1N-V36P2
	PNP N.O+N.C	FQ30-L1P-P36P2	FQ30-L1P-V36P2
Size		30*15*4.5mm	
Sensing distance		1m	
Detection type		Through-beam	
Operating Voltage		12-24V DC	
Light source		Red light 650nm	
Response time		<1s(Action/restoration)	
Load Current		≤30mA	
No-load Current		≤25mA	
Switch protection		Short-circuit protection, Polarity reversal protection	
Light immunity		Incandescent lamp : < 3000lx, sunlight: <10000lx	
Ambient temperature		-25...55°C	
Ambient humidity		35...85%	
Housing material		ABS	Stainless Steel
Ingress protection		IP67	
Operation indicator		Output: Yellow/Power: Green	
Connectors		2m PVC Cable	
Accessories		None	

Cylindrical

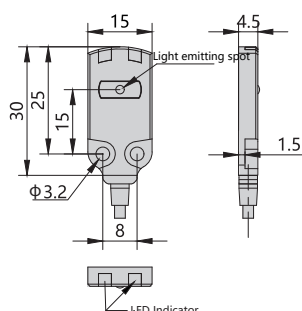
Rectangular

Fork

Optical fiber

Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)

FQ30 Cable ①



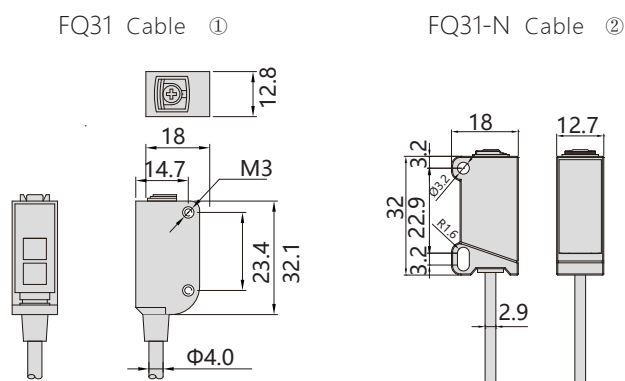
Features:

- Super thin and super small size;
- Easy installation;
- Dual colors LED indicator,easy identification

Technical data

Model No	Appearance	①			②		
		FQ31-T011N-P31P2	FQ31-T035N-P31P2	FQ31-T08N-P31P2	FQ31-T011N-P31P2-N	FQ31-T035N-P31P2-N	FQ31-T08N-P31P2-N
Size	Sensing distance	32.1*18*12.8mm			32.1*18*12.8mm		
		110mm	350mm	800mm	110mm	350mm	800mm
Detection type	Diffuse reflection						
Switching frequency	500Hz						
Operating Voltage	10...30V DC						
Light source	Infrared light 880nm						
Response time	<2ms						
Load Current	100mA						
Power-on delay	<300ms						
Sensitivity adjustment	Single-turn potentiometer						
Light immunity	<5000Lux.						
Ambient temperature	-25...55°C						
Ambient humidity	35...85%						
Housing material	ABS						
Ingress protection	IP65						
Lens material	PMMA						
Operation indicator	Output: Red/Power: Yellow						
Connectors	2m PVC Cable, 4*0.25mm ²						
Accessories	None						

Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)



Features:

- Quick response time;
- Infrared light source;
- Strong light immunity capability

Technical data

Appearance		①		②	
					
Model No	NPN N.O+N.C	FQ31-R2N-P31P2	FQ31-R4N-P31P2	FQ31-R2N-P31P2-N	FQ31-R4N-P31P2-N
	PNP N.O+N.C	FQ31-R2P-P31P2	FQ31-R4P-P31P2	FQ31-R2P-P31P2-N	FQ31-R4P-P31P2-N
Size	32.1*18*12.8mm			32.1*18*12.8mm	
Sensing distance	2m	4m		2m	4m
Detection type	Retro-reflection				
Switching frequency	500Hz				
Operating Voltage	10...30V DC				
Light source	Infrared light 880nm				
Response time	<2ms				
Load Current	100mA				
Power-on delay	<300ms				
Sensitivity adjustment	Single-turn potentiometer				
Light immunity	<5000Lux.				
Ambient temperature	-25...55℃				
Ambient humidity	35...85%				
Housing material	ABS				
Ingress protection	IP65				
Lens material	PMMA				
Operation indicator	Output: Red/Power: Yellow				
Connectors	2m PVC Cable, 4*0.25mm ²				
Accessories	HL-08				

Cylindrical

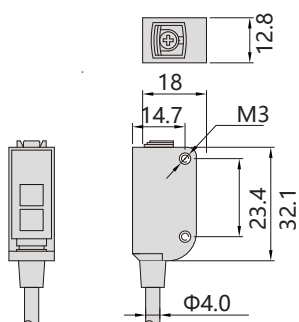
Rectangular

Fork

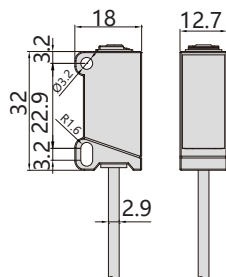
Optical fiber

Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)

FQ31 Cable ①



FQ31-N Cable ②



Features:

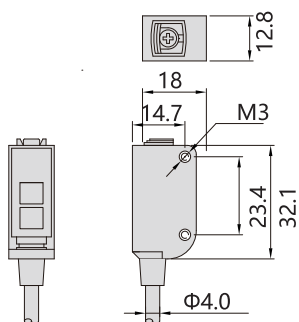
- Quick response time;
- Infrared light source;
- Strong light immunity capability

Technical data

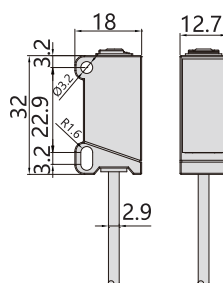
Appearance			
Model No	NPN N.O+N.C	FQ31-T02N-P31P2-D	FQ31-T02N-P31P2-D-N
	PNP N.O+N.C	FQ31-T02P-P31P2-D	FQ31-T02P-P31P2-D-N
Size		32.1*18*12.8mm	32*18*12.7mm
Sensing distance		200mm	
Detection type		Diffuse reflection (Super large spot)	
Switching frequency		500Hz	
Operating Voltage		10...30V DC	
Light source		Red Light 650nm	
Response time		≤2ms	
Load Current		100mA	
Power-on delay		<300ms	
Sensitivity adjustment		Single-turn potentiometer	
Light spot diameter		About 200mm square spot (at 200mm)	
Light immunity		<5000Lux.	
Ambient temperature		-25...55℃	
Ambient humidity		35...85%	
Housing material		ABS	
Ingress protection		IP65	
Lens material		PMMA	
Operation indicator		Output: Red/Power: Yellow	
Connectors		2m PVC Cable, 4*0.25mm²	
Accessories		None	

Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)

FQ31 Cable ①



FQ31-N Cable ②



Features:

- Super large spot;
- Capable of detecting carved hollow objects and transparent objects

Technical data

Appearance		①		②	
Model No	Emitter	FQ31-L5D-P51P2	FQ31-L15MD-P51P2	FQ31-L5D-P51P2-N	FQ31-L15MD-P51P2-N
	NPN N.O+N.C	FQ31-L5N-P31P2	FQ31-L15MN-P31P2	FQ31-L5N-P31P2-N	FQ31-L15MN-P31P2-N
	PNP N.O+N.C	FQ31-L5P-P31P2	FQ31-L15MP-P31P2	FQ31-L5P-P31P2-N	FQ31-L15MP-P31P2-N
	Size	32.1*18*12.8mm		32.1*18*12.7mm	
Sensing distance		5m	15m	5m	15m
Detection type		Through-beam			
Switching frequency		500Hz			
Operating Voltage		10...30V DC			
Light source		Infrared light 880nm			
Response time		<2ms			
Load Current		100mA			
Power-on delay		<300ms			
Sensitivity adjustment		Single-turn potentiometer			
Light immunity		<5000Lux.			
Ambient temperature		-25...55°C			
Ambient humidity		35...85%			
Housing material		ABS			
Ingress protection		IP65			
Lens material		PMMA			
Operation indicator		Output: Red/Power: Yellow			
Connectors		2m PVC Cable, 2*0.5mm ² , 4*0.25mm ²			
Accessories		None			

Cylindrical

Rectangular

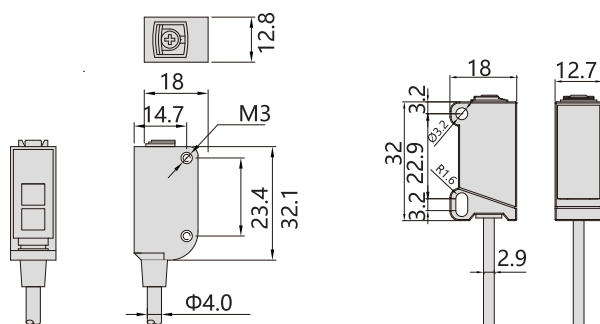
Fork

Optical fiber

Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)

FQ31 Cable ①

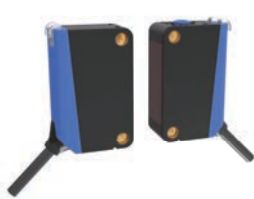
FQ31-N Cable ②



Features:

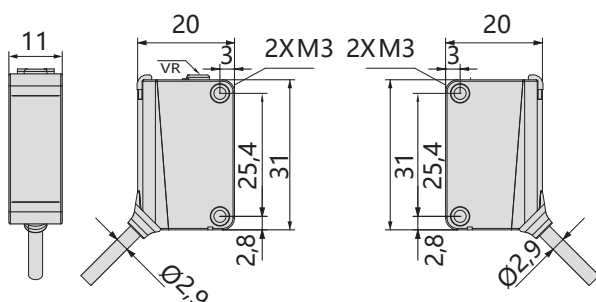
- Long detection distance;
- Wide detection range;
- Infrared light with high light immunity capability

Technical data

Appearance						
		Emitter	FQ31-L5D-P51P2-1	FQ31-L15MD-P51P2-1	FQ31-L5D-P51P2-Y	FQ31-L15MD-P51P2-Y
		NPN N.O+N.C	FQ31-L5N-P31P2-1	FQ31-L15MN-P31P2-1	FQ31-L5N-P31P2-Y	FQ31-L15MN-P31P2-Y
		PNP N.O+N.C	FQ31-L5P-P31P2-1	FQ31-L15MP-P31P2-1	FQ31-L5P-P31P2-Y	FQ31-L15MP-P31P2-Y
Model No	Size	31*20*11mm				
	Sensing distance	5m	15m	5m	15m	
	Detection type	Through-beam				
	Switching frequency	500Hz				
	Operating Voltage	10...30V DC				
	Light source	Red light 650nm		Infrared light 850nm		
	Response time	≤2ms				
	Load Current	100mA				
	Power-on delay	<300ms				
	Sensitivity adjustment	Single-turn potentiometer				
	Light immunity	<5000Lux.				
	Ambient temperature	-25...55℃				
	Ambient humidity	35...85%				
	Housing material	ABS				
	Ingress protection	IP65				
	Lens material	PC				
	Operation indicator	Output: Yellow/Power: Green				
	Connectors	2m PVC Cable, 4*0.15mm ² /2*0.25mm ²				
	Accessories	None				

Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)

FQ31 Cable



Features:

- Long detection distance;
- Wide detection range;
- Infrared light with high light immunity capability

Technical data

Appearance					
Model No	Emitter	FQ31-L5D-P51S8-1	FQ31-L15MD-P51S8-1	FQ31-L5D-P51S8-Y	FQ31-L15MD-P51S8-Y
	NPN N.O+N.C	FQ31-L5N-P31S8-1	FQ31-L15MN-P31S8-1	FQ31-L5N-P31S8-Y	FQ31-L15MN-P31S8-Y
	PNP N.O+N.C	FQ31-L5P-P31S8-1	FQ31-L15MP-P31S8-1	FQ31-L5P-P31S8-Y	FQ31-L15MP-P31S8-Y
Size		31*20*11mm			
Sensing distance		5m	15m	5m	15m
Detection type		Through-beam			
Switching frequency		500Hz			
Operating Voltage		10...30V DC			
Light source		Red light 650nm		Infrared light 850nm	
Response time		≤2ms			
Load Current		100mA			
Power-on delay		<300ms			
Sensitivity adjustment		Single-turn potentiometer			
Light immunity		<5000Lux.			
Ambient temperature		-25...55℃			
Ambient humidity		35...85%			
Housing material		ABS			
Ingress protection		IP65			
Lens material		PC			
Operation indicator		Output: Yellow/Power: Green			
Connectors		M8 Connector			
Accessories		B8-4GV2/B8-4WV2			

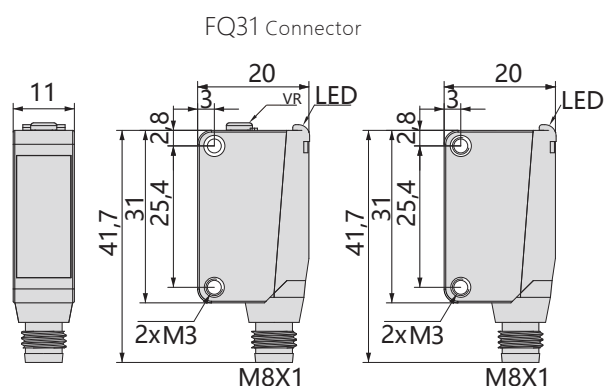
Cylindrical

Rectangular

Fork

Optical fiber

Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)



Features:

- Long detection distance;
- Wide detection range;
- Infrared light with high light immunity capability

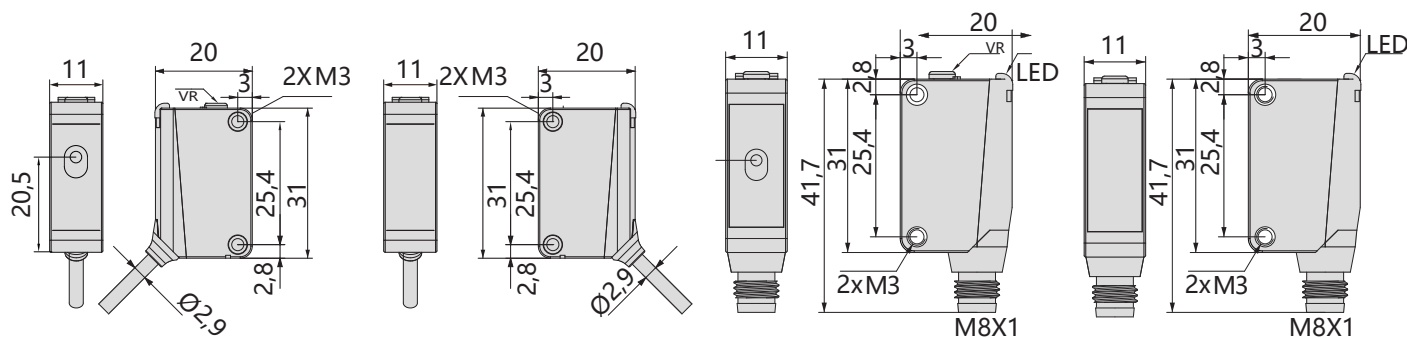
Technical data

Model No	Appearance				
	Emitter	FQ31-LJ5D-P51P2	FQ31-LJ15MD-P51P2	FQ31-LJ5D-P51S8	FQ31-LJ15MD-P51S8
	NPN N.O+N.C	FQ31-LJ5N-P31P2	FQ31-LJ15MN-P31P2	FQ31-LJ5N-P31S8	FQ31-LJ15MN-P31S8
	PNP N.O+N.C	FQ31-LJ5P-P31P2	FQ31-LJ15MP-P31P2	FQ31-LJ5P-P31S8	FQ31-LJ15MP-P31S8
Size		31*20*11mm	31*20*11mm	31*20*11mm	31*20*11mm
Sensing distance		5m	15m	5m	15m
Detection type		Through-beam			
Switching frequency		500Hz			
Operating Voltage		10...30V DC			
Light source		Laser 650nm			
Response time		<2ms			
Load Current		100mA			
Power-on delay		<300ms			
Sensitivity adjustment		Single-turn potentiometer			
Light immunity		<5000Lux.			
Ambient temperature		-25...55°C			
Ambient humidity		35...85%			
Housing material		ABS			
Ingress protection		IP65			
Lens material		PC			
Operation indicator		Output: Yellow/Power: Green			
Connectors		2m PVC Cable, 4*0.15mm ² /2*0.25mm ²		M8 Connector	
Accessories		None		B8-4GV2/B8-4WV2	

Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)

FQ31 Cable ①

FQ31Connector ②



Features:

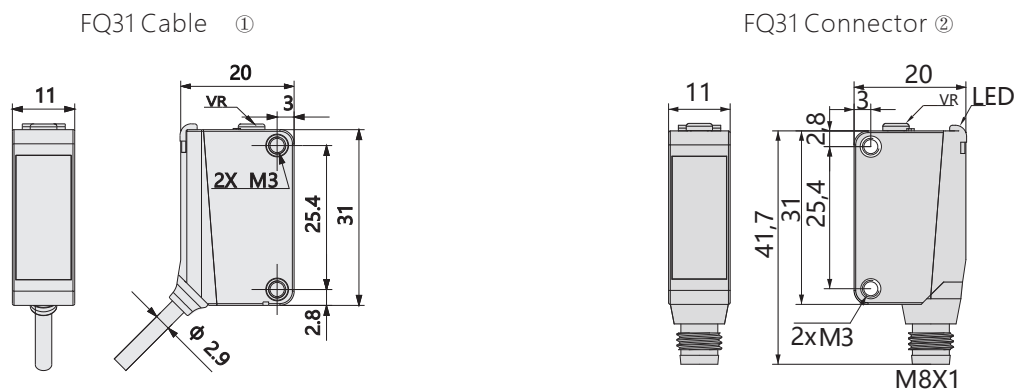
- Long detection distance;
- Wide detection range;
- Laser light source

Technical data

Appearance		① 		② 		
		FQ31-T1N-P31P2		FQ31-T1N-P31S8		
Model No	NPN N.O+N.C	FQ31-T1P-P31P2		FQ31-T1P-P31S8		
	PNP N.O+N.C					
Size	31*20*11mm					
Sensing distance	1m					
Detection type	Diffuse reflection					
Switching frequency	500Hz					
Operating Voltage	10...30V DC					
Light source	Red Light 650nm					
Response time	≤2ms					
Load Current	100mA					
Power-on delay	<300ms					
Sensitivity adjustment	Single-turn potentiometer					
Light immunity	<5000Lux.					
Ambient temperature	-25...55℃					
Ambient humidity	35...85%					
Housing material	ABS					
Ingress protection	IP65					
Lens material	PC					
Operation indicator	Output: Yellow/Power: Green					
Connectors	2m PVC Cable, 4*0.15mm ²		M8 Connector			
Accessories	None		B8-4GV2/B8-4WV2			

- Cylindrical
- Rectangular
- Fork
- Optical fiber

Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)

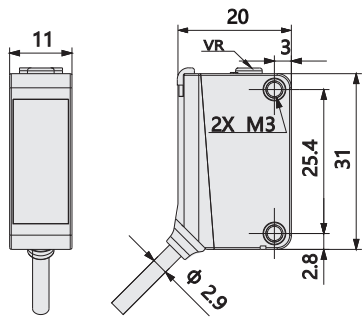


Technical data

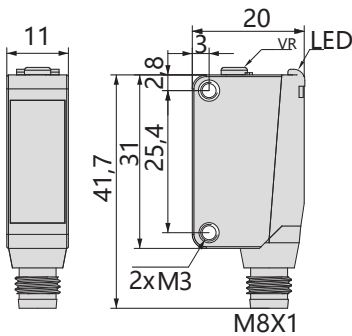
Model No	NPN N.O+N.C	① 	② 
	PNP N.O+N.C		
Appearance			
Size		31*20*11mm	
Sensing distance		1m	
Detection type		Diffuse reflection	
Switching frequency		500Hz	
Operating Voltage		10...30V DC	
Light source		Infrared light 850nm	
Response time		≤2ms	
Load Current		100mA	
Power-on delay		<300ms	
Sensitivity adjustment		Single-turn potentiometer	
Light immunity		<5000Lux.	
Ambient temperature		-25...55°C	
Ambient humidity		35...85%	
Housing material		ABS	
Ingress protection		IP65	
Lens material		PC	
Operation indicator		Output: Yellow/Power: Green	
Connectors		2m PVC Cable, 4*0.15mm ²	M8 Connector
Accessories		None	B8-4GV2/B8-4WV2

Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)

FQ31 Cable ①



FQ31 Connector ②



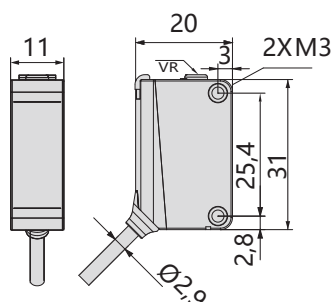
Technical data

Technical data

Model No	NPN N.O+N.C	FQ31-R2N-P31P2-1	FQ31-R4N-P31P2-1	FQ31-R2N-P31P2-Y	FQ31-R4N-P31P2-Y
	PNP N.O+N.C	FQ31-R2P-P31P2-1	FQ31-R4P-P31P2-1	FQ31-R2P-P31P2-Y	FQ31-R4P-P31P2-Y
Size	31*20*11mm				
Sensing distance	2m	4m	2m	4m	
Detection type	Retro-reflective				
Switching frequency	500Hz				
Operating Voltage	10...30V DC				
Light source	Red Light 650nm		Infrared light 850nm		
Response time	<2ms				
Load Current	100mA				
Power-on delay	<300ms				
Sensitivity adjustment	Single-turn potentiometer				
Light immunity	<5000Lux.				
Ambient temperature	-25...55°C				
Ambient humidity	35...85%				
Housing material	ABS				
Ingress protection	IP65				
Lens material	PC				
Operation indicator	Output: Yellow/Power: Green				
Connectors	2m PVC Cable, 4*0.15mm²/2*0.25mm²				
Accessories	HL-08				

Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ②)

FQ31 Cable ①

**Features:**

- Long detection distance;
- Wide detection range;
- Quick response time

Cylindrical

Rectangular

Fork

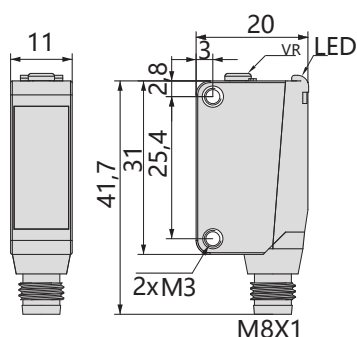
Optical fiber

Technical data

Appearance		① 		② 	
Model No	NPN N.O+N.C	FQ31-R2N-P31S8-1	FQ31-R4N-P31S8-1	FQ31-R2N-P31S8-Y	FQ31-R4N-P31S8-Y
	PNP N.O+N.C	FQ31-R2P-P31S8-1	FQ31-R4P-P31S8-1	FQ31-R2P-P31S8-Y	FQ31-R4P-P31S8-Y
Size		31*20*11mm			
Sensing distance		2m	4m	2m	4m
Detection type		Retro-reflective			
Switching frequency		500Hz			
Operating Voltage		10...30V DC			
Light source		Red Light 650nm		Infrared light 850nm	
Response time		<2ms			
Load Current		100mA			
Power-on delay		<300ms			
Sensitivity adjustment		Single-turn potentiometer			
Light immunity		<5000Lux.			
Ambient temperature		-25...55℃			
Ambient humidity		35...85%			
Housing material		ABS			
Ingress protection		IP65			
Lens material		PC			
Operation indicator		Output: Yellow/Power: Green			
Connectors		M8 Connector			
Accessories		B8-4GV2/B8-4WV2/HL-08			

Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)

FQ31 Connector ①



Features:

- Long detection distance;
- Wide detection range;
- Quick response time

Technical data

Appearance		①		②	
					
Model No	NPN N.O.+N.C	FQ31-RJ2N-P31P2	FQ31-RJ4N-P31P2	FQ31-RJ2N-P31S8	FQ31-RJ4N-P31S8
	PNP N.O.+N.C	FQ31-RJ2P-P31P2	FQ31-RJ4P-P31P2	FQ31-RJ2P-P31S8	FQ31-RJ4P-P31S8
Size		31*20*11mm			
Sensing distance		2m	4m	2m	4m
Detection type		Retro-reflective			
Switching frequency		500Hz			
Operating Voltage		10...30V DC			
Light source		Laser 650nm			
Response time		<2ms			
Load Current		100mA			
Power-on delay		<300ms			
Sensitivity adjustment		Single-turn potentiometer			
Light immunity		<5000Lux.			
Ambient temperature		-25...55°C			
Ambient humidity		35...85%			
Housing material		ABS			
Ingress protection		IP65			
Lens material		PC			
Operation indicator		Output: Yellow/Power: Green			
Connectors		2m PVC Cable, 4*0.15mm ² /2*0.25mm ²		M8 Connector	
Accessories		HL-08		B8-4GV2/B8-4WV2/HL-08	

Cylindrical

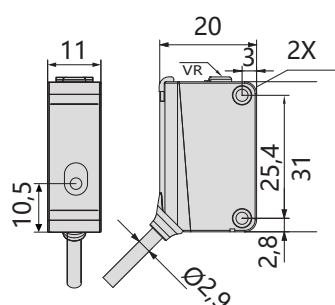
Rectangular

Fork

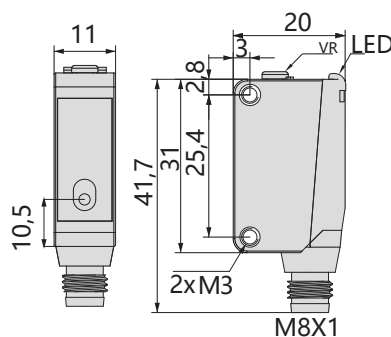
Optical fiber

Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)

FQ31 Cable ①



FQ31 Connector ②



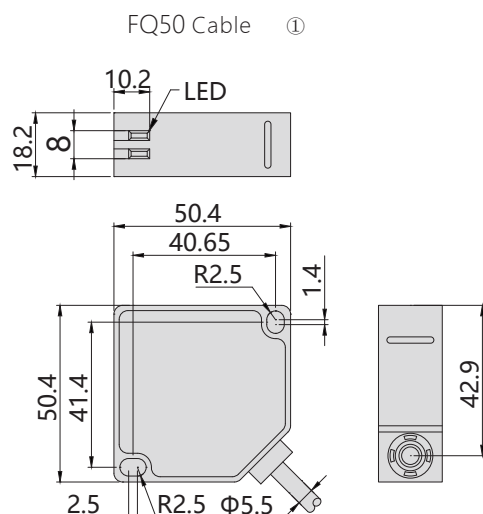
Features:

- Long detection distance;
- Wide detection range;
- Quick response time

Technical data

Appearance					
Model No	NPN N.O+N.C	FQ50-T1N-P31P2	FQ50-T2N-P31P2	FQ50-R5N-P31P2	FQ50-R5N-P31P2-F
	PNP N.O+N.C	FQ50-T1P-P31P2	FQ50-T2P-P31P2	FQ50-R5P-P31P2	FQ50-R5P-P31P2-F
Size	50*50*18mm			50*50*18mm	
Sensing distance	1m	2m		5m	
Detection type	Diffuse reflection			Retro-reflection	
Switching frequency	200Hz				
Operating Voltage	10...30V DC				
Light source	Infrared light 880nm			Red light 650nm	
Response time	≤5ms				
Load Current	≤200mA				
Power-on delay	<100ms				
Sensitivity adjustment	Single-turn potentiometer				
Light immunity	<10000Lux.				
Ambient temperature	-25...55℃				
Ambient humidity	35...85%				
Housing material	PBT				
Ingress protection	IP65				
Lens material	PMMA				
Operation indicator	Output: Yellow/Power: Red				
Connectors	2m PVC Cable, 4*0.25mm ²				
Accessories	None			FR-D83	

Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)



Features:

- Long detection distance;
- Quick response time

Technical data

Appearance			
Model No	Emitter	FQ50-L20MD-P51P2	FQ50-L40MD-P51P2
	NPN N.O+N.C	FQ50-L20MN-P31P2	FQ50-L40MN-P31P2
	PNP N.O+N.C	FQ50-L20MP-P31P2	FQ50-L40MP-P31P2
Size		50*50*18mm	
Sensing distance		20m	40m
Detection type		Through-beam	
Switching frequency		200Hz	
Operating Voltage		10...30V DC	
Light source		Infrared light 880nm	
Response time		≤5ms	
Load Current		≤200mA	
Power-on delay		<100ms	
Sensitivity adjustment		None	
Light immunity		<10000Lux.	
Ambient temperature		-25...55°C	
Ambient humidity		35...85%	
Housing material		PBT	
Ingress protection		IP66	
Lens material		PMMA	
Operation indicator		Output: Yellow/Power: Red	
Connectors		2m PVC Cable, 2*0.5mm ² , 4*0.25mm ²	
Accessories		None	

Cylindrical

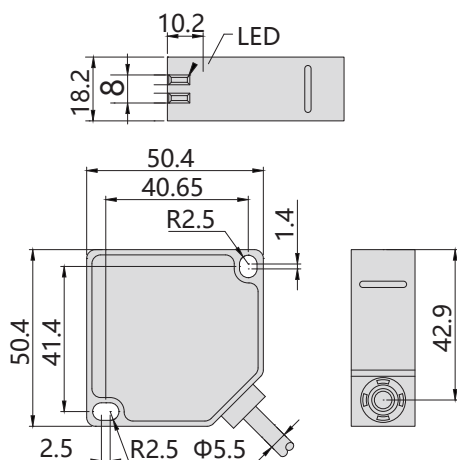
Rectangular

Fork

Optical fiber

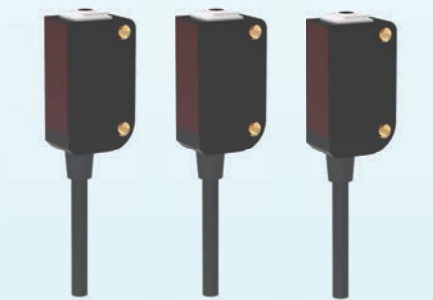
Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)

FQ50 Cable ①



Features:

- Long detection distance;
- Wide detection objects range;
- Infrared light with high light immunity capability



FQ31

Photoelectric sensors

ABS

Rectangular

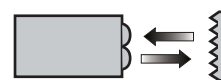
Retro-reflection

transparent objects detection

DC 3wire

Type diagram

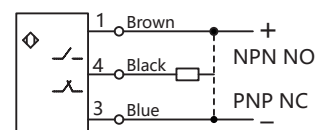
Retro-reflective photoelectric sensor



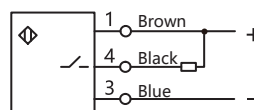
Retro-reflective photoelectric sensor encapsulate the emitter together with the receiver in the same housing, and then mount a reflective mirror on the opposite to the sensor. The light of emitter is reflected by the mirror and received by the receiver. When the light is blocked, there will be a switching point change.

Wiring

FQ31-R2D-P31P2

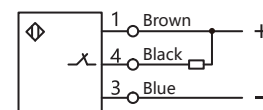


DC NPN-NO



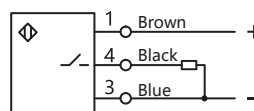
FQ31-RT2N-P11P2

DC NPN-NC



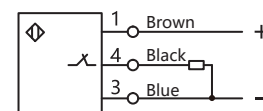
FQ31-RT2N-P21P2

DC PNP-NO



FQ31-RT2P-P11P2

DC PNP-NC



FQ31-RT2P-P21P2

Technical data

Appearance		
Model No	NPN N.O. & PNP N.C	FQ31-R2D-P31P2
Size		32.1*18*12.8mm
Sensing distance		2m
Detection type		Retro-reflection type(transparent objects detection)
Switching frequency		500Hz
Operating Voltage		10...30V DC
Light type		Red Light 650nm
Reaction Time		≤2ms
Load Current		100mA
Power-on delay		<300ms
Adjustment		Aim at the reflector mirror and continuously press button for >1s duration
Spot diameter		24x24mm at 1000mm detection distance
Light immunity		<5000Lux.
Ambient temperature		-25...55℃
Ambient humidity		35...85%
Housing material		ABS
Ingress protection		IP65
Lens material		PMMA
LED indicator		Output: Red/Power: Yellow
Connectors		2m PVC Cable, 4*0.25mm²
Accessories		HL-08

Cylindrical

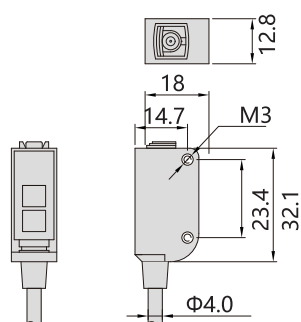
Rectangular

Fork

Optical fiber

Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)

FQ31 Cable ①



Features:

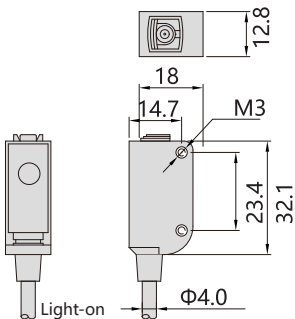
- Co-axial light;
- Detection of transparent objects, highly reflective objects

Technical data

Model No	Appearance		①
	NPN N.O		
	NPN N.C		
	PNP N.O		
	PNP N.C		
Size		32.1*18*12.8mm	
Sensing distance		0...2000mm	
Detection type		Retro-reflection type(transparent objects detection)	
Switching frequency		500Hz	
Operating Voltage		10...30V DC	
Light type		Red Light 650nm	
Reaction time		≤2ms	
Spot diameter		< 10mm	
Load Current		100mA	
Power-on delay		<300ms	
Adjustment		Aim at the reflector mirror and continuously press button for 1s duration	
Light immunity		<5000Lux.	
Ambient temperature		-25...+55℃	
Ambient humidity		35...85%	
Housing material		ABS	
Ingress protection		IP65	
Lens material		PMMA	
LED indicator		Output: Red/Power: Yellow	
Connectors		2m PVC Cable, 3*0.18mm ²	
Accessories		HL-08	

Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)

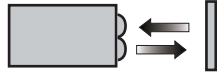
FQ31 Cable ①



Features:

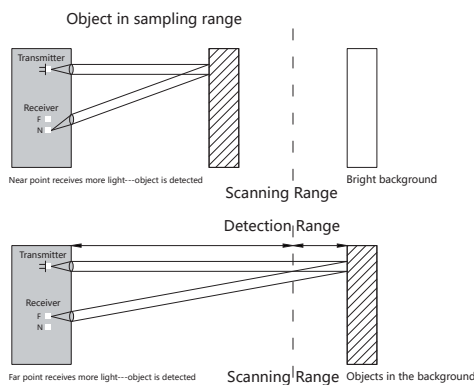
- Co-axial light;
- Detection of transparent objects, highly reflective objects

Type diagram



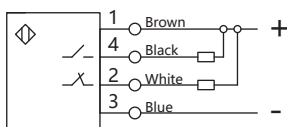
Diffuse reflection sensor with background suppression can detect any object within its effective detection range, regardless of the object's brightness, color or other characteristics, for example, background brightness. The light from the emitter is reflected from the target object to the receiver's lens where the reflection light will be focused. If the target object is within detection range, part of the focused reflection light from the receiver lens will reach near point(N) of the receiver. So the sensor will be "ON" signal

As the distance increases between target object and sensor, the light spot will move to far point(F). Within the sensor's limit detection range, half of the reflection light is on near point and the other half is on far point. So the sensor will be "OFF" signal. If the distance proceed to increase between the target object and sensor, all reflection light will be on far point. The sensor will stay "OFF" signal.

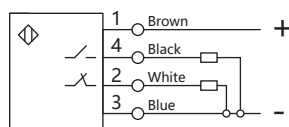


Wiring

DC NPN NO+NC

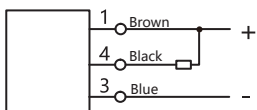


DC PNP NO+NC

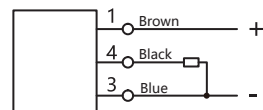


FQ50

DC NPN NO+NC



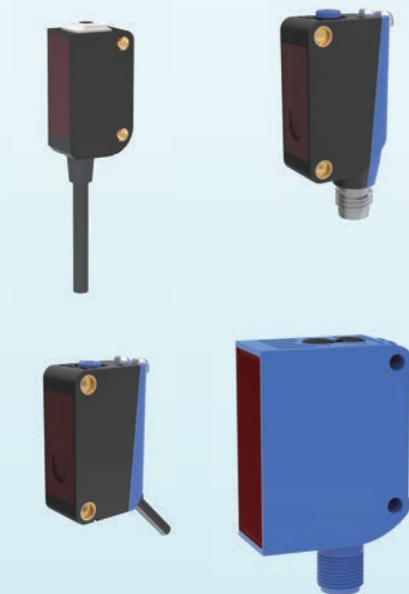
DC PNP NO+NC



EURO M12 Connector



PICO M8 Connector



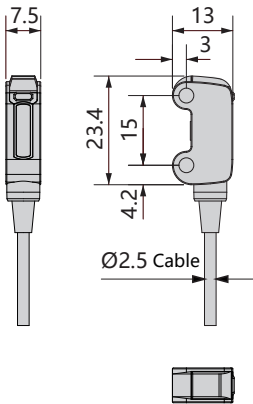
FQ21 FQ31 FQ50
Photoelectric sensors
 ABS, Stainless Steel
Rectangular
 Background suppression
 DC 4 wire, DC 3 wire

Technical data

Appearance		①
Model No		
NPN N.O+N.C	FQ21-H003N-V31P2	
PNP N.O+N.C	FQ21-H003P-V31P2	
Size	23.4*13*7.5mm	
Sensing distance	30mm	
Detection type	Background suppression	
Switching frequency	1000Hz	
Operating Voltage	10...30V DC	
Light type	Red Light 621nm	
Reaction time	≤1ms	
Load Current	100mA	
Power-on delay	<300ms	
Sensitivity adjustment	None	
Light immunity	<5000Lux.	
Blind distance	<2mm	
Ambient temperature	-25...55°C	
Ambient humidity	35...85%	
Housing material	Stainless Steel	
Ingress protection	IP67	
Lens material	PC	
LED indicator	Output: Yellow/Power: Green	
Connectors	2m PVC Cable, 4*0.08mm ²	
Accessories	None	

Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)

FQ21 Cable ①



Technical data

Appearance		
Model No	NPN N.O+N.C	FQ30-H003N-P31P2
	PNP N.O+N.C	FQ30-H003P-P31P2
Size		30*15*4.5mm
Sensing distance		1...30mm
Detection type		Background suppression
Operating Voltage		12...24V DC
Light type		Red Light
Reaction time		≤1ms
Load Current		≤30mA
No-load Current		≤25mA
Blind distance		< 1mm
Light immunity		Incandescent lamp ≤3000lx; Sunlight: ≤10000lx
Ambient temperature		-25...55°C
Ambient humidity		35...85%
Housing material		ABS
Ingress protection		IP66
LED indicator		Output: Yellow/Power: Green
Connectors		2m PVC Cable, 4*0.09mm ²
Accessories		None

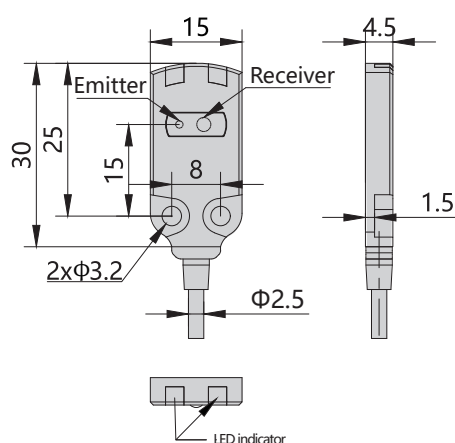
Cylindrical

Rectangular

Fork

Optical fiber

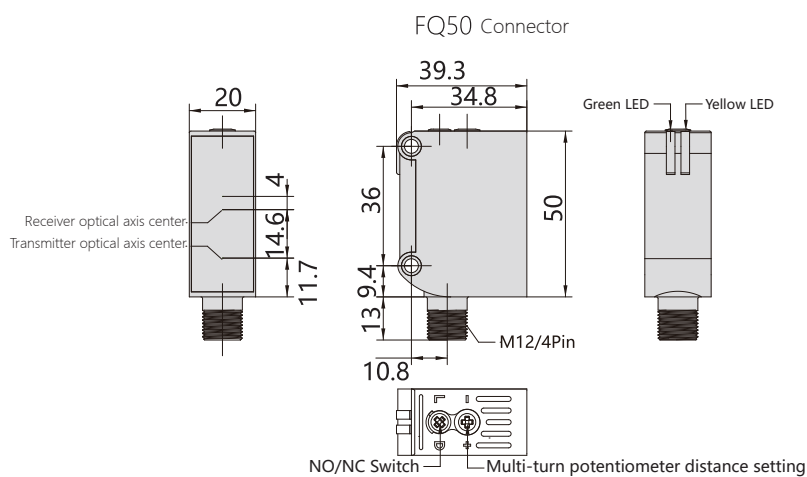
Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)



Technical data

Model No	NPN N.O+N.C	FQ50-H1N-P31S12
	PNP N.O+N.C	FQ50-H1P-P31S12
Size	50*39*20mm	
Sensing distance	25...1000mm	
Detection type	Background suppression	
Switching frequency	300HZ	
Operating Voltage	10...30V DC	
Light source	Red Light 650nm	
Response time	<3.3ms	
Load Current	100mA	
Power-on delay	< 50ms	
Blind distance	< 1cm	
Sensitivity adjustment	Multi-turn potentiometer	
Light immunity	<10000Lux.	
Ambient temperature	-25...55°C	
Ambient humidity	35...85%	
Housing material	ABS	
Ingress protection	IP65	
Lens material	PMMA	
Operation indicator	Output: Red/Power: Green	
Connectors	M12 Connector	
Accessories	B12-4GV2/B12-4WV2	

Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ②)



Features:

- No need to distinguish the target object color;
- Quick response time;
- Reverse connection protection

Technical data

Appearance		①	②
Model No	NPN N.O+N.C	FQ31-H025N-P31P2	FQ31-H025N-P31S8
	PNP N.O+N.C	FQ31-H025P-P31P2	FQ31-H025P-P31S8
Size		31*20*11mm	
Sensing distance		10...250mm	
Detection type		Background suppression	
Switching frequency		1000Hz	
Operating Voltage		10...30V DC	
Light source		Red light 650nm	
Response time		≤1ms	
Load Current		100mA	
Power-on delay		<300ms	
Sensitivity adjustment		Multi-turn potentiometer	
Light immunity		<5000Lux.	
Blind distance		< 10mm	
Ambient temperature		-25...55°C	
Ambient humidity		35...85%	
Housing material		ABS	
Ingress protection		IP65	
Lens material		PC	
Operation indicator		Output: Yellow/Power: Green	
Connectors		2m PVC Cable, 4*0.15mm ²	M8Connector
Accessories		None	B8-4GV2/B8-4WV2

Cylindrical

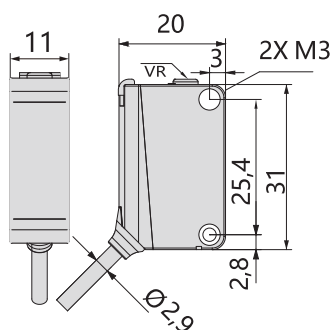
Rectangular

Fork

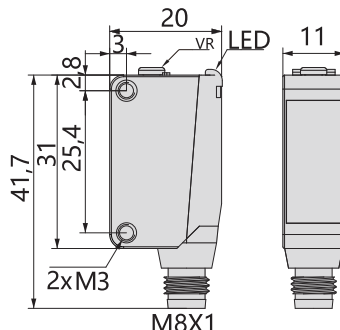
Optical fiber

Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)

FQ31 Cable ①



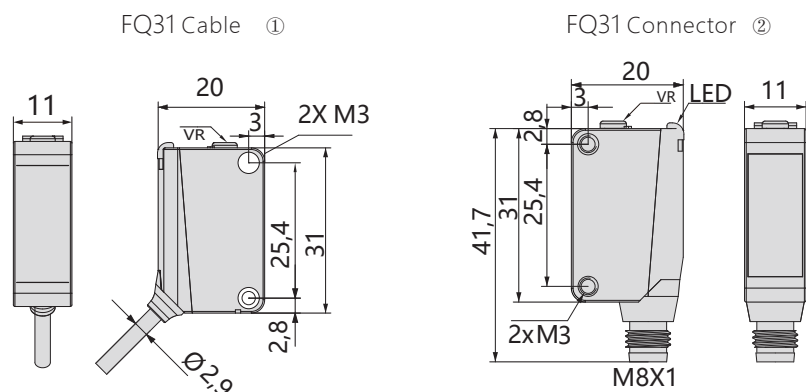
FQ31 Connector ②



Technical data

Appearance		①		②	
					
Model No	NPN N.O+N.C	FQ31-H01N-P31P2-T	FQ31-H01N-P31S8-T	FQ31-H025N-P31P2-B	FQ31-H025N-P31S8-B
	PNP N.O+N.C	FQ31-H01P-P31P2-T	FQ31-H01P-P31S8-T	FQ31-H025P-P31P2-B	FQ31-H025P-P31S8-B
Size		31*20*11mm		31*20*11mm	
Sensing distance		10...100mm		10...250mm	
Detection type		Background suppression		Background suppression	
Switching frequency		1000Hz		1000Hz	
Operating Voltage		10...30V DC		10...30V DC	
Light type		Red light 650nm		Blue light 465nm	
Reaction Time		≤1ms		≤1ms	
Blind distance		< 10mm		< 10mm	
Spot size		About 6mmx60mm Strip (at 100mm)			
Load Current		100mA		100mA	
Power-on delay		<300ms		<300ms	
Adjustment		Multi-turn potentiometer		Multi-turn potentiometer	
Light immunity		<5000Lux.		<5000Lux.	
Ambient temperature		-25...55℃		-25...55℃	
Ambient humidity		35...85%		35...85%	
Housing material		ABS		ABS	
Ingress protection		IP65		IP65	
Lens material		PC		PC	
Operation indicator		Output: Yellow/Power: Green		Output: Yellow/Power: Green	
Connectors		2m PVC Cable, 4*0.15mm ²	M8 Connector	2m PVC Cable, 4*0.15mm ²	M8 Connector
Accessories		None	B8-4GV2/B8-4WV2	None	B8-4GV2/B8-4WV2

Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)



Features:

- No need to distinguish the target object color
- Quick response
- Reverse connection protection

Technical data

Appearance			
Model No	NPN N.O+N.C	FQ31-HJ025N-P31P2	FQ31-HJ025N-P31S8
	PNP N.O+N.C	FQ31-HJ025P-P31P2	FQ31-HJ025P-P31S8
Size	31*20*11mm		
Sensing distance	10...250mm		
Detection type	Background suppression		
Switching frequency	1000Hz		
Operating Voltage	10...30V DC		
Light source	Laser 650nm		
Response time	≤1ms		
Blind distance	< 10mm		
Light spot size	Diameter about 1mm circle (at 300mm)		
Load Current	100mA		
Power-on delay	<300ms		
Sensitivity adjustment	Multi-turn potentiometer		
Light immunity	<5000Lux.		
Ambient temperature	-25...55°C		
Ambient humidity	35...85%		
Housing material	ABS		
Ingress protection	IP65		
Lens material	PC		
Operation indicator	Output: Yellow/Power: Green		
Connectors	2m PVC Cable, 4*0.15mm ²		M8Connector
Accessories	None		B8-4GV2/B8-4WV2

Cylindrical

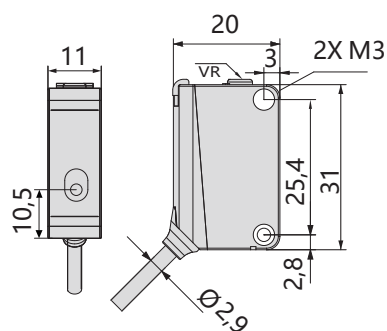
Rectangular

Fork

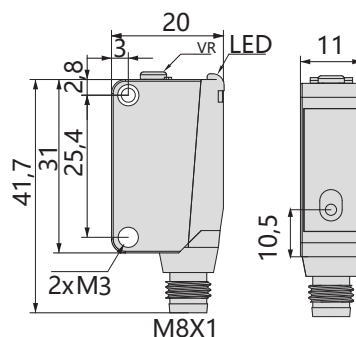
Optical fiber

Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)

FQ31 Cable ①



FQ31 Connector ②



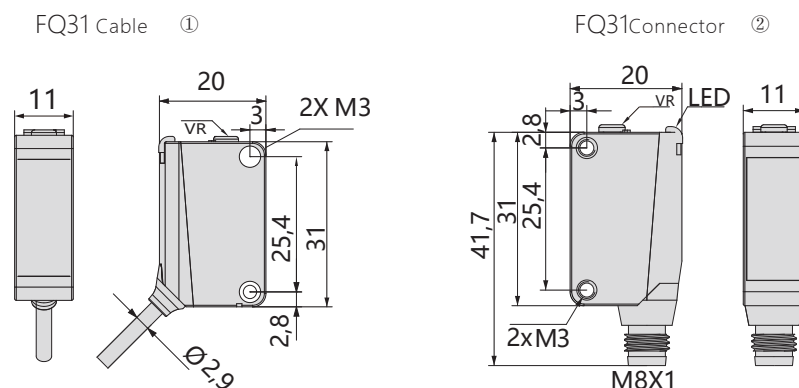
Features:

- No need to distinguish the target object color
- Quick response
- Reverse connection protection

Technical data

Model No		NPN N.O+N.C		①		②
Appearance		FQ31-H005N-P31P2	FQ31-H005N-P31S8			
Model No		PNP N.O+N.C	FQ31-H005P-P31P2	FQ31-H005P-P31S8		
Size		31*20*11mm				
Sensing distance		2...50mm				
Detection type		Background suppression				
Switching frequency		1000Hz				
Operating Voltage		10...30V DC				
Light source		Red light 650nm				
Response time		≤1ms				
Blind distance		< 10mm				
Light spot size		About φ2mm (50mm)				
Load Current		100mA				
Power-on delay		<300ms				
Sensitivity adjustment		Multi-turn potentiometer				
Light immunity		<5000Lux.				
Ambient temperature		-25...55℃				
Ambient humidity		35...85%				
Housing material		ABS				
Ingress protection		IP65				
Lens material		PC				
Operation indicator		Output: Yellow/Power: Green				
Connectors		2m PVC Cable, 4*0.15mm ²		M8Connector		
Accessories		None		B8-4GV2/B8-4WV2		

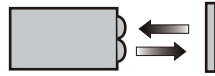
Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)



- Features:**
- No need to distinguish the color of the object to be measured;
 - Fast response speed;
 - Reverse protection

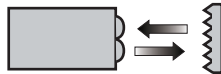
Type diagram

Diffuse reflection photoelectric sensor



The working principle of diffuse reflection type photoelectric sensor is same with retro-reflective sensor, but without reflection mirror. The light of emitter is reflected by the target object, then received and evaluated by the receiver. Its positioning of the target object is not accurate. When target object enters into valid light-area, its output situation will change. Detection range depends on target object's shape, dimension, color and surface characteristics.

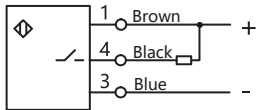
Retro-reflective photoelectric sensor



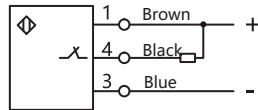
Retro-reflective photoelectric sensor encapsulate the emitter together with the receiver in the same housing, and then mount a reflective mirror on the opposite to the sensor. The light of emitter is reflected by the mirror and received by the receiver. When the light is blocked, there will be a switching point change.

Wiring

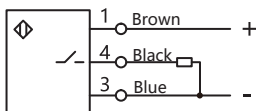
DC NPN-NO



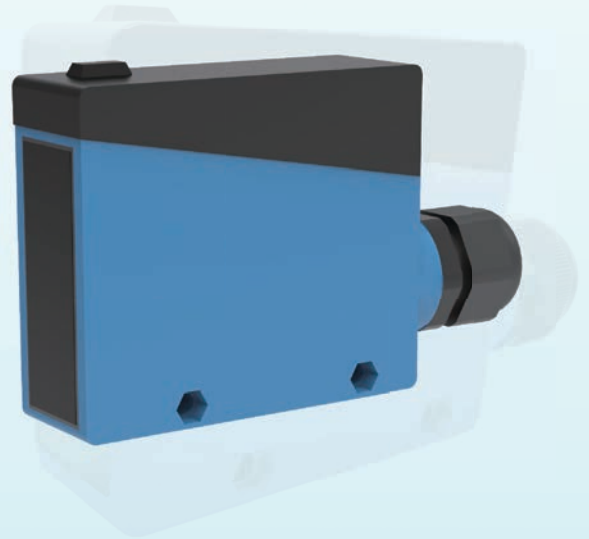
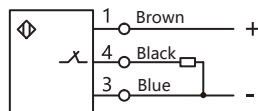
DC NPN-NC



DC PNP-NO



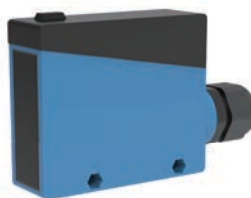
DC NPN-NC



FQ78
Photoelectric sensors
 ABS
Rectangular
 Diffuse 、 Retro-reflective
 DC 3 wire

Technical data

Model No	NPN N.O.+N.C	FQ78-T2N-P31T
	PNP N.O.+N.C	FQ78-T2P-P31T
Size	78*63*25mm	
Sensing distance	2m	
Detection type	Diffuse reflection	
Switching frequency	200Hz	
Operating Voltage	10...30V DC	
Light source	Infrared light 880nm	
Response time	≤5ms	
Load Current	200mA	
Power-on delay	<100ms	
Sensitivity adjustment	Single-turn potentiometer	
Time control	None	
Light immunity	<10000Lux.	
Ambient temperature	-25...55°C	
Ambient humidity	35...85%	
Housing material	PBT	
Ingress protection	IP65	
Lens material	PMMA	
Operation indicator	Output: Yellow/Power: Green	
Connectors	Terminal connection 2.5mm ²	
Accessories	None	



①

Cylindrical

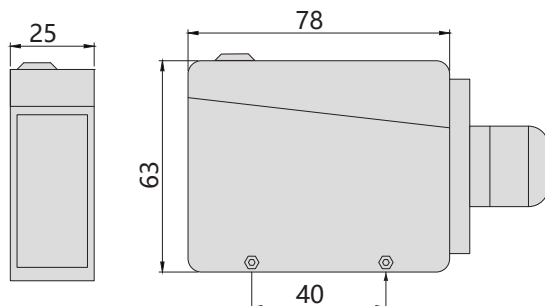
Rectangular

Fork

Optical fiber

Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)

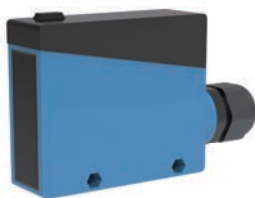
FQ78 Terminal connection ①



Features:

- Long detection distance;
- Wide detection range;

Technical data

Appearance			
Model No	NPN N.O+N.C	FQ78-R6MN-P31T-F	FQ78-R6MN-P31T-FD
	PNP N.O+N.C	FQ78-R6MP-P31T-F	FQ78-R6MP-P31T-FD
Size	78*63*25mm		
Sensing distance	0.6-...6m		
Detection type	Retro-reflective		
Switching frequency	200Hz		
Operating Voltage	10...30V DC		
Light source	Infrared light 880nm		
Response time	≤5ms		
Load Current	200mA		
Power-on delay	<100ms		
Sensitivity adjustment	Single-turn potentiometer		
Time control	None	0.1s-7s±2s	
Light immunity	<10000Lux.		
Ambient temperature	-25...55℃		
Ambient humidity	35...85%		
Housing material	PBT		
Ingress protection	IP65		
Lens material	PMMA		
Operation indicator	Output: Yellow/Power: Green		
Connectors	Terminal connection 2.5mm²		
Accessories	FR-D83		

Cylindrical

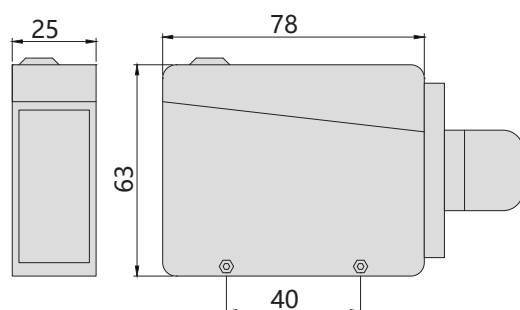
Rectangular

Fork

Optical fiber

Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)

FQ78 Terminal connection ①

**Features:**

- Long detection distance;
- Wide detection range;



FM18

Photoelectric sensors

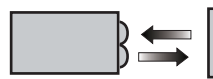
ABS

Rectangular

Background suppression

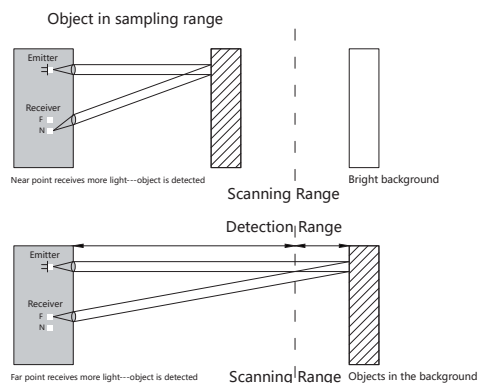
DC 3 wire

Type diagram



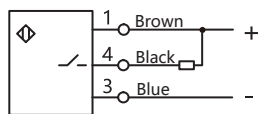
Diffuse reflection sensor with background suppression can detect any object within its effective detection range, regardless of the object's brightness, color or other characteristics, for example, background brightness. The light from the emitter is reflected from the target object to the receiver's lens where the reflection light will be focused. If the target object is within detection range, part of the focused reflection light from the receiver lens will reach near point (N) of the receiver. So the sensor will be "ON" signal.

As the distance increases between target object and sensor, the light spot will move to far point (F). Within the sensor's limit detection range, half of the reflection light is on near point and the other half is on far point. So the sensor will be "OFF" signal. If the distance proceeds to increase between the target object and sensor, all reflection light will be on far point. The sensor will stay "OFF" signal.

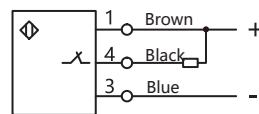


Wiring

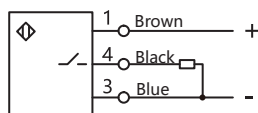
DC NPN-NO



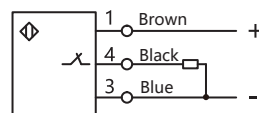
DC NPN-NC



DC PNP-NO



DC NPN-NC



Technical data

①

Appearance		
Model No	NPN N.O	FQ21-H008N-P11P2
	NPN N.C	FQ21-H008N-P21P2
	PNP N.O	FQ21-H008P-P11P2
	PNP N.C	FQ21-H008P-P21P2
Size		21*14*8mm
Sensing distance		15...85mm
Detection type		Background suppression
Switching frequency		1000Hz
Operating Voltage		10...30V DC
Light source		Red light 621nm
Response time		≤1ms
Load Current		50 mA
Power-on delay		<300ms
Sensitivity adjustment		None
Light immunity		<5000Lux.
Blind distance		< 10mm
Ambient temperature		-25...55°C
Ambient humidity		35...85%
Housing material		ABS
Ingress protection		IP65
Lens material		PC
Operation indicator		Output: Yellow/Power: Green
Connectors		2m PVC Cable, 3*0.08mm ²
Accessories		None

Cylindrical

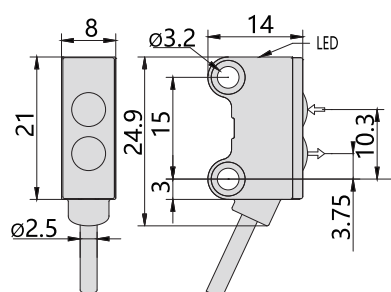
Rectangular

Fork

Optical fiber

Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)

FQ21 Cable ①



Bedook®



FQ31

Photoelectric sensors

ABS

Rectangular

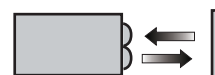
Retro-reflective, Background suppression

Through-beam

DC 2 wire/DC 3 wire

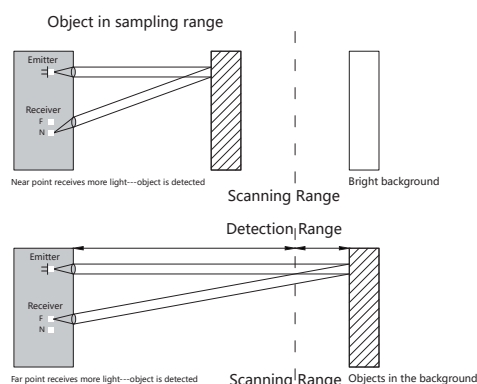
ISO9001 CE UKCA CCC RoHS

Type diagram

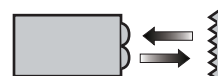


Diffuse reflection sensor with background suppression can detect any object within its effective detection range, regardless of the object's brightness, color or other characteristics, for example, background brightness. The light from the emitter is reflected from the target object to the receiver's lens where the reflection light will be focused. If the target object is within detection range, part of the focused reflection light from the receiver lens will reach near point (N) of the receiver. So the sensor will be "ON" signal.

As the distance increases between target object and sensor, the light spot will move to far point (F). Within the sensor's limit detection range, half of the reflection light is on near point and the other half is on far point. So the sensor will be "OFF" signal. If the distance proceeds to increase between the target object and sensor, all reflection light will be on far point. The sensor will stay "OFF" signal.

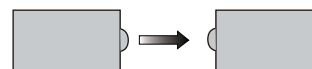


Retro-reflective photoelectric sensor



Retro-reflective photoelectric sensor encapsulate the emitter together with the receiver in the same housing, and then mount a reflective mirror on the opposite to the sensor. The light of emitter is reflected by the mirror and received by the receiver. When the light is blocked, there will be a switching point change.

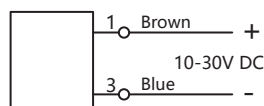
Through-beam photoelectric sensor



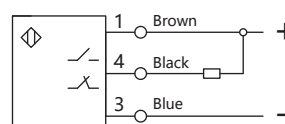
Through-beam photoelectric sensor is composed of independent emitter and receiver, which are separated from each other in structure. Emitter (E) directly transmit to the receiver (R). Please align the emitter and the receiver to establish light path. Whatever object blocks the light route, the receiver voltage will drop and switching condition will change.

Wiring

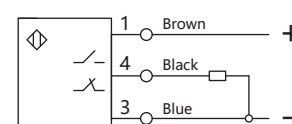
Emitter



DC NPN NO+NC



DC PNP NO+NC



Technical data

①

Appearance			
Model No	Emitter	FQ31-L5D-P51P2-1	FQ31-L15MD-P51P2-1
	NPN N.O+N.C	FQ31-L5N-P31P2-LD	FQ31-L15MN-P31P2-LD
	PNP N.O+N.C	FQ31-L5P-P31P2-LD	FQ31-L15MP-P31P2-LD
Size		31*20*11mm	
Sensing distance		5m	15m
Detection type		Through-beam	
Switching frequency		500Hz	
Operating Voltage		10...30V DC	
Light source		Red light 650nm	
Response time		≤2ms	
Load Current		100mA	
Power-on delay		<300ms	
Sensitivity adjustment		Single-turn potentiometer	
Light immunity		<5000Lux.	
Ambient temperature		-25...55°C	
Ambient humidity		35...85%	
Housing material		ABS	
Ingress protection		IP65	
Lens material		PC	
Operation indicator		Output: Yellow/Power: Green	
Connectors		2m PVC Cable, 3*0.18mm ² /2*0.25mm ²	
Accessories		None	

Cylindrical

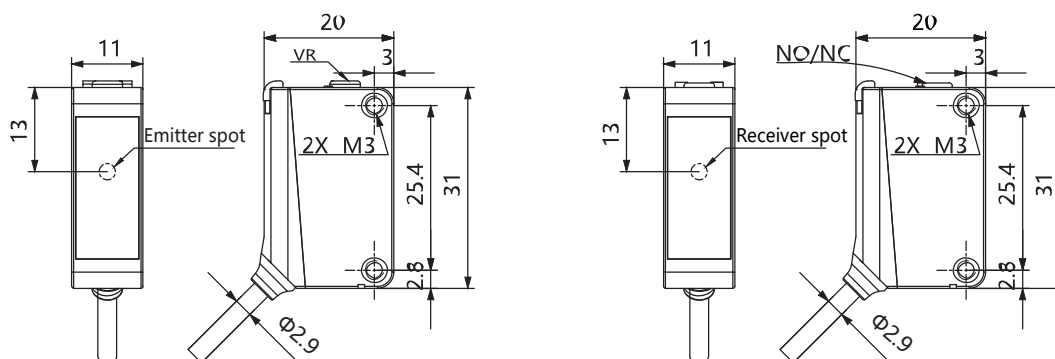
Rectangular

Fork

Optical fiber

Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)

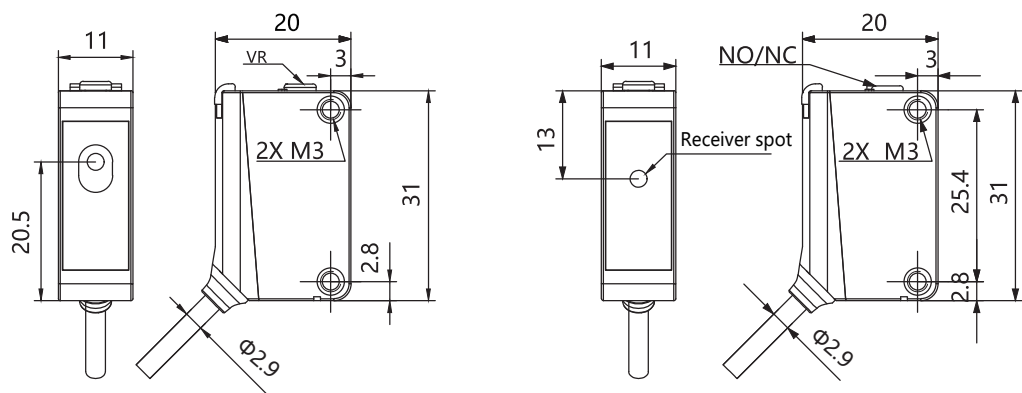
①



Technical data

Model No	Appearance			①
	Emitter	FQ31-LJ5D-P51P2	FQ31-LJ15MD-P51P2	
	NPN N.O+N.C	FQ31-LJ5N-P31P2-LD	FQ31-LJ15MN-P31P2-LD	
	PNP N.O+N.C	FQ31-LJ5P-P31P2-LD	FQ31-LJ15MP-P31P2-LD	
Size		31*20*11mm		
Sensing distance		5m	15m	
Detection type		Through-beam		
Switching frequency		500Hz		
Operating Voltage		10...30V DC		
Light source		Laser 650nm		
Response time		≤2ms		
Load Current		100mA		
Power-on delay		<300ms		
Sensitivity adjustment		Single-turn potentiometer		
Light immunity		<5000Lux.		
Ambient temperature		-25...55°C		
Ambient humidity		35...85%		
Housing material		ABS		
Ingress protection		IP65		
Lens material		PC		
Operation indicator		Output: Yellow/Power: Green		
Connectors		2m PVC Cable, 3*0.18mm ² /2*0.25mm ²		
Accessories		None		

Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)



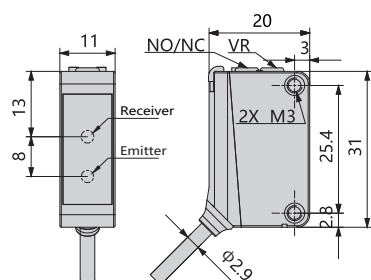
①

Technical data

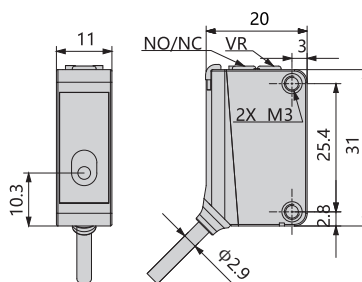
Appearance		①	②
Model No	NPN N.O+N.C	FQ31-H025N-P31P2-LD	FQ31-HJ025N-P31P2-LD
	PNP N.O+N.C	FQ31-H025P-P31P2-LD	FQ31-HJ025P-P31P2-LD
Size		31*20*11mm	
Sensing distance		10...250mm	
Detection type		Background suppression	
Switching frequency		1000Hz	
Operating Voltage		10...30V DC	
Light source		Red light 650nm	Laser 650nm
Response time		≤1ms	
Load Current		100mA	
Power-on delay		<300ms	
Sensitivity adjustment		Multi-turn potentiometer	
Light immunity		<5000Lux.	
Blind distance		< 10mm	
Ambient temperature		-25...55°C	
Ambient humidity		35...85%	
Housing material		ABS	
Ingress protection		IP65	
Lens material		PC	
Operation indicator		Output: Yellow/Power: Green	
Connectors		2m PVC Cable, 3*0.18mm ²	
Accessories		None	

Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)

FQ31 Cable ①



FQ31 Cable ②



Cylindrical

Rectangular

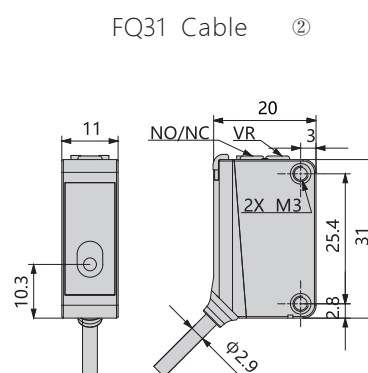
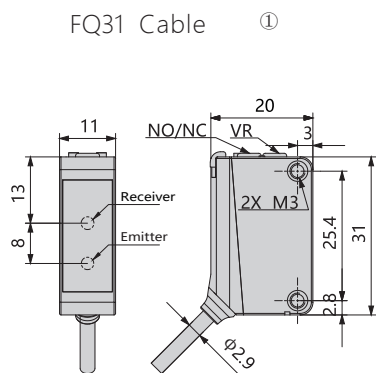
Fork

Optical fiber

Technical data

Appearance					
Model No	NPN N.O+N.C	FQ31-R2N-P31P2-LD	FQ31-R4N-P31P2-LD	FQ31-RJ2N-P31P2-LD	FQ31-RJ4N-P31P2-LD
	PNP N.O+N.C	FQ31-R2P-P31P2-LD	FQ31-R4P-P31P2-LD	FQ31-RJ2P-P31P2-LD	FQ31-RJ4P-P31P2-LD
Size	31*20*11mm				
Sensing distance	2m	4m	2m	4m	
Detection type	Retro-reflective				
Switching frequency	500Hz				
Operating Voltage	10...30V DC				
Light source	Red light 650nm			Laser 650nm	
Response time	≤2ms				
Load Current	100mA				
Power-on delay	<300ms				
Sensitivity adjustment	Single-turn potentiometer				
Light immunity	<5000Lux.				
Ambient temperature	-25...55℃				
Ambient humidity	35...85%				
Housing material	ABS				
Ingress protection	IP65				
Lens material	PC				
Operation indicator	Output: Yellow/Power: Green				
Connectors	2m PVC Cable, 3*0.18mm ²				
Accessories	None				

Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)



Technical data

①

Appearance			
Model No	Emitter	FQ31-L5D-P51S8-1	FQ31-L15MD-P51S8-1
	NPN N.O+N.C	FQ31-L5N-P31S8-LD	FQ31-L15MN-P31S8-LD
	PNP N.O+N.C	FQ31-L5P-P31S8-LD	FQ31-L15MP-P31S8-LD
Size		31*20*11mm	
Sensing distance		5m	15m
Detection type		Through-beam	
Switching frequency		500Hz	
Operating Voltage		10...30V DC	
Light source		Red light 650nm	
Response time		≤2ms	
Load Current		100mA	
Power-on delay		<300ms	
Sensitivity adjustment		Single-turn potentiometer	
Light immunity		<5000Lux.	
Ambient temperature		-25...55°C	
Ambient humidity		35...85%	
Housing material		ABS	
Ingress protection		IP65	
Lens material		PC	
Operation indicator		Output: Yellow/Power: Green	
Connectors		M8 Connector	
Accessories		B8-4GV2/B8-4WV2	

Cylindrical

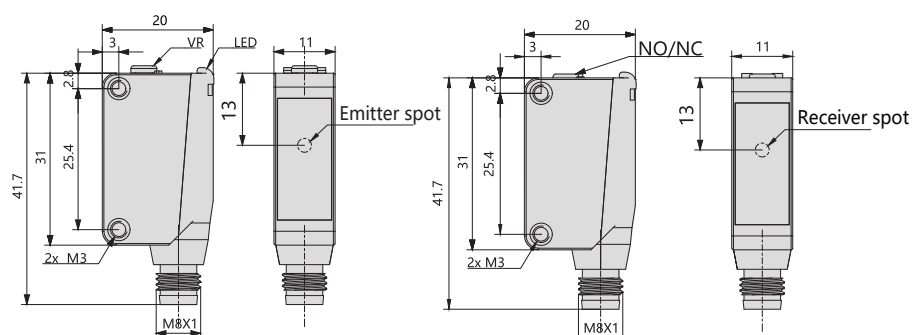
Rectangular

Fork

Optical fiber

Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)

FQ31 Connector

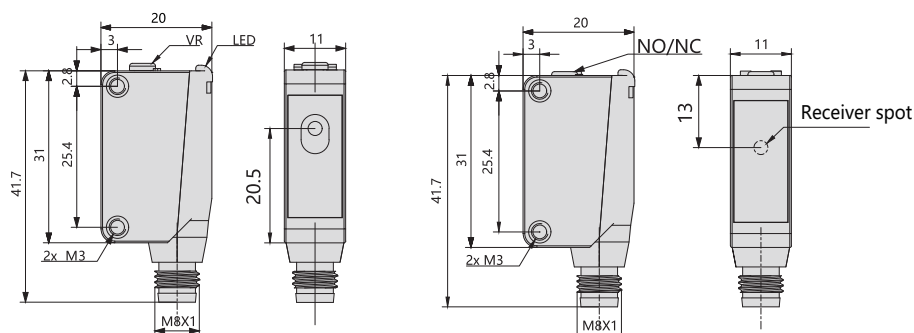


Technical data

Model No	Appearance		
	Emitter	FQ31-LJ5D-P51S8	FQ31-LJ15MD-P51S8
	NPN N.O+N.C	FQ31-LJ5N-P31S8-LD	FQ31-LJ15MN-P31S8-LD
	PNP N.O+N.C	FQ31-LJ5P-P31S8-LD	FQ31-LJ15MP-P31S8-LD
Size		31*20*11mm	
Sensing distance		5m	15m
Detection type		Through-beam	
Switching frequency		500Hz	
Operating Voltage		10...30V DC	
Light source		Laser 650nm	
Response time		≤2ms	
Load Current		100mA	
Power-on delay		<300ms	
Sensitivity adjustment		Single-turn potentiometer	
Light immunity		<5000Lux.	
Ambient temperature		-25...55°C	
Ambient humidity		35...85%	
Housing material		ABS	
Ingress protection		IP65	
Lens material		PC	
Operation indicator		Output: Yellow/Power: Green	
Connectors		M8 Connector	
Accessories		B8-4GV2/B8-4WV2	

Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)

FQ31 Connector



Technical data

Appearance			
Model No	NPN N.O+N.C	FQ31-H025N-P31S8-LD	FQ31-HJ025N-P31S8-LD
	PNP N.O+N.C	FQ31-H025P-P31S8-LD	FQ31-HJ025P-P31S8-LD
Size	31*20*11mm		
Sensing distance	10...250mm		
Detection type	Background suppression		
Switching frequency	1000Hz		
Operating Voltage	10...30V DC		
Light source	Red light 650nm		Laser 650nm
Response time	≤1ms		
Load Current	100mA		
Power-on delay	<300ms		
Sensitivity adjustment	Multi-turn potentiometer		
Light immunity	<5000Lux.		
Blind distance	< 10mm		
Ambient temperature	-25...55°C		
Ambient humidity	35...85%		
Housing material	ABS		
Ingress protection	IP65		
Lens material	PC		
Operation indicator	Output: Yellow/Power: Green		
Connectors	M8 Connector		
Accessories	B8-4GV2/B8-4WV2		

Cylindrical

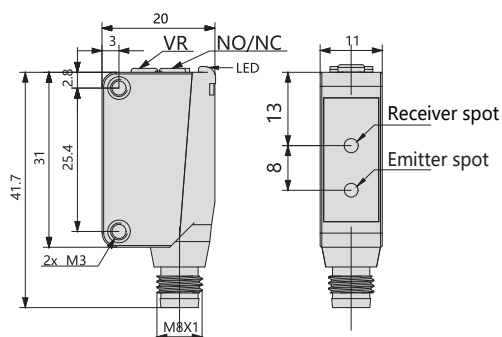
Rectangular

Fork

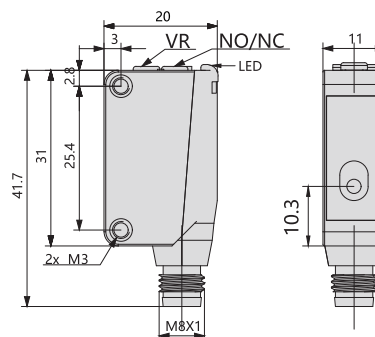
Optical fiber

Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ③)

FQ31 Connector ①



FQ31 Connector ②

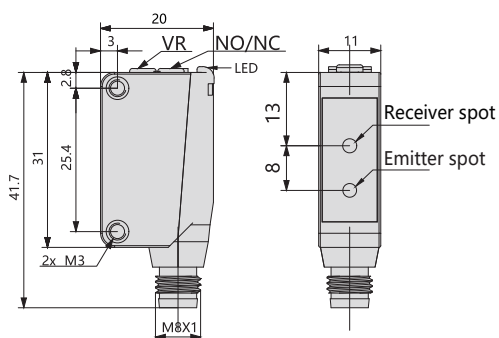


Technical data

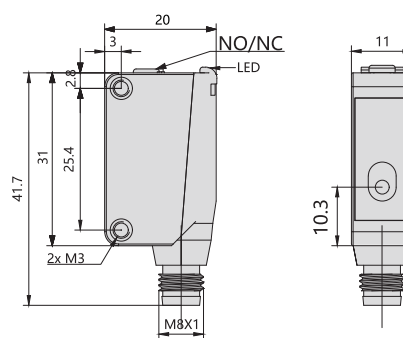
Appearance					
Model No	NPN N.O+N.C	FQ31-R2N-P31S8-LD	FQ31-R4N-P31S8-LD	FQ31-RJ2N-P31S8-LD	FQ31-RJ4N-P31S8-LD
	PNP N.O+N.C	FQ31-R2P-P31S8-LD	FQ31-R4P-P31S8-LD	FQ31-RJ2P-P31S8-LD	FQ31-RJ4P-P31S8-LD
Size	31*20*11mm				
Sensing distance	2m	4m	2m	4m	
Detection type	Retro-reflective				
Switching frequency	500Hz				
Operating Voltage	10...30V DC				
Light source	Red light 650nm			Laser 650nm	
Response time	≤2ms				
Load Current	100mA				
Power-on delay	<300ms				
Sensitivity adjustment	Single-turn potentiometer				
Light immunity	<5000Lux.				
Ambient temperature	-25...55℃				
Ambient humidity	35...85%				
Housing material	ABS				
Ingress protection	IP65				
Lens material	PC				
Operation indicator	Output: Yellow/Power: Green				
Connectors	M8 Connector				
Accessories	B8-4GV2/B8-4WV2/HL-08				

Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)

FQ31 Connector ①



FQ31 Connector ②



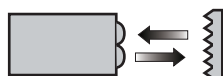
Type diagram

Diffuse reflection photoelectric sensor



The working principle of diffuse reflection type photoelectric sensor is same with retro-reflective sensor, but without reflection mirror. The light of emitter is reflected by the target object, then received and evaluated by the receiver. Its positioning of the target object is not accurate. When target object enters into valid light-area, its output situation will change. Detection range depends on target object's shape, dimension, color and surface characteristics.

Retro-reflective photoelectric sensor

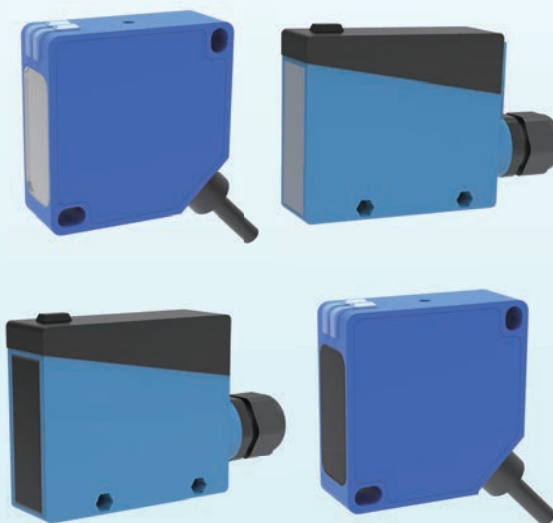


Retro-reflective photoelectric sensor encapsulate the emitter together with the receiver in the same housing, and then mount a reflective mirror on the opposite to the sensor. The light of emitter is reflected by the mirror and received by the receiver. When the light is blocked, there will be a switching point change.

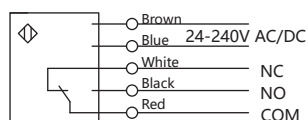
Through-beam photoelectric sensor



Through-beam photoelectric sensor is composed of independent emitter and receiver, which are separated from each other in structure. Emitter (E) directly transmit to the receiver (R). Please align the emitter and the receiver to establish light path. Whatever object blocks the light route, the receiver voltage will drop and switching condition will change.



Wiring



FQ50 FQ78

Photoelectric sensors Rectangular

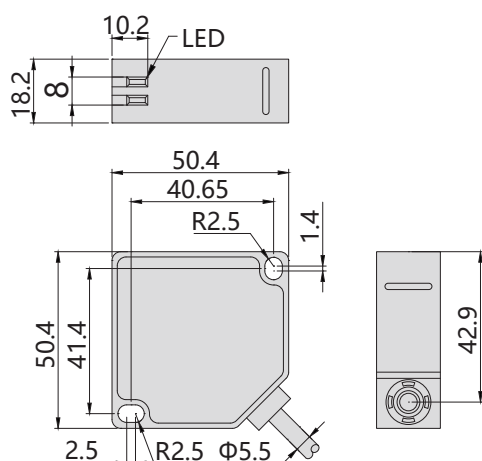
Diffuse 、 Retro-reflective
Through-beam
AC/DC 5 wire

Technical data

Appearance				
Model No	N.O+N.C	FQ50-T1U-P45P2	FQ50-T2U-P45P2	FQ50-R5U-P45P2
Size	50*50*18mm			
Sensing distance	0.2...1m	0.3...2m		5m
Detection type	Diffuse reflection			Retor-reflective
Switching frequency	10Hz			
Operating Voltage	24...240V AC/DC			
Light source	Infrared light 880nm			Red light 650nm
Response time	≤100ms			
Load Current	3A/30VDC; 1A/220VAC			
Power-on delay	<300ms			
Sensitivity adjustment	Single-turn potentiometer			
Light immunity	<10000Lux.			
Ambient temperature	-25...55℃			
Ambient humidity	35...85%			
Housing material	PBT			
Ingress protection	IP65			
Lens material	PMMA			
Operation indicator	Output: Yellow/Power: Green			
Connectors	2m PVC Cable, 5*0.25mm ²			
Accessories	None			FR-D83

Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)

FQ50 Cable ①



Features:

- Long detection distance
- Quick response time

Technical data

Appearance			
Model No	Emitter	FQ50-L20MU-P55P2	FQ50-L40MU-P55P2
	Relay output	FQ50-L20MU-P45P2	FQ50-L40MU-P45P2
Size		50*50*18mm	50*50*18mm
Sensing distance		20m	40m
Detection type		Through-beam	
Switching frequency		10Hz	
Operating Voltage		24...240V AC/DC	
Light source		Infrared light 880nm	
Response time		≤100ms	
Load Current		3A/30VDC ; 1A/220VAC	
Power-on delay		<300ms	
Sensitivity adjustment		None	
Light immunity		<10000Lux.	
Ambient temperature		-25...55°C	
Ambient humidity		35...85%	
Housing material		PBT	
Ingress protection		IP66	
Lens material		PMMA	
Operation indicator		Output: Yellow/Power: Red	
Connectors		2m PVC Cable, 2*0.5mm ² /5*0.25mm ²	
Accessories		None	

Cylindrical

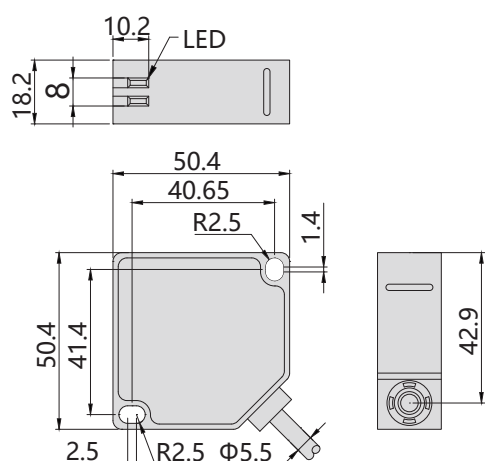
Rectangular

Fork

Optical fiber

Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)

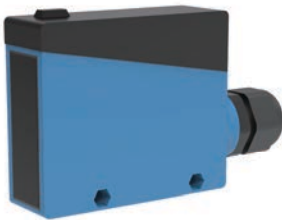
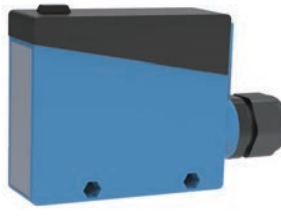
FQ50 Cable ①



Features:

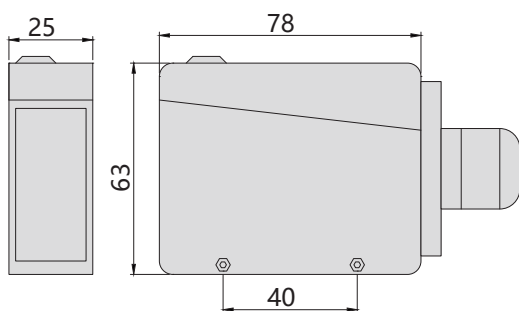
- Long detection distance;
- Wide detection range;
- Infrared light with high light immunity capability

Technical data

Appearance						
		Model No.	N.O.+N.C.	FQ78-T2U-P45T	FQ78-T2U-P45T-D	FQ78-R10MU-P45T-F
Size		78*63*25mm				
Sensing distance		2m			10m	
Detection type		Diffuse reflection			Retor-reflective reflection	
Switching frequency		10Hz				
Operating Voltage		24...240V AC/DC				
Light source		Infrared light 880nm				
Response time		≤100ms				
Load Current		5A/30VDC ; 1A/220VAC				
Time control		0.1s...7s±2s				
Power-on delay		<300ms				
Sensitivity adjustment		Single-turn potentiometer				
Light immunity		<10000Lux.				
Ambient temperature		-25...55℃				
Ambient humidity		35...85%				
Housing material		PBT				
Ingress protection		IP65				
Lens material		PMMA				
Operation indicator		Output: Yellow/Power: Green				
Connectors		Terminal connection to2.5mm ²				
Accessories		None			FR-D83	

Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)

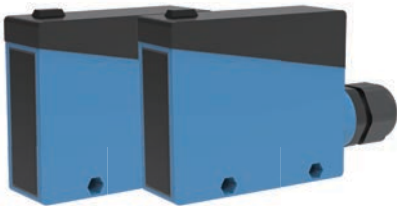
FQ78 Terminal ①



Features:

- Long detection distance
- Quick response time

Technical data

Appearance			①
Model No	Emitter	FQ78-L50MU-P55T	
	Relay output	FQ78-L50MU-P45T	
Size		78*63*25mm	
Sensing distance		50m	
Detection type		Through-beam	
Switching frequency		10Hz	
Operating Voltage		24...240V DC/AC	
Light source		Infrared light 880nm	
Response time		≤100ms	
Load Current		5A/30VDC; 1A/220VAC	
Time control		None	
Power-on delay		<300ms	
Sensitivity adjustment		Single-turn potentiometer	
Light immunity		<10000Lux.	
Ambient temperature		-25...55°C	
Ambient humidity		35...85%	
Housing material		PBT	
Ingress protection		IP65	
Lens material		PMMA	
Operation indicator		Output: Yellow/Power: Green	
Connectors		Terminal connection to 2.5mm ²	
Accessories		None	

Cylindrical

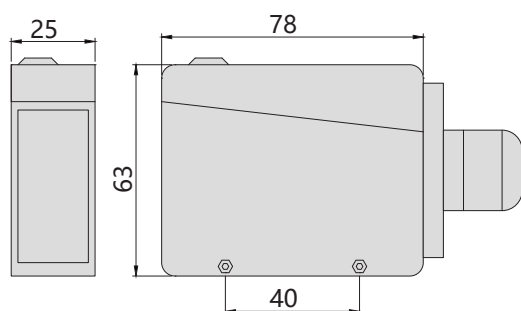
Rectangular

Fork

Optical fiber

Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)

FQ78 Terminal ①



Features:

- Long detection distance;
- Wide detection range;
- Infrared light with high light immunity capability

Laser TOF sensor



Features:

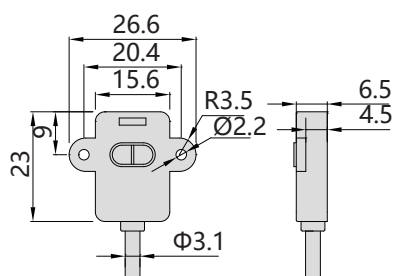
- Laser light source,small light spot
- TOF working principle,detection distance is not affected by target object colors
- Long detection distance up to 30m
- Output includes digital,analog,RS485,etc

Technical data

Appearance			①
Model No	NPN N.O	FQ23-J10N-P11P2	
	NPN N.C	FQ23-J10N-P21P2	
	PNP N.O	FQ23-J10P-P11P2	
	PNP N.C	FQ23-J10P-P21P2	
Size		23*26.6*6.5mm	Cylindrical
Sensing distance		20...1000mm	Rectangular
Switching frequency		2Hz	Fork
Operating Voltage		10...30V DC	Optical fiber
Light source		Infrared light 940nm	
Response time		500ms	
No-Load Current		≤30mA	
Power-on delay		—	
Sensitivity adjustment		White wire short-circuit connection, blue wire teaching	
Light immunity		≤5000Lux	
Ambient temperature		-25...55°C	
Storage temperature		-40...70°C	
Housing material		PBT	
Ingress protection		IP66	
Lens material		PMMA	
Operation indicator		Power/teaching--green, output -- yellow	
Connectors		2m PVC Cable, 4*0.09mm ²	
Accessories		None	

Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)

FQ23 Cable ①



Teaching method:

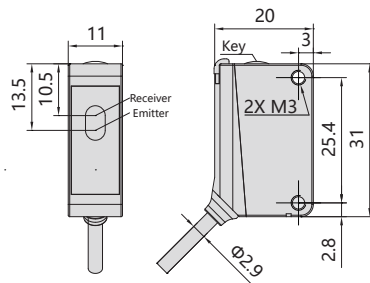
- Distance adjustment: Put the target object in the desired position, and then short-circuit connect the white wire with -V. Red indicator will light up. The red indicator will go out after 2 seconds short-circuit connection. Disconnect the white wire with -V and distance adjustment is completed.
- Restore factor settings: Short-circuit connect the white wire with -V and then red indicator will light up. The red indicator will go out after 2 seconds. Wait another 10 seconds, the red indicator will light up again. Disconnect white wire and -V and then restoration factory settings will be completed.

Technical data

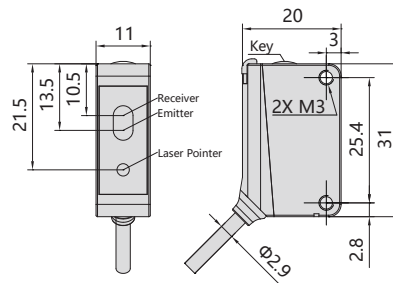
Appearance									
		Model No	NPN N.O	FQ31-J1N-P11P2	FQ31-J2N-P11P2	FQ31-J4N-P11P2	FQ31-J1N-P11P2-R	FQ31-J2N-P11P2-R	FQ31-J4N-P11P2-R
			NPN N.C	FQ31-J1N-P21P2	FQ31-J2N-P21P2	FQ31-J4N-P21P2	FQ31-J1N-P21P2-R	FQ31-J2N-P21P2-R	FQ31-J4N-P21P2-R
			PNP N.O	FQ31-J1P-P11P2	FQ31-J2P-P11P2	FQ31-J4P-P11P2	FQ31-J1P-P11P2-R	FQ31-J2P-P11P2-R	FQ31-J4P-P11P2-R
			PNP N.C	FQ31-J1P-P21P2	FQ31-J2P-P21P2	FQ31-J4P-P21P2	FQ31-J1P-P21P2-R	FQ31-J2P-P21P2-R	FQ31-J4P-P21P2-R
Size		31*20*11mm							
Sensing distance		50...1000mm	50...2000mm	50...4000mm	50...1000mm	50...2000mm	50...4000mm		
Blind zone		50mm							
Detect range setting		Button							
Measurement accuracy		5mm							
Resolution		1mm							
Switching frequency		30Hz							
Operating Voltage		10...30V DC							
No-load power consumption		≤0.5VA							
Power-on delay		3s							
Load current		100mA							
Light source		Infrared light 940nm							
Light spot size		about30mm (1000mm) 、 about60mm (2000mm) 、 about140mm (4000mm)							
Voltage drop		≤2V							
Light immunity		<100K Lux.							
Overload protection		Yes							
Short Circuit Protection		Yes							
Reverse polarity protection		Yes							
Ambient temperature		-20...60℃							
Storage temperature		-40...70℃							
Housing material		ABS							
Lens material		PMMA							
Ingress protection		IP66							
Aim for the light		None			Red Laser				
Operation indicator		Output: Yellow; Power/Instruction: Green							
Connectors		2m PVC Cable, 3*0.18mm ²							
Accessories		None							

Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)

FQ31Cable ①

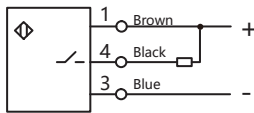


FQ31 Red laser cable ②

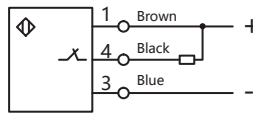


Wiring

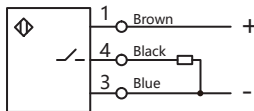
DC NPN-NO



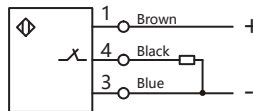
DC NPN-NC



DC PNP-NO



DC PNP-NC



Cylindrical

Rectangular

Fork

Optical fiber

Teaching method:

- Single-point mode teaching: put the target object at the required distance and press T button for duration 3s-10s.Green light will flash 3 times.And then the setting is completed.
- Window mode teaching: Put the target object at near point(270mm) and press T button for duration <2 seconds.Green light will flash 2 times and then stay shimmering situation.Put the target object at the far point(<1000mm/2000mm/4000mm) and press T button for duration <2 seconds.Green light will flash 3 times and then the setting is completed.

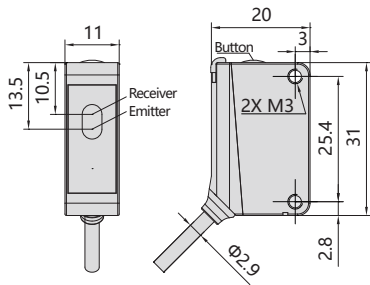
Please complete the far point setting within 30 seconds.Or the sensor will automatically quit setting procedure.Notice:During the teaching procedure,if there is no target object within the sensor' s detection range, green light will flash 15 times and then quit setting procedure.

Technical data

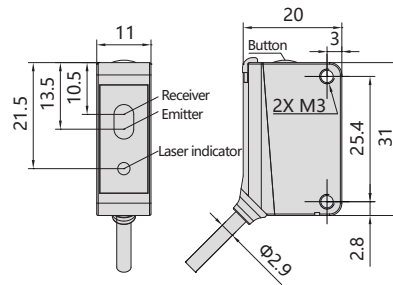
Appearance		①			②		
							
Model No	RS485	FQ31-J1R-P1P2	FQ31-J2R-P1P2	FQ31-J4R-P1P2	FQ31-J1R-P1P2-R	FQ31-J2R-P1P2-R	FQ31-J4R-P1P2-R
Size	31*20*11mm						
Sensing distance	50...1000mm	50...2000mm	50...4000mm	50...1000mm	50...2000mm	50...4000mm	
Blind zone	50mm						
Detect range setting	Button						
Repeatability	Within ±10mm (50-300mm) ; ≤1% (300mm-4000mm)						
Measurement accuracy	Within ±30mm (50-300mm) ; ≤2% (300mm-4000mm)						
Resolution	1mm						
Operating Voltage	10...30V DC						
No-load power consumption	≤0.5VA						
Power-on delay	≤3s						
Response time	35ms						
Light source	Infrared light 940nm						
Divergence angle	±2°						
Aim indicator	None			Red Laser			
Operation indicator	Yellow LED: target is within the range;Green LED:power source						
Light immunity	10K Lux.						
Overload protection	Yes						
Short Circuit Protection	Yes						
Polarity reversal protection	Yes						
Output model	RS485						
Ambient temperature	-20...60℃						
Storage temperature	-40...70℃						
Ambient humidity	35%-85% (No condensation)						
Withstand voltage	1000V/AC 50/60Hz 60s						
EMC	IEC60947-5-2						
Housing material	ABS						
Lens material	PMMA						
Ingress protection	IP66						
Connectors	2m PVC Cable, 4*0.15mm ²						
Accessories	None						

Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)

FQ31 Cable ①

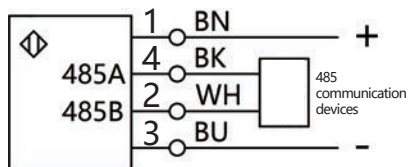


FQ31 Red laser Cable ②



Wiring

RS485 Output wiring diagram



FQ31-J1R-P1P2 FQ31-J2R-P1P2 FQ31-J4R-P1P2

Function:

- RS485 output interface;
- TOF working principle, stable sensing distance for black color products, small sensing distance reduction ratio;
- Continuously press button for 3 seconds or above to restore to factory original configuration. Byte rate and address will be restored to factory original configuration.

FQ31-J1R-P1P2-R FQ31-J2R-P1P2-R FQ31-J4R-P1P2-R

Function:

- RS485 output interface;
- Red laser light is convenient for aiming at target object.
- TOF working principle, stable sensing distance for black color products, small sensing distance reduction ratio;
- Continuously press button for 3 seconds or above to restore to factory original configuration. Byte rate and address will be restored to factory original configuration.

Cylindrical

Rectangular

Fork

Optical fiber

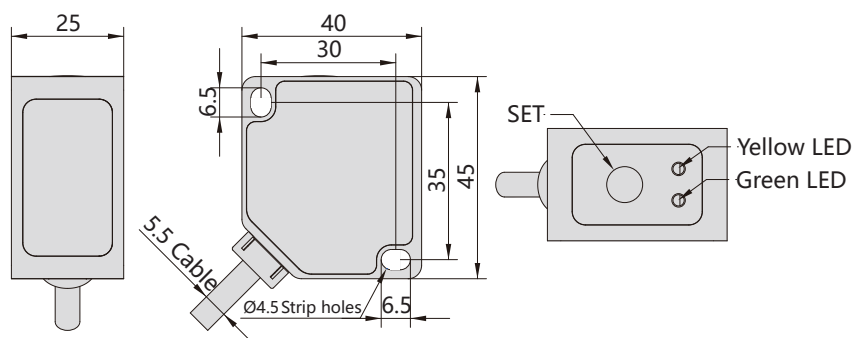
Technical data



Model No		NPN N.O+N.C	PNP N.O+N.C	Appearance	
					
Model No		NPN N.O+N.C		PNP N.O+N.C	
Model No		NPN N.O+N.C		PNP N.O+N.C	
Size		45*40*20mm			
Sensing distance		0.05m~5m			
Blind zone		50mm			
Detection accuracy		3%			
Resolution		1cm			
Operating Voltage		10~30V DC			
No-load current		≤50mA			
Load current		≤200mA			
Voltage drop		≤2V			
Switching frequency		100Hz			
Light source		Red light 650nm		Infrared light 808nm	
Light spot size		8*10mm (5m)			
Light immunity		≤100K Lux.			
Overload protection		Yes			
Short Circuit Protection		Yes			
Anti-polarity protection		Yes			
Ambient temperature		-10℃~50℃			
Storage temperature		-20℃~70℃			
Ingress protection		IP65			
Connectors		2m PVC Cable, 4*0.25mm ²			

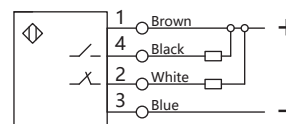
Dimensioned drawing

FQ45 Cable ①

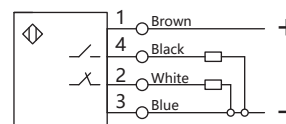


Wiring

DC NPN NO+NC



DC PNP NO+NC



Technical data

Model No	NPN/PNP N.O./N.C	FQ60-J5D-P31P2	FQ60-J30D-P31P2	FQ60-J30R-P1P2
	RS485			
Size		60*55*28mm	60*55*28mm	60*55*28mm
Sensing distance		0.05m~5m	0.05m~30m	0.05m~30m
Blind zone		50mm		
Detection accuracy		±2mm		
Resolution		1mm		
Operating Voltage		10~30V DC		
No-load current		≤50mA		
Load current		≤200mA		—
Voltage drop		≤2V		—
Switching frequency		0.5Hz		50Hz
Light source		Red light 650nm		
Light spot size		5*10mm (5m)		
Light immunity		10K Lux.		
Operating temperature		-10°C~50°C		
Storage temperature		-20°C~70°C		
Ingress protection		IP65		
Connectors		2m PVC Cable, 4*0.25mm ²		

①



Cylindrical

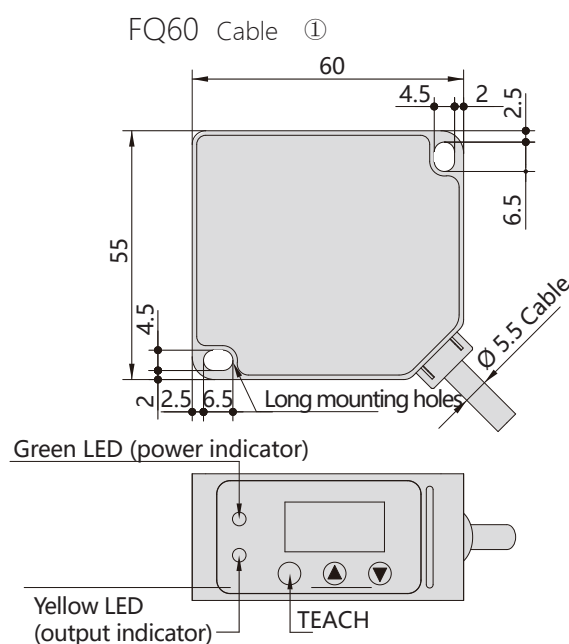
Rectangular

Fork

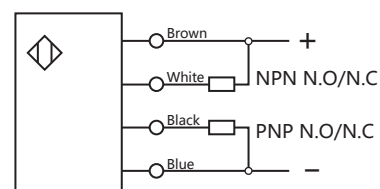
Optical fiber

Dimensioned drawing

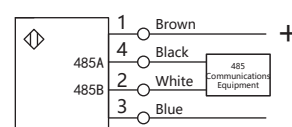
Wiring



NPN/PNP NO/NC



485 OUTPUT

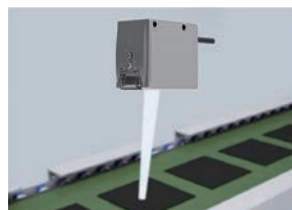




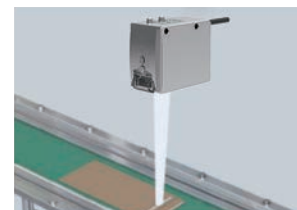
FQ45 FQ80
Photoelectric sensors
Color sensor
Rectangular
DC 4 wire

ISO9001 CE UKCA CCC RoHS

Application illustration



Detect the presence of thin sheet



Detect the presence of glue

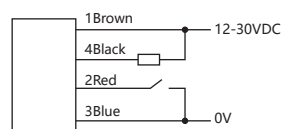


Detect the colors of the conveyor

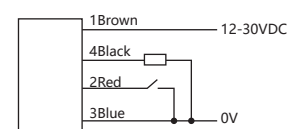
Wiring

FQ45-Y05D-X37P2

NPN

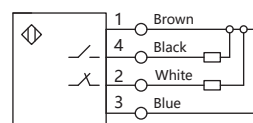


PNP

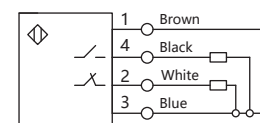


FQ80-9D

DC NPN NO+NC



DC PNP NO+NC



EURO M12 Connector



Technical data

Appearance			①
Model No	NPN/PNP	FQ45-Y05D-X37P2	
Size	43.5*28*24.5mm		
Sensing distance	50-500mm		
Min light spot diameter	About Φ7mm (at 100mm distance) ; About Φ10mm (at 250mm distance) ; About Φ20mm (at 500mm distance)		
Response time	200μs/1ms/10ms/100ms/500ms		
Light source	White LED		
Power supply	12~30V including ripple voltage 10%,Class 2 or LPS		
Current consumption	<50mA at 24V,<100mA at 12V		
Timer	OFF/ON delay/OFF delay/one shot		
Control output	NPN open collector/PNP open collector,switchable;<30V,<100mA,residue voltage <2V;N.O./N.C. switchable		
External input	Tuning/stop-transmitting,switchable		
Protection circuit	Power polarity reversal protection;Power surge protection;Output over-current protection;Output surge protection		
Light immunity	Incandescent light <10000 lux,sunlight<20000lux		
Ambient temperature	-25...50℃ (no freezing)		
Ambient humidity	35...85%RH (no condensation)		
Shock resistance	300m/s ² 6 times at each of X,Y,Z axis		
Vibration resistance	10-55Hz dual amplitude 1.5mm,2hours duration at each of X,Y,Z axis		
Ingress protection	IP65		
Material	Housing;zinc die casting; LED indicator cover:PC;button:stainless steel		
Mutual interference reduction function	Set-up different frequency,max 2 pcs sensors		

Cylindrical

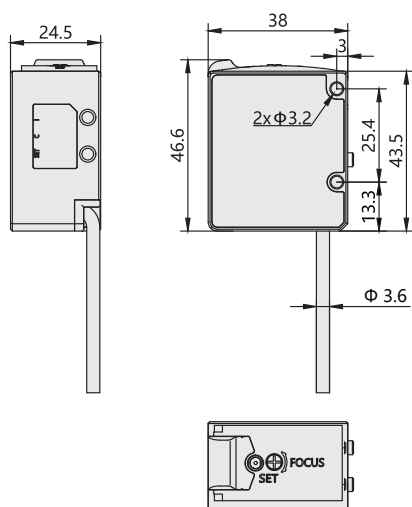
Rectangular

Fork

Optical fiber

Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)

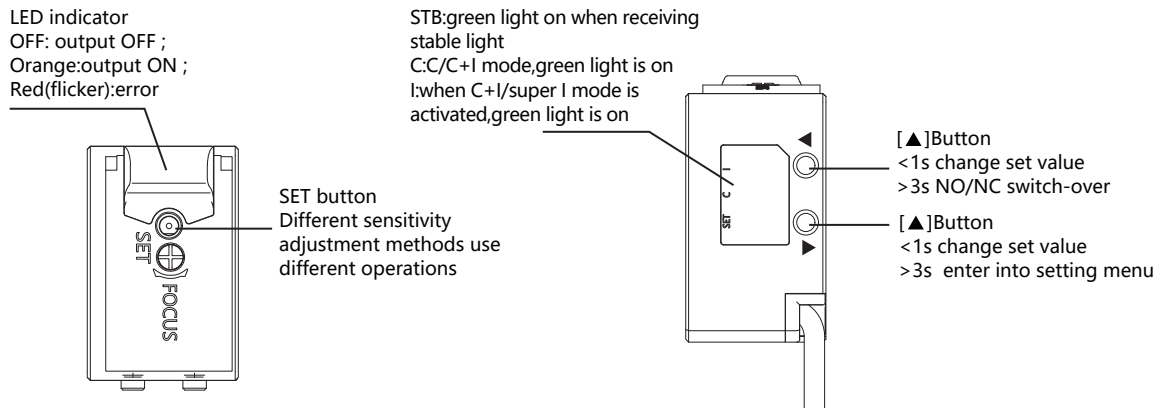
FQ45 Cable ①



Features:

- LED white light source ,wide range of light wave-length, stably detect the difference of colors or appearance.
- Long distance detection,up to 500mm.
- Background suppression.

Components



Detection mode

Detection mode	Description
Auto(initial value)	when adjusting sensitivity,automatically select suitable mode from C+I or C modes
C+I mode	olor elements(R,G,B) detection and illumination detection(light intensity)
C mode	color elements(R.G.B) detection
Super I mode	illumination detection(received light intensity)

Application instruction

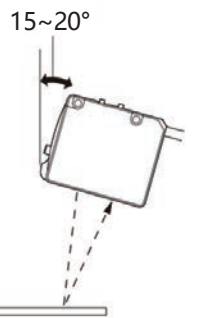
1. Installation

- Mounting holes fastening torque: 0.63 N·m (M3 screw)
- If the detection is not stable,maybe the reason is that the target object is glossy.Under this situation,please tilt the sensor about 15°-20°, or use a reflection reduction accessory.

2. Light immunity

If high frequency light,for example,inverter fluorescent lamp light,enters into or are reflected into the target object,and then is received by the sensor receiver,there may be malfunction.

Under this situation,please use light shade plate or relocate the installation position.



Technical data

Appearance		
Model No	NPN/PNP N.O/N.C	FQ80-9D
Size	80*53*31mm	
Sensing distance	9mm	
Operating voltage	10...30V DC	
Ripple	2V/pp Max	
No-load current	Max50 mA@ 24Vcc	
Output	1 PNP output/1 NPN output	
Output Current	100 mA Max	
Output saturation voltage	≤2V	
Response time	33us	
Switching frequency	15kHz	
Delay	0 / 20 ms optional (Default configuration no delay)	
Light/dark options	Dark/Light selection automatic	
LED indicator	Output LED (Yellow)/Ready LED (Green)/Delay LED (Orange)	
Button	ON and OFF Button	
Operating Temperature	-10 ... 55 °C	
Storage temperature	-20 ... 70 °C	
Dielectric strength	500 VAC 1min, Between the electronics and the housing	
Insulation resistance	>20 MΩ 500 Vdc, Between the electronic component and the housing	
Rated sensing distance	9mm	
Sensing distance tolerance	±3mm	
Light spot size	1.5x5 mm @ 9 mm	
Light source	Blue (465 nm)/Green (520 nm)/Red (630 nm) is selected automatically	
Light immunity	According to EN 60947-5-2	
Vibration	0.5 mm amplitude, 10 ... 55 Hz frequency, Every axis (EN60068-2-6)	
Impact resistance	11 ms (30 G) Six shocks per axis (EN60068-2-27)	
Housing material	ABS	
Lens material	PMMA	
Ingress protection	IP67	
Connectors	M12 4 Core connectors	

Cylindrical

Rectangular

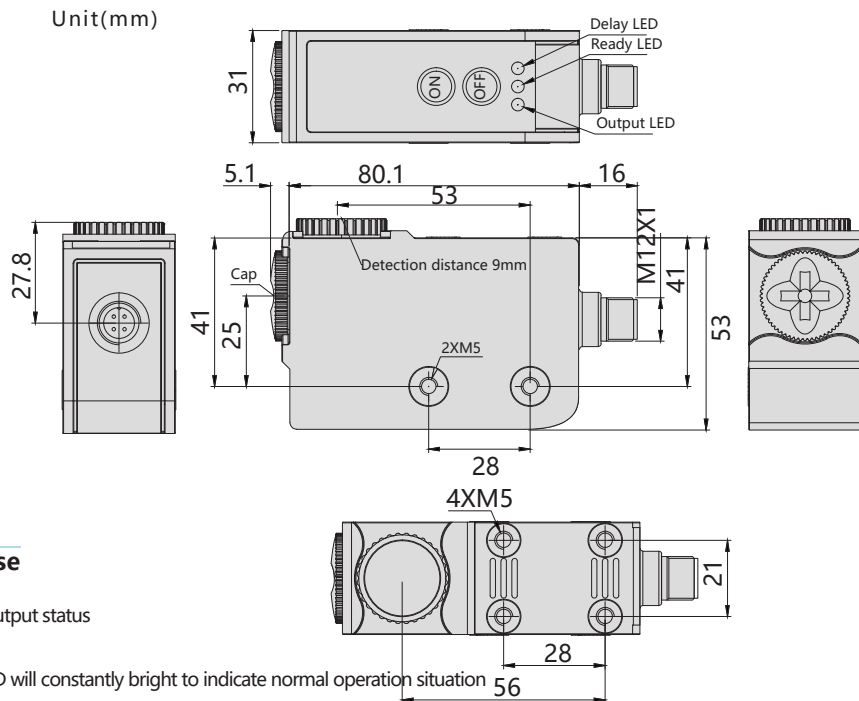
Fork

Optical fiber

Features:

- Color sensor;
- Strong plastic case;
- High resolution

Dimensioned drawing



Instructions for use

The yellow LED indicates the output status
 Ready LED (Green)
 During working state, green LED will constantly bright to indicate normal operation situation
 Delay LED (orange)
 The Orange LED lights up to indicate that a delay function is active on the digital output
 ON button
 Label detecting program will be activated by pressing ON button
 OFF button
 Activate background detecting program by pressing OFF button
 For setup instructions, see the settings section

Settings(label-background)

- Put the label in front of the sensor lighting spot and press ON button until the Ready LED(green) goes out. The sensor will alternately emit red light, green light and blue light to detect the label. Do not move the label during this period
- Put the background in front of the sensor light spot and press OFF button. The sensor will alternately emit red light, green light and blue light to detect the background. Do not move the background during this period. DARK/LIGHT mode will be automatically selected by the sensor.
 Dark color label - light color background = dark color mode.
 Light color label - dark color background = light color mode

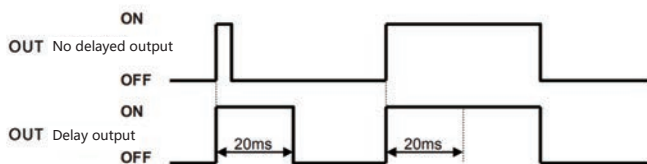
If Ready LED(green) is normally bright, the detection is completed. If the LED flashes slowly, it means the detection fails because of low contrast.

By pressing one of the 2 buttons, the sensor will return to previous setting. Delay will prolong the valid output minimum duration time to 20ms

Allow slow speed interface connection system to detect short pulse. Delay activation status is displayed by the orange LED lighting-up.

Delay activation

Simultaneously press ON/OFF buttons for 2 seconds until orange LED light up. To stop the Delay function, simultaneously press ON/OFF buttons for 2 seconds until orange LED light goes out.



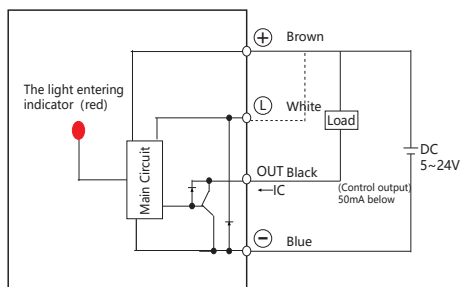
Through-beam photoelectric sensor



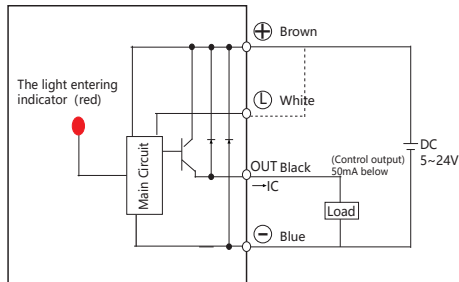
Through-beam photoelectric sensor is composed of independent emitter and receiver, which are separated from each other in structure. Emitter (E) directly transmits to the receiver (R). Please align the emitter and the receiver to establish light path. Whatever object blocks the light route, the receiver voltage will drop and switching condition will change.

Wiring

NPN

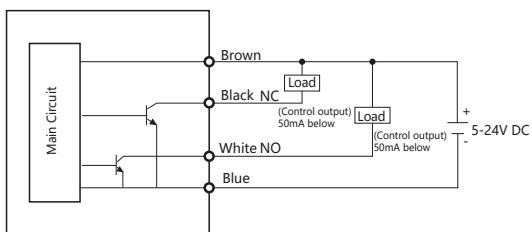


PNP

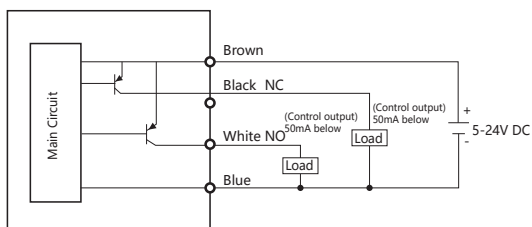


-S and -X series are as follows:

NPN



PNP



Photoelectric sensors

Plastic housing

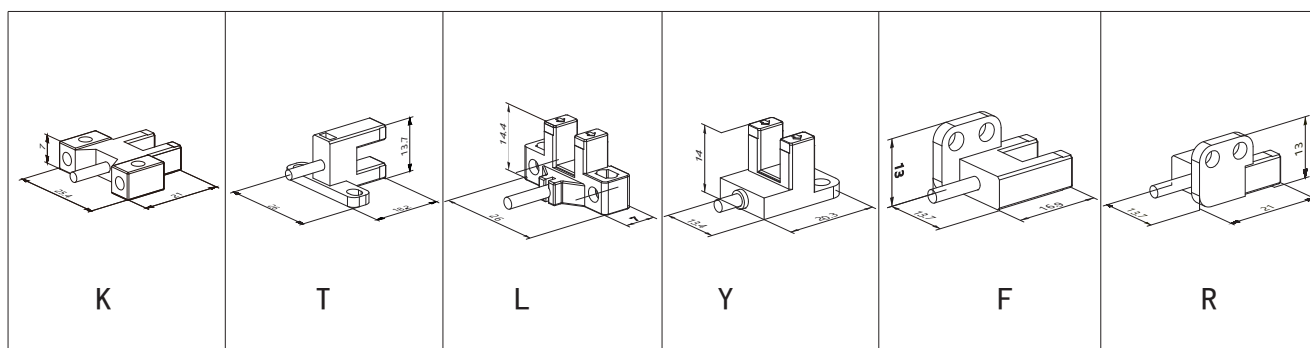
Fork

DC 4 wire

Technical data

Appearance								
Model No	NPN	Incoming light indicator ON	FG15NK	FG15NT	FG15NL	FG15NY	FG15NF	FG15NR
		Incoming light indicator OFF	FG25NK	FG25NT	FG25NL	FG25NY	FG25NF	FG25NR
	PNP	Incoming light indicator ON	FG15PK	FG15PT	FG15PL	FG15PY	FG15PF	FG15PR
		Incoming light indicator OFF	FG25PK	FG25PT	FG25PL	FG25PY	FG25PF	FG25PR
Compliance with CE marking directive			EMC directive、RoHS directive					
Sensing distance			6mm fixed					
Minimum detection object			0.8mm×1.2mm Opaque objects					
Hysteresis			<0.05mm					
Repeat accuracy			<0.01mm					
Operating voltage			5V DC...24V DC±10% Ripple P...P <10%					
Current consumption			<15mA					
Output			NPN open-circuit collector transistor		External voltage: Below 30V DC (between output and 0V)			
			PNP open-circuit collector transistor		External voltage: Below 30V DC (between output and +V)			
Max. Input current			50mA					
Voltage drop			<2V					
Output action			Light ON / Shade ON 2 output functions					
Short circuit protection			NPN(protected),PNP(not protected)					
Response time			light:<20μs,Light-shade:<80μs(Max. Frequency is 3000HZ)					
LED indicator			Red LED					
Ingress protection			IP66					
Ambient temperature			-25℃... + 55℃ (no dew formation and frozen ice) storage: - 30℃... + 80℃					
Ambient humidity			5%RH...85%RH、storage: 5%RH...95%RH					
Light immunity			Fluorescent lighting: illumination of the light receiving surface is <1000 lux					
Withstanding voltage			AC1000V 1minute between all power connction terminal and the housing					
Insulation resistance			>20MΩ between all power connection terminals and the housing,based on DC250V high-resistance-meter					
Vibration			Frequency 10Hz...55Hz, Amplitude 1mm, X、Y、Z 30 minutes in each direction					
Impact			Acceleration 300m / s ² (30G) X、Y、Z Six times in each direction					
Light source			Infrared LED (peak wavelength: 940nm, non-modulated)					
Material			Housing: PC+PBT、Display mask: ABS					
Standard cable			1m PVC cable, 0.09mm ² 4 core with rubber insulation					
Extension cable			Cable diameter is >0.3 mm ² , The length can be extended to 100M.					
Weight			N.W: about 10g、G.W: about 15g					

Size specification



Cylindrical

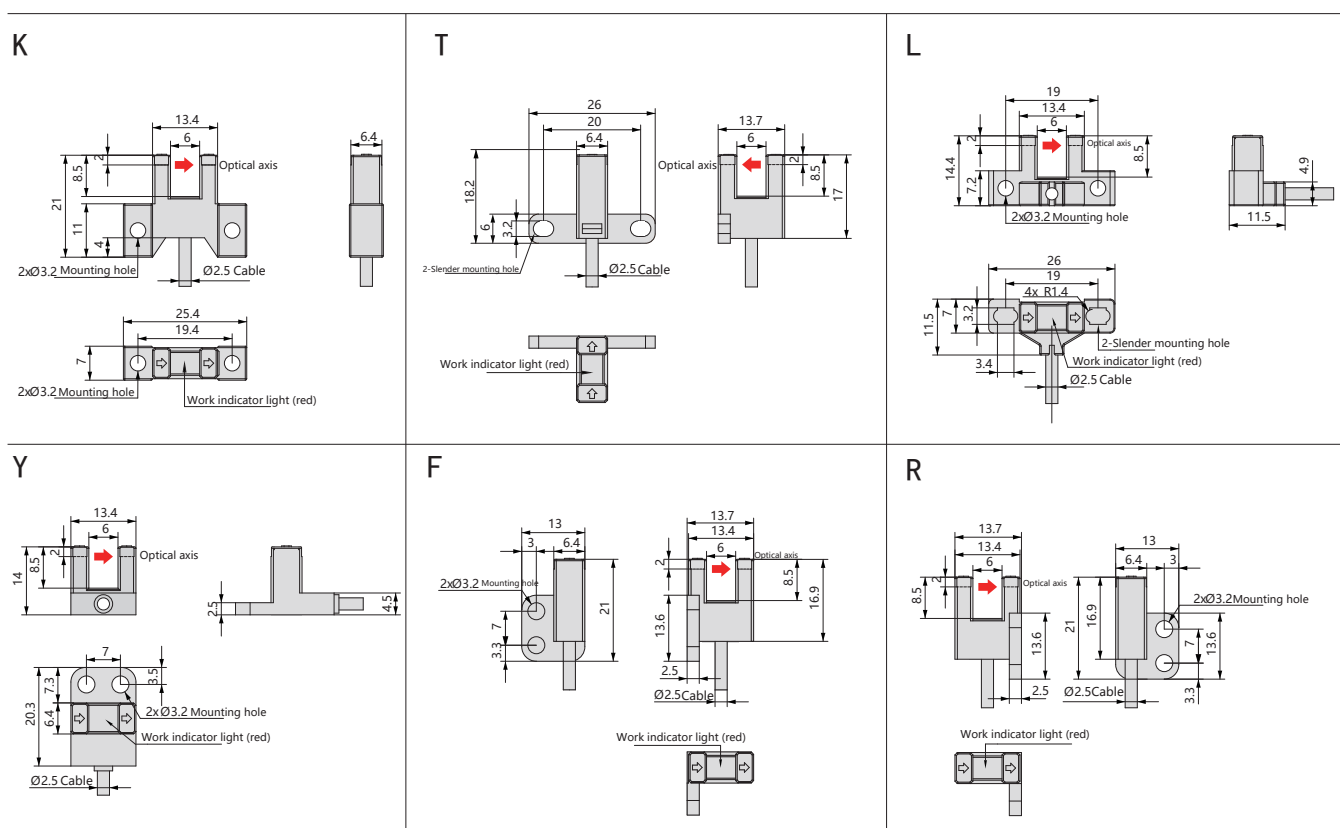
Rectangular

Fork

Optical fiber

Dimensioned drawing

Unit: mm



Indicator light

Incoming light indicator ON DC4 wire NPN/PNP

Model	Action state	Response chart	Terminals
FG15NK FG15NT FG15NL FG15NY FG15NF FG15NR	Light-on	Incoming light indicator (red) Indicator ON Indicator OFF Output Transistor ON OFF Load 1 (Relay) Action reset	$\text{L} \sim \oplus$ short-circuit
	Shade-on	Incoming light indicator (red) Indicator ON Indicator OFF Output Transistor ON OFF Load 1 (Relay) Action reset	$\text{L} \sim \oplus$ Open Circuit *1

Incoming light indicator OFF DC4 wire NPN/PNP

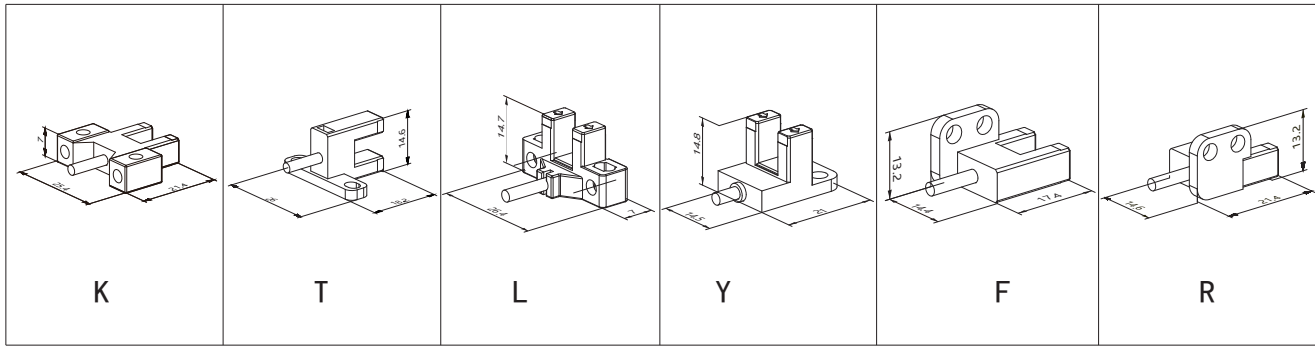
Model	Action state	Response chart	Terminals
FG25NK FG25NT FG25NL FG25NY FG25NF FG25NR	Light-on	Incoming light indicator (red) Indicator ON Indicator OFF Output Transistor ON OFF Load 2 (Relay) Action reset	$\text{L} \sim \oplus$ short-circuit
	Shade-on	Incoming light indicator (red) Indicator ON Indicator OFF Output Transistor ON OFF Load 2 (Relay) Action reset	$\text{L} \sim \oplus$ Open Circuit *1

Note;If it is shade on,please do not short-circuit connect terminal L with 0V.

Technical data

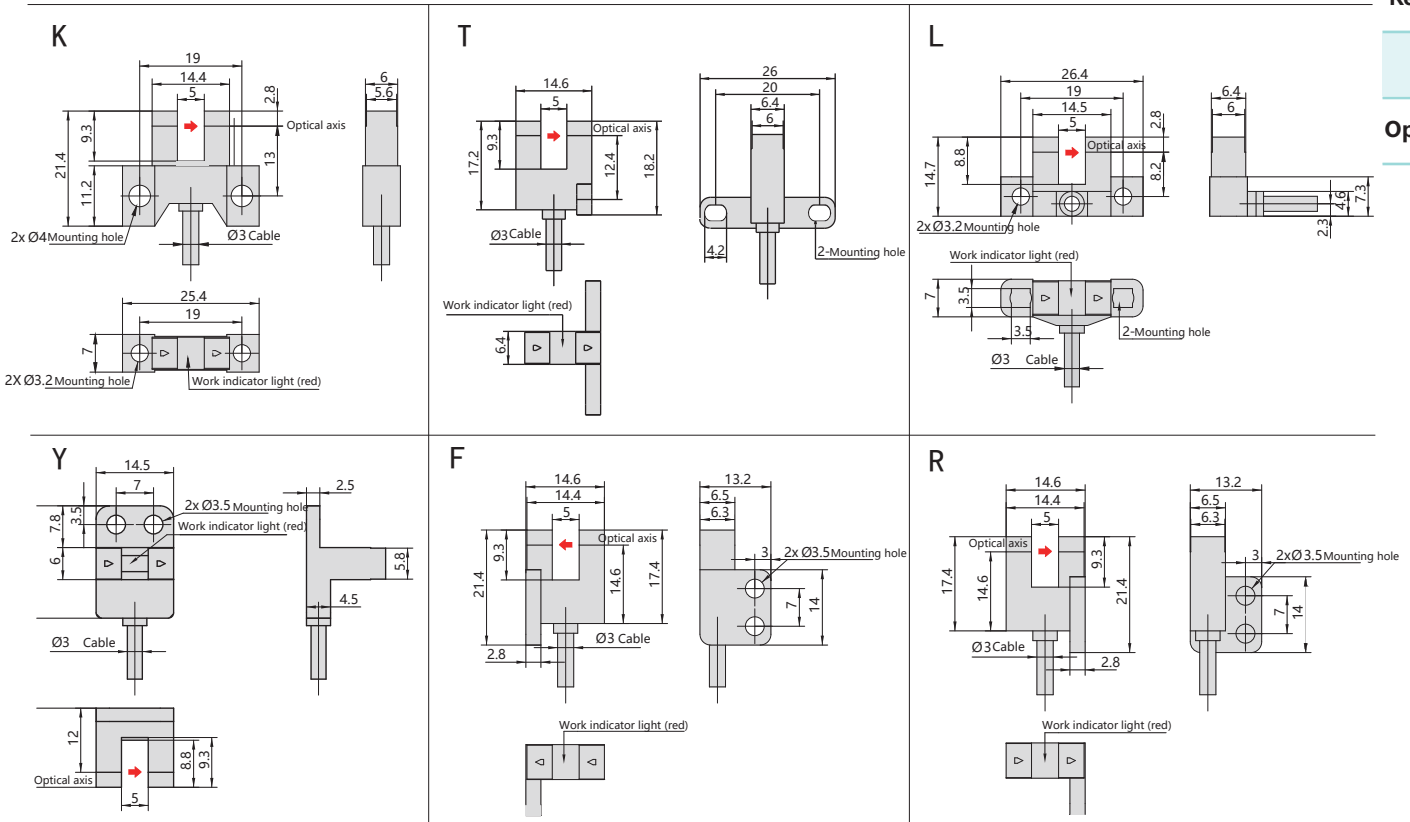
Appearance								
Model No	NPN	Incoming light indicator ON	FG15NK-X	FG15NT-X	FG15NL-X	FG15NY-X	FG15NF-X	FG15NR-X
	PNP	Incoming light indicator ON	FG15PK-X	FG15PT-X	FG15PL-X	FG15PY-X	FG15PF-X	FG15PR-X
Compliance with CE marking directive			EMC directive、RoHS directive					
Detection distance			5mm fixed					
Minimum detection object			0.8mm×1.2mm Opaque body					
Hysteresis			<0.05mm					
Repeat accuracy			<0.01mm					
Supply voltage			5V DC...24V DC±10% Ripple P..P <10%					
Consumption current			<15mA					
Output			NPN open-circuit collector transistor	External voltage: Below 30V DC (between output and 0V)				
			PNP open-circuit collector transistor	External voltage: Below 30V DC (between output and +V)				
Maximum inflow current			50mA					
Voltage drop			<2V					
Output action			Light-on / Shade-on 2 output functions					
Short circuit protection			Yes					
Response time			Light:<20μs,Shade:<80μs(Max. Frequency is 3000HZ)					
LED indicator			Red LED (Light up when entering light)					
Ingress protection			IP50					
Ambient temperature			-25℃... + 55℃ (no dew formation and frozen ice) storage: - 30℃... + 80℃					
Ambient humidity			5%RH...85%RH、storage: 5%RH...95%RH					
Light immunity			Fluorescent lighting: illumination of the light receiving surface is <1000 lux					
Resistance voltage			AC1000V 1minute between all power connction terminal and the housing					
Insulation resistance			>20MΩ between all power connection terminals and the housing,based on DC250V high-resistance-meter					
Vibration			Frequency 10Hz...55Hz, Amplitude 1mm, X、Y、Z 30 minutes in each direction					
Impact			Acceleration 300m / s ² (30G) X、Y、Z 6 times in each directio					
Light source			Infrared LED (peak wavelength: 940nm, non-modulated)					
Material			Housing: PBT、Display mask: PC					
Cable			1m PVC cable, 0.09mm ² 4 core with rubber insulation					
Extension cable			Cable diameter is >0.3 mm ² , The length can be extended to 100M.					
Weight			N.W: about 10g、G.W: about 15g					

Size specification



Dimensioned drawing

Unit: mm



Indicator light

	Cable color	Output action
Output 1	Black	Light-on
Output 2	White	Shade-on

Cylindrical

Rectangular

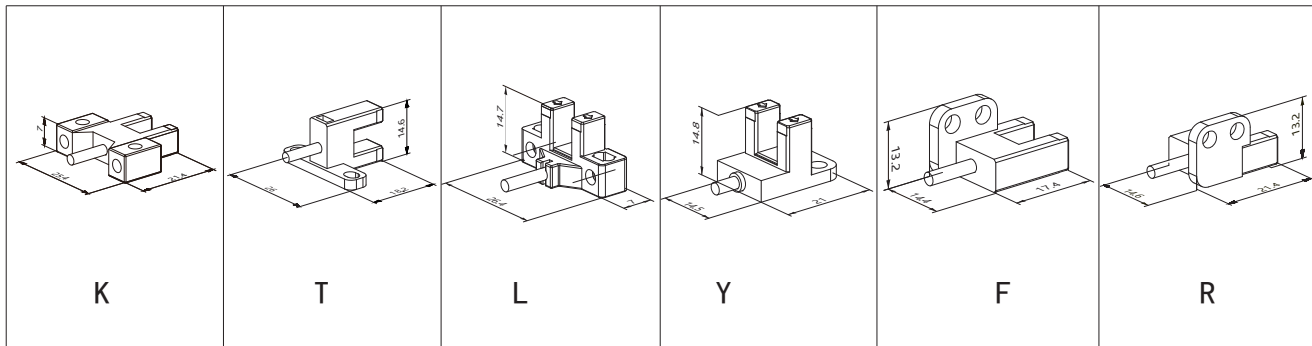
Fork

Optical fiber

Technical data

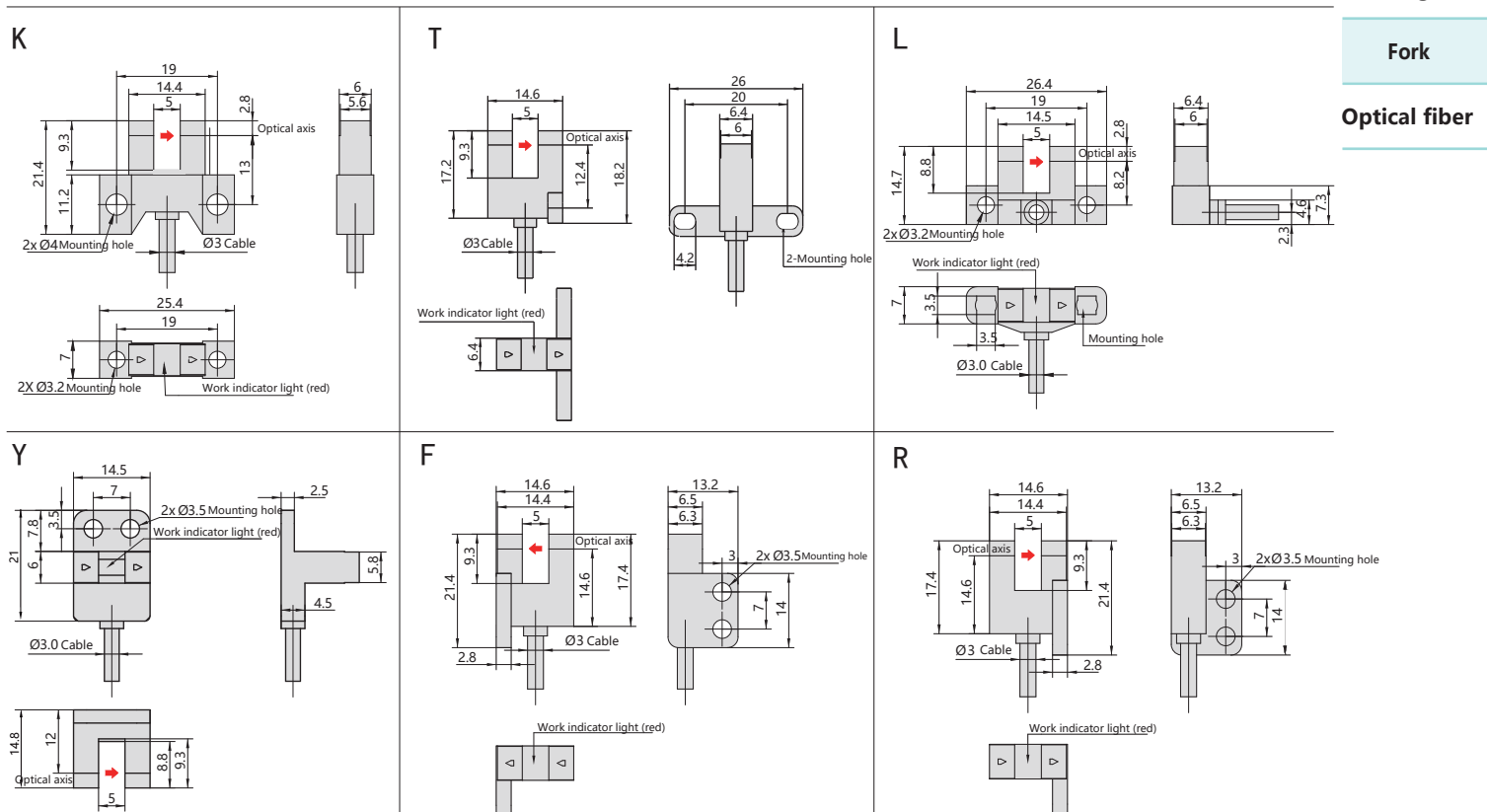
Appearance								
Model No	NPN	Incoming light indicator ON	FG15NK-XD	FG15NT-XD	FG15NL-XD	FG15NY-XD	FG15NF-XD	FG15NR-XD
		Incoming light indicator OFF	FG25NK-XD	FG25NT-XD	FG25NL-XD	FG25NY-XD	FG25NF-XD	FG25NR-XD
	PNP	Incoming light indicator ON	FG15PK-XD	FG15PT-XD	FG15PL-XD	FG15PY-XD	FG15PF-XD	FG15PR-XD
		Incoming light indicator OFF	FG25PK-XD	FG25PT-XD	FG25PL-XD	FG25PY-XD	FG25PF-XD	FG25PR-XD
Compliance with CE marking directive			EMC directive、RoHS directive					
Detection distance			5mm fixed					
Minimum detection object			0.8mm×1.2mm Opaque body					
Hysteresis			<0.05mm					
Repeat accuracy			<0.01mm					
Supply voltage			5V DC...24V DC±10%			Ripple P...P <10%		
Consumption current			<15mA					
Output			NPN open-circuit collector transistor		External voltage: Below 30V DC (between output and 0V)			
			PNP open-circuit collector transistor		External voltage: Below 30V DC (between output and +V)			
Maximum inflow current			50mA					
Voltage drop			<2V					
Output action			Light-on / Shade-on 2 output functions					
Short circuit protection			Yes					
Response time			Light: <20μs, Shade: <80μs(Max. Frequency is 3000HZ)					
LED indicator			Red LED (Light up when entering light)					
Ingress protection			IP50					
Ambient temperature			-25℃... + 55℃ (no dew formation and frozen ice) storage: - 30℃... + 80℃					
Ambient humidity			5%RH...85%RH、storage: 5%RH...95%RH					
Light immunity			Fluorescent lighting: illumination of the light receiving surface is <1000 lux					
Resistance voltage			AC1000V 1minute between all power connction terminal and the housing					
Insulation resistance			>20MΩ between all power connection terminals and the housing,based on DC250V high-resistance-meter					
Vibration			Frequency 10Hz...55Hz, Amplitude 1mm, X、Y、Z 30 minutes in each direction					
Impact			Acceleration 300m / s ² (30G) X、Y、Z 6 times in each directio					
Light source			Infrared LED (peak wavelength: 940nm, non-modulated)					
Material			Housing: PBT、Display mask: PC					
Cable			1m PVC cable, 0.09mm²4 core with rubber insulation					
Extension cable			Cable diameter is >0.3 mm², The length can be extended to 100M.					
Weight			N.W: about 10g、G.W: about 15g					

Size specification



Dimensioned drawing

Unit: mm



Indicator light

Incoming light indicator ON DC4 wire NPN/PNP

Model	Action state	Response chart	Terminals
FG15NK-XD FG15NT-XD FG15NL-XD FG15NY-XD FG15NF-XD FG15NR-XD	Light-on	Light in Shade Incoming light indicator (red) Indicator ON Indicator OFF Output Transistor ON OFF Load 2 (Relay) Action reset	$\text{L} \sim \oplus$ Short-circuit
FG15PK-XD FG15PT-XD FG15PL-XD FG15PY-XD FG15PF-XD FG15PR-XD	Shade-on	Light in Shade Incoming light indicator (red) Indicator ON Indicator OFF Output Transistor ON OFF Load 1 (Relay) Action reset	$\text{L} \sim \oplus$ Open Circuit *1

Incoming light indicator OFF DC4 wire NPN/PNP

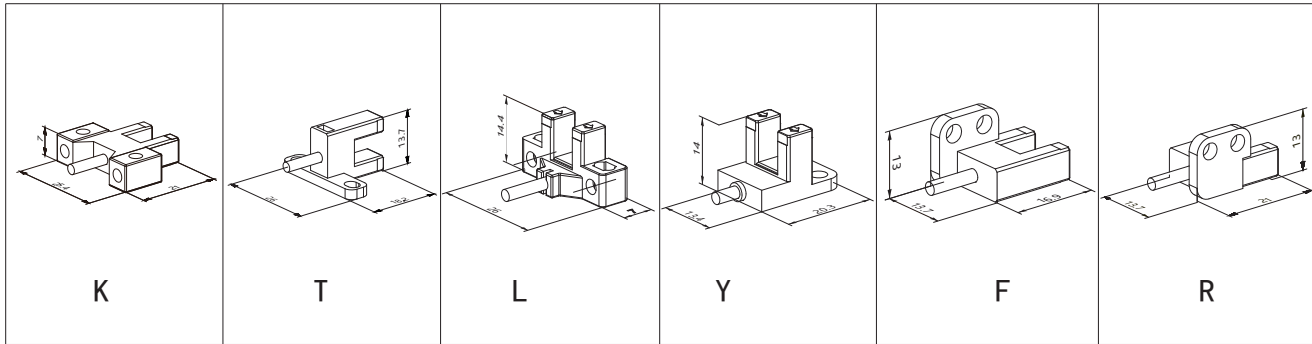
Model	Action state	Response chart	Terminals
FG25NK-XD FG25NT-XD FG25NL-XD FG25NY-XD FG25NF-XD FG25NR-XD	Light-on	Light in Shade Incoming light indicator (red) Indicator ON Indicator OFF Output Transistor ON OFF Load 2 (Relay) Action reset	$\text{L} \sim \oplus$ Short-circuit
FG25PK-XD FG25PT-XD FG25PL-XD FG25PY-XD FG25PF-XD FG25PR-XD	Shade-on	Light in Shade Incoming light indicator (red) Indicator ON Indicator OFF Output Transistor ON OFF Load 2 (Relay) Action reset	$\text{L} \sim \oplus$ Open Circuit *1

Note;If it is shade on,please do not short-circuit connect terminal L with 0V.

Technical data

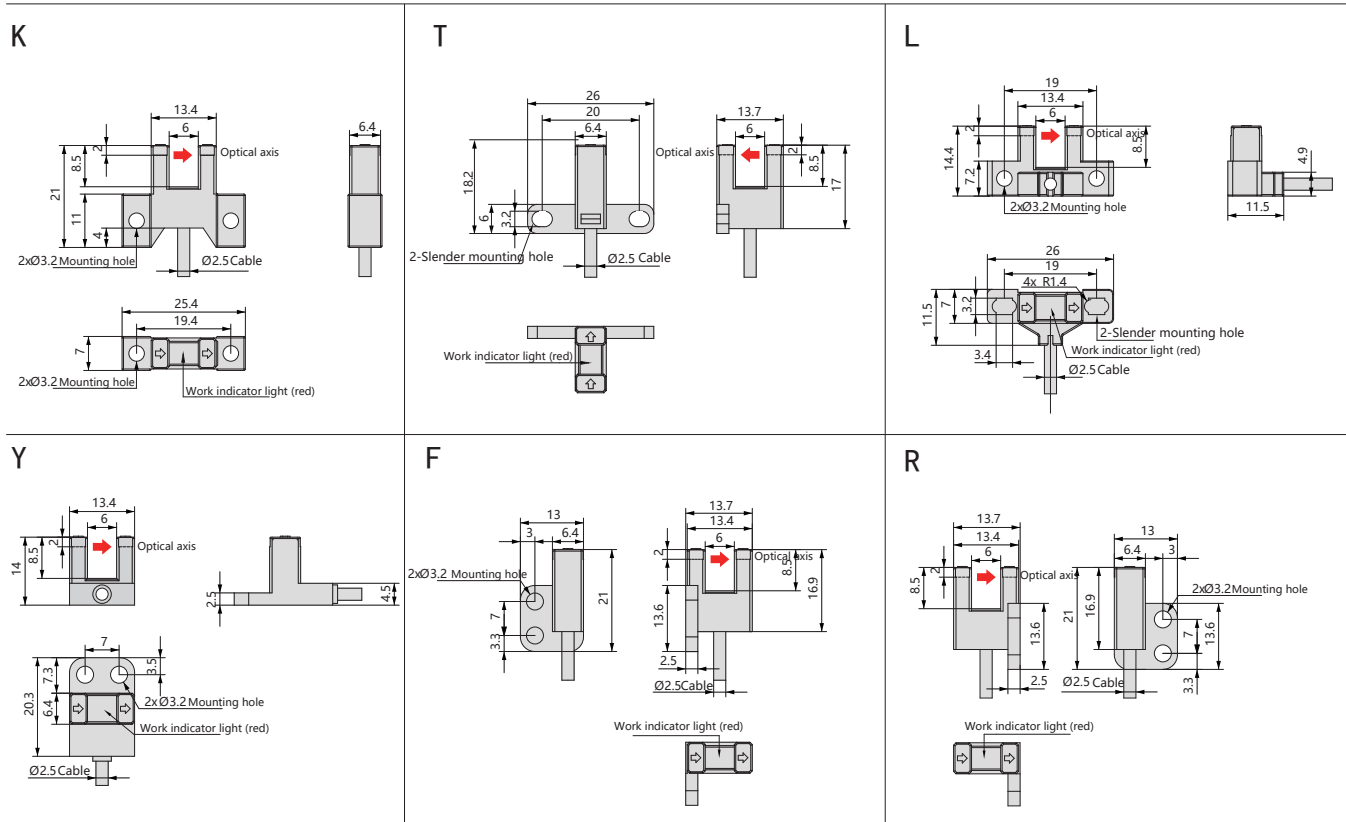
Appearance								
Model No	NPN	Incoming light indicator ON	FG15NK-S	FG15NT-S	FG15NL-S	FG15NY-S	FG15NF-S	FG15NR-S
	PNP	Incoming light indicator ON	FG15PK-S	FG15PT-S	FG15PL-S	FG15PY-S	FG15PF-S	FG15PR-S
Compliance with CE marking directive			EMC directive、RoHS directive					
Detection distance			6mm fixed					
Minimum detection object			0.8mm×1.2mm Opaque objects					
Hysteresis			<0.05mm					
Repeat accuracy			<0.01mm					
Supply voltage			5V DC...24V DC±10%			Ripple P...P <10%		
Consumption current			<15mA					
Output			NPN open-circuit collector transistor		External voltage: Below 30V DC (between output and 0V)			
			PNP open-circuit collector transistor		External voltage: Below 30V DC (between output and+V)			
Maximum inflow current			50mA					
Voltage drop			<2V					
Output action			Light-on / Shade-on 2 output functions					
Short circuit protection			Yes					
Response time			Light:<20μs,Shade:<80μs(Max. Frequency is 3000HZ)					
LED indicator			Red LED (Light up when entering light)					
Ingress protection			IP66					
Ambient temperature			-25℃... + 55℃ (no dew formation and frozen ice) storage: - 30℃... + 80℃					
Ambient humidity			5%RH...85%RH、 storage: 5%RH...95%RH					
Light immunity			Fluorescent lighting: illumination of the light receiving surface is <1000 lux					
Resistance voltage			AC1000V 1minute between all power connction terminal and the housing					
Insulation resistance			>20MΩ between all power connection terminals and the housing,based on DC250V high-resistance-meter					
Vibration			Frequency 10Hz...55Hz, Amplitude 1mm, X、Y、Z 30 minutes in each direction					
Impact			Acceleration 300m / s ² (30G) X、Y、Z Six times in each direction					
Light source			Infrared LED (peak wavelength: 940nm, non-modulated)					
Material			Housing: PC+PBT、Display mask: ABS					
Cable			1m PVC cable, 0.09mm ² 4 core with rubber insulation					
Extension cable			Cable diameter is >0.3 mm ² , The length can be extended to 100M.					
Weight			N.W: about 10g、G.W: about 15g					

Size specification



Dimensioned drawing

Unit: mm



Cylindrical

Rectangular

Fork

Optical fiber

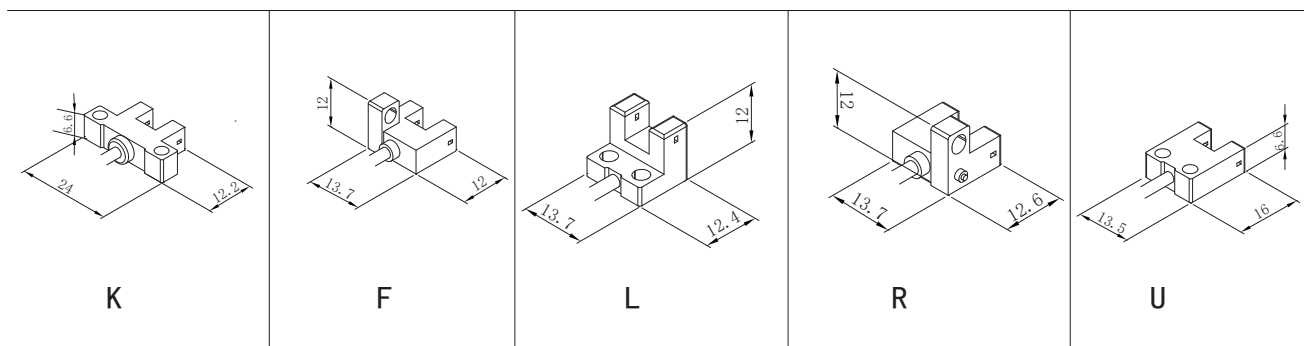
Indicator light

	Cable color	Output action
Output 1	Black	Light-on
Output 2	White	Shade-on

Technical data

Appearance							
Model No	NPN	Incoming light indicator ON	FG35NK	FG35NF	FG35NL	FG35NR	FG35NU
		Incoming light indicator OFF	FG45NK	FG45NF	FG45NL	FG45NR	FG45NU
	PNP	Incoming light indicator ON	FG35PK	FG35PF	FG35PL	FG35PR	FG35PU
		Incoming light indicator OFF	FG45PK	FG45PF	FG45PL	FG45PR	FG45PU
Compliance with CE marking directive			EMC directive、RoHS directive				
Sensing distance			6mm fixed				
Minimum detection object			0.8mm×1.2mm Opaque objects				
Hysteresis			<0.05mm				
Repeat accuracy			<0.01mm				
Operating voltage			5V DC...24V DC±10%		Ripple P...P <10%		
Current consumption			<15mA				
Output			NPN open-circuit collector transistor External voltage: Below 30V DC (between output and 0V)				
			PNP open-circuit collector transistor External voltage: Below 30V DC (between output and +V)				
Max. Input current			50mA				
Voltage drop			<2V				
Output action			Light-on / Shade-on 2 output functions				
Short circuit protection			NPN(protected),PNP(not protected)				
Response time			Light:<20μs,Shade:<80μs(Max. Frequency is 3000HZ)				
LED indicator			Red LED				
Ingress protection			IP66				
Ambient temperature			-25℃... + 55℃ (no dew formation and frozen ice) storage: - 30℃... + 80℃				
Ambient humidity			5%RH...85%RH、storage: 5%RH...95%RH				
Light immunity			Fluorescent lighting: illumination of the light receiving surface is <1000 lux				
Withstanding voltage			AC1000V 1minute between all power connction terminal and the housing				
Insulation resistance			>20MΩ between all power connection terminals and the housing,based on DC250V high-resistance-meter				
Vibration			Frequency 10Hz...55Hz, Amplitude 1mm, X、Y、Z 30 minutes in each direction				
Impact			Acceleration 300m / s ² (30G) X、Y、Z Six times in each direction				
Light source			Infrared LED (peak wavelength: 940nm, non-modulated)				
Material			Housing: PC+PBT、Display mask: ABS				
Standard cable			1m PVC cable, 0.09mm ² 4 core with rubber insulation				
Extension cable			Cable diameter is >0.3 mm ² , The length can be extended to 100M.				
Weight			N.W: about 10g、G.W: about 15g				

Size specification



Dimensioned drawing

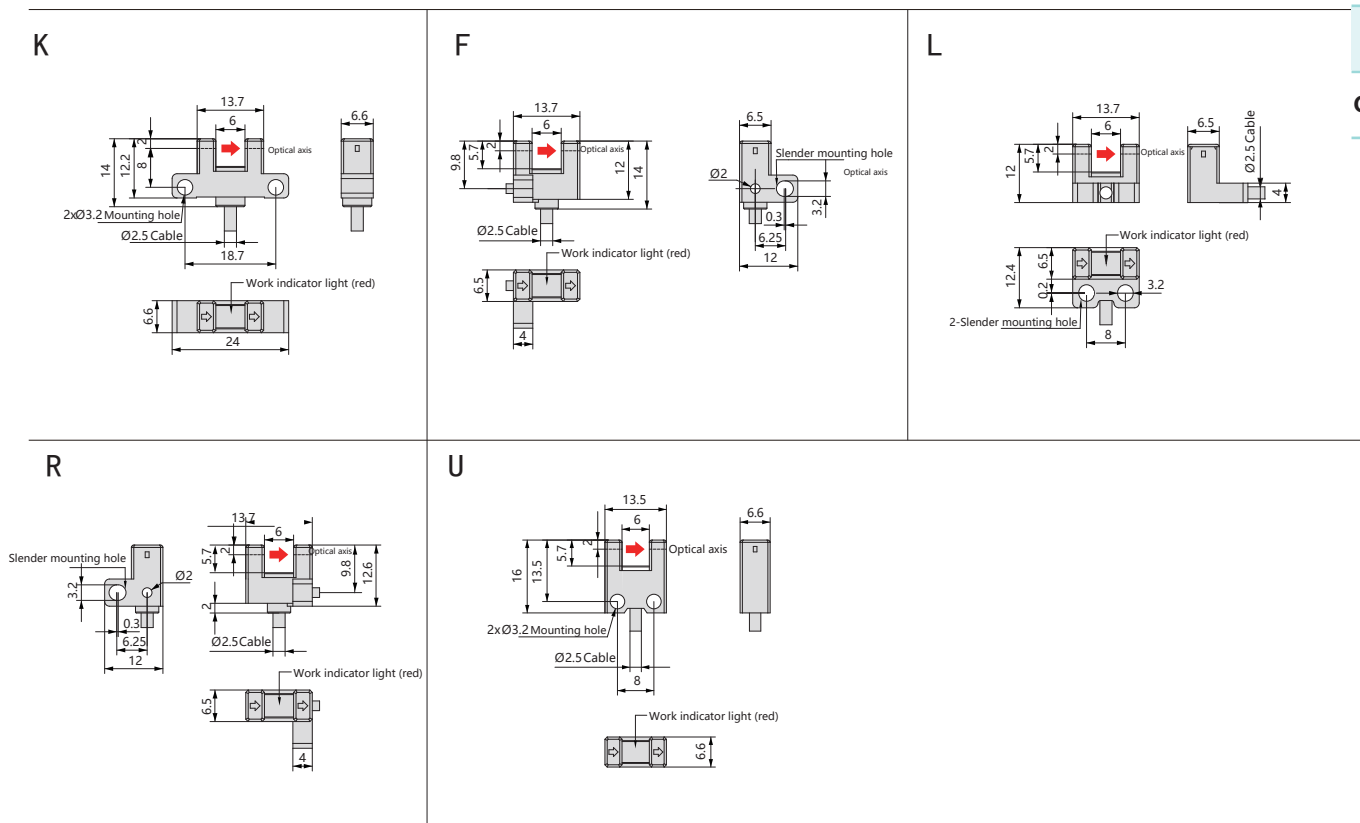
Unit: mm

Cylindrical

Rectangular

Fork

Optical fiber



Indicator light

Incoming light indicator ON DC4 wire NPN/PNP

Model	Action state	Response chart	Terminals
FG35NK FG35NF FG35NL FG35NR FG35NU	Light-on	Incoming light indicator (red) Light in Shade Indicator ON Indicator OFF Output Transistor ON OFF Load 1 (Relay) Action reset	$\textcircled{L} \sim \oplus$ short-circuit
	Shade-on	Incoming light indicator (red) Light in Shade Indicator ON Indicator OFF Output Transistor ON OFF Load 1 (Relay) Action reset	$\textcircled{L} \sim \oplus$ Open Circuit *1

Incoming light indicator OFF DC4 wire NPN/PNP

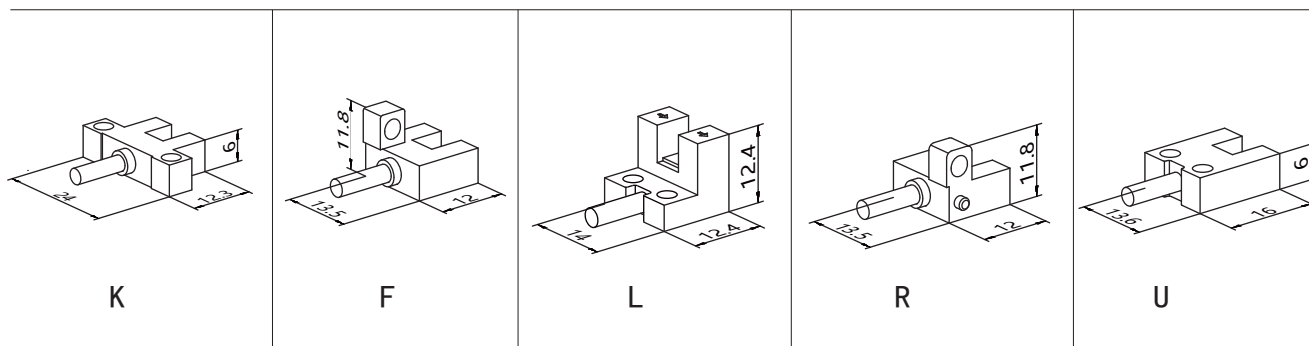
Model	Action state	Response chart	Terminals
FG45NK FG45NF FG45NL FG45NR FG45NU	Light-on	Incoming light indicator (red) Light in Shade Indicator ON Indicator OFF Output Transistor ON OFF Load 2 (Relay) Action reset	$\textcircled{L} \sim \oplus$ short-circuit
	Shade-on	Incoming light indicator (red) Light in Shade Indicator ON Indicator OFF Output Transistor ON OFF Load 2 (Relay) Action reset	$\textcircled{L} \sim \oplus$ Open Circuit *1

Note;If it is shade on,please do not short-circuit connect terminal L with 0V.

Technical data

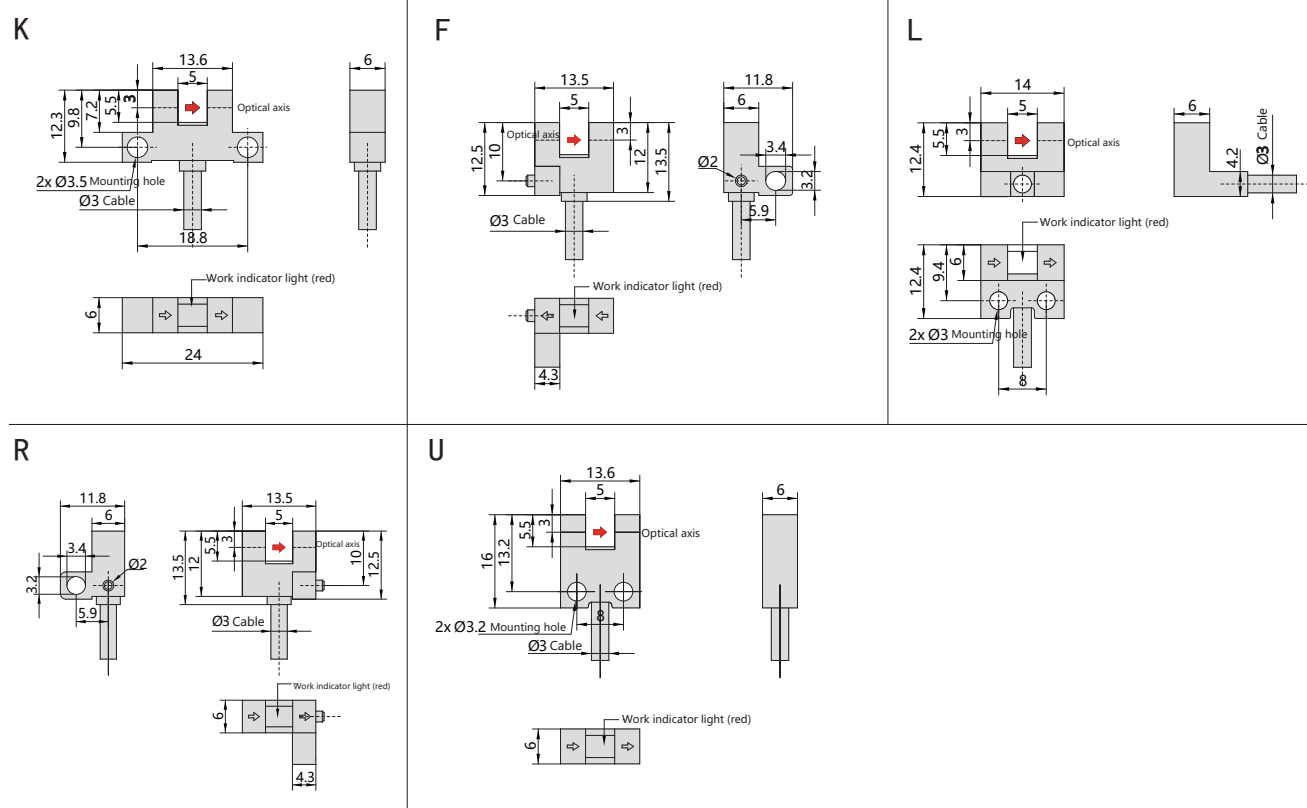
Appearance										
	Model No	NPN	Incoming light indicator ON	FG35NK-X	FG35NF-X	FG35NL-X	FG35NR-X	FG35NU-X		
		PNP	Incoming light indicator ON	FG35PK-X	FG35PF-X	FG35PL-X	FG35PR-X	FG35PU-X		
Compliance with CE marking directive		EMC directive、RoHS directive								
Detection distance		5mm fixed								
Minimum detection object		0.8mm×1.2mm Opaque objects								
Hysteresis		<0.05mm								
Repeat accuracy		<0.01mm								
Supply voltage		5V DC...24V DC±10% Ripple P..P <10%								
Consumption current		<15mA								
Output		NPN open-circuit collector transistor External voltage: Below 30V DC (between output and 0V)								
		PNP open-circuit collector transistor External voltage: Below 30V DC (between output and +V)								
Maximum inflow current		50mA								
Voltage drop		<2V								
Output action		Light-on / Shade-on 2 output functions								
Short circuit protection		yes								
Response time		Light:<20μs,Shade:<80μs(Max. Frequency is 3000HZ)								
LED indicator		Red LED (Incoming light indicator ON)								
Ingress protection		IP50								
Ambient temperature		-25°C... + 55°C (no dew formation and frozen ice) storage: - 30°C... + 80°C								
Ambient humidity		5%RH...85%RH、storage: 5%RH...95%RH								
Light immunity		Fluorescent lighting: illumination of the light receiving surface is <1000 lux								
Resistance voltage		AC1000V 1minute between all power connction terminal and the housing								
Insulation resistance		>20MΩ between all power connection terminals and the housing,based on DC250V high-resistance-meter								
Vibration		Frequency 10Hz...55Hz, Amplitude 1mm, X、Y、Z 30 minutes in each direction								
Impact		Acceleration 300m / s ² (30G) X、Y、Z Six times in each direction								
Light source		Infrared LED (peak wavelength: 940nm, non-modulated)								
Material		Housing: PBT、Display mask: PC								
Cable		1m PVC cable, 0.09mm ² 4 core with rubber insulation								
Extension cable		Cable diameter is >0.3 mm ² , The length can be extended to 100M.								
Weight		N.W: about 10g、G.W: about 15g								

Size specification



Dimensioned drawing

Unit: mm



Cylindrical

Rectangular

Fork

Optical fiber

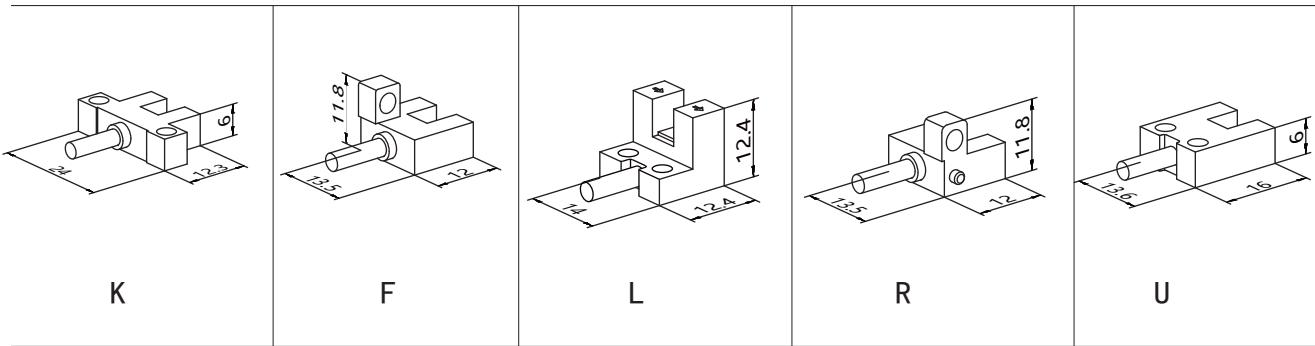
Indicator light

	Cable color	Output action
Output 1	Black	Light-on
Output 2	White	Shade-on

Technical data

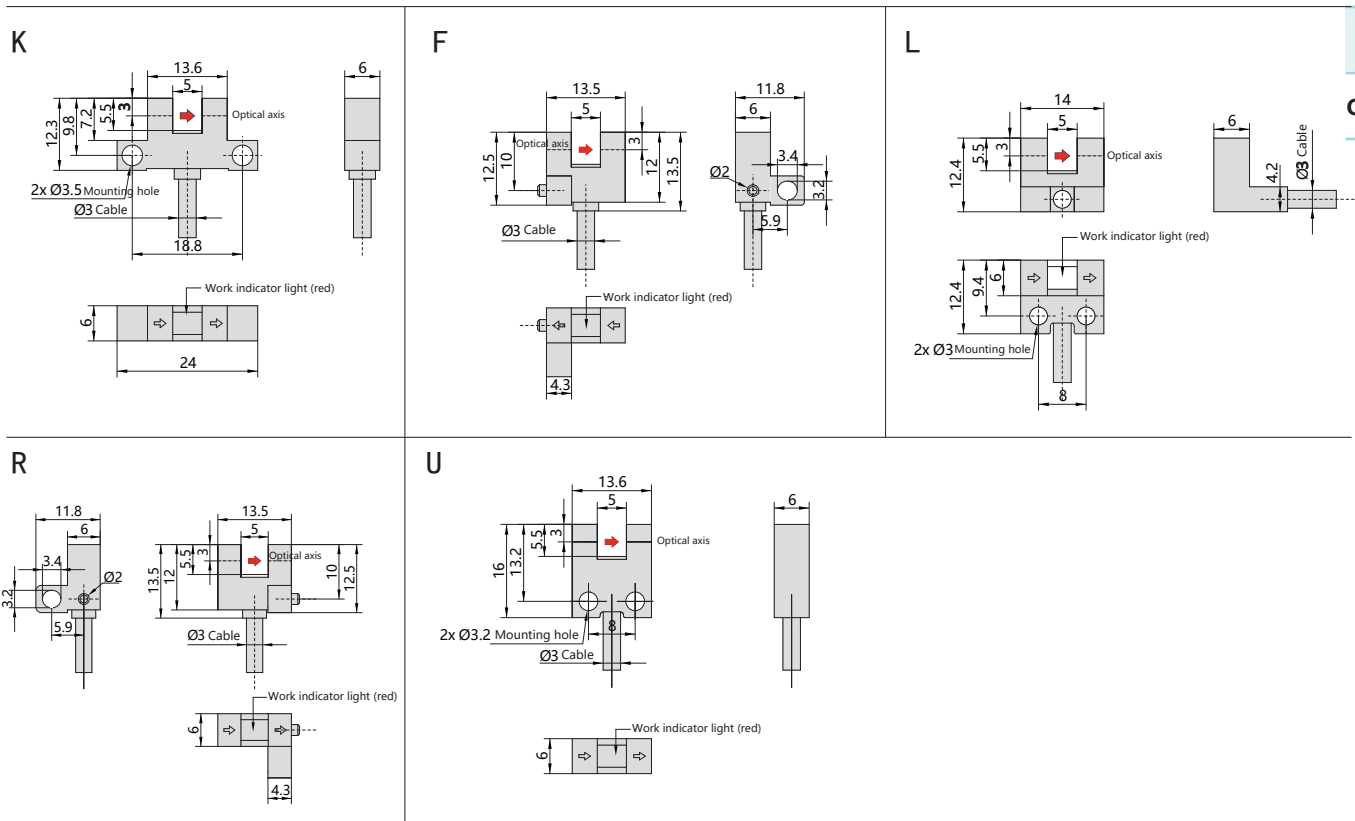
Appearance							
Model No	NPN	Incoming light indicator ON	FG35NK-XD	FG35NF-XD	FG35NL-XD	FG35NR-XD	FG35NU-XD
		Incoming light indicator OFF	FG45NK-XD	FG45NF-XD	FG45NL-XD	FG45NR-XD	FG45NU-XD
	PNP	Incoming light indicator ON	FG35PK-XD	FG35PF-XD	FG35PL-XD	FG35PR-XD	FG35PU-XD
		Incoming light indicator OFF	FG45PK-XD	FG45PF-XD	FG45PL-XD	FG45PR-XD	FG45PU-XD
Compliance with CE marking directive			EMC directive、RoHS directive				
Detection distance			5mm fixed				
Minimum detection object			0.8mm×1.2mm Opaque objects				
Hysteresis			<0.05mm				
Repeat accuracy			<0.01mm				
Supply voltage			5V DC...24V DC±10% Ripple P..P <10%				
Consumption current			<15mA				
Output			NPN open-circuit collector transistor External voltage: Below 30V DC (between output and 0V)				
			PNP open-circuit collector transistor External voltage: Below 30V DC (between output and +V)				
Maximum inflow current			50mA				
Voltage drop			<2V				
Output action			Light-on / Shade-on 2 output functions				
Short circuit protection			yes				
Response time			Light:<20μs,Shade:<80μs(Max. Frequency is 3000HZ)				
LED indicator			Red LED (Incoming light indicator ON)				
Ingress protection			IP50				
Ambient temperature			-25℃... + 55℃ (no dew formation and frozen ice) storage: - 30℃... + 80℃				
Ambient humidity			5%RH...85%RH、storage: 5%RH...95%RH				
Light immunity			Fluorescent lighting: illumination of the light receiving surface is <1000 lux				
Resistance voltage			AC1000V 1minute between all power connction terminal and the housing				
Insulation resistance			>20MΩ between all power connection terminals and the housing,based on DC250V high-resistance-meter				
Vibration			Frequency 10Hz...55Hz, Amplitude 1mm, X、Y、Z 30 minutes in each direction				
Impact			Acceleration 300m / s ² (30G) X、Y、Z Six times in each direction				
Light source			Infrared LED (peak wavelength: 940nm, non-modulated)				
Material			Infrared LED (peak wavelength: 940nm, non-modulated)				
Cable			1m PVC cable, 0.09mm ² 4 core with rubber insulation				
Extension cable			Cable diameter is >0.3 mm ² , The length can be extended to 100M.				
Weight			N.W: about 10g、G.W: about 15g				

Size specification



Dimensioned drawing

Unit: mm



Indicator light

Incoming light indicator ON DC4 wire NPN/PNP

Model	Action state	Response chart	Terminals
FG35NK-XD FG35PK-XD FG35NF-XD FG35PF-XD FG35NL-XD FG35PL-XD FG35NR-XD FG35PR-XD FG35NU-XD FG35PU-XD	Light-on	Incoming light indicator (red) Light in Shade Indicator ON Indicator OFF Output Transistor ON Load 1 (Relay) OFF Action reset	$\text{L} \sim \oplus$ short-circuit
	Shade-on	Incoming light indicator (red) Light in Shade Indicator ON Indicator OFF Output Transistor ON Load 1 (Relay) OFF Action reset	$\text{L} \sim \oplus$ Open Circuit *1

Incoming light indicator OFF DC4 wire NPN/PNP

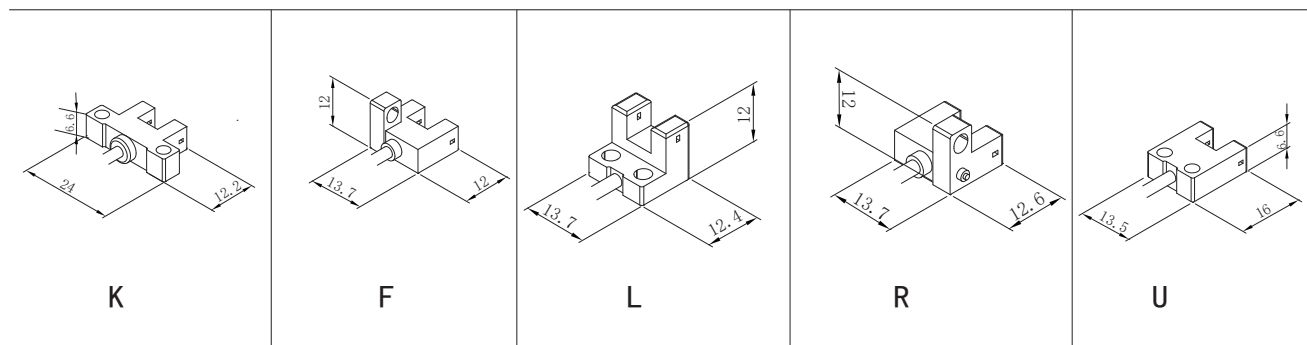
Model	Action state	Response chart	Terminals
FG45NK-XD FG45PK-XD FG45NF-XD FG45PF-XD FG45NL-XD FG45PL-XD FG45NR-XD FG45PR-XD FG45NU-XD FG45PU-XD	Light-on	Incoming light indicator (red) Light in Shade Indicator ON Indicator OFF Output Transistor ON Load 2 (Relay) OFF Action reset	$\text{L} \sim \oplus$ short-circuit
	Shade-on	Incoming light indicator (red) Light in Shade Indicator ON Indicator OFF Output Transistor ON Load 2 (Relay) OFF Action reset	$\text{L} \sim \oplus$ Open Circuit *1

Note;If it is shade on,please do not short-circuit connect terminal L with 0V.

Technical data

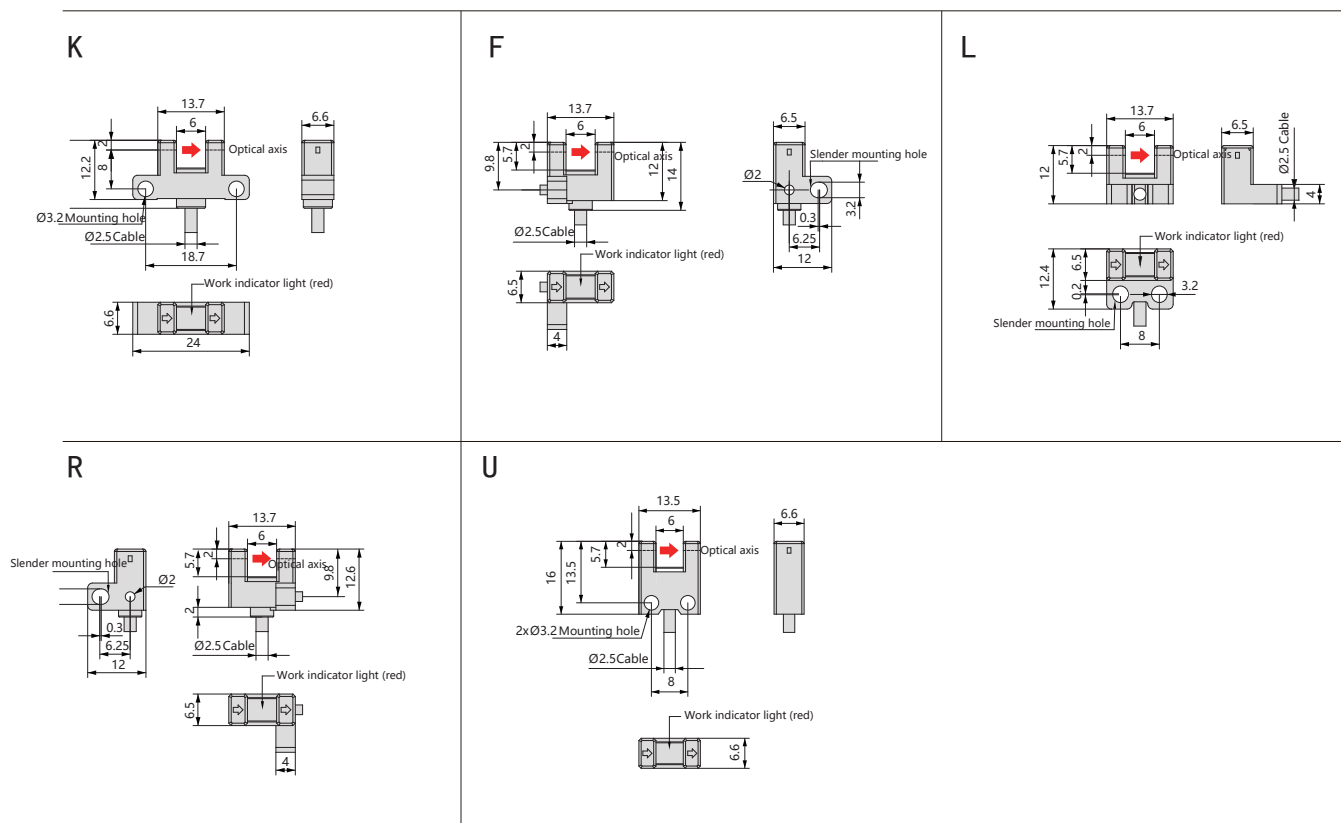
Appearance							
Model No	NPN	Incoming light indicator ON	FG35NK-S	FG35NF-S	FG35NL-S	FG35NR-S	FG35NU-S
	PNP	Incoming light indicator ON	FG35PK-S	FG35PF-S	FG35PL-S	FG35PR-S	FG35PU-S
Compliance with CE marking directive			EMC directive、RoHS directive				
Sensing distance			6mm fixed				
Minimum detection object			0.8mm×1.2mm Opaque objects				
Hysteresis			<0.05mm				
Repeat accuracy			<0.01mm				
Operating voltage			5V DC...24V DC±10% Ripple P..P <10%				
Current consumption			<15mA				
Output			NPN open-circuit collector transistor		External voltage: Below 30V DC (between output and 0V)		
			PNP open-circuit collector transistor		External voltage: Below 30V DC (between output and +V)		
Output action			Light-on / Shade-on 2 output functions				
Short circuit protection			Yes				
Response time			Light: <20μs, Shade: <80μs(Max. Frequency is 3000HZ)				
LED indicator			Red LED (Light up when entering light)				
Ingress protection			IP66				
Ambient temperature			-25℃... + 55℃ (no dew formation and frozen ice) storage: - 30℃... + 80℃				
Ambient humidity			5%RH...85%RH、storage: 5%RH...95%RH				
Light immunity			Fluorescent lighting: illumination of the light receiving surface is <1000 lux				
Withstanding voltage			AC1000V 1minute between all power connction terminal and the housing				
Insulation resistance			>20MΩ between all power connection terminals and the housing,based on DC250V high-resistance-meter				
Vibration			Frequency 10Hz...55Hz, Amplitude 1mm, X、Y、Z 30 minutes in each direction				
Impact			Acceleration 300m / s ² (30G) X、Y、Z Six times in each direction				
Light source			Infrared LED (peak wavelength: 940nm, non-modulated)				
Material			Housing: PC+PBT、Display mask: ABS				
Standard cable			1m PVC cable, 0.09mm ² 4 core with rubber insulation				
Extension cable			Cable diameter is >0.3 mm ² , The length can be extended to 100M				
Weight			N.W: about 10g、G.W: about 15g				

Size specification



Dimensioned drawing

Unit: mm



Cylindrical

Rectangular

Fork

Optical fiber

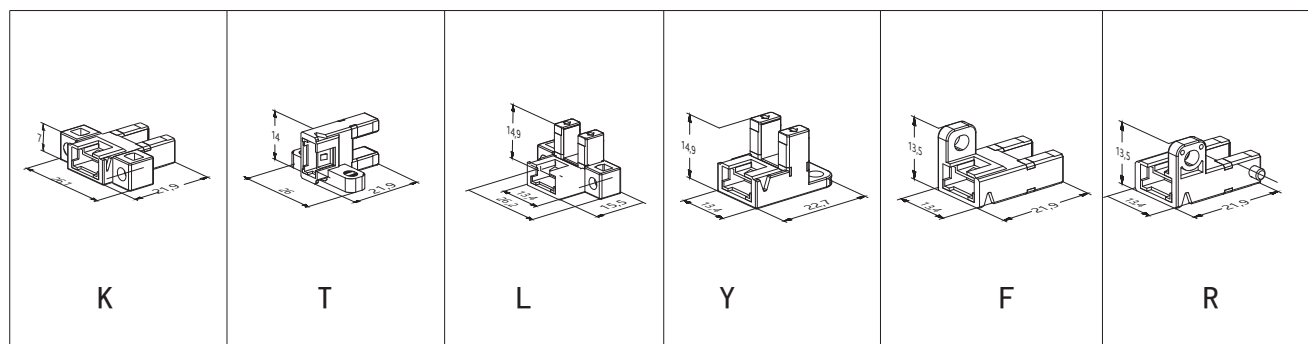
Indicator light

	Cable color	Output action
Output 1	Black	Light-on
Output 2	White	Shade-on

Technical data

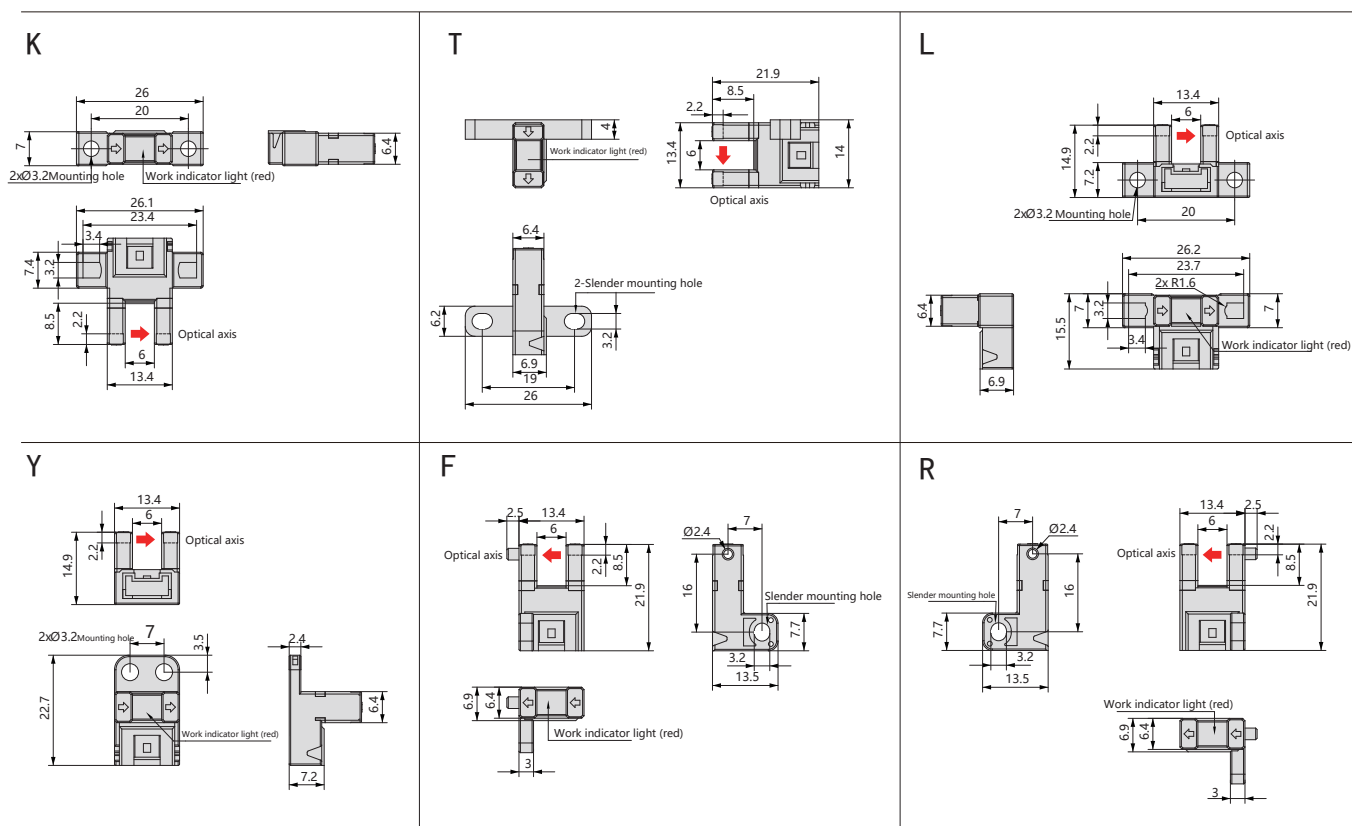
Appearance								
Model No	NPN	Incoming light indicator ON	FG55NK	FG55NT	FG55NL	FG55NY	FG55NF	FG55NR
		Incoming light indicator OFF	FG65NK	FG65NT	FG65NL	FG65NY	FG65NF	FG65NR
	PNP	Incoming light indicator ON	FG55PK	FG55PT	FG55PL	FG55PY	FG55PF	FG55PR
		Incoming light indicator OFF	FG65PK	FG65PT	FG65PL	FG65PY	FG65PF	FG65PR
Compliance with CE marking directive			EMC directive、RoHS directive					
Sensing distance			6mm fixed					
Minimum detection object			0.8mm×1.2mm Opaque objects					
Hysteresis			<0.05mm					
Repeat accuracy			<0.01mm					
Operating voltage			5V DC...24V DC±10% Ripple P...P <10%					
Current consumption			<15mA					
Output			NPN open-circuit collector transistor		External voltage: Below 30V DC (between output and 0V)			
			PNP open-circuit collector transistor		External voltage: Below 30V DC (between output and +V)			
Max Input current			50mA					
Voltage drop			<2V					
Output action			Light-on / Shade-on 2 output functions					
Short circuit protection			NPN(protected),PNP(not protected)					
Response time			Light:<20μs,Shade:<80μs(Max. Frequency is 3000HZ)					
LED indicator			Red LED					
Ingress protection			IP66					
Ambient temperature			-25℃... + 55℃ (no dew formation and frozen ice) storage: - 30℃... + 80℃					
Ambient humidity			5%RH...85%RH、 storage: 5%RH...95%RH					
Light immunity			Fluorescent lighting: illumination of the light receiving surface is <1000 lux					
Withstanding voltage			AC1000V 1minute between all power connction terminal and the housing					
Insulation resistance			>20MΩ between all power connection terminals and the housing,based on DC250V high-resistance-meter					
Vibration			Frequency 10Hz...55Hz, Amplitude 1mm, X、 Y、 Z 30 minutes in each direction					
Impact			Acceleration 300m / s ² (30G) X、 Y、 Z Six times in each direction					
Light source			Infrared LED (peak wavelength: 940nm, non-modulated)					
Material			Housing: PC+PBT、 Display mask: ABS					
Weight			N.W: about 10g、 G.W: about 15g					

Technical data



Dimensioned drawing

Unit: mm



Cylindrical

Rectangular

Fork

Optical fiber

Indicator light

Incoming light indicator ON DC4 wire NPN/PNP

Model	Action state	Response chart	Terminals
FG55NK FG55NT FG55NL FG55NY FG55NF FG55NR	Light-on	Incoming light indicator (red) Indicator ON Output Transistor ON Load 1 (Relay) OFF Action reset	Ⓛ ~ ⊕ short-circuit
	Shade-on	Incoming light indicator (red) Indicator ON Indicator OFF Output Transistor ON Load 1 (Relay) OFF Action reset	Ⓛ ~ ⊕ Open Circuit

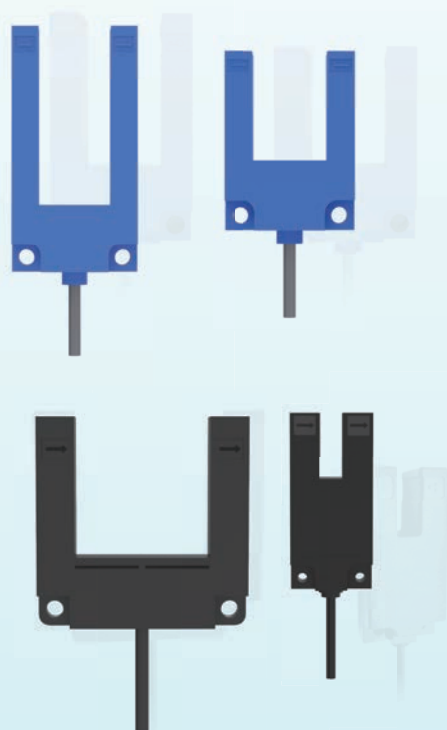
*1

Incoming light indicator OFF DC4 wire NPN/PNP

Model	Action state	Response chart	Terminals
FG65NK FG65NT FG65NL FG65NY FG65NF FG65NR	Light-on	Incoming light indicator (red) Indicator ON Indicator OFF Output Transistor ON Load 2 (Relay) OFF Action reset	Ⓛ ~ ⊕ short-circuit
	Shade-on	Incoming light indicator (red) Indicator ON Indicator OFF Output Transistor ON Load 2 (Relay) OFF Action reset	Ⓛ ~ ⊕ Open Circuit

*1

Note;If it is shade on,please do not short-circuit connect terminal L with 0V



FG25 FG26 FG28 FG36 FG50
FG72 FG74 FG78

Photoelectric sensor

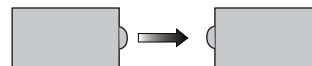
Plastic shell

Fork Sensor

DC 4 wire

Type diagram

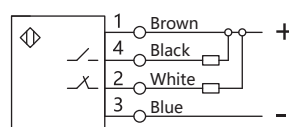
Through-beam photoelectric sensor



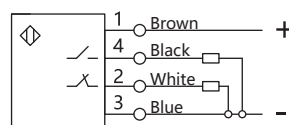
Through-beam photoelectric sensor is composed of independent emitter and receiver, which are separated from each other in structure. Emitter (E) directly transmits to the receiver (R). Please align the emitter and the receiver to establish light path. Whatever object blocks the light route, the receiver voltage will drop and switching condition will change.

Wiring

DC NPN NO+NC

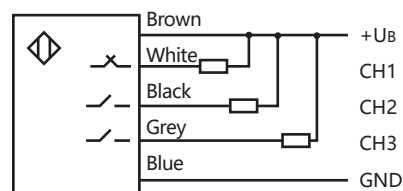


DC PNP NO+NC

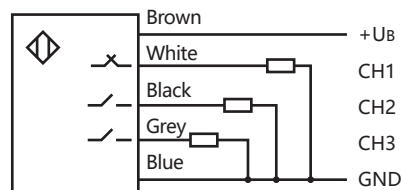


FG72

NPN



PNP

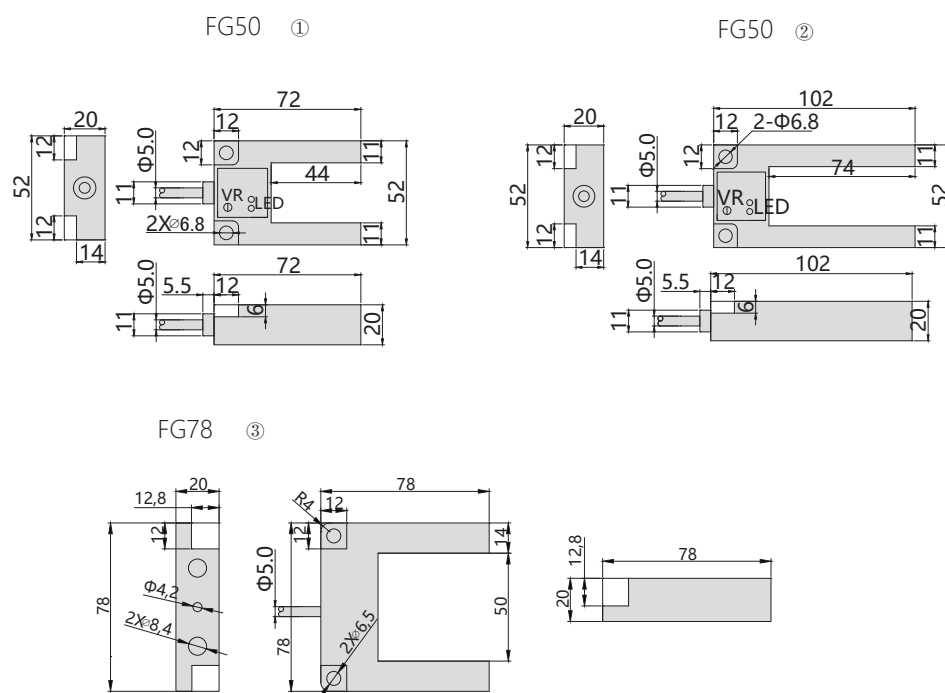


Optical fiber

Technical data

Model No	Appearance	①	②	③
				
NPN N.O+N.C		FG50-G30N-P31P2	FG50-G30N-P31P2-L	FG78-G50N-P31P2
PNP N.O+N.C		FG50-G30P-P31P2	FG50-G30P-P31P2-L	FG78-G50P-P31P2
Size		72X25X20mm	102X25X20mm	78X78X20
Sensing distance		30mm	30mm	50mm
Operating Voltage		10...30V DC		
Switching frequency		500Hz		
Light source		Infrared light 880nm		
Response time		<2ms		
Load Current		100mA		
Power-on delay		<300ms		
Sensitivity adjustment		Single-turn potentiometer		
Light immunity		<5000Lux.		
Ambient temperature		-25...55°C		
Ambient humidity		35...85%		
Housing material		ABS		
Lens material		PMMA		
Operation indicator		Yellow: output/Green: power		
Connectors		2m PVC Cable, 4*0.25mm ²		

Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)



Technical data

Appearance			①
Model No	NPN N.O+N.C	FG26-G13N-P31P2	
	PNP N.O+N.C	FG26-G13P-P31P2	
Size		26*16*17.2mm	
Operating Voltage		DC12 ~ 24V±10% Ripple P...P <5%	
Applicable pipe type		Exterior diameter Φ6-13mm,thickness 1mm,transparent pipe,made of FEP(fluororesin) or other materials with same transparency level	
Target sensing object		Liquid inside the pipe(Detection may fail if the liquid viscosity is too high or the liquid contains suspended solids)	
Light source		Infrared light source 940nm	
No-load current		< 20mA(24V)	
Load current		≤100mA	
Voltage drop		≤1V	
Light immunity		Incandescent light/sunlight:<3000Lux	
LED indicator		Light up when entering light (Red LED)	
Vibration		10-500HZ, single amplitude,1.0mm or acceleration 150m/s ² , 3 times at each of X,Y,Z axis(11min duration per time)	
Impact		500m/s ² X、Y、Z 3 times in each direction	
Ambient temperature		Operation: -10 ~ +55℃ storage: -25 ~ +65℃ (no condensation,no frozen ice)	
Ambient humidity		Operation: 5 ~ 85%RH storage: 5 ~ 95%RH (no condensation)	
Ingress protection		IP50	
Housing material		PC	
Lens material		PC	
Connectors		2m PVC cable 3*0.15mm ²	
Accessories		2pcs strapping ribbon	

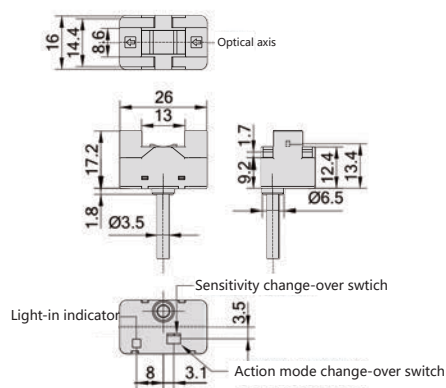
Cylindrical

Rectangular

Fork

Optical fiber

Dimensioned drawing



Input/output diagram

Action status	Time diagram	Mode change switch	Output loop
Dark ON	light in (no liquid)	D.ON (DARK ON)	NPN
	no-light-in (have liquid)		
	light-in indicator (red) light off		
	output transistor ON OFF		
Light ON	load (relay) action restoration	L.ON (LIGHT ON)	PNP
	light in (no liquid)		
	no-light-in (have liquid)		
	light-in indicator (red) light off		

Technical data

Model No	NPN N.O+N.C	FG72-G26N-P37P2-3
	PNP N.O+N.C	FG72-G26P-P37P2-3
Size	15X72X72mm	
Sensing distance	26mm	
Operating Voltage	24...48V DC $\pm 20\%$	
Voltage drop	$\leq 1.5\text{VDC}$	
Switching frequency	1000Hz	
Light source	Infrared 940nm	
Response time	$\leq 1\text{ms}$	
Load Current	200mA	
Power-on delay	$\leq 20\text{ms}$	
Output modes	CH1:NC ;CH2:NO ;CH3:NO	
Light immunity	$\leq 100\text{K Lux.}$	
Ambient temperature	$-25...60^{\circ}\text{C}$	
Ambient humidity	35...85%	
Ingress protection	IP65	
Housing material	PC	
Lens material	PC	
Operation indicator	Output: Yellow/Power: Green	
Connectors	2m PVC Cable, $5 \times 0.2\text{mm}^2$	



①

Cylindrical

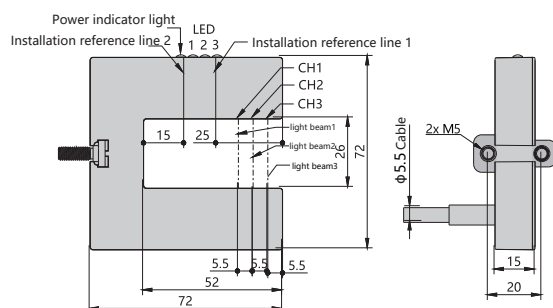
Rectangular

Fork

Optical fiber

Dimensioned drawing

FG72 ①

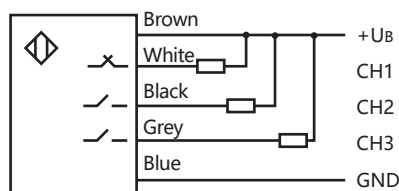


Feature:

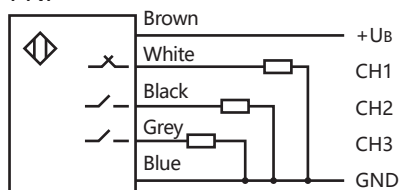
- High resistance to dust, smoke and steam
- High light immunity
- Multi-channels output, independent control
- Minimum target object size 2mm at vertical direction detection, 3mm at horizontal direction detection

Wiring

NPN



PNP

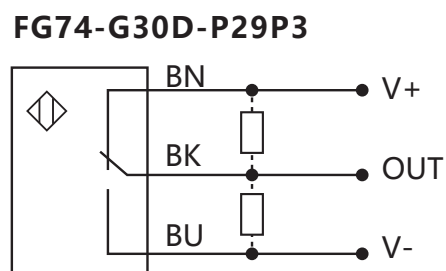
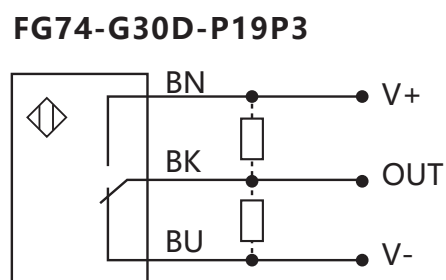
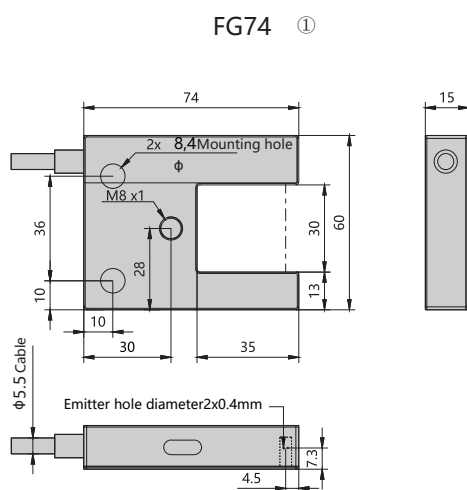


Appearance

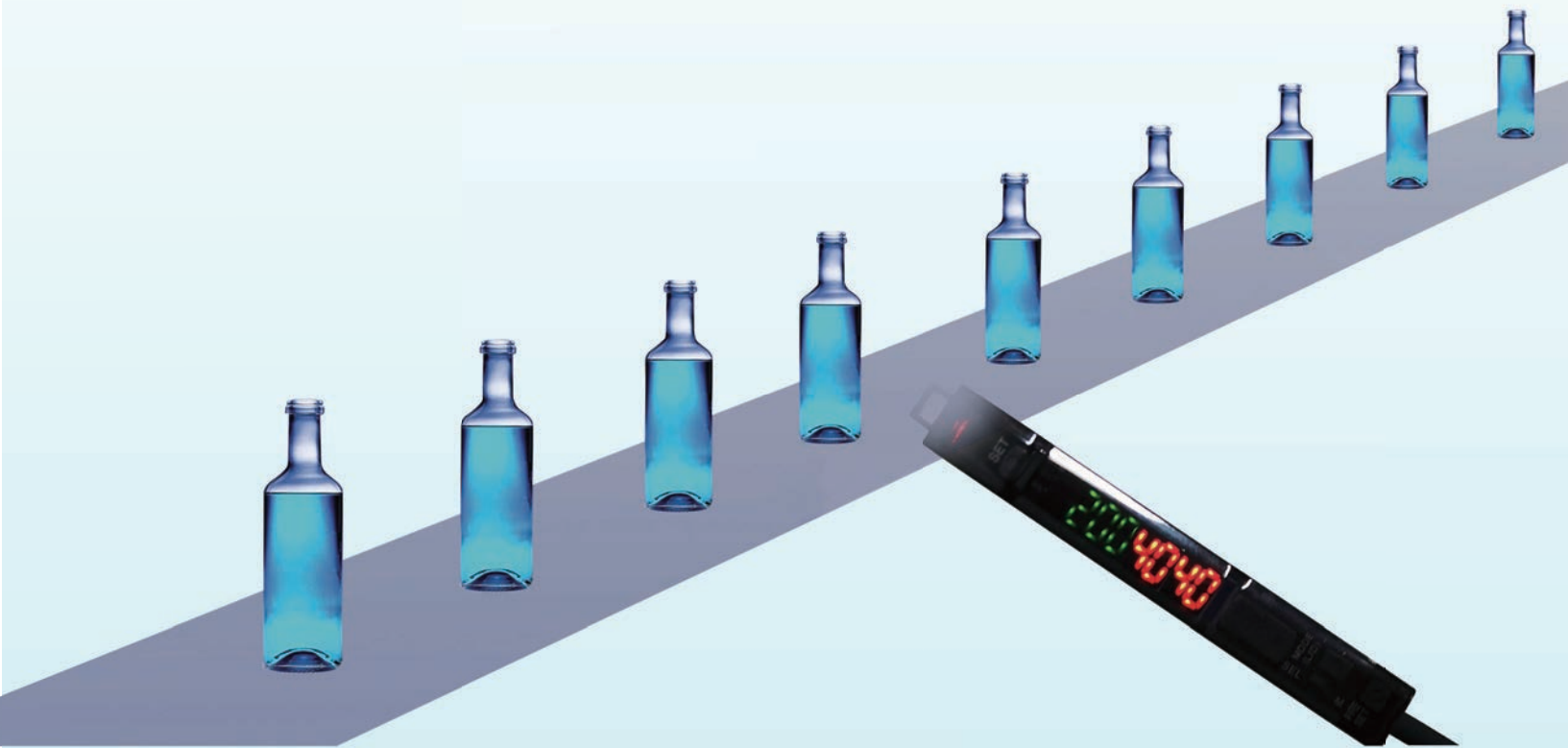


Optical fiber

Wiring



Optical fiber amplifier



Built-in light compensation technology ensures the stability of detection.
Excellent operability and functionality, more convenient debugging.
High-definition LED dual digital display screen, subtle changes are under control.

Model No

1	2	3		4	5	6		7	8
F	M	6	-	T	11	P	-	P	1

1 Type

F Photoelectric sensor

2 Shape

M Thread cylinder

3 Dimensions

3 External diameter 3mm
4 External diameter 4mm
6 External diameter 6mm
.....

4 Detection type

T Diffuse
C Coaxial diffuse reflection
L Through-beam
.....

5 Core diameter (mm)

1 1mm
2 2mm
11 1.0mm*2
14 1.0mm/0.25mm
22 0.5mm*2
24 0.5mm/0.25mm
.....

6 Housing material

P Plastic

7 Cable material

P Plastic
F PTFE

8 Cable length

1 1m
.....

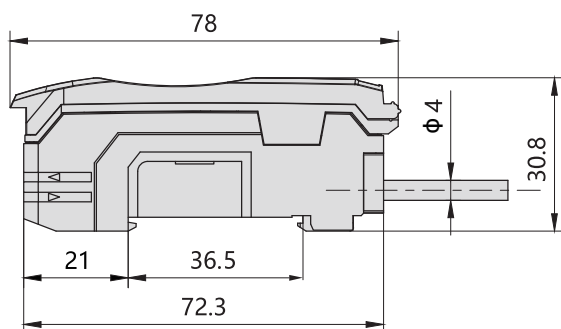
- Cylindrical
- Rectangular
- Fork
- Optical fiber

Technical data

Appearance		
Model No	NPN	FQ10-FRN-P31P2-X
	PNP	FQ10-FRP-P31P2-X
Operating Voltage		12...24 VDC±10%, Ripple voltage (P-P): Max. 10%
Light source		Red LED package
Response time		50us(HIGH SPEED)/250us (FINE)1ms(SUPER)/16ms(MEGA)
Output selection		LIGHT-ON/DARK-ON
Delay function		Off-delay timer/On-delay timer/One-shot timer
Output	NPN	NPN open collector, 24 V;Maximum output current: 100 mA or less;(For connecting multiple submodules);Residual voltage: 1 V or less
	PNP	PNP open collector, 24 V;Single output max. 100 mA or less;Residual voltage: 1 V or less
Switch protection		Reverse polarity protection (power supply), overcurrent protection (output), overvoltage protection (output)
Light immunity		Incandescent lamp: Max. 20000lux; Sunlight: Maximum: 30000lux
Ambient temperature		-20...+55 °C(No freezing)
Ambient humidity		35...85%RH(No condensation)
Vibration		10...55 Hz, composite amplitude 1.5 mm, 2 hours in each direction of X, Y and Z axes
Shock		500 m/s ² , 3 times in each direction of X, Y and Z axes
NPN	Normal: Max. 900 mW (At 24 V: Max. 36 mA; At 12 V: Max. 48 mA)	
	Energy-saving mode: Max. 800 mW (At 24 V: Max. 32 mA; At 12 V: Max. 39 mA)	
	Note: Power consumption will increase by 160 mW (7 mA) when using "High Speed" mode.	
PNP	Normal: Max. 950 mW (At 24 V: Max. 39 mA; At 12 V: Max. 52 mA)	
	Energy-saving mode: Max. 850 mW (At 24 V: Max. 35 mA; At 12 V: Max. 44 mA)	
	Note: Power consumption will increase by 160 mW (7 mA) when using "High Speed" mode.	

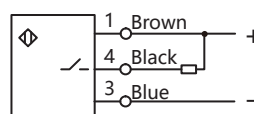
Dimensioned drawing

Optical fiber amplifier

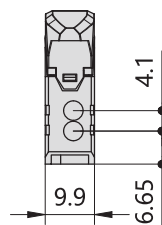
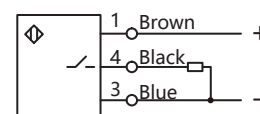


Wiring

NPN



PNP



Technical data

Appearance	①		②		③	
						
Type	Coaxial	Non coaxial	Coaxial	Non coaxial	Coaxial	Non coaxial
Model	FM3-C24P-P1-X	FM3-T22P-P1-X	FM4-C24P-P1-X	FM4-T22P-P1-X	FM6-C14P-P1	FM6-T11P-P1
Exterior structure	M3		M4		M6	
Sensing distance	50mm				100mm	
Detection type	Diffuse reflection				Diffuse reflection	
Imports of plastic optical fiber	Φ0.5mm*1/ Φ0.25mm*9	Φ0.5mm*2	Φ0.5mm*1/ Φ0.25mm*9	Φ0.5mm*2	Φ1.0mm*1/ Φ0.25mm*16	Φ1.0mm*2
Plastic optical fiber diameter	Φ1.0mm*1+ Φ1.3mm*1	Φ1.0mm*2	Φ1.0mm*1+ Φ1.3mm*1	Φ1.0mm*2	Φ2.2mm*2	Φ2.2mm*2
Plastic optical fiber length	1m					
Housing material	Stainless steel					
Connectors	PVC					
Accessories	Nut (including gasket)					

Cylindrical

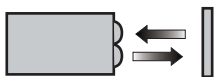
Rectangular

Fork

Optical fiber

Type diagram

Diffuse reflection photoelectric sensor



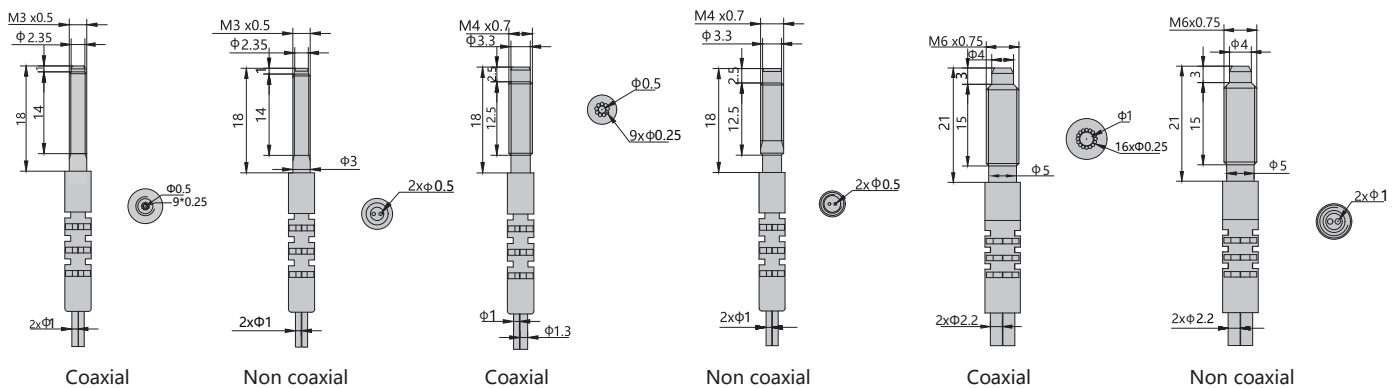
The working principle of diffuse reflection type photoelectric sensor is same with retro-reflective sensor, but without reflection mirror. The light of emitter is reflected by the target object, then received and evaluated by the receiver. Its positioning of the target object is not accurate. When target object enters into valid light-area, its output situation will change. Detection range depends on target object's shape, dimension, color and surface characteristics.

Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)

M3 Cable ①

M4 Cable ②

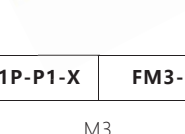
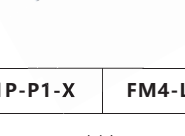
M6 Cable ③



Features:

- Precision, Stabilization;
- Performance optimization;
- Compact structure;
- Built-in short circuit protection, overload protection and polarity protection

Technical data

Appearance	①		②		③
					
Model	FM3-L1P-P1-X	FM3-L2P-P1-X	FM4-L1P-P1-X	FM4-L2P-P1-X	FM6-L2P-P1-X
Exterior structure	M3		M4		M6
Sensing distance	200mm	400mm	200mm	400mm	400mm
Detection type	Through-beam	Through-beam	Through-beam	Through-beam	Through-beam
Imports of plastic optical fiber	Φ0.5mm	Φ1.0mm	Φ0.5mm	Φ1.0mm	Φ1.0mm
Plastic optical fiber diameter	Φ1.0mm*1	Φ2.2mm*1	Φ1.0mm*1	Φ2.2mm*1	Φ2.2mm
Plastic optical fiber length	1m				
Housing material	Stainless steel				
Connectors	PVC				
Accessories	Nut (including gasket)				

Type diagram

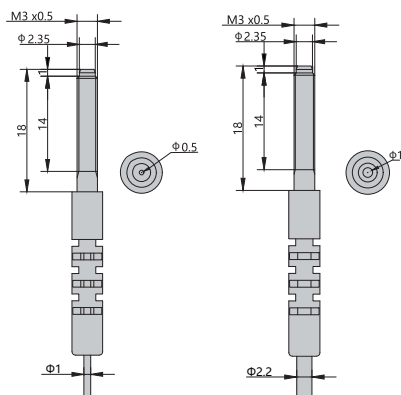
Through-beam photoelectric sensor



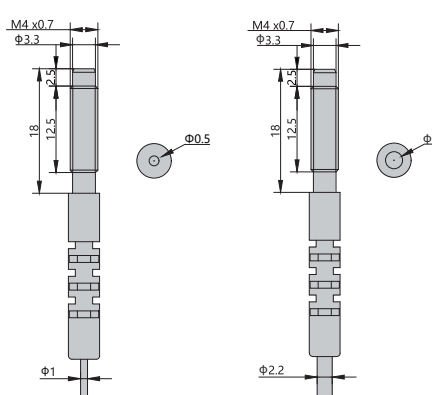
Through-beam photoelectric sensor is composed of independent emitter and receiver, which are separated from each other in structure. Emitter (E) directly transmits to the receiver (R). Please align the emitter and the receiver to establish light path. Whatever object blocks the light route, the receiver voltage will drop and switching condition will change.

Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)

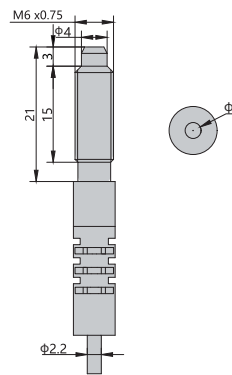
M3 Cable ①



M4 Cable ②



M6 Cable ③



Features:

- Precision, Stabilization;
- Performance optimization;
- Compact structure;
- Built-in short circuit protection, overload protection and polarity protection

Light curtain



1. Hand detection
2. Maximum Protection with Minimal Effort
3. STRONG - Rugged Exterior Increases Life & Decreases Downtime
4. Safe Zone Creation

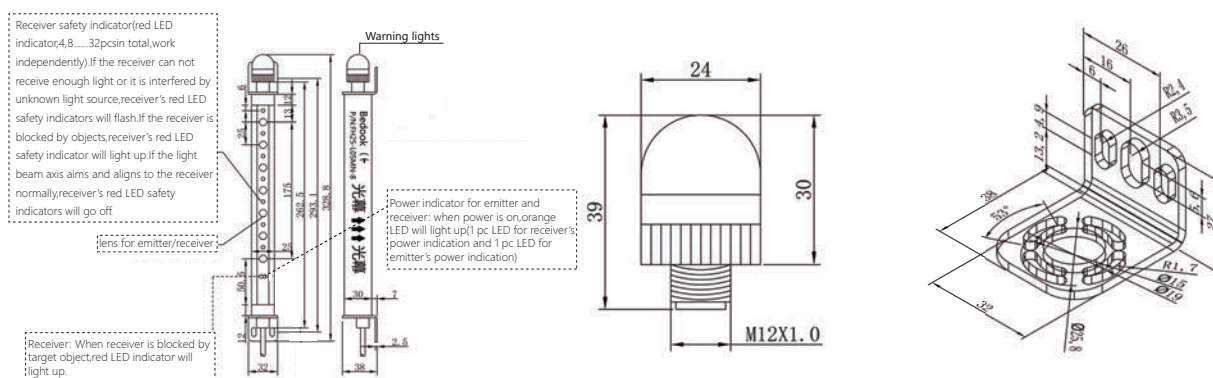
Technical data

Appearance

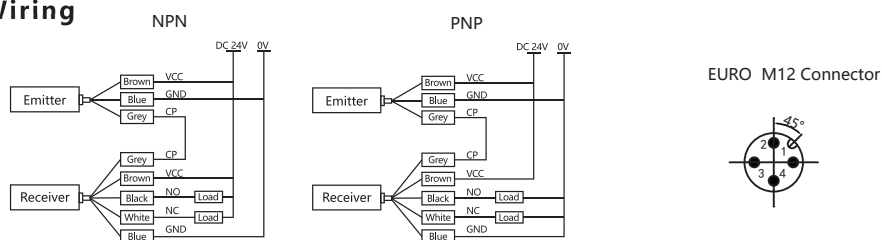


NPN	FH25-L05MN-8	FH25-L05MN-12	FH25-L05MN-16	FH25-L05MN-20	FH25-L05MN-24	FH25-L05MN-32
PNP	FH25-L05MP-8	FH25-L05MP-12	FH25-L05MP-16	FH25-L05MP-20	FH25-L05MP-24	FH25-L05MP-32
No.of beams	8	12	16	20	24	32
Detection height(A)	175	275	375	475	575	775
Light screen height(B)	262.5	362.5	462.5	562.5	662.5	8662.5
Mounting holes center distance(C)	293.1	393.1	493.1	593.1	693.1	893.1
Total height(D)	328.8	428.8	528.8	628.8	728.8	928.8
Operating Voltage	12-24V DC					
Light source	Infrared light 870nm					
Response Time	ON-12...50ms; OFF-12ms					
Load current	≤200mA					
Light immunity	Lamp light: <3000Lux/Sunlight: <10000Lux					
Ambient temperature	-10...55℃ with no icing					
Ambient humidity	35...85% with no condensation					
Housing material	Protective cover: PMMA;Housing: aluminum alloys; The upper&lower lid: zinc die-castings; Bracket: (316S12) ; Sealing ring: silicone resin					
Ingress protection	IP65					
LED indicator	Red LED					
Connectors	M12 Connecton+PVC Cable/200mm; 4*0.16mm ²					
Accessories	None					

Dimensioned drawing (Dimensional drawing ① corresponds to technical parameters - appearance column ①)



Wiring



EURO M12 Connector

