






## Opposed Mode

U: EP SERIES




Sensing Mode	Connection	Supply Voltage	Output Mode	Part Number
Light Source : infrared 880nm	2m Cable 	10-30V DC (10ms on/off)	Emitter	EP-T1800D-EY9C3L2
			NPN/PNP Light-ON	EP-T1800D-LY9C4U2
			NPN/PNP Dark-ON	EP-T1800D-DY9C4U2
			NPN/PNP L.O./D.O.	
	9m Cable 	10-30V DC (10ms on/off)	Emitter	EP-T1800D-EY9C3L9
			NPN/PNP Light-ON	EP-T1800D-LY9C4U9
			NPN/PNP Dark-ON	EP-T1800D-DY9C4U9
			NPN/PNP L.O./D.O.	
	Pico Style 4 Pins 6" Pigtail 	10-30V DC (10ms on/off)	Emitter	EP-T1800D-EY9P4LP
			NPN/PNP Light-ON	EP-T1800D-LY9P4UP
			NPN/PNP Dark-ON	EP-T1800D-DY9P4UP
			NPN/PNP L.O./D.O.	
Opposed Mode Sensing Distance: 1.8m	Euro Style 4 Pins 6" Pigtail 	10-30V DC (10ms on/off)	Emitter	EP-T1800D-EY9P4LE
			NPN/PNP Light-ON	EP-T1800D-LY9P4UE
			NPN/PNP Dark-ON	EP-T1800D-DY9P4UE
			NPN/PNP L.O./D.O.	
	Euro Style 4 Pins 6" Pigtail 	10-30V DC (1ms on/off)	Emitter	EP-T1800D-EY9P4LE-HS
			NPN/PNP Light-ON	EP-T1800D-LY9P4UE-HS
			NPN/PNP Dark-ON	EP-T1800D-DY9P4UE-HS
			NPN/PNP L.O./D.O.	

Note:

Coming Soon : Part numbers with underline

In Preparation: Part numbers with a line through the middle

Opposed Mode

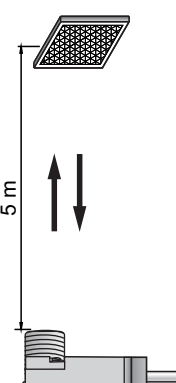




Sensing Mode	Connection	Supply Voltage	Output Mode	Part Number	
Light Source : infrared:880nm	2m Cable 	24-240V AC (10ms on/off)	Emitter (2-wire)	<u>EP-T1800A-EY9C2L2</u>	
			SPST Solid-state Light-ON (3-wire)	<u>EP-T1800A-LY9C3U2</u>	
			SPST Solid-state Dark-ON (3-wire)		
			SPST Solid-state Light-ON (2-wire)		
			SPST Solid-state Dark-ON (2-wire)		
			Emitter (2-wire)		
	12-240V DC/ 24-240V AC (10ms on/off)	SPST Solid-state Light-ON (2-wire)			
		SPST Solid-state Dark-ON (2-wire)			
		9m Cable 	24-240V AC (10ms on/off)	Emitter (2-wire)	<u>EP-T1800A-EY9C2L9</u>
				SPST Solid-state Light-ON (3-wire)	<u>EP-T1800A-LY9C3U9</u>
				SPST Solid-state Dark-ON (3-wire)	
				SPST Solid-state Light-ON (2-wire)	
SPST Solid-state Dark-ON (2-wire)					
Emitter (2-wire)					
12-240V DC/ 24-240V AC (10ms on/off)	SPST Solid-state Light-ON (2-wire)				
	SPST Solid-state Dark-ON (2-wire)				
	Micro Style 3Pins 6" Pigtail 	24-240V AC (10ms on/off)	Emitter (2-wire)	<u>EP-T1800A-EY9P3LM</u>	
			SPST Solid-state Light-ON (3-wire)	<u>EP-T1800A-LY9P3UM</u>	
			SPST Solid-state Dark-ON (3-wire)		
			SPST Solid-state Light-ON (2-wire)		
SPST Solid-state Dark-ON (2-wire)					
Emitter (2-wire)					
Opposed Mode Sensing Distance:1.8m	12-240V DC/ 24-240V AC (10ms on/off)	SPST Solid-state Light-ON (2-wire)			
		SPST Solid-state Dark-ON (2-wire)			
		SPST Solid-state Dark-ON (2-wire)			

Note:  
Coming Soon : Part numbers with underline  
In Preparation: Part numbers with a line through the middle

U : EP SERIES

Retroreflective Mode

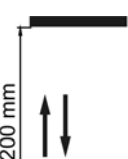




U: EP SERIES

Sensing Mode	Connection	Supply Voltage	Output Mode	Part Number
<p>Light Source: red light:650nm</p>  <p>5 m</p> <p>Retroreflective Mode Sensing Distance:5m (Note)</p>	<p>2m Cable</p> 	<p>10-30V DC (10ms on/off)</p>	NPN/PNP Light-ON	EP-L5000D-LY6C4U2
			NPN/PNP Dark-ON	EP-L5000D-DY6C4U2
			NPN/PNP L.O./D.O.	
		<p>10-30V DC (1ms on/off)</p>	NPN/PNP Light-ON	EP-L5000D-LY6C4U2-HS
			NPN/PNP Dark-ON	EP-L5000D-DY6C4U2-HS
			NPN/PNP L.O./D.O.	
	<p>9m Cable</p> 	<p>10-30V DC (10ms on/off)</p>	NPN/PNP Light-ON	EP-L5000D-LY6C4U9
			NPN/PNP Dark-ON	EP-L5000D-DY6C4U9
			NPN/PNP L.O./D.O.	
		<p>10-30V DC (1ms on/off)</p>	NPN/PNP Light-ON	EP-L5000D-LY6C4U9-HS
			NPN/PNP Dark-ON	EP-L5000D-DY6C4U9-HS
			NPN/PNP L.O./D.O.	
<p>Pico Style 4 Pins 6" Pigtail</p> 	<p>10-30V DC (10ms on/off)</p>	NPN/PNP Light-ON	EP-L5000D-LY6P4UP	
		NPN/PNP Dark-ON	EP-L5000D-DY6P4UP	
		NPN/PNP L.O./D.O.		
	<p>10-30V DC (1ms on/off)</p>	NPN/PNP Light-ON	EP-L5000D-LY6P4UP-HS	
		NPN/PNP Dark-ON	EP-L5000D-DY6P4UP-HS	
		NPN/PNP L.O./D.O.		
<p>Euro Style 4 Pins 6" Pigtail</p> 	<p>10-30V DC (10ms on/off)</p>	NPN/PNP Light-ON	EP-L5000D-LY6P4UE	
		NPN/PNP Dark-ON	EP-L5000D-DY6P4UE	
		NPN/PNP L.O./D.O.		
	<p>10-30V DC (1ms on/off)</p>	NPN/PNP Light-ON	EP-L5000D-LY6P4UE-HS	
		NPN/PNP Dark-ON	EP-L5000D-DY6P4UE-HS	
		NPN/PNP L.O./D.O.		

Note: Used with RE-6152 (supplied with sensor) reflector.  
 Coming Soon : Part numbers with underline  
 In Preparation: Part numbers with a line through the middle

## Diffuse Mode (Long range, Sn=200mm)

U: EP SERIES

Sensing Mode	Connection	Supply Voltage	Output Mode	Part Number
<p>Light Source: infrared 880nm</p>  <p>200 mm</p>	<p>2m Cable</p> 	<p>10-30V DC (10ms on/off)</p>	NPN/PNP Light-ON	EP-D0200D-LY9C4U2
			NPN/PNP Dark-ON	EP-D0200D-DY9C4U2
			NPN/PNP L.O./D.O.	
		<p>10-30V DC (1ms on/off)</p>	NPN/PNP Light-ON	EP-D0200D-LY9C4U2-HS
			NPN/PNP Dark-ON	EP-D0200D-DY9C4U2-HS
			NPN/PNP L.O./D.O.	
	<p>9m Cable</p> 	<p>10-30V DC (10ms on/off)</p>	NPN/PNP Light-ON	EP-D0200D-LY9C4U9
			NPN/PNP Dark-ON	EP-D0200D-DY9C4U9
			NPN/PNP L.O./D.O.	
		<p>10-30V DC (1ms on/off)</p>	NPN/PNP Light-ON	EP-D0200D-LY9C4U9-HS
			NPN/PNP Dark-ON	EP-D0200D-DY9C4U9-HS
			NPN/PNP L.O./D.O.	
<p>Pico Style 4 Pins 6" Pigtail</p> 	<p>10-30V DC (10ms on/off)</p>	NPN/PNP Light-ON	EP-D0200D-LY9P4UP	
		NPN/PNP Dark-ON	EP-D0200D-DY9P4UP	
		NPN/PNP L.O./D.O.		
	<p>10-30V DC (1ms on/off)</p>	NPN/PNP Light-ON	EP-D0200D-LY9P4UP-HS	
		NPN/PNP Dark-ON	EP-D0200D-DY9P4UP-HS	
		NPN/PNP L.O./D.O.		
<p>Euro Style 4 Pins 6" Pigtail</p> 	<p>10-30V DC (10ms on/off)</p>	NPN/PNP Light-ON	EP-D0200D-LY9P4UE	
		NPN/PNP Dark-ON	EP-D0200D-DY9P4UE	
		NPN/PNP L.O./D.O.		
	<p>10-30V DC (1ms on/off)</p>	NPN/PNP Light-ON	EP-D0200D-LY9P4UE-HS	
		NPN/PNP Dark-ON	EP-D0200D-DY9P4UE-HS	
		NPN/PNP L.O./D.O.		

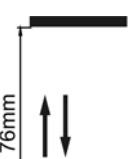




**Note:**

Coming Soon : Part numbers with underline

In Preparation: Part numbers with a line through the middle

## Diffuse Mode (Standard range, Sn=76mm)

U: EP SERIES

Sensing Mode	Connection	Supply Voltage	Output Mode	Part Number
<p>Light Source: infrared 880nm</p>  <p>76mm</p> <p>Diffused Mode Sensing Distance: 76mm</p>	<p>2m Cable</p> 	<p>10-30V DC (10ms on/off)</p>	NPN/PNP Light-ON	EP-D0076D-LY9C4U2
			NPN/PNP Dark-ON	EP-D0076D-DY9C4U2
			NPN/PNP L.O./D.O.	
		<p>10-30V DC (1ms on/off)</p>	NPN/PNP Light-ON	EP-D0076D-LY9C4U2-HS
			NPN/PNP Dark-ON	EP-D0076D-DY9C4U2-HS
			NPN/PNP L.O./D.O.	
	<p>9m Cable</p> 	<p>10-30V DC (10ms on/off)</p>	NPN/PNP Light-ON	EP-D0076D-LY9C4U9
			NPN/PNP Dark-ON	EP-D0076D-DY9C4U9
			NPN/PNP L.O./D.O.	
		<p>10-30V DC (1ms on/off)</p>	NPN/PNP Light-ON	EP-D0076D-LY9C4U9-HS
			NPN/PNP Dark-ON	EP-D0076D-DY9C4U9-HS
			NPN/PNP L.O./D.O.	
<p>Pico Style 4 Pins 6" Pigtail</p> 	<p>10-30V DC (10ms on/off)</p>	NPN/PNP Light-ON	EP-D0076D-LY9P4UP	
		NPN/PNP Dark-ON	EP-D0076D-DY9P4UP	
		NPN/PNP L.O./D.O.		
	<p>10-30V DC (1ms on/off)</p>	NPN/PNP Light-ON	EP-D0076D-LY9P4UP-HS	
		NPN/PNP Dark-ON	EP-D0076D-DY9P4UP-HS	
		NPN/PNP L.O./D.O.		
<p>Euro Style 4 Pins 6" Pigtail</p> 	<p>10-30V DC (10ms on/off)</p>	NPN/PNP Light-ON	EP-D0076D-LY9P4UE	
		NPN/PNP Dark-ON	EP-D0076D-DY9P4UE	
		NPN/PNP L.O./D.O.		
	<p>10-30V DC (1ms on/off)</p>	NPN/PNP Light-ON	EP-D0076D-LY9P4UE-HS	
		NPN/PNP Dark-ON	EP-D0076D-DY9P4UE-HS	
		NPN/PNP L.O./D.O.		

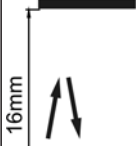




**Note:**

Coming Soon : Part numbers with underline

In Preparation: Part numbers with a line through the middle

## Convergent Mode

U: EP SERIES

Sensing Mode	Connection	Supply Voltage	Output Mode	Part Number
<p>Light Source: red light 650nm</p>  <p>16mm</p> <p>Convergent Mode Sensing Distance: 16mm</p>	<p>2m Cable</p> 	<p>10-30V DC (10ms on/off)</p>	NPN/PNP Light-ON	EP-C0016D-LY6C4U2
			NPN/PNP Dark-ON	EP-C0016D-DY6C4U2
			NPN/PNP L.O./D.O.	
		<p>10-30V DC (1ms on/off)</p>	NPN/PNP Light-ON	EP-C0016D-LY6C4U2-HS
			NPN/PNP Dark-ON	EP-C0016D-DY6C4U2-HS
			NPN/PNP L.O./D.O.	
	<p>9m Cable</p> 	<p>10-30V DC (10ms on/off)</p>	NPN/PNP Light-ON	EP-C0016D-LY6C4U9
			NPN/PNP Dark-ON	EP-C0016D-DY6C4U9
			NPN/PNP L.O./D.O.	
		<p>10-30V DC (1ms on/off)</p>	NPN/PNP Light-ON	EP-C0016D-LY6C4U9-HS
			NPN/PNP Dark-ON	EP-C0016D-DY6C4U9-HS
			NPN/PNP L.O./D.O.	
<p>Pico Style 4 Pins 6" Pigtail</p> 	<p>10-30V DC (10ms on/off)</p>	NPN/PNP Light-ON	EP-C0016D-LY6P4UP	
		NPN/PNP Dark-ON	EP-C0016D-DY6P4UP	
		NPN/PNP L.O./D.O.		
	<p>10-30V DC (1ms on/off)</p>	NPN/PNP Light-ON	EP-C0016D-LY6P4UP-HS	
		NPN/PNP Dark-ON	EP-C0016D-DY6P4UP-HS	
		NPN/PNP L.O./D.O.		
<p>Euro Style 4 Pins 6" Pigtail</p> 	<p>10-30V DC (10ms on/off)</p>	NPN/PNP Light-ON	EP-C0016D-LY6P4UE	
		NPN/PNP Dark-ON	EP-C0016D-DY6P4UE	
		NPN/PNP L.O./D.O.		
	<p>10-30V DC (1ms on/off)</p>	NPN/PNP Light-ON	EP-C0016D-LY6P4UE-HS	
		NPN/PNP Dark-ON	EP-C0016D-DY6P4UE-HS	
		NPN/PNP L.O./D.O.		

**Note:**

Coming Soon : Part numbers with underline  
 In Preparation: Part numbers with a line through the middle

Specifications (DC)

U: EP SERIES

Sensing Mode Item	DC					
	Opposed Mode	Retroreflective	Diffuse Mode	Convergent	Glass Fiber	Plastic Fiber
Sensing Range	See each mode					
Hysteresis	—					
Operating Voltage	10~30V DC					
Ripple	< 10%					
Voltage Drop	<2.0V at 150mA					
Max Load Current	150mA					
No Load Current	<25mA					
Min. Load Current	5mA					
Leakage Current	<1mA					
Output Configuration	Bipolar: One current sourcing (PNP) and one current sinking (NPN) open-collector transistor					
Environmental Rating	Meets NEMA standards 1, 2, 3s, 4, 12, and 13; IEC IP66 when assembled to sensor head					
Indicators	Red indicator LED on rear or sensor is "on" when the load is energized					
Transient Protection	Yes					
Reverse Polarity Protection	Yes					
Short Circuit Protection	Yes					
Over Load Current Protection	>180mA					
Output Response Time	10ms or 1ms(High-speed type)					
Construction	Reinforced thermoplastic polyester housing, totally encapsulated, o-ring sealing, acrylic lenses, and stainless screws.					
Enclosure Rating	IP66					
Operating Conditions	Temperature: 0°...50°C, Maximum relative humidity: 90% at 50°C (non-condensing)					
EMC	IEC 60947-5-2, Parts 7.2.6.1. 2. 3 or RFI>3V/m(in 30-1000MHZ), EFT>1KV, ESD>4KV(contact)					
Voltage Withstand Ability	IEC 60947-5-2, Part 8.3.3.4 or 500VDC for one min, between all supply terminals connected together and enclosure					
Insulation Resistance	>20M $\Omega$ , with 500V DC megger between all supply terminals connected together and enclosure					
Vibration Resistance	IEC 60947-5-2, Part 7.4.2 or 10-55HZ, 1.0mm amplitude in x , y and z directions for 30 min					
Shock Resistance	IEC 60947-5-2, Part 7.4.1 or 30g, 11ms in x , y and z directions for six time each					
Cable	2m or 9m 5.8 $\phi$ 4X0.5 (Emitter :2X0.5) PVC.					
Pigtail Type	See Pigtail Series or our Cables & Connectors catalogue.					

Specifications (AC)

Sensing Mode Item	AC					
	Opposed Mode	Retroreflective	Diffuse Mode	Convergent	Glass Fiber	Plastic Fiber
Sensing Range	See each mode					
Hysteresis	<20 % of sensing distance (only for diffuse mode)					
Operating Voltage	24~240V AC (50/60HZ)					
Output Configuration	SPST MOSFET solid-state relay with either normally closed or normally open contact 2-wire or 3-wire hookup (by type number)					
Voltage Drop	<10V at 200mA					
Max Load Current	≤200mA					
No Load Current	≤1.7mA					
Min. Load Current	≥5mA					
Leakage Current	≤1.7mA					
Transient Protection	Yes					
Short Circuit Protection	Yes					
Over Load Current Protection	≥220mA					
Response Time	10 ms					
Construction	Reinforced thermoplastic polyester housing, totally encapsulated, o-ring sealing, acrylic lenses, and stainless screws.					
Indicators	Red indicator LED on rear or sensor is "on" when the load is energized					
Enclosure Rating	IP66					
Operating Temperature	Temperature: 0°to +50°C, Maximum relative humidity: 90% at 50°C					
EMC	IEC 60947-5-2, Parts 7.2.6.1. 2. 3 or RFI>3V/m(in 30-1000MHZ), EFT>1KV, ESD>4KV(contact)					
Voltage Withstand Ability	IEC 60947-5-2, Part 8.3.3.4 or 1500VAC for one min, between all supply terminals connected together and enclosure					
Insulation Resistance	>20MΩ, with 1500V AC megger between all supply terminals connected together and enclosure					
Vibration Resistance	IEC 60947-5-2, Part 7.4.2 or 10-55HZ, 1.0mm amplitude in x , y and z directions for 30 min					
Shock Resistance	IEC 60947-5-2, Part 7.4.1 or 30g, 11ms in x , y and z directions for six time each					
Cable	2m or 9m 5.8 ϕ 2x0.5 or 3x0.5 (Emitter of thru-beam mode :2x0.5) PVC.					
Pigtail Type	See page Pigtail Series or our Cables & Connectors catalogue					

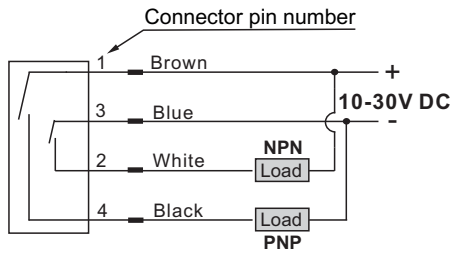
Specifications (AC/DC)

U: EP SERIES

Sensing Mode Item	AC/DC					
	Opposed Mode	Retroreflective	Diffuse Mode	Convergent	Glass Fiber	Plastic Fiber
Sensing Range	See each mode					
Hysteresis	<20 % of sensing distance (only for diffuse mode)					
Operating Voltage	12~240VDC / 24~240V AC					
Output Configuration	SPST MOSFET solid-state relay with either normally closed or normally open contact ; 2-wire hookup					
Voltage Drop	<10V @ 200mA					
Max Load Current	≤ 200mA					
No Load Current	≤ 25mA					
Min. Load Current	≥ 5mA					
Leakage Current	≤ 1.7mA					
Transient Protection	Yes					
Short Circuit Protection	Yes					
Over Load Current Protection	≥ 220mA					
Response Time	10 ms					
Construction	Reinforced thermoplastic polyester housing, totally encapsulated, o-ring sealing, acrylic lenses, and stainless screws.					
Indicators	Red indicator LED on rear or sensor is "on" when the load is energized					
Enclosure Rating	IP66					
Operating Temperature	Temperature: 0° to +50°C, Maximum relative humidity: 90% at 50°C					
EMC	IEC 60947-5-2, Parts 7.2.6.1. 2. 3 or RFI>3V/m(in 30-1000MHZ), EFT>1KV, ESD>4KV(contact)					
Voltage Withstand Ability	IEC 60947-5-2, Part 8.3.3.4 or 1500VAC for one min, between all supply terminals connected together and enclosure					
Insulation Resistance	>20MΩ, with 1500V AC megger between all supply terminals connected together and enclosure					
Vibration Resistance	IEC 60947-5-2, Part 7.4.2 or 10-55HZ, 1.0mm amplitude in x , y and z directions for 30 min					
Shock Resistance	IEC 60947-5-2, Part 7.4.1 or 30g, 11ms in x , y and z directions for six time each					
Cable	2m or 9m 5.8 φ 2x0.5 PVC.					
Pigtail Type	See page Pigtail Series or our Cables & Connectors catalogue					

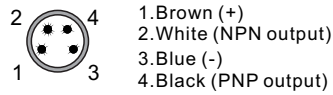
## Connection Diagrams

### NPN/PNP Light-On or Dark-ON output



#### Connector pin position

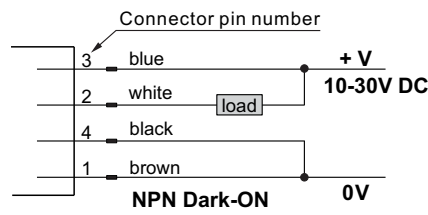
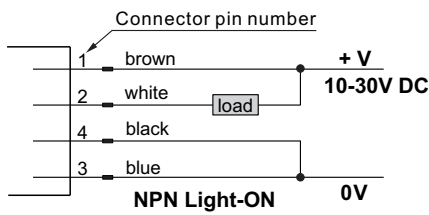
##### Pico-Style



##### Euro-style



### NPN/PNP Light-ON/Dark-ON changeover output

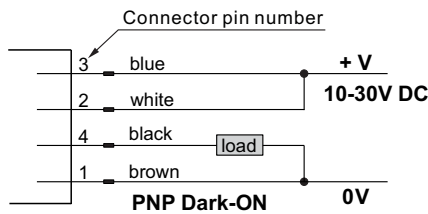
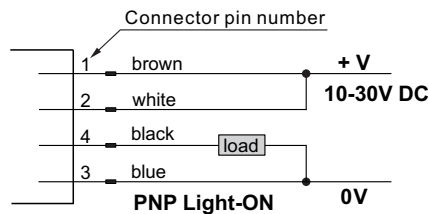
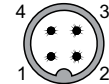


#### Connector pin position

##### Pico-Style

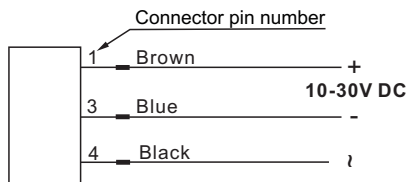


##### Euro-style



- 1. Brown
- 2. White
- 3. Blue
- 4. Black

### Emitter of Thru-beam Mode (DC)

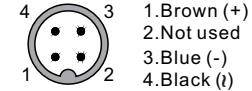


#### Connector pin position

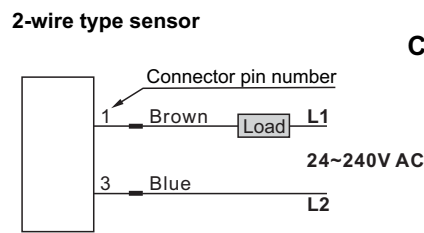
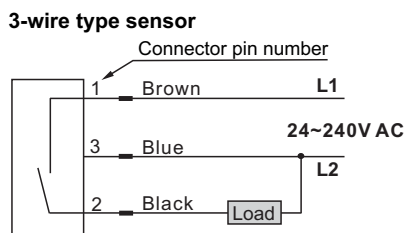
##### Pico-Style



##### Euro-style



### SPST Solid-state output (AC)

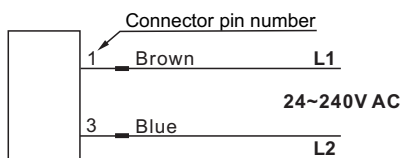


#### Connector face view

##### Micro-style

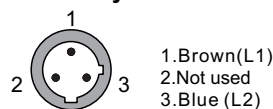


### Emitter of Thru-beam Mode (AC)

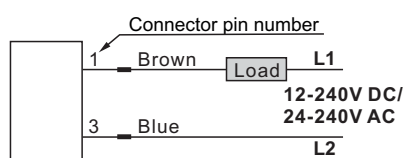


#### Connector face view

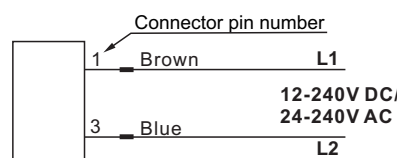
##### Micro-style



### SPST Solid-state output (AC/DC)

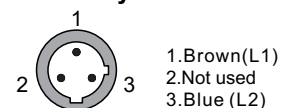


### Emitter of Thru-beam Mode (AC/DC)



#### Connector face view

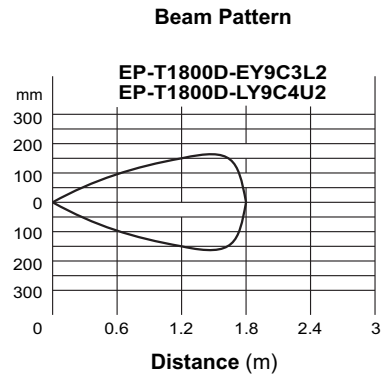
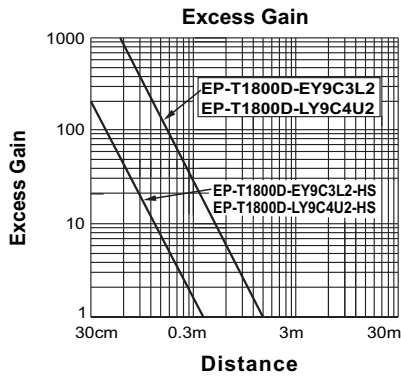
##### Micro-style



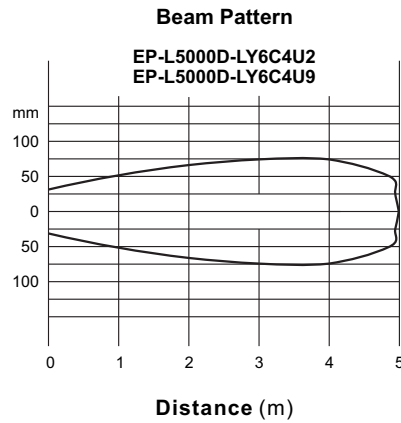
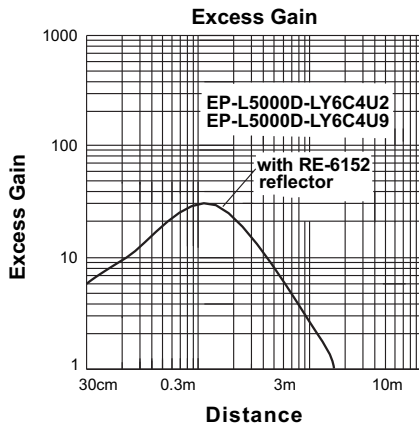
Sensing Characteristics (Typical)

U: EP SERIES

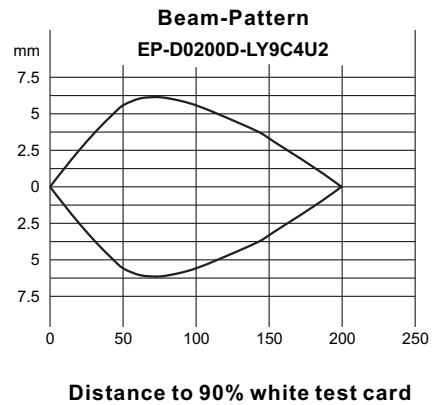
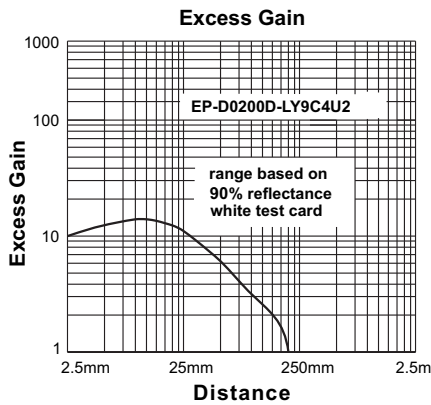
Opposed Mode (Sn=1.8m)



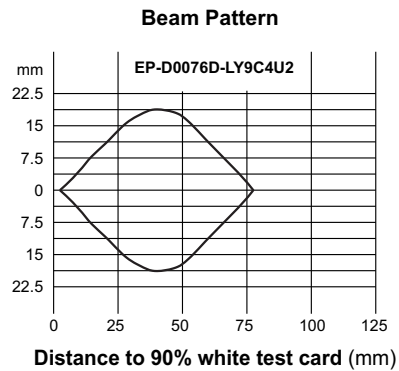
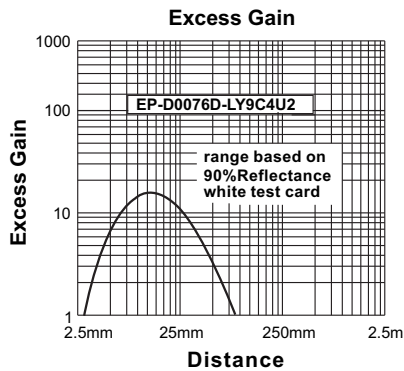
Retroreflective Mode (Sn=5m)



Diffused Mode (Sn=200mm)

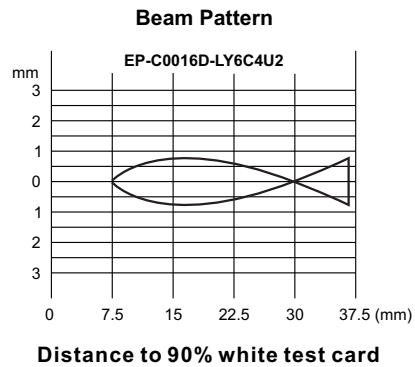
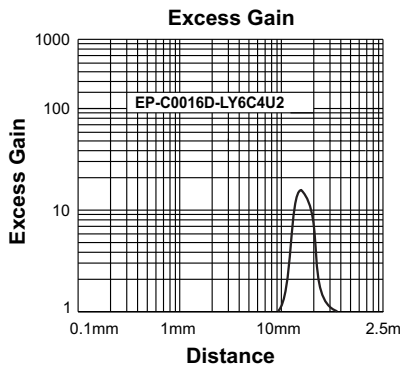


Diffused Mode (Sn=76mm)

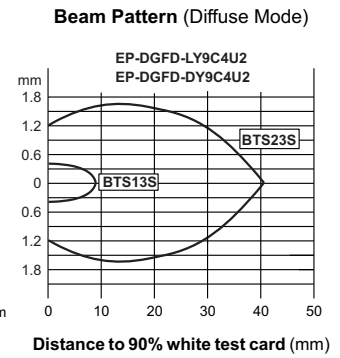
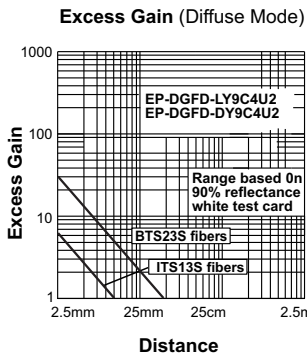
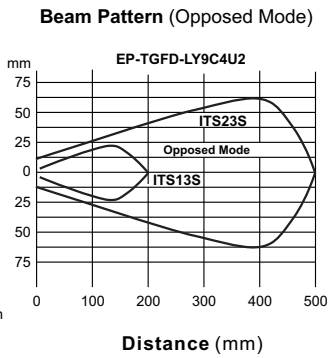
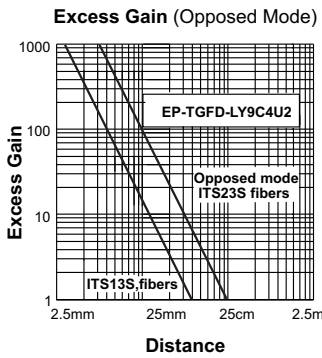


Sensing Characteristics (Typical)

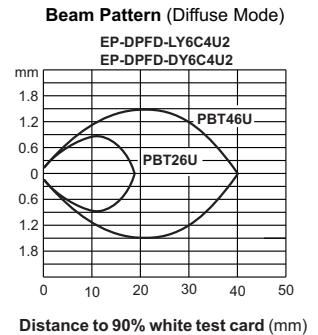
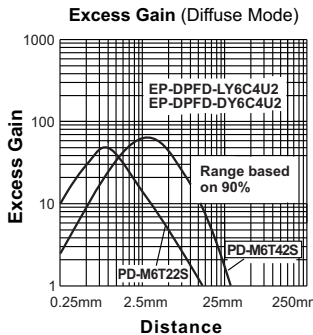
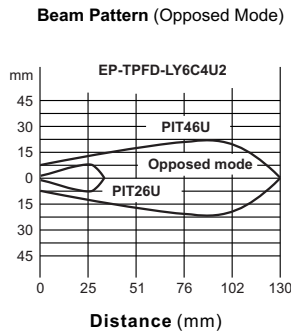
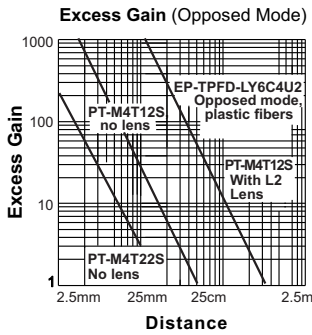
Convergent Mode



Glass Fiber Optic



Plastic Fiber Optic

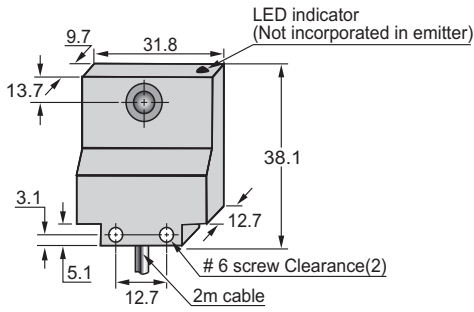


U : EP SERIES

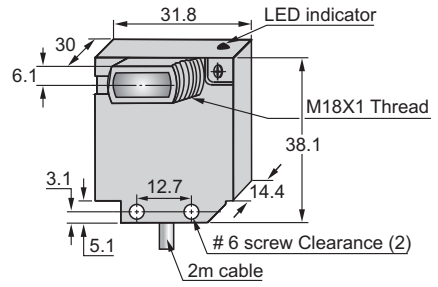
## Dimensions (Unit: mm)

U: EP SERIES

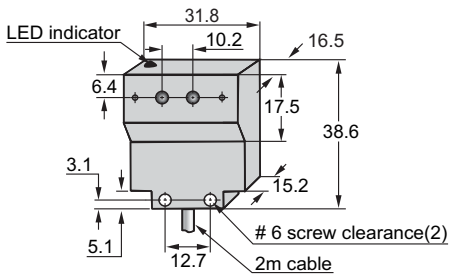
### Opposed Sensor



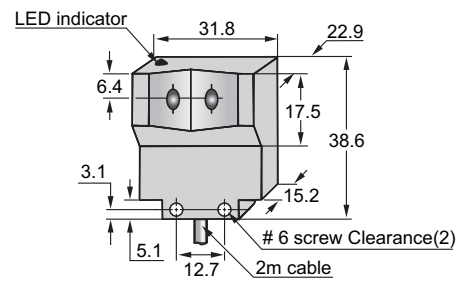
### Retroreflective Sensor



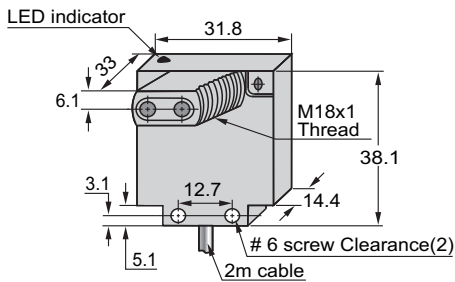
### Diffuse Sensor



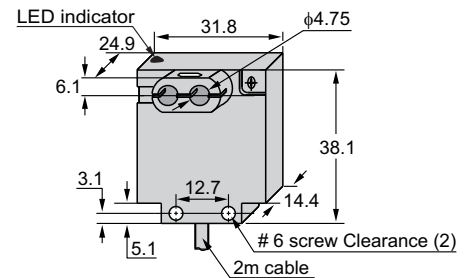
### Convergent Sensor



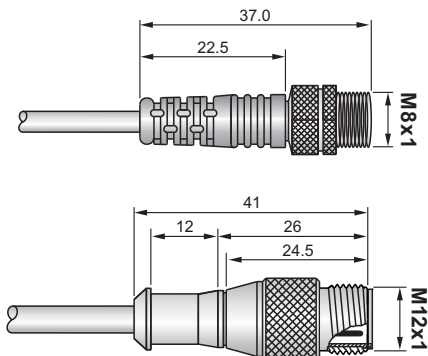
### Glass Fiber Sensor



### Plastic Fiber Sensor



### Pigtail\* Type



\*: Please see **Pigtail Series** or our **Cables & Connectors** catalogue for more information.