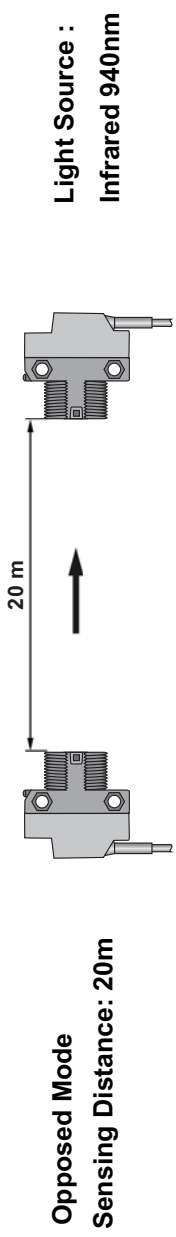







## Opposed Mode (Long Range, Sn=20m)

V: TF18 SERIES







Sensing Mode	Connection	Supply Voltage	Output Mode	Part Number	
<p>Light Source : Infrared 940nm</p>  <p>Opposed Mode Sensing Distance: 20m</p>	2m Cable	10-30V DC	Emitter	<u>TF18-T020MD-EY9G2L2</u>	
			NPN	<u>TF18-T020MN-CY9G4U2</u>	
			PNP	<u>TF18-T020MP-CY9G4U2</u>	
	Pico Style 4 Pins QD		10-30V DC	Emitter	<u>TF18-T020MD-EY9Q4LP</u>
				NPN	<u>TF18-T020MN-CY9Q4UP</u>
				PNP	<u>TF18-T020MP-CY9Q4UP</u>
	Euro Style 4 Pins QD		10-30V DC	Emitter	<u>TF18-T020MD-EY9Q4LE</u>
				NPN	<u>TF18-T020MN-CY9Q4UE</u>
				PNP	<u>TF18-T020MP-CY9Q4UE</u>
	Pico Style 4 Pins 6" Pigtail		10-30V DC	Emitter	<u>TF18-T020MD-EY9P4LP</u>
				NPN	<u>TF18-T020MN-CY9P4UP</u>
				PNP	<u>TF18-T020MP-CY9P4UP</u>
Euro Style 4 Pins 6" Pigtail		10-30V DC	Emitter	<u>TF18-T020MD-EY9P4LE</u>	
			NPN	<u>TF18-T020MN-CY9P4UE</u>	
			PNP	<u>TF18-T020MP-CY9P4UE</u>	

Note:

Coming Soon : Part numbers with underline

In Preparation: Part numbers with a line through the middle

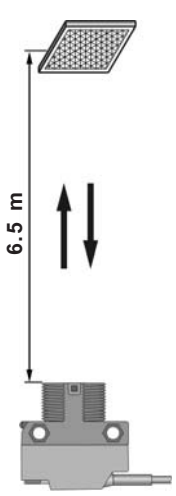





## Opposed Mode (Standard Range, Sn=3m)

Sensing Mode	Connection	Supply Voltage	Output Mode	Part Number
<p>Light Source : infrared 940nm</p>  <p>3 m</p> <p>Opposed Mode Sensing Distance: 3m</p>	<p>2m Cable</p> 	10-30V DC	Emitter	<u>TF18-T3000D-EY9C2L2</u>
			NPN	<u>TF18-T3000N-CY9C4U2</u>
			PNP	<u>TF18-T3000P-CY9C4U2</u>
	<p>Pico Style 4 Pins QD</p> 	10-30V DC	Emitter	<u>TF18-T3000D-EY9Q4LP</u>
			NPN	<u>TF18-T3000N-CY9Q4UP</u>
			PNP	<u>TF18-T3000P-CY9Q4UP</u>
	<p>Euro Style 4 Pins QD</p> 	10-30V DC	Emitter	<u>TF18-T3000D-EY9Q4LE</u>
			NPN	<u>TF18-T3000N-CY9Q4UE</u>
			PNP	<u>TF18-T3000P-CY9Q4UE</u>
<p>Pico Style 4 Pins 6" Pigtail</p> 	10-30V DC	Emitter	<u>TF18-T3000D-EY9P4LP</u>	
		NPN	<u>TF18-T3000N-CY9P4UP</u>	
		PNP	<u>TF18-T3000P-CY9P4UP</u>	
	<p>Euro Style 4 Pins 6" Pigtail</p> 	10-30V DC	Emitter	<u>TF18-T3000D-EY9P4LE</u>
			NPN	<u>TF18-T3000N-CY9P4UE</u>
			PNP	<u>TF18-T3000P-CY9P4UE</u>

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







## Retroreflective Mode (Sn=6.5m)

V: TF18 SERIES

Sensing Mode	Connection	Supply Voltage	Output Mode	Part Number
<p>Light Source : Red Light 660nm</p>  <p>6.5 m</p> <p>Retroreflective Mode Sensing Distance: 6.5m (Note)</p>	2m Cable	10-30V DC	NPN	<u>TF18-L6500N-CY6G4U2</u>
			PNP	<u>TF18-L6500P-CY6G4U2</u>
	Pico Style 4 Pins QD	10-30V DC	NPN	<u>TF18-L6500N-CY6Q4UP</u>
			PNP	<u>TF18-L6500P-CY6Q4UP</u>
	Euro Style 4 Pins QD	10-30V DC	NPN	<u>TF18-L6500N-CY6Q4UE</u>
			PNP	<u>TF18-L6500P-CY6Q4UE</u>
	Pico Style 4 Pins 6" Pigtail	10-30V DC	NPN	<u>TF18-L6500N-CY6P4UP</u>
			PNP	<u>TF18-L6500P-CY6P4UP</u>
	Euro Style 4 Pins 6" Pigtail	10-30V DC	NPN	<u>TF18-L6500N-CY6P4UE</u>
			PNP	<u>TF18-L6500P-CY6P4UE</u>

**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

## Retroreflective Mode with Polarizing Filter (Sn=3.5m)

Sensing Mode	Connection	Supply Voltage	Output Mode	Part Number
<p>Light Source : Red Light 660nm</p>  <p>3.5 m</p> <p>Retroreflective Mode with Polarizing Filter Sensing Distance: 3.5m (Note)</p>	2m Cable	10-30V DC	NPN	<u>TF18-L3500N-CY6C4U2-PF</u>
			PNP	<u>TF18-L3500P-CY6C4U2-PF</u>
	Pico Style 4 Pins QD	10-30V DC	NPN	<u>TF18-L3500N-CY6Q4UP-PF</u>
			PNP	<u>TF18-L3500P-CY6Q4UP-PF</u>
	Euro Style 4 Pins QD	10-30V DC	NPN	<u>TF18-L3500N-CY6Q4UE-PF</u>
			PNP	<u>TF18-L3500P-CY6Q4UE-PF</u>
	Pico Style 4 Pins 6" Pigtail	10-30V DC	NPN	<u>TF18-L3500N-CY6P4UP-PF</u>
			PNP	<u>TF18-L3500P-CY6P4UP-PF</u>
	Euro Style 4 Pins 6" Pigtail	10-30V DC	NPN	<u>TF18-L3500N-CY6P4UE-PF</u>
			PNP	<u>TF18-L3500P-CY6P4UE-PF</u>

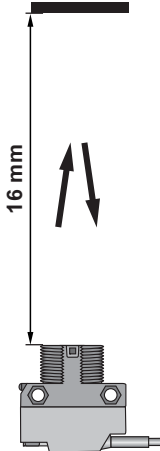





Note: Used with RE-6152 (supplied with sensor) reflector.

Coming Soon : Part numbers with underline

In Preparation: Part numbers with a line through the middle

## Standard Convergent Mode (Sn=16mm)

V: TF18 SERIES

Sensing Mode	Connection	Supply Voltage	Output Mode	Part Number
<p>Light Source : Red Light 660nm</p>  <p>16 mm</p> <p>Convergent Mode Sensing Distance: 16mm</p>	2m Cable	10-30V DC	NPN	<u>TF18-C0016N-CY6G4U2</u>
			PNP	<u>TF18-C0016P-CY6G4U2</u>
	Pico Style 4 Pins QD	10-30V DC	NPN	<u>TF18-C0016N-CY6Q4UP</u>
			PNP	<u>TF18-C0016P-CY6Q4UP</u>
	Euro Style 4 Pins QD	10-30V DC	NPN	<u>TF18-C0016N-CY6Q4UE</u>
			PNP	<u>TF18-C0016P-CY6Q4UE</u>
	Pico Style 4 Pins 6" Pigtail	10-30V DC	NPN	<u>TF18-C0016N-CY6P4UP</u>
			PNP	<u>TF18-C0016P-CY6P4UP</u>
	Euro Style 4 Pins 6" Pigtail	10-30V DC	NPN	<u>TF18-C0016N-CY6P4UE</u>
			PNP	<u>TF18-C0016P-CY6P4UE</u>







Note:

Coming Soon : Part numbers with underline

In Preparation: Part numbers with a line through the middle

## Long Range Convergent Mode (Sn=43mm)

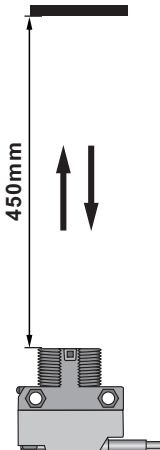





V: TF18 SERIES

Sensing Mode	Connection	Supply Voltage	Output Mode	Part Number
<p>Light Source : Red Light 660nm</p>  <p>43 mm</p>	2m Cable	10-30V DC	NPN	<u>TF18-C0043N-CY6G4U2</u>
			PNP	<u>TF18-C0043P-CY6G4U2</u>
	Pico Style 4 Pins QD	10-30V DC	NPN	<u>TF18-C0043N-CY6Q4UP</u>
			PNP	<u>TF18-C0043P-CY6Q4UP</u>
	Euro Style 4 Pins QD	10-30V DC	NPN	<u>TF18-C0043N-CY6Q4UE</u>
			PNP	<u>TF18-C0043P-CY6Q4UE</u>
<p>Convergent Mode Sensing Distance: 43mm</p>	Pico Style 4 Pins 6" Pigtail	10-30V DC	NPN	<u>TF18-C0043N-CY6P4UP</u>
			PNP	<u>TF18-C0043P-CY6P4UP</u>
	Euro Style 4 Pins 6" Pigtail	10-30V DC	NPN	<u>TF18-C0043N-CY6P4UE</u>
			PNP	<u>TF18-C0043P-CY6P4UE</u>

Note:  
 Coming Soon : Part numbers with underline  
 In Preparation: Part numbers with a line through the middle  
 — V-06 —

## Diffuse Mode (Sn=450mm)

V: TF18 SERIES

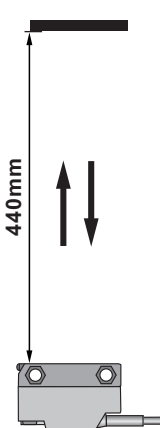





Sensing Mode	Connection	Supply Voltage	Output Mode	Part Number
<p>Light Source : infrared 940nm</p>  <p>450mm</p> <p>Diffuse Mode Sensing Distance: 450mm</p>	<p>2m Cable</p> 	10-30V DC	NPN	<u>TF18-D0450N-CY9C4U2</u>
			PNP	<u>TF18-D0450P-CY9C4U2</u>
	<p>Pico Style 4 Pins QD</p> 	10-30V DC	NPN	<u>TF18-D0450N-CY9Q4UP</u>
			PNP	<u>TF18-T0450P-CY9Q4UP</u>
	<p>Euro Style 4 Pins QD</p> 	10-30V DC	NPN	<u>TF18-D0450N-CY9Q4UE</u>
			PNP	<u>TF18-D0450P-CY9Q4UE</u>
	<p>Pico Style 4 Pins 6" Pigtail</p> 	10-30V DC	NPN	<u>TF18-D0450N-CY9P4UP</u>
			PNP	<u>TF18-D0450P-CY9P4UP</u>
	<p>Euro Style 4 Pins 6" Pigtail</p> 	10-30V DC	NPN	<u>TF18-D0450N-CY9P4UE</u>
			PNP	<u>TF18-D0450P-CY9P4UE</u>

Note:

Coming Soon : Part numbers with underline

In Preparation: Part numbers with a line through the middle

## Diffuse Mode (Sn=440mm)

Sensing Mode	Connection	Supply Voltage	Output Mode	Part Number
Light Source : Infrared 940nm  	2m Cable  	10-30V DC	NPN	<u>TF18-D0440N-CY9C4U2</u>
			PNP	<u>TF18-D0440P-CY9C4U2</u>
	Pico Style 4 Pins QD  	10-30V DC	NPN	<u>TF18-D0440N-CY9Q4UP</u>
			PNP	<u>TF18-T0440P-CY9Q4UP</u>
	Euro Style 4 Pins QD  	10-30V DC	NPN	<u>TF18-D0440N-CY9Q4UE</u>
			PNP	<u>TF18-D0440P-CY9Q4UE</u>
Diffuse Mode Sensing Distance: 440mm	Pico Style 4 Pins 6" Pigtail  	10-30V DC	NPN	<u>TF18-D0440N-CY9P4UP</u>
			PNP	<u>TF18-D0440P-CY9P4UP</u>
	Euro Style 4 Pins 6" Pigtail  	10-30V DC	NPN	<u>TF18-D0440N-CY9P4UE</u>
			PNP	<u>TF18-D0440P-CY9P4UE</u>






**Note:**  
 Coming Soon : Part numbers with underline  
 In Preparation: Part numbers with a line through the middle  
 — V-08 —

V: TF18 SERIES



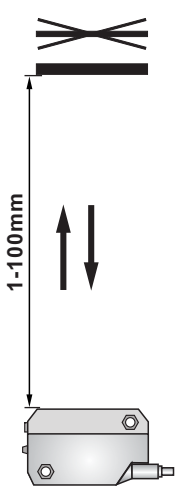





## Divergent Diffuse Mode (Sn=100mm)

V: TF18 SERIES

Sensing Mode	Connection	Supply Voltage	Output Mode	Part Number
<p>Light Source : Infrared 940nm</p> <p>100mm</p> <p>Divergent Diffuse Mode Sensing Distance: 100mm</p>	2m Cable	10-30V DC	NPN	<u>TF18-D0100N-CY9G4U2</u>
			PNP	<u>TF18-D0100P-CY9G4U2</u>
	Pico Style 4 Pins QD	10-30V DC	NPN	<u>TF18-D0100N-CY9Q4UP</u>
			PNP	<u>TF18-D0100P-CY9Q4UP</u>
	Euro Style 4 Pins QD	10-30V DC	NPN	<u>TF18-D0100N-CY9Q4UE</u>
			PNP	<u>TF18-D0100P-CY9Q4UE</u>
	Pico Style 4 Pins 6" Pigtail	10-30V DC	NPN	<u>TF18-D0100N-CY9P4UP</u>
			PNP	<u>TF18-D0100P-CY9P4UP</u>
	Euro Style 4 Pins 6" Pigtail	10-30V DC	NPN	<u>TF18-D0100N-CY9P4UE</u>
			PNP	<u>TF18-D0100P-CY9P4UE</u>

Note:

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

Sensing Mode	Connection	Supply Voltage	Output Mode	Part Number
<p>Light Source : Red 660nm</p>  <p>1-100mm</p> <p>Diffuse Mode (with background suppression) Sensing Distance: 1-100mm</p>	2m Cable	10-30V DC	NPN	<u>TF18-D0100N-CY6C4U2-BS</u>
			PNP	<u>TF18-D0100P-CY6C4U2-BS</u>
	Pico Style 4 Pins QD	10-30V DC	NPN	<u>TF18-D0100N-CY6Q4UP-BS</u>
			PNP	<u>TF18-D0100P-CY6Q4UP-BS</u>
	Euro Style 4 Pins QD	10-30V DC	NPN	<u>TF18-D0100N-CY6Q4UE-BS</u>
			PNP	<u>TF18-D0100P-CY6Q4UE-BS</u>
	Pico Style 4 Pins 6" Pigtail	10-30V DC	NPN	<u>TF18-D0100N-CY6P4UP-BS</u>
			PNP	<u>TF18-D0100P-CY6P4UP-BS</u>
	Euro Style 4 Pins 6" Pigtail	10-30V DC	NPN	<u>TF18-D0100N-CY6P4UE-BS</u>
			PNP	<u>TF18-D0100P-CY6P4UE-BS</u>




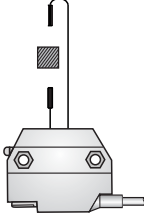


Note:

Coming Soon : Part numbers with underline

In Preparation: Part numbers with a line through the middle

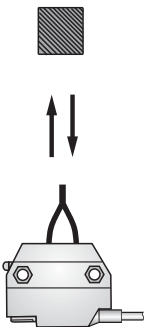





## Plastic Fiber Optic Opposed Mode

V: TF18 SERIES

Sensing Mode	Connection	Supply Voltage	Output Mode	Part Number
Light Source : Red 660nm	2m Cable 	10-30V DC	NPN	<del>TF18-TPFN-CY6G4U2</del>
			PNP	<del>TF18-TPFP-CY6G4U2</del>
	Pico Style 4 Pins QD 	10-30V DC	NPN	<del>TF18-TPFN-CY6Q4UP</del>
			PNP	<del>TF18-TPFP-CY6Q4UP</del>
	Euro Style 4 Pins QD 	10-30V DC	NPN	<del>TF18-TPFN-CY6Q4UE</del>
			PNP	<del>TF18-TPFP-CY6Q4UE</del>
Plastic Fiber Optic Opposed Mode Sensing Distance: (Note) 	Pico Style 4 Pins 6" Pigtail 	10-30V DC	NPN	<del>TF18-TPFN-CY6P4UP</del>
			PNP	<del>TF18-TPFP-CY6P4UP</del>
	Euro Style 4 Pins 6" Pigtail 	10-30V DC	NPN	<del>TF18-TPFN-CY6P4UE</del>
			PNP	<del>TF18-TPFP-CY6P4UE</del>

**Note:** Depends on fiber optic used (Please see our **Glass Fiber & Plastic Fiber** catalogue for detail information).  
**In Preparation:** Part numbers with a line through the middle

## Plastic Fiber Optic Diffuse Mode

Sensing Mode	Connection	Supply Voltage	Output Mode	Part Number
<p>Light Source : Red 660nm</p>  <p>Plastic Fiber Optic Diffuse Mode Sensing Distance: (Note)</p>	2m Cable	10-30V DC	NPN	TF18-DPFN-CY6G4U2
			PNP	TF18-DPFP-CY6G4U2
	Pico Style 4 Pins QD	10-30V DC	NPN	TF18-DPFN-CY6Q4UP
			PNP	TF18-DPFP-CY6Q4UP
	Euro Style 4 Pins QD	10-30V DC	NPN	TF18-DPFN-CY6Q4UE
			PNP	TF18-DPFP-CY6Q4UE
	Pico Style 4 Pins 6" Pigtail	10-30V DC	NPN	TF18-DPFN-CY6P4UP
			PNP	TF18-DPFP-CY6P4UP
	Euro Style 4 Pins 6" Pigtail	10-30V DC	NPN	TF18-DPFN-CY6P4UE
			PNP	TF18-DPFP-CY6P4UE

**Note:** Depends on fiber optic used (Please see our **Glass Fiber & Plastic Fiber** catalogue for detail information).  
**In Preparation:** Part numbers with a line through the middle

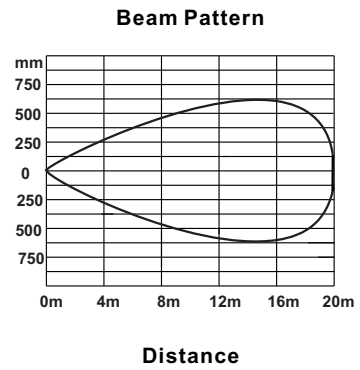
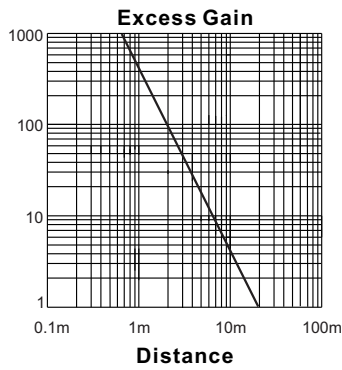
V: TF18 SERIES

## Specifications

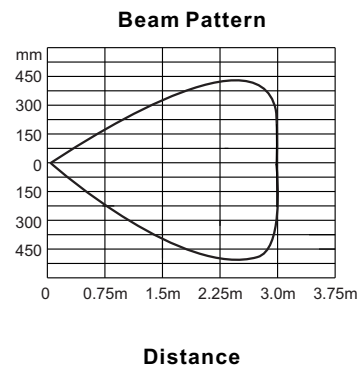
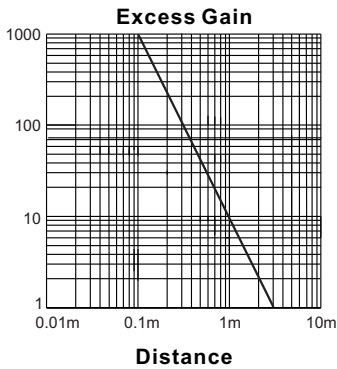
<b>Sensing Range</b>	See each mode
<b>Supply Voltage</b>	10 to 30V DC
<b>Ripple</b>	< 10%
<b>Voltage Drop</b>	<1V @ 10mA; <1.5V@ 100mA
<b>Max. Load Current</b>	100mA
<b>Leakage Current</b>	<50uA @ 30V DC
<b>Output Configuration</b>	Solid-state complementary (SPDT), NPN(current sinking) or PNP (current sourcing)
<b>Operation Mode</b>	Light-ON/Dark-ON changeover
<b>Adjustments</b>	<b>Convergent, diffuse, retroreflective mode models (only):</b> Single-turn sensitivity (Gain) adjustment potentiometer; <b>Background suppression diffuse Mode (only):</b> Multi-turn adjustment screw sets cutoff distance between 20 to 100mm
<b>Output Response Time</b>	<b>Opposed Mode:</b> 750ms ON/ 375ms OFF <b>Background suppression diffuse Mode:</b> 700ms ON/OFF <b>All others:</b> 600ms ON/OFF (Note: 100ms delay on power-up; outputs do not conduct during this time)
<b>Repeatability</b>	<b>Opposed Mode:</b> 100ms, <b>Background suppression Mode:</b> 175ms, <b>All others:</b> 150ms
<b>Indicators</b>	<b>Green steady:</b> Power on <b>Green flashing :</b> Output overloaded <b>Red steady:</b> Light sensed <b>Red flashing:</b> Marginal excess gain
<b>Transient Protection</b>	Yes
<b>Reverse Polarity Protection</b>	Yes
<b>Output Short Circuit Protection</b>	Yes
<b>Construction</b>	Polycarbonate/ABS alloy housing, 3mm mounting hardware included
<b>Environmental Rating</b>	IEC IP67
<b>Operating Condition</b>	<b>Temperature for Background suppression diffuse Mode:</b> 0°C to 55°C <b>Temperature for All other Modes:</b> -20°C to + 70°C <b>Maximum relative humidity:</b> 90% at 50°C (non-condensing)
<b>EMC</b>	IEC 60947-5-2, Parts 7.2.6.1.2.3 or RFI>3V/m( in 30-1000MHZ), EFT>1KV, ESD>4KV (contact)
<b>Voltage Withstand Ability</b>	IEC 60947-5-2, Part 8.3.3.4 or 1500V AC for one min, between all supply terminals connected together and enclosure
<b>Insulation Resistance</b>	>20M Ω , with 1500V AC megger between all supply terminals connected together and enclosure
<b>Vibration Resistance</b>	IEC 60947-5-2, part 7.4.2 or 10-55HZ, 1.0mm amplitude in x, y and z directions for 30 min
<b>Shock Resistance</b>	IEC 60947-5-2, part 7.4.1 or 30g, 11ms in x, y and z directions for six time each
<b>Connections</b>	2m 4-wire PVC cable ,9 m PVC cable , Euro-style(M12) connector, Euro-style(M12) Pigtail , Pico -style(M8) 150mm pigtail, Pico-style (M8) connector , depending on Model
<b>Pigtail Type</b>	See Pigtail Series or our Cables & Connectors catalogue.

## Sensing Characteristics (Typical)

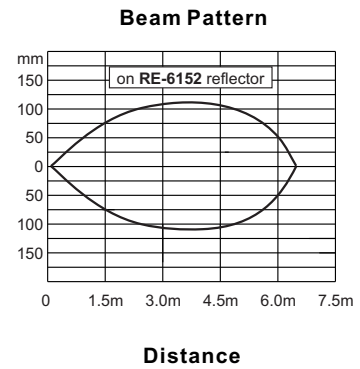
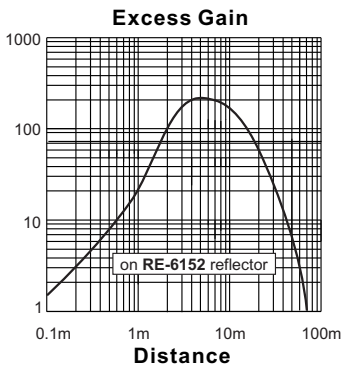
### Opposed Mode (Sn=20m)



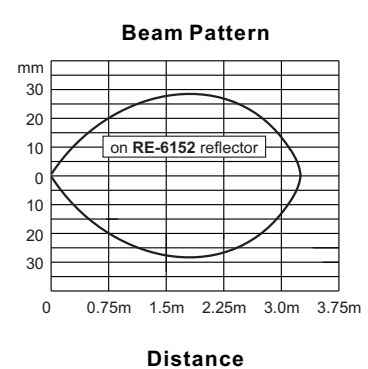
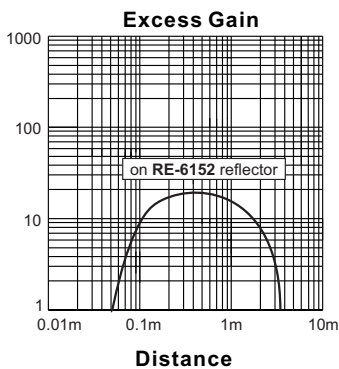
### Opposed Mode (Sn=3m)



### Retroreflective Mode (Sn=6.5 m)

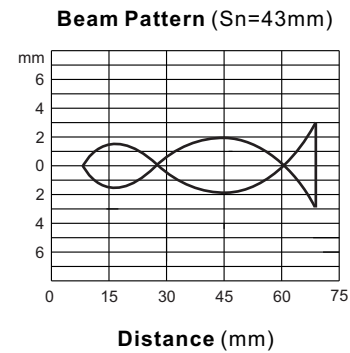
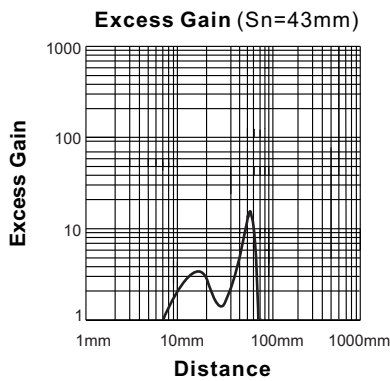
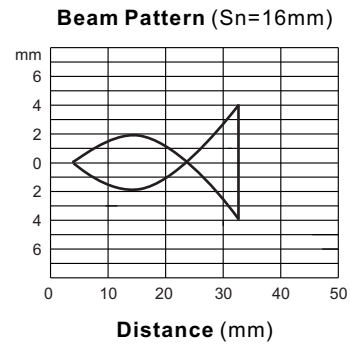
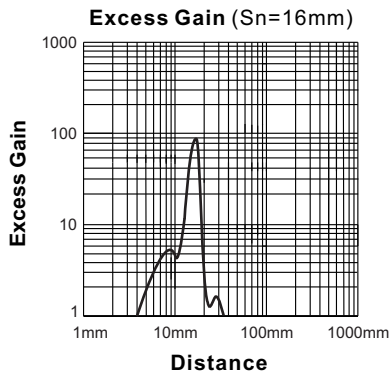


### Retroreflective with Polarizing Filter (Sn=3.5 m)

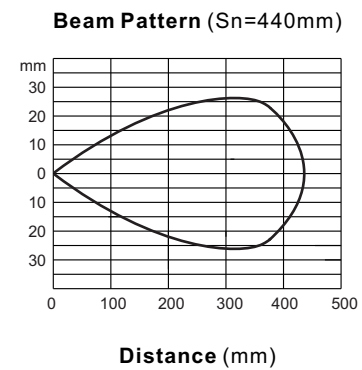
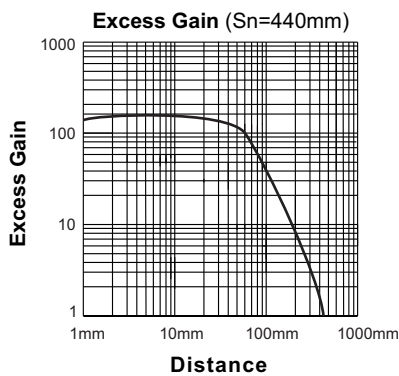
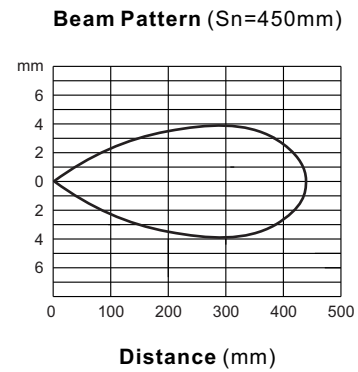
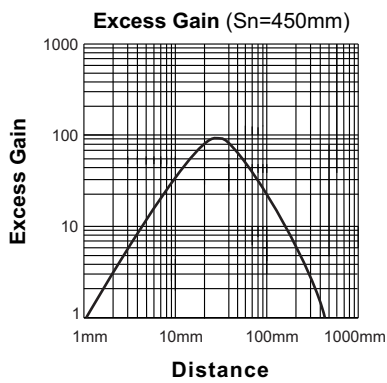


## Sensing Characteristics (Typical)

### Convergent Mode

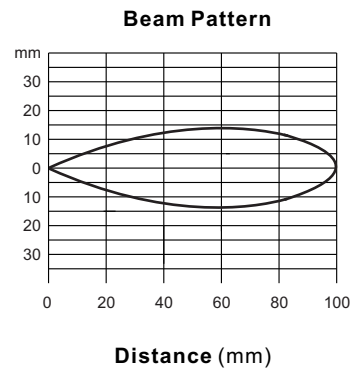
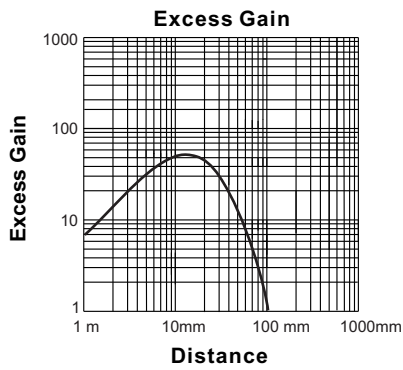


### Diffuse Mode

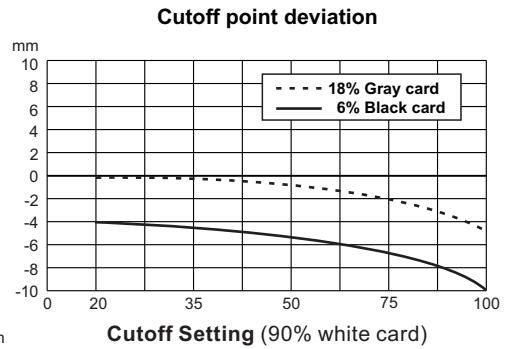
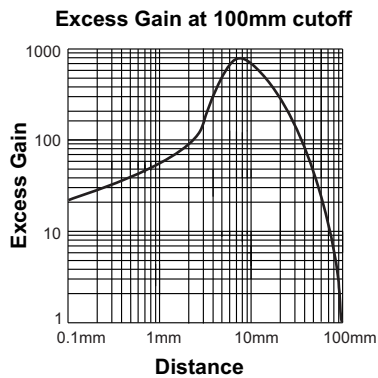
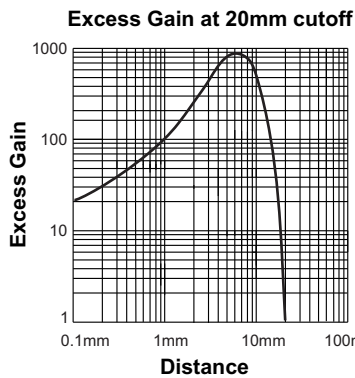


## Sensing Characteristics (Typical)

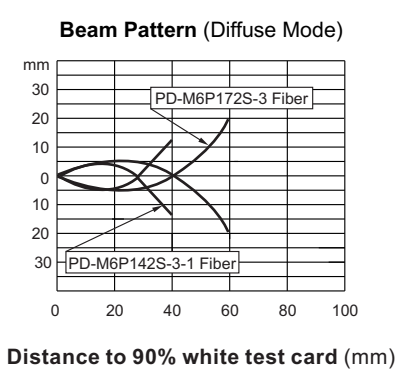
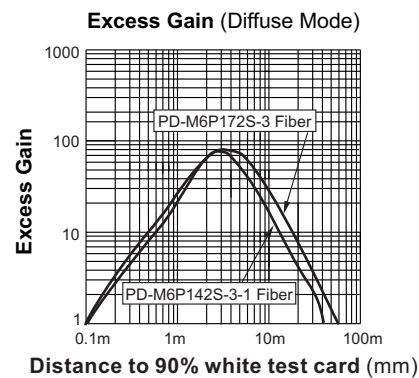
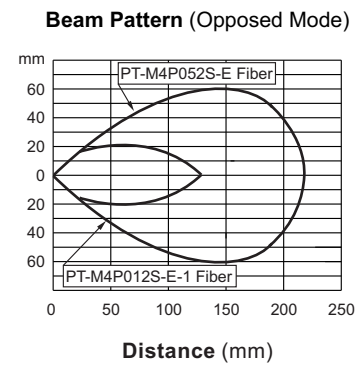
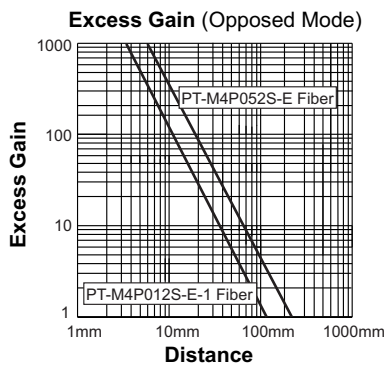
### Divergent Diffuse Mode (Sn=100mm)



### Diffuse with Background Suppression (Sn=100mm)



### Plastic Fiber Optic Mode (Sensing distance depends on fiber optic used)

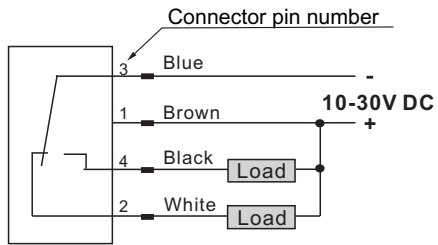


V: TF18 SERIES



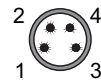
## Connection Diagrams

### NPN output type



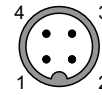
#### Connector pin position

##### Pico-style



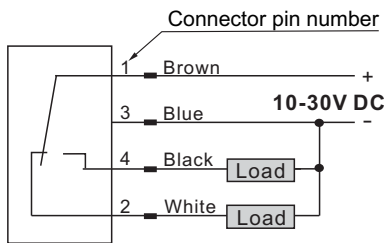
- 1. Brown
- 2. White
- 3. Blue
- 4. Black

##### Euro-style



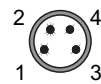
- 1. Brown
- 2. White
- 3. Blue
- 4. Black

### PNP output type



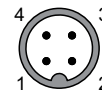
#### Connector pin position

##### Pico-style



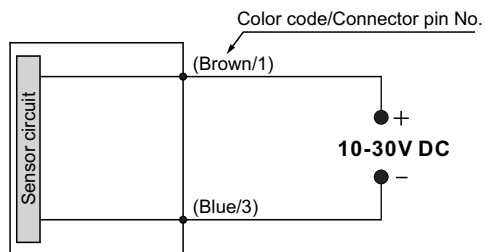
- 1. Brown
- 2. White
- 3. Blue
- 4. Black

##### Euro-style



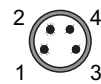
- 1. Brown
- 2. White
- 3. Blue
- 4. Black

### Emitter of Thru-beam Mode



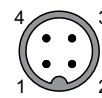
#### Connector pin position

##### Pico-style



- 1. Brown
- 2. Not used
- 3. Blue
- 4. Not used

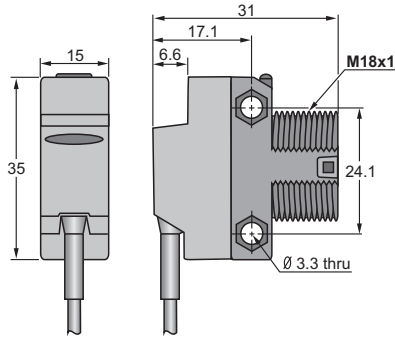
##### Euro-style



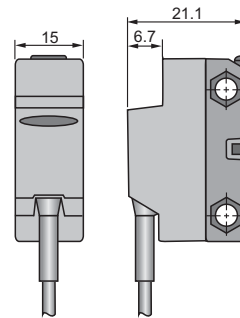
- 1. Brown
- 2. Not used
- 3. Blue
- 4. Not used

## Dimensions (Unit: mm)

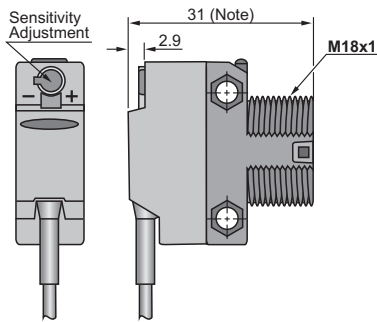
### Opposed Mode (Sn=20m)



### Opposed Mode (Sn=3m)

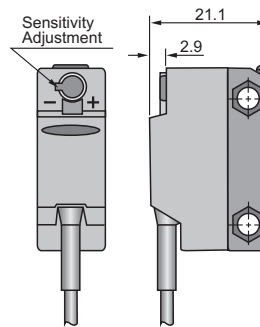


### Retroreflective (Sn=6.5m) Polarizing Retroreflective Mode (Sn=3.5m) Convergent Mode (Sn=16mm, 43mm) Diffuse Mode (Sn=450mm)

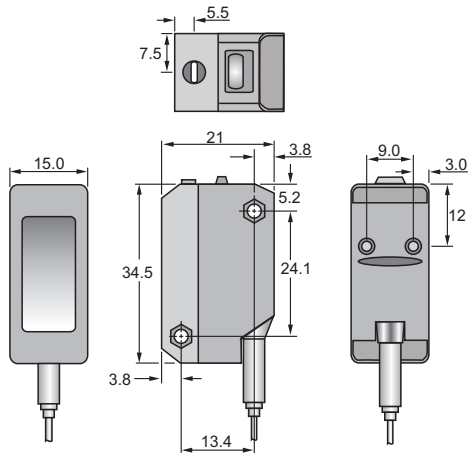


Note: Convergent mode sensor with 33.2mm.

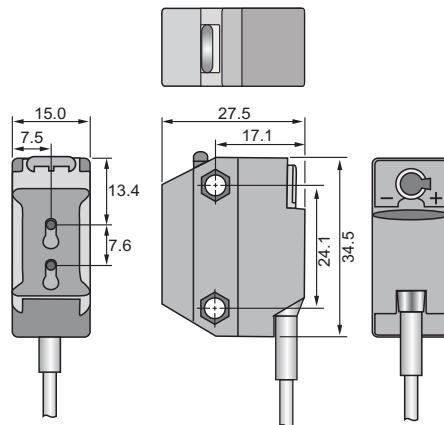
### Diffuse Mode (Sn=440mm) Divergent Mode (Sn=100mm)



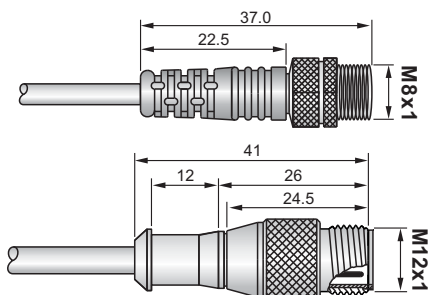
### BGS type Diffuse Mode (Sn=100 mm)



### Plastic Fiber Optic Mode



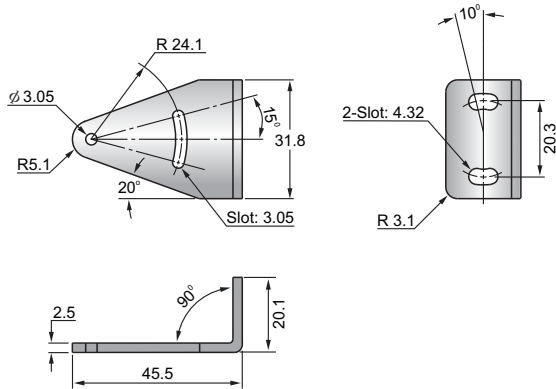
### Pigtail\* Type



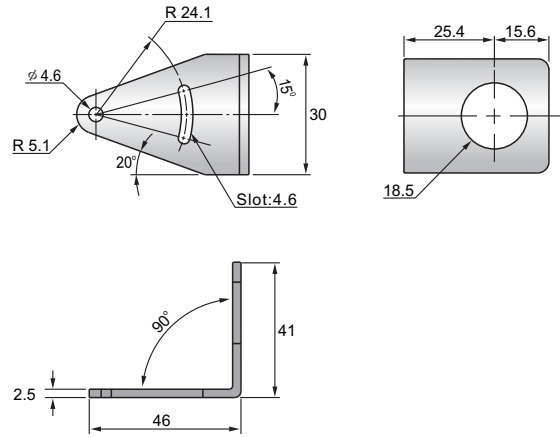
\*: Please see **Pigtail Series** or our **Cables & Connectors** catalogue for more information.

## Mounting Bracket's\* Dimensions (Unit: mm)

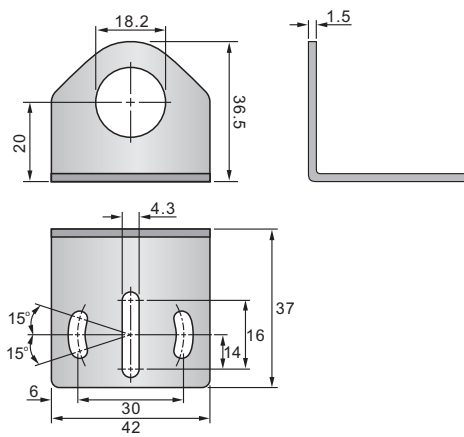
**MB-3245 (optional)**



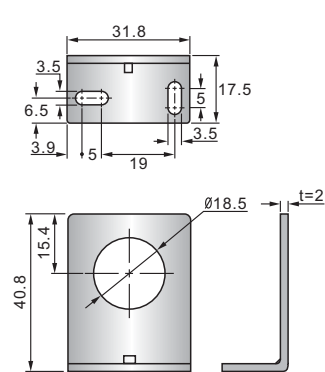
**MB-4630 (Optional)**



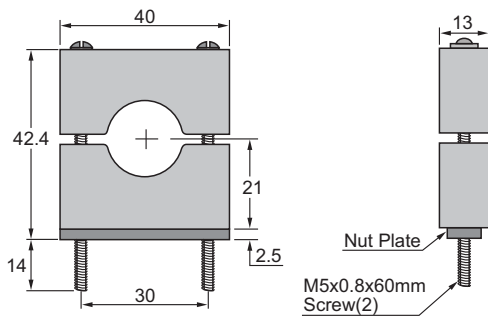
**MB-4237 (optional)**



**MB-4032 (optional)**

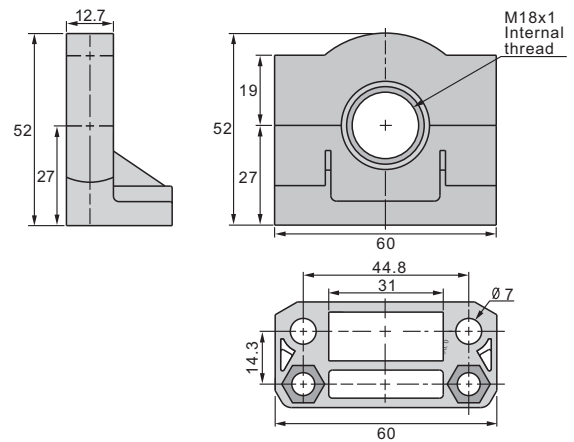


**MB-4240 (optional)**



18mm split clamp bracket

**MB-6052 (optional)**



Mounting Bracket to Provide 360° Rotation

\*: Please see **Accessories** (Universal Mounting Brackets Series).