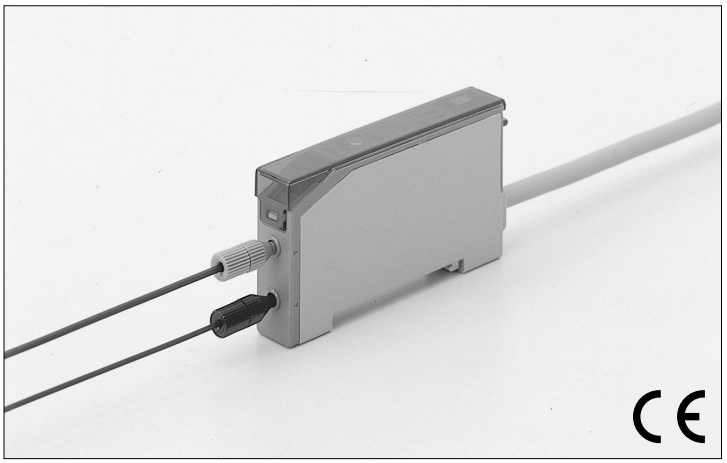
NAiS

MANUAL SETTING TYPE
OPTICAL FIBER
PHOTOELECTRIC SENSORS

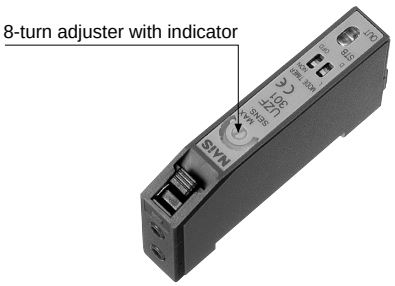
UZF3 Series

THE BEST SENSING PERFORMANCE IN THE SMALLEST BODY



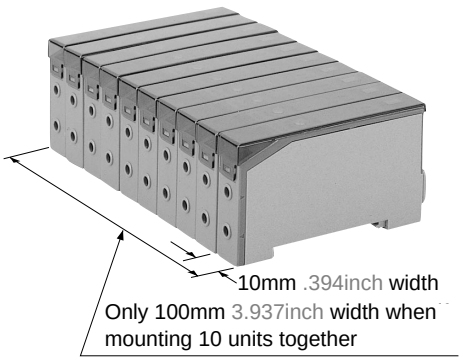
8-turn Adjuster with Indicator

Wide adjuster range of 8 turns permits precision setting.
The indicator shows the sensitivity setting.



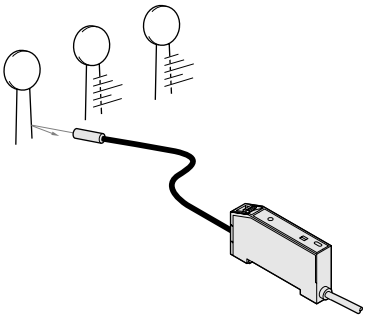
Compact Size ! Width : 10mm .394inch

Saves space.



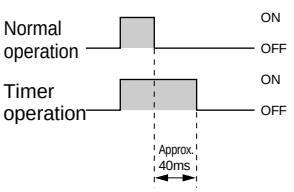
Ultra-high Speed Response : 30µs

High-speed sensing type **UZF321**, ignores ambient light thanks to its' modulated beam.
The response time of 30 µs (standard type : 0.3ms) allows detection of high-speed small objects.



OFF-delay Timer Function

Equipped with a fixed off-delay timer of approx. 40ms.
It is useful when the input processing time of the connected controller is slow, or signal width is short such as when the sensor detects a high-speed small object.

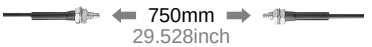


High Sensing Performance

Long sensing range type **UZF311** attains 750mm 29.528inch sensing range with M4 thru-beam type fiber optic cable.
Sufficient sensing range can be achieved even in combination with ultra-small diameter fiber optic cable.
It is now feasible to use the green LED type or high-speed sensing type with the pinpoint spot lens.

Thru-beam type

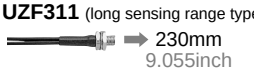
M4 standard x long sensing range fiber optic cable (**UZFTB8**) + **UZF311** (long sensing range type)



Ultra-small diameter fiber optic cable (**UZFTE2**) + **UZF312** (green LED type)

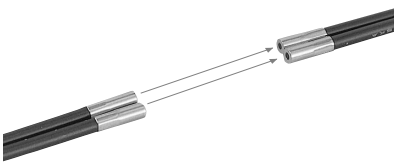
Reflective type

M6 standard x long sensing range fiber optic cable (**UZFR8B**) + **UZF311** (long sensing range type)



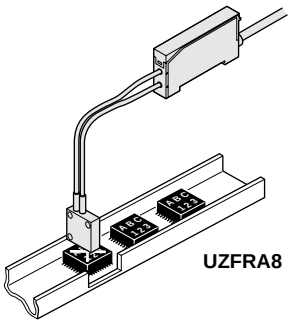
Automatic Crosstalk Prevention Function

Two sets of fiber optic cable can be installed close together. (Except for **UZF321**, **UZF3215**)



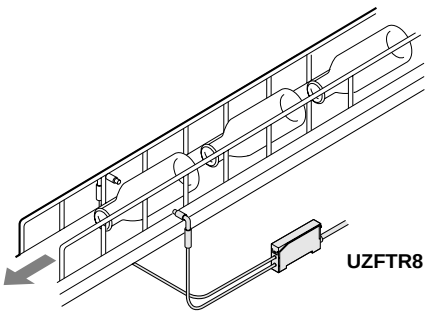
APPLICATIONS

Detection of IC bad marks
A shift in printing doesn't affect the sensing as it senses wider area on objects.



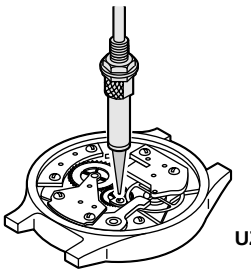
UZFRA8

Detection of translucent resin
Green LED type detects a small difference in light volume and is suitable for detection of translucent objects.



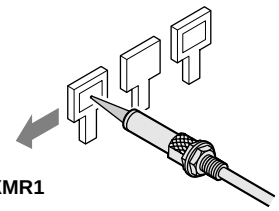
UZFTR8

Presence sensing of object
It reliably detects the small parts in a wrist watch.



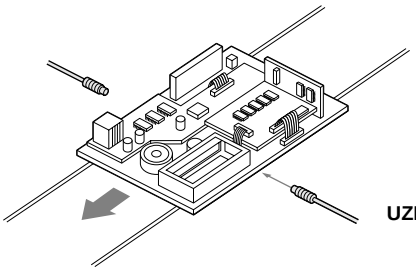
UZFXMR1

Sensing of plating on electrode parts
It can detect whether the parts are plated or not.



UZFXMR1

Detection of large Print Circuit board
It has 750mm 29.528inch long sensing range with M4 thru-beam mode fiber optic cable, so large size printed circuit board can be detected.



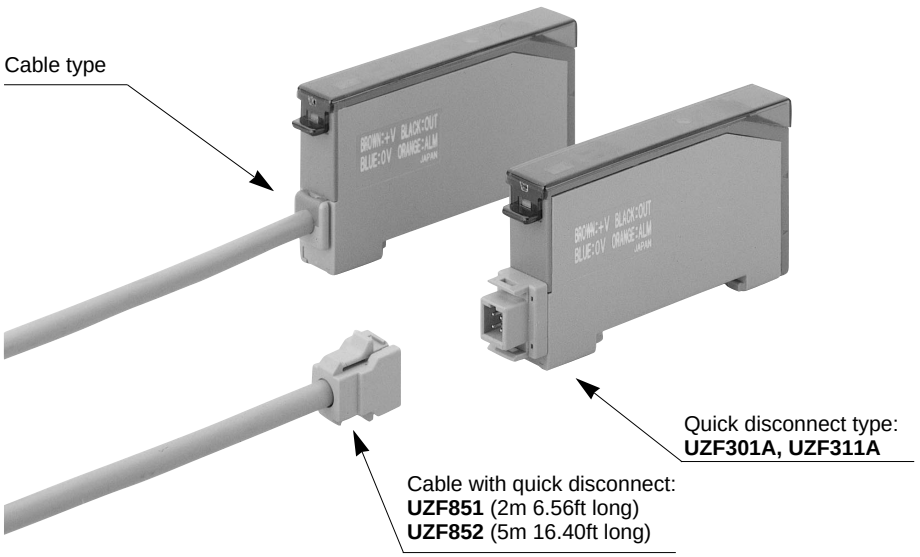
UZFTB8

Wide Variation

UZF3 series – a variety of sensors:

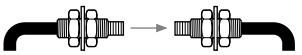
UZF301 .....Sensitive type, suitable for sensing small differences
UZF312 .....Green LED type, suitable for distinguishing red from white
UZF311 .....Long sensing range type, suitable for long range sensing
UZF321 .....High-speed sensing type, suitable for sensing high-speed objects

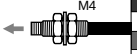
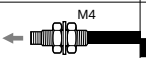
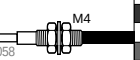
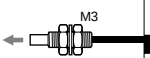
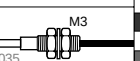
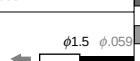
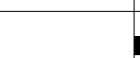
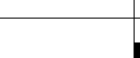
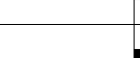
UZF301A and **UZF311A** are available with cable or with a quick disconnect.



ORDER GUIDE

For general use fiber optic cable [Thru-beam type (one set consists of two pcs.)]



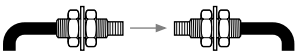
	Shape of sensing probe (mm inch)	Sensing range (*2) ■:UZF301 ■:UZF312 ■:UZF311 ■:UZF321	Min. sensing object [on optimum condition (*1)] ❶UZF301 ❷UZF312 ❸UZF311 ❹UZF321	Features	Fiber optic cable length	Model No.
Long sensing range	Lens applicable 	300mm 11.811inch 115mm 4.528inch 750mm 29.528inch 150mm 5.906inch	❶ϕ0.15mm ϕ.006inch opaque object ❷ϕ0.15mm ϕ.006inch opaque object ❸ϕ0.15mm ϕ.006inch opaque object ❹ϕ0.15mm ϕ.006inch opaque object	• Sensing range is about double of that of conventional model.	Freely cuttable 2m 6.562ft	**UZFTB8**
Standard	Lens applicable 	160mm 6.299inch 60mm 2.362inch 400mm 15.748inch 80mm 3.150inch	❶ϕ0.08mm ϕ.003inch opaque object ❷ϕ0.08mm ϕ.003inch opaque object ❸ϕ0.08mm ϕ.003inch opaque object ❹ϕ0.08mm ϕ.003inch opaque object	• Freely cuttable type	Freely cuttable 2m 6.562ft	**UZFTF8**
	With sleeve 					**UZFTF89** Sleeve 90mm 3.543inch
						UZFTF84 Sleeve 40mm 1.575inch
						**UZFTS8**
Small sensing probe	Lens applicable 	160mm 6.299inch 60mm 2.362inch 400mm 15.748inch 80mm 3.150inch	❶ϕ0.08mm ϕ.003inch opaque object ❷ϕ0.08mm ϕ.003inch opaque object ❸ϕ0.08mm ϕ.003inch opaque object ❹ϕ0.08mm ϕ.003inch opaque object	• Same sensing range as the standard with a smaller sensing probe	Freely cuttable 2m 6.562ft	**UZFTT8**
Small diameter		48mm 1.890inch 15mm .591inch 120mm 4.724inch 25mm .984inch	❶ϕ0.05mm ϕ.002inch opaque object ❷ϕ0.05mm ϕ.002inch opaque object ❸ϕ0.05mm ϕ.002inch opaque object ❹ϕ0.05mm ϕ.002inch opaque object	• Suitable for sensing in the intricate apparatus • Freely cuttable type	Freely cuttable 2m 6.562ft	**UZFTF4**
	With sleeve 					**UZFTF49** Sleeve 90mm 3.543inch
						UZFTF44 Sleeve 40mm 1.575inch
						**UZFTS4**
Flexible	Lens applicable Small diameter 	48mm 1.890inch 15mm .591inch 120mm 4.724inch 25mm .984inch	❶ϕ0.08mm ϕ.003inch opaque object ❷ϕ0.08mm ϕ.003inch opaque object ❸ϕ0.08mm ϕ.003inch opaque object ❹ϕ0.08mm ϕ.003inch opaque object	• Small diameter sensing probe coiled cable	2m 6.562ft	**UZFTC4**
	Lens applicable 	160mm 6.299inch 60mm 2.362inch 400mm 15.748inch 80mm 3.150inch	❶ϕ0.08mm ϕ.003inch opaque object ❷ϕ0.12mm ϕ.005inch opaque object ❸ϕ0.08mm ϕ.003inch opaque object ❹ϕ0.12mm ϕ.005inch opaque object	• Allowable bending radius : R4mm R.157inch • Bending durability : one million times min.	Freely cuttable 2m 6.562ft	**UZFTP8**
	Small diameter 	48mm 1.890inch 15mm .591inch 120mm 4.724inch 25mm .984inch	❶ϕ0.05mm ϕ.002inch opaque object ❷ϕ0.05mm ϕ.002inch opaque object ❸ϕ0.05mm ϕ.002inch opaque object ❹ϕ0.05mm ϕ.002inch opaque object			**UZFTP4**
	Small diameter 	52mm 2.047inch 18mm .709inch 130mm 5.118inch 30mm 1.181inch	❶ϕ0.05mm ϕ.002inch opaque object ❷ϕ0.05mm ϕ.002inch opaque object ❸ϕ0.05mm ϕ.002inch opaque object ❹ϕ0.05mm ϕ.002inch opaque object		1m 3.281ft	**UZFTP2**

(*1) : The optimum condition is that the sensing output is the condition set the sensitivity to the beam-receiving operation level without the sensing object.

(*2) : As for freely cuttable fiber optic cables, note that sensing ranges may be reduced up to 20% depending on the cut condition.

ORDER GUIDE

For environmental-resistant use fiber optic cable [Thru-beam type (one set consists of two pcs.)]



	Shape of sensing probe (mm inch)	Sensing range (*3) ■:UZF301 ■:UZF312 ■:UZF311 ■:UZF321	Min. sensing object [on optimum condition (*1)] ❶UZF301 ❷UZF312 ❸UZF311 ❹UZF321	Features	Fiber optic cable length	Model No.
Heat-resistant	Lens applicable M4	140mm 5.512inch	❶ϕ0.08mm ϕ.003inch opaque object ❷ϕ0.08mm ϕ.003inch opaque object ❸ϕ0.08mm ϕ.003inch opaque object ❹ϕ0.08mm ϕ.003inch opaque object	• Heat-resistant : 350°C 662°F Cold-resistant : −60°C −76°F	2m 6.562ft	**UZFTH7**
	With sleeve M4 ϕ2.1 ϕ.083	50mm 1.969inch 350mm 13.780inch				**UZFTH76** Sleeve 60mm 2.362inch
	Lens applicable M4	70mm 2.756inch		• Silicon housing makes cable lead-around easy. • Heat-resistant : 200°C 392°F Cold-resistant : −60°C −76°F	1m 3.281ft	**UZFTH6**
	Lens applicable M4	220mm 8.661inch 80mm 3.150inch 550mm 21.654inch 110mm 4.331inch	❶ϕ0.15mm ϕ.006inch opaque object ❷ϕ0.15mm ϕ.006inch opaque object ❸ϕ0.15mm ϕ.006inch opaque object ❹ϕ0.15mm ϕ.006inch opaque object	• Heat-resistant : 130°C 266°F Cold-resistant : −60°C −76°F • Freely cuttable type	Freely cuttable 2m 6.562ft	**UZFTH8**
Chemical-resistant	ϕ5.5 ϕ.271	680mm 26.772inch 220mm 8.661inch 1,700mm 66.929inch 340mm 13.386inch	❶ϕ0.5mm ϕ.020inch opaque object ❷ϕ0.5mm ϕ.020inch opaque object ❸ϕ0.5mm ϕ.020inch opaque object ❹ϕ0.5mm ϕ.020inch opaque object	• For the application in liquid chemical • Heat-resistant specification (115°C 239°F) • Long sensing range type with lens	2m 6.562ft (Bending R : 30mm 1.181inch)	**UZFTL8Y**
	ϕ5.5 ϕ.217	200mm 7.874inch 70mm 2.756inch 500mm 19.685inch 100mm 3.937inch	❶ϕ0.5mm ϕ.020inch opaque object ❷ϕ0.5mm ϕ.020inch opaque object ❸ϕ0.5mm ϕ.020inch opaque object ❹ϕ0.5mm ϕ.020inch opaque object	• For the application in liquid chemical • Heat-resistant specification (115°C 239°F) • Side-view type	2m 6.562ft (Bending R : 30mm 1.181inch)	**UZFTV8Y**
Vacuum-resistant (*2)	Lens applicable M4	110mm 4.331inch 275mm 10.827inch 60mm 2.362inch	❶ϕ0.1mm ϕ.004inch opaque object ❸ϕ0.1mm ϕ.004inch opaque object ❹ϕ0.1mm ϕ.004inch opaque object	• For the application in vacuum area • Heat-resistant : 120°C 248°F	1m 3.281ft (Bending R : 200mm 7.874inch)	**UZFT6V**
		52mm 2.047inch 130mm 5.118inch 30mm 1.181inch	❶ϕ0.1mm ϕ.004inch opaque object ❸ϕ0.1mm ϕ.004inch opaque object ❹ϕ0.1mm ϕ.004inch opaque object		1m 3.281ft (Bending R : 30mm 1.181inch)	**UZFT60V**

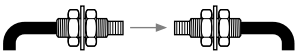
(*1) : The optimum condition is that the sensing output is the condition set the sensitivity to the beam-receiving operation level without the sensing object.

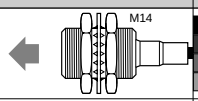
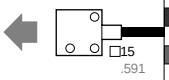
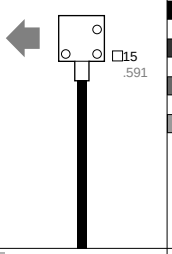
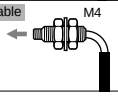
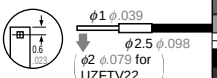
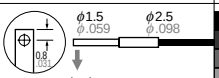
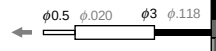
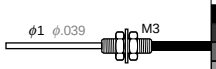
(*2) : When vacuum-resistant fiber optic cable is used, be sure to use the followings together.
UZFTJ6 : Fiber optic cable on atmospheric side (One set consists of two pcs.)
UZFVBR1 : Photo terminal (One set consists of two pcs.)

(*3) : As for freely cuttable fiber optic cables, note that sensing ranges may be reduced up to 20% depending on the cut condition.

ORDER GUIDE

For special application use fiber optic cable [Thru-beam type (one set consists of two pcs.)]



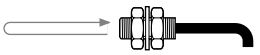
	Shape of sensing probe (mm inch)	Sensing range (*2) ■:UZF301 ■:UZF312 ■:UZF311 ■:UZF321	Min. sensing object [on optimum condition (*1)] ❶UZF301 ❷UZF312 ❸UZF311 ❹UZF321	Features	Fiber optic cable length	Model No.
Long sensing range with lens		5,000mm 196.850inch 2,800mm 110.236inch 13,000mm 511.811inch 3,500mm 137.795inch	❶ϕ1mm ϕ.039inch opaque object ❷ϕ1mm ϕ.039inch opaque object ❸ϕ1mm ϕ.039inch opaque object ❹ϕ1mm ϕ.039inch opaque object	• By applying large diameter lens, a long sensing range is achieved. • Fiber optic cable length is 10m 32.808ft long	Freely cuttable 10m 32.808ft	**UZFTL9**
		400mm 15.748inch 150mm 5.906inch 1,000mm 39.370inch 200mm 7.874inch	❶ϕ0.15mm ϕ.006inch opaque object ❷ϕ0.15mm ϕ.006inch opaque object ❸ϕ0.15mm ϕ.006inch opaque object ❹ϕ0.15mm ϕ.006inch opaque object	• A long sensing range is achieved with a very small sensing probe of ϕ2.5mm ϕ.098inch.	Freely cuttable 2m 6.562ft	**UZFTL8**
Array	Top sensing 	140mm 5.512inch 50mm 1.969inch 350mm 13.780inch 70mm 2.756inch	Vertical ϕ0.6mm ϕ.024inch opaque object ❶Horizontal ϕ0.04mm ϕ.002inch opaque object Vertical ϕ0.6mm ϕ.024inch opaque object ❷Horizontal ϕ0.04mm ϕ.002inch opaque object Vertical ϕ0.6mm ϕ.024inch opaque object ❸Horizontal ϕ0.04mm ϕ.002inch opaque object Vertical ϕ0.6mm ϕ.024inch opaque object ❹Horizontal ϕ0.04mm ϕ.002inch opaque object	• Arrayed beam does not miss by detecting object regardless of its position.	Freely cuttable 2m 6.562ft	**UZFTA8**
	Side sensing 	110mm 4.331inch 40mm 1.772inch 275mm 10.827inch 60mm 2.362inch	Vertical ϕ0.6mm ϕ.024inch opaque object ❶Horizontal ϕ0.04mm ϕ.002inch opaque object Vertical ϕ0.6mm ϕ.024inch opaque object ❷Horizontal ϕ0.04mm ϕ.002inch opaque object Vertical ϕ0.6mm ϕ.024inch opaque object ❸Horizontal ϕ0.04mm ϕ.002inch opaque object Vertical ϕ0.6mm ϕ.024inch opaque object ❹Horizontal ϕ0.04mm ϕ.002inch opaque object			**UZFTA8E**
Elbow	Lens applicable 	110mm 4.331inch 45mm 1.772inch 275mm 10.827inch 60mm 2.362inch	❶ϕ0.08mm ϕ.003inch opaque object ❷ϕ0.12mm ϕ.005inch opaque object ❸ϕ0.08mm ϕ.003inch opaque object ❹ϕ0.12mm ϕ.005inch opaque object	• Installation is simple as the sensing probe is bent 90 degrees and has 5mm .197inch radius.	Freely cuttable 2m 6.562ft	**UZFTR8**
Side-view	Small diameter  Sleeve part cannot be bent.	70mm 2.756inch 18mm .709inch 175mm 6.890inch 38mm 1.496inch	❶ϕ0.08mm ϕ.003inch opaque object ❷ϕ0.12mm ϕ.005inch opaque object ❸ϕ0.08mm ϕ.003inch opaque object ❹ϕ0.12mm ϕ.005inch opaque object	• Side sensing method saves installation space.	1m 3.281ft	**UZFTV22**
	Sleeve part cannot be bent.	30mm 1.181inch 10mm .394inch 75mm 2.953inch 15mm .591inch	❶ϕ0.03mm ϕ.001inch opaque object ❷ϕ0.08mm ϕ.003inch opaque object ❸ϕ0.03mm ϕ.001inch opaque object ❹ϕ0.08mm ϕ.003inch opaque object		Freely cuttable 2m 6.562ft	**UZFTV41**
	 Sleeve part cannot be bent.	100mm 3.937inch 35mm 1.378inch 250mm 9.843inch 50mm 1.969inch	❶ϕ0.08mm ϕ.003inch opaque object ❷ϕ0.08mm ϕ.003inch opaque object ❸ϕ0.08mm ϕ.003inch opaque object ❹ϕ0.08mm ϕ.003inch opaque object			**UZFTV82**
Ultra-small diameter	 Sleeve part cannot be bent.	7mm .276inch	❸ϕ0.01mm ϕ.0004inch opaque object	• Ultra-small diameter, and diameter of ϕ0.125mm ϕ.005inch	500mm 19.685inch	**UZFTE1**
	 Sleeve part cannot be bent.	12mm .472inch 30mm 1.181inch 6mm .236inch	❶ϕ0.02mm ϕ.001inch opaque object ❸ϕ0.02mm ϕ.001inch opaque object ❹ϕ0.03mm ϕ.001inch opaque object	• Ultra-small diameter, and diameter of ϕ0.25mm ϕ.010inch	1m 3.281ft	**UZFTE2**
Narrow-view	 Sleeve part cannot be bent.	70mm 2.756inch 18mm .709inch 175mm 6.890inch 38mm 1.496inch	❶ϕ0.05mm ϕ.002inch opaque object ❷ϕ0.05mm ϕ.002inch opaque object ❸ϕ0.05mm ϕ.002inch opaque object ❹ϕ0.05mm ϕ.002inch opaque object	• The spread of beam is one-sixth of conventional model, so that it doesn't cause crosstalk.	1m 3.281ft	**UZFTK22**

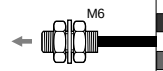
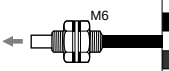
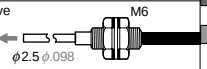
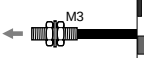
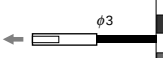
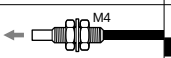
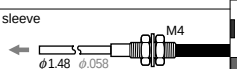
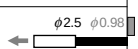
(*1) : The optimum condition is that the sensing output is the condition set the sensitivity to the beam-receiving operation level without the sensing object.

(*2) : As for freely cuttable fiber optic cables, note that sensing ranges may be reduced up to 20% depending on the cut condition.

ORDER GUIDE

For general use fiber optic cable [reflective type]



	Shape of sensing probe (mm inch)	Sensing range (*3) ■:UZF301 ■:UZF312 ■:UZF311 ■:UZF321	Min. sensing object [on optimum condition (*2)] ❶UZF301 ❷UZF312 ❸UZF311 ❹UZF321	Features	Fiber optic cable length	Model No.
Long sensing range		95mm 3.740inch 40mm 1.575inch 230mm 9.055inch 60mm 2.362inch	❶ϕ0.01mm ϕ.0004inch gold wire ❷ϕ0.05mm ϕ.002inch gold wire ❸ϕ0.01mm ϕ.0004inch gold wire ❹ϕ0.03mm ϕ.001inch gold wire	• Long sensing range • Freely cuttable type	Freely cuttable 2m 6.562ft	**UZFR8B**
Standard	Coaxial 	60mm 2.362inch 23mm .906inch 150mm 5.906inch	❶ϕ0.01mm ϕ.0004inch gold wire ❷ϕ0.03mm ϕ.001inch gold wire ❸ϕ0.01mm ϕ.0004inch gold wire ❹ϕ0.02mm ϕ.001inch gold wire	• Suitable for green LED type	500mm 19.685inch	**UZFRF5**
				• Freely cuttable type	Freely cuttable 2m 6.562ft	**UZFRF8**
	With sleeve 	30mm 1.181inch				**UZFRF89** Sleeve 90mm 3.543inch **UZFRF84** Sleeve 40mm 1.575inch
Small sensing probe		60mm 2.362inch 23mm .906inch 150mm 5.906inch 30mm 1.181inch	❶ϕ0.01mm ϕ.0004inch gold wire ❷ϕ0.03mm ϕ.001inch gold wire ❸ϕ0.01mm ϕ.0004inch gold wire ❹ϕ0.02mm ϕ.001inch gold wire	• Same sensing range as the standard with small sensing probe	Freely cuttable 2m 6.562ft	**UZFRT8**
	Small diameter 	18mm .709inch 6mm .236inch 45mm 1.772inch 10mm .394inch	❶ϕ0.01mm ϕ.0004inch gold wire ❷ϕ0.05mm ϕ.002inch gold wire ❸ϕ0.01mm ϕ.0004inch gold wire ❹ϕ0.03mm ϕ.001inch gold wire			**UZFRT4**
		60mm 2.362inch 23mm .906inch 150mm 5.906inch 30mm 1.181inch	❶ϕ0.01mm ϕ.0004inch gold wire ❷ϕ0.03mm ϕ.001inch gold wire ❸ϕ0.01mm ϕ.0004inch gold wire ❹ϕ0.02mm ϕ.001inch gold wire			**UZFRS8**
Small diameter		18mm .709inch	❶ϕ0.01mm ϕ.0004inch gold wire ❷ϕ0.05mm ϕ.002inch gold wire ❸ϕ0.01mm ϕ.0004inch gold wire ❹ϕ0.03mm ϕ.001inch gold wire	• Suitable for sensing in the intricate apparatus • Freely cuttable type	Freely cuttable 2m 6.562ft	**UZFRF4**
	With sleeve 	6mm .236inch 45mm 1.772inch				**UZFRF49** Sleeve 90mm 3.543inch **UZFRF44** Sleeve 40mm 1.575inch
		10mm .394inch				**UZFRS4**
Flexible		44mm 1.732inch 16mm .630inch 110mm 4.331inch 25mm .984inch	❶ϕ0.01mm ϕ.0004inch gold wire ❷ϕ0.05mm ϕ.002inch gold wire ❸ϕ0.01mm ϕ.0004inch gold wire ❹ϕ0.03mm ϕ.001inch gold wire	• Allowable bending radius : R4mm R.157inch • Bending durability : one million times min.	Freely cuttable 2m 6.562ft	**UZFRP8**
	Small diameter 	7mm .276inch 18mm .709inch 4mm .157inch	❶ϕ0.01mm ϕ.0004inch gold wire ❸ϕ0.01mm ϕ.0004inch gold wire ❹ϕ0.02mm ϕ.001inch gold wire			**UZFRP4**
	Small diameter 	10mm .394inch 3mm .118inch 25mm .984inch 5mm .197inch	❶ϕ0.01mm ϕ.0004inch gold wire ❷ϕ0.03mm ϕ.001inch gold wire ❸ϕ0.01mm ϕ.0004inch gold wire ❹ϕ0.02mm ϕ.001inch gold wire		1m 3.281ft	**UZFRP2**

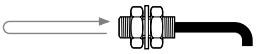
(*1) : The sensing range is the figure using an object of non-glossy white paper (100×100mm 3.937×3.937inch, standard of long sensing range type : 200×200mm 7.874×7.874inch, side- view type of small diameter type : 50×50mm 1.969×1.969inch, narrow-view type : 10×10mm .394×.394inch).

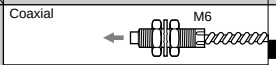
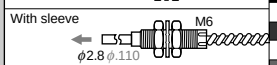
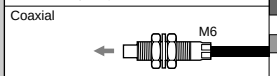
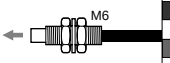
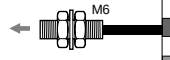
(*2) : Minimum sensing object is the value by the maximum sensitivity. Note that this setting distance is different from the rated sensing distance.

(*3) : As for freely cuttable fiber optic cables, note that sensing ranges may be reduced up to 20% depending on the cut condition.

ORDER GUIDE

For environmental-resistant use fiber optic cable [reflective type]



	Shape of sensing probe (mm inch)	Sensing range (*1) (*4) ■:UZF301 ■:UZF312 ■:UZF311 ■:UZF321	Min. sensing object [at the maximum sensitivity (*2)] ❶UZF301 ❷UZF312 ❸UZF311 ❹UZF321	Features	Fiber optic cable length	Model No.
Heat-resistant	Coaxial 	60mm 2.362inch	❶ϕ0.01mm ϕ.0004inch gold wire ❷ϕ0.03mm ϕ.001inch gold wire ❸ϕ0.01mm ϕ.0004inch gold wire ❹ϕ0.02mm ϕ.001inch gold wire	• Heat-resistant : 350°C 662°F Cold-resistant : −60°C −76°F	2m 6.562ft	**UZFRH7**
	With sleeve 	18mm .709inch 170mm 6.693inch				**UZFRH76** Sleeve 60mm 2.362inch
	Coaxial 	30mm 1.181inch		• Silicon housing makes cable lead-around easy. • Heat-resistant : 200°C 392°F Cold-resistant : −60°C −76°F	1m 3.281ft	**UZFRH6**
		70mm 2.756inch 26mm 1.024inch 180mm 7.087inch 36mm 1.417inch	❶ϕ0.01mm ϕ.0004inch gold wire ❷ϕ0.12mm ϕ.005inch copper wire ❸ϕ0.01mm ϕ.0004inch gold wire ❹ϕ0.08mm ϕ.003inch gold wire	• Heat-resistant : 130°C 266°F • Cold-resistant : −60°C −76°F • Freely cuttable type	Freely cuttable 2m 6.562ft	**UZFRH8**
Vacuum-resistant (*3)		32mm 1.260inch 80mm 3.150inch 18mm .709inch	❶ϕ0.01mm ϕ.0004inch gold wire ❸ϕ0.01mm ϕ.0004inch gold wire ❹ϕ0.02mm ϕ.001inch gold wire	• For the application in vacuum area • Heat-resistant : 120°C 248°F	1m 3.281ft	**UZFR6V**

(*1) : The sensing range is the figure using an object of non-glossy white paper (100×100mm 3.937×3.937inch, standard of long sensing range type : 200×200mm 7.874×7.874inch, side- view type of small diameter type : 50×50mm 1.969×1.969inch, narrow-view type : 10×10mm .394×.394inch).

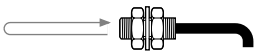
(*2) : Minimum sensing object is the value by the maximum sensitivity. Note that this setting distance is different from the rated sensing distance.

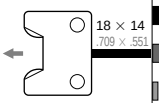
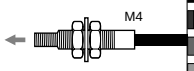
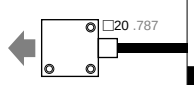
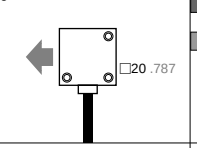
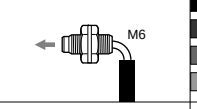
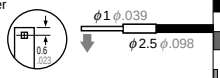
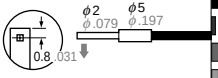
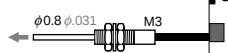
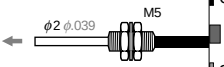
(*3) : When vacuum-resistant fiber optic cable is used, be sure to use the followings together.
UZFTJ6 : Fiber optic cable on atmospheric side (One set consists of two pcs.)
UZFVBR1 : Photo terminal (One set consists of two pcs.)

(*4) : As for freely cuttable fiber optic cables, note that sensing ranges may be reduced up to 20% depending on the cut condition.

ORDER GUIDE

For special applications use fiber optic cable [reflective type]



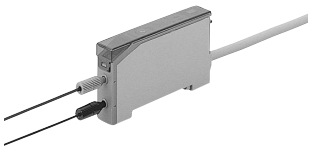
	Shape of sensing probe (mm inch)	Sensing range (*1) (*3) ■:UZF301 ■:UZF312 ■:UZF311 ■:UZF321	Min. sensing object [at the maximum sensitivity (*2)] ❶UZF301 ❷UZF312 ❸UZF311 ❹UZF321	Features	Fiber optic cable length	Model No.
Fixed-focus		5 to 10mm .197 to .394inch 4.5 to 12mm .177 to .472inch (center : 6mm .236inch) 5 to 8mm .197 to .315inch	❶ϕ0.01mm ϕ.0004inch gold wire ❸ϕ0.01mm ϕ.0004inch gold wire ❹ϕ0.02mm ϕ.0008inch gold wire	• Sensing performance is not affected by color or surface condition of the object.	Freely cuttable 2m 6.562ft	**UZFRL4**
High precision (Coaxial)	Lens applicable Coaxial 	22mm .866inch 9mm .354inch 55mm 2.165inch 12mm .472inch	❶ϕ0.01mm ϕ.0004inch gold wire ❷ϕ0.03mm ϕ.001inch gold wire ❸ϕ0.01mm ϕ.0004inch gold wire ❹ϕ0.02mm ϕ.0008inch gold wire	• A highly precise positioning is possible with coaxial reflective mode.	Freely cuttable 2m 6.562ft	**UZFRG4**
	Lens applicable Coaxial • Small diameter 	8mm .315inch 20mm .787inch 4mm .157inch	❶ϕ0.01mm ϕ.0004inch gold wire ❸ϕ0.01mm ϕ.0004inch gold wire ❹ϕ0.02mm ϕ.0008inch gold wire	• Approx. ϕ0.3mm ϕ.012inch is achieved by means of combining with ultra-small spot lens **UZFXMR3**.	500mm 19.685inch	**UZFREG1**
Array	Top sensing 	46mm 1.811inch 17mm .669inch	❶Vertical ϕ0.1mm ϕ.004inch copper wire Horizontal ϕ0.01mm ϕ.0004inch gold wire ❷Vertical ϕ0.3mm ϕ.012inch copper wire Horizontal ϕ0.01mm ϕ.0004inch gold wire ❸Vertical ϕ0.1mm ϕ.004inch copper wire Horizontal ϕ0.01mm ϕ.0004inch gold wire ❹Vertical ϕ0.2mm ϕ.008inch copper wire Horizontal ϕ0.01mm ϕ.0004inch gold wire	• Arrayed beams meet various sensing demand.	Freely cuttable 2m 6.562ft	**UZFRA8**
	Side sensing 	115mm 4.528inch 26mm 1.024inch				**UZFRA8E**
Elbow		36mm 1.417inch 13mm .512inch 90mm 3.543inch 20mm .787inch	❶ϕ0.01mm ϕ.0004inch gold wire ❷ϕ0.05mm ϕ.002inch copperwire ❸ϕ0.01mm ϕ.0004inch gold wire ❹ϕ0.03mm ϕ.001inch gold wire	• Installation is simple as sensing probe is bent 90 degrees and has 5mm .197inch radius.	Freely cuttable 2m 6.562ft	**UZFRR8**
Side-view	Small diameter  Sleeve part cannot be bent.	11mm .433inch 27mm 1.063inch 6mm .236inch	❶ϕ0.01mm ϕ.0004inch gold wire ❸ϕ0.01mm ϕ.0004inch gold wire ❹ϕ0.02mm ϕ.0008inch gold wire	• Side sensing method saves installation space.	Freely cuttable 2m 6.562ft	**UZFRV41**
	 Sleeve part cannot be bent.	18mm .709inch 6mm .236inch 45mm 1.772inch 10mm .394inch	❶ϕ0.1mm ϕ.004inch copper wire ❷ϕ0.5mm ϕ.020inch copper wire ❸ϕ0.1mm ϕ.004inch copper wire ❹ϕ0.3mm ϕ.012inch copper wire			**UZFRV82**
Ultra-small diameter	 Sleeve part cannot be bent.	2.5mm .098inch	❸ϕ0.01mm ϕ.0004inch gold wire	• Suitable for sensing in the intricate apparatus	500mm 19.685inch	**UZFRE11**
	Coaxial  Sleeve part cannot be bent.	8mm .315inch 20mm .787inch 4mm .157inch	❶ϕ0.01mm ϕ.004inch gold wire ❸ϕ0.01mm ϕ.004inch gold wire ❹ϕ0.02mm ϕ.0008inch gold wire	• A highly precise positioning is possible with coaxial reflective type.	1m 3.281ft	**UZFRE21**
Narrow-view	Coaxial  Sleeve part cannot be bent.	6mm .236inch 15mm .591inch 3mm .118inch	❶ϕ0.02mm ϕ.0008inch gold wire ❸ϕ0.02mm ϕ.0008inch gold wire ❹ϕ0.02mm ϕ.0008inch gold wire	• The spread of beam is one-sixth of a conventional model. It is effective for the detection in the narrow space.	1m 3.281ft	**UZFRK22**

(*1) : The sensing range is the figure using an object of non-glossy white paper (100×100mm 3.937×3.937inch, standard of long sensing range type : 200×200mm 7.874×7.874inch, side- view type of small diameter type : 50×50mm 1.969×1.969inch, narrow-view type : 10×10mm .394×.394inch).

(*2) : Minimum sensing object is the value by the maximum sensitivity. Note that this setting distance is different from the rated sensing distance.

(*3) : As for freely cuttable fiber optic cables, note that sensing ranges may be reduced up to 20% depending on the cut condition.

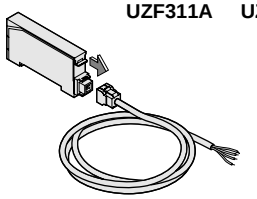
ORDER GUIDE

	Appearance	Model No.	Output	Response time	Emitting element
Sensitive type		**UZF301**	NPN open-collector transistor	Less than 0.3ms	Red LED
		UZF3015	PNP open-collector transistor		
Green LED type		**UZF312**	NPN open-collector transistor	Less than 0.8ms	Green LED
Long sensing range type		**UZF311**	NPN open-collector transistor	Less than 0.4ms	Red LED
		UZF3115	PNP open-collector transistor		
High-speed type		**UZF321**	NPN open-collector transistor	Less than 30µs	Red LED
		UZF3215	PNP open-collector transistor		

Connector type

Connector type is available for Sensitive type and Long sensing range type.
When ordering this type, add suffix "**A**" at the end of model number (only for NPN output type).
Model No. : **UZF301A** (Sensitive type), **UZF311A** (Long sensing range type)
Applicable with Cable with a connector **UZF851**, **UZF852**.

UZF301A **UZF3015A**
UZF311A **UZF3115A** **UZF3215A**



Cable with a connector
UZF851 (2m 6.56ft long)
UZF852 (5m 16.40ft long)

SPECIFICATIONS

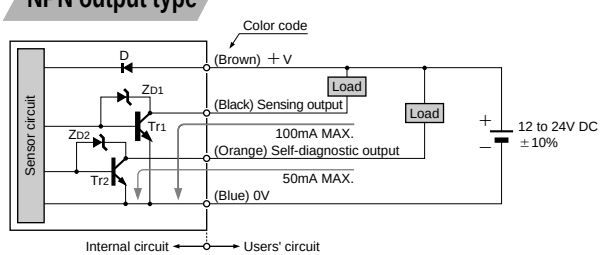
Amplifier

Item \ Type		NPN output				PNP output		
		Standard type	Green LED type	Long sensing range type	High-speed type	Sensitive type	Long sensing range type	High-speed type
Model No.		**UZF301**	**UZF312**	**UZF311**	**UZF321**	**UZF3015**	**UZF3115**	**UZF3215**
Supply voltage		12 to 24V DC ± 10% Ripple P-P : 10% or less						
Consumption		35mA or less						
Sensing output		NPN open-collector transistor Sink current : 100mA max. Applied voltage : 30V DC or less Residual voltage : 1.5V or less (at 100mA sink current) 0.4V or less (at 16mA sink current)				PNP open-collector transistor Source current : 100mA max. Applied voltage : 30V DC or less Residual voltage : 1.5V or less (at 100mA source current)		
	Output operation	Selectable for Light - ON/Dark - ON by the switch						
	Short-circuit protection	Equipped						
Self-diagnostic output		NPN open-collector transistor Sink current : 50mA max. Applied voltage: 30V DC or less Residual voltage : 1V or less (at 50mA sink current) 0.4V or less (at 16mA sink current)				PNP open-collector transistor Source current : 50mA max. Applied voltage: 30V DC or less Residual voltage : 1.5V or less (at 100mA source current)		
	Output operation	ON under the unstable sensing condition						
	Short-circuit protection	——						
Response time		0.3ms or less	0.8ms or less	0.4ms or less	30µs or less	0.3ms or less	0.4ms or less	30µs or less
Operation indicator		Red LED (lights on when the sensing output is ON)						
Stable operation indicator		Green LED (lights on under the stable “Light” condition and the stable “Dark” condition)						
Sensitivity adjuster		8-turn adjuster with the indicator						
Automatic crosstalk prevention function		Equipped		——		Equipped		——
Timer function		Equipped with approx. 40ms fixed OFF-delay timer (selection of valid or void)						
Environmental resistance	Ambient temperature	−10 to +55°C −14 to +131°F (no dew condensation nor icing allowed), Storage : −20 to +70°C −4 to +158°F						
	Ambient humidity	35 to 85% RH, Storage : 35 to 85% RH						
	Ambient light	Sun light : 10,000ℓx at the light-receiving face, Incandescent : 3,500ℓx at the light-receiving face						
	Noise	Power line : 240Vp with 10ms cycle and 0.5µs pulse duration, Radiation : 300Vp with 10ms cycle and 0.5µs pulse duration (by a noise simulator)						
	Withstand voltage	1,000V AC applied between the live parts and enclosure for 1 min. (*1)						
	Insulation	20MΩ or more when 250V DC applied between the live parts and enclosure (*1)						
	Vibration	0.75mm .030inch amplitude at the frequency of 10 to 150Hz in each of X, Y and Z directions for 2 hours in the power OFF state						
	Shock	100m/s^2 {approx. 10G} impulse in each of X, Y and Z directions for 5 times each in the power OFF state						
Emitting element		Red LED (modulated)	Green LED (modulated)	Red LED (modulated)				
Material		Enclosure : Heat-resistant ABS, Cover : Polycarbonate, Fiber optic cable lock lever : PPS						
Cable		0.2mm^2 × 4 cores of cabtyre cable of 2m 6.56ft long						
Cable extension		Extendable up to 100m 328.08ft using 0.3mm^2 or more cable						
Weight		Approx. 60g 2.12oz						
Accessories		**UZF811** (mounting bracket) : 1 pc., Screwdriver for the sensitivity adjustment : 1 pc.						

(*1): Data of withstand voltage and insulation resistance are for the amplifier itself.

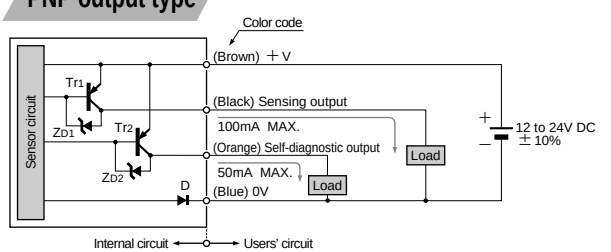
TYPICAL WIRING DIAGRAMS

NPN output type



Symbol... D : Reverse polarity protection diode
Z_{D1}, Z_{D2} : Surge absorption zener diode
T_{r1}, Z_{r2} : NPN output transistor

PNP output type



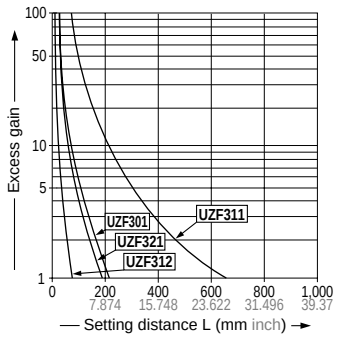
Symbol... D : Reverse polarity protection diode
Z_{D1}, Z_{D2} : Surge absorption zener diode
T_{r1}, Z_{r2} : PNP output transistor

SENSING FIELDS (TYPICAL)

Correlation between setting distance and excess gain

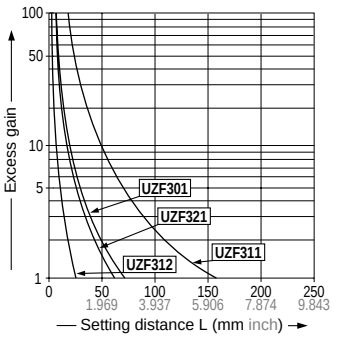
UZFTF8 Thru-beam

UZF301, 312, 311, 321



UZFRF8 Reflective

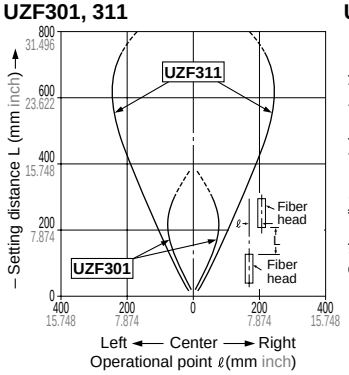
UZF301, 312, 311, 321



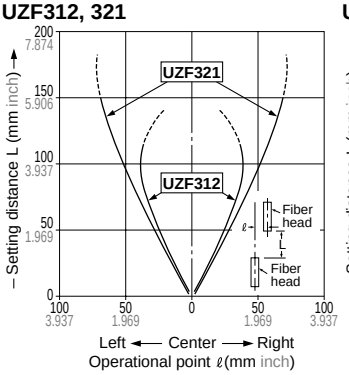
Parallel deviations

UZFTB8 Thru-beam

UZF301, 311

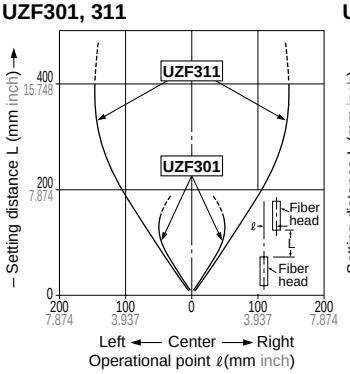


UZF312, 321

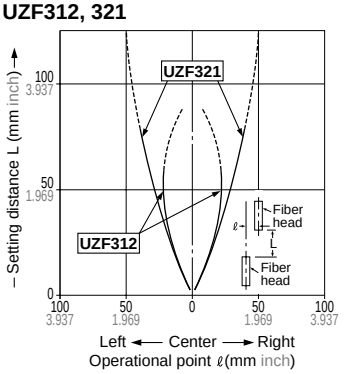


UZFTF8, UZFTF89, UZFTF84 UZFTS8, UZFTT8 Thru-beam

UZF301, 311

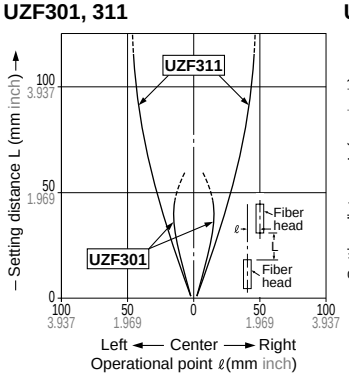


UZF312, 321

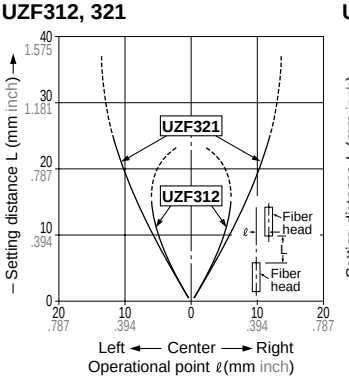


UZFTF4, UZFTF49 UZFTF44, UZFTS4 Thru-beam

UZF301, 311

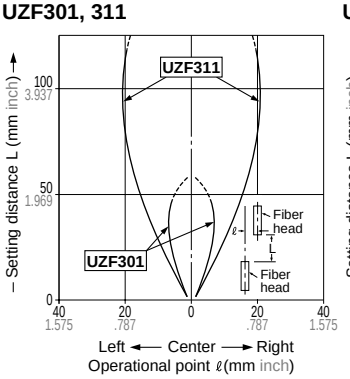


UZF312, 321

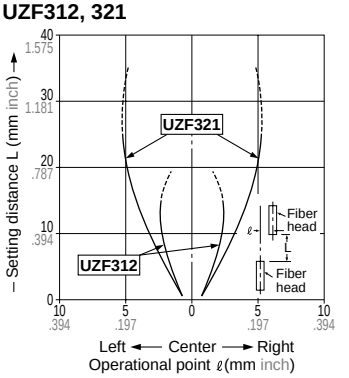


UZFTC4 Thru-beam

UZF301, 311

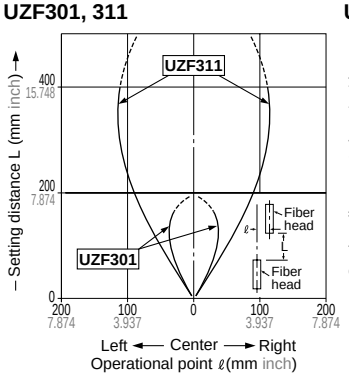


UZF312, 321

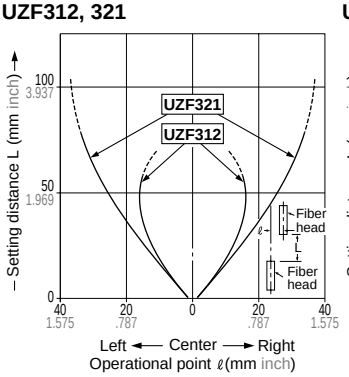


UZFTP8 Thru-beam

UZF301, 311

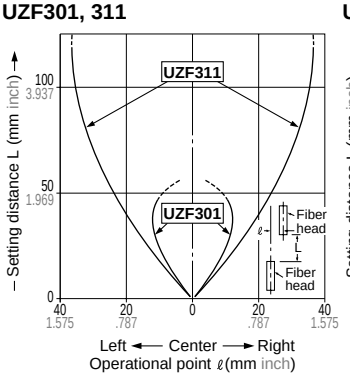


UZF312, 321

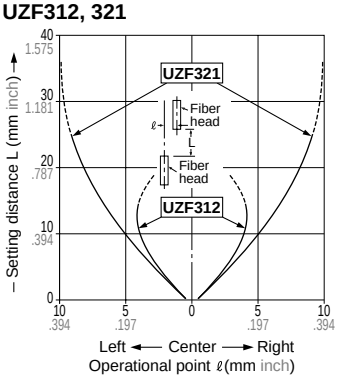


UZFTP4 Thru-beam

UZF301, 311



UZF312, 321

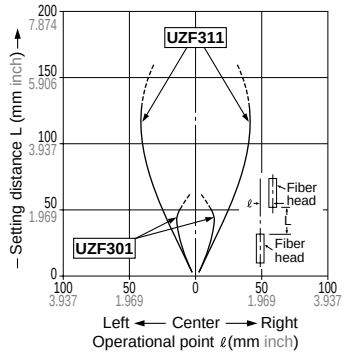


SENSING FIELDS (TYPICAL)

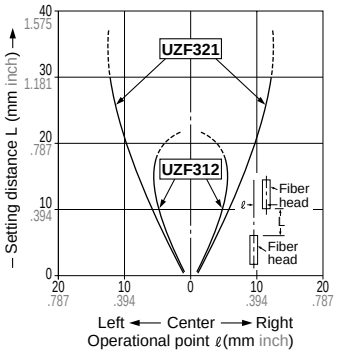
Parallel deviations

UZFTP2 Thru-beam

UZF301, 311

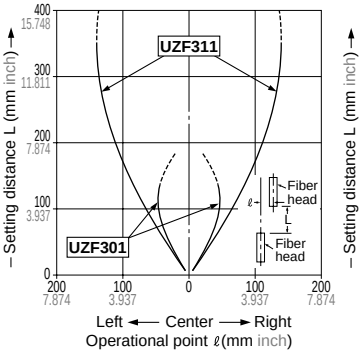


UZF312, 321

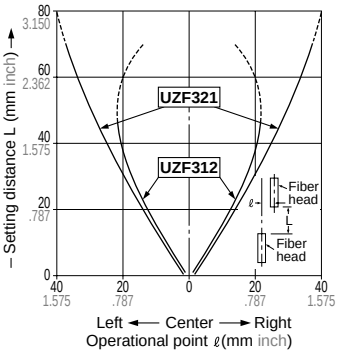


UZFTH7 UZFTH76 UZFTH6 Thru-beam

UZF301, 311

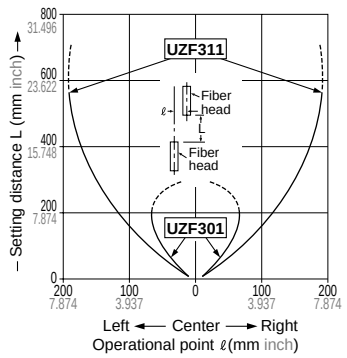


UZF312, 321

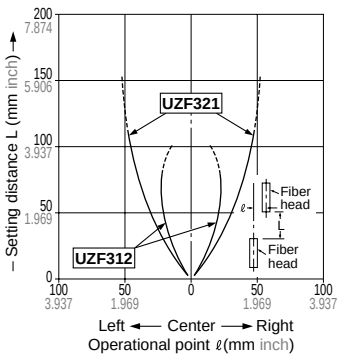


UZFTH8 Thru-beam

UZF301, 311

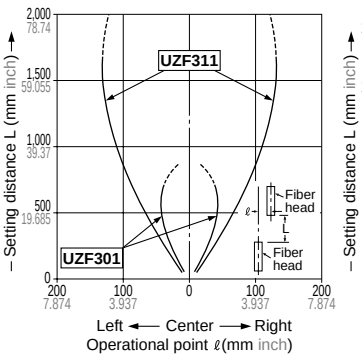


UZF312, 321

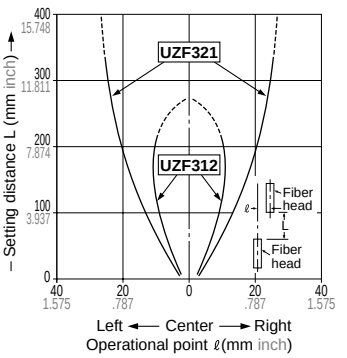


UZFTL8Y Thru-beam

UZF301, 311

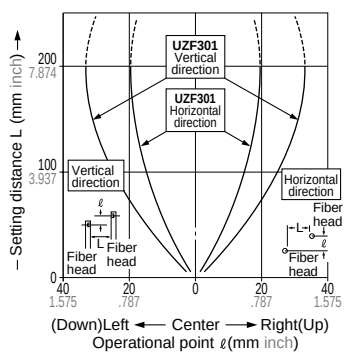


UZF312, 321

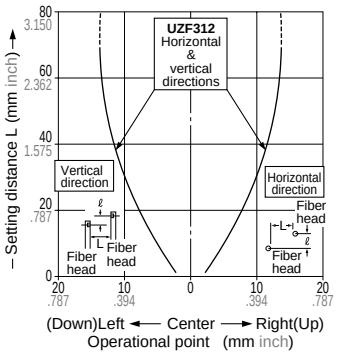


UZFTV8Y Thru-beam

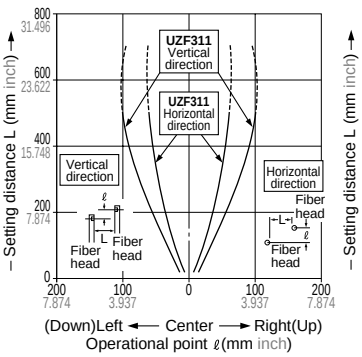
UZF301



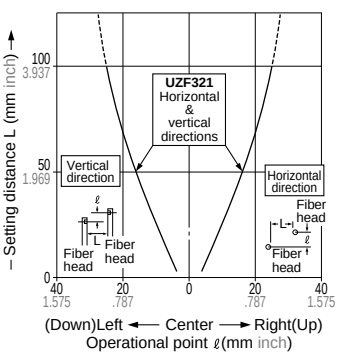
UZF312



UZF311

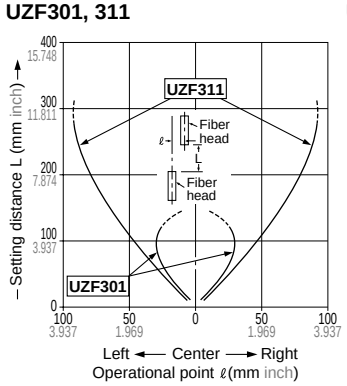


UZF321

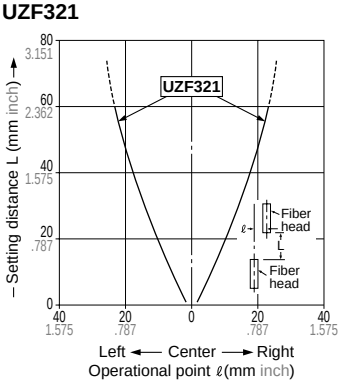


UZFT6V Thru-beam

UZF301, 311

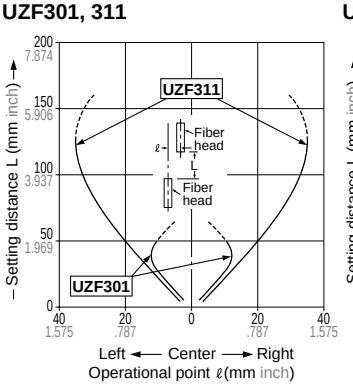


UZF321

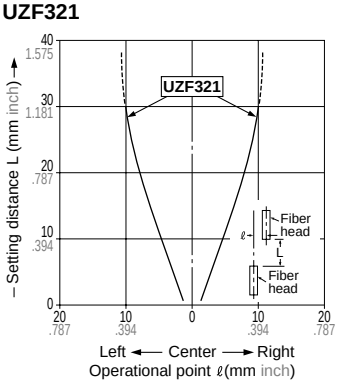


UZFT60V Thru-beam

UZF301, 311



UZF321

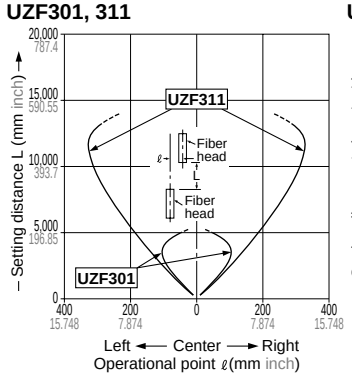


SENSING FIELDS (TYPICAL)

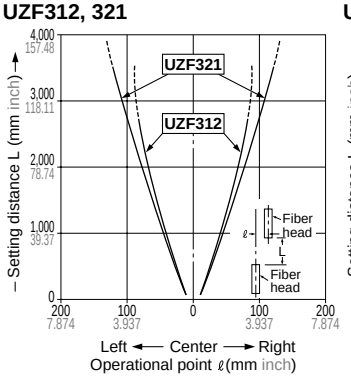
Parallel deviations

UZFTL9 Thru-beam

UZF301, 311

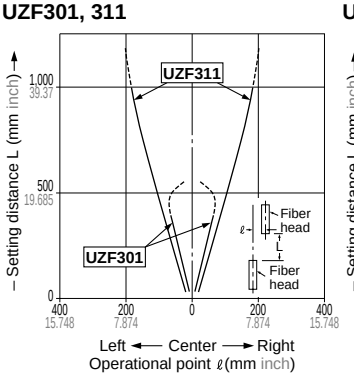


UZF312, 321

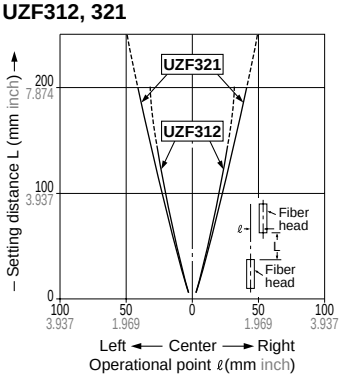


UZFTL8 Thru-beam

UZF301, 311

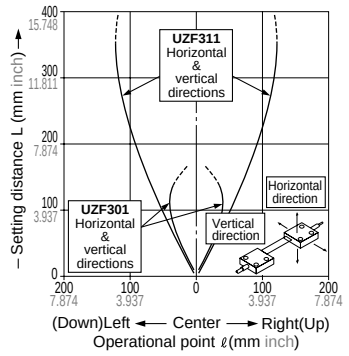


UZF312, 321

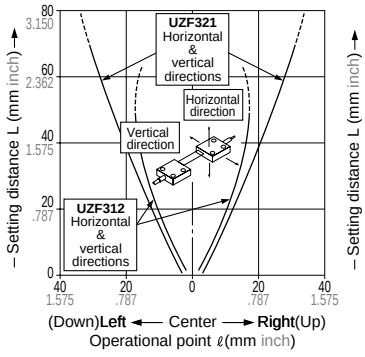


UZFTA8 Thru-beam

UZF301, 311

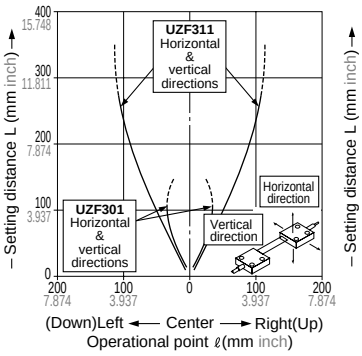


UZF312, 321

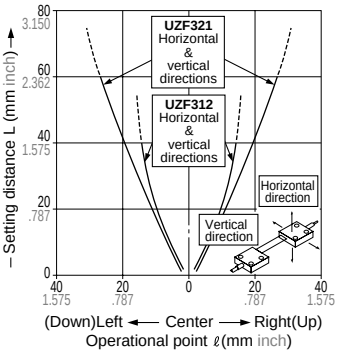


UZFTA8E Thru-beam

UZF301, 311

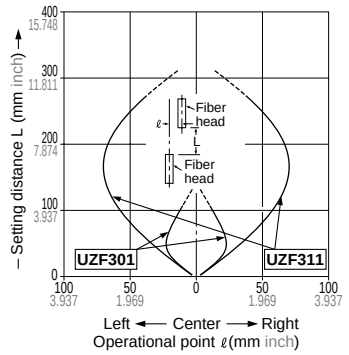


UZF312, 321

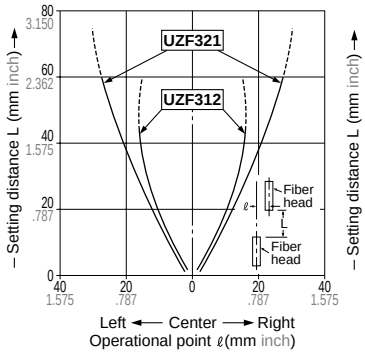


UZFTR8 Thru-beam

UZF301, 311

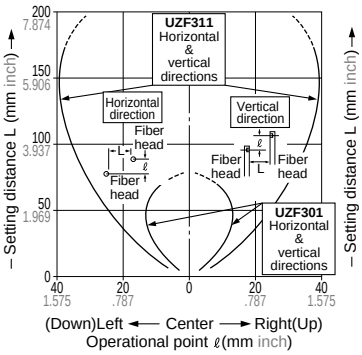


UZF312, 321

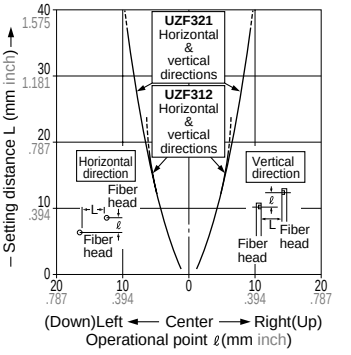


UZFTV22 Thru-beam

UZF301, 311

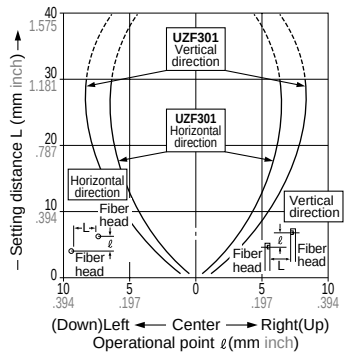


UZF312, 321

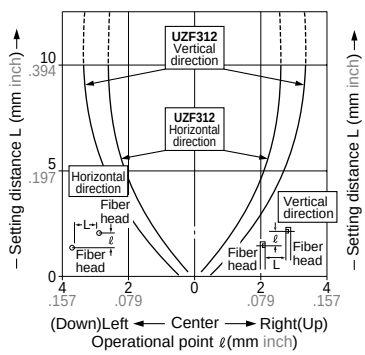


UZFTV41 Thru-beam

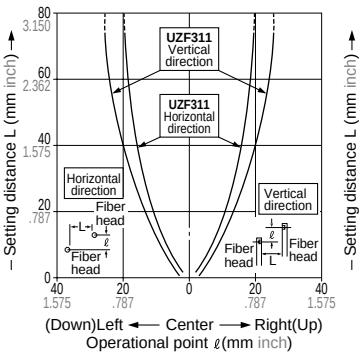
UZF301



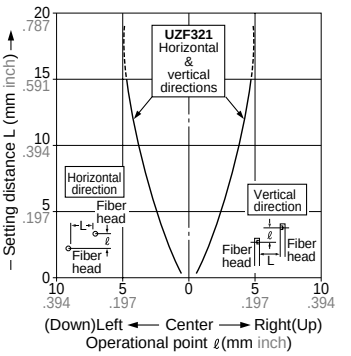
UZF312



UZF311



UZF321

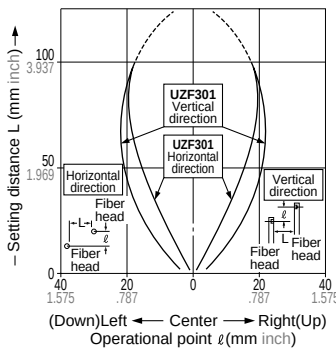


SENSING FIELDS (TYPICAL)

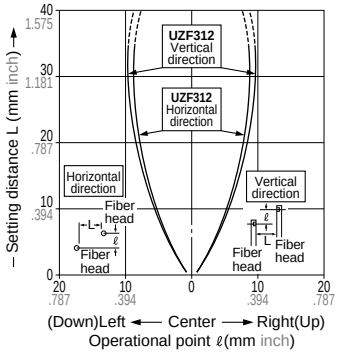
Parallel deviations

UZFTV82 Thru-beam

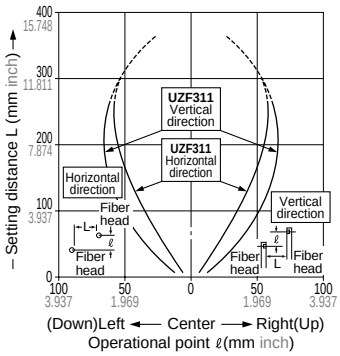
UZF301



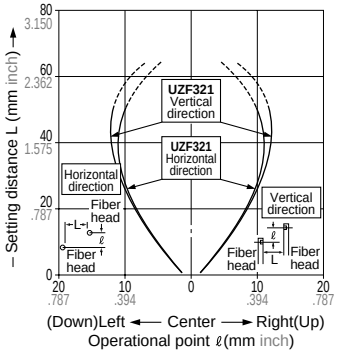
UZF312



UZF311

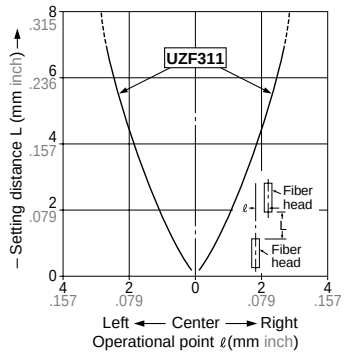


UZF321



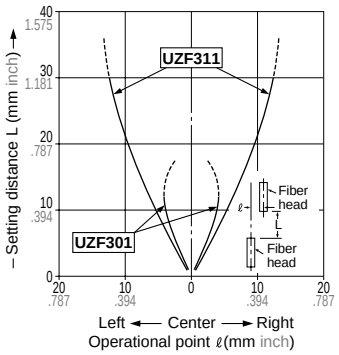
UZFTE1 Thru-beam

UZF311

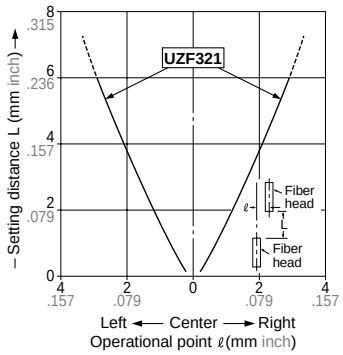


UZFTE2 Thru-beam

UZF301, 311

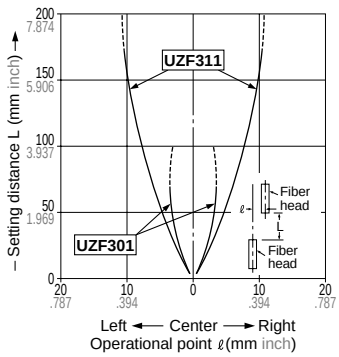


UZF321

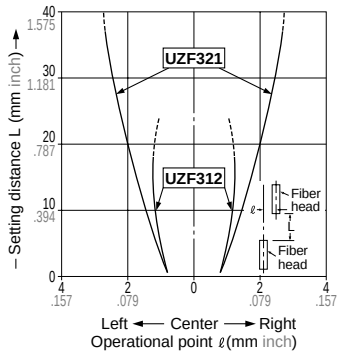


UZFTK22 Thru-beam

UZF301, 311



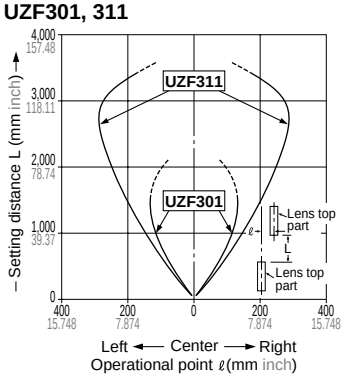
UZF312, 321



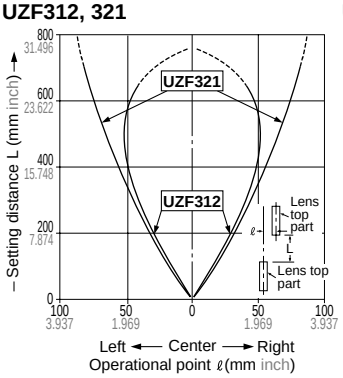
Parallel deviations with UZFXLE1 (Expansion lens) applied on both sides

UZFTB8 Thru-beam

UZF301, 311

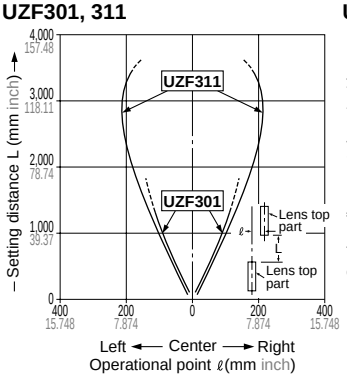


UZF312, 321

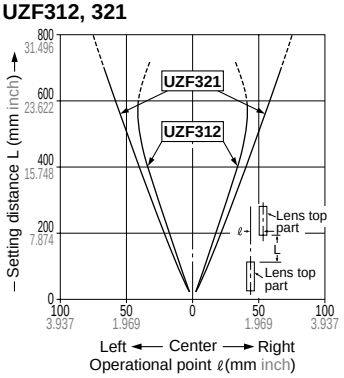


UZFTF8 UZFTT8 Thru-beam

UZF301, 311



UZF312, 321

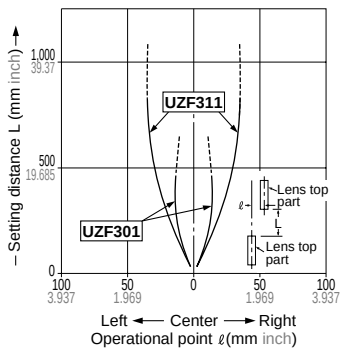


SENSING FIELDS (TYPICAL)

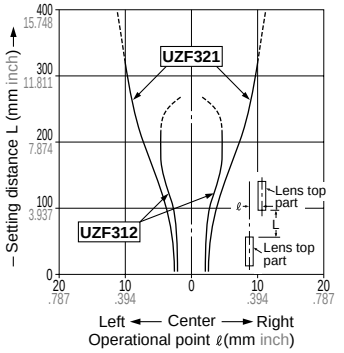
Parallel deviations with UZFXLE1 (Expansion lens) applied on both sides

UZFTC4 Thru-beam

UZF301, 311

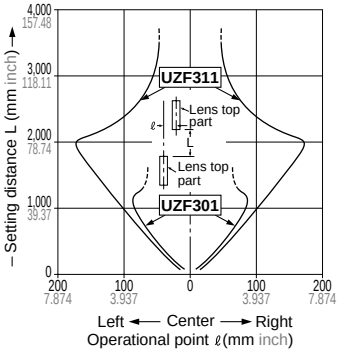


UZF312, 321

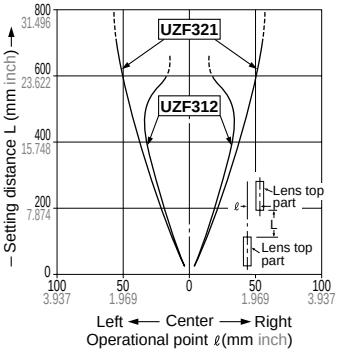


UZFTP8 Thru-beam

UZF301, 311

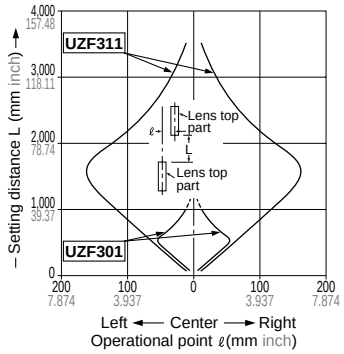


UZF312, 321

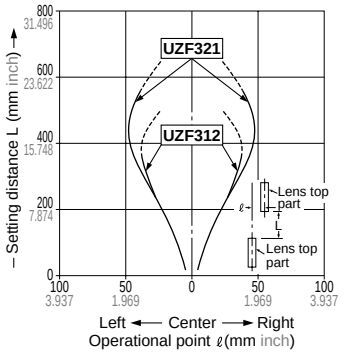


UZFTH7 Thru-beam

UZF301, 311

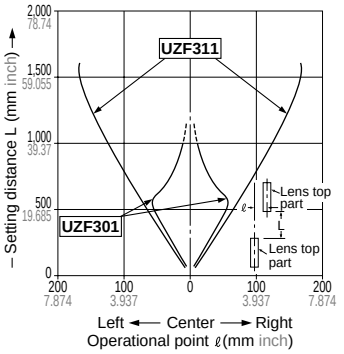


UZF312, 321

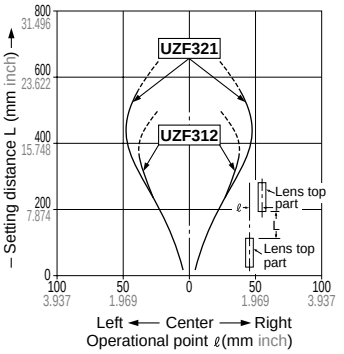


UZFTH6 Thru-beam

UZF301, 311

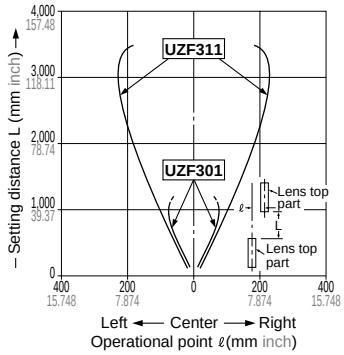


UZF312, 321

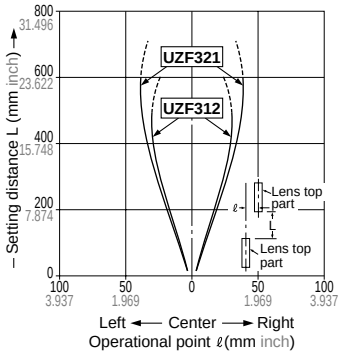


UZFTR8 Thru-beam

UZF301, 311



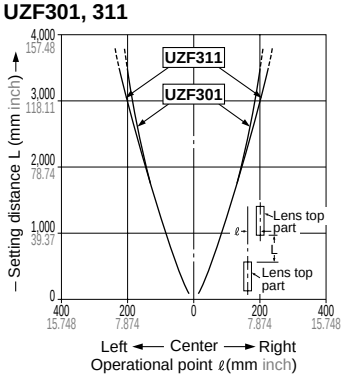
UZF312, 321



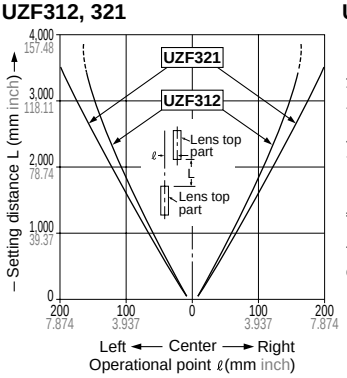
Parallel deviations with UZFXLE2 (Super-expansion lens) applied on both sides

UZFTB8 Thru-beam

UZF301, 311

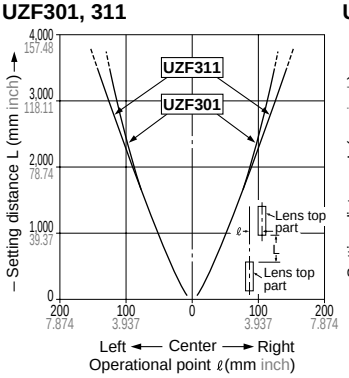


UZF312, 321

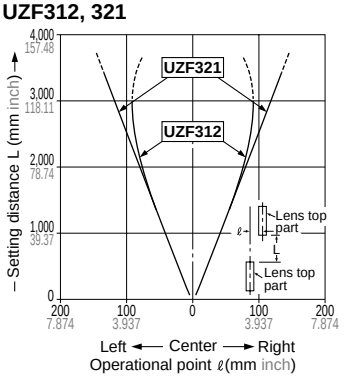


UZFTF8 Thru-beam

UZF301, 311



UZF312, 321

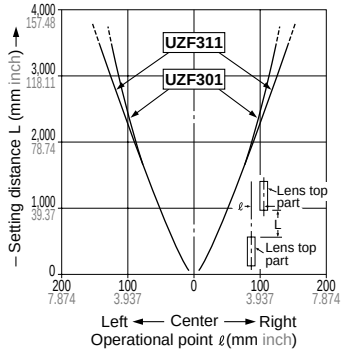


SENSING FIELDS (TYPICAL)

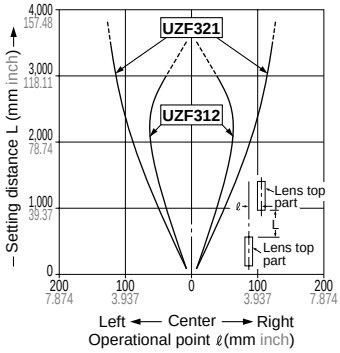
Parallel deviations with UZFXLE2 (Expansion lens) applied on both sides

UZFTP8 Thru-beam

UZF301, 311

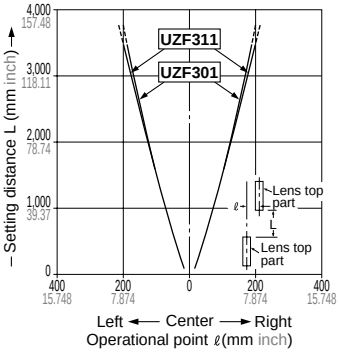


UZF312, 321

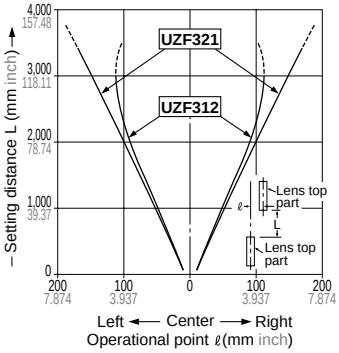


UZFTH7 Thru-beam

UZF301, 311

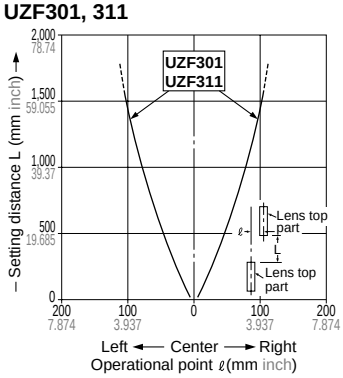


UZF312, 321

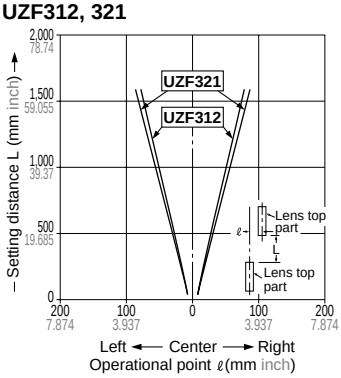


UZFTH6 Thru-beam

UZF301, 311

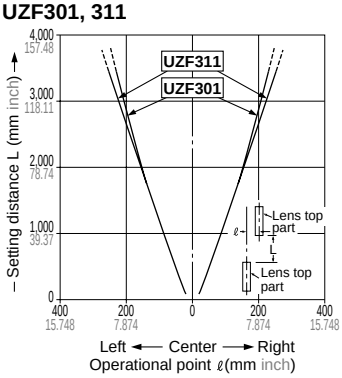


UZF312, 321

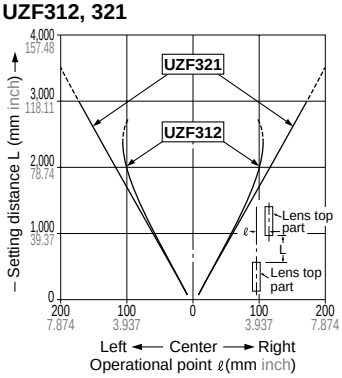


UZFTH8 Thru-beam

UZF301, 311

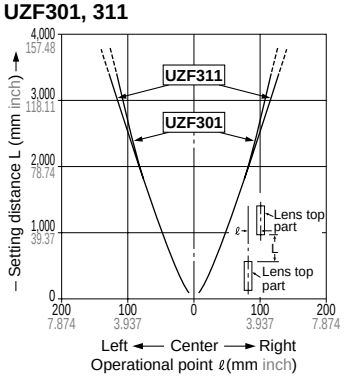


UZF312, 321

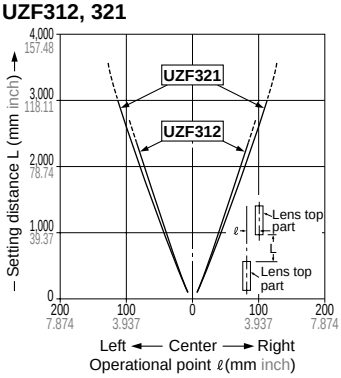


UZFTR8 Thru-beam

UZF301, 311



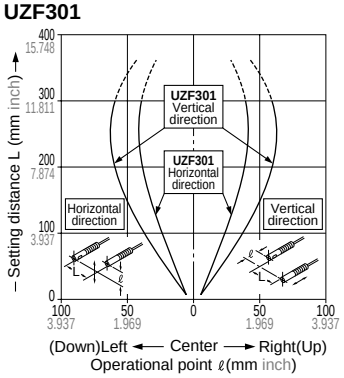
UZF312, 321



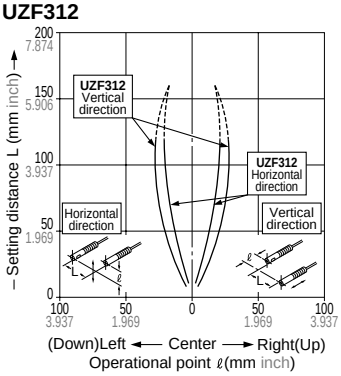
Parallel deviations with UZFXSV1 (Side-view lens) applied on both sides

UZFTB8 Thru-beam

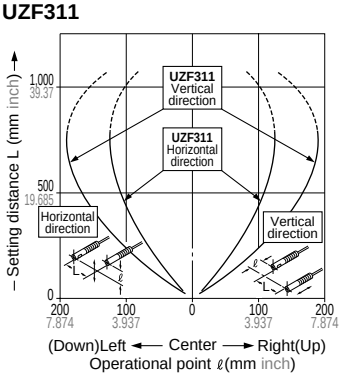
UZF301



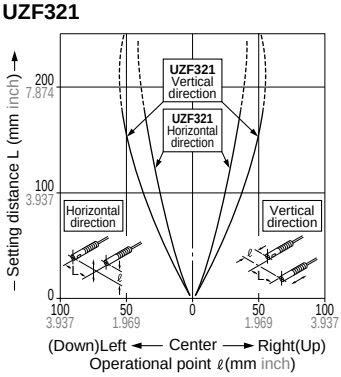
UZF312



UZF311



UZF321

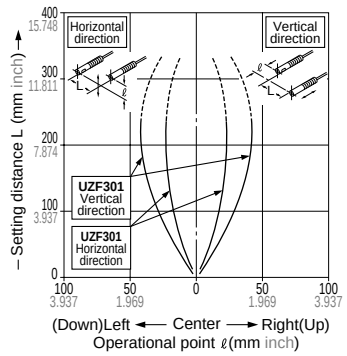


SENSING FIELDS (TYPICAL)

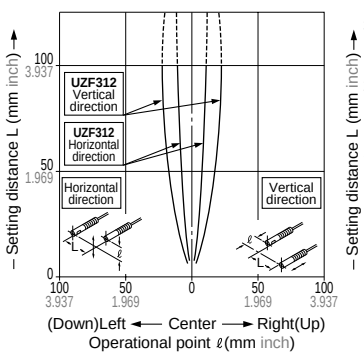
Parallel deviations with UZFXSV1 (Side-view lens) applied on both sides

UZFTF8
UZFTT8 Thru-beam

UZF301



UZF312



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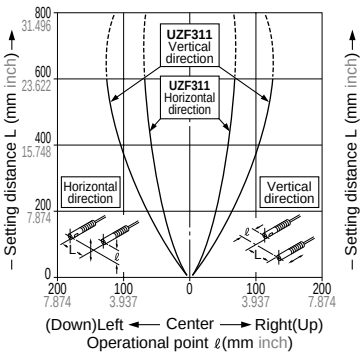

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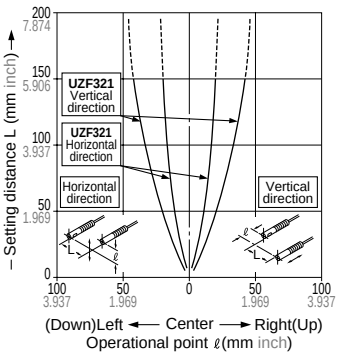
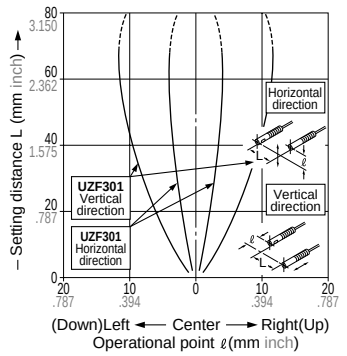
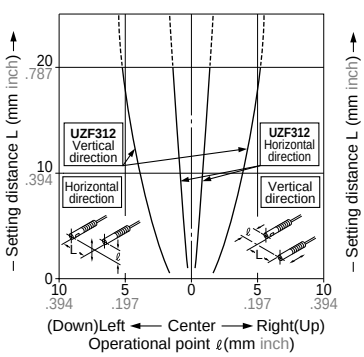


UZFTC4 Thru-beam

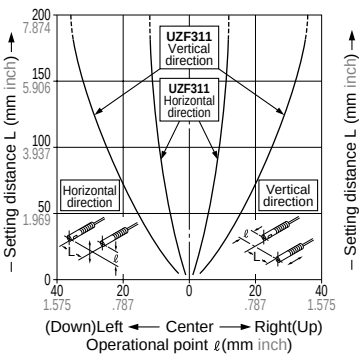
UZF301



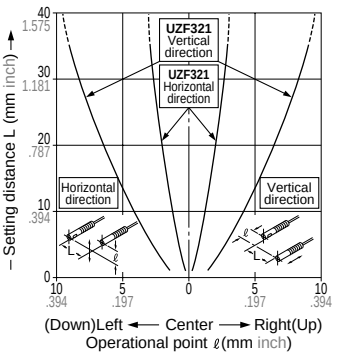
UZF312



UZF311

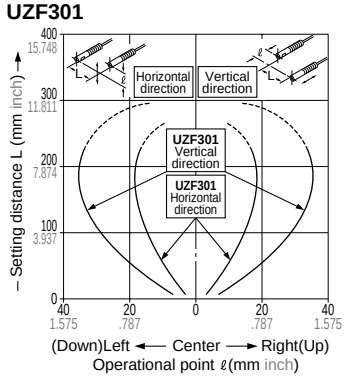


UZF321

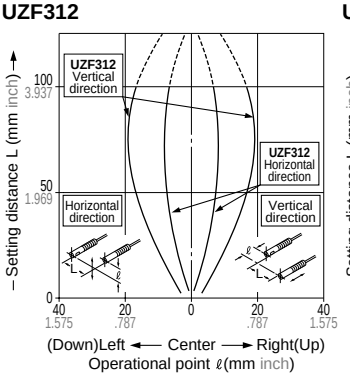


UZFTP8 Thru-beam

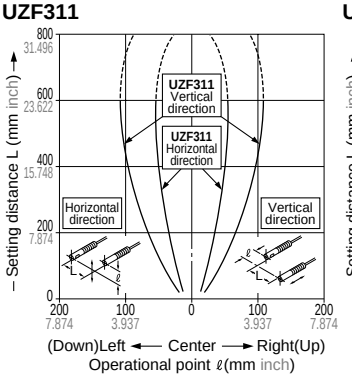
UZF301



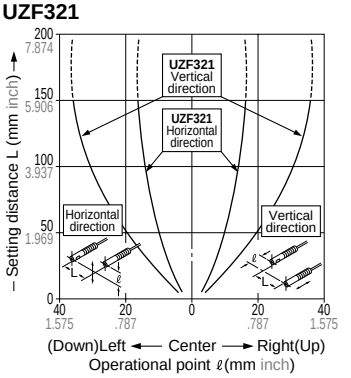
UZF312



UZF311

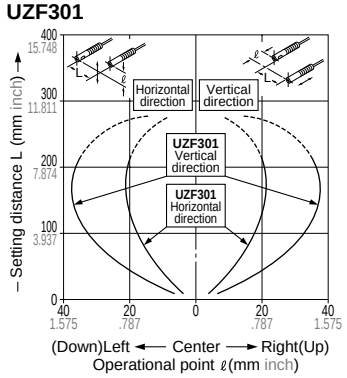


UZF321

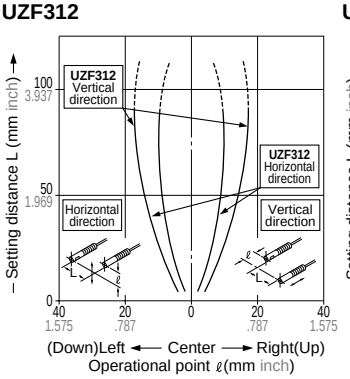


UZFTH7
UZFTH6 Thru-beam

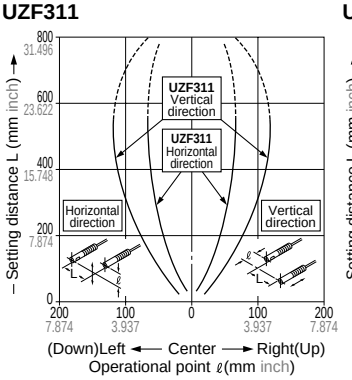
UZF301



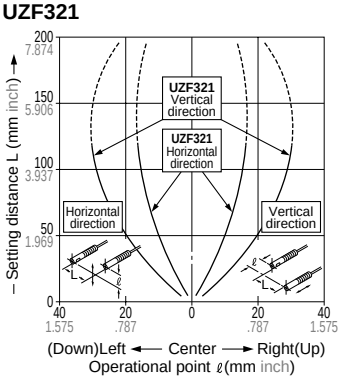
UZF312



UZF311



UZF321

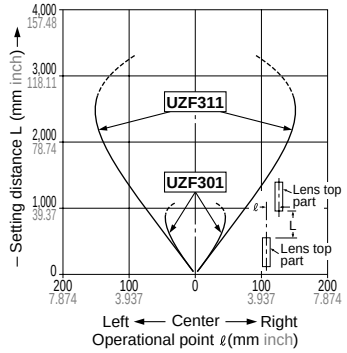


SENSING FIELDS (TYPICAL)

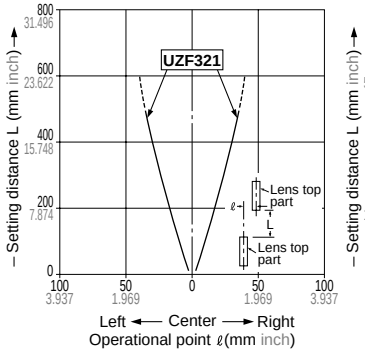
Parallel deviations with UZFVLE1 (Vacuum • expansion lens) applied on both sides

UZFT6V Thru-beam

UZF301, 311

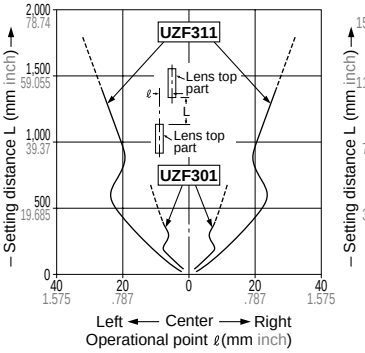


UZF321



UZFT60V Thru-beam

UZF301, 311



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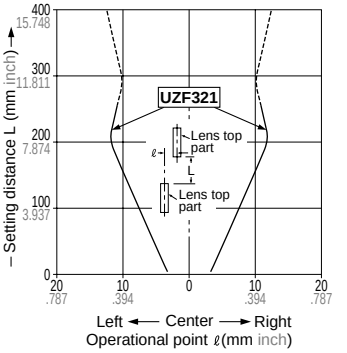
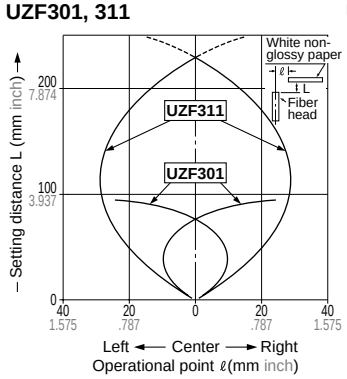


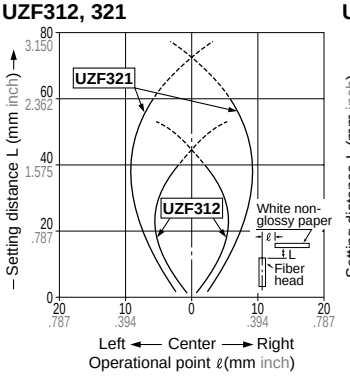
Sensing fields

UZFR8B Reflective

UZF301, 311

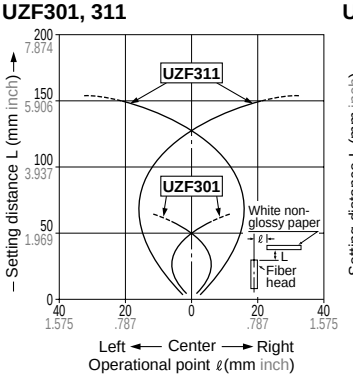


UZF312, 321

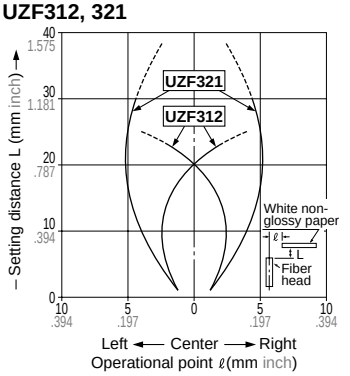


UZFRF8, UZFRF89, UZFRF84 UZFRT8, UZFRS8 Reflective

UZF301, 311

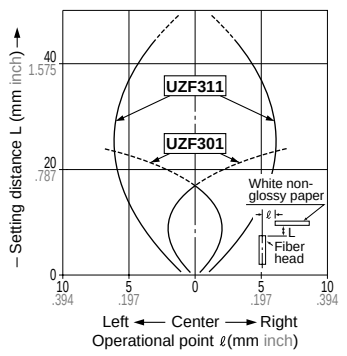


UZF312, 321

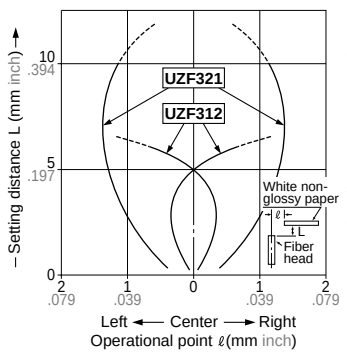


UZFRT4, UZFRF4, UZFRF49 UZFRF44, UZFRS4 Reflective

UZF301, 311

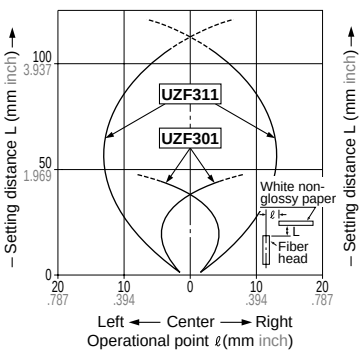


UZF312, 321

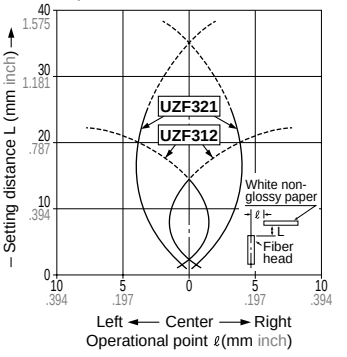


UZFRP8

UZF301, 311

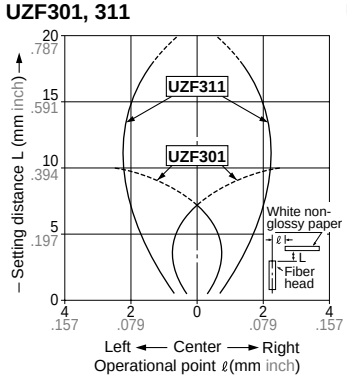


UZF312, 321

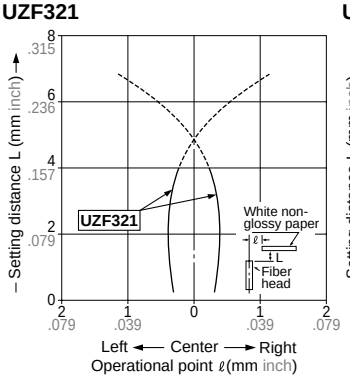


UZFRP4 Reflective

UZF301, 311

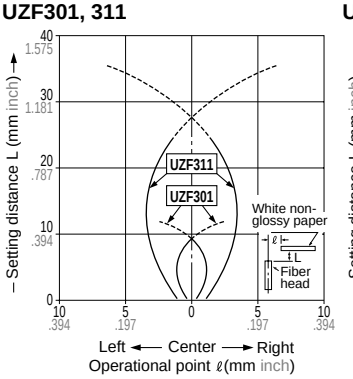


UZF321

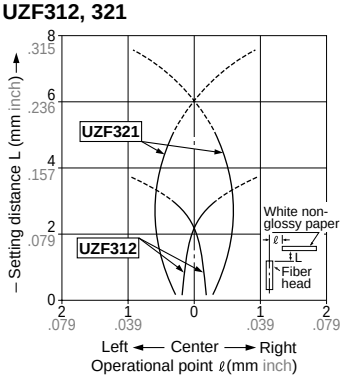


UZFRP2 Reflective

UZF301, 311



UZF312, 321

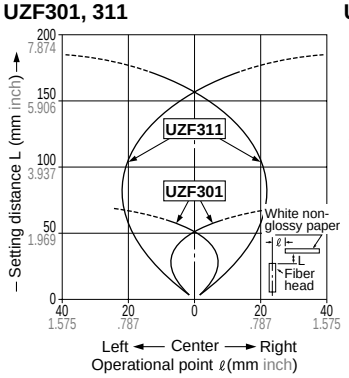


SENSING FIELDS (TYPICAL)

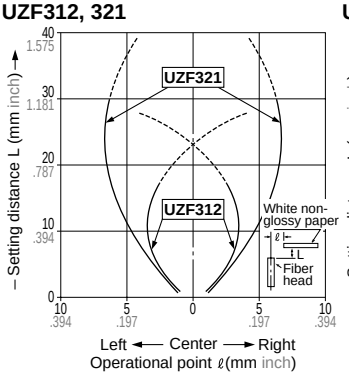
Sensing fields

UZFRH7, UZFRH76 UZFRH6 Reflective

UZF301, 311

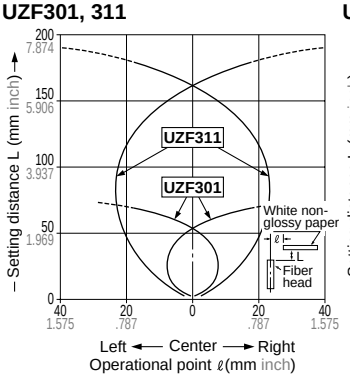


UZF312, 321

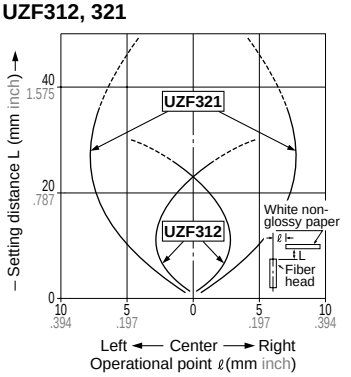


UZFRH8 Reflective

UZF301, 311

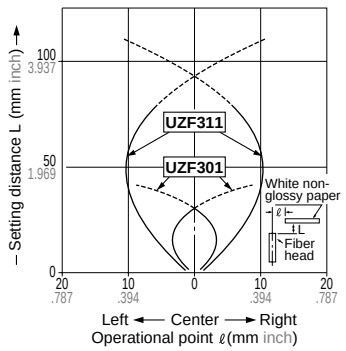


UZF312, 321

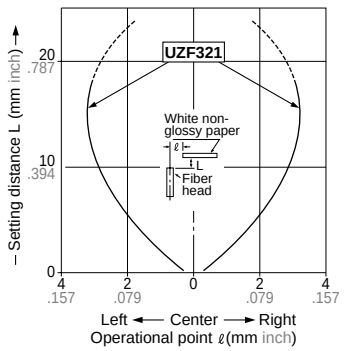


UZFR6V Reflective

UZF301, 311

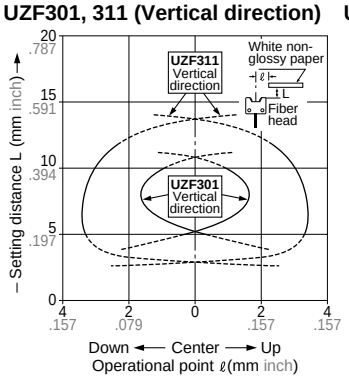


UZF321

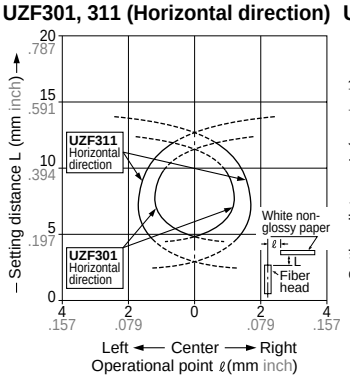


UZFRL4 Reflective

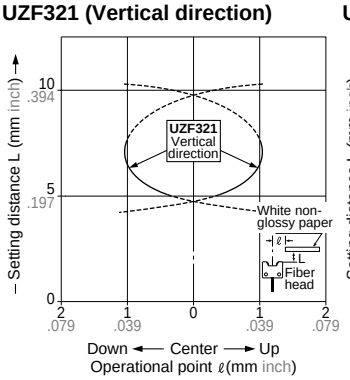
UZF301, 311 (Vertical direction)



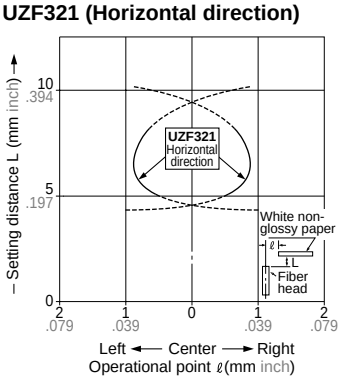
UZF301, 311 (Horizontal direction)



UZF321 (Vertical direction)

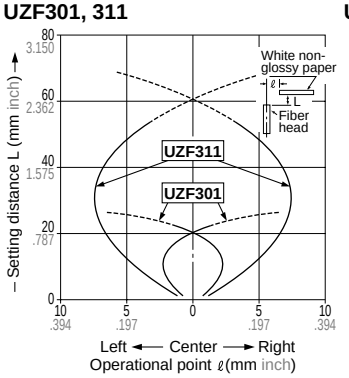


UZF321 (Horizontal direction)

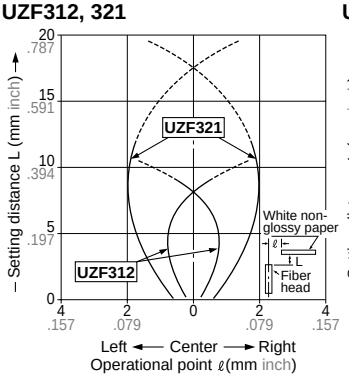


UZFRG4 Reflective

UZF301, 311

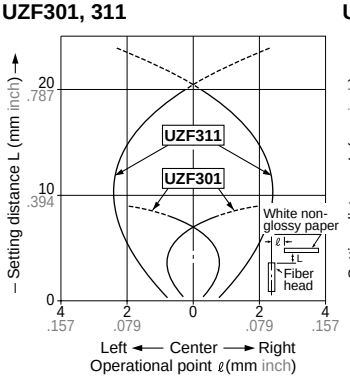


UZF312, 321

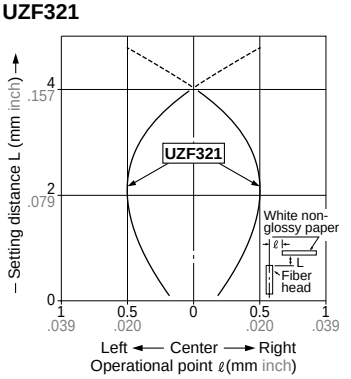


UZFREG1 Reflective

UZF301, 311



UZF321

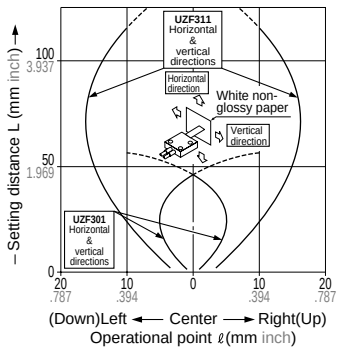


SENSING FIELDS (TYPICAL)

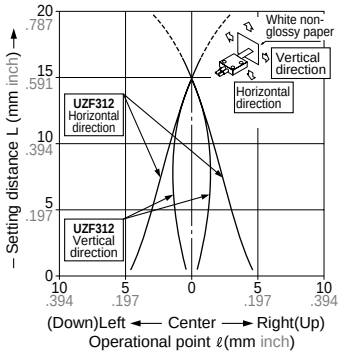
Sensing fields

UZFRA8 / UZFRA8E — Reflective

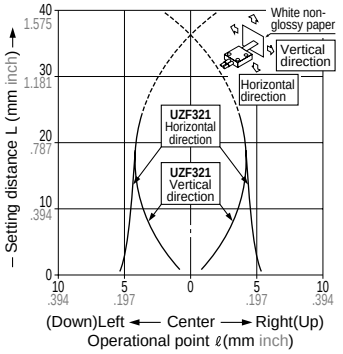
UZF301, 311



UZF312

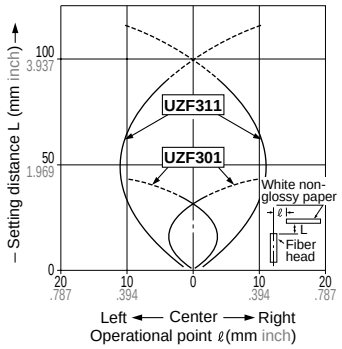


UZF321

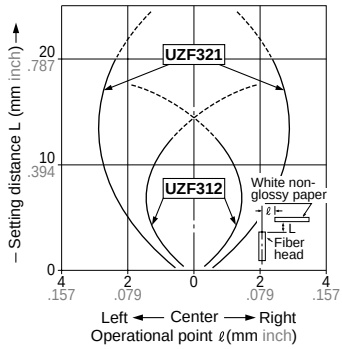


UZFRR8 — Reflective

UZF301, 311

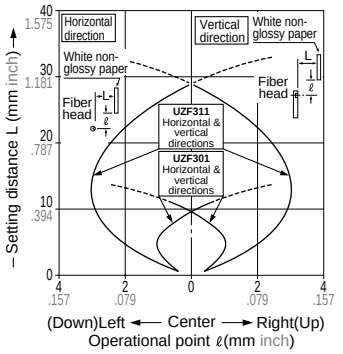


UZF312, 321

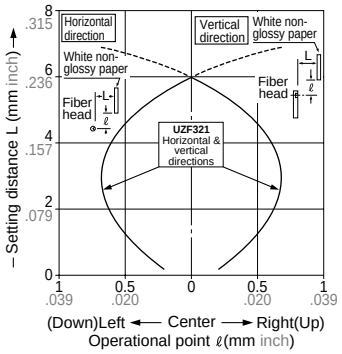


UZFRV41 — Reflective

UZF301, 311

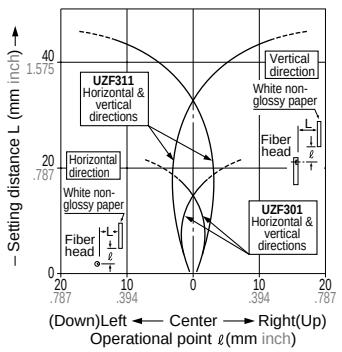


UZF321

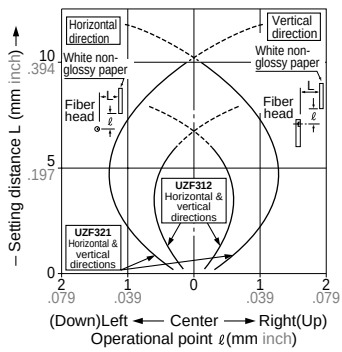


UZFRV82 — Reflective

UZF301, 311

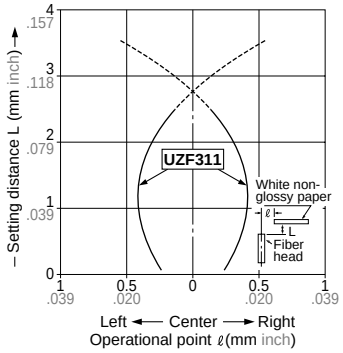


UZF312, 321



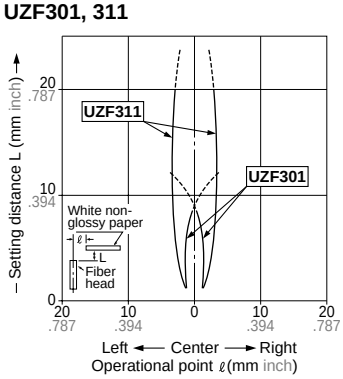
UZFRE11 — Reflective

UZF311

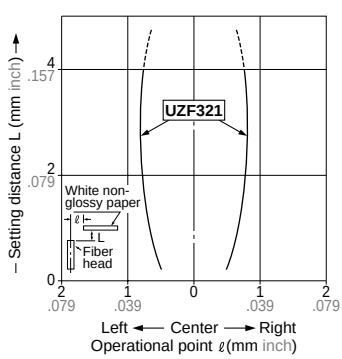


UZFRE21 — Reflective

UZF301, 311

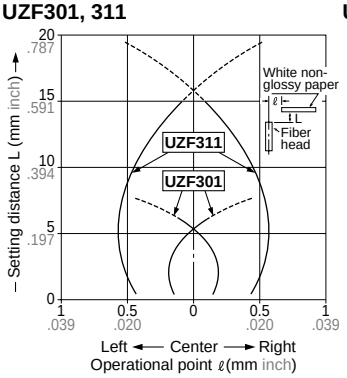


UZF321

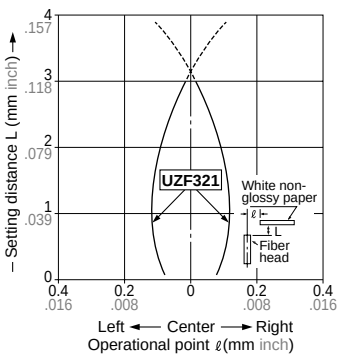


UZFRK22 — Reflective

UZF301, 311



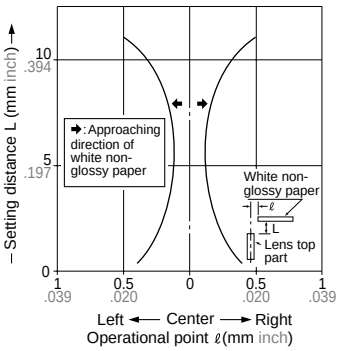
UZF321



SENSING FIELDS (TYPICAL)

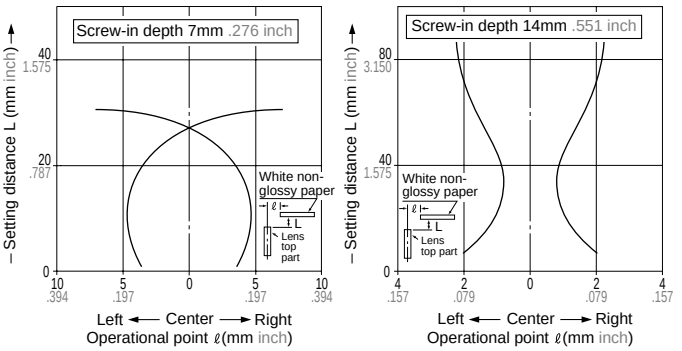
Sensing field with UZFXMR1 (Pinpoint spot lens) applied

UZFRG4 Reflective



Sensing fields with UZFXMR2 (Zoom lens) applied

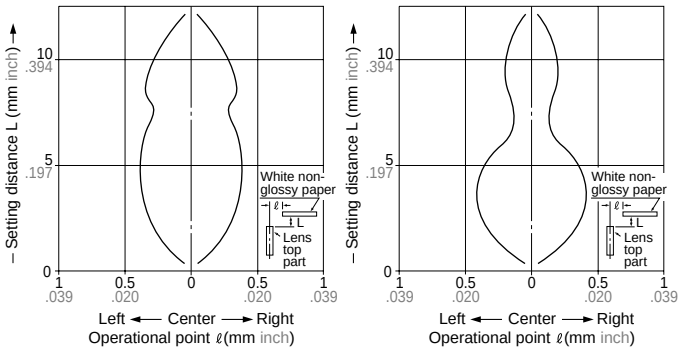
UZFRG4 Reflective



Sensing fields with UZFXMR3 (Finest spot lens) applied

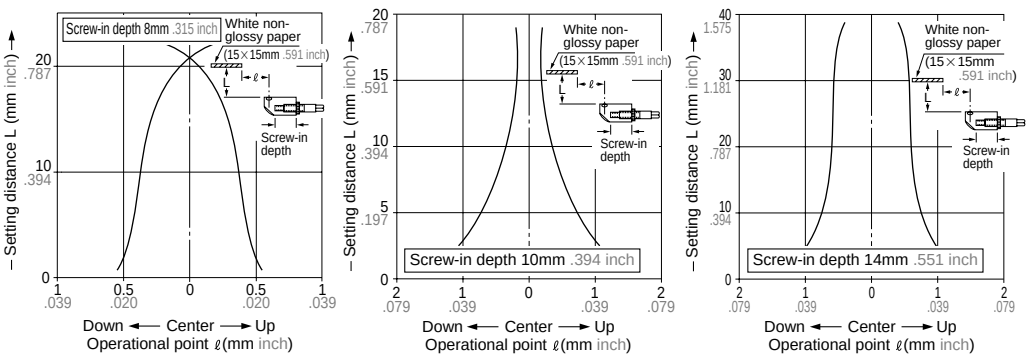
UZFRG4 Reflective

UZFREG1 Reflective



Sensing fields with UZFXMR5 (Side-view type zoom lens) applied

UZFRG4 Reflective

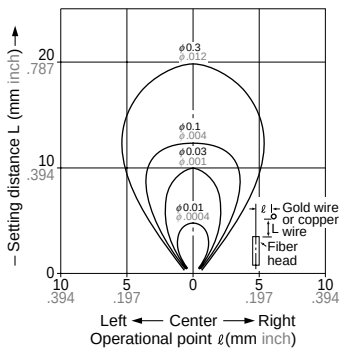


SENSING FIELDS (TYPICAL)

Correlation between diameter of an object and sensing fields

UZFR8B Reflective

UZF301



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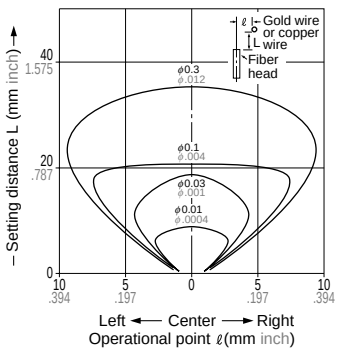

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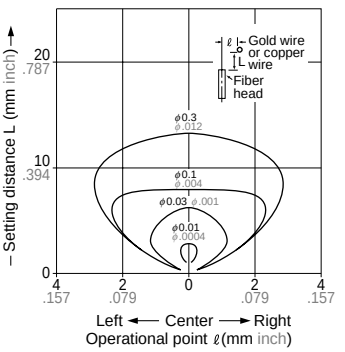
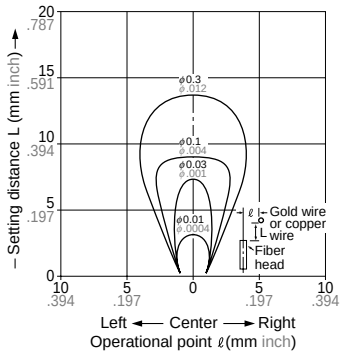


UZFRF8, UZFRT8 UZFRS8 Reflective

UZF301



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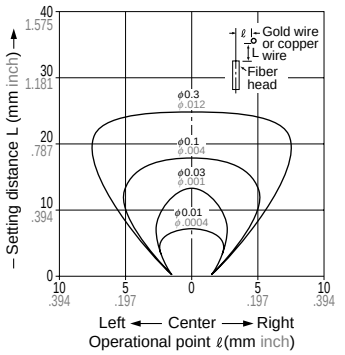

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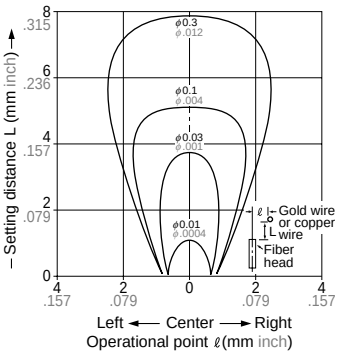
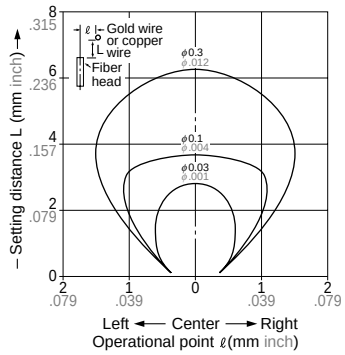


UZFRT4 UZFRF4 Reflective

UZF301



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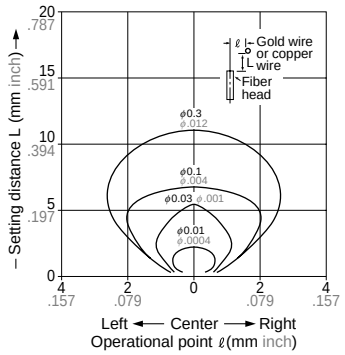

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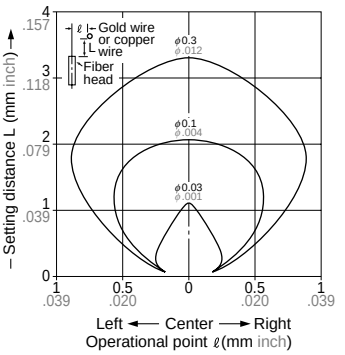
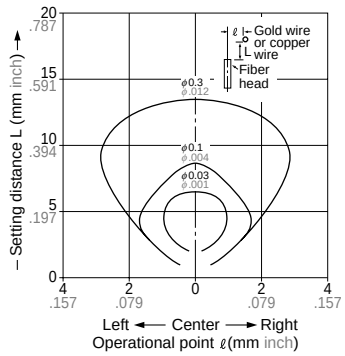


UZFRP8 Reflective

UZF301



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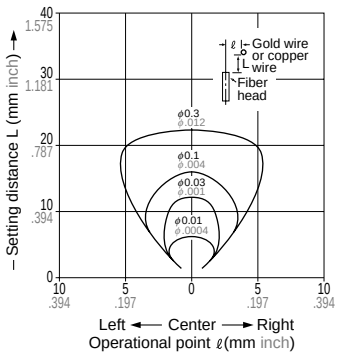

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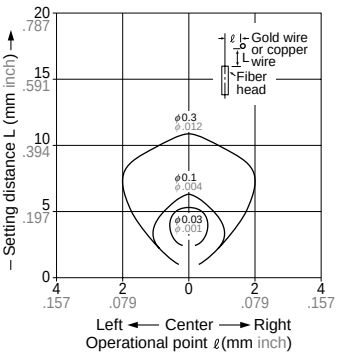
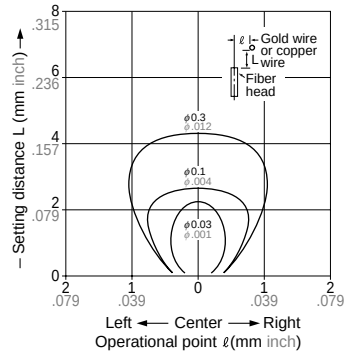


SENSING FIELDS (TYPICAL)

Correlation between diameter of an object and sensing fields

UZFRP2 Reflective

UZF301



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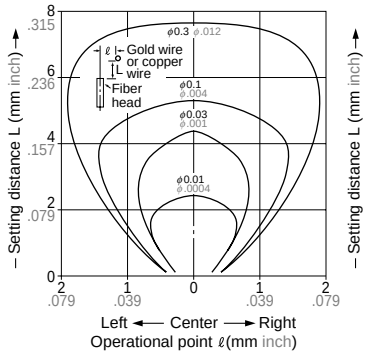

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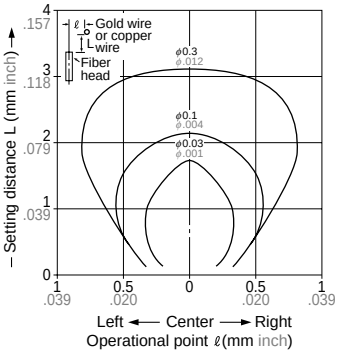
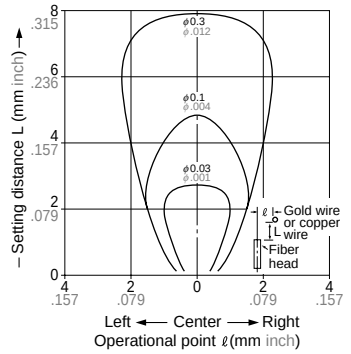


UZFRG4 Reflective

UZF301



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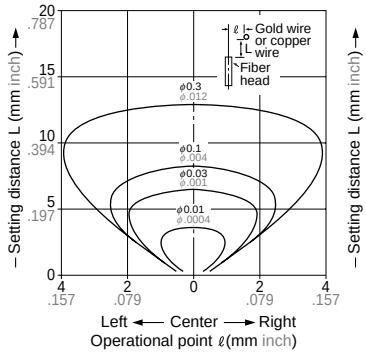

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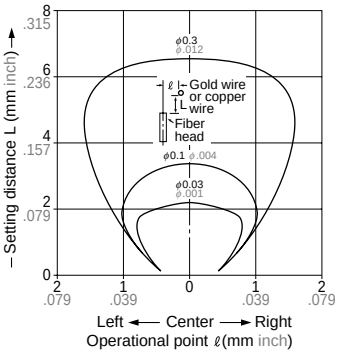
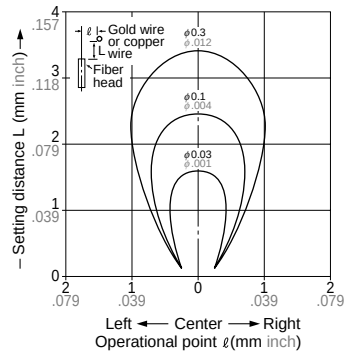


UZFREG1 Reflective

UZF301



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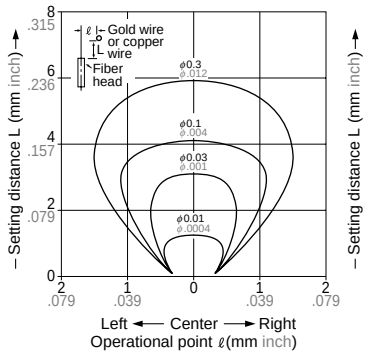

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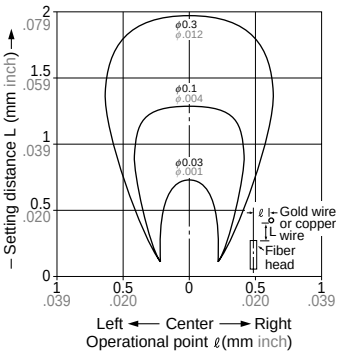
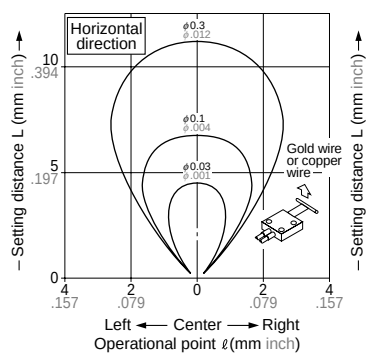


UZFRA8 Reflective

UZF301



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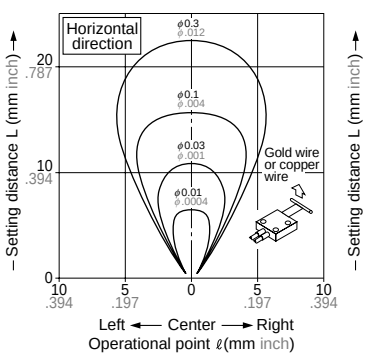

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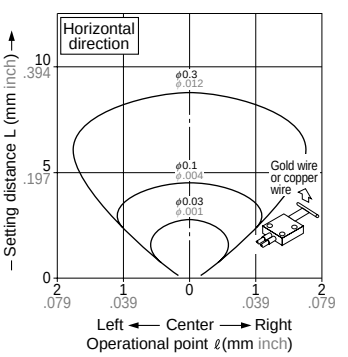
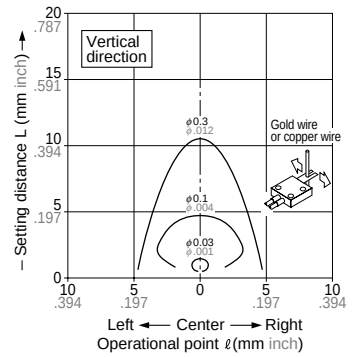


SENSING FIELDS (TYPICAL)

Correlation between diameter of an object and sensing fields

UZFRA8 Reflective

UZF301



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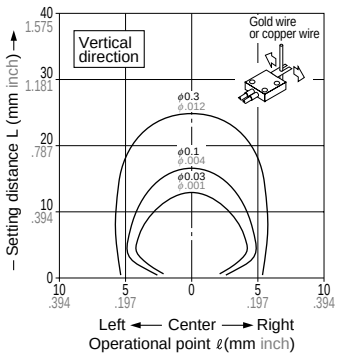

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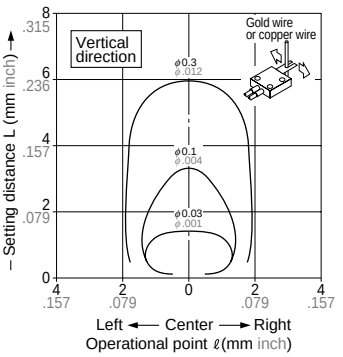
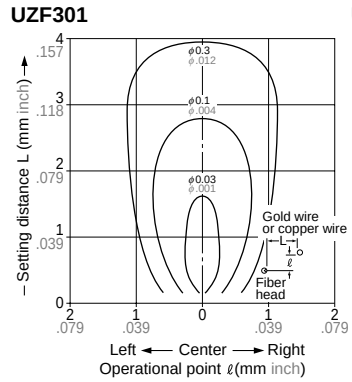


UZFRV82 Reflective

UZF301



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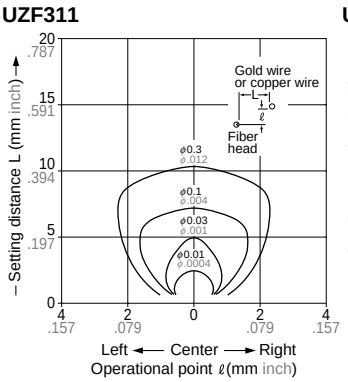

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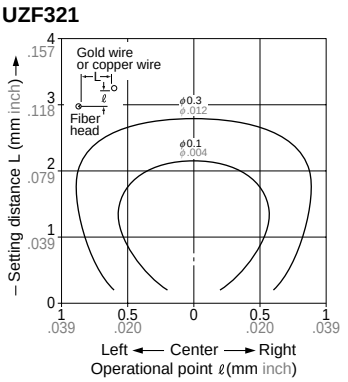
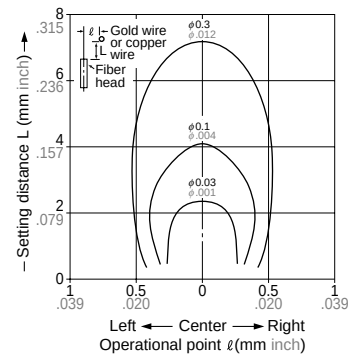


UZFRK22 Reflective

UZF301



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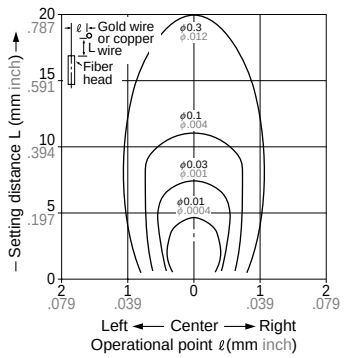

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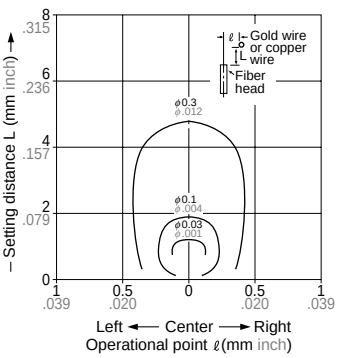


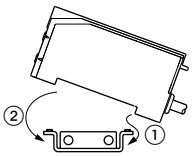
Amplifier

These products are **not** safety sensors and are **not** designed or intended to be used to protect life and prevent bodily injury or property damage.

Mounting

How to mount the amplifier

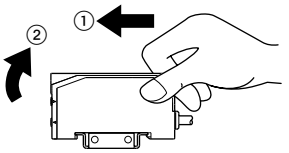
① Hook the rear part to the attached mounting bracket (**UZF811**) or DIN rail.
② Press the amplifier down on the bracket or DIN rail.



DIN rail or the attached mounting bracket

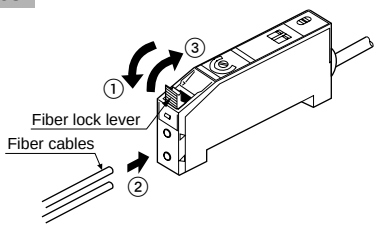
How to remove the amplifier

① Push the amplifier front-ward.
② With keeping on it, lift up the front part of the amplifier.

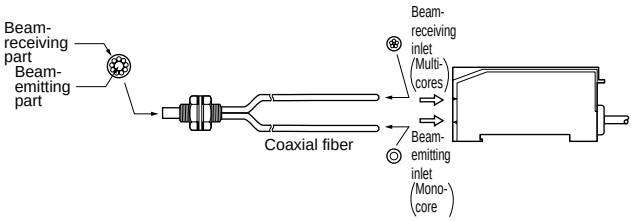


How to connect fiber cables

① Unlock the fiber lock lever upright.
② Insert fiber cables into the inlets slowly until fully deepened.
③ Lock the fiber lock lever on the original position.



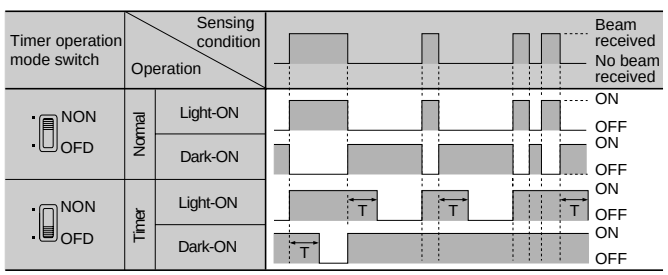
(*1) : With the coaxial diffuse fiber such as the **UZFRG4** or the **UZFRF8**, insert the mono-core fiber cable into the beam-emitting inlet and the multi-core fiber cable into the beam-receiving inlet. If they are inserted in opposition, the repeatability will deteriorate.



OFF-delay timer function

- The **UZF3** series is incorporated with the OFF-delay timer fixed for approx. 40ms. The timer function is useful if the output signal responds so quickly that a connected device can not take in.
  To bring the timer in effect condition set the timer operation mode switch to “OFD”.

< Time chart >



Timer : T = Approx. 40ms

Wiring

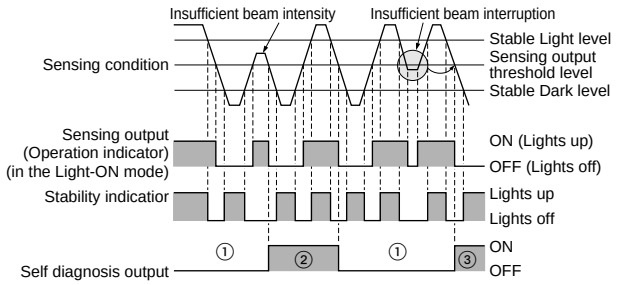
- The **UZF3** series does not incorporate a short-circuit protection at the self-diagnosis output. Do not connect it directly to a power source or a capacitive load.

Others

- The transient time duration is 50ms after power-up.

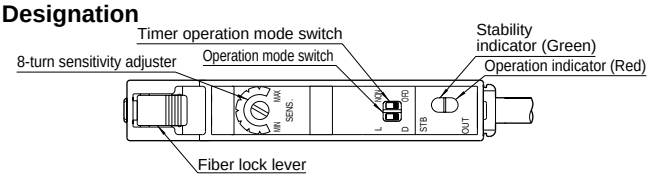
Self-diagnosis function

The sensor diagnosis itself in the incident beam intensity. If the lens is foiled with dirt or dust, or the beam alignment is displaced, the output is generated.



① The self-diagnosis output transistor stays in the “OFF” state during the stable sensing.
② If the incident beam intensity does not reach the stable Light or Dark level, the self-diagnosis output is turned ON at the same time as the sensor goes from the Light state to the Dark state. It is automatically restored after approx. 40ms. (The sensing output does not relate to it.)
③ The incomplete Light state introduces to generate the self-diagnosis output at the same time as the sensor changes the states.
However, the incomplete Dark state introduces to generate the self-diagnosis output half-cycle behind.

Designation



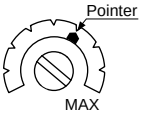
Sensitivity adjustment

☼: Lights up ●: Lights off

Mode	Sensing condition	Operation indicator
D-ON (Dark-ON)	Light state	●
	Dark state	☼
L-ON (Light-ON)	Light state	☼
	Dark state	●

Normal usage

- Adjust the sensitivity with observing the operation indicator.
  Which state it lights up depends on the mode set with the operation mode switch.
- The sensitivity adjuster is the 8-turn trimmer. The maximum sensitivity can be obtained by fully turned clockwise.
- The pointer shows where you set the sensitivity.



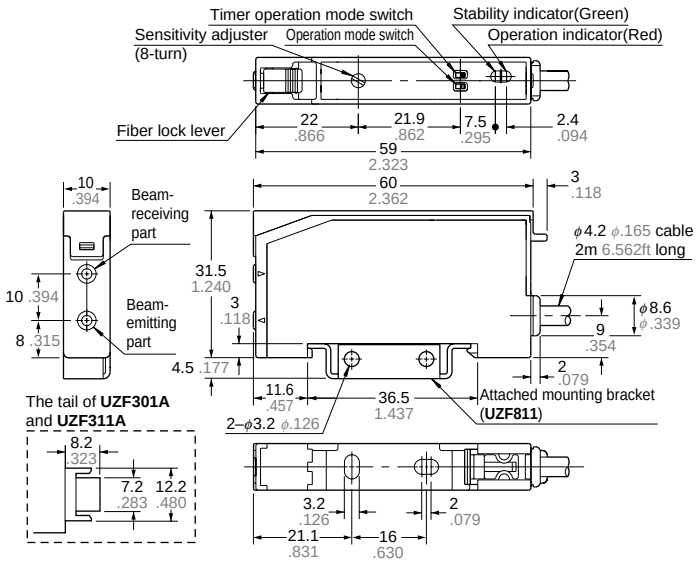
Procedure	Sensing condition: Reflective	Sensing condition: Thru-beam	Operation	Setting adjuster
①	Set the operation mode switch in Light-ON mode. (Initialization)		Turn the sensitivity adjuster counter-clockwise fully. (The minimum sensitivity)	
②	 Beam received	 Beam received	On condition that beam is received, turn the adjuster clockwise and find the position Ⓐ where the sensor is switched ON.	
③	 No Beam received	 No Beam received	On condition that beam is not received, turn the adjuster further clockwise until the sensor goes into the ON state again. Once it is switched on, turn the adjuster backwards a little and find the position Ⓑ where it is switched OFF. [If the sensor does not go into the ON state (normally in the thru-beam mode), the position Ⓑ is designated at the maximum point (MAX.).]	
④	——	——	Set the adjuster at the center between Ⓐ and Ⓑ. It is regarded as the optimum sensitivity point.	
⑤	Select the mode either Light-ON or Dark-ON according to your application. (L-ON: ON when the beam is received, D-ON: ON when the beam is not received)			

(*1) : In order to protect the mechanism, the sensitivity adjuster idles even over turned.

DIMENSIONS (Unit : mm inch)

UZF3□□ Amplifier

Assembled dimensions with attached mounting bracket



UZF811 Amplifier mounting bracket (Accessory for amplifier)