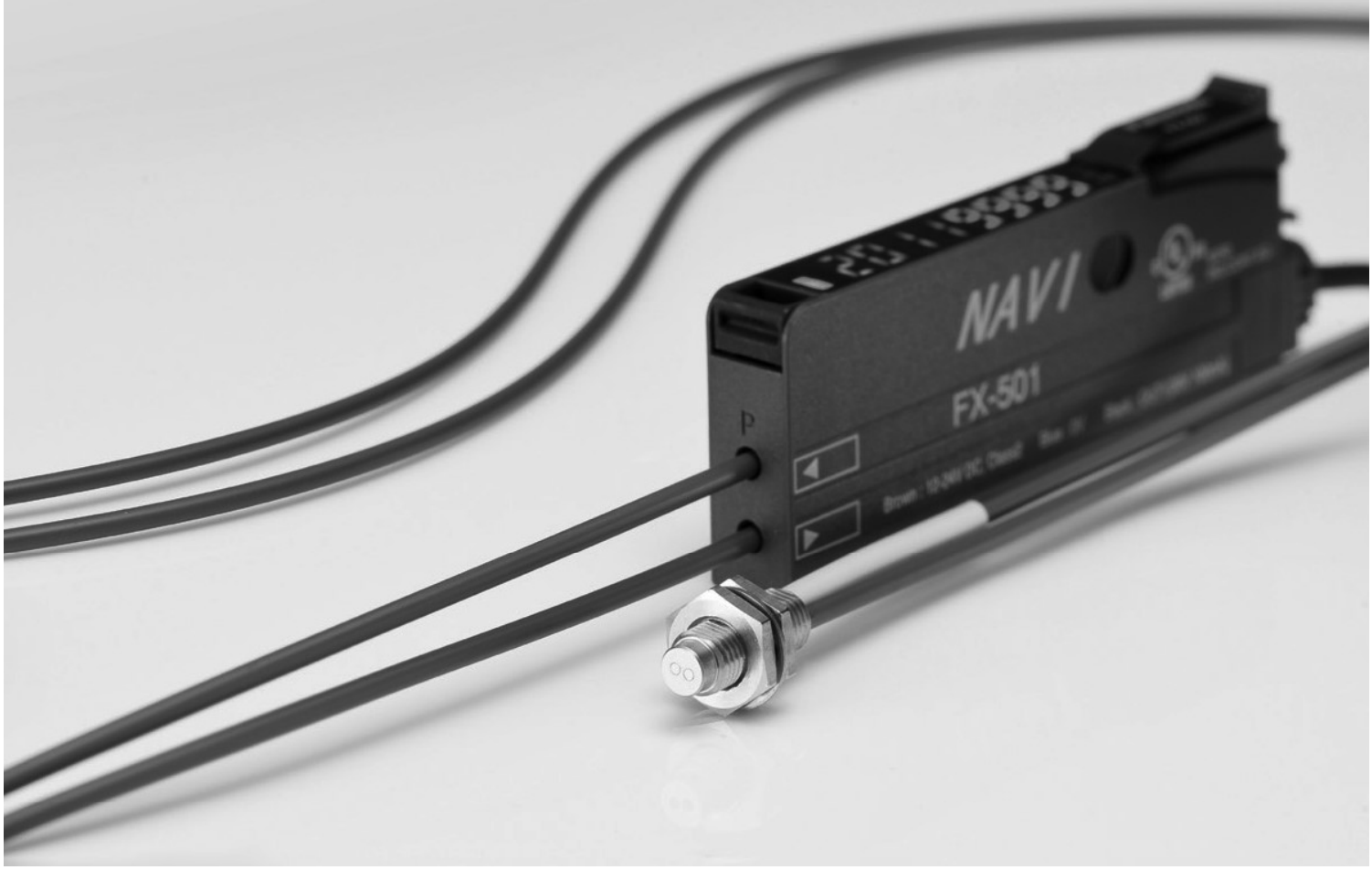
Panasonic

Fiber Sensor Guide Book



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Fiber Selection Guide

Choose by model

Thru-beam type

Model No.	Page: Sensing range Specifications	Page: Dimensions
FT-140	P.12	P.48
FT-30	P.11	
FT-31	P.12	
FT-31S	P.19	
FT-31W	P.12	
FT-40	P.11	
FT-42	P.12	
FT-42S	P.19	
FT-42W	P.12	
FT-43		
FT-45X		P.49
FT-A11	P.25	
FT-A11W		
FT-A32		
FT-A32W		
FT-AL05		
FT-E13	P.16/P.19	
FT-E23		
FT-F93	P.35	
FT-H13-FM2	P.30	P.50
FT-H20-J20-S		
FT-H20-J30-S		
FT-H20-J50-S		
FT-H20-M1		
FT-H20-VJ50-S		
FT-H20-VJ80-S		
FT-H20W-M1		
FT-H30-M1V-S	P.32	
FT-H35-M2	P.30	
FT-H35-M2S6		
FT-HL80Y	P.29	
FT-KS40	P.24	P.51
FT-KV26		
FT-KV40		
FT-KV40W		
FT-L80Y	P.29	
FT-R31	P.15	
FT-R40	P.12	
FT-R41W	P.15	
FT-R42W		
FT-R43		
FT-R44Y	P.15/P.29	P.52
FT-R60Y		
FT-S11	P.16	
FT-S20	P.11	
FT-S21	P.16	
FT-S21W		
FT-S30	P.11	
FT-S31W	P.16	
FT-S32		
FT-V23	P.19	P.53
FT-V24W		
FT-V25		
FT-V30		
FT-V40	P.16	
FT-V80Y	P.29	
FT-Z20HBW	P.20	
FT-Z20W		

Model No.	Page: Sensing range Specifications	Page: Dimensions
FT-Z30	P.20	P.53
FT-Z30E		
FT-Z30EW		P.54
FT-Z30H		
FT-Z30HW		
FT-Z30W		
FT-Z40HBW		
FT-Z40W		
FT-Z802Y	P.29	

Retroreflective type

Model No.	Page: Sensing range Specifications	Page: Dimensions
FR-KZ22E	P.24/P.27	P.55
FR-KZ50E		
FR-KZ50H		
FR-Z50HW		

Reflective type

Model No.	Page: Sensing range Specifications	Page: Dimensions
FD-30	P.11	P.56
FD-31	P.13	
FD-31W		
FD-32G	P.13/P.23	
FD-32GX		
FD-40	P.11	
FD-41	P.13	
FD-41S	P.19	
FD-41SW		
FD-41W	P.13	
FD-42G	P.13/P.23	P.57
FD-42GW		
FD-60	P.11	
FD-61	P.13	
FD-61G		
FD-61S	P.19	
FD-61W	P.13	
FD-62		
FD-64X		P.58
FD-A16	P.25	
FD-AL11		
FD-E13	P.17/P.19	
FD-E23		
FD-EG30	P.13/P.23	
FD-EG30S	P.19	P.59
FD-EG31	P.13/P.23	
FD-F4	P.35	
FD-F41		
FD-F41Y		
FD-F71		
FD-F8Y		
FD-FA93		
FD-H13-FM2	P.31	P.60
FD-H18-L31		
FD-H20-21		
FD-H20-M1		
FD-H25-L43		
FD-H25-L45		

Model No.	Page: Sensing range Specifications	Page: Dimensions
FD-H30-KZ1V-S	P.32	P.61
FD-H30-L32	P.31	
FD-H30-L32V-S	P.32	
FD-H35-20S	P.31	
FD-H35-M2		
FD-H35-M2S6		
FD-HF40Y	P.35	
FD-L10	P.26	P.62
FD-L11		
FD-L12W		
FD-L20H		
FD-L21		
FD-L21W		
FD-L22A		
FD-L23		
FD-L30A		
FD-L31A		
FD-L32H		P.63
FD-R31G	P.15/P.23	
FD-R32EG		
FD-R33EG		
FD-R34EG		
FD-R41	P.15	
FD-R60	P.13	
FD-R61Y	P.15/P.29	
FD-S21	P.17	
FD-S30	P.11	P.64
FD-S31	P.17	
FD-S32		
FD-S32W		
FD-S33GW		
FD-S60Y	P.29	
FD-V30	P.19	
FD-V30W		
FD-V50		P.65
FD-Z20HBW	P.21	
FD-Z20W		
FD-Z40HBW		
FD-Z40W		
FD-Z50HW	P.24	

Fiber Selection Guide

Earlier Models Comparison Table (The specification of new fiber may be changed from that of old one. Please confirm the specification before use.)

Thru-beam type

Old fiber Model No.	New fiber Model No.	Page: Sensing range Specifications	Page: Dimensions
FT-A30	FT-A32	P.25	P.49
FT-A8	FT-A11		
FT-AFM2	FT-AL05		
FT-AFM2E			
FT-B8	FT-43	P.12	P.48
FT-E12	FT-E13	P.16/P.19	P.49
FT-E22	FT-E23		
FT-F902	FT-F93	P.35	
FT-FM10L	FT-140	P.12	P.48
FT-FM2	FT-42		
FT-FM2S	FT-42S	P.19	
FT-FM2S4			
FT-K8	FT-KS40	P.24	P.51
FT-KV1	FT-KV26		
FT-KV8	FT-KV40		
FT-NFM2	FT-31	P.12	P.48
FT-NFM2S	FT-31S	P.19	
FT-NFM2S4			
FT-P2	FT-S21	P.16	P.52
FT-P40	FT-31	P.12	P.48
FT-P60	FT-42		
FT-P80			
FT-P81X	FT-45X		P.49
FT-PS1	FT-S11	P.16	P.52
FT-R80	FT-R40	P.12	P.51
FT-SFM2	FT-S32	P.16	P.52
FT-SFM2L			
FT-SFM2SV2	FT-V30	P.19	P.53
FT-SNFM2	FT-S21	P.16	P.52
FT-T80	FT-42	P.12	P.48
FT-V10	FT-V40	P.16	P.53
FT-V22	FT-V23	P.19	P.52
FT-V41	FT-V25		P.53
FT-W4	FT-31	P.12	P.48
	FT-31W		
FT-W8	FT-42		
	FT-42W		
FT-WA30	FT-A32	P.25	P.49
	FT-A32W		
FT-WA8	FT-A11		
	FT-A11W		

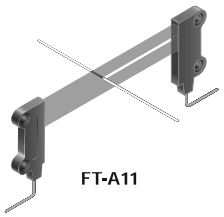
Old fiber Model No.	New fiber Model No.	Page: Sensing range Specifications	Page: Dimensions
FT-WKV8	FT-KV40	P.24	P.51
	FT-KV40W		
FT-WR80	FT-R41W	P.15	
FT-WR80L	FT-R42W		
FT-WS3	FT-S31W	P.16	P.52
FT-WS4	FT-S21		
	FT-S21W		
FT-WS8	FT-S31W		
FT-WS8L	FT-S32		
FT-WV42	FT-V25	P.19	P.53
	FT-V24W		
FT-WZ4	FT-Z20W	P.20	
FT-WZ4HB	FT-Z20HBW		
FT-WZ7	FT-Z40W		P.54
FT-WZ7HB	FT-Z40HBW		
FT-WZ8	FT-Z30		P.53
	FT-Z30W		P.54
FT-WZ8E	FT-Z30E		P.53
	FT-Z30EW		P.54
FT-WZ8H	FT-Z30H		
	FT-Z30HW		
FT-Z8	FT-Z30		P.53
FT-Z8E	FT-Z30E		
FT-Z8H	FT-Z30H		P.54
———	FT-30	P.11	P.48
———	FT-40		
———	FT-S20		P.52
———	FT-S30		
———	FT-R31	P.15	P.51
———	FT-R43		

Retroreflective type

Old fiber Model No.	New fiber Model No.	Page: Sensing range Specifications	Page: Dimensions
FR-KV1	FR-KZ22E	P.24/P.27	P.55
FR-KZ21	FR-KZ50H		
FR-KZ21E	FR-KZ50E		
FR-WKZ11	FR-Z50HW		

Wide Beam

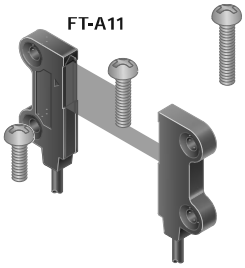
■ Senses a workpiece with indefinite shape or position in the wide beam without missing. It can also be used to discriminate shape.



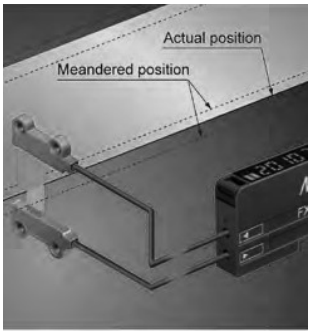
■ Applications

Sensing tiny moving objects

Inspecting screw height



Control the amount of meandering



Confirming presence of slit mask

■ LIST OF FIBERS

Thru-beam type (one pair set)

Type	Shape of fiber head (mm)	Model No.	Bending radius (mm)	Fiber cable length ✂: Free-cut	Sensing range (mm in) (Note 1) FX-500 series	Sensing range (mm in) (Note 1) U-LG LONG FAST H-SP	Sensing range (mm in) (Note 1) FX-101 (Upper value) FX-102 (Lower value)	Beam axis dia. (mm)	Protection	Ambient temp.	Dimensions
Wide beam	Sensing width 32mm W5 × H69 × D20	Tough FT-A32	R2 Bending durability	2 m	STD (Note 2) 3,600 141.732 HYPR (Note 2) 3,600 141.732	3,600 141.732 (Note 2) 3,600 141.732 (Note 2) 3,600 141.732 (Note 2) 2,100 82.677	3,600 141.732 (Note 2) 3,600 141.732 (Note 2)	3.2 × 32	IP40	–40 to +60 °C	P.49
Wide beam	Allows flexible wiring Sensing width 32mm W5 × H69 × D20	FT-A32W	R1	2 m	STD (Note 2) 3,600 141.732 HYPR (Note 2) 3,600 141.732	3,600 141.732 (Note 2) 3,600 141.732 (Note 2) 3,600 141.732 (Note 2) 3,000 118.110	3,600 141.732 (Note 2) 3,600 141.732 (Note 2)	3.2 × 32	IP40	–40 to +55 °C	P.49
Wide beam	Sensing width 11mm W4.2 × H31 × D13.5	Tough FT-A11	R2 Bending durability	2 m	STD (Note 2) 3,600 141.732 HYPR (Note 2) 3,600 141.732	3,600 141.732 (Note 2) 3,600 141.732 (Note 2) 3,600 141.732 (Note 2) 1,100 43.307	1,900 74.803 3,600 141.732 (Note 2)	2.2 × 11	IP40	–40 to +70 °C	P.49
Wide beam	Allows flexible wiring Sensing width 11mm W4.2 × H31 × D13.5	FT-A11W	R1	2 m	STD (Note 2) 3,600 141.732 HYPR (Note 2) 3,600 141.732	3,600 141.732 (Note 2) 3,600 141.732 (Note 2) 3,600 141.732 (Note 2) 1,300 51.181	1,700 66.929 3,400 133.858	2.2 × 11	IP40	–40 to +55 °C	P.49
Array	Sensing width 5.5mm W5 × H15 × D15	Tough FT-AL05	R2 Bending durability	2 m	STD 860 33.858 HYPR 2,300 90.551	1,550 61.024 1,500 59.055 500 19.685 170 6.693	250 9.843 660 25.984	0.25 × 5.5	IP40	–55 to +80 °C	P.49

Notes: 1) Note that the sensing range of the free-cut type fiber may be reduced by 20 % max. depending upon how the fiber is cut.
2) The fiber cable length practically limits the sensing range.

Reflective type

Type	Shape of fiber head (mm)	Model No.	Bending radius (mm)	Fiber cable length ✂: Free-cut	Sensing range (mm in) (Note 1, 2) FX-500 series	Sensing range (mm in) (Note 1, 2) U-LG LONG FAST H-SP	Sensing range (mm in) (Note 1, 2) FX-101 (Upper value) FX-102 (Lower value)	Protection	Ambient temp.	Dimensions
Wide beam	W7 × H15 × D30	Tough FD-A16	R4 Bending durability	2 m	STD 200 7.874 HYPR Cannot use	200 7.874 200 7.874 140 5.512 75 2.953	120 4.724 240 9.449	IP40	–40 to +60 °C	P.58
Array	W5 × H20 × D20	Tough FD-AL11	R2 Bending durability	2 m	STD 320 12.598 HYPR 670 26.378	530 20.866 510 20.079 180 7.087 50 1.969	100 3.937 285 11.220	IP40	–55 to +80 °C	P.58

Notes: 1) Note that the sensing range of the free-cut type fiber may be reduced by 20 % max. depending upon how the fiber is cut.
2) The sensing range is specified for white non-glossy paper.

Tough : Refers to a fiber which possesses both unbreakable (bending radius: R10 mm R0.394 in, reciprocating bending: 180°) and more flexible (bending radius: R4 mm R0.157 in or less) features.

SENSING RANGE

Fibers are listed in alphabetic order.
Refer to p. 2~ for details of each fiber.

Thru-beam type (one pair set)

Model No.	Sensing range (mm in) (Note 1)								Dimensions
	FX-500 series						**FX-100** series		
	HYPR	U-LG	LONG	STD	FAST	H-SP	**FX-101**	**FX-102**	
FT-140	19,600 771.652 (Note 2)	19,600 771.652 (Note 2)	19,600 771.652 (Note 2)	19,600 771.652 (Note 2)	16,000 629.920	6,300 248.031	14,000 551.180	19,600 771.652 (Note 2)	P.48
FT-30	1,350 53.150	810 31.890	650 25.591	400 15.748	210 8.268	75 2.953	135 5.315	400 15.748	P.48
FT-31	1,350 53.150	770 30.315	550 21.654	315 12.402	210 8.268	70 2.756	130 5.118	340 13.386	P.48
FT-31S	1,220 48.031	740 29.134	550 21.654	315 12.402	195 7.677	63 2.480	130 5.118	340 13.386	P.48
FT-31W	990 38.976	590 23.228	440 17.323	260 10.236	150 5.906	53 2.087	80 3.150	240 9.449	P.48
FT-40	3,600 141.732 (Note 2)	2,200 86.614	1,700 66.929	1,200 47.244	530 20.866	190 7.480	320 12.598	870 34.252	P.48
FT-42	3,600 141.732 (Note 2)	2,050 80.709	1,600 62.992	1,130 44.488	530 20.866	190 7.480	300 11.811	800 31.496	P.48
FT-42S	3,600 141.732 (Note 2)	2,050 80.709	1,600 62.992	1,130 44.488	530 20.866	190 7.480	300 11.811	800 31.496	P.48
FT-42W	3,300 129.921	1,900 74.803	1,400 55.118	800 31.496	490 19.291	160 6.299	260 10.236	720 28.346	P.48
FT-43	3,600 141.732 (Note 2)	2,800 110.236	2,100 82.677	1,400 55.118	770 30.315	240 9.449	350 13.780	970 38.189	P.48
FT-45X	1,600 62.992 (Note 2)	1,600 62.992 (Note 2)	1,600 62.992 (Note 2)	1,200 47.244	630 24.803	200 7.874	340 13.386	920 36.220	P.49
FT-A11	3,600 141.732 (Note 2)	3,600 141.732 (Note 2)	3,600 141.732 (Note 2)	3,600 141.732 (Note 2)	3,600 141.732 (Note 2)	1,100 43.307	1,900 74.803	3,600 141.732 (Note 2)	P.49
FT-A11W	3,600 141.732 (Note 2)	3,600 141.732 (Note 2)	3,600 141.732 (Note 2)	3,600 141.732 (Note 2)	3,600 141.732 (Note 2)	1,300 51.181	1,700 66.929	3,400 133.858	P.49
FT-A32	3,600 141.732 (Note 2)	3,600 141.732 (Note 2)	3,600 141.732 (Note 2)	3,600 141.732 (Note 2)	3,600 141.732 (Note 2)	2,100 82.677	3,600 141.732 (Note 2)	3,600 141.732 (Note 2)	P.49
FT-A32W	3,600 141.732 (Note 2)	3,600 141.732 (Note 2)	3,600 141.732 (Note 2)	3,600 141.732 (Note 2)	3,600 141.732 (Note 2)	3,000 118.110	3,600 141.732 (Note 2)	3,600 141.732 (Note 2)	P.49
FT-AL05	2,300 90.551	1,550 61.024	1,500 59.055	860 33.858	500 19.685	170 6.693	250 9.843	660 25.984	P.49
FT-E13	52 2.047	30 1.181	24 0.945	15 0.591	8 0.315	2 0.079	6 0.236	19 0.748	P.49
FT-E23	270 10.630	160 6.299	125 4.921	75 2.953	42 1.654	13 0.512	22 0.866	80 3.150	P.49
FT-F93	Applicable pipe diameter: Outer dia. ø3 to ø10 mm ø0.118 to ø0.394 in transparent pipe [PFA (fluorine resin) or equivalently transparent pipe, wall thickness 0.3 to 1 mm 0.012 to 0.039 in] Liquid absent: Beam interrupted, Liquid present: Beam received Compatible amplifier: FX-500 series only								P.49
FT-H13-FM2	3,300 129.921	1,900 74.803	1,300 51.181	700 27.559	410 16.142	140 5.512	250 9.843	700 27.559	P.49
FT-H20-J20-S (Note 3)	1,600 62.992	1,000 39.370	790 31.102	470 18.504	300 11.811	90 3.543	135 5.315	420 16.535	P.50
FT-H20-J30-S (Note 3)	1,600 62.992	1,000 39.370	790 31.102	470 18.504	300 11.811	90 3.543	135 5.315	420 16.535	P.50
FT-H20-J50-S (Note 3)	1,600 62.992	1,000 39.370	790 31.102	470 18.504	300 11.811	90 3.543	135 5.315	420 16.535	P.50
FT-H20-M1	1,600 62.992 (Note 2)	1,300 51.181	960 37.795	540 21.260	330 12.992	110 4.331	210 8.268	540 21.260	P.50
FT-H20-VJ50-S (Note 3)	2,100 82.677	1,300 51.181	980 38.583	600 23.622	390 15.354	120 4.724	150 5.906	500 19.685	P.50
FT-H20-VJ80-S (Note 3)	2,100 82.677	1,300 51.181	980 38.583	600 23.622	390 15.354	120 4.724	150 5.906	500 19.685	P.50
FT-H20W-M1	1,600 62.992 (Note 2)	1,000 39.370	840 33.071	470 18.504	300 11.811	90 3.543	100 3.937	300 11.811	P.50
FT-H30-M1V-S (Note 4)	1,000 39.370	590 23.228	470 18.504	270 10.630	160 6.299	55 2.165	110 4.331	280 11.024	P.50
FT-H35-M2	1,200 47.244	880 34.646	670 26.378	430 16.929	250 9.843	80 3.150	170 6.693	490 19.291	P.50
FT-H35-M2S6	1,200 47.244	880 34.646	670 26.378	430 16.929	250 9.843	80 3.150	170 6.693	490 19.291	P.50
FT-HL80Y	3,600 141.732 (Note 2)	3,600 141.732 (Note 2)	3,600 141.732 (Note 2)	3,600 141.732 (Note 2)	2,300 90.551	740 29.134	990 38.976	2,340 92.126	P.50
FT-KS40	3,600 141.732 (Note 2)	3,600 141.732 (Note 2)	3,600 141.732 (Note 2)	3,600 141.732 (Note 2)	3,600 141.732 (Note 2)	1,200 47.244	2,200 86.614	3,600 141.732 (Note 2)	P.51
FT-KV26	2,500 98.425	1,600 62.992	1,200 47.244	710 27.953	440 17.323	160 6.299	135 5.315	560 22.047	P.51
FT-KV40	3,600 141.732 (Note 2)	3,600 141.732 (Note 2)	3,600 141.732 (Note 2)	3,600 141.732 (Note 2)	3,600 141.732 (Note 2)	1,200 47.244	2,200 86.614	3,600 141.732 (Note 2)	P.51
FT-KV40W	3,600 141.732 (Note 2)	3,600 141.732 (Note 2)	3,600 141.732 (Note 2)	3,600 141.732 (Note 2)	3,100 122.047	940 37.008	2,200 86.614	3,600 141.732 (Note 2)	P.51
FT-L80Y	3,600 141.732 (Note 2)	3,600 141.732 (Note 2)	3,600 141.732 (Note 2)	3,600 141.732 (Note 2)	2,800 110.236	920 36.220	1,100 43.307	2,600 102.362	P.51
FT-R31	1,000 39.370	580 22.835	440 17.323	270 10.630	160 6.299	55 2.165	100 3.937	340 13.386	P.51
FT-R40	3,600 141.732 (Note 2)	1,750 68.898	1,500 59.055	930 36.614	500 19.685	160 6.299	270 10.630	740 29.134	P.51
FT-R41W	3,200 125.984	1,800 70.866	1,400 55.118	800 31.496	460 18.110	150 5.906	250 9.843	710 27.953	P.51
FT-R42W	3,600 141.732 (Note 2)	3,600 141.732 (Note 2)	3,500 137.795	2,200 86.614	1,300 51.181	460 18.110	510 20.079	2,000 78.740	P.51

Notes: 1) Note that the sensing range of the free-cut type fiber may be reduced by 20 % max. depending upon how the fiber is cut.
2) The fiber cable length practically limits the sensing range.
3) Heat-resistant joint fibers and ordinary-temperature fibers (**FT-42**) are sold as a set.
4) Sold as a set comprising vacuum type fiber + photo-terminal (**FV-BR1**) + fiber at atmospheric side (**FT-J8**).

Applicable models

■Thru-beam type

Model No.	Fiber cable length ✂ : Free-cut	Protective tube extension length	Sleeve length (mm)	Sensing range (mm) FX-500 series (STD)(Note 1)	Applicable fiber length Max. (m)	Unit (m)
FT-140	10 m ✂	—	—	19,600 (Note 2)	30	1
FT-31	2 m ✂	—	—	315	30	1
▲FT-31S	2 m ✂	—	40 (Note 3)	315	30	1
FT-31W	2 m ✂	—	—	260	20	1
FT-42	2 m ✂	—	—	1,130	30	1
▲FT-42S	2 m ✂	—	40 (Note 3)	1,130	30	1
FT-42W	2 m ✂	—	—	800	30	1
FT-43	2 m ✂	—	—	1,400	30	1
FT-45X	1 m	—	—	1,200	10	0.5
FT-A11	2 m ✂	—	—	3,600 (Note 2)	10	1
FT-A11W	2 m ✂	—	—	3,600 (Note 2)	10	1
FT-A32	2 m ✂	—	—	3,600 (Note 2)	10	1
FT-A32W	2 m ✂	—	—	3,600 (Note 2)	10	1
FT-AL05	2 m ✂	—	—	860	20	1
FT-E13	1 m ✂	—	5	15	10	0.5
FT-E23	1 m ✂	—	5	75	10	0.5
★FT-F93	2 m ✂	1 m (Note 4)	—	—	30	1
FT-H13-FM2	2 m ✂	—	—	700	30	1
FT-H20-J50-S	500 mm ✂ (Note 5)	—	—	470	6.5	0.1
FT-H20-M1	1 m	—	—	540	6.5	0.1
FT-H20-VJ80-S	800 mm ✂ (Note 5)	—	—	600	6.5	0.1
FT-H20W-M1	1 m	—	—	470	6.5	0.1
FT-H30-M1V-S	1 m	—	—	270	6.5	0.1
FT-H35-M2	2 m	—	—	430	6.5	0.1
FT-H35-M2S6	2 m	—	—	430	6.5	0.1
★FT-HL80Y	2 m ✂ (Note 6)	1.5 m (Note 4)	—	3,600 (Note 2)	30	1
FT-KS40	2 m ✂	—	—	3,600 (Note 2)	10	1
FT-KV26	2 m ✂	—	—	710	10	1
FT-KV40	2 m ✂	—	—	3,600 (Note 2)	10	1
FT-KV40W	2 m ✂	—	—	3,600 (Note 2)	10	1
★FT-L80Y	2 m ✂ (Note 6)	1.5 m (Note 4)	—	3,600 (Note 2)	30	1
FT-R31	2 m ✂	—	—	270	30	1
FT-R43	2 m ✂	—	—	720	30	1
FT-R40	2 m ✂	—	—	930	30	1
FT-R41W	2 m ✂	—	—	800	30	1
FT-R42W	2 m ✂	—	—	2,200	30	1
FT-R44Y	2 m ✂	—	—	720	30	1
FT-R60Y	2 m ✂	—	—	2,100	30	1
FT-S11	500 mm	—	—	90	30	1
FT-S21	2 m ✂	—	—	315	30	1
FT-S21W	2 m ✂	—	—	260	20	1
FT-S31W	2 m ✂	—	—	800	30	1
FT-S32	2 m ✂	—	—	3,100	30	1
FT-V23	2 m ✂	—	20	450	30	1
FT-V24W	2 m ✂	—	15	110	10	1
FT-V25	2 m ✂	—	15	240	30	1
FT-V30	2 m ✂	—	20	680	30	1
FT-V40	2 m ✂	—	—	3,500	30	1
★FT-V80Y	2 m ✂ (Note 6)	1.5 m (Note 4)	—	3,600 (Note 2)	30	1
FT-Z20HBW	1 m ✂	—	—	260	20	1
FT-Z20W	1 m ✂	—	—	620	20	1
FT-Z30	2 m ✂	—	—	2,100	30	1
FT-Z30E	2 m ✂	—	—	3,500	30	1
FT-Z30EW	2 m ✂	—	—	3,400	20	1
FT-Z30H	2 m ✂	—	—	3,500	30	1
FT-Z30HW	2 m ✂	—	—	3,500	20	1
FT-Z30W	2 m ✂	—	—	1,500	20	1
FT-Z40HBW	2 m ✂	—	—	800	20	1
FT-Z40W	2 m ✂	—	—	1,500	20	1
FT-Z802Y	2 m ✂	—	—	3,100	30	1

■Retroreflective type

Model No.	Fiber cable length ✂ : Free-cut	Protective tube extension length	Sleeve length (mm)	Sensing range (mm) FX-500 series (STD)(Note 1)	Applicable fiber length Max. (m)	Unit (m)
FR-KZ22E	2 m ✂	—	—	15 to 310	10	1
FR-KZ50E	2 m ✂	—	—	20 to 300	10	1
FR-KZ50H	2 m ✂	—	—	20 to 300	10	1
FR-Z50HW	2 m ✂	—	—	100 to 990	30	1

■Reflective type

Model No.	Fiber cable length ✂ : Free-cut	Protective tube extension length	Sleeve length (mm)	Sensing range (mm) FX-500 series (STD)(Note 1)	Applicable fiber length Max. (m)	Unit (m)
FD-31	2 m ✂	—	—	125	30	1
FD-31W	2 m ✂	—	—	80	20	1
FD-32G	2 m ✂	—	—	200	30	1
☆FD-32GX	1 m ✂	300 mm (Note 4)	—	200	30	1
FD-41	2 m ✂	—	—	125	30	1
▲FD-41S	2 m ✂	—	40 (Note 3)	125	30	1
▲FD-41SW	2 m ✂	—	40 (Note 3)	80	20	1
FD-41W	2 m ✂	—	—	270	20	1
FD-42G	2 m ✂	—	—	200	30	1
FD-42GW	2 m ✂	—	—	150	20	1
FD-61	2 m ✂	—	—	450	30	1
FD-61G	2 m ✂	—	—	420	30	1
▲FD-61S	2 m ✂	—	40 (Note 3)	420	30	1
FD-61W	2 m ✂	—	—	270	30	1
FD-62	2 m ✂	—	—	520	30	1
FD-64X	1 m	—	—	280	10	0.5
FD-A16	2 m ✂	—	—	200	30	1
FD-AL11	2 m ✂	—	—	320	20	1
FD-E13	1 m	—	3	12	3	0.1
FD-E23	1 m	—	5	55	3	0.1
FD-EG30	500 mm	—	—	48	3	0.1
FD-EG30S	1 m	—	15	50	3	0.1
FD-EG31	500 mm	—	—	20	3	0.1
FD-F4	2 m ✂	—	—	—	10	1
FD-F41	2 m ✂	—	—	—	10	1
★FD-F71	5 m ✂	3 m (Note 4)	—	—	20	1
FD-FA93	2 m ✂	—	—	—	10	1
FD-H13-FM2	2 m ✂	—	—	350	30	1
FD-H18-L31	2 m ✂	—	—	16	5	1
FD-H20-21	1 m	—	—	230	6.5	0.1
FD-H20-M1	1 m	—	—	330	6.5	0.1
FD-H25-L43	3 m	—	—	1.5 to 26	6.5	0.1
FD-H25-L45	3 m	—	—	5 to 42	6.5	0.1
FD-H30-KZ1V-S	1 m	—	—	20 to 200	6.5	0.1
FD-H30-L32	2 m	—	—	17	5	1
FD-H30-L32V-S	3 m	—	—	8	6.5	0.1
FD-H35-20S	1 m	—	—	260	6.5	0.1
FD-H35-M2	2 m	—	—	260	6.5	0.1
FD-H35-M2S6	2 m	—	—	260	6.5	0.1
FD-L10	2 m ✂	—	—	0 to 5	5	1
FD-L11	2 m ✂	—	—	0 to 9.5	5	1
FD-L12W	1 m ✂	—	—	8	5	1
FD-L20H	2 m ✂	—	—	30	5	1
FD-L21	2 m ✂	—	—	1.5 to 16	5	1
FD-L21W	2 m ✂	—	—	3 to 14	5	1
FD-L22A	2 m ✂	—	—	0 to 24	5	1
FD-L23	3 m ✂	—	—	0 to 29	5	1
FD-L30A	3 m ✂	—	—	0 to 43	5	1
FD-L31A	3 m ✂	—	—	4 to 33	5	1
FD-L32H	4 m ✂	—	—	0 to 56	5	1
FD-R31G	2 m ✂	—	—	170	30	1
FD-R32EG	500 mm	—	—	45	3	0.1
FD-R33EG	500 mm	—	—	19	3	0.1
FD-R34EG	500 mm	—	—	38	3	0.1
FD-R41	2 m ✂	—	—	210	30	1
FD-R60	2 m ✂	—	—	290	30	1
FD-R61Y	2 m ✂	—	—	280	30	1
FD-S21	1 m	—	—	80	20	1
FD-S31	2 m ✂	—	—	125	30	1
FD-S32	2 m ✂	—	—	420	30	1
FD-S32W	2 m ✂	—	—	270	20	1
FD-S33GW	2 m ✂	—	—	150	20	1
FD-S60Y	2 m ✂ (Note 6)	1.5 m (Note 4)	—	320	30	1
FD-V30	2 m ✂	—	15	65	30	1
FD-V30W	2 m ✂	—	15	20	10	1
FD-V50	2 m ✂	—	20	120	30	1
FD-Z20HBW	1 m ✂	—	—	2 to 85	20	1
FD-Z20W	1 m ✂	—	—	1 to 65	20	1
FD-Z40HBW	2 m ✂	—	—	260	20	1
FD-Z40W	2 m ✂	—	—	190	20	1
FD-Z50HW	2 m ✂	—	—	10 to 650	30	1

▲: Models which can have extended sleeve
★: Models which can have extended protective tube (fluorine resin)
☆: Models which can have extended stainless jacket sheath

Notes: 1) Note that the sensing range of the free-cut type fiber may be reduced by 20% max. depending upon how the fiber is cut.
2) The fiber cable length practically limits the sensing range.
3) Applicable sleeve lengh is from 10 to 120 mm 0.394 to 4.724 in and in units of 10 mm 0.394 in.
4) Applicable protective lengh is up to 10 m 32.808 ft and in units of 0.5 m 1.640 ft. (however, **FD-32GX** is in units of 0.1 m 0.328 ft.)
5) Fiber length (fixed-length) for heat-resistant fiber side. Fiber length for ordinary temperature side is 2 m 6.562 ft (free-cut).
6) The allowable cutting range is 500 mm 19.685 in from the end that the amplifier inserted.

DIMENSIONS (Unit: mm in)

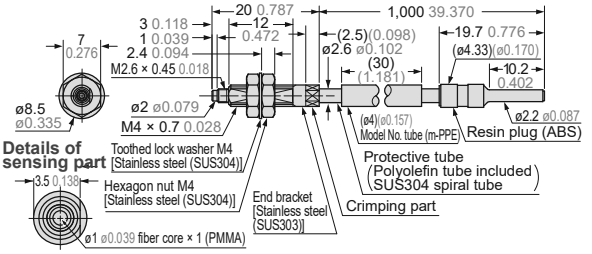
Refer to the **FX-500** series (p.96), **FX-100** series (p.110) for dimensions of the amplifiers.
The CAD data in the dimensions can be downloaded from our website.

Thru-beam type fibers

Dimensions are listed in the order of thru-beam type, retroreflective type, and reflective type, and in alphabetic order of the Model No.

FT-45X

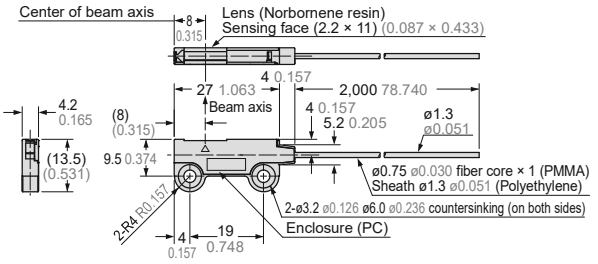
<with **FX-AT2**>



FT-A11

Free-cut

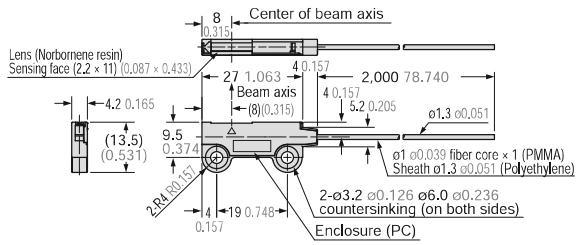
<with **FX-AT5**>



FT-A11W

Free-cut

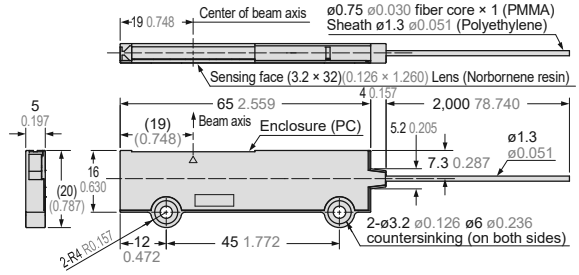
<with **FX-AT5**>



FT-A32

Free-cut

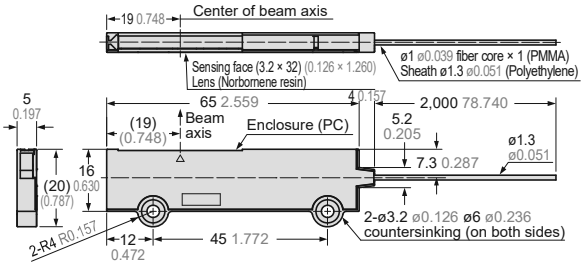
<with **FX-AT5**>



FT-A32W

Free-cut

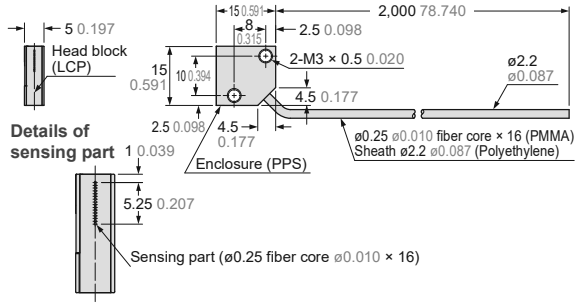
<with **FX-AT5**>



FT-AL05

Free-cut

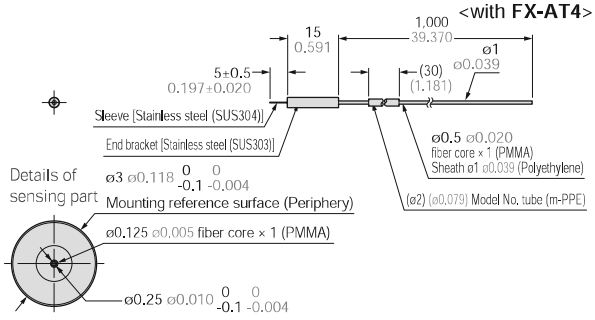
<with **FX-AT3**>



FT-E13

Free-cut

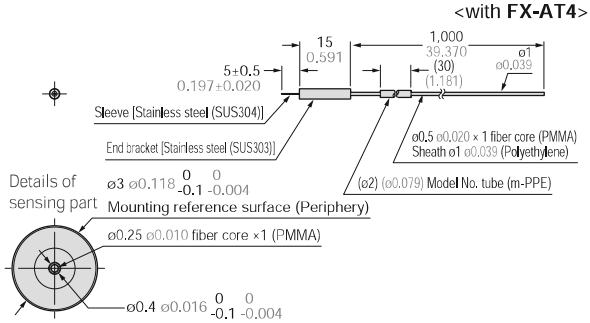
<with **FX-AT4**>



FT-E23

Free-cut

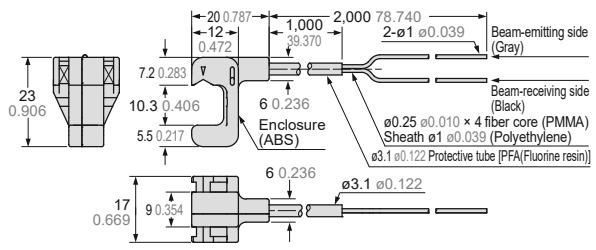
<with **FX-AT4**>



FT-F93

Free-cut

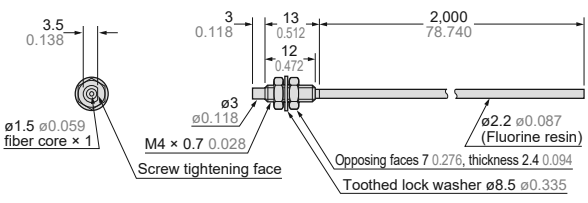
<with **FX-AT4**>



FT-H13-FM2

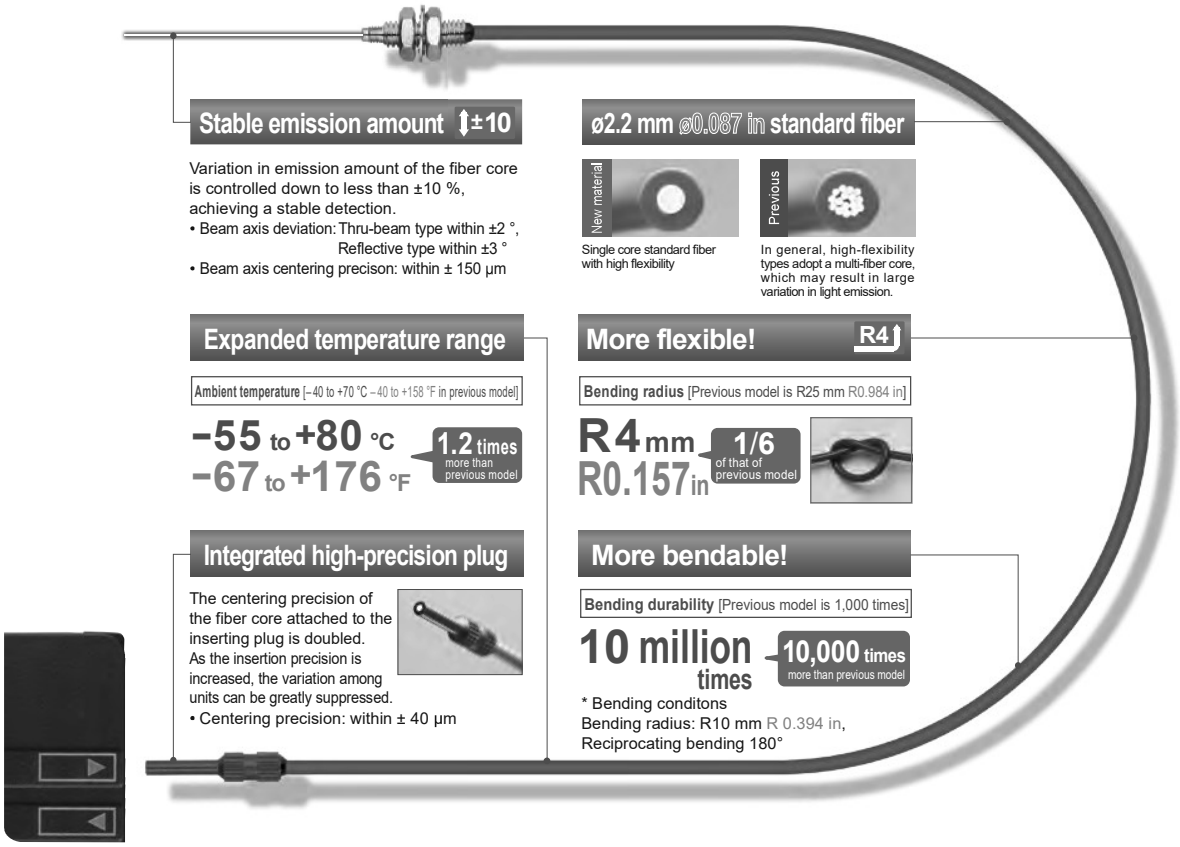
Free-cut

<with **FX-AT3**>



A quality that surpassed that of standard fibers!

New fibers developed using a new manufacturing method adopted by our own factory along with a persistent quality control system.
The basic performance of a standard fiber is greatly enhanced!



Stable emission amount ±10

Variation in emission amount of the fiber core is controlled down to less than ±10 %, achieving a stable detection.
- Beam axis deviation: Thru-beam type within ±2 °, Reflective type within ±3 °
- Beam axis centering precison: within ± 150 µm

ø2.2 mm ø0.087 in standard fiber

Single core standard fiber with high flexibility

In general, high-flexibility types adopt a multi-fiber core, which may result in large variation in light emission.

Expanded temperature range

Ambient temperature [–40 to +70 °C –40 to +158 °F in previous model]

−55 to +80 °C
−67 to +176 °F

1.2 times more than previous model

More flexible! R4

Bending radius [Previous model is R25 mm R0.984 in]

R4 mm
R0.157 in

1/6 of that of previous model

Integrated high-precision plug

The centering precision of the fiber core attached to the inserting plug is doubled. As the insertion precision is increased, the variation among units can be greatly suppressed.
- Centering precision: within ± 40 µm

More bendable!

Bending durability [Previous model is 1,000 times]

10 million times

10,000 times more than previous model

* Bending conditons
Bending radius: R10 mm R 0.394 in,
Reciprocating bending 180°

Max. 25 µs response time

FX-500 with its high response time contributes to improve productivity.

Performing minute object detection when using a small diameter fiber is now possible with a high response time and longer sensing range.

Hyper HYPR mode incorporated

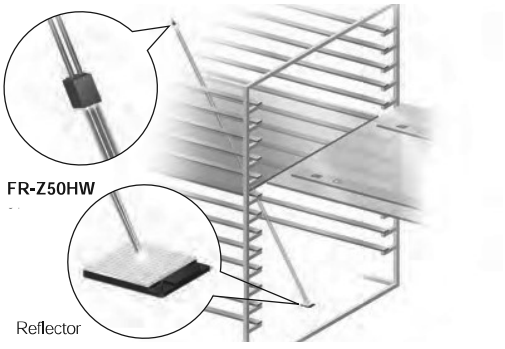
FX-500 in combination with small diameter fibers which can handle challenging detections, allows long sensing range.

Note: When using FD-NFM2.

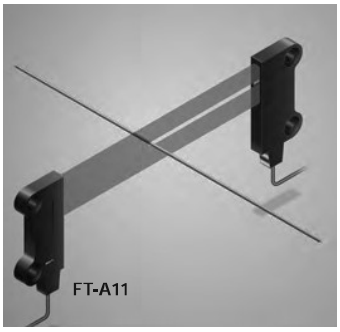
So accurate! Sharp detection with suppressed hysteresis

FX-500 with its accurate detection catches fractional differences in light intensity, achieving high precision and solving low-hysteresis applications.

- Long range detection of small objects with small difference in light intensity **H-02 mode**



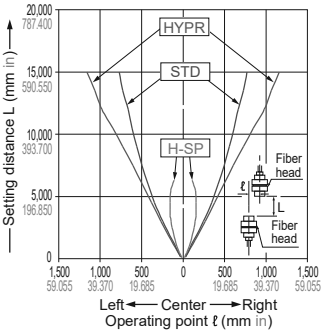
- Highly accurate detection while avoiding saturation **H-01 mode**



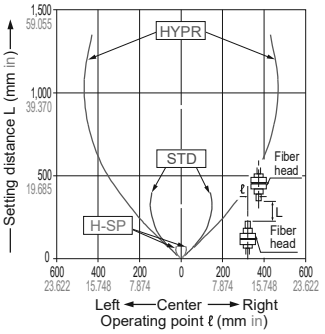
SENSING CHARACTERISTICS (TYPICAL)

Thru-beam type Parallel deviation Sensing characteristics are listed in the alphabetic order of the Model No.

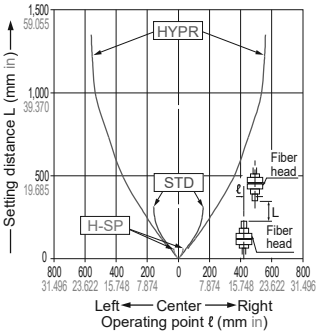
FT-140 Thru-beam type



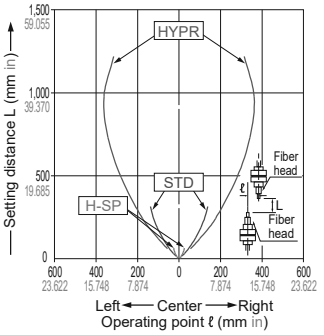
FT-30 Thru-beam type



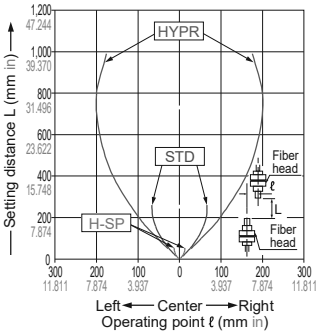
FT-31 Thru-beam type



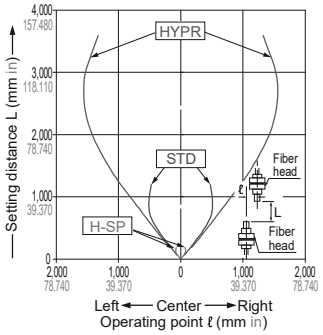
FT-31S Thru-beam type



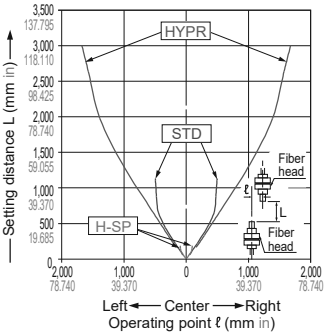
FT-31W Thru-beam type



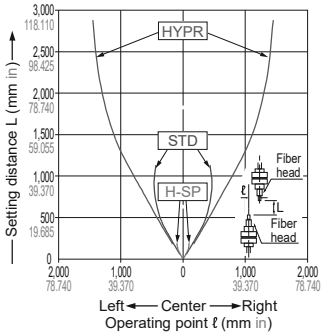
FT-40 Thru-beam type



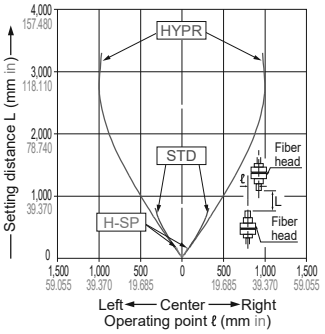
FT-42 Thru-beam type



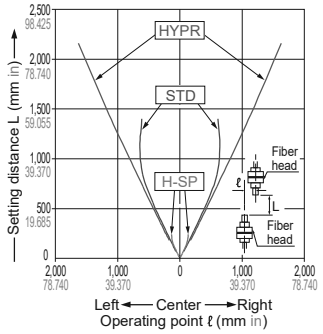
FT-42S Thru-beam type



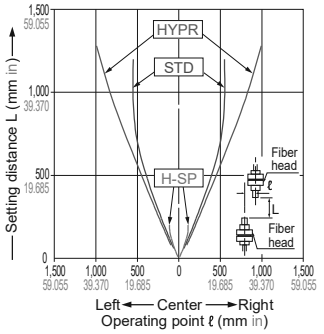
FT-42W Thru-beam type



FT-43 Thru-beam type

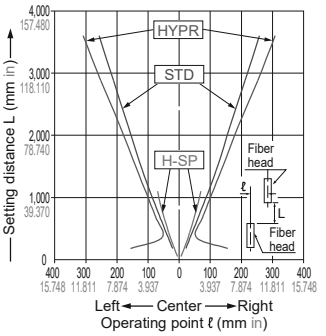


FT-45X Thru-beam type

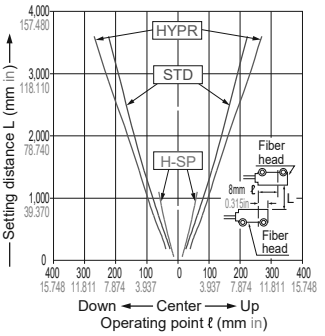


FT-A11 Thru-beam type

Horizontal direction

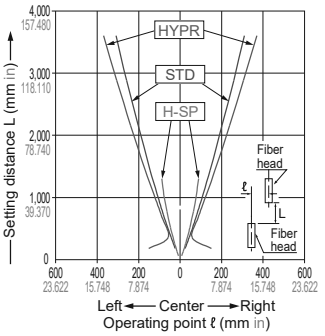


Vertical direction

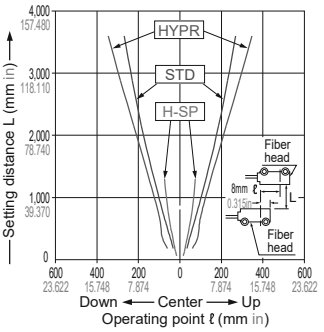


FT-A11W Thru-beam type

Horizontal direction



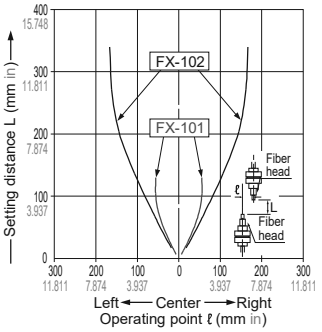
Vertical direction



SENSING CHARACTERISTICS (TYPICAL)

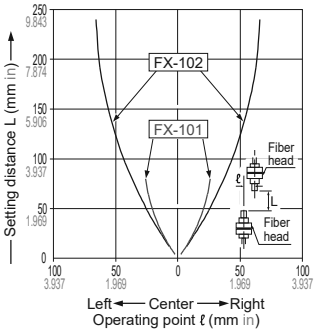
FT-31S Thru-beam type

Parallel deviation



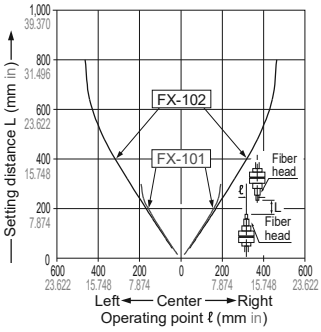
FT-31W Thru-beam type

Parallel deviation



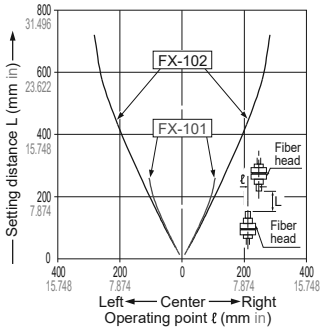
FT-42S Thru-beam type

Parallel deviation



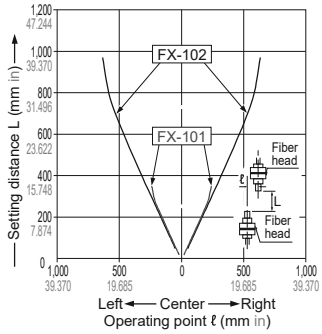
FT-42W Thru-beam type

Parallel deviation



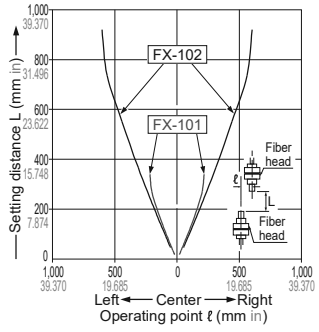
FT-43 Thru-beam type

Parallel deviation



FT-45X Thru-beam type

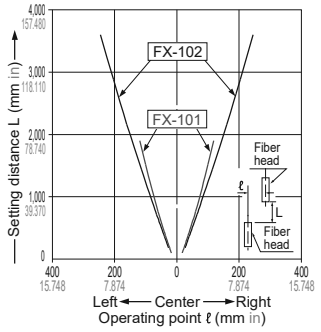
Parallel deviation



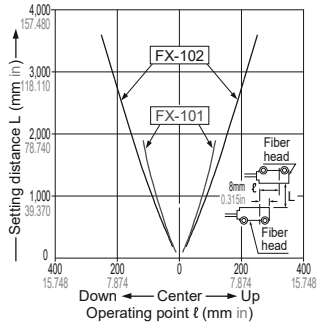
FT-A11 Thru-beam type

Parallel deviation

• Horizontal direction

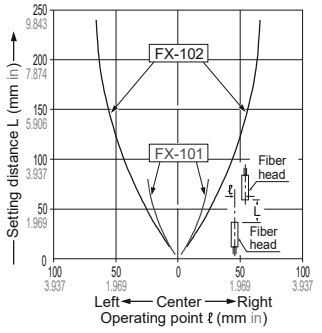


• Vertical direction



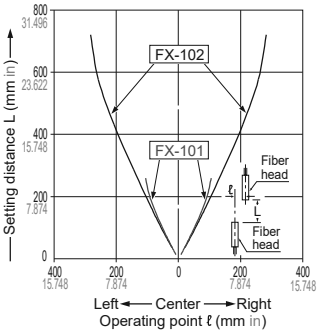
FT-S21W Thru-beam type

Parallel deviation



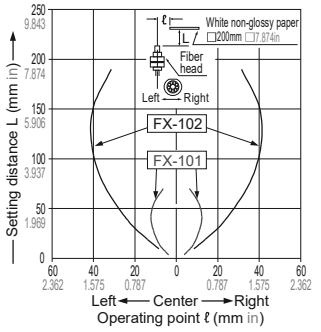
FT-S31W Thru-beam type

Parallel deviation



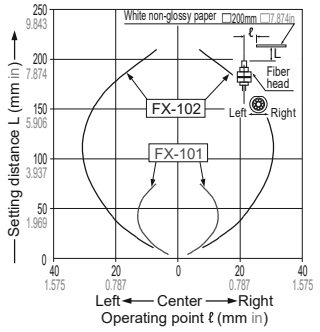
FD-32G Reflective type

Sensing field



FD-32GX Reflective type

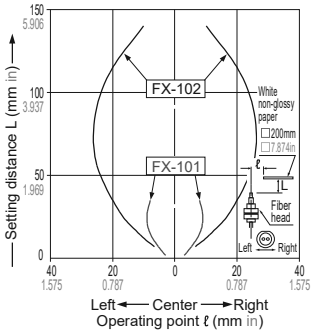
Sensing field



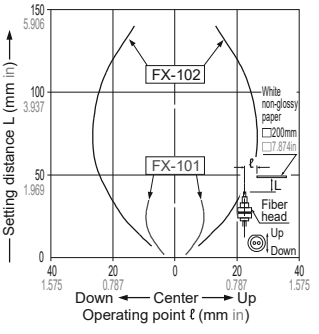
FD-41S Reflective type

Sensing field

• Horizontal direction



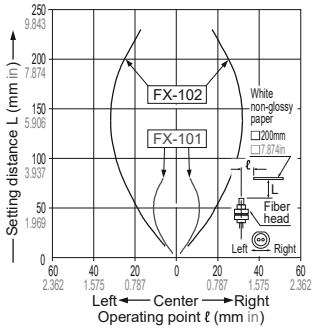
• Vertical direction



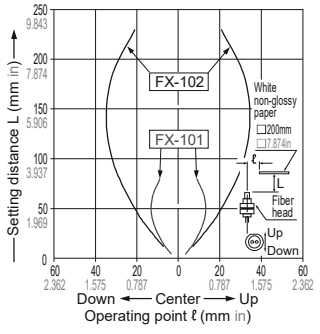
FD-41W Reflective type

Sensing field

• Horizontal direction



• Vertical direction



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