

Thru-beam type	Thru-beam type	Thru-beam type	Thru-beam type	Thru-beam type	Thru-beam type	Thru-beam type	Retroreflective type	Reflective type	Reflective type	Reflective type	Reflective type	Reflective type	Reflective type
Threaded type	Cylindrical type	Rectangular type	Narrow beam / Wide beam	Array / Heat-resistant	Chemical-resistant / Vacuum resistant			Threaded type	Cylindrical type	Rectangular type	Wide beam	Liquid detection	Heat-resistant / Vacuum resistant

LIST OF FIBERS

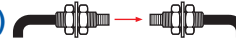
Red LED type sensing range

Super quality fiber thru-beam type (one pair set)



Type	Shape of fiber head (mm in)	Model No.	Sensing range (mm in) (Note 1)		
			FX-500 series	FX-101 (Upper value) FX-102 (Lower value)	
Thru-beam type	M4	FT-40	(Note 2)	3,600 141.732	
				2,200 86.614	320 12.598
	M3	FT-30		1,700 66.929	
				1,200 47.244	870 34.252
Cylindrical type	ø3 ø0.118	FT-S30	(Note 2)	3,600 141.732	
				2,200 86.614	320 12.598
	ø1.5 ø0.059	FT-S20		1,700 66.929	
				1,200 47.244	870 34.252

New standard fiber thru-beam type (one pair set)



Type	Shape of fiber head (mm in)	Model No.	Sensing range (mm in) (Note 1)		
			FX-500 series	FX-101 (Upper value) FX-102 (Lower value)	
Thru-beam type	M4	FT-42	(Note 2)	3,600 141.732	
				2,050 80.709	300 11.811
	M3	FT-31		1,600 62.992	
Cylindrical type	ø1.5 ø0.059	FT-S21		1,130 44.488	800 31.496
				530 20.866	
	Beam diameter ø0.125 mm ø0.005 in	FT-E13		190 7.480	
				1,350 53.150	
				770 30.315	130 5.118
Ultra small diameter	FT-E23		550 21.654		
			315 12.402	340 13.386	

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 to 3,600 mm 141.732 in long.
 3) Please contact our office about the sensing range for the FX-301-HS.

2 m 6.562 ft	Fiber cable length/ Free cut	R4 mm R0.157 in	Allowable bending radius	10 million Times	Bending durability	-55 to +80 °C -67 to +176 °F	Ambient temperature	±10 %	Optical transmission loss
150 µm ±2 °	Beam axis position/ Inclination of beam axis	IP67	Protective structure						

FIBER SENSORS

LASER SENSORS

PHOTO-ELECTRIC SENSORS

MICRO PHOTO-ELECTRIC SENSORS

AREA SENSORS

LIGHT CURTAINS

PRESSURE / FLOW SENSORS

INDUCTIVE PROXIMITY SENSORS

PARTICULAR USE SENSORS

SENSOR OPTIONS

WIRE-SAVING UNITS

WIRE-SAVING SYSTEMS

MEASUREMENT SENSORS

STATIC CONTROL DEVICES

ENDOSCOPE

LASER MARKERS

PLC / TERMINALS

HUMAN MACHINE INTERFACES

ENERGY CONSUMPTION VISUALIZATION COMPONENTS

FA COMPONENTS

MACHINE VISION SYSTEMS

UV CURING SYSTEMS

Selection Guide

Fibers

Amplifiers

FT/FD/FR

	FX-301 / FX-301-HS (Note 3) / FX-311 (Only LONG/STD/S-D for FX-311)	FX-305	FX-411 / FX-412	Beam axis dia. (mm in)	Specifications
	General purpose / High-speed / Sensitivity types	FX-301's 2 output type	Digital dual display + Adjuster operation		
	900 35.433 450 17.717 330 12.992 180 7.087 180 7.087	1,300 51.181 900 35.433 600 23.622 450 17.717 330 12.992 180 7.087	1,600 62.992 345 13.583 245 9.646	ø1 ø0.039	2 m 6.562 ft R4 mm R0.157 in 10 million Times -55 to +80 °C -67 to +176 °F ±10 % 150 µm/ ±2 °
	310 12.205 150 5.906 110 4.331 60 2.362 60 2.362	450 17.717 310 12.205 210 8.268 150 5.906 110 4.331 60 2.362	600 23.622 145 5.709 95 3.740	ø0.5 ø0.020	
	900 35.433 450 17.717 330 12.992 180 7.087 180 7.087	1,300 51.181 900 35.433 600 23.622 450 17.717 330 12.992 180 7.087	1,600 62.992 345 13.583 245 9.646	ø1 ø0.039	
	310 12.205 150 5.906 110 4.331 60 2.362 60 2.362	450 17.717 310 12.205 210 8.268 150 5.906 110 4.331 60 2.362	600 23.622 145 5.709 95 3.740	ø0.5 ø0.020	

	FX-301 / FX-301-HS (Note 3) / FX-311 (Only LONG/STD/S-D for FX-311)	FX-305	FX-411 / FX-412	Beam axis dia. (mm in)	Specifications
	General purpose / High-speed / Sensitivity types	FX-301's 2 output type	Digital dual display + Adjuster operation		
	800 31.496 400 15.748 285 11.220 160 6.299 150 5.906	1,100 43.307 800 31.496 550 21.654 400 15.748 285 11.220 160 6.299	1,550 61.024 340 13.386 240 9.449	ø1 ø0.039	R4 mm R0.157 in 2 m 6.562 ft 10 million Times -55 to +80 °C -67 to +176 °F 150 µm/ ±2 ° IP67 R2 mm R0.079 in 1 m 3.281 ft 10 million Times -40 to +70 °C -40 to +158 °F 90 µm/ ±5 ° IP67
	290 11.417 142 5.591 105 4.134 58 2.283 49 1.929	440 17.323 290 11.417 200 7.874 142 5.591 105 4.134 58 2.283	540 21.260 140 5.512 85 3.346	ø0.5 ø0.020	
	13 0.512 6 0.236 5 0.197 2 0.079 2 0.079	20 0.787 13 0.512 9 0.354 6 0.236 5 0.197 2 0.079	30 1.181 7 0.276 5 0.197	ø0.125 ø0.005	
	65 2.559 31 1.220 22 0.866 12 0.472 12 0.472	95 3.740 65 2.559 42 1.654 31 1.220 22 0.866 12 0.472	110 4.331 20 0.787 15 0.591	ø0.25 ø0.010	

● Each amplifier response time (Red LED type)	HYPR	U-LG	LONG	STDF	STD	FAST	H-SP	S-D
FX-500 series	24 ms	4 ms	2 ms	—	250 µs	60 µs	25 µs	—
FX-101 / FX-102 (Note)	—	—	—	—	250 µs / 2.5 ms	—	—	—
FX-301 / FX-301-HS	—	—	2 ms	—	250 µs	150 µs	65 µs / 35 µs	250 µs
FX-305	—	4.5 ms	2.5 ms	700 µs	250 µs	150 µs	65 µs	—
FX-411 / FX-412	—	4.5 ms	—	—	500 µs	150 µs	—	—
FX-311	—	—	2 ms	—	250 µs	—	—	250 µs

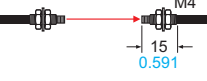
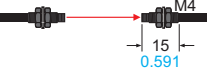
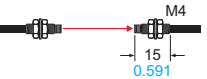
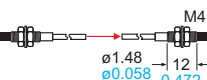
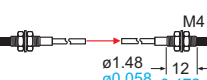
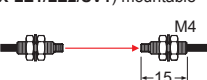
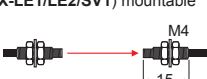

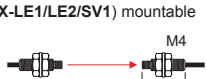
Note: For the FX-100 series response times, FX-101's response frequency is 0, and FX-102's response frequency is 1.

Thru-beam type Threaded type	Thru-beam type Cylindrical type	Thru-beam type Rectangular type	Thru-beam type Narrow beam / Wide beam	Thru-beam type Array / Heat-resistant	Thru-beam type Chemical-resistant / Vacuum resistant	Retroreflective type	Reflective type Threaded type	Reflective type Cylindrical type	Reflective type Rectangular type	Reflective type Wide beam	Reflective type Liquid detection	Reflective type Heat-resistant / Vacuum resistant
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LIST OF FIBERS

Red LED type sensing range

Thru-beam type (one pair set)

Type	Shape of fiber head (mm in)	Model No.	Sensing range (mm in) (Note 1)		
			■ : HYPR ■ : U-LG ■ : LONG ■ : STDF ■ : STD ■ : FAST ■ : H-SP ■ : S-D		
			FX-500 series		FX-101 (Upper value) FX-102 (Lower value)
Dual display digital standard type		Dual display digital			
Thru-beam type M4	Lens (FX-LE1/LE2/SV1) mountable 	FT-B8	(Note 2) 3,600 141.732 2,400 94.488 2,100 82.677 1,250 49.213 570 22.441 180 7.087	400 15.748 1,150 45.276	
	Metal-free 	FT-41			
	Lens (FX-LE1/LE2/SV1) mountable 	FT-FM2	3,300 129.921 2,000 78.740 1,550 61.024 1,100 43.307	300 11.811	
	Sleeve 90 mm 3.543 in 	FT-FM2S	445 17.520 150 5.906	800 31.496	
	Sleeve 40 mm 1.575 in 	FT-FM2S4			
	Lens (FX-LE1/LE2/SV1) mountable 	FT-W8	3,300 129.921 1,800 70.866 1,400 55.118 790 31.102 420 16.535 140 5.512	260 10.236 650 25.591	
	Lens (FX-LE1/LE2/SV1) mountable 	FT-P80	3,300 129.921 2,000 78.740 1,500 59.055 810 31.890 470 18.504 160 6.299	230 9.055 650 25.591	
	Lens (FX-LE1/LE2/SV1) mountable Tough flexible 	FT-P81X	1,600 62.992 1,600 62.992 1,600 62.992 880 34.646 530 20.866 160 6.299	260 10.236 800 31.496	
	Lens (FX-LE1/LE2/SV1) mountable 	FT-P60	1,200 47.244 640 25.197 560 22.047 350 13.780 210 8.268 60 2.362	130 5.118 300 11.811	

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 to 3,600 mm 141.732 in long.

FIBER SENSORS
LASER SENSORS
PHOTO-ELECTRIC SENSORS
MICRO PHOTO-ELECTRIC SENSORS
AREA SENSORS
LIGHT CURTAINS
PRESSURE / FLOW SENSORS
INDUCTIVE PROXIMITY SENSORS
PARTICULAR USE SENSORS
SENSOR OPTIONS
SIMPLE WIRE-SAVING UNITS
WIRE-SAVING SYSTEMS
MEASUREMENT SENSORS
STATIC CONTROL DEVICES
ENDOSCOPE
LASER MARKERS
PLC / TERMINALS
HUMAN MACHINE INTERFACES
ENERGY CONSUMPTION VISUALIZATION COMPONENTS
FA COMPONENTS
MACHINE VISION SYSTEMS
UV CURING SYSTEMS
Selection Guide
Fibers
Amplifiers
FT/FD/FR

Pliable fibers (flexible and sharp bending fibers) are marked with light blue in the table.

	FX-301 / FX-301-HS / FX-311 (Only LONG/STD/S-D for FX-311)	FX-305	FX-411 / FX-412	Beam axis dia. (mm in)	Fiber cable length ✂ : Free cut	Bending radius	Ambient temperature
	General purpose / High-speed / Sensitivity types	FX-301's 2 output type	Digital dual display + Adjuster operation				
	<p>1,100 43.307 530 20.866 400 15.748 200 7.874 (FX-301-HS: 120 4.724) 180 7.087</p>	<p>1,600 62.992 1,100 43.307 700 27.559 530 20.866 400 15.748 200 7.874</p>	<p>2,000 78.740 530 20.866 400 15.748</p>	ø1.5 ø0.059			
	<p>780 30.709 400 15.748 280 11.024 150 5.906 (FX-301-HS: 90 3.543) 130 5.118</p>	<p>1,000 39.370 780 30.709 500 19.685 400 15.748 280 11.024 150 5.906</p>	<p>1,500 59.055 340 13.386 240 9.449</p>	ø1 ø0.039	<p>2 m 6.562 ft</p>	R25 mm R0.984 in	-40 to +70 °C -40 to +158 °F
	<p>570 22.441 290 11.417 200 7.874 90 3.543 (FX-301-HS: 50 1.969) 100 3.937</p>	<p>750 29.528 570 22.441 350 13.780 290 11.417 200 7.874 90 3.543</p>	<p>950 37.402 290 11.417 200 7.874</p>			R1 mm R0.039 in	-40 to +60 °C -40 to +140 °F
	<p>650 25.591 320 12.598 230 9.055 100 3.937 (FX-301-HS: 60 2.362) 110 4.331</p>	<p>900 35.433 650 25.591 400 15.748 320 12.598 230 9.055 100 3.937</p>	<p>1,000 39.370 230 9.055 170 6.693</p>	ø1.4 ø0.055		R4 mm R0.157 in Flexible	-40 to +70 °C -40 to +158 °F
	<p>650 25.591 320 12.598 230 9.055 100 3.937 (FX-301-HS: 60 2.362) 110 4.331</p>	<p>900 35.433 650 25.591 380 14.961 320 12.598 230 9.055 100 3.937</p>	<p>1,200 47.244 320 12.598 230 9.055</p>		<p>1 m 3.281 ft</p>	R10 mm R0.394 in	-40 to +60 °C
	<p>400 15.748 190 7.480 140 5.512 70 2.756 (FX-301-HS: 42 1.654) 80 3.150</p>	<p>550 21.654 400 15.748 250 9.843 190 7.480 140 5.512 70 2.756</p>	<p>600 23.622 140 5.512 100 3.937</p>	ø0.7 ø0.028	<p>2 m 6.562 ft</p>	R4 mm R0.157 in Flexible	-40 to +140 °F

● Each amplifier response time (Red LED type)	HYPR	U-LG	LONG	STDF	STD	FAST	H-SP	S-D
FX-500 series	24 ms	4 ms	2 ms	—	250 μs	60 μs	25 μs	—
FX-101 / FX-102 (Note)	—	—	—	—	250 μs / 2.5 ms	—	—	—
FX-301 / FX-301-HS	—	—	2 ms	—	250 μs	150 μs	65 μs / 35 μs	250 μs
FX-305	—	4.5 ms	2.5 ms	700 μs	250 μs	150 μs	65 μs	—
FX-411 / FX-412	—	4.5 ms	—	—	500 μs	150 μs	—	—
FX-311	—	—	2 ms	—	250 μs	—	—	250 μs

Note: For the FX-100 series response times, FX-101's response frequency is 0, and FX-102's response frequency is 1.

FIBER SENSORS

LASER SENSORS

PHOTO-ELECTRIC SENSORS

MICRO PHOTO-ELECTRIC SENSORS

AREA SENSORS

LIGHT CURTAINS

PRESSURE / FLOW SENSORS

INDUCTIVE PROXIMITY SENSORS

PARTICULAR USE SENSORS

SENSOR OPTIONS

SIMPLE WIRE-SAVING UNITS

WIRE-SAVING SYSTEMS

MEASUREMENT SENSORS

STATIC CONTROL DEVICES

ENDOSCOPE

LASER MARKERS

PLC / TERMINALS

HUMAN MACHINE INTERFACES

ENERGY CONSUMPTION VISUALIZATION COMPONENTS

FA COMPONENTS

MACHINE VISION SYSTEMS

UV CURING SYSTEMS

Selection Guide

Fibers

Amplifiers

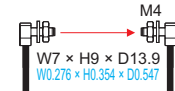
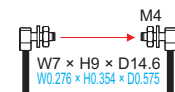
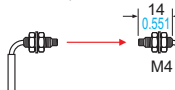
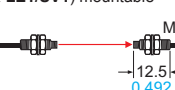
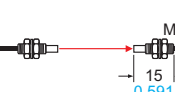
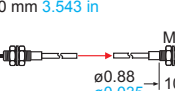
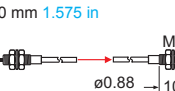
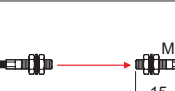
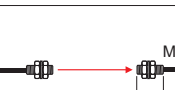
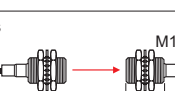
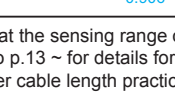



FT/FD/FR

Thru-beam type Threaded type	Thru-beam type Cylindrical type	Thru-beam type Rectangular type	Thru-beam type Narrow beam / Wide beam	Thru-beam type Array / Heat-resistant	Thru-beam type Chemical-resistant / Vacuum resistant	Retroreflective type	Reflective type Threaded type	Reflective type Cylindrical type	Reflective type Rectangular type	Reflective type Wide beam	Reflective type Liquid detection	Reflective type Heat-resistant / Vacuum resistant
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LIST OF FIBERS

Red LED type sensing range

Thru-beam type (one pair set)

Type	Shape of fiber head (mm in)	Model No.	Sensing range (mm in) (Note 1)			
			■ : HYPR ■ : U-LG ■ : LONG ■ : STDF ■ : STD ■ : FAST ■ : H-SP ■ : S-D			
			FX-500 series		FX-101 (Upper value) FX-102 (Lower value)	
Dual display digital standard type		Dual display digital				
Thru-beam type	Square head type	 W7 × H9 × D13.9 W0.276 × H0.354 × D0.547	FT-WR80 (Note 2)	2,600 102.362	215 8.465	
				1,300 51.181		
	With lens		 W7 × H9 × D14.6 W0.276 × H0.354 × D0.575	FT-WR80L (Note 2)	(Note 3) 3,600 141.732	430 16.929
	(Note 3) 3,600 141.732					
	Elbow	 W7 × H9 × D14.6 W0.276 × H0.354 × D0.575	FT-R80	3,300 129.921	180 7.087	
				2,200 86.614		
	Thru-beam type	M3	Lens (FX-LE1/SV1) mountable  14 0.551 M4	FT-R80	3,500 137.795	430 16.929
					1,750 68.898	
			Lens (FX-LE1/SV1) mountable  12.5 0.492 M3	FT-T80	3,300 129.921	300 11.811
					2,000 78.740	
 Sleeve 90 mm 3.543 in 15 0.591 M3			FT-NFM2	1,550 61.024	800 31.496	
				1,100 43.307		
 Sleeve 90 mm 3.543 in 10 0.394 M3			FT-NFM2S	1,220 48.031	130 5.118	
				740 29.134		
 Sleeve 40 mm 1.575 in 10 0.394 M3	FT-NFM2S4	545 21.457	280 11.024			
		310 12.205				
 Sleeve 40 mm 1.575 in 10 0.394 M3	FT-W4	960 37.795	80 3.150			
		590 23.228				
 Sleeve 40 mm 1.575 in 10 0.394 M3	FT-P40	440 17.323	220 8.661			
		250 9.843				
 Sleeve 40 mm 1.575 in 10 0.394 M3	FT-P40	650 25.591	80 3.150			
		360 14.173				
 With lens 23 0.906 M14	FT-FM10L	270 10.630	240 9.449			
		160 6.299				
 With lens 23 0.906 M14	FT-FM10L	95 3.740	15,000 590.551			
		30 1.181				
 With lens 23 0.906 M14	FT-FM10L	(Note 3) 19,600 771.654	9,300 366.142			
		(Note 3) 19,600 771.654				

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) Refer to p.13 ~ for details for the **FT-WR80/WR80L**.
 3) The fiber cable length practically limits the sensing range to 3,600 mm 141.732 in or 19,600 mm 771.654 in, 19,500 mm 767.717 in long.

- FIBER SENSORS
- LASER SENSORS
- PHOTO-ELECTRIC SENSORS
- MICRO PHOTO-ELECTRIC SENSORS
- AREA SENSORS
- LIGHT CURTAINS
- PRESSURE / FLOW SENSORS
- INDUCTIVE PROXIMITY SENSORS
- PARTICULAR USE SENSORS
- SENSOR OPTIONS
- SIMPLE WIRE-SAVING UNITS
- WIRE-SAVING SYSTEMS
- MEASUREMENT SENSORS
- STATIC CONTROL DEVICES
- ENDOSCOPE
- LASER MARKERS
- PLC / TERMINALS
- HUMAN MACHINE INTERFACES
- ENERGY CONSUMPTION VISUALIZATION COMPONENTS
- FA COMPONENTS
- MACHINE VISION SYSTEMS
- UV CURING SYSTEMS
- Selection Guide
- Fibers
- Amplifiers
- FT/FD/FR

Pliable fibers (flexible and sharp bending fibers) are marked with light blue in the table.

FIBER SENSORS

LASER SENSORS

PHOTO-ELECTRIC SENSORS

MICRO PHOTO-ELECTRIC SENSORS

AREA SENSORS

LIGHT CURTAINS

PRESSURE / FLOW SENSORS

INDUCTIVE PROXIMITY SENSORS

PARTICULAR USE SENSORS

SENSOR OPTIONS

WIRE- SAVING UNITS

WIRE- SAVING SYSTEMS

MEASUREMENT SENSORS

STATIC CONTROL DEVICES

ENDOSCOPE

LASER MARKERS

PLC / TERMINALS

HUMAN MACHINE INTERFACES

ENERGY CONSUMPTION VISUALIZATION COMPONENTS

FA COMPONENTS

MACHINE VISION SYSTEMS

UV CURING SYSTEMS

Selection Guide

Fibers

Amplifiers

FT/FD/FR

	FX-301 / FX-301-HS / FX-311 (Only LONG/STD/S-D for FX-311)	FX-305	FX-411 / FX-412	Beam axis dia. (mm in)	Fiber cable length ✂ : Free cut	Bending radius	Ambient temperature
	General purpose / High-speed / Sensitivity types	FX-301's 2 output type	Digital dual display + Adjuster operation				
	570 22.441 290 11.417 200 7.874 90 3.543 (FX-301-HS: —) 100 3.937	750 29.528 570 22.441 350 13.780 290 11.417 200 7.874 90 3.543	950 37.402 290 11.417 200 7.874	ø1 ø0.039		R1 mm R0.039 in	-40 to +60 °C -40 to +140 °F
	1,200 47.244 600 23.622 420 16.535 200 7.874 (FX-301-HS: —) 210 8.268	1,500 59.055 1,200 47.244 750 29.528 600 23.622 420 16.535 200 7.874	2,100 82.677 600 23.622 400 15.748	ø2 ø0.079			
	530 20.866 230 9.055 150 5.906 75 2.953 (FX-301-HS: 45 1.772) 80 3.150	740 29.134 530 20.866 320 12.598 230 9.055 150 5.906 75 2.953	630 24.803 160 6.299 110 4.331	ø1 ø0.039			
	780 30.709 400 15.748 280 11.024 150 5.906 (FX-301-HS: 90 3.543) 130 5.118	1,000 39.370 780 30.709 500 19.685 400 15.748 280 11.024 150 5.906	1,500 59.055 340 13.386 240 9.449	ø1 ø0.039		R25 mm R0.984 in	
	270 10.630 140 5.512 100 3.937 55 2.165 (FX-301-HS: 33 1.299) 49 1.929	400 15.748 270 10.630 200 7.874 140 5.512 100 3.937 55 2.165	450 17.717 130 5.118 85 3.346	ø0.5 ø0.020	✂ 2 m 6.562 ft	Fiber R25 mm R0.984 in Sleeve R10 mm R0.394 in	-40 to +70 °C -40 to +158 °F
	160 6.299 80 3.150 55 2.165 25 0.984 (FX-301-HS: 15 0.591) 28 1.102	220 8.661 160 6.299 100 3.937 80 3.150 55 2.165 25 0.984	250 9.843 65 2.559 45 1.772			R1 mm R0.039 in	-40 to +60 °C -40 to +140 °F
	250 9.843 100 3.937 75 2.953 30 1.181 (FX-301-HS: 18 0.709) 35 1.378	350 13.780 250 9.843 150 5.906 100 3.937 75 2.953 30 1.181	210 8.268 58 2.283 43 1.693	ø0.6 ø0.024		R4 mm R0.157 in Flexible	-40 to +70 °C
	(Note 3) 19,500 767.717 14,000 551.181 10,000 393.701 3,500 137.795 (FX-301-HS: 2,100 82.677) 3,800 149.606	(Note 3) 19,500 767.717 (Note 3) 19,500 767.717 (Note 3) 19,500 767.717 14,000 551.181 10,000 393.701 3,500 137.795	(Note 3) 19,500 767.717 10,000 393.701 8,000 314.961	ø10 ø0.394	✂ 10 m 32.808 ft	R25 mm R0.984 in	-40 to +158 °F

● Each amplifier response time (Red LED type)	HYPR	U-LG	LONG	STDF	STD	FAST	H-SP	S-D
FX-500 series	24 ms	4 ms	2 ms	—	250 µs	60 µs	25 µs	—
FX-101 / FX-102 (Note)	—	—	—	—	250 µs / 2.5 ms	—	—	—
FX-301 / FX-301-HS	—	—	2 ms	—	250 µs	150 µs	65 µs / 35 µs	250 µs
FX-305	—	4.5 ms	2.5 ms	700 µs	250 µs	150 µs	65 µs	—
FX-411 / FX-412	—	4.5 ms	—	—	500 µs	150 µs	—	—
FX-311	—	—	2 ms	—	250 µs	—	—	250 µs

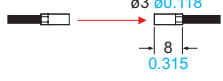
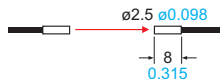
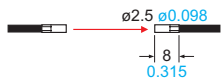
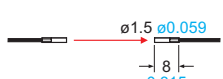
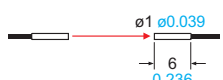
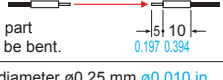
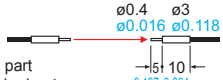
Note: For the FX-100 series response times, FX-101's response frequency is 0, and FX-102's response frequency is 1.

Thru-beam type Threaded type	Thru-beam type Cylindrical type	Thru-beam type Rectangular type	Thru-beam type Narrow beam / Wide beam	Thru-beam type Array / Heat-resistant	Thru-beam type Chemical-resistant / Vacuum resistant	Retroreflective type	Reflective type Threaded type	Reflective type Cylindrical type	Reflective type Rectangular type	Reflective type Wide beam	Reflective type Liquid detection	Reflective type Heat-resistant / Vacuum resistant
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LIST OF FIBERS

Red LED type sensing range

Thru-beam type (one pair set)

Type	Shape of fiber head (mm in)	Model No.	Sensing range (mm in) (Note 1)				
			■ : HYPR ■ : U-LG ■ : LONG ■ : STDF ■ : STD ■ : FAST ■ : H-SP ■ : S-D				
			FX-500 series	FX-101 (Upper value) FX-102 (Lower value)			
Cylindrical type	ø3 ø0.118	With lens • Long sensing range 	FT-WS8L	(Note 2) 3,600 141.732 (Note 2) 3,600 141.732 3,500 137.795 3,300 129.921 1,700 66.929 640 25.197	600 23.622 1,500 59.055		
			FT-WS3	3,300 129.921 1,900 74.803 1,400 55.118 790 31.102 460 18.110 150 5.906	150 5.906 600 23.622		
		ø2.5 ø0.098	With lens • Long sensing range 	FT-SFM2L	(Note 2) 3,600 141.732 (Note 2) 3,600 141.732 3,500 137.795 2,600 102.362 1,400 55.118 440 17.323	760 29.921 2,400 94.488	
				FT-SFM2	3,300 129.921 2,000 78.740 1,550 61.024 1,100 43.307 445 17.520 150 5.906	300 11.811 800 31.496	
			ø2.5 ø0.098		FT-WS8	3,300 129.921 1,800 70.866 1,400 55.118 790 31.102 420 16.535 140 5.512	260 10.236 650 25.591
					FT-SNFM2	1,220 48.031 740 29.134 545 21.457 310 12.205 192 7.559 63 2.480	130 5.118 280 11.024
	ø1.5 ø0.059		FT-WS4	960 37.795 590 23.228 440 17.323 250 9.843 150 5.906 53 2.087	80 3.150 220 8.661		
			FT-P2	1,200 47.244 770 30.315 570 22.441 330 12.992 200 7.874 70 2.756	120 4.724 330 12.992		
		ø1 ø0.039		FT-PS1	350 13.780 210 8.268 160 6.299 90 3.543 60 2.362 19 0.748	40 1.575 90 3.543	
				FT-E12	6 0.236 19 0.748		
	Ultra small diameter	Beam diameter ø0.25 mm ø0.010 in ø0.25 ø3 ø0.010 ø0.118  Sleeve part cannot be bent.	FT-E12				
			Beam diameter ø0.25 mm ø0.010 in ø0.4 ø3 ø0.016 ø0.118  Sleeve part cannot be bent.	FT-E22	15 0.591 60 2.362		

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 to 3,600 mm 141.732 in or 3,500 mm 137.795 in long.

FIBER SENSORS
LASER SENSORS
PHOTO-ELECTRIC SENSORS
MICRO PHOTO-ELECTRIC SENSORS
AREA SENSORS
LIGHT CURTAINS
PRESSURE / FLOW SENSORS
INDUCTIVE PROXIMITY SENSORS
PARTICULAR USE SENSORS
SENSOR OPTIONS
SIMPLE WIRE-SAVING UNITS
WIRE-SAVING SYSTEMS
MEASUREMENT SENSORS
STATIC CONTROL DEVICES
ENDOSCOPE
LASER MARKERS
PLC / TERMINALS
HUMAN MACHINE INTERFACES
ENERGY CONSUMPTION VISUALIZATION COMPONENTS
FA COMPONENTS
MACHINE VISION SYSTEMS
UV CURING SYSTEMS
Selection Guide
Fibers
Amplifiers
FT/FD/FR

Pliable fibers (flexible and sharp bending fibers) are marked with light blue in the table.

	FX-301 / FX-301-HS / FX-311 (Only LONG/STD/S-D for FX-311)	FX-305	FX-411 / FX-412	Beam axis dia. (mm in)	Fiber cable length ✂ : Free cut	Bending radius	Ambient temperature
	General purpose / High-speed / Sensitivity types	FX-301's 2 output type	Digital dual display + Adjuster operation				
	1,200 47.244 600 23.622 420 16.535 200 7.874 (FX-301-HS: 120 4.724) 210 8.268	1,500 59.055 1,200 47.244 750 29.528 600 23.622 420 16.535 200 7.874	2,100 82.677 600 23.622 400 15.748	ø2 ø0.079	2 m 6.562 ft	R1 mm R0.039 in	-40 to +60 °C -40 to +140 °F
	570 22.441 290 11.417 200 7.874 90 3.543 (FX-301-HS: —) 100 3.937	780 30.709 570 22.441 340 13.386 290 11.417 200 7.874 90 3.543	950 37.402 290 11.417 200 7.874	ø1 ø0.039	2 m 6.562 ft	R25 mm R0.984 in	-40 to +70 °C -40 to +158 °F
	1,600 62.992 800 31.496 580 22.835 170 6.693 (FX-301-HS: 100 3.937) 280 11.024	2,000 78.740 1,600 62.992 820 32.283 800 31.496 580 22.835 170 6.693	(Note 2) 3,500 137.795 800 31.496 580 22.835	ø2 ø0.079	2 m 6.562 ft	R25 mm R0.984 in	-40 to +70 °C -40 to +158 °F
	780 30.709 400 15.748 280 11.024 150 5.906 (FX-301-HS: 90 3.543) 130 5.118	1,000 39.370 780 30.709 500 19.685 400 15.748 280 11.024 150 5.906	1,500 59.055 340 13.386 240 9.449	ø1 ø0.039	2 m 6.562 ft	R1 mm R0.039 in	-40 to +60 °C -40 to +140 °F
	570 22.441 290 11.417 200 7.874 90 3.543 (FX-301-HS: 50 1.969) 100 3.937	750 29.528 570 22.441 350 13.780 290 11.417 200 7.874 90 3.543	950 37.402 290 11.417 200 7.874	ø0.5 ø0.020	2 m 6.562 ft	R25 mm R0.984 in	-40 to +70 °C -40 to +158 °F
	270 10.630 140 5.512 100 3.937 55 2.165 (FX-301-HS: 33 1.299) 49 1.929	400 15.748 270 10.630 200 7.874 140 5.512 100 3.937 55 2.165	450 17.717 130 5.118 85 3.346	ø0.6 ø0.024	1 m 3.281 ft	R4 mm R0.157 in	-40 to +70 °C -40 to +158 °F
	160 6.299 80 3.150 55 2.165 25 0.984 (FX-301-HS: 15 0.591) 28 1.102	220 8.661 160 6.299 100 3.937 80 3.150 55 2.165 25 0.984	250 9.843 65 2.559 45 1.772	ø0.25 ø0.010	500 mm 19.685 in	R1 mm R0.039 in	-40 to +60 °C -40 to +140 °F
	280 11.024 120 4.724 90 3.543 40 1.575 (FX-301-HS: 24 0.945) 42 1.654	350 13.780 280 11.024 160 6.299 120 4.724 90 3.543 40 1.575	315 12.402 80 3.150 60 2.362	ø0.25 ø0.010	500 mm 19.685 in	R5 mm R0.197 in	-40 to +70 °C -40 to +158 °F
	80 3.150 40 1.575 30 1.181 13 0.512 (FX-301-HS: 7 0.276) 17 0.669	100 3.937 80 3.150 50 1.969 40 1.575 30 1.181 13 0.512	105 4.134 25 0.984 19 0.748	ø0.125 ø0.005	500 mm 19.685 in	Flexible	-40 to +60 °C -40 to +140 °F
	18 0.709 10 0.394 8 0.315 3 0.118 (FX-301-HS: 1.5 0.059) 3 0.118	20 0.787 18 0.709 13 0.512 10 0.394 8 0.315 3 0.118	11 0.433 1.5 0.059 1 0.039	ø0.25 ø0.010	1 m 3.281 ft		-40 to +70 °C -40 to +158 °F
	80 3.150 50 1.969 36 1.417 18 0.709 (FX-301-HS: 10 0.394) 15 0.591	130 5.118 80 3.150 60 2.362 50 1.969 36 1.417 18 0.709	60 2.362 15 0.591 10 0.394				

● Each amplifier response time (Red LED type)	HYPR	U-LG	LONG	STDF	STD	FAST	H-SP	S-D
FX-500 series	24 ms	4 ms	2 ms	—	250 μs	60 μs	25 μs	—
FX-101 / FX-102 (Note)	—	—	—	—	250 μs / 2.5 ms	—	—	—
FX-301 / FX-301-HS	—	—	2 ms	—	250 μs	150 μs	65 μs / 35 μs	250 μs
FX-305	—	4.5 ms	2.5 ms	700 μs	250 μs	150 μs	65 μs	—
FX-411 / FX-412	—	4.5 ms	—	—	500 μs	150 μs	—	—
FX-311	—	—	2 ms	—	250 μs	—	—	250 μs

Note: For the FX-100 series response times, FX-101's response frequency is 0, and FX-102's response frequency is 1.

FIBER SENSORS

LASER SENSORS

PHOTO-ELECTRIC SENSORS

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ENDOSCOPE

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PLC / TERMINALS

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ENERGY CONSUMPTION VISUALIZATION COMPONENTS

FA COMPONENTS

MACHINE VISION SYSTEMS

UV CURING SYSTEMS

Selection Guide

Fibers

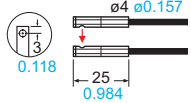
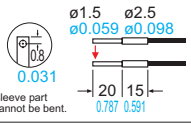
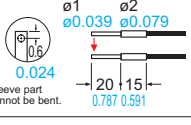
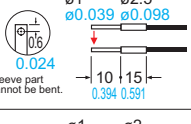
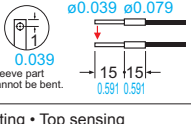
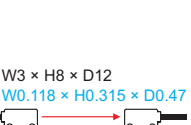
Amplifiers

FT/FD/FR

LIST OF FIBERS

Red LED type sensing range

Thru-beam type (one pair set)

Type	Shape of fiber head (mm in)	Model No.	Sensing range (mm in) (Note 1)			
			■ : HYPR ■ : U-LG ■ : LONG ■ : STDF ■ : STD ■ : FAST ■ : H-SP ■ : S-D			
			FX-500 series		FX-101 (Upper value) FX-102 (Lower value)	
Dual display digital standard type		Dual display digital				
Cylindrical type Side view		FT-V10	(Note 2) 3,600 141.732	(Note 2) 3,600 141.732	(Note 2) 3,600 141.732	1,000 39.370
		FT-SFM2SV2	2,200 86.614	1,300 51.181	1,000 39.370	180 7.087
		FT-V22	600 23.622	490 19.291	300 11.811	140 5.512
		FT-V41	790 31.102	450 17.717	360 14.173	40 1.575
		FT-WV42	380 14.961	220 8.661	170 6.693	30 1.181
		FT-WZ8H	(Note 2) 3,600 141.732	(Note 2) 3,600 141.732	3,500 137.795	1,200 47.244
Rectangular type Compact		FT-Z8H	(Note 2) 3,600 141.732	(Note 2) 3,600 141.732	3,300 129.921	2,800 110.236
		FT-Z8H	2,100 82.677	1,300 51.181	2,100 82.677	800 31.496
		FT-WZ8E	(Note 2) 3,600 141.732	(Note 2) 3,600 141.732	3,600 141.732	700 27.559
		FT-Z8E	3,400 133.858	2,000 78.740	3,400 133.858	2,100 82.677
		FT-Z8E	1,850 72.835	1,300 51.181	1,850 72.835	800 31.496
		FT-WZ8	590 23.228	490 19.291	1,300 51.181	1,850 72.835
		FT-WZ8	(Note 2) 3,600 141.732	(Note 2) 3,100 122.047	3,300 129.921	330 12.992
		FT-Z8	1,300 51.181	1,300 51.181	1,300 51.181	950 37.402
		FT-Z8	830 32.677	280 11.024	830 32.677	360 14.173
		FT-Z8	(Note 2) 3,600 141.732	(Note 2) 2,700 106.299	2,100 82.677	1,000 39.370
		FT-Z8	1,200 47.244	750 29.528	1,200 47.244	360 14.173
		FT-Z8	250 9.843	250 9.843	250 9.843	360 14.173

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 to 3,600 mm 141.732 in or 3,500 mm 137.795 in long.

Pliable fibers (flexible and sharp bending fibers) are marked with light blue in the table.

	FX-301 / FX-301-HS / FX-311 (Only LONG/STD/S-D for FX-311)	FX-305	FX-411 / FX-412	Beam axis dia. (mm in)	Fiber cable length ✂ : Free cut	Bending radius	Ambient temperature
	General purpose / High-speed / Sensitivity types	FX-301's 2 output type	Digital dual display + Adjuster operation				
	2,000 78.740 1,000 39.370 800 31.496 340 13.386 (FX-301-HS: 200 7.874) 350 13.780	2,350 92.520 2,000 78.740 1,400 55.118 1,000 39.370 800 31.496 340 13.386	(Note 2) 3,500 137.795 950 37.402 700 27.559	ø2.5 ø0.098	✂ 2 m 6.562 ft	R25 mm R0.984 in	-40 to +60 °C -40 to +140 °F
	400 15.748 200 7.874 140 5.512 65 2.559 (FX-301-HS: 35 1.378) 70 2.756	550 21.654 400 15.748 240 9.449 200 7.874 140 5.512 65 2.559	600 23.622 150 5.906 110 4.331	ø1.1 ø0.043	✂ 2 m 6.562 ft	R25 mm R0.984 in	-20 to +70 °C -4 to +158 °F
	390 15.354 180 7.087 125 4.921 60 2.362 (FX-301-HS: 35 1.378) 63 2.480	410 16.142 390 15.354 220 8.661 180 7.087 125 4.921 60 2.362	500 19.685 130 5.118 85 3.346	ø0.8 ø0.031	✂ 1 m 3.281 ft	R25 mm R0.984 in	-20 to +60 °C -4 to +140 °F
	175 6.890 80 3.150 60 2.362 25 0.984 (FX-301-HS: 15 0.591) 27 1.063	220 8.661 175 6.890 100 3.937 80 3.150 60 2.362 25 0.984	130 5.118 30 1.181 25 0.984	ø0.55 ø0.022	✂ 2 m 6.562 ft	R25 mm R0.984 in	-20 to +60 °C -4 to +140 °F
	90 3.543 40 1.575 30 1.181 13 0.512 (FX-301-HS: 7 0.276) 15 0.591	120 4.724 90 3.543 55 2.165 40 1.575 30 1.181 13 0.512	68 2.677 15 0.591 12 0.472	ø0.5 ø0.020	✂ 2 m 6.562 ft	R1 mm R0.039 in	-40 to +60 °C -40 to +140 °F
	2,500 98.425 1,200 47.244 850 33.465 400 15.748 (FX-301-HS: 240 9.449) 410 16.142	(Note 2) 3,500 137.795 2,500 98.425 1,600 62.992 1,200 47.244 850 33.465 400 15.748	(Note 2) 3,500 137.795 700 27.559 500 19.685				
	2,700 106.299 1,400 55.118 1,000 39.370 420 16.535 (FX-301-HS: 250 9.843) 490 19.291	3,100 122.047 2,700 106.299 1,550 61.024 1,400 55.118 1,000 39.370 420 16.535	(Note 2) 3,500 137.795 980 38.583 700 27.559			R4 mm R0.157 in Flexible	-40 to +60 °C -40 to +140 °F
	1,500 59.055 700 27.559 500 19.685 200 7.874 (FX-301-HS: 120 4.724) 210 8.268	2,100 82.677 1,500 59.055 950 37.402 700 27.559 500 19.685 200 7.874	1,900 74.803 500 19.685 350 13.780	2.2 x 3 0.087 x 0.118	✂ 2 m 6.562 ft	R1 mm R0.039 in	-40 to +60 °C -40 to +140 °F
	1,600 62.992 800 31.496 600 23.622 250 9.843 (FX-301-HS: 150 5.906) 280 11.024	1,850 72.835 1,600 62.992 950 37.402 800 31.496 600 23.622 250 9.843	1,900 74.803 600 23.622 400 15.748			R4 mm R0.157 in Flexible	-40 to +60 °C -40 to +140 °F
	700 27.559 330 12.992 240 9.449 100 3.937 (FX-301-HS: 60 2.362) 120 4.724	950 37.402 700 27.559 420 16.535 330 12.992 240 9.449 100 3.937	950 37.402 250 9.843 180 7.087			R1 mm R0.039 in	-40 to +60 °C -40 to +140 °F
	800 31.496 400 15.748 300 11.811 120 4.724 (FX-301-HS: 70 2.756) 140 5.512	1,100 43.307 800 31.496 500 19.685 400 15.748 300 11.811 120 4.724	1,250 49.213 310 12.205 220 8.661			R4 mm R0.157 in Flexible	-40 to +60 °C -40 to +140 °F

● Each amplifier response time (Red LED type)	HYPR	U-LG	LONG	STDF	STD	FAST	H-SP	S-D
FX-500 series	24 ms	4 ms	2 ms	—	250 μs	60 μs	25 μs	—
FX-101 / FX-102 (Note)	—	—	—	—	250 μs / 2.5 ms	—	—	—
FX-301 / FX-301-HS	—	—	2 ms	—	250 μs	150 μs	65 μs / 35 μs	250 μs
FX-305	—	4.5 ms	2.5 ms	700 μs	250 μs	150 μs	65 μs	—
FX-411 / FX-412	—	4.5 ms	—	—	500 μs	150 μs	—	—
FX-311	—	—	2 ms	—	250 μs	—	—	250 μs

Note: For the FX-100 series response times, FX-101's response frequency is 0, and FX-102's response frequency is 1.

FIBER SENSORS

LASER SENSORS

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ENDOSCOPE

LASER MARKERS

PLC / TERMINALS

HUMAN MACHINE INTERFACES

ENERGY CONSUMPTION VISUALIZATION COMPONENTS

FA COMPONENTS

MACHINE VISION SYSTEMS

UV CURING SYSTEMS

Selection Guide

Fibers

Amplifiers

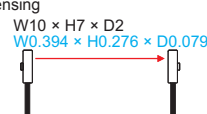
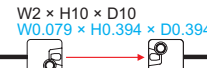
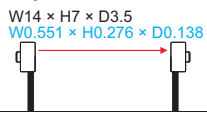
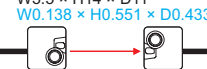
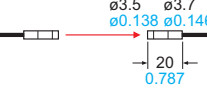
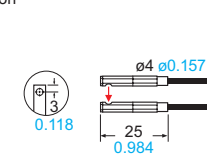
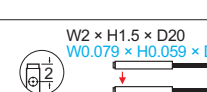
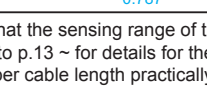
FT/FD/FR

Thru-beam type Threaded type	Thru-beam type Cylindrical type	Thru-beam type Rectangular type	Thru-beam type Narrow beam / Wide beam	Thru-beam type Array / Heat-resistant	Thru-beam type Chemical-resistant / Vacuum resistant	Retroreflective type	Reflective type Threaded type	Reflective type Cylindrical type	Reflective type Rectangular type	Reflective type Wide beam	Reflective type Liquid detection	Reflective type Heat-resistant / Vacuum resistant
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LIST OF FIBERS

Red LED type sensing range

Thru-beam type (one pair set)

Type	Shape of fiber head (mm in)	Model No.	Sensing range (mm in) (Note 1)		
			■ : HYPR ■ : U-LG ■ : LONG ■ : STDF ■ : STD ■ : FAST ■ : H-SP ■ : S-D		
			FX-500 series	FX-101 (Upper value)	FX-102 (Lower value)
		Dual display digital standard type	Dual display digital		
Rectangular Compact	Front sensing W10 × H7 × D2 W0.394 × H0.276 × D0.079 	FT-WZ4 (Note 2)	(Note 3) 1,600 62.992 1,100 43.307 900 35.433 530 20.866 330 12.992 100 3.937	230 9.055	670 26.378
	Fiber bending type W2 × H10 × D10 W0.079 × H0.394 × D0.394 	FT-WZ4HB (Note 2)	800 31.496 460 18.110 370 14.567 210 8.268 130 5.118 40 1.575	80 3.150	230 9.055
	Front sensing W14 × H7 × D3.5 W0.551 × H0.276 × D0.138 	FT-WZ7 (Note 2)	3,500 137.795 3,300 129.921 2,300 90.551 1,400 55.118 890 35.039 290 11.417	330 12.992	1,000 39.370
	Fiber bending type W3.5 × H14 × D11 W0.138 × H0.551 × D0.433 	FT-WZ7HB (Note 2)	3,500 137.795 1,700 66.929 1,300 51.181 790 31.102 490 19.291 160 6.299	190 7.480	580 22.835
Special Narrow beam		FT-K8 (Note 4)	(Note 3) 3,600 141.732 (Note 3) 3,600 141.732 (Note 3) 3,600 141.732 (Note 3) 3,600 141.732 2,700 106.299 750 29.528	1,000 39.370	3,000 118.110
	Side-view type with small light dispersion 	FT-WKV8 (Note 4)	(Note 3) 3,600 141.732 (Note 3) 3,600 141.732 (Note 3) 3,600 141.732 (Note 3) 3,600 141.732 2,400 94.488 760 29.921	700 27.559	2,200 86.614
		FT-KV8 (Note 4)	(Note 3) 3,600 141.732 (Note 3) 3,600 141.732 (Note 3) 3,600 141.732 (Note 3) 3,600 141.732 2,700 106.299 750 29.528	1,000 39.370	3,000 118.110
		FT-KV1 (Note 4)	2,400 94.488 1,100 43.307 850 33.465 540 21.260 430 16.929 160 6.299	135 5.315	500 19.685

- 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) Refer to p.13 ~ for details for the FT-WZ4/WZ4HB/WZ7/WZ7HB.
 3) The fiber cable length practically limits the sensing range to 3,600 mm 141.732 in or 3,500 mm 137.795 in, 1,600 mm 62.992 in long.
 4) Refer to p.21 ~ for details for the FT-K□/WKV8.

FIBER SENSORS

LASER SENSORS

PHOTO-ELECTRIC SENSORS

MICRO PHOTO-ELECTRIC SENSORS

AREA SENSORS

LIGHT CURTAINS

PRESSURE / FLOW SENSORS

INDUCTIVE PROXIMITY SENSORS

PARTICULAR USE SENSORS

SENSOR OPTIONS

SIMPLE WIRE-SAVING UNITS

WIRE-SAVING SYSTEMS

MEASUREMENT SENSORS

STATIC CONTROL DEVICES

ENDOSCOPE

LASER MARKERS

PLC / TERMINALS

HUMAN MACHINE INTERFACES

ENERGY CONSUMPTION VISUALIZATION COMPONENTS

FA COMPONENTS

MACHINE VISION SYSTEMS

UV CURING SYSTEMS

Selection Guide

Fibers

Amplifiers

FT/FD/FR

Pliable fibers (flexible and sharp bending fibers) are marked with light blue in the table.

	FX-301 / FX-301-HS / FX-311 (Only LONG/STD/S-D for FX-311)	FX-305	FX-411 / FX-412	Beam axis dia. (mm in)	Fiber cable length ✂️ : Free cut	Bending radius	Ambient temperature
	General purpose / High-speed / Sensitivity types	FX-301's 2 output type	Digital dual display + Adjuster operation				
	200 7.874 100 3.937 70 2.756 40 1.575 (FX-301-HS: —) 40 1.575	300 11.811 200 7.874 140 5.512 100 3.937 70 2.756 40 1.575	400 15.748 100 3.937 70 2.756	ø1.5 ø0.059	1 m 3.281 ft		
	150 5.906 75 2.953 50 1.969 30 1.181 (FX-301-HS: —) 30 1.181	220 8.661 150 5.906 105 4.134 75 2.953 50 1.969 30 1.181	280 11.024 70 2.756 49 1.929	ø0.5 ø0.020			
	440 17.323 220 8.661 150 5.906 80 3.150 (FX-301-HS: —) 80 3.150	660 25.984 440 17.323 308 12.126 220 8.661 150 5.906 80 3.150	880 34.646 220 8.661 150 5.906	ø1.5 ø0.059	2 m 6.562 ft	R1 mm R0.039 in	-40 to +60 °C -40 to +140 °F
	580 22.835 290 11.417 210 8.268 110 4.331 (FX-301-HS: —) 110 4.331	870 34.252 580 22.835 406 15.984 290 11.417 210 8.268 110 4.331	1,000 39.370 250 9.843 175 6.890	ø1 ø0.039			
	2,000 78.740 1,000 39.370 800 31.496 300 11.811 (FX-301-HS: 150 5.906) 350 13.780	3,000 118.110 2,000 78.740 1,500 59.055 1,000 39.370 800 31.496 300 11.811	(Note 3) 3,500 137.795 1,000 39.370 800 31.496	ø2.2 ø0.087		R25 mm R0.984 in	
	1,700 66.929 700 27.559 600 23.622 280 11.024 (FX-301-HS: 140 5.512) 300 11.811	2,200 86.614 1,700 66.929 1,000 39.370 700 27.559 600 23.622 280 11.024	(Note 3) 3,500 137.795 700 27.559 600 23.622	ø2.5 ø0.098	2 m 6.562 ft	R1 mm R0.039 in	-40 to +55 °C -40 to +131 °F
	2,000 78.740 1,000 39.370 800 31.496 300 11.811 (FX-301-HS: 150 5.906) 350 13.780	3,000 118.110 2,000 78.740 1,500 59.055 1,000 39.370 800 31.496 300 11.811	(Note 3) 3,500 137.795 1,000 39.370 700 27.559	ø1 ø0.039		R25 mm R0.984 in	-40 to +60 °C
	500 19.685 250 9.843 180 7.087 90 3.543 (FX-301-HS: 45 1.772) 100 3.937	600 23.622 500 19.685 300 11.811 250 9.843 180 7.087 90 3.543	500 19.685 135 5.315 100 3.937	ø1 ø0.039		R10 mm R0.394 in	-40 to +140 °F

● Each amplifier response time (Red LED type)	HYPR	U-LG	LONG	STDF	STD	FAST	H-SP	S-D
FX-500 series	24 ms	4 ms	2 ms	—	250 µs	60 µs	25 µs	—
FX-101 / FX-102 (Note)	—	—	—	—	250 µs / 2.5 ms	—	—	—
FX-301 / FX-301-HS	—	—	2 ms	—	250 µs	150 µs	65 µs / 35 µs	250 µs
FX-305	—	4.5 ms	2.5 ms	700 µs	250 µs	150 µs	65 µs	—
FX-411 / FX-412	—	4.5 ms	—	—	500 µs	150 µs	—	—
FX-311	—	—	2 ms	—	250 µs	—	—	250 µs

Note: For the FX-100 series response times, FX-101's response frequency is 0, and FX-102's response frequency is 1.

FIBER SENSORS

LASER SENSORS

PHOTO-ELECTRIC SENSORS

MICRO PHOTO-ELECTRIC SENSORS

AREA SENSORS

LIGHT CURTAINS

PRESSURE / FLOW SENSORS

INDUCTIVE PROXIMITY SENSORS

PARTICULAR USE SENSORS

SENSOR OPTIONS

SIMPLE WIRE-SAVING UNITS

WIRE-SAVING SYSTEMS

MEASUREMENT SENSORS

STATIC CONTROL DEVICES

ENDOSCOPE

LASER MARKERS

PLC / TERMINALS

HUMAN MACHINE INTERFACES

ENERGY CONSUMPTION VISUALIZATION COMPONENTS

FA COMPONENTS

MACHINE VISION SYSTEMS

UV CURING SYSTEMS

Selection Guide

Fibers

Amplifiers

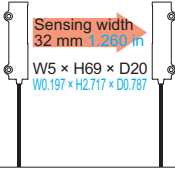
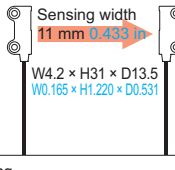

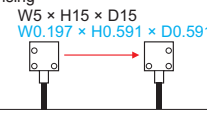
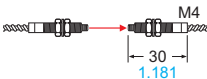
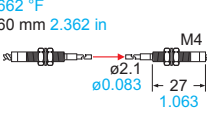
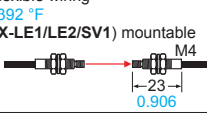
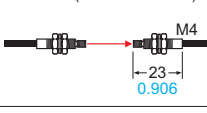
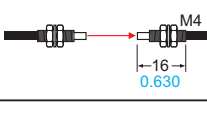
FT/FD/FR

Thru-beam type Threaded type	Thru-beam type Cylindrical type	Thru-beam type Rectangular type	Thru-beam type Narrow beam / Wide beam	Thru-beam type Array / Heat-resistant	Thru-beam type Chemical-resistant / Vacuum resistant	Retroreflective type	Reflective type Threaded type	Reflective type Cylindrical type	Reflective type Rectangular type	Reflective type Wide beam	Reflective type Liquid detection	Reflective type Heat-resistant / Vacuum resistant
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LIST OF FIBERS

Red LED type sensing range

Thru-beam type (one pair set)

Type	Shape of fiber head (mm in)	Model No.	Sensing range (mm in) (Note 1)			
			■ : HYPR ■ : U-LG ■ : LONG ■ : STDF ■ : STD ■ : FAST ■ : H-SP ■ : S-D			
			FX-500 series	FX-101 (Upper value)	FX-102 (Lower value)	
		Dual display digital standard type		Dual display digital		
Wide beam	Wide area sensing  Sensing width 32 mm 1.260 in W5 × H69 × D20 W0.197 × H2.717 × D0.787	FT-WA30	(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) 3,600 141.732 3,300 129.921	(Note 2) 3,500 137.795 (Note 2) 3,500 137.795		
		FT-A30				
	Wide area sensing  Sensing width 11 mm 0.433 in W4.2 × H31 × D13.5 W0.165 × H1.220 × D0.531	FT-WA8	(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) 3,600 141.732 3,300 129.921	1,500 59.055 (Note 2) 3,500 137.795		
		FT-A8	980 38.583			
Special Array	Top sensing  W5 × H15 × D15 W0.197 × H0.591 × D0.591	FT-AFM2	3,500 137.795 2,000 78.740 1,500 59.055 860 33.858	280 11.024 720 28.346		
	Side sensing  W5 × H15 × D15 W0.197 × H0.591 × D0.591	FT-AFM2E	490 19.291 160 6.299	240 9.449 670 26.378		
Heat-resistant	350 °C 662 °F Lens (FX-LE1/LE2/SV1) mountable  M4 30 1.181	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		
	350 °C 662 °F Sleeve 60 mm 2.362 in  M4 ø2.1 ø0.083 27 1.063	FT-H35-M2S6				
	Allows flexible wiring 200 °C 392 °F Lens (FX-LE1/LE2/SV1) mountable  M4 23 0.906	FT-H20W-M1	(Note 2) 1,600 62.992 1,000 39.370 840 33.071 470 18.504 300 11.811 90 3.543	100 3.937 300 11.811		
	200 °C 392 °F Lens (FX-LE1/LE2/SV1) mountable  M4 23 0.906	FT-H20-M1	(Note 2) 1,600 62.992 1,300 51.181 960 37.795 540 21.260 330 12.992 110 4.331	210 8.268 540 21.260		
	130 °C 266 °F Lens (FX-LE2 only) mountable  M4 16 0.630	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		

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 to 3,600 mm 141.732 in or 3,500 mm 137.795 in, 1,600 mm 62.992 in long.

FIBER SENSORS
LASER SENSORS
PHOTO-ELECTRIC SENSORS
MICRO PHOTO-ELECTRIC SENSORS
AREA SENSORS
LIGHT CURTAINS
PRESSURE / FLOW SENSORS
INDUCTIVE PROXIMITY SENSORS
PARTICULAR USE SENSORS
SENSOR OPTIONS
SIMPLE WIRE-SAVING UNITS
WIRE-SAVING SYSTEMS
MEASUREMENT SENSORS
STATIC CONTROL DEVICES
ENDOSCOPE
LASER MARKERS
PLC / TERMINALS
HUMAN MACHINE INTERFACES
ENERGY CONSUMPTION VISUALIZATION COMPONENTS
FA COMPONENTS
MACHINE VISION SYSTEMS
UV CURING SYSTEMS
Selection Guide
Fibers
Amplifiers
FT/FD/FR

Pliable fibers (flexible and sharp bending fibers) are marked with light blue in the table.

	FX-301 / FX-301-HS / FX-311 (Only LONG/STD/S-D for FX-311)	FX-305	FX-411 / FX-412	Beam axis dia. (mm in)	Fiber cable length ✂ : Free cut	Bending radius	Ambient temperature	
	General purpose / High-speed / Sensitivity types	FX-301's 2 output type	Digital dual display + Adjuster operation					
	(Note 2) 3,500 137.795 (Note 2) 3,500 137.795 (Note 2) 3,500 137.795 3,000 118.110 (FX-301-HS: 1,800 70.866) (Note 2) 3,500 137.795	(Note 2) 3,500 137.795 (Note 2) 3,500 137.795 (Note 2) 3,500 137.795 (Note 2) 3,500 137.795 (Note 2) 3,500 137.795 3,000 118.110	(Note 2) 3,500 137.795 (Note 2) 3,500 137.795 (Note 2) 3,500 137.795 (Note 2) 3,500 137.795	3.2 × 32 0.126 × 1.260		R1 mm R0.039 in R10 mm R0.394 in	-40 to +55 °C -40 to +131 °F -40 to +60 °C -40 to +140 °F	
	(Note 2) 3,500 137.795 1,500 59.055 1,100 43.307 1,080 42.520 (FX-301-HS: 640 25.197) 750 29.528	(Note 2) 3,500 137.795 (Note 2) 3,500 137.795 3,300 129.921 1,500 59.055 1,100 43.307 1,080 42.520	(Note 2) 3,500 137.795 1,500 59.055 1,100 43.307	2.2 × 11 0.087 × 0.433	✂ 2 m 6.562 ft	R1 mm R0.039 in R10 mm R0.394 in	-40 to +55 °C -40 to +131 °F -40 to +70 °C -40 to +158 °F	
	650 25.591 330 12.992 220 8.661 100 3.937 (FX-301-HS: 60 2.362) 115 4.528	850 33.465 650 25.591 380 14.961 330 12.992 220 8.661 100 3.937	940 37.008 240 9.449 170 6.693	0.265 × 5.5 0.010 × 0.217		R25 mm R0.984 in	-40 to +70 °C -40 to +158 °F	
	590 23.228 290 11.417 200 7.874 90 3.543 (FX-301-HS: 54 2.126) 100 3.937	800 31.496 590 23.228 350 13.780 290 11.417 200 7.874 90 3.543	880 34.646 210 8.268 155 6.102					
	550 21.654 280 11.024 200 7.874 85 3.346 (FX-301-HS: 50 1.969) 90 3.543	750 29.528 550 21.654 330 12.992 280 11.024 200 7.874 85 3.346	600 23.622 150 5.906 110 4.331	ø1.2 ø0.047	2 m 6.562 ft	Fiber R25 mm R0.984 in Sleeve R10 mm R0.394 in	-60 to +350 °C -76 to +662 °F	
	310 12.205 140 5.512 100 3.937 40 1.575 (FX-301-HS: 20 0.787) 50 1.969	420 16.535 310 12.205 180 7.087 140 5.512 100 3.937 40 1.575	400 15.748 110 4.331 80 3.150	ø0.8 ø0.031		1 m 3.281 ft	R10 mm R0.394 in	-60 to +200 °C -76 to +392 °F
	550 21.654 280 11.024 200 7.874 85 3.346 (FX-301-HS: 50 1.969) 90 3.543	750 29.528 550 21.654 320 12.598 280 11.024 200 7.874 85 3.346	550 21.654 150 5.906 100 3.937	ø1.2 ø0.047		R25 mm R0.984 in	-60 to +130 °C -76 to +266 °F	
	880 34.646 440 17.323 300 11.811 150 5.906 (FX-301-HS: 90 3.543) 155 6.102	1,200 47.244 880 34.646 550 21.654 440 17.323 300 11.811 150 5.906	1,100 43.307 280 11.024 200 7.874	ø1.5 ø0.059	✂ 2 m 6.562 ft			

● Each amplifier response time (Red LED type)	HYPR	U-LG	LONG	STDF	STD	FAST	H-SP	S-D
FX-500 series	24 ms	4 ms	2 ms	—	250 μs	60 μs	25 μs	—
FX-101 / FX-102 (Note)	—	—	—	—	250 μs / 2.5 ms	—	—	—
FX-301 / FX-301-HS	—	—	2 ms	—	250 μs	150 μs	65 μs / 35 μs	250 μs
FX-305	—	4.5 ms	2.5 ms	700 μs	250 μs	150 μs	65 μs	—
FX-411 / FX-412	—	4.5 ms	—	—	500 μs	150 μs	—	—
FX-311	—	—	2 ms	—	250 μs	—	—	250 μs

Note: For the FX-100 series response times, FX-101's response frequency is 0, and FX-102's response frequency is 1.

FIBER SENSORS

LASER SENSORS

PHOTO-ELECTRIC SENSORS

MICRO PHOTO-ELECTRIC SENSORS

AREA SENSORS

LIGHT CURTAINS

PRESSURE / FLOW SENSORS

INDUCTIVE PROXIMITY SENSORS

PARTICULAR USE SENSORS

SENSOR OPTIONS

SIMPLE WIRE-SAVING UNITS

WIRE-SAVING SYSTEMS

MEASUREMENT SENSORS

STATIC CONTROL DEVICES

ENDOSCOPE

LASER MARKERS

PLC / TERMINALS

HUMAN MACHINE INTERFACES

ENERGY CONSUMPTION VISUALIZATION COMPONENTS

FA COMPONENTS

MACHINE VISION SYSTEMS

UV CURING SYSTEMS

Selection Guide

Fibers

Amplifiers

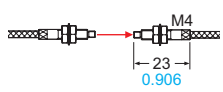
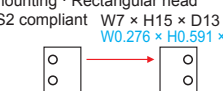
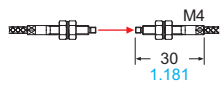
FT/FD/FR

Thru-beam type Threaded type	Thru-beam type Cylindrical type	Thru-beam type Rectangular type	Thru-beam type Narrow beam / Wide beam	Thru-beam type Array / Heat-resistant	Thru-beam type Chemical-resistant / Vacuum resistant	Retroreflective type	Reflective type Threaded type	Reflective type Cylindrical type	Reflective type Rectangular type	Reflective type Wide beam	Reflective type Liquid detection	Reflective type Heat-resistant / Vacuum resistant
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LIST OF FIBERS

Red LED type sensing range

Thru-beam type (one pair set)

Type	Shape of fiber head (mm in)	Model No.	Sensing range (mm in) (Note 1)			
			■ : HYPR ■ : U-LG ■ : LONG ■ : STDF ■ : STD ■ : FAST ■ : H-SP ■ : S-D			
			FX-500 series	FX-101 (Upper value)	FX-102 (Lower value)	
			Dual display digital standard type	Dual display digital		
Special	Lens (FX-LE1/LE2/SV1) mountable 	FT-H20-J20-S (Note 4)				
		FT-H20-J30-S (Note 4)	■ 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	
		FT-H20-J50-S (Note 4)				
	Side-view	FT-H20-VJ50-S (Note 4)	■ 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	
		FT-H20-VJ80-S (Note 4)				
	Chemical-resistant	Easy mounting · Rectangular head SEMI S2 compliant W7 × H15 × D13 W0.276 × H0.591 × D0.512 	FT-Z802Y (Note 6)	(Note 5) ■ 3,600 141.732 (Note 5) ■ 3,600 141.732 (Note 5) ■ 3,600 141.732 ■ 3,100 122.047 ■ 1,900 74.803 ■ 470 18.504	■ 520 20.472	■ 3,100 122.047
		115 °C 239 °F	FT-HL80Y	(Note 5) ■ 3,600 141.732 (Note 5) ■ 3,600 141.732 (Note 5) ■ 3,600 141.732 (Note 5) ■ 3,600 141.732 ■ 2,300 90.551 ■ 740 29.134	■ 990 38.976	■ 2,340 92.126
			FT-L80Y	(Note 5) ■ 3,600 141.732 (Note 5) ■ 3,600 141.732 (Note 5) ■ 3,600 141.732 (Note 5) ■ 3,600 141.732 ■ 2,800 110.236 ■ 920 36.220	■ 1,100 43.307	■ 2,600 102.362
		Side-view	FT-V80Y	(Note 5) ■ 3,600 141.732 ■ 2,800 110.236 ■ 2,200 86.614 ■ 1,300 51.181 ■ 800 31.496 ■ 240 9.449	■ 340 13.386	■ 800 31.496
	Vacuum-resistant	300 °C 572 °F Lens (FV-LE1/SV2) mountable 	FT-H30-M1V-S (Note 8)	■ 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

- 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) This is the fiber length (fixed length) for heat-resistant fibers. The ordinary-temperature fibers are free-cut to 2 m 6.562 ft.
 3) The bending radius for the ordinary-temperature fiber is R25 mm R0.984 in or more.
 4) Heat-resistant joint fibers and ordinary-temperature fibers (FT-FM2) are sold as a set. Please refer to p.27~ for details.
 5) The fiber cable length practically limits the sensing range to 3,600 mm 141.732 in or 3,500 mm 137.795 in long.
 6) Refer to p.22~ for details for the FT-Z802Y.
 7) The allowable cutting range is 500 mm 19.685 in from the end that the amplifier inserted.
 8) Sold as a set comprising vacuum type fiber + photo-terminal (FV-BR1) + fiber at atmospheric side (FT-J8). Please refer to p.25~ for details.

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MICRO PHOTO-ELECTRIC SENSORS
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PRESSURE / FLOW SENSORS
INDUCTIVE PROXIMITY SENSORS
PARTICULAR USE SENSORS
SENSOR OPTIONS
SIMPLE WIRE-SAVING UNITS
WIRE-SAVING SYSTEMS
MEASUREMENT SENSORS
STATIC CONTROL DEVICES
ENDOSCOPE
LASER MARKERS
PLC / TERMINALS
HUMAN MACHINE INTERFACES
ENERGY CONSUMPTION VISUALIZATION COMPONENTS
FA COMPONENTS
MACHINE VISION SYSTEMS
UV CURING SYSTEMS
Selection Guide
Fibers
Amplifiers
FT/FD/FR

Pliable fibers (flexible and sharp bending fibers) are marked with light blue in the table.

	FX-301 / FX-301-HS / FX-311 (Only LONG/STD/S-D for FX-311)	FX-305	FX-411 / FX-412	Beam axis dia. (mm in)	Fiber cable length ✂ : Free cut	Bending radius	Ambient temperature
	General purpose / High-speed / Sensitivity types	FX-301's 2 output type	Digital dual display + Adjuster operation				
	390 15.354 200 7.874 140 5.512 60 2.362 (FX-301-HS: Cannot use) 60 2.362	530 20.866 390 15.354 225 8.858 200 7.874 140 5.512 60 2.362	700 27.559 160 6.299 110 4.331	ø1.2 ø0.047	✂ 200 mm 7.874 in (Note 2)	Heat-resistant fiber R18 mm R0.709 in (Note 3)	-60 to +200 °C -76 to +392 °F
	550 21.654 280 11.024 200 7.874 90 3.543 (FX-301-HS: Cannot use) 90 3.543	840 33.071 550 21.654 370 14.567 280 11.024 200 7.874 90 3.543	1,100 43.307 240 9.449 170 6.693		✂ 300 mm 11.811 in (Note 2)		
	(Note 5) 3,500 137.795 1,500 59.055 1,000 39.370 500 19.685 (FX-301-HS: 300 11.811) 530 20.866	(Note 5) 3,500 137.795 (Note 5) 3,500 137.795 3,000 118.110 1,500 59.055 1,000 39.370 500 19.685	(Note 5) 3,500 137.795 750 29.528 540 21.260	ø3.7 ø0.146	✂ 2 m 6.562 ft	R25 mm R0.984 in	0 to +60 °C 32 to +140 °F
	(Note 5) 3,500 137.795 1,350 53.150 900 35.433 450 17.717 (FX-301-HS: —) 480 18.898	(Note 5) 3,500 137.795 (Note 5) 3,500 137.795 1,800 70.866 1,350 53.150 900 35.433 450 17.717	(Note 5) 3,500 137.795 800 31.496 550 21.654		✂ 2 m 6.562 ft (Note 7)		
	(Note 5) 3,500 137.795 1,500 59.055 1,000 39.370 500 19.685 (FX-301-HS: 300 11.811) 530 20.866	(Note 5) 3,500 137.795 (Note 5) 3,500 137.795 2,000 78.740 1,500 59.055 1,000 39.370 500 19.685	(Note 5) 3,500 137.795 900 35.433 600 23.622	ø2.8 ø0.110	R30 mm R1.181 in	-40 to +70 °C -40 to +158 °F	
	800 31.496 400 15.748 280 11.024 120 4.724 (FX-301-HS: 70 2.756) 140 5.512	1,000 39.370 800 31.496 500 19.685 400 15.748 280 11.024 120 4.724	1,500 59.055 350 13.780 250 9.843				ø1.2 ø0.047
	250 9.843 125 4.921 90 3.543 50 1.969 (FX-301-HS: 25 0.984) 40 1.575	350 13.780 250 9.843 150 5.906 125 4.921 90 3.543 50 1.969	390 15.354 100 3.937 70 2.756				

● Each amplifier response time (Red LED type)	HYPR	U-LG	LONG	STDF	STD	FAST	H-SP	S-D
FX-500 series	24 ms	4 ms	2 ms	—	250 μs	60 μs	25 μs	—
FX-101 / FX-102 (Note)	—	—	—	—	250 μs / 2.5 ms	—	—	—
FX-301 / FX-301-HS	—	—	2 ms	—	250 μs	150 μs	65 μs / 35 μs	250 μs
FX-305	—	4.5 ms	2.5 ms	700 μs	250 μs	150 μs	65 μs	—
FX-411 / FX-412	—	4.5 ms	—	—	500 μs	150 μs	—	—
FX-311	—	—	2 ms	—	250 μs	—	—	250 μs

Note: For the FX-100 series response times, FX-101's response frequency is 0, and FX-102's response frequency is 1.

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FT/FD/FR