

SPECIFICATIONS

Refer to the 'Sensor general catalog 2003-2004' for fiber specifications.

Item	Model No.	Type	Standard type				High-speed type	High-function type
			Red LED	Blue LED	Green LED	Infrared LED		
		NPN output	<b>FX-301</b>	<b>FX-301B</b>	<b>FX-301G</b>	<b>FX-301H</b>	<b>FX-301-HS</b>	<b>FX-305</b>
		PNP output	<b>FX-301P</b>	<b>FX-301BP</b>	<b>FX-301GP</b>	<b>FX-301HP</b>	<b>FX-301P-HS</b>	<b>FX-305P</b>
Supply voltage			12 to 24 V DC ± 10 %				Ripple P-P 10 % or less	
Power consumption			<Red LED / Infrared LED type> Normal operation: 960 mW or less (Current consumption 40 mA or less at 24 V supply voltage) ECO mode: 600 mW or less (Current consumption 25 mA or less at 24 V supply voltage)				<Blue LED / Green LED type> Normal operation: 720 mW or less (Current consumption 30 mA or less at 24 V supply voltage) ECO mode: 430 mW or less (Current consumption 18 mA or less at 24 V supply voltage)	
Output			<NPN output type> NPN open-collector transistor • Maximum sink current: 100 mA (50 mA, if five, or more, amplifiers are connected in cascade.) • Applied voltage: 30 V DC or less (between output and 0 V) • Residual voltage: 1.5 V or less [at 100 mA (at 50 mA, if five, or more, amplifiers are connected in cascade) sink current.]				<NPN output type> NPN open-collector transistor 2 outputs • Maximum sink current: 50 mA each (Note 1) • Applied voltage: 30 V DC or less (between output and 0 V) • Residual voltage: 1.5 V or less [at 50 mA (Note 1)]	
			<PNP output type> PNP open-collector transistor • Maximum source current: 100 mA (50 mA, if five, or more, amplifiers are connected in cascade.) • Applied voltage: 30 V DC or less (between output and + V) • Residual voltage: 1.5 V or less [at 100 mA (at 50 mA, if five, or more, amplifiers are connected in cascade) source current.]				<PNP output type> PNP open-collector transistor 2 outputs • Maximum source current: 50 mA each (Note 1) • Applied voltage: 30 V DC or less (between output and + V) • Residual voltage: 1.5 V or less [at 50 mA (Note 1)]	
Output operation			Selectable either Light-ON or Dark-ON, with jog switch					
Short-circuit protection			Incorporated					
Response time			65 μs or less [H-SP (Red LED type only)], 150 μs or less (FAST), 250 μs or less [STD / S-D (Red LED type only)], 2 ms or less (LONG), selectable with jog switch			35 μs or less (H-SP), 150 μs or less (FAST), 250 μs or less (STD / S-D), 2 ms or less (LONG), selectable with jog switch		65 μs or less (H-SP), 150 μs or less (FAST), 250 μs or less (STD), 700 μs or less (STDF), 2.5 ms or less (LONG), 4.5 ms or less (U-LG), selectable with jog switch
Sensitivity setting			2-level teaching / Limit teaching / Manual adjustment / Full-auto teaching / Max. sensitivity teaching				Normal mode: 2-level teaching / Limit teaching / Full-auto teaching / Max. sensitivity teaching / Manual adjustment Window comparator mode: Teaching (1-level / 2-level / 3-level) / Manual adjustment	
Operation indicator			Orange LED (lights up when the output is ON)					
Stability indicator			Green LED (lights up under stable light received condition or stable dark condition)				—	
MODE indicator			RUN: Green LED, TEACH · ADJ · L/D ON · TIMER · PRO: Yellow LED					
Digital display			4 digit red LED display					
Fine sensitivity adjustment function			Incorporated					
Timer function			Incorporated with variable ON-delay / OFF-delay / ONE-SHOT timer, switchable either effective or ineffective. [Timer period: Red LED type; 0.5 ms approx., 1 ms to 9999 ms] [Blue LED, Green LED, Infrared LED type; approx. 0.5 ms to 500 ms]			Incorporated with variable ON-delay / OFF-delay / ONE-SHOT / ON-delay · OFF-delay / ON-delay · ONE-SHOT timer, switchable either effective or ineffective. (Timer period: Output 1; 0.5 ms, 1 ms to 9999 ms, Output 2; 0.5 ms, 1 ms to 500 ms)		Incorporated (Note 2) FAST, STD, LONG: 4 level H-SP, S-D: 2 level
Light emitting amount selection function			Incorporated (Red LED type only)(Note 2) FAST, STD, LONG: 4 level, H-SP: 3 level, S-D: 2 level			Incorporated (Note 2) FAST, STD, STDF, LONG, U-LG: 4 level H-SP: 3 level		
Automatic interference prevention function			Incorporated (Up to four sets of fiber heads can be mounted close together. However, H-SP mode is 2 fiber heads.)(Note 3)			Incorporated [Up to four sets of fiber heads can be mounted close together. (However, U-LG mode is 8 fiber heads, H-SP mode is 2 fiber heads.)] (Note 4)		
Environmental resistance	Ambient temperature		- 10 to + 55 °C + 14 to + 131 °F (If 4 to 7 units are connected in cascade: - 10 to + 50 °C + 14 to + 122 °F, if 8 to 16 units are connected in cascade: - 10 to + 45 °C + 14 to + 113 °F (No dew condensation or icing allowed), Storage: - 20 to + 70 °C - 4 to + 158 °F					
	Ambient humidity		35 to 85 % RH, Storage: 35 to 85 % RH					
	Ambient illuminance		Sunlight: 10,000 lx at the light-receiving face, Incandescent light: 3,000 lx at the light-receiving face					
	Voltage withstandability		1,000 V AC for one min. between all supply terminals connected together and enclosure (Note 5)					
	Insulation resistance		20 MΩ, or more, with 250 V DC megger between all supply terminals connected together and enclosure (Note 5)					
	Vibration resistance		10 to 150 Hz frequency, 0.75 mm 0.030 in amplitude in X, Y and Z directions for two hours each					
	Shock resistance		98 m/s <sup>2</sup> acceleration (10 G approx.) in X, Y and Z directions for five times each					
Emitting element (modulated)			Red LED	Blue LED	Green LED	Infrared LED	Red LED	Red LED
Material			Enclosure: Heat-resistant ABS, Case cover: Polycarbonate, MODE key: Acrylic, Jog switch: Heat-resistant ABS (FX-301B/G/H: Acrylic)					
Connecting method			Connector (Note 6)					
Cable extension			Extension up to total 100 m 328.084 ft (50 m 164.042 ft for 5 to 8 units, 20 m 65.617 ft for 9 to 16 units) is possible with 0.3 mm <sup>2</sup> , or more, cable.					
Weight			Net weight: 20 g approx., Gross weight: 25 g approx.					

Notes: 1) 50 mA per output. 25 mA if five, or more, amplifiers are connected in cascade.  
 2) The light emitting amount can be zero (emission halt) in all modes.  
 3) When the power supply is switched on, the light emission timing is automatically set for interference prevention.  
 4) When the interference prevention function 'IP-2' is set, the number of mountable fiber heads becomes double. Furthermore, take care that the response time also becomes double.  
 5) The voltage withstandability and the insulation resistance values given in the above table are for the amplifier only.  
 6) The cable for amplifier connection is not supplied as an accessory. Make sure to use the optional quick-connection cables given below.  
 Main cable (3-core) for FX-301(P)(-HS): CN-73-C1 (Cable length 1 m 3.281 ft), CN-73-C2 (Cable length 2 m 6.562 ft), CN-73-C5 (Cable length 5 m 16.404 ft)  
 Sub cable (1-core) for FX-301(P)(-HS): CN-71-C1 (Cable length 1 m 3.281 ft), CN-71-C2 (Cable length 2 m 6.562 ft), CN-71-C5 (Cable length 5 m 16.404 ft)  
 Main cable (4-core) for FX-305(P): CN-74-C1 (Cable length 1 m 3.281 ft), CN-74-C2 (Cable length 2 m 6.562 ft), CN-74-C5 (Cable length 5 m 16.404 ft)  
 Sub cable (2-core) for FX-305(P): CN-72-C1 (Cable length 1 m 3.281 ft), CN-72-C2 (Cable length 2 m 6.562 ft), CN-72-C5 (Cable length 5 m 16.404 ft)

