

Digital Fiber Sensor / FX-301 SERIES

Refer to the FX-301 catalog for more details.



Superior performance and advanced user-friendly multi-functionality enables expert usage on the very first day



MODE NAVI
New Advanced sensor with Visible Indicator

Type	NPN output	PNP output
Model No.	FX-301 □	FX-301 □P
Sensing range (Red LED type)	Thru-beam type (FT-B8): 1,100 mm 43.307 in (LONG), 530 mm 20.866 in (STD) 400 mm 15.748 in (FAST), 180 mm 7.087 in (S-D) Reflective type (FD-B8): 480 mm 18.898 in (LONG), 220 mm 8.661 in (STD) 160 mm 6.299 in (FAST), 75 mm 2.953 in (S-D)	
Supply voltage	12 to 24 V DC ± 10%	
Output	NPN open-collector transistor	PNP open-collector transistor
Output operation	Selectable either Light-ON or Dark-ON, with jog switch	
Response time	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	
Digital display	4 digit red LED display	
Sensitivity setting	2-level teaching / Limit teaching / Manual adjustment / Full-auto teaching (except for red LED type)	
Automatic interference prevention function	Incorporated (Up to 4 sets of fiber heads can be mounted close together.)	
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)	
Emitting element (modulated)	FX-301(P) : Red LED, FX-301B(P) : Blue LED, FX-301G(P) : Green LED, FX-301H(P) : Infrared LED	
Dimensions	W10 × H30.5 × D64.5 mm W0.394 × H1.201 × D2.575 in	

Note: The cable for amplifier connection is not supplied as an accessory. Make sure to use the optional quick-connection cable given below

- Main cable (3-core): **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): **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**)

Newly developed

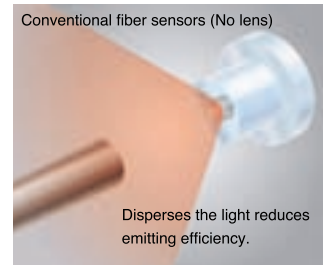
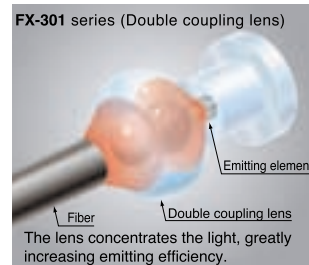
Stable long-term sensing

The newly developed four-chemical emitting element that uses the FX-301 (red LED type) suppresses changes over long periods of time as much as possible, so that a stable light emitting level is maintained. There is very little element deterioration so that stable and accurate sensing can be maintained over long periods.

Innovative feature

Long-range sensing made possible with built-in optical lens

For the first time in the industry, an optical 'double coupling lens' has been incorporated directly into the fiber sensor itself. This lens maximizes the light emission efficiency, resulting in a tremendous improvement in the sensing range. Sensing ranges with small diameter fibers and ultra-small diameter fibers, which have become very popular in recent years due to the miniaturization of chip components, have been increased by 50% over previous values achieved with other amplifiers.



Easy operation with MODE NAVI

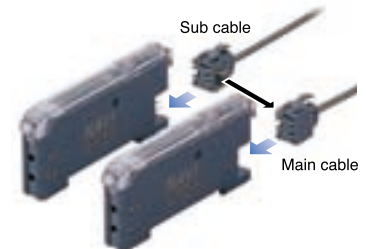
MODE NAVI uses six indicators to display the amplifier's basic operations. The current operating mode can be confirmed at a glance, so even a first time user can easily operate the amplifier without becoming confused.



MODE NAVI (MODE indicators)

Easy maintenance, as main and sub units are identical

Both main and sub units utilize the same amplifier body. This feature allows for easy mounting in the side-by-side configuration. The main and sub unit functions are distinguished only by the proper use of the 3-core main cable and the 1-core sub cable. Moreover, by utilizing the same body for both main and sub units, inventory management and maintenance is simplified.



Equipped with a timer for easy fine adjustments

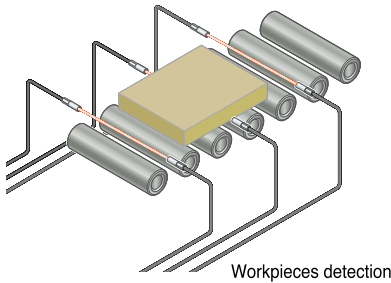
Fine adjustments in the workplace can be made at the sensor itself, without changing PLC settings.

Variable ON-delay/OFF-delay/ONE-SHOT timer 0.5 to 500 ms

A lineup of four light source type sensors gives a greater range of applications!

Red LED type FX-301

This standard type using red light has a four-chemical emitting element for stable sensing over long periods.



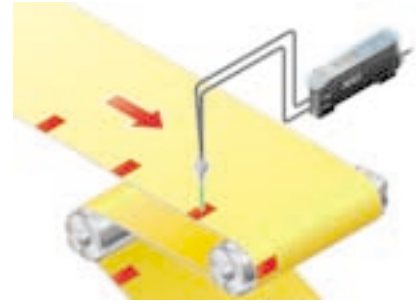
Blue LED type FX-301B

The blue LED type greatly reduces the dampening rate, making it ideal for delicate sensing.



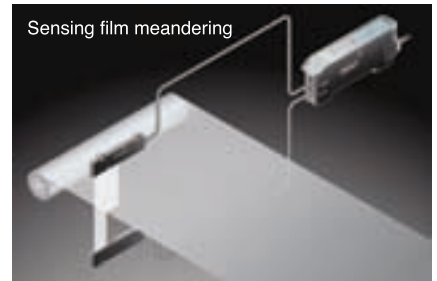
Green LED type FX-301G

The green LED type can accurately discriminate between red and yellow, that cannot be easily detected using red LED type.



Infrared LED type FX-301H

Infrared LED type is ideal for sensing environments with light restrictions, such as places where light-sensitive film is being handled. (The emitting peak wavelength : 940 nm.) It includes full-auto teaching function which allows sensitivity to be set without stopping the workpiece line.



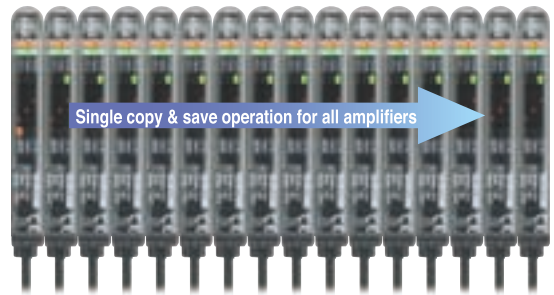
Color combinations that can be discerned during mark sensing

Mark color / Background color	White	Yellow	Orange	Red	Green	Blue	Black
White		●	●	●●	●●●	●●●	●●●
Yellow	●		●	●●	●●●	●●●	●●●
Orange	●	●		●●	●●●	●●●	●●●
Red	●●	●	●		●	●●	●●
Green	●●●	●●●	●●	●		●	●
Blue	●●●	●●●	●●	●	●		●
Black	●●●	●●●	●●	●	●	●	

●: Red light
●: Blue light
●: Green light

Optical communication function lets multiple sensors be adjusted all at once

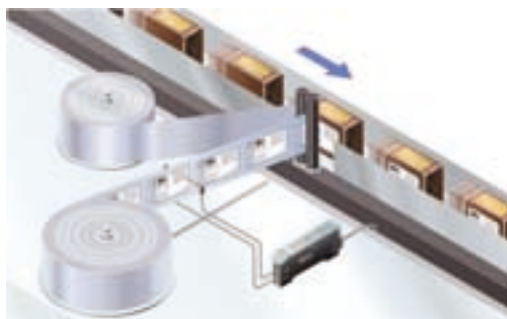
The optical communication function allows the data that is currently set to be copied and saved all at once for all amplifiers connected together from the right side. This greatly reduces troublesome setup tasks and makes setup much smoother.



High Speed Digital Fiber Sensor / FX-303



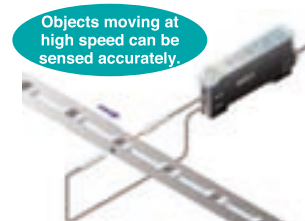
High-speed sensing of 90 μs



90 μs high-speed response

FX-303 is high-speed type with response time of 90 μs. This is ideal for applications which require high-speed sensing and sensing of minute objects.

Chip component sensing



Solves saturation problems at close distances

The light amount can be set to one of three levels at a fixed response time (90 μs).

H-SP MODE Normal (standard)	Used for general sensing.
S-D1 MODE Approx. 50% of standard	Used when the received light amount becomes saturated during H-SP mode.
S-D2 MODE Approx. 80% of standard	

Supply voltage: 12 to 24 V DC ± 10 %
Output: NPN open-collector transistor (NPN output type) or PNP open-collector transistor (PNP output type)