

DIGITAL FIBER SENSOR

New

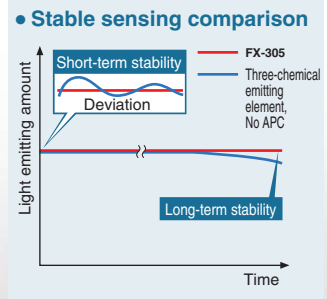
FX-305

Highest level of stability and sensing performance!



Stable sensing over long and short periods

In addition to a 'four-chemical emitting element' which suppresses changes in the light-emitting element over time so that a stable level of light emission can be maintained over long periods, a new 'Auto Power Control (APC) circuit' has also been adopted. Because fluctuations over short periods of time have also been suppressed, stable sensing is possible very quickly once the power is turned back on after setup changes.



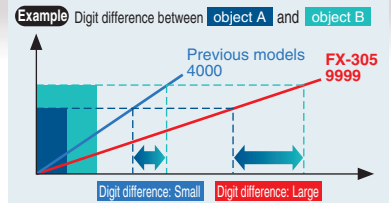
Industry's largest display 9999

2.5 times previous models

Industry's largest display with 4 digits (9999). With a greater difference in digit value than previous models, threshold values can be set in units of 1 digit up to maximum 9999. Threshold setting can now be done more easily and accurately.

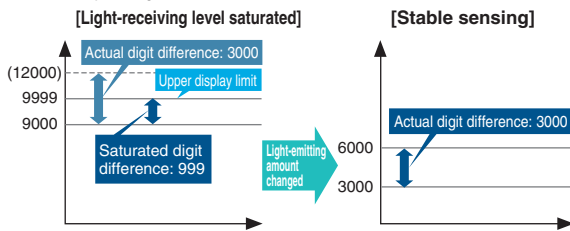


Digit difference comparison



Industry first! Light-emitting amount selection function

If the light-receiving level becomes saturated during close-range sensing or when sensing transparent or ultra-small objects, you can adjust the light-emitting amount of the sensor to stabilize sensing without needing to change the response time. Sensing that previously required the response time or fibers to be changed can now be set much more easily using this function.



Comparison of saturation remedies

[Conventional models]	[FX-305]
Response time: Mode selection → Affects positioning precision	Variable light amount function Industry First Makes steps such as those at left unnecessary.
Changing fiber: Change to thinner fiber to reduce light amount → Man-hour and cost inefficiencies	
Changing setting position: Increase sensing range → Space and man-hour inefficiencies	

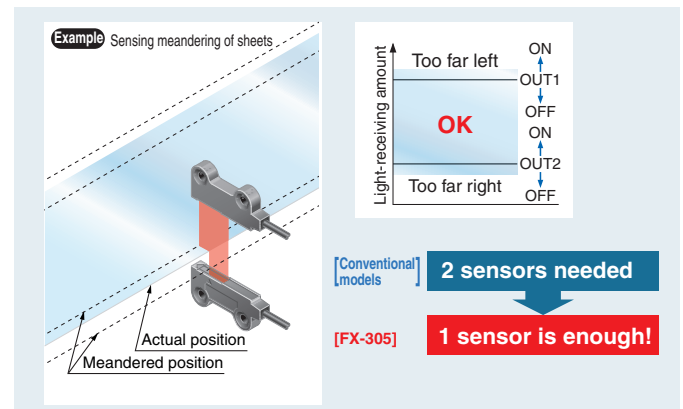
Twice as fast as before

High-speed response 65 μs

High-speed response that is about twice as fast as before has been achieved. Even small objects moving at high speeds can be sensed. In addition, interference between two units is prevented in high-speed mode (H-SP).

Independent dual outputs

Two independent output channels are provided, so that one sensor can be used for control tasks that previously required two sensors. In addition, the second output channel can be used for simple self-diagnosis and alarm output, so that ease of maintenance is improved.



Largest number in the industry! Automatic interference prevention of up to 16 units

Can be used even in places where fibers need to be installed close together.

SPECIFICATIONS

Item	Type	NPN output	PNP output
	Model No.	FX-305	FX-305P
Sensing range (mm)	Thru-beam type (FT-B8): 1,700 (U-LG), 1,100 (LONG), 730 (STDF) 530 (STD), 400 (FAST), 200 (H-SP) Reflective type (FD-B8): 600 (U-LG), 480 (LONG), 280 (STDF) 220 (STD), 160 (FAST), 85 (H-SP)		
Supply voltage	12 to 24 V DC $\pm 10\%$ Ripple P-P 10% or less		
Power consumption	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)		
Output (Output 1, Output 2)		NPN open-collector transistor • Maximum sink current: each 50 mA (Note 1) • Applied voltage: 30 V DC or less (between output and 0 V) • Residual voltage: 1.5 V or less [at each 50 mA (Note 1) sink current]	PNP open-collector transistor • Maximum source current: each 50 mA (Note 1) • Applied voltage: 30 V DC or less (between output and +V) • Residual voltage: 1.5 V or less [at each 50 mA (Note 1) source current]
	Output operation	Selectable either Light-ON or Dark-ON, with jog switch	
Short-circuit protection	Incorporated		
Response time (Note 2)	H-SP: 65 μ s or less, FAST 150 μ s or less, STD: 250 μ s or less, STDF: 700 μ s or less, LONG: 2.5 ms or less, U-LG: 4.5 ms or less selectable with jog switch		
Digital display	4-digit red LED display		
Sensitivity setting	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		
Fine sensitivity adjustment function	Incorporated		
Timer function	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 to 9999 ms, Output 2: 0.5 ms, 1 to 500 ms)		
Automatic interference prevention function (Note 2) (Note 3)	Incorporated [Up to 4 sets of fiber heads can be mounted close together (However, U-LG mode is 8 sets, H-SP mode is 2 sets.)]		
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		
Emitting element	Red LED (modulated)		
Material	Enclosure: Heat-resistant ABS, Transparent cover: Polycarbonate Press switches: Acrylic, Jog switch: Heat-resistant ABS		
Connecting method	Connector (Note 4)		
Cable extension	Extension up to total 100 m 328.084 ft is possible with 0.3 mm ² , or more, cable.		
Weight	20 g approx.		

Notes: 1) 50 mA per output. 25 mA if five, or more, amplifiers are connected in cascade.

- When the interference prevention function 'IP-2' is set, the number of mountable fibers becomes double. Furthermore, take care that the response time also becomes double.
- When the power supply is switched on, the light emission timing is automatically set for interference prevention.
- The cable for amplifier connection is not supplied as an accessory. Make sure to use the optional quick-connection cables given below.
Main cable (4-core): 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): 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)
CN-73-C□ and CN-71-C□ cannot be used.

PRECAUTIONS FOR PROPER USE



This product is not a safety sensor. Its use is not intended or designed to protect life and prevent body injury or property damage from dangerous parts of machinery. It is a normal object detection sensor.

All information is subject to change without prior notice.



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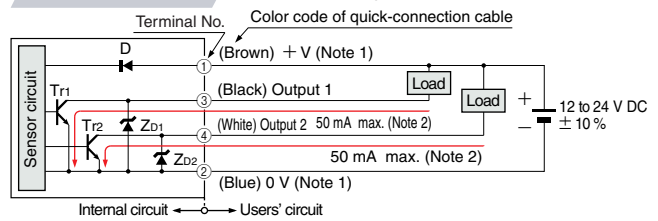
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I/O CIRCUIT

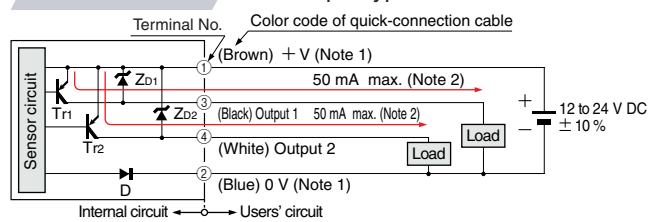
FX-305 NPN output type



Notes: 1) The quick-connection sub cable does not have +V (brown) and 0V (blue). The power is supplied from the connector of the main cable.
2) 25 mA max., if five amplifiers, or more, are connected together.

Symbols ... D: Reverse supply polarity protection diode
ZD1, ZD2: Surge absorption zener diode
Tr1, Tr2: NPN output transistor

FX-305P PNP output type

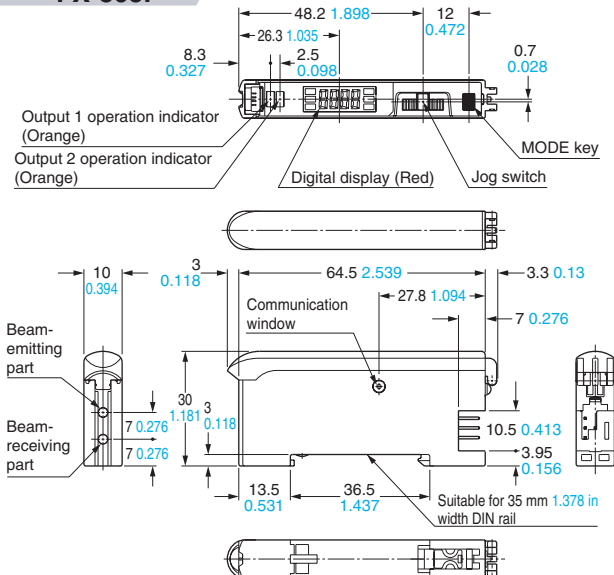


Notes: 1) The quick-connection sub cable does not have +V (brown) and 0V (blue). The power is supplied from the connector of the main cable.
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DIMENSIONS (Unit: mm in)

FX-305 FX-305P Amplifier



• Refer to the sensor general catalog 2003-2004 or the SUNX website (<http://www.sunx.co.jp/>) for the dimension diagram for the fiber heads.