SUNX

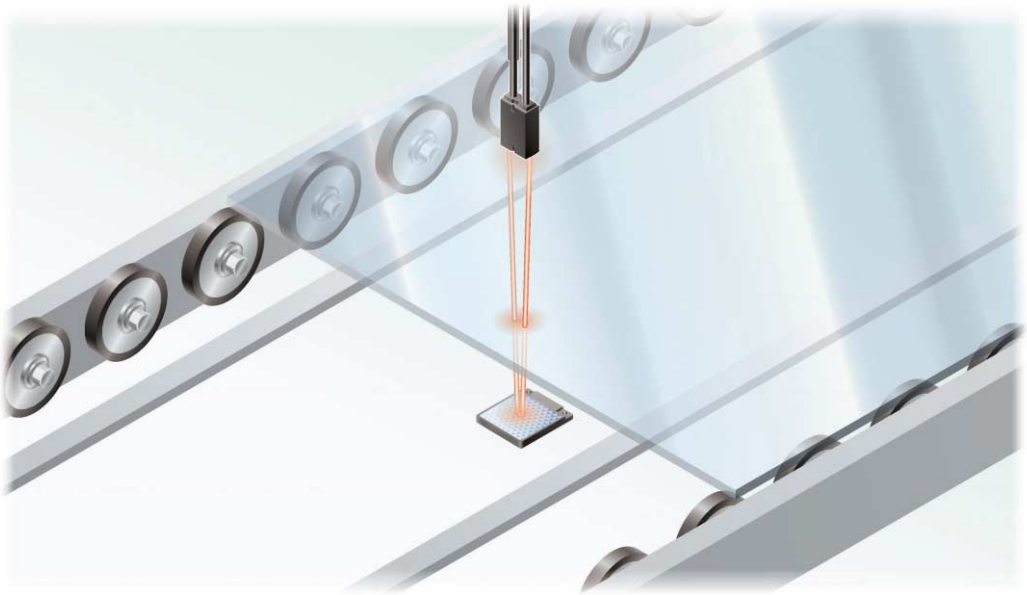
RETROREFLECTIVE WITH POLARIZING FILTERS FIBER

New

FR-WKZ11

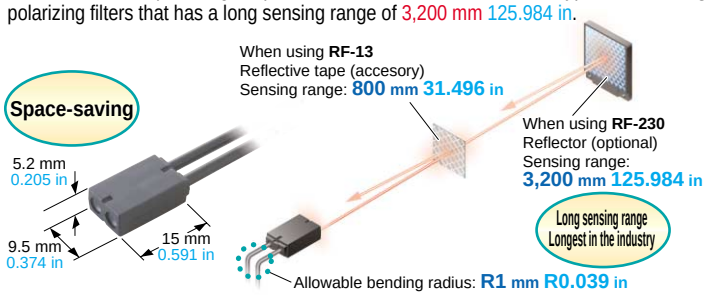
Stable sensing of transparent objects

Even glass substrates can be accurately detected.



Compact head and long sensing range

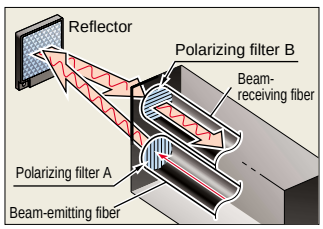
This fiber has a compact head of W9.5 × H5.2 × D15 mm W0.374 × H0.205 × D0.591 in. Equipped with sharp bending fibers (Allowable bending radius: R1 mm R0.039 in) making it space efficient. It is a retroreflective type with a polarizing filters that has a long sensing range of 3,200 mm 125.984 in.



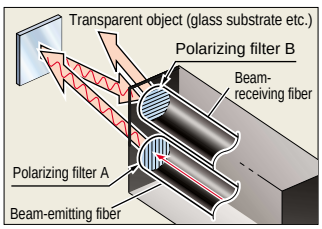
※Sensing range values determined with the amplifier in LONG mode. Unstable detection may result if setting the fiber to detect objects passing within 0 to 100 mm 0 to 3.937 in from the fiber head.

Unaffected by surface reflection from transparent objects

FR-WKZ11 has a built-in polarizing filters in its tip, so that it is unaffected by surface reflection from transparent objects and specular objects directly in front of it.



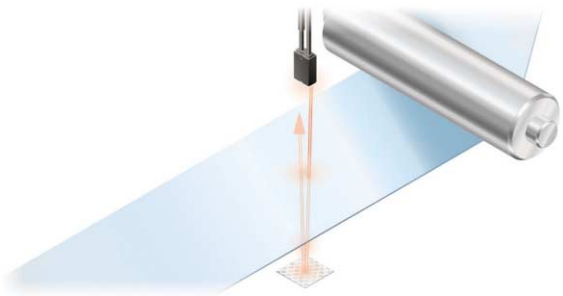
Light passing through polarizing filter A is changed the direction of polarization by a reflector and polarizing filter B only lets in beam whose wavelengths run horizontally.



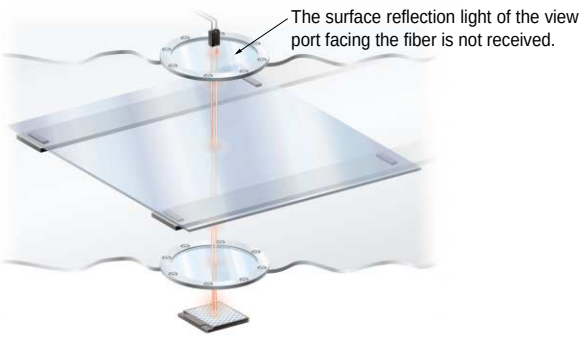
Because the reflected light from the transparent object returns oscillating in the same direction as the incident light, it does not pass through polarizing filter B.

Gives stable detection of transparent objects

Because it's a retroreflective type, light passes through transparent objects twice, so differences in light amount can be easily picked up and glass substrate and transparent films can be detected with good stability.



Because stable sensing is made possible at a long range, transparent objects (glass substrates and the like) can be detected through a view port.



SPECIFICATIONS

Item \ Model No.	Type	Retroreflective with polarizing filters fiber
		FR-WKZ11
Applicable amplifiers (Note 1)		**FX-301/302/303/311** series
Sensing range (**RF-13**) (Note 2, 3)		100 to 800 mm 3.937 to 31.496 in (LONG), 100 to 570 mm 3.937 to 22.441 in (STD) 100 to 500 mm 3.937 to 19.685 in (FAST)(Note 4), 100 to 350 mm 3.937 to 13.780 in (S-D)
Sensing range when detecting a glass substrate (reference)(Note 3, 5)		100 to 280 mm 3.937 to 11.024 in (**RF-13**), 100 to 1,000 mm 3.937 to 39.370 in (**RF-230**)
Repeatability		Along sensing axis: 6 mm 0.236 in or less Perpendicular to sensing axis: 1.2 mm 0.047 in or less
Min. sensing object (Note 6)		ϕ0.3 mm ϕ0.012 in opaque object
Allowable bending radius		R1 mm R0.039 in or more
Fiber cable length		2 m 6.562 ft free cut
Ambient temperature		−25 to +55 °C −13 to +131 °F (No dew condensation or icing allowed), Strage: −25 to +55 °C −13 to +131 °F
Ambient humidity (Note 7)		35 to 85 %RH, Strage: 35 to 85 %RH
Material	Fiber	Fiber core: Acrylic, Sheath: Polyethylene
	Fiber head	Enclosure: Polycarbonate, Lens: Crown glass (BK7)
Weight		15 g Approx.
Accessories		**FX-AT3** (Fiber attachment for ϕ2.2 mm ϕ0.087 in fiber): 1 set **FX-CT2** (Fiber cutter): 1 pc., **MS-FD-2** (Fiber mounting bracket) **RF-13** (Reflective tape): 1 pc.

Notes: 1) Refer to the sensor general catalog 2003-2004, catalog of each amplifier (**FX-301/311** series) or dedicated homepage for fiber sensor (http://www.fiber-sensor.com) for details about the applicable amplifier.

2) The sensing ranges are the values for red LED type amplifier (excluding **FX-303**).

3) The sensing range and sensing range when detecting a glass substrate are the possible setting range for the reflector or the reflective tape. The fiber can detect an object less than 100 mm 3.937 in away. However, if setting the fiber to detect objects passing within 0 to 100 mm 0 to 3.937 in from the fiber head, unstable detection may result.

4) **FX-311**(**P**) does not have a FAST mode.

5) The sensing range when detecting a glass substrate are the values for red LED type amplifier (excluding **FX-303**) at STD mode. The sensing range is specified for t = 0.7 mm 0.028 in glass substrate for LCD.

6) The minimum sensing object value is the value for red LED type under optimum conditions. The optimum condition is the condition when the sensivity is set so that the sensing output just changes to light incident operation in the object absent condition.

7) If using the fiber with a reflector (**RF-230/220/210**), changes in the ambient humidity level may lead to fluctuations in the amount of incident light. Exercise caution when using the fiber set to low differences in light amount. If using the fiber in an area prone to significant changes in ambient humidity level, we recommend the **RF-13**.

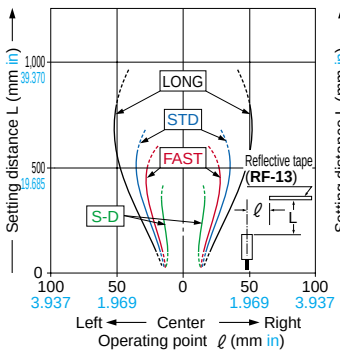
Sensing range when using a reflector (optional)(mm in)

RF-230	100 to 3,200 3.937 to 125.984 (LONG), 100 to 2,000 3.937 to 78.740 (STD) 100 to 1,600 3.937 to 62.992 (FAST), 100 to 1,000 3.937 to 39.370 (S-D)
RF-220	100 to 2,400 3.937 to 94.488 (LONG), 100 to 1,300 3.937 to 51.181 (STD) 100 to 1,000 3.937 to 39.370 (FAST), 100 to 600 3.937 to 23.622 (S-D)
RF-210	100 to 1,100 3.937 to 43.307 (LONG), 100 to 700 3.937 to 27.559 (STD) 100 to 550 3.937 to 21.654 (FAST), 100 to 300 3.937 to 11.811 (S-D)

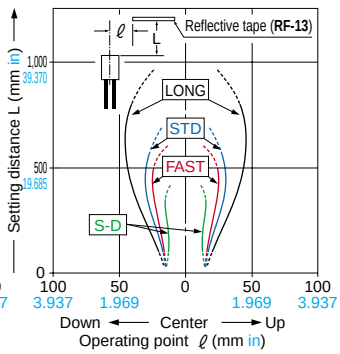
SENSING CHARACTERISTICS (TYPICAL)

Parallel deviation

• **Horizontal direction**



• **Vertical direction**

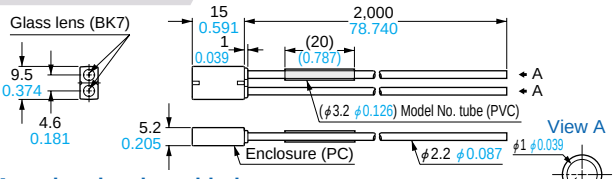


All information is subject to change without prior notice.

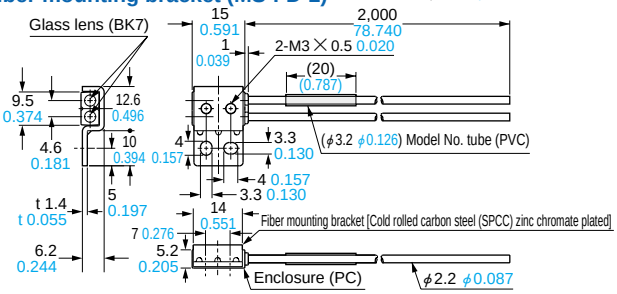
DIMENSIONS (Unit: mm in)

The CAD data in the dimensions can be downloaded from the SUNX website: http://www.sunx.co.jp/

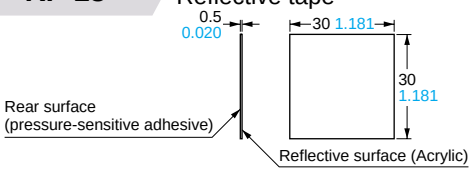
FR-WKZ11 Fiber



Mounting drawing with the fiber mounting bracket (MS-FD-2)



RF-13 Reflective tape



PRECAUTIONS FOR PROPOSER 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.

Mounting

If not using the attached mounting bracket

• Use M3 or less set screws (cup point), and affix the head within 15 mm 0.591 in from the tip of the fiber head. Do not exceed a torque of 0.3 N·m when tightening.

If using the attached mounting bracket

• The head can be affixed even without using the set screws together.

• If using the set screws together, use M3 set screws (cup point) to affix and do not exceed a torque of 0.05 N·m when tightening.

Cautions

• Keep the fiber head surface intact. If it is scratched or spoiled, the detectability will deteriorate.

• If the sensing surface gets dirty, wipe dirt or stains from the sensing faces with a soft cloth. (Do not use organic solvents.)

• Ensure that any strong extraneous light is not incident on the receiving face of the fiber head.

• Do not apply excessive tensile force to the fiber cable. (The tensile force should be 20 N or less.)

• Take care that the fiber is not directly exposed to fluorescent light from a rapid-starter lamp or a high frequency lighting device, as it may affect the sensing performance.

• Avoid areas prone to vapor or dust as well as corrosive gas environments. Do not expose the sensor directly to water or chemicals.

• Take care that the fiber does not come in direct contact with organic solvents, such as, thinner, etc.

SUNX Sensing the Future

http://www.sunx.co.jp/

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