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# **Screen/Array**



Fiber amplifier BRF • P.130



# Fiber units for detecting with light screen

Optimal for detection of complex shapes and when workpiece passage locations are not fixed.

Photoelectric Sensors

Specialized Photoelectric Sensors

Laser Displacement **Sensors** 

#### **Fiber Units**

Easy mounting Thread type Cylindrical type Sleeve type

Flexible R4/R2 Flexible R1/R2

Retro-reflective

Small object detection

#### Screen/Array

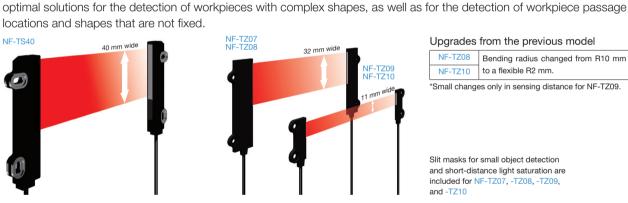
Limited diffuse Narrow view/

wafer mapping

Heat resistant

Chemical resistant Vacuum resistant Liquid level/liquid leakage/ water detection Lens for through-beam type

Correct use



New through-beam type

**Screen fiber** 



New models for 32 mm wide and 11 mm wide types in addition to new 40 mm wide type. Five models are available as

#### Upgrades from the previous model

NF-TZ08	Bending radius changed from R10 mm
NF-TZ10	to a flexible R2 mm.

\*Small changes only in sensing distance for NF-TZ09.

Slit masks for small object detection and short-distance light saturation are included for NF-TZ07, -TZ08, -TZ09, and -TZ10

#### Head ON diffuse type

The NF-DZ01 diffuse type enables a detection area with a spot size of 2 × 15 mm (at a distance of 15 mm). Optimal for the detection of workpieces with complex shapes and drilled workpieces such as lead frames.

#### Lead frame detection

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# Collimated light like laser beam

Collimated light like laser beam achieved through unique optical design. Because there is little light leakage even for mounting in complex areas, superior detection stability is achieved.

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# Difference between screen fiber and array fiber

#### Screen fiber Collimated light

This screen fiber collimates light into a band through the lens. Able to detect finer light differences than array fibers as a through-beam type due to collimated light.

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Light path: almost parallel.

# Array fiber

This array fiber aligns the fiber cores and emits light in a band. Easy to perform light axis adjustment as a through-beam type because the light expands. Because there is more light received when detecting small objects at a short-distance when using diffuse types as compared to screen fibers, stable detection is possible.



Light is emitted at an approx. 60° angle.

Photoelectric Sensors

#### Photoelectric Sensors

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**Fiber Units** 

# Screen / Array fiber units (through-beam type)

	Sensing distance (mm) Ambient Min. bending							Easy mounting
Туре	Features/dimensions (mm)	D3RF	D2RF	BRF	temperature	radius (mm)	Model	Thread type
Through-beam type	11 mm wide screen, Flexible, Side ON, Free cut Light axis center Lens (norbornene plastic), window (2.2 × 11) (13.5) 9.5 2-R4 4 4 5.2 2-R4 4 5.2 2-R4 4 5.2 2-R4 4 4 5.2 2-R4 4 5.2 2-R4 4 5.2 2-R4 4 5.2 2-R4 4 5.2 01.3 1000	7-EL 3,700 6-UL 3,000 5-PL 3,000 4-LG 3,500 4-LG 3,500 4-LG 3,500 4-LG 3,000 4-LG 3,500 4-LG 3,500 4-LG 3,000 4-LG 3,500 4-LG 3,000 3-LS 3,500 4-LS 3,000 3-LS 3,000 3-LS 3,000 3-LS 3,000 3-LS 3,000 3-LS 3,000 3-LS 3,000 3-LS 3,000 3-LS 3,000 3-LS 3,000 3-LS 3,000 3-LS 3,000 3-LS 3,000 3-LS 3,000 3-LS 3,000 3-LS 3,000 3-LS 3,000	Long 3,500 Std 2,500 Fast 1,800	2,500	-40 to +70°C	R10	NF-TZ10 Renewal Collimated light	Cylindrical type Sleeve type Flexible R4/R2 Flexible R1/R2 Retro-reflective
	11 mm wide screen, Flexible, Side ON, Free cut Light axis center Lens (norbornene plastic), window (2.2 × 11) (13.5) 9.5 (13.5) 9.5 2-R4 4 4 19 Housing (PC)	7-EL 3,700 6-UL 3,000 5-PL 3,000 4-LG 3,000 3.8T 2,500 2-FS 2,500 1-HS 1,000	Long 3,000 Std 2,500 Fast 1,200	2,000	-40 to +55°C	R1	NF-TZ09 Renewal Collimated light	Small object detection Screen/Array Limited diffuse Narrow view/ wafer mapping Heat resistant
	32 mm wide screen, Flexible, Side ON, Free cut Light axis 19 center Sheath of 3 (PE) Window (3.2 × 32), lens (norbornene plastic) 19 center Sheath of 3 (PE) (19) Light Hussing (PC) 2-03.2 e6 countersinking (both sides)	7-EL 3,700 6-UL 3,700 4-LG 3,700 4-LG 3,700 3,700 2+F8 3,700 2+F8 3,000 1-HS 2,500	Long 3,700 Std 3,000 Fast 2,500	2,500	-40 to +60°C	R10	NF-TZO8 Renewal Collimated light	Chemical resistant Vacuum resistant Liquid level/liquid leakage/ water detection Lens for through-beam type Correct use

●Install with an ambient humidity between 35 and 85%. In the case of 85% RH, the ambient temperature should be between 0 and 40°C.



### Fiber units Screen/Array

## Screen / Array fiber units (through-beam type)

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Photoelectric
Sensors

Specialized Photoelectric Sensors

Laser Displacement Sensors

Fiber Units
Easy mounting
Thread type
Cylindrical type
Sleeve type
Flexible R4/R2
Flexible R1/R2
Retro-reflective
Small object detection
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Screen/Array

Limited diffuse

Narrow view/ wafer mapping

Heat resistant

Chemical resistant Vacuum resistant Liquid level/liquid leakage/ water detection Lens for through-beam type

Correct use

Туре	Features/dimensions (mm)	Sensing distance (mm)			Ambient	Min. bending	Model
.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		D3RF	D2RF	BRF	temperature	radius (mm)	
Through-beam type	32 mm wide screen, Flexible, Side ON, Free cut Light axis 19 center Fiber: e1 × 1 core (PMMA), sheath e1.3 (PE) Window (3.2 × 32), lens (norbornene plastic) (19) Light Housing PO 16 2-63.2 e6 countersinking (both sides)	7-EL 3,700 6-UL 3,700 5-PL 3,700 4-L6 3,700 3,700 2-FS 3,000 1-H8 2,500	Long 3,700 Std 3,000 Fast 2,500	2,500	-40 to +55°C	R1	NF-TZO7 Renewal Collimated light
	40 mm wide screen, Flexible, Side ON, Free cut 5.1 40 5.1 5.1 40 5.1 5.1 40 5.1 5.1 5.1 5.1 5.1 5.1 5.1 5.1	7-EL 3,600 6-UL 3,600 5-PL 3,600 4-L6 3,600 2-FS 3,600 1-HS 2,500	Long 3,600 8id 3,600 Fast 3,000	3,600	-40 to +60°C	R2	NF-TS40 Collimated light
	5.25 mm wide array, Head ON, Free cut Housing (Brass with nickel plating) 15 2000 (a3.2) Protective tube (polyolefin) 5.25 15 (a3.2) Protective tube (polyolefin) 4. rray fiber part (o0.265 x 16) 3 -M3 x 0.5 threaded (b) threaded (c) threaded	7-EL 1,350 6-UL 1,260 5-PL 1,170 4-L3 990 3-ST 660 2-FS 400 1-HS 130	Long 650 Std 400 Faat 250	300	-40 to +70°C	R25	NF-TZ05
	5.25 mm wide array, Side ON, Free cut Array fiber part ( $a0.265 \times 16$ ) Housing (Brass with nickel plating) 15 15 $3$ -M3 $\times$ 0.5 threaded 10 10 15 10 15 10 15 10 15 10	7-EL 1,440 6-UL 1,350 5-FL 1,170 4-L6 1,080 3-ST 710 2-FS 430 1-HS 130	Long 650 Std 400 Fast 250	300	-40 to +70°C	R25	NF-TZ06
	5.25 mm wide array, Head ON, Free cut 10 5.25 S S S S S S S S S S S S S S S S S S S	7-EL 3-ST 4-,000 6-50 2-FS 2-FS 1,600 330 5-FL 1-HS 1,000 100 4-LG 100	Long 800 Std 500 Fast 250	330	-40 to +70°C	R25	NF-TS10
	10.5 mm wide array, Head ON, Free cut 10.5 mm wide array, Head ON, Free cut BSBM brass M3 × P0.5 2-02.2 19 10.5 Array fiber part 41 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	7-EL 3-ST 4,000 650 6-UL 2-FS 1,600 330 5-PL 1-HS 1,000 100 4-LG 900	Long 800 Std 500 Fast 250	330	-40 to +70°C	R25	NF-TS14

Sensing distance (mm)

●Install with an ambient humidity between 35 and 85%. In the case of 85% RH, the ambient temperature should be between 0 and 40°C.

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# Screen / Array fiber units (through-beam type/diffuse type)

Туре	Features/dimensions (mm)	Sensing distance (mm) Ambient Min, bending Model					Model	<u>ပ</u>
Type		D3RF	D2RF	BRF	temperature	radius (mm)	Woder	s itr
Through-beam type	13 mm wide array, Head ON, Detecting part detail e0.265 fiber (16) 0.7 0.35 0.35 1 2 1 1 1 1 2 1 3 12 Head material BSBM 4 0.5 (13) 0.5 1 1.13 19 4 2.5 2000	7-EL 4,000 6-UL 1,500 5-PL 1,400 4-L3 1,200 3-ST 800 2-FS 400 1-HS 100	Long 850 Std 500 Fast 250	350	-40 to +70°C	R25	NF-TS28	Photoelectric Sensors
	30 mm wide array, Head ON, Free cut 0.265 fiber (16) 2.5 Head material BSBM 30 20 16.5 02.21 16.5 02.21 25 25 20 25 20 25 20 25 20 25 25 20 25 25 25 25 25 25 25 25 25 25	7-EL 4,000 6-UL 1,400 5-FL 1,200 4-L6 1,000 3-ST 700 2-FS 300 1-HS 100	Long 650 Std 500 Fast 250	200	-40 to +70°C	R25	NF-TS19	Photoelectric Sensors Specialized Photoelectric Sensors Laser Displacement Sensors
Diffuse type	Screen Head ON, Free cut Lens 15 15 Housing (polycarbonate) 7 15 15 15 15 15 15 15 15 15 15	7-EL 3-ST 620 280 6-UL 2-FS 580 210 5-PL 1-HS 500 59 4-LG 440	Long 350 Std 250 Fast 100	Unusable	-40 to +60°C	R25	NF-DZ01 Collimated light	Fiber Units Easy mounting Thread type
	Array, Head ON, Free cut Housing (Brass with nickel plating) 10.85 Array fiber part (e0.265 × 32) 3-M3 × 0.5 threaded	7-EL 3-ST 600 270 6-UL 2-FS 560 270 5-PL 1-HS 490 51 4-LG 430	Long 320 Std 170 Fast 85	130	-40 to +70°C	R25	NF-DZ02	Cylindrical type Sleeve type Flexible R4/R2 Flexible R1/R2
	Array, Side ON, Free cut Array fiber part ( $0.265 \times 32$ ) Housing (Brass with nickel plating) 5 3-M3 × 0.5 threaded 15 20 (10) 10	7-EL 3-ST 5300 2-FS 6-UI 2-FS 500 140 5-PL 1+HS 440 45 4-LG 3770	Long 320 Std 170 Fast 85	100	-40 to +70°C	R25	NF-DZ03	Retro-reflective Small object detection Screen/Array Limited diffuse Narrow view/ wafer mapping
	Array, Head ON, Free cut Detecting part detail 1.125 31 × P0.35 10.85) 31 × P0.35 10.85) 2-M3P0.5 through 10.422 25.435 2000 13 <sup>100</sup>	7.EL 3-ST 950 250 6-UL 258 500 100 5-PL 1-HS 450 40 4-UG	Long 300 Std 180 Fast 80	35	-40 to +70°C	R25	FD-ML02	Heat resistant Chemical resistant Vacuum resistant Liquid leek/liquid leakage/ water detection Lens for through-beam type

 $\bullet$  The sensing distances for the diffuse type fiber units are values on 500  $\times$  500 mm white paper.

●Install with an ambient humidity between 35 and 85%. In the case of 85% RH, the ambient temperature should be between 0 and 40°C.

Correct use