

06

Flexible R4/R2 (R4 mm, R2 mm)

Related products

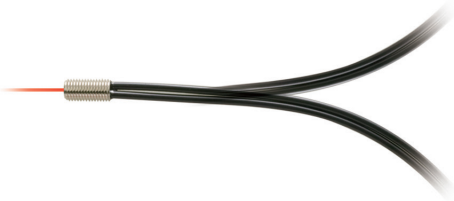
Fiber units
Flexible R1
(R1 mm)
● P.52

Fiber units
Flexible R2
(R2 mm)
● P.58



Flexible type fiber units can be mounted at moving parts

- Withstands 800,000 cycle bending test
- Limited diffuse reflective types optimized for glass substrate alignment is also available

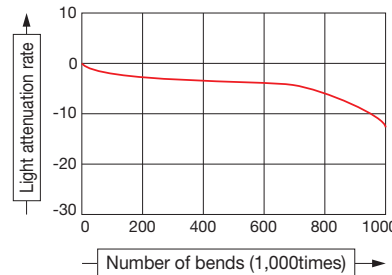


Withstands 800,000 cycle bending test

Withstands 800,000 cycle bending test at a load of 50 g !*
Because of high photo-conductivity with a less than 10% light deterioration rate, this sensor is optimal for mounting on moving parts such as robot arms.

*Measurement conditions: Bending angle of 90°, load of 50 g, bending radius of 4 mm, light attenuation rate of less than 10%

Bend cycles and light attenuation rate



Flexible fiber units (through-beam type)

Type	Features/dimensions (mm)	Sensing distance (mm)			Ambient temperature	Min. bending radius (mm)	Model	
		D3RF	D2RF	BRF				
Through-beam type	Free cut 	7-EL: 850 6-UL: 550 5-PL: 450 4-LG: 400	3-ST: 275 2-FS: 150 1-HS: 50	Long: 350 Std: 200 Fast: 90	110	-40 to +70°C	R4	NF-TR02
	Lens attachable (P.98), Free cut 	7-EL: 4,000 6-UL: 1,800 5-PL: 1,400 4-LG: 1,200	3-ST: 850 2-FS: 500 1-HS: 175	Long: 800 Std: 400 Fast: 250	330	-40 to +70°C	R4	NF-TR01 Standard item
	Fine 	7-EL: 54 6-UL: 50 5-PL: 44 4-LG: 38	3-ST: 25 2-FS: 15 1-HS: 5	Long: 30 Std: 18 Fast: 8	10	-40 to +60°C	R4	NF-TR04
	Fine, Free cut 	7-EL: 850 6-UL: 550 5-PL: 450 4-LG: 400	3-ST: 275 2-FS: 150 1-HS: 50	Long: 350 Std: 200 Fast: 90	110	-40 to +70°C	R4	NF-TR03

●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.

Photoelectric Sensors

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

Flexible fiber units (through-beam type)

Type	Features/dimensions (mm)	Sensing distance (mm)			Ambient temperature	Min. bending radius (mm)	Model
		D3RF	D2RF	BRF			
Through-beam type Square	Flat ON, Free cut 	7-EL 1,600 6-UL 1,510 5-PL 1,320 4-LG 1,150	3-ST 750 2-FS 750 1-HS 450 280	300	-40 to +60°C	R4	NF-TE05
	Side ON, Free cut 	7-EL 3,600 6-UL 3,600 5-PL 3,600 4-LG 3,150	3-ST 2,000 2-FS 2,700 1-HS 1,300 600	1,100	-40 to +60°C	R4	NF-TR05
	Head ON, Free cut 	7-EL 3,600 6-UL 3,600 5-PL 3,580 4-LG 3,060	3-ST 1,980 2-FS 1,400 1-HS 500 850	1,100	-40 to +60°C	R4	NF-TR06

● 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.

Flexible fiber units (diffuse type)

Type	Features/dimensions (mm)	Sensing distance (mm)			Ambient temperature	Min. bending radius (mm)	Model
		D3RF	D2RF	BRF			
Diffuse type M3	Free cut 	7-EL 88 6-UL 80 5-PL 70 4-LG 60 3-ST 40 2-FS 20 1-HS 7	Long 40 Std 20 Fast 14	20	-40 to +70°C	R4	NF-DR08
	Free cut 	7-EL 300 6-UL 180 5-PL 130 4-LG 100	3-ST 80 2-FS 45 1-HS 30 15	20	-40 to +70°C	R4	NF-DR02

● The sensing distances for the diffuse type fiber units are values on 500 × 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.

Flexible fiber units (diffuse type/limited diffuse reflective type)

Type	Features/dimensions (mm)	Sensing distance (mm)			Ambient temperature	Min. bending radius (mm)	Model	
		D3RF	D2RF	BRF				
Diffuse type	<p>Free cut</p> <p>ø0.82 sleeve: 15 mm long, Free cut</p> <p>M3 x P0.5 SUS</p> <p>ø0.25 x 1 (receiving part)</p> <p>ø0.25 x 1 (emitting part)</p> <p>ø0.82 SUS</p> <p>5.5</p> <p>1.8</p> <p>ø3 SUS</p> <p>ø1</p> <p>15</p> <p>10</p> <p>5</p> <p>500</p>	<p>7-EL 190</p> <p>6-UL 125</p> <p>5-PL 70</p> <p>4-LG 65</p>	<p>3-ST 45</p> <p>2-FS 25</p> <p>1-HS 8</p>	<p>Long 40</p> <p>Std 15</p> <p>Fast 5</p>	10	-40 to +70°C	R4	NF-DT02
	<p>Coaxial ø0.82 sleeve: 15 mm long</p> <p>ø0.125 x 9 (receiving part)</p> <p>ø0.25 x 1 (emitting part)</p> <p>ø0.82 SUS</p> <p>5.5</p> <p>M3 x P0.5 SUS</p> <p>ø3 SUS</p> <p>ø1.2 (emitting)</p> <p>ø2.1</p> <p>15</p> <p>15</p> <p>500</p> <p>Detecting part detail</p>	<p>7-EL 240</p> <p>6-UL 120</p> <p>5-PL 100</p> <p>4-LG 85</p>	<p>3-ST 60</p> <p>2-FS 35</p> <p>1-HS 10</p>	<p>Long 70</p> <p>Std 40</p> <p>Fast 15</p>	15	-40 to +70°C	R4	NF-DT04
	<p>Free cut</p> <p>ø0.25 x 4 (receiving part)</p> <p>ø0.25 x 4 (emitting part)</p> <p>M2.6 x P0.45 SUS</p> <p>M4 x P0.7 SUS</p> <p>ø1</p> <p>2.4</p> <p>3</p> <p>3</p> <p>12</p> <p>2000</p> <p>Detecting part detail</p>	<p>7-EL 300</p> <p>6-UL 180</p> <p>5-PL 140</p> <p>4-LG 120</p>	<p>3-ST 80</p> <p>2-FS 45</p> <p>1-HS 16</p>	<p>Long 120</p> <p>Std 50</p> <p>Fast 25</p>	35	-40 to +70°C	R4	NF-DR06
	<p>Free cut</p> <p>ø0.265 x 16 (receiving part)</p> <p>ø0.265 x 16 (emitting part)</p> <p>M6 x P0.75 (brass with nickel plating)</p> <p>ø2.2</p> <p>2.4</p> <p>10</p> <p>12</p> <p>2000</p> <p>Detecting part detail</p>	<p>7-EL 1,100</p> <p>6-UL 700</p> <p>5-PL 600</p> <p>4-LG 500</p>	<p>3-ST 350</p> <p>2-FS 230</p> <p>1-HS 70</p>	<p>Long 350</p> <p>Std 200</p> <p>Fast 80</p>	130	-40 to +70°C	R4	NF-DR01 Standard item
	<p>ø0.25 x 2 (receiving part)</p> <p>ø0.25 x 2 (emitting part)</p> <p>ø1.5 SUS</p> <p>ø3 joint bracket SUS</p> <p>ø1.2</p> <p>ø1.2</p> <p>ø2.1</p> <p>15</p> <p>15</p> <p>100</p> <p>1000</p> <p>Detecting part detail</p>	<p>7-EL 300</p> <p>6-UL 180</p> <p>5-PL 150</p> <p>4-LG 130</p>	<p>3-ST 80</p> <p>2-FS 45</p> <p>1-HS 18</p>	<p>Long 70</p> <p>Std 30</p> <p>Fast 15</p>	20	-40 to +70°C	R4	NF-DR04
	<p>Free cut</p> <p>ø0.25 x 4 (receiving part)</p> <p>ø0.25 x 4 (emitting part)</p> <p>ø3 SUS</p> <p>ø1</p> <p>10</p> <p>2000</p> <p>Detecting part detail</p>	<p>7-EL 450</p> <p>6-UL 250</p> <p>5-PL 190</p> <p>4-LG 160</p>	<p>3-ST 120</p> <p>2-FS 70</p> <p>1-HS 25</p>	<p>Long 120</p> <p>Std 50</p> <p>Fast 25</p>	35	-40 to +70°C	R4	NF-DR03
<p>Free cut</p> <p>ø0.82 sleeve: 5 mm long</p> <p>ø0.25 x 1 (receiving part)</p> <p>ø0.25 x 1 (emitting part)</p> <p>ø0.82 SUS</p> <p>ø3 SUS</p> <p>ø3 joint bracket SUS</p> <p>ø1.2</p> <p>ø2.1</p> <p>5</p> <p>15</p> <p>500</p> <p>100</p> <p>Detecting part detail</p>	<p>7-EL 190</p> <p>6-UL 125</p> <p>5-PL 75</p> <p>4-LG 65</p>	<p>3-ST 45</p> <p>2-FS 25</p> <p>1-HS 8</p>	<p>Long 40</p> <p>Std 15</p> <p>Fast 5</p>	10	-40 to +70°C	R4	NF-DR05	
Limited diffuse reflective type	<p>Glass substrate alignment, Flat ON, Free cut</p> <p>2-M3 flush screw hole</p> <p>Emitting/receiving part</p> <p>Housing (Heat resistant ABS)</p> <p>3.8</p> <p>17</p> <p>29</p> <p>18</p> <p>6.5</p> <p>10</p> <p>(20)</p> <p>ø1.3 x 2</p> <p>ø3 (PVC)</p> <p>Emitting side</p> <p>Receiving side</p>	<p>7-EL 0 to 23</p> <p>6-UL 0 to 23</p> <p>5-PL 0 to 22</p> <p>4-LG 0 to 22</p> <p>3-ST 0 to 21</p> <p>2-FS 0 to 20</p> <p>1-HS 5 to 13</p>	<p>Long 0 to 23</p> <p>Std 0 to 17</p> <p>Fast 0 to 12</p>	15	0 to +70°C	R4	NF-DC06	
	<p>Glass substrate alignment, Flat ON, Free cut</p> <p>Detecting part detail</p> <p>Emitting/receiving fiber</p> <p>ø0.25 x 9</p> <p>29</p> <p>18</p> <p>6.5</p> <p>10</p> <p>2-M3 flush screw hole</p> <p>(20)</p> <p>ø1.3 x 2</p> <p>ø3.2 (PVC)</p> <p>Housing (Heat resistant ABS)</p> <p>3.8</p> <p>20</p> <p>10</p> <p>3000</p> <p>Emitting side</p> <p>Receiving side</p>	<p>7-EL 0 to 38</p> <p>6-UL 0 to 38</p> <p>5-PL 0 to 38</p> <p>4-LG 0 to 38</p> <p>3-ST 0 to 34</p> <p>2-FS 0 to 31</p> <p>1-HS 4 to 22</p>	<p>Long 0 to 36</p> <p>Std 0 to 30</p> <p>Fast 0 to 15</p>	Unusable	0 to +70°C	R4	NF-DC04	

●The sensing distances for the diffuse type fiber units are values on 500 x 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.

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