



Good Thinking, Good Future

Fiber-sensors

*FASTUS is a product brand of Optex FA.

D1RF Series / V2RF Series



D1RF Series

V2RF Series

Teach-In + Display type
and Potentiometer type

Degree of
protection

IP66

Mounting holes for
M3 screws

OPTEX FA CO., LTD.



Which will you choose?

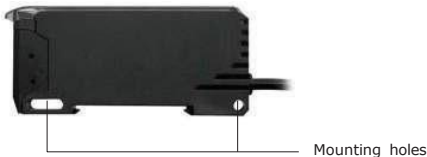


Select between the intelligent D1RF series equipped with a digital display and featuring "Teach-in" or the V2RF series that pushes the limits in simple operation. The series of fiber-sensor stands for innovative technologies for solving multifaceted tasks.

■ Common features

Mounting holes

Features mounting holes for M3 screws. This enables the amplifier to be mounted without use of a DIN rail or mounting bracket.



Degree of protection: IP66

Featuring an IP66 structure uncommon for fiber-amplifiers. Can be used without worry in factories or with devices in which contact with water occurs.



Cable and connector type

Both a cost-effective cable type, as well as a connector type that does not require wiring when replacing sensors, are available.

Cable type



Connector type



Connector cable
(straight or L-shaped)

■ Lineup

Type	Shape	I / O	Response Time	Model	
				NPN	PNP
Teach-In + Display		Control Output External teach input	250µs / 50µs	D1RF-T (D1RF-TC)	
Potentiometer		Control Output	250µs	V2RF-N (V2RF-CN)	V2RF-P (V2RF-CP)

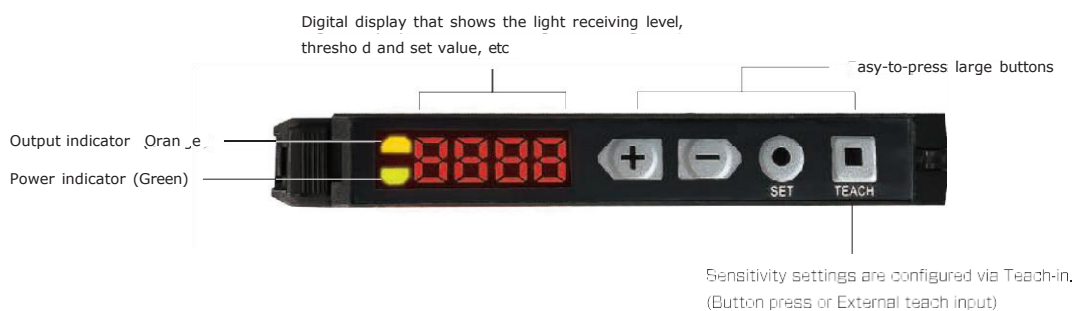
Intelligent & flexible

Teach-In + Display Type D1RF Serie



Features

User-friendly control panel

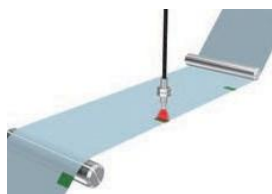


Response time switching is possible

It is possible to switch the response time between the standard 250 μ s and the high-speed response of 50 μ s. This is effective in detecting small workpieces travelling at high speeds.



Presence of capacitor leads



Detection of registration marks

Emitted light power reducing function

Switching between three levels of emitted light power is possible. Because saturation of received light can be prevented by reducing emitted light power, it is useful when detecting at short distances or when detecting transparent objects or small objects.



NPN/PNP switchable

The control output can be used by switching between either NPN or PNP. Thanks to this, stock can be reduced and order errors eliminated.

Timer function

Equipped with timer function in which ON delay, OFF delay and One-shot can be selected. The delay time can also be set in 1 ms increments within a range of 1 to 9999 ms.

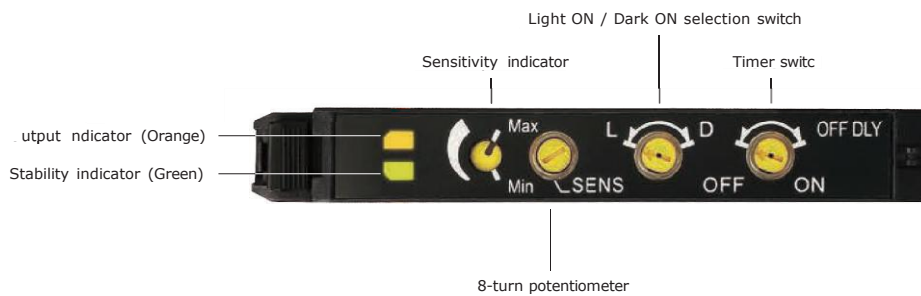
Simple & cost effective

Potentiometer Type
V2RF series



Features

Simple control panel



Potentiometer with indicator

Features an 8-turn potentiometer. Adjustment to the optimal sensitivity is possible even for applications that require fine adjustments.

Also, if the potentiometer is turned multiple times, the current sensitivity will be difficult to ascertain. However, because the V2RF is equipped with a sensitivity indicator, it's easy to see how much sensitivity is being adjusted.

OFF Delay Timer

Equipped with an OFF delay timer fixed at 40 ms. By extending the pulse width to 40 ms or more, input is possible even for input devices that cannot receive short ON/OFF signals.

Long range detection

With the V2RF series, long range detection is achieved even though it has the same 250 μ s response time as the conventional model.

Sensing distance comparison

	Model of fiber-unit	Sensing distance of conventional model	Sensing distance of V2RF	Comparison to conventional model
Diffuse-reflective type	NF-DS06 (M3, Standard)	45 mm	60 mm	30% UP
	NF-DB07 (M3, Coaxial)	55 mm	90 mm	60% UP
	NF-DH07 (M4, Up to 200°C)	200 mm	300 mm	50% UP
Through-beam type	NF-TB02 (M4, Standard)	450 mm	610 mm	35% UP
	NF-TK05 (ϕ 3, Flexible)	360 mm	540 mm	50% UP
	NF-TH12 (M4, Up to 200°C)	220 mm	410 mm	85% UP

Specifications

Model	Teach-in with digital display model		Potentiometer model	
	Cable type	D1RF-T	NPN	PNP
	Connector type	D1RF-TC	V2RF-CN	V2RF-CP
Light source		Red LED		
Response time		250 μs / 50 μs		250 μs
Sensitivity adjustment		Teaching, fine tuning with +/- buttons		8-turn potentiometer with indicator
Indicators		Output indicator: Orange, Power indicator: Green		Output indicator: Orange, Stability indicator: Green
Digital display		7-segment, 4-digit display: Receiving light level / Threshold / Set value		—
Control output*		NPN/PNP switched by setting, Open collector, 30 V/100 mA, Residual voltage 1.8 V max.		NPN/PNP (depends upon the model), Open collector, 30 V/100 mA, Residual voltage 1.8 V max.
External input		External teaching		
Timer function		OFF / ON Delay / OFF Delay / One-shot, 1 to 9999 ms		OFF Delay fixed at 40 ms, selectable by switch
Output mode		Light ON / Dark ON selectable by setting		Light ON / Dark ON selectable by switch
Protection circuit		Reverse connection protection, Overcurrent protection, 30 V max.		
Connection type		Cable type: 4-wire 2 m cable, Connector type: M8, 4-pin		Cable type: 3-wire 2 m cable, Connector type: M8, 4-pin
Rating	Supply voltage*	10 to 30 VDC (including 10% ripple)		
	Current consumption	40mA max.		30mA max.
Applicable regulations	EMC	EMC Directive (2014/30/EU)		
	Environment	RoHS Directive (2011/65/EU), China RoHS (MIIT Order No.32)		
Applicable standards		EN 60947-5-2		
Company standards		Noise resistance: Feilen Level 3 cleared		
Environmental resistance	Ambient temp./Humidity*	-25 to +55°C / 35 to 85% (no freezing or condensation)		
	Storage temp./Humidity	-40 to +70°C / 35 to 95% (no freezing or condensation)		
	Ambient illuminance	Sunlight: 10,000 lx or less, Incandescent light: 3,000 lx or less		
	Vibration resistance	10 to 55 Hz; Double amplitude 1.5 mm; 2 hours in each of the X, Y, and Z directions		
	Shock resistance	50 G (500 m/s ²), 3 times in each of the X, Y, and Z directions		
	Degree of protection	IP66		
Material		Housing, Cover: PC		
Weight		Cable type: Approx. 66g Connector type: Approx. 22g		Cable type: Approx. 63g Connector type: Approx. 19g
Included accessories		Instruction manual		

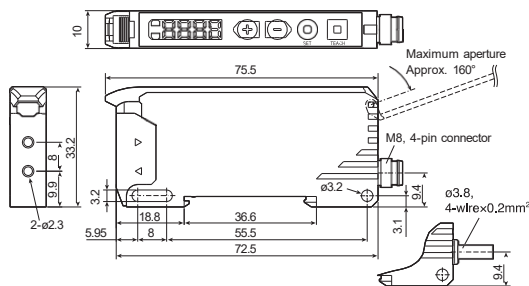
*Depends upon the number of closely mounted amplifiers.

- 1 to 2 units: -25 to +55°C, Supply voltage: 30V, Output current: 100mA
- 3 to 10 units: -25 to +50°C, Supply voltage: 24V, Output current: 100mA
- 11 to 16 units: -25 to +50°C, Supply voltage: 24V, Output current: 20mA

Dimensions

Teach-In + Display Type

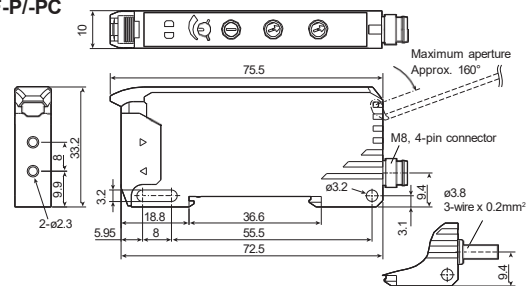
D1RF-T/TC



Potentiometer Type

V2RF-N/NC

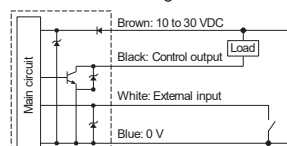
V2RF-P/PC



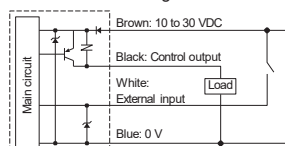
I / O circuit diagram

D1RF-T/TC

With the NPN setting

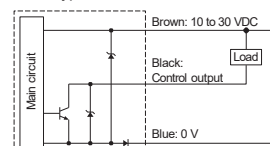


With the PNP setting



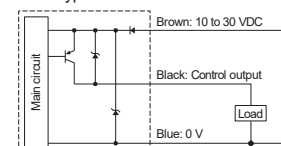
V2RF-N/NC

NPN type



V2RF-P/PC

PNP type



(unit : mm)

Options / Accessories

Mounting bracket

BEF-WLL180



Connector cable

Straight



- JCN-S
Cable length: 2 m
- JCN-5S
Cable length: 5 m
- JCN-10S
Cable length: 10 m

L-shaped



- JCN-L
Cable length: 2 m
- JCN-5L
Cable length: 5 m
- JCN-10L
Cable length: 10 m





















Fiber-units NF Series

More than 200 models of fiber-units with options such as lenses are available, with varying detection methods, mounting methods, environmental resistances and applications.

You can find the fiber you need for any application.

Select the appropriate unit from the industry's largest product lineup.

Industry's No. 1 product lineup More than 20 types More than 200 models

<p>Easy mounting</p> <p>14 models</p> 	<p>Thread type</p> <p>25 models</p> 	<p>Cylindrical type</p> <p>22 models</p> 	<p>Sleeve type (straight view)</p> <p>20 models</p> 
<p>Sleeve type (side view)</p> <p>12 models</p> 	<p>Flexible R4/R2 (R4 mm, R2 mm)</p> <p>20 models</p> 	<p>Flexible R1 (R1 mm)</p> <p>25 models</p> 	<p>Flexible R2 (R2 mm)</p> <p>9 models</p> 
<p>Retro-reflective type</p> <p>3 models</p> 	<p>Small object detection</p> <p>13 models</p> 	<p>Screen/Array</p> <p>15 models</p> 	<p>Limited diffuse reflective type</p> <p>14 models</p> 
<p>Narrow view / wafer mapping</p> <p>10 models</p> 	<p>Heat resistant (130°C or below)</p> <p>8 models</p> 	<p>Heat resistant (180 to 200°C)</p> <p>14 models</p> 	<p>Heat resistant (250 to 350°C)</p> <p>8 models</p> 
<p>Chemical resistant</p> <p>8 models</p> 	<p>Vacuum resistant</p> <p>3 models</p> 	<p>Liquid level / leakage / water detection</p> <p>9 models</p> 	<p>Lens for through-beam type</p> <p>6 models</p> 

- Specifications are subject to change without prior notice.
- Specifications and technical information not mentioned here are written in Instruction Manual. Or visit our website for details.
- All the warnings and cautions to know prior to use are given in Instruction Manual.