

- Specifications and technical information not mentioned here are written in Operation Manual. Or visit our website for details.
- All the warnings and cautions to know prior to use are given in Operation Manual.

OPTEX FA CO., LTD.
607-8085 Kyoto Yamashina Takehanadounomae 46-1, Japan
TEL. +81-(0)75-594-8123 FAX. +81-(0)75-594-8124
http://www.optex-fa.com

74558-00-RD0511

OPTEX FA

Digital amplifier with modular laser optics

DS SERIES

Digital Amplifier with Modular Optics.
Two Independent outputs, high speed response up to 60 msec.

Max 70 meter sensing distance with coaxial beam light source

Sensor head

Retro Reflective Type

DSR-800 : 8 meter
DSR-5000 : 70 meter Max

Diffuse Reflective Type

DSD-100 : 1.5 meter Max

Thru-beam type

DSTC-200 : 2 meter
DSTC-200-M8 : 2 meter, QD type
DSTA-200 : 2 meter, Line Beam
DSTA-200-M8 : 2 meter, Line Beam, QD type

Amplifier

DSA-M : Master Amplifier, 2CH
DSA-S : Slave Amplifier, 2CH
DSA-M3 : Master Amplifier, 1CH
DSA-S1 : Slave Amplifier, 1CH
DSA-M-M8 : QD Amplifier of DSA-M



http://www.optex-fa.com

By fitting Lens Attachment, you can select the beam of sensor among Area beam, Line beam, or Spot Beam. Master and Slave Amplifiers for wire savings.

4-20mA output available for displacement sensing applications.
(Thru-beam type)

e-con, the easy connection

Just snap-in the e-con to connect to amplifiers. All the sensor heads are connectable to any amplifier with the preset e-con mechanics.



IP67 water tightness

All the DS Series sensor heads secures IP67 Water tightness with its rugged housing.



SENSOR HEAD LINEUP (All IP67 protection. All visible red laser for easy alignment.)

Retro Reflective Type

You can select the beam of 2mm spot, Area beam, or Line beam by changing optional Lens Attachment BL-W130L-1.

DSR-5000 senses Max 70 meter at its Long Distance Mode. Distance is varied upon Response time you will need. (see Page3)

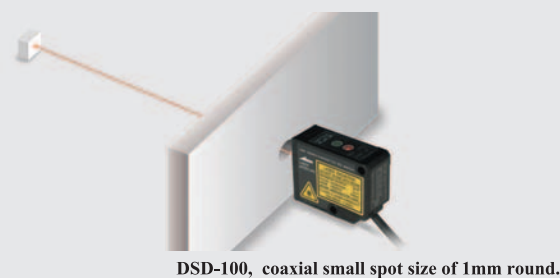
DSR-800 senses 8 meter even for glass and PET bottle application. Both types can give minimum spot of 2mm size at 2 meter distance.



Diffuse Reflective Type

Max 1.5 meter distance at Long Mode. Coaxial spot beam is given for accurate sensing, so you don't have to mind orientation of workpiece.

1mm spot size at 1 meter distance, that is convenient for sensing over the nitch of wall.



DSD-100, coaxial small spot size of 1mm round.

Through Beam Type

You will select either DSTC-200 (2mm spot size) or DSTA-200 (Measurement Type that can provide 30 X 2.5mm of line beam as well as 4-20mA analogue signal). M8 QD Connection is available for easy maintenance by using QD cable DSL-8L04-2-130.

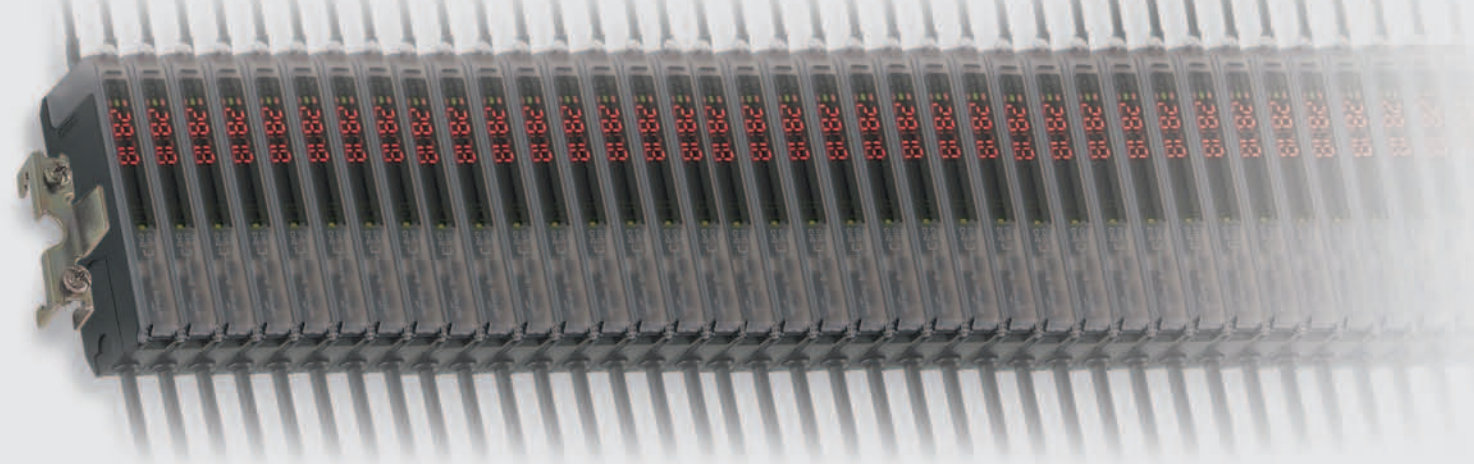


DSL-8L04-2-130, M8 QD cable for sensor head DSTA(C)-200-M8

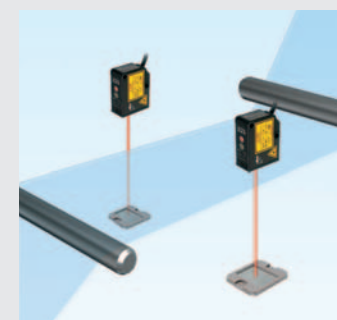
DSTA-200, Line Beam of 30 X 2.5mm in the distance of 50cm.

DSTC-200, Standard Thru-beam of 2mm spot size at 2m distance.

Inter-connected up to 30 pcs. Parallel installation up to 50 pcs.
(12V DC, 40 Celsius of surroundings)

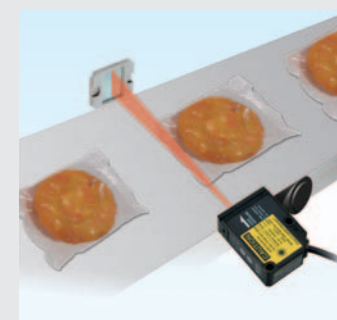


Applications



DSR-800 for monitoring meandering of Transparent Film

Install two pcs of DSR-800 not touching the both edge of film. DSR-800 lets you know as soon as the beam touches the edge.



DSR-800 for sensing transparent bag of cookies.

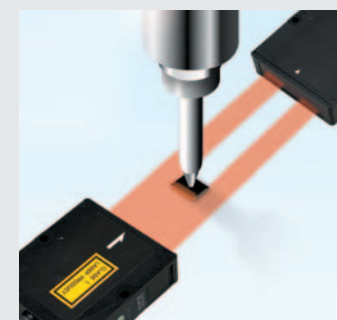
Edge of plastic bag is sometimes shrinked that is not good for stable sensing.

DSR-800 with Beam Selector BL-W130L-1 will provide a line beam that can work stably for such kind of object.



DSD-100 for sensing thread inside the bolt.

DSD-100 can focus on 1mm spot in 1 meter distance. As being designed in Coaxial optics, it can look in the depth of bolt.



DSTA-200 for finding a fine chip vacuumed by picker.

The line beam of 30mm width doesn't matter the position of object as far as it's in the 30mm range.

Sensor head and Amplifier List

Sensor head

Type	Model	Mode	Sensing Distance
Retro Reflective	DSR-800 (Reflector MP45)	Long	8 meter (remark 1)
		Standard	5 meter
		Fast	2 meter
	DSR-5000 (Reflector P250F)	Long	0.5 - 50 meter (remark 2)
		Standard	0.3 - 35 meter
		Fast	0.1 - 20 meter
Diffuse Reflective	DSD-100	Long	1.5 meter
		Standard	0.7 meter
		Fast	0.25 meter
Thru-beam Cable type	DSTC-200	Standard	2 meter
	DSTA-200	Standard	2 meter
		Measurement	0.5 meter
Thru-beam M8 QD type	DSTC-200-M8	Standard	2 meter
		Standard	2 meter
	DSTA-200-M8	Measurement	0.5 meter

2CH Amplifier

Mode	Specifications
DSA-MN	2CH, NPN Master Amplifier, 6 wires
DSA-MP	2CH, PNP Master Amplifier, 6 wires
DSA-SN	2CH, NPN Slave Amplifier, 4 wires
DSA-SP	2CH, PNP Slave Amplifier, 4 wires

1CH Amplifier

Mode	Specifications
DSA-MN3	1CH, NPN Master Amplifier, 3 wires
DSA-MP3	1CH, PNP Master Amplifier, 3 wires
DSA-SN1	1CH, NPN Slave Amplifier, 1 wire
DSA-SP1	1CH, PNP Slave Amplifier, 1 wire
DSA-MN-M8	M8QD, 1CH, NPN Master Amplifier, 4pins
DSA-MP-M8	M8QD, 1CH, PNP Master Amplifier, 4pins

Remark(1) Use of Lens Attachment for Line/Area beam for DSR-800 will change the sensing distance. Please see Page 5.

Remark(2) The distance in the Long Distance Mode of Retro Reflective Types will be extended at Sensitivity Compensation Status.
DSR-800 : 0.2 - 20 meter
DSR-5000 : 1 - 70 meter

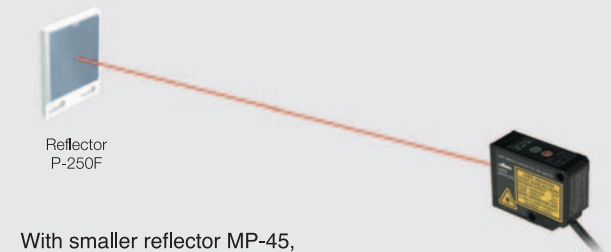
Remark(3) The distance of DSD-100 is defined with 200 X 200 mm white paper.

Diagram of the L-1000 Laser Level control panel. The panel features a digital display showing '40.33' in red and '39.99' in green. Labels point to various components:

- 1CH output indicator (OUT 1)
- Laser emission indicator (LASER ON)
- 2CH output indicator (OUT 2)
- Channel indicator (Teach Mode Indicator)
- Received light
- Threshold
- UP button
- DOWN button
- Teaching button (T)
- Channel Indicator
- Mode button
- SET/RUN selector

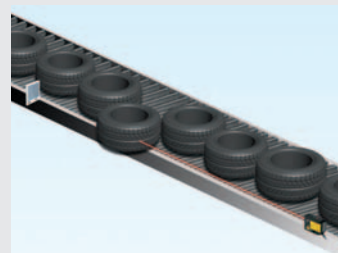
DSR-5000 : Max 70 meter of sensing (at Sensitivity Compensation ON in the Long Mode)

With exclusive Reflector P250F , 70meter distance is possible.



With smaller reflector MP-45, the sensing distance is shrunk as follows ;

Long Mode : 0.5 - 20 meter
Standard Mode : 0.3 - 10 meter
Fast Mode : 1 meter

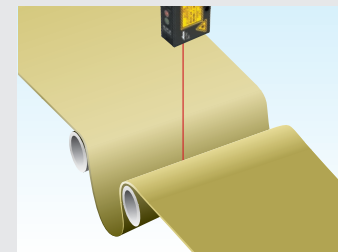


Dispositioned workpiece on a running conveyor

DSR-5000 will successfully find a dispositioned object on a running conveyor as far as it's within 70 meter length.

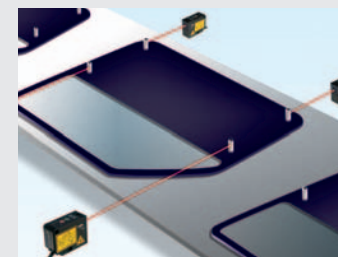
DSD-100 : Diffuse Reflective sensor for 1.5 meter distance.

At Sensitivity Compensation ON under Long mode, you can reach 1.5 meter distance. Ideal for positioning because of coaxial optics and 1mm round spot.



Slack control of rubber belt

With 2CH Amplifier DSA-M (Master) or DSA-S (Slave), you can monitor slack of belt as the amplifier has two channels of control output. Analogue output will be useful for monitoring depth of slack.

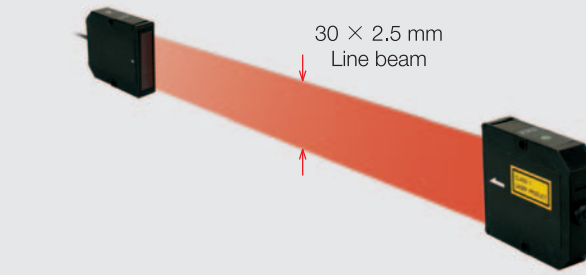


Small object in distance

Safe sensing in distance. This example is to sense a metal part stuck on glass plate in Automotive application.

DSTA-200 : 30mm width Line Beam for sorting application with 4-20mA output.

Ideal for sorting by width and size of objects. Measurement Mode will give analogue signal for use in the range of 0.5 meter.



Sorting by size

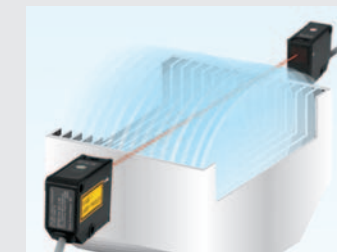
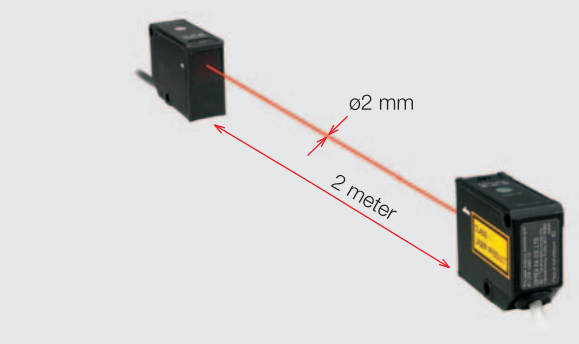
Metal junction in a different shape. If the tip was too big the received light decreases. If it was too small, visa versa. DSTA-200 gives parallel line beam, therefore you can sense it regardless of position of workpiece.



Finding a fine chip vacuumed by picker.

The line beam of 30mm width doesn't matter the position of object as far as it's in the 30mm range.

DSTC-200 : 2mm sharp and small spot



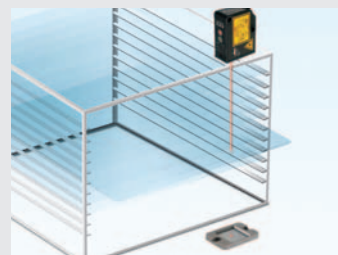
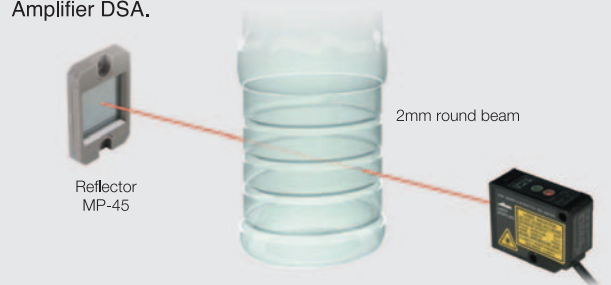
Counting of wafer

DSTC-200 will be ideal for counting wafer to be set in a cassette.

2mm round spot in 2 meter distance means direct light to go through, and you don't have to worry about light immunity. Counter function of DSA Amplifier will be convenient to confirm wafer quantity in a cassette.

DSR-800 : Three kinds of spots are selectable

DSR-800 will successfully detect a clear glass object or PET bottle. 2mm of fine spot will help to secure the performance against the glass material thanks to "Glass Teach" function of Amplifier DSA.



Disposition of glass plate

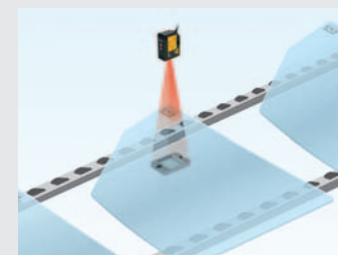
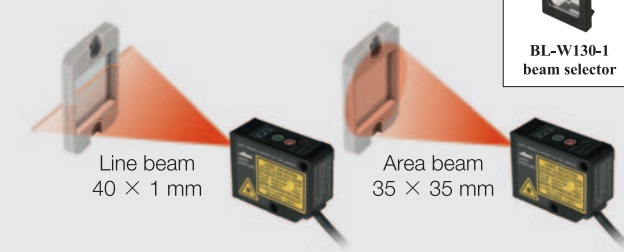
It's ideal. DSR-800 has 2mm round spot (at 2 meter distance) given in coaxial optics, so will not fail to detect slight disposition of glass plate. Sensivity setting is easy with DSA Amplifier's Glass Teach setting.



Meandering of transparent film

Set a pair of DSR-800 outside the edge of transparent film to minor meandering of the film. DSR-800 is so sensitive to sense a slight change of receiving light.

DSR-800 can change its sensing spot into Line beam (40 X 1 mm), or Area spot (35 X 35mm) by using optional beam selector BL-W130L-1.



Print on a transparent glass

You can know if there is a print on a transparent glass if you would use DSR-800 as area sensing sensor using optional lens BL-W130L-1. If the spot was a round or line shape it's impossible, but you can do it focusing the printed area with Area Beam.

Specifications

MODEL	Cable	Retro reflective type		Diffuse reflective type	Through beam type	Through beam / Measurement type
		DSR-5000	DSR-800	DSD-100	DSTC-200	DSTA-200
					Emitter: DSTC-D	Emitter: DSTA-D
					Receiver: DSTC-200	Receiver: DSTA-200
					DSTC-200-M8	DSTA-200-M8
Emitter M8	-	-	-	DSTC-S	DSTA-S	
Detector M8	-	-	-	DSTC-R	DSTA-R	
Amplifier unit		DSA-M□□ / DSA-M□-M8 / DSA-S□□				
Light source		Visible light semiconductor laser 650nm				
Output		max. 3mW			max. 390μW	
IEC/JIS CLASS		CLASS 2			CLASS 1	
FDA CLASS		Class II				
Detection distance *1	Long	0.5 - 50 m	8 m	1 m	2 m	2 m Length measurement mode: 0.5 m (Only Long and Standard)
	Standard	0.3 - 35 m	5 m	0.7 m		
	Fast	0.1 - 20 m	2 m	0.25 m		
Spot size *2		Selectable see Page 5		Approx. 1 mmØ (Distance: 1 m)	Approx. 2 mmØ (Distance: 2 m)	Approx. 30 x 2.5 mm (Distance: 2 m)
Repeat accuracy *3		0.2 mm		0.2 mm	0.2 mm	0.3 mm
Indicator light		Laser radiation indicator light: Green Output indicator light: Orange				
Operating temperature/humidity		-10 to +55°C/35 to 85 %RH (No condensation or freezing)				
Store temperature/humidity		-25 to +70°C/35 to 85 %RH (No condensation or freezing)				
Ambient light		3,000 lx (Incandescent light)		10,000 lx (Sunlight)		
Shock resistance		10 to 55 Hz Double-amplitude 1.5 mm 2 hours at each direction of X, Y and Z				
Protection category		IP67				
Material		PC (Case, Cover) PMMA / Glass (Front glass)				
Weight (including the codes) *4		45g			90g	115g

* 1 DSD-100 : With white paper (90 %) of 200 x 200 mm
 DSR-800 : With the reflector MP-45 (accessory)

* 2 Defined with center strength 1/e2 (13.5%).

There may be leak light other than the specified spot size. The sensor may be damaged when there is a highly reflective object around the targets

* 3 Right angle to sensing axis.

* 4 The weights of DSTC-200 and DSTA-200 include the emitter and the receiver.

* For the model M8-QD type, replacement is available only for the emitter and the detector.

Options

M-45
Standard reflector for DSR-800



P250F
Long distance reflector for DSR-5000



BL-W130-1
Beam Selector



DSL-8L04-2-130
M8-QD cable

