

FASTUS

Good Thinking, Good Future

Compact laser displacement sensor

CD22 Series

FASTUS is new product brand name from Optex-FA



**The World's Smallest
Displacement Sensor !!**

Innovative size! Fits in any machine	Built-in controller 4 Digit display	Performance like High end	Repeat accuracy 1μm (CD22-15)
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OPTEX FA CO., LTD.



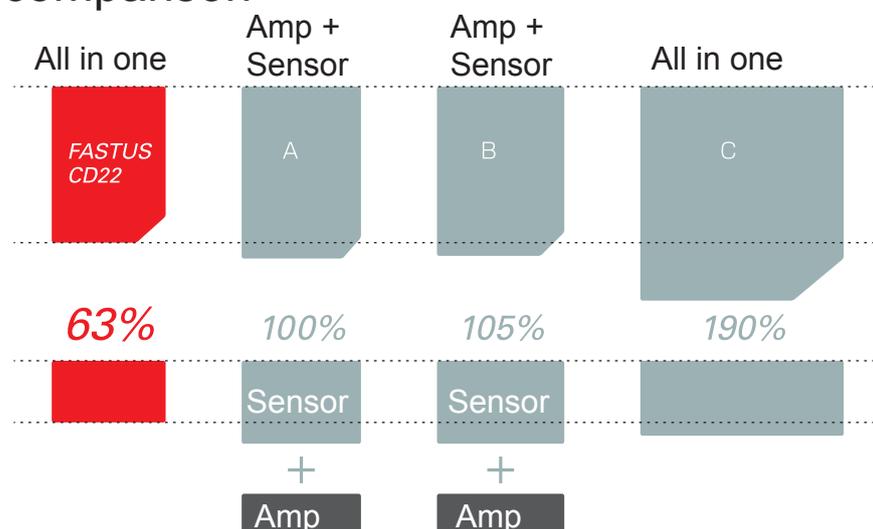
The World's Smallest

W18*D31*H44mm

High performance and cost efficient displacement sensor built in innovative compact case. This is enabled by:

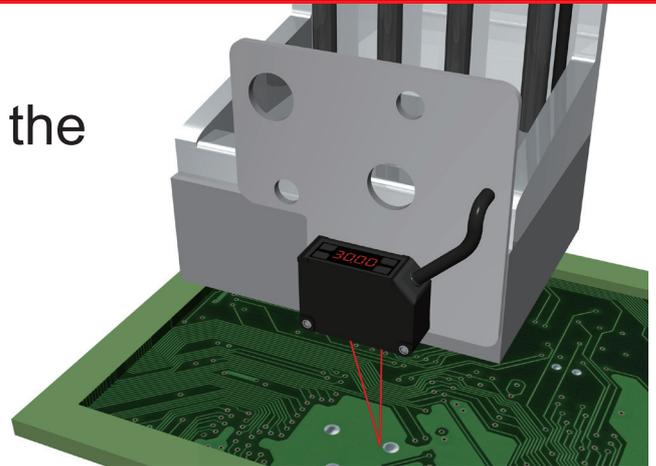
- Dedicated hybrid lens
- Original all in one technology
- High quality feedback circuitry

Size comparison



/ Installing into machinery is the most suitable application.

- Small and light weight
- Small temperature drift
- All in one

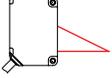
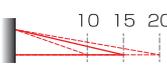


/ Easy to see digital panel

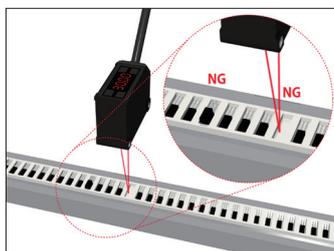
- 4 Digit display in small case
- Easy setup by 4 buttons
- Functions are like high end



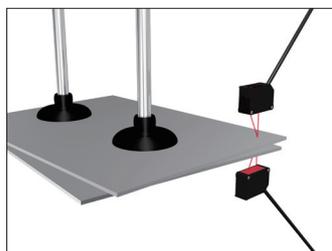
/ Line up

Type	Measurement range	Repeat accuracy	Analog output	Line up
 Diffuse	 15±5mm	1μm	4~20mA 0~10V	CD22-15AM12 CD22-15VM12
	 35±15mm	6μm	4~20mA 0~10V	CD22-35AM12 CD22-35VM12
	 100±50mm	20μm	4~20mA 0~10V	CD22-100AM122 CD22-100VM122

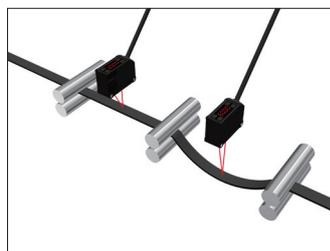
/ Applications



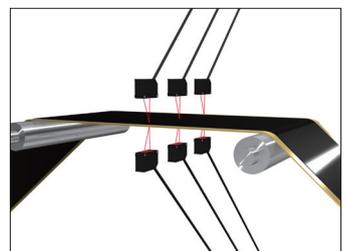
Detecting small parts



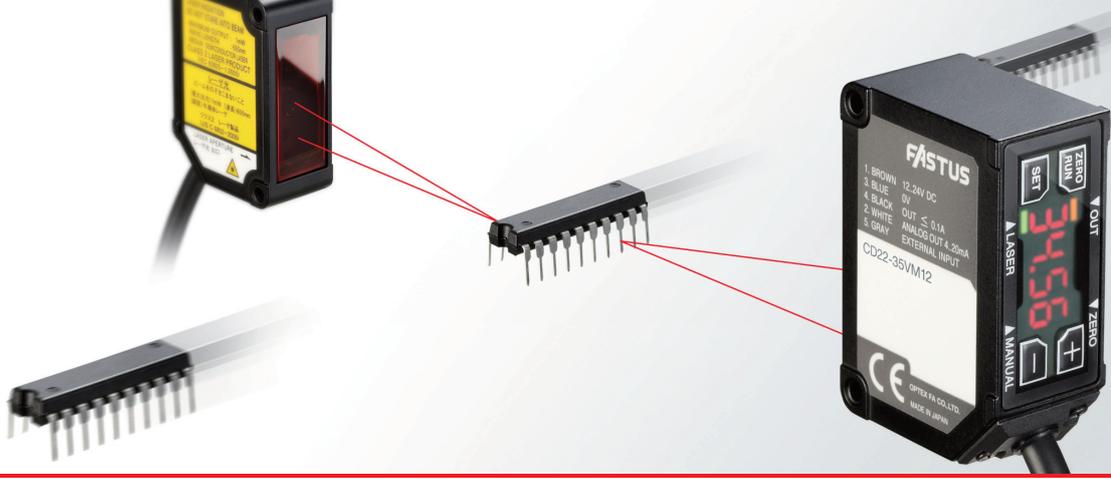
Detecting picking double thin sheets



Detecting deflection

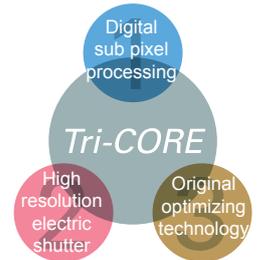


Measuring thickness of thin film electrode



High Accuracy enabled by “Tri-CORE”:

- Digital sub pixel processing
- High resolution electric shutter
- Original optimizing technology

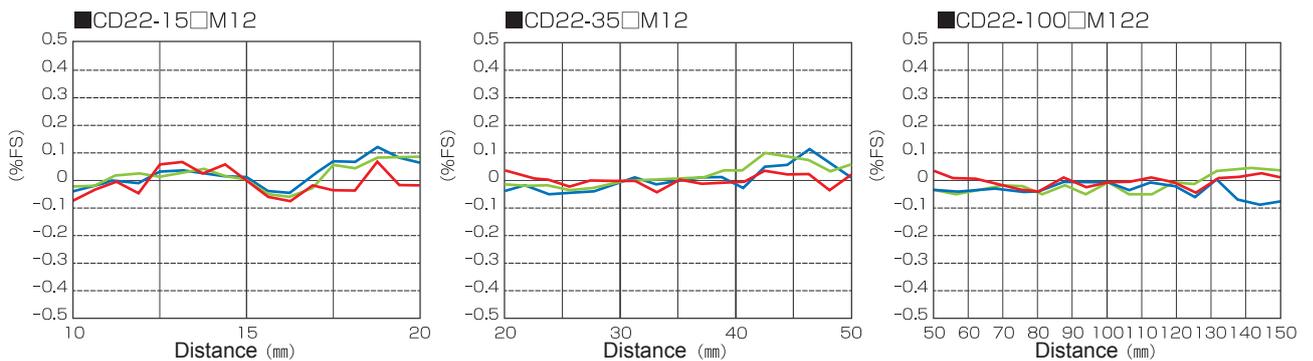


Repeat accuracy : $1\mu\text{m}$ (CD22-15□M12)

Linearity : $\pm 0.1\%$ F.S.

Linearity typical data (very stable with various material)

— White ceramic — SUS — Black rubber



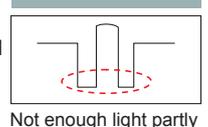
Automatic Sampling

In addition to standard feedback, received light to laser power, CD22 has Automatic Sampling function which enables stable measurement of metal surface and also black material by adjusting sampling speed.



■ Sampling speed is fixed

High speed sampling



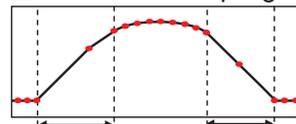
Not enough light partly

Slow sampling



Can't get correct shape

■ Automatic Sampling

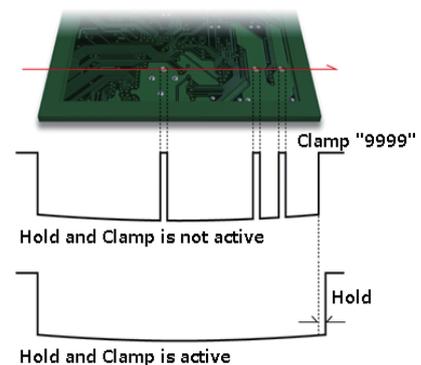


It can get correct shape by changing sampling speed.

Slow sampling Slow sampling

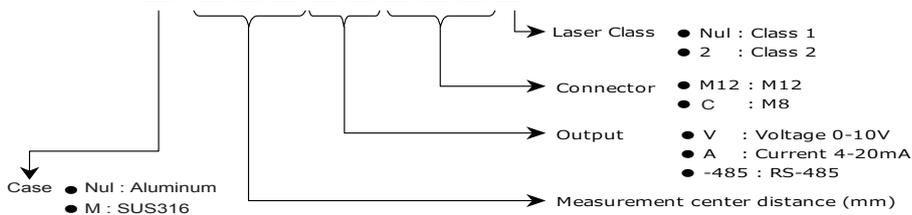
Alarm - Hold and Clamp

CD22 can neglect small holes on the PWB by “Hold and Clamp” function. This is good for detecting objects with rough surface.



Part number legend

CD22



Specifications per measurement range

Part number	Aluminum housing	CD22-15□□	CD22-35□□	CD22-100□□
	SUS housing	CD22M-15□□	CD22M-35□□	CD22M-100□□
Center of measurement range		15mm	35mm	100mm
Measurement range		±5mm	±15mm	±50mm
Light source	Red laser Diode (wave length 655nm)			
	Max. output: 390 μW			Max. output: 1mW ※3
Laser class	IEC/JIS	Suffix nul: CLASS 1 / 2: CLASS 2		
	FDA	Class II		
Spot size ※1		500 * 700μm	450 * 800μm	600 * 700μm
Linearity		0.1% of F.S.	0.1% of F.S.	0.1% of F.S.
Repeatability ※2		1μm	6μm	20μm
Sampling period		500μs / 1000μs / 2000μs / 4000μs / AUTO		
Temperature drift (typical value)		±0.02% / °C of F.S.	±0.02% / °C of F.S.	±0.05% / °C of F.S.
Indicator		Laser indicator: Green / Zero reset indicator: Red Output indicator: Orange / Mode indicator: Red		
MF (multiple function) Input		Laser OFF, Teaching, Sample & Hold, One shot, Zero reset		
Control Output		NPN/PNP max.100mA/DC30V ((Residual voltage 1.8 V max.)		
Current consumption		70mA max. including Analog output current		
Protection circuit		Reverse connection protection, Over current protection		
Protection category		IP67 including connection part		
Operating Temp./Humid.		-10 ~ 50°C / 35 ~ 85% RH without frosting or condensation		
Storage Temp./Humid.		-20 ~ 60°C / 35 ~ 85%/RH		
Ambient illuminance		Incandescent lamp: 3,000 lx max.		
Vibration resistance		10 ~ 55Hz, Double amplitude 1.5mm, X,Y,Z for 2 hours		
Shock resistance		500mm/s ² (approx. 50G) X,Y,Z 3 times each		
Material		Case: Aluminum/SUS316L, Front lens: PPSU, Display: PET		
Weight		Aluminum case with M12 connector : Approx. 60g including 300mm cable with connector SUS case with M12 connector type : Approx. 90g including 300mm cable with connector Aluminum case with M8 connector : Approx. 40g SUS case with M8 connector : Approx. 70g		

The specifications are based on the condition unless otherwise designated: Ambient temperature: 23°C , Supply voltage: 24VDC, Sampling period: 500μs, Averaging: 64, Measuring distance: Center of the range, Testing object: White ceramic

※ 1 Defined with center strength 1/e²(13.5%) at the center. There may be leak light other than the specified spot size. The sensor may be affected when there is a highly reflective object close to the detection area.

※ 2 512 averaging time

※ 3 for Laser Class 2 type (Model: CD22-100AM122, CD22-100VM122)

Specifications per output

Part number	CD22□-□□V	CD22□-□□A	CD22□-□□-485
Type	Voltage output	Current output	RS-485 type
Analog output range	0 ~ 10V	4 ~ 20mA	—
Maximum load impedance	—	300Ω	—
Output impedance	100Ω	—	—
Power supply	DC18-24V±10%	DC12-24V ±10%	

Accessory



M12 connector cable
DOL-1205-G02M

Warnings

Do Not stare the beam directly and expose to a laser beam. It will damage and harm eyes and health.



⚠ Cautions

Read this manual carefully before using the sensor for safety use.
● Kindly consult us about sensor choice, setting, adjustment and more.



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