Good Thinking, Good Future

FASTUS

Through-beam Edge Sensor

TD1 Series

TD1-010M8

*FASTUS is a product brand of OPTEX FA.

[Sold separately:
CDA-DM amplifier unit]

Edge Position Measurement for Any Workpiece

Suitable for edge measurement and width/gap measurement

Light axis alignment function for easy installation

Easily readable amplifier unit

Sold separately: CDA-DM

OPTEX FA CO., LTD.

Edge Measurement

The TD1 series is ideal for equipment where edge control is required, such as for measurement of the end surfaces of components or sheet materials.

Measurement range
10 mm

Measurement even at up to 300 mm between heads

Through-beam edge sensor TD1 series devices use a CMOS sensor as the light receiving element, allowing for highly accurate edge position measurement of end surfaces.

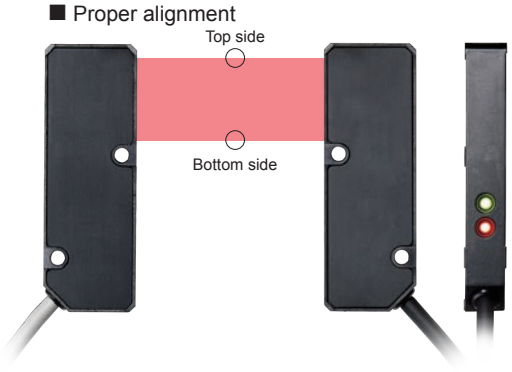
Repeatability ±5 µm

Linearity ±0.4% of F.S.

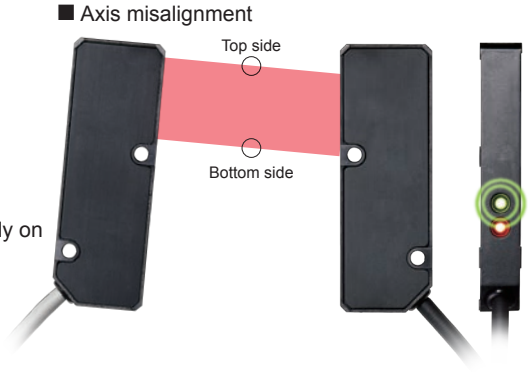
Easy Light Axis Alignment

In Direction Checking mode, the indicator will flash when the light axis is misaligned, notifying that the alignment should be checked.
This makes it easier to check the light axis when installing sensors or during periodic maintenance.

■ Proper alignment



■ Axis misalignment



Light axis condition

Misaligned toward top side
Indicator (red) flashes

Misaligned toward bottom side
Indicator (green) flashes

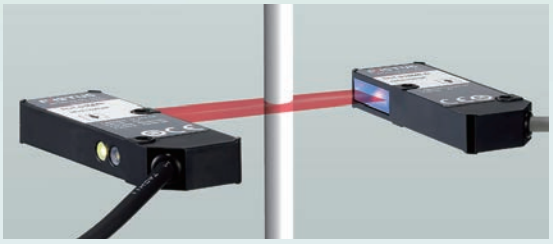
Compact Design

The compact size of the sensor head allows for easy installation even for devices with limited space. This makes it possible to keep equipment as small as possible.

Width/Gap Measurement

The measurement method used in a TD1 series product can be changed to suit the inspection application, such as when measuring the width of small electronic components or the gaps between rollers.

■ Width measurement



■ Gap measurement

Displacement sensor amplifier unit

CDA series

CDA-DM

Features an organic EL display that can display clearly in both Japanese and English. Calculations can be performed with up to two TD1 series units.

[Actual size]

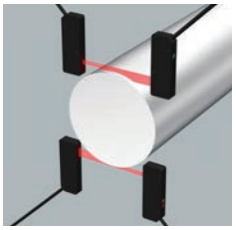
One-touch detection target position teaching

Simple Teaching Mode

When teaching, the edge center position can be set as desired within the measurement range. Simply place the measurement target and press the button.

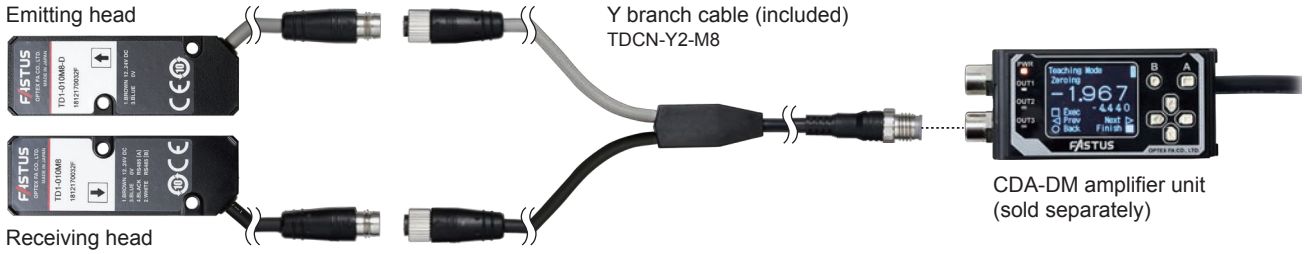
Calculation Function

Connecting two TD1 series units enables measurement of workpieces with outer diameters of 10 mm or more.



Cylindrical workpiece outer diameter measurement

System Configuration Diagram



● Up to two units per amplifier

Options/Accessories

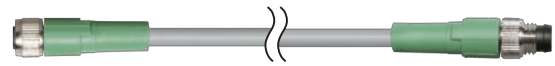
■ Amplifier unit

● CDA-DM Dual analog output type **NEW**

■ Sensor-to-amplifier extension cable

● DSL-0804-G02M Cable length: 2 m, robot cable specification

● DSL-0804-G05M Cable length: 5 m, robot cable specification



● Ensure that the cable length when using a CDA series amplifier unit is within 10 m.

Specifications

■ Sensor head

Model		TD1-010M8
Measurement range		Edge: ±5 mm, width: 10 mm
Distance between heads		Max. 300 mm
Light source	Medium (Wavelength)	Red semiconductor laser (Wavelength: 660 nm)
	Maximum output	390 μW
Laser class		Class 1 (IEC/JIS)*1
Spot size		3 × 14 mm
Linearity		With a distance between heads of 100 mm: ±0.4% of F.S. (±40 μm)
Repeatability*2		±5 μm
Sampling period		500 μs
Temperature drift		±0.02% of F.S./°C
Indicators		[Emitting head] Power indicator: Green [Receiving head] Power indicator: Green, Alarm indicator: Red
Serial interface		RS-485
Supply voltage		12 to 24 VDC ±10%
Current consumption		Emitting head: 20 mA or less (at 12 VDC) Light-receiving head: 80 mA or less (at 12 VDC)
Connection type		Pig tail type: Cable with M8, 4-pin connector, 300 mm length
Environmental resistance	Ambient temperature/ humidity	-10 to +50°C / 35 to 85% RH (no freezing or condensation)
	Storage temperature/ humidity	-20 to +60°C / 35 to 85% RH (no freezing or condensation)
	Ambient illuminance	Sunlight: 10,000 lx or less, Incandescent lamp: 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	Approx. 50 G (500 m/s^2), 3 times in each of the X, Y, and Z directions
	Protection circuit	Reverse connection protection
	Degree of protection	IP50
Applicable regulations	EMC	EMC directive (2014/30/EU)
	Environment	RoHS directive (2011/65/EU), China RoHS (Directive No. 32)
Applicable standards		EN60947-5-2
Material		Housing: Aluminum die cast, Emitting/receiving part: Glass
Weight		Emitting head, receiving head: 30 g each (including 300 mm connector cable)

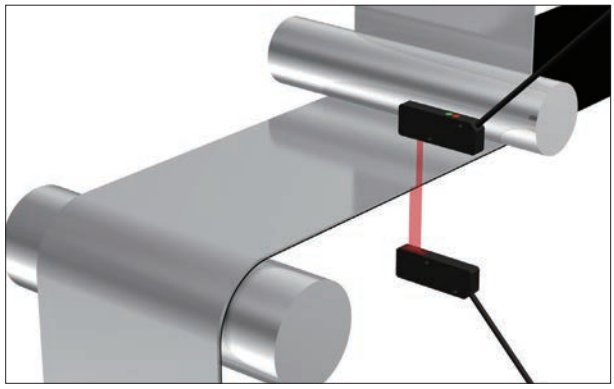
*1 Contact us for information on FDA Regulations.
*2 With an averaging count of one.

■ Amplifier unit

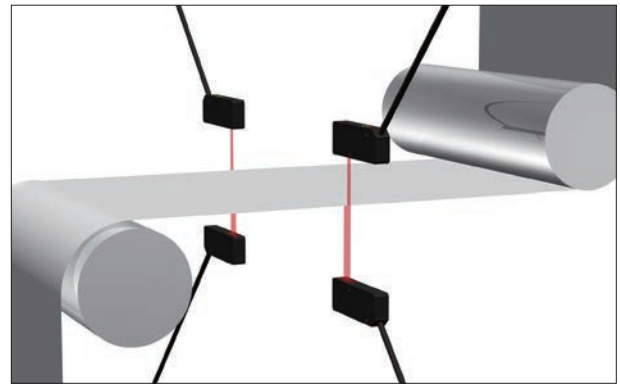
Model		Dual analog output type CDA-DM
Sensor head	No. of connectable units	Max. 2 units
	Connection type	Amplifier side: M8, 4-pin connector
Display	Dot matrix display	Organic EL panel, 128 × 96 pixels
	Indicators	Power indicator: Red/green, Output indicator: Orange
Supply voltage		12 to 24 VDC ±10%, including 10% ripple (p-p)
Current consumption		100 mA or less (at 12 V)
Analog output		Voltage type: 0 to 10 V, dual output
Control output		NPN/PNP open collector (3 outputs), Max. 100 mA / 30 VDC, Residual voltage: 1.8 V or less
External input		—
Connection type		Cable type: Cable: 2 m (ø5.8)
Environmental resistance	Ambient temperature/ humidity	-20 to +50°C / 35 to 85% RH (no freezing or condensation)
	Storage temperature/ humidity	-20 to +60°C / 35 to 85% RH (no freezing or condensation)
	Vibration resistance	10 to 55 Hz; double amplitude 1.5 mm; 2 hours in each of the X, Y, and Z directions
	Shock resistance	Approx. 50 G (500 m/s^2), 3 times in each of the X, Y, and Z directions
	Protection circuit	Reverse connection protection, overcurrent protection
	Degree of protection	IP50
Material		Housing: Polycarbonate
Weight		170 g

Applications

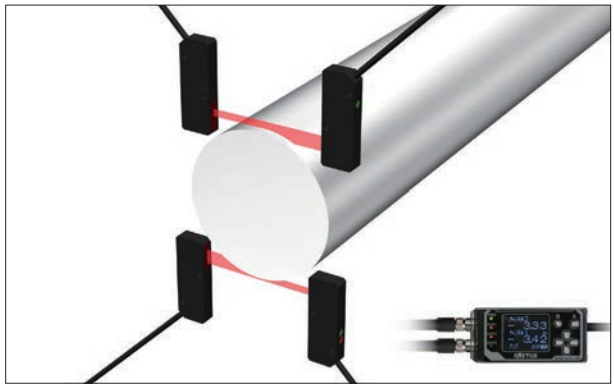
Sheet material winding control



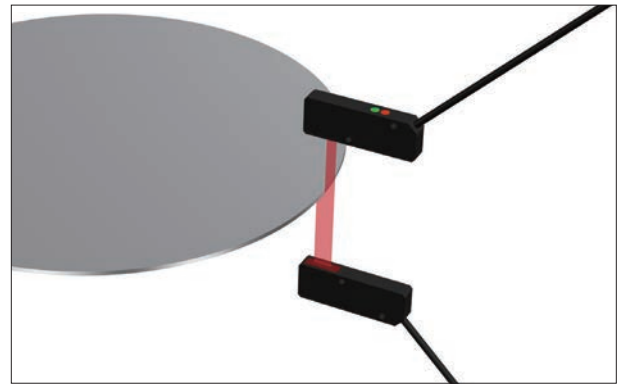
Sheet material meander control/edge measurement



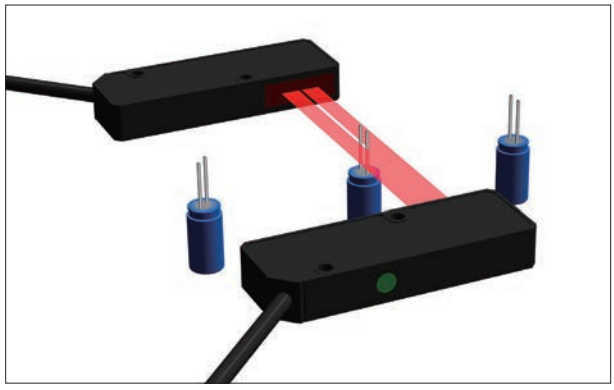
Cylindrical workpiece outer diameter measurement



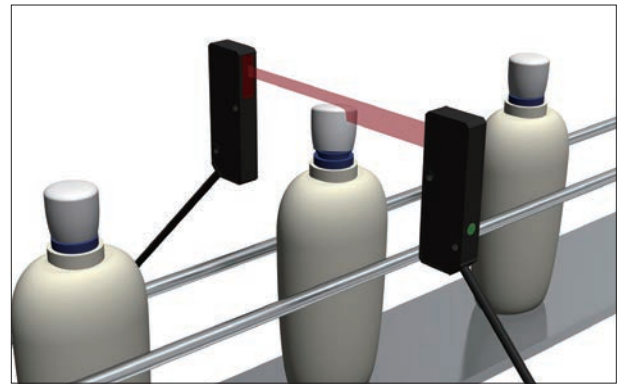
Wafer alignment



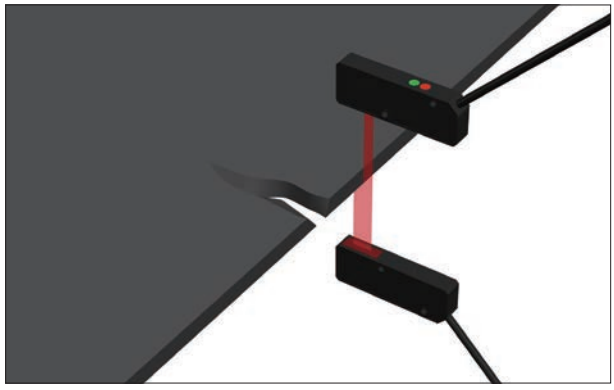
Electronic component orientation identification



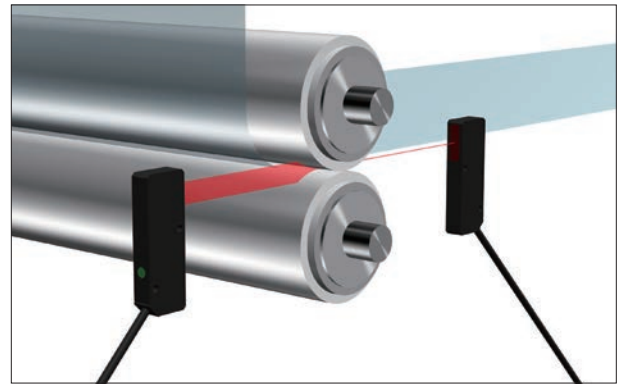
Bottle cap float detection



Rubber sheet defect inspection

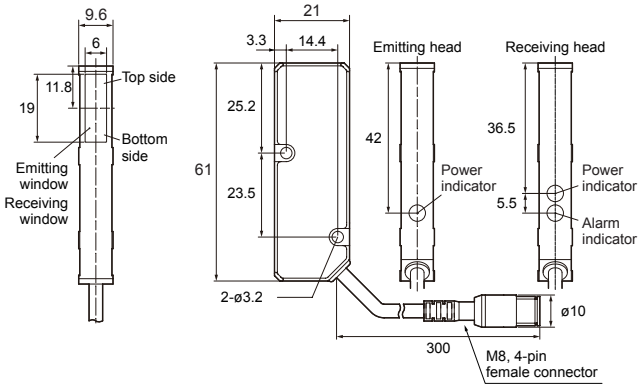


Roller gap measurement

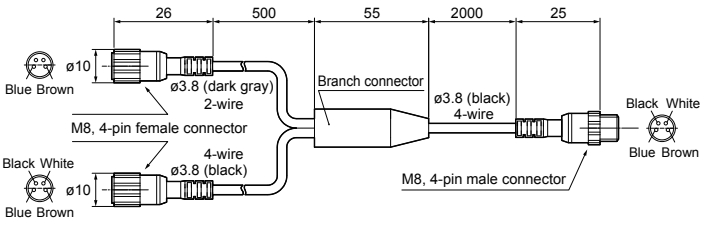


Dimensions (Unit: mm)

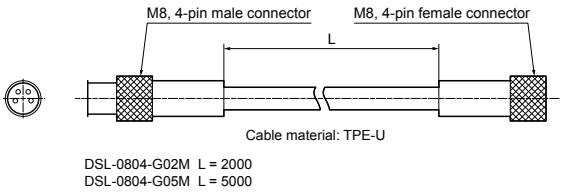
■ TD1 series



■ TDCN-Y2-M8 Y branch cable



■ DSL-0804-G02M / DSL-0804-G05M sensor-to-amplifier extension cable

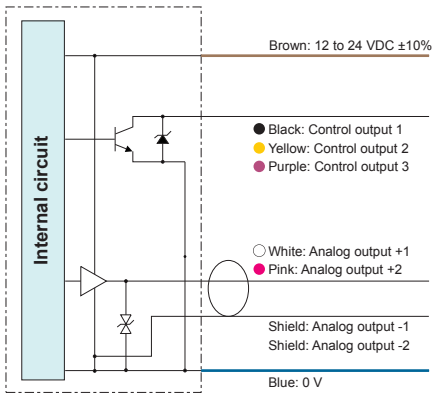


DSL-0804-G02M L = 2000
DSL-0804-G05M L = 5000

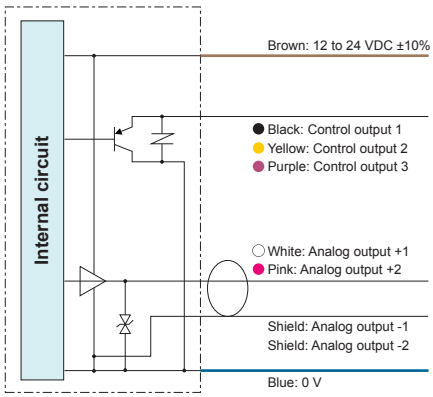
■ CDA-DM amplifier unit

I/O Circuit Diagram (CDA-DM amplifier unit)

With the NPN setting



With the PNP setting



Attention: Not to be Used for Personnel Protection.

Never use these products as sensing devices for personnel protection. Doing so could lead to serious injury or death.
These sensors do not include the self-checking redundant circuitry necessary to allow their use in personnel safety applications.
A sensor failure or malfunction can cause either an energized or de-energized sensor output condition.
Please consult our distributors about safety products which meet OSHA, ANSI and IEC standards for personnel protection.

- 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.

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