Laser Displacement Sensor

CD2H Series

For Technical and Application Support
Contact Ramco today!

Best-in-class, All-in-one Middle-range Sensors

Highest-in-class*

Repeat Accuracy

0.25 µm

(CD2H-30□/CD2H-50□)

Fastest-in-class*

Sampling Period

133.3 µs

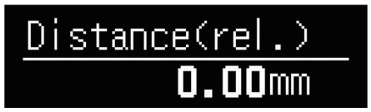
* Among laser displacement sensors with the repeat accuracy of 1 µm
(Investigated by OPTEX FA in November 2021)

Easy-to-read OLED display

Improved visibility **Improved operability**

Menu texts can be displayed in 7 languages. Display of measurement values can be selected among 3 modes of relative value, analog output value and bar graph.
Maintenance data, such as internal temperature and total operating time can be also displayed for predictive maintenance.

Relative value
(Distance from a reference point)



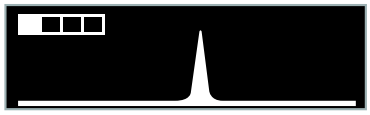
Analog value

Bar gragh display

First in industry*

Waveform of received light can be displayed

Received light waveforms



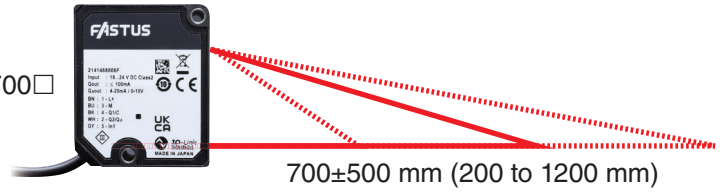
Monitoring of waveform helps to check amounts of received light and an installation angle.
The masking function of unwanted ambient light is also available to reduce such interference.

*with amplifier built-in displacement sensors
(Investigated by OPTEX FA in December 2021)

Measurement in a long distance up to 1,200 mm

Narrow measurement ranges of displacement sensors have required to adjust installation or model of the sensors to measure the distance to objects. CD2H-700 with the longest distance of measurement range of 700±500 mm reduces work and time of setup changes.

CD2H-700□



Ramco Innovations
(800) 280-6933

OPTEX FA CO., LTD

www.optex-ramco.com
email - nsales@ramcoi.com

Lineup

Reflection mode	Measurement range	Repeat accuracy*1	Resolution*2	Sampling period*3	Linearity	Light source Laser class*4	Spot size*5	I/O	Temperature characteristics*6	Weight	Model	
											Cable	Pigtail cable
Diffuse reflective	30±5 mm (25 to 35 mm)	0.25 µm	0.25 µm	133.3 µs 150 µs 200 µs 300 µs 500 µs 1 ms 2 ms 5 ms Auto	±0.1 % of F.S.	Red semiconductor laser 655 nm 0.39 mW CLASS1	ø0.05 mm	2 Control output Analog output External input IO-Link	±0.06 % of F.S./°C	Cable model: Approx. 140 g Pigtail cable model: Approx. 90 g	CD2H-30A	CD2H-30M12A
	50±10 mm (40 to 60 mm)	0.25 µm	0.25 µm				ø0.07 mm				CD2H-50A	CD2H-50M12A
	130±70 mm (60 to 200 mm)	4 µm	4 µm				ø0.3 mm				CD2H-130	CD2H-130M12
	245±175 mm (70 to 420 mm)	10 µm	10 µm			Red semiconductor laser 655 nm 1 mW CLASS2	ø0.5 mm				CD2H-2452	CD2H-245M122
	350±250 mm (100 to 600 mm)	20 µm	20 µm				ø0.6 mm				CD2H-3502	CD2H-350M122
	700±500 mm (200 to 1200 mm)	100 µm	100 µm		±0.1 % of F.S. (200 to 700 mm) ±0.3 % of F.S. (700 to 1200 mm)		ø1.0 mm				CD2H-7002	CD2H-700M122

Measurement condition
The measurement conditions are as follows unless otherwise designated:
Ambient temperature: 25°C (room temperature), supply voltage: 24 VDC, sampling period: 200 µs, moving average performed: 128, median filter: 31, center of measurement range, standard measured object (white ceramic). Furthermore, the sensor is fixed in place with an aluminum bracket when measurements are performed.

*1: Peak to peak value of measurement in stationary state (at moving average of 512)
*2: The smallest determinable step when changing the distance between the sensor and the target one step at a time (at moving average of 512)
*3: Set to 200 µs by default.
*4: In accordance with the guidance of Laser Notice No. 56 by FDA, the lasers are classified per the IEC 60825-1:2014 standard.
*5: Defined with center strength 1/e2 (13.5 %) at the center of the measurement range. 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.
*6: Typical example when the object (white ceramic) is measured while the object and the sensor are fixed in place with aluminum brackets. This object is placed at the center of the measurement range.

Specifications

Common Specifications

Supply voltage		18 to 24 VDC (±10 %, including ripple)
Current consumption*7		80 mA (at 18 VDC), 70 mA (at 24 VDC)
IO-Link Specifications	Revision	Ver.1.1
	Baud rate	COM3 (230.4 kbps)
	Number of process input data bytes	6 bytes
	Minimum cycle time	0.7 ms
Control output (DO1/DO2*8)	No. of outputs	2 (DO1 can be switched to IO-Link.)
	Polarity	NPN/PNP open collector or Push-Pull (selectable by setting) Max. 100 mA/24 VDC, residual voltage 1.8 V or less
Analog output AO*8	Current	4 to 20 mA, load impedance: 300 ohm or less
	Voltage	0 to 10 V, output impedance: 100 ohm or less
External input*9		Switchable between Off, Multi operations, Hold, Zero point teach and Laser off
Display		0.9-inch OLED display (128 × 36 pixel) Menu languages: English, German, Spanish, Japanese, Simplified Chinese, Traditional Chinese, Korean
Indicators		Power indicator (green), output indicators (orange × 2), IO-Link communication indicator (flashing green)
Connection		Cable model: ø4.5 mm 2 m cable, Pigtail cable model: ø4.5 300 mm cable with M12 5-pin connector Minimum bending radius: Cable diameter × 2 (when fixed in place), cable diameter × 6 (when movable)
Protection circuit		Reverse connection protection, overcurrent protection
Environmental resistance	Degree of protection	IP67 (including M12 connector of pigtail cable model)
	Ambient temperature/humidity	-10 to +50°C/35 to 85 % RH (without freezing or condensation)
	Storage temperature/humidity	-20 to +60°C/35 to 85 % RH (without freezing or condensation)
	Ambient illuminance	Incandescent light: 10000 lx max., Fluorescent light: 10000 lx max.
	Vibration resistance	10 to 55 Hz, Double amplitude 1.5 mm, 2 hours in each X, Y, and Z direction
	Shock resistance	Approx. 50 G (500 m/s^2), 3 times in each X, Y, and Z direction
Applicable regulations	EMC	EU EMC Directive (2014/30/EU), UK EMC (Electromagnetic Compatibility Regulations 2016)
	Environment	RoHS Directive (2011/65/EU), UK RoHS (The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012), China RoHS (MIIT Order No. 32)
	Safety	FDA Regulations (21 CFR 1040.10 and 1040.11)*10
Applicable standards		EN 60947-5-2, IEC 60825-1
NRTL certification		UL Recognized Components Proximity Switch Certified for US and Canada.
Company standards		Noise resistance: Feilen Level 3 cleared
Warm-up time		Approx. 30 minutes
Material		Housing: PBT, Front window: PMMA

*7: Value when DO2 is set to analog output (current) and measurement is not possible (outputting a current of 21 mA).
*8: Set to analog current output by default.
*9: Set to laser off by default.
*10: Excluding differences per Laser Notice No. 56.
● Specifications are subject to change without prior notice. Thank you for your understanding.

The information in this catalog is correct as of Augus 2023.

78069-00-006-2308