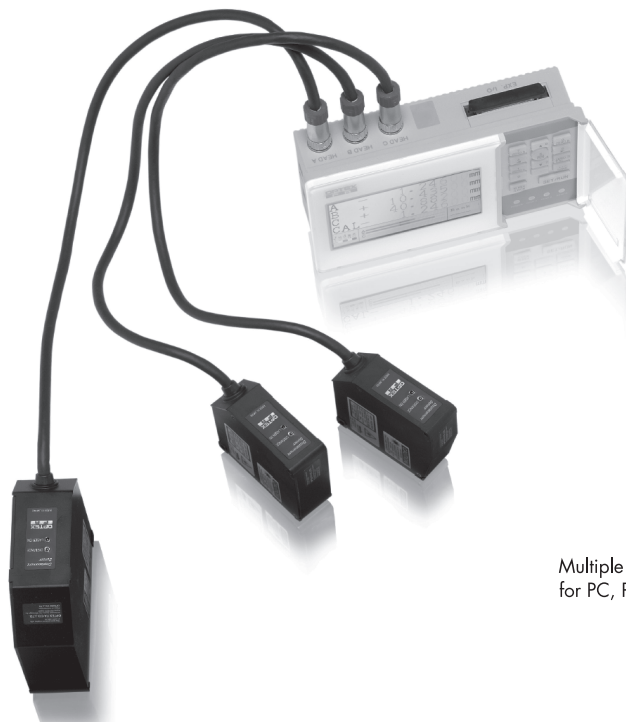
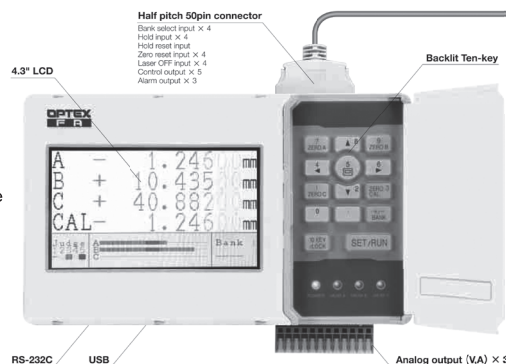




คุณสมบัติ

- CD5-SERIES เป็น Displacement Sensor ที่ประกอบด้วย Controller และ Sensor Head
- Controller มีหน้าจอแสดงผลแบบ LCD 4.3 นิ้ว สามารถใช้ร่วมกับ Sensor Head ได้สูงสุด 3 ตัว
- สามารถสื่อสารกับคอมพิวเตอร์ด้วย USB และ RS-232C

Multiple interface
for PC, PLC, etc.



ข้อมูลทางเทคนิค

Controller

Model	CD5A-N (NPN input / output type)	CD5A-P (PNP input / output type)
Number of heads	Max, 3pcs	
Supply voltage	12 - 24VDC $\pm 10\%$	
Power consumption	350mA / 24VDC (When connected with 3 sensor heads. Including analog current output)	
Temp drift	$\pm 0.01\%$ F.S. / $^{\circ}\text{C}$	
Interface	RS232 / USB	
Analog output	Voltage output $\pm 10\text{V}$ / F.S. (Output impedance 100 Ω) Current output 4 to 20mA / F.S. (Load impedance max.300 Ω)	
Alarm output	NPN open collector Max. 100mA / 24V DC (residual voltage max. 1.8V)	PNP open collector Turns ON when the sensor head fails in measurement.
Control output	NPN open collector Max. 100mA / 24V DC (residual voltage max. 1.8V)	PNP open collector HI / LO setting for each line and hysteresis setting are available.
Bank select input	Turns ON when connected to GND 16 banks selectable	Turns ON when connected to 12 - 24VDC
Hold input	Turns ON when connected to GND Measurement value holding (selectable in the menu)	Turns ON when connected to 12 - 24VDC
Zero reset input	Turns ON when connected to GND Zero reset of Head A measurement value / Head B measurement value / Head C measurement value / Calculation value is available.	Turns ON when connected to 12 - 24VDC
Laser off input	Turns ON when connected to GND Laser shutoff of Head A / Head B / Head C is available.	Turns ON when connected to 12 - 24VDC
Optional features	Calculation setting (calculation formula, measurement value increase / decrease direction, value of K, shift), hold settings, filter setting (filter, cut-off frequency), memory bank setting, RS232 setting, memory copying function, measurement value display digit number setting, display brightness setting, key illumination setting	
Display	4.3" TFT LCD	
Protection category	IP20	
Operating temp / humidity	-10 to +50 $^{\circ}\text{C}$ (No condensation) / 35 to 85% RH	
Storage temp / humidity	-20 to +60 $^{\circ}\text{C}$ (No condensation) / 35 to 85% RH	
Vibration resistance	10 to 55Hz, Double amplitude 1.5mm, 2h for XYZ axes	
Shock resistance	20G(196m/s 2), 3 times for XYZ axes	
Material	Chassis: Polycarbonate, connection terminals : Nylon 66	
Weight	Approx. 550 g (Including connection terminals)	

ข้อมูลทางเทคนิค [ต่อ]

Sensor head

Model		CD5-L25		CD5-LW25	CD5-30		CD5-W30	
Optical method		Specular reflection			Diffuse reflection	Specular mode	Diffuse reflection	Specular mode
Measurement dist.		25mm			30mm	26.1mm	30mm	26.1mm
Measurement range		±1mmn			±5mm	±2.5mm	±5mm	±2.5mm
Light source		Red laser diode						
		Wavelength 650nm / Maximum output 390μW			Wavelength 650nm / Maximum output 1mW		Wavelength 658nm / Maximum output 1mW	
Laser class	IEC/JIS	Class 1			Class 2			
	FDA	CLASSII						
Spot size (*1)		Appx.25×35μm	Appx.100×700μm		Appx.30×100μm		Appx.260×1,000μm	
Light receiving element		Linear image sensor						
Linearity		±0.08%F.S.						
Resolution (*2)		0.02μm			0.2μm	0.1μm	0.2μm	0.1μm
Sampling period (*3)		100 / 200 / 400 / 800 / 1600 / 3200μs Setup to be done through the controller (CD5A series)						
Temperature drift (*4)		±0.01% F.S. / °C	±0.05% F.S. / °C		±0.01% F.S. / °C			
Serial I/F		RS-422 9.6k to 1843.2kbps						
Supply voltage		12 - 24VDC ±10% or from controller (CD5A series)						
Indicator		Laser emission indicator : Green (ON during laser emission)						
		Distance indicator : Orange (Lights around center) Distance indicator : Green (Lights at the far side)						
		Distance indicator : Red (Lights at the near side) Distance indicator : Alternative Red / Green (Out of range)						
Protection category		IP67 (Including connecting part)						
Operating temp / humidity		－10 to +50°C (No condensation) / 35% to 85%RH						
Storage temp / humidity		－20 to +60°C (No condensation) / 35% to 85%RH						
Ambient illuminance		Max. 3,000lx (Surface illuminance, incandescent lamp)						
Vibration resistance		10 to 55Hz Double amplitude 1.5mm 2 h per XYZ axes						
Shock resistance		50G (500m/S²) X,Y,Z 3times						
Cable extension		Up to 50 m using an optional extension cable (unbundled)						
Material		Sensor head housing : Diecast aluminum cover of emitting / receiving part : Glass						
Weight		Appx. 250 g (Including cable)						

Model		CD5-85		CD5-W85		CD5-150	CD5-W150
Optical method		Diffuse reflection	Specular mode	Diffuse reflection	Specular mode	Diffuse reflection	
Measurement dist.		85mm	82.3mm	85mm	82.3mm	150mm	
Measurement range		±20mm	±10mm	±20mm	±10mm	±40mm	
Light source		Red Laser Diode					
		Wavelength 650nm / Maximum output 1mW		Wavelength 658nm / Maximum output 1mW		Wavelength 650nm / Maximum output 1mW	Wavelength 658nm / Maximum output 1mW
Laser class	IEC/JIS	Class 2					
	FDA	CLASSII					
Spot size (*1) (μm)		Appx.70×29		Appx.260×1200		Appx.180	Appx.330×1,600
Light receiving element		Linear image sensor					
Linearity		±0.05% F.S.	±0.08% F.S.	±0.05% F.S.	±0.08% F.S.	±0.05% F.S.	
Resolution (*2)		1μm	0.5μm	1μm	0.5μm	2μm	
Sampling period (*3)		100 / 200 / 400 / 800 / 1600 / 3200μs Setup to be done through the controller (CD5A series)					
Temperature drift (*4)		±0.01% F.S. / °C					
Serial I/F		RS-422 9.6k to 843.2kbps					
Supply voltage		12 - 24VDC ±10% or from controller (CD5A series)					
Indicator		Laser emission indicator : Green (ON during laser emission)					
		Distance indicator : Orange (Lights around center) Distance indicator : Green (Lights at the far side)					
		Distance indicator : Red (Lights at the near side) Distance indicator : Alternative Red / Green(Out of range)					
Protection category		IP67 (Including connecting part)					
Operating temp / humidity		－10 to +50°C (No condensation) / 35% to 85%RH					
Storage temp / humidity		－20 to +60°C (No condensation) / 35% to 85%RH					
Ambient illuminance		Max. 3,000lx (Surface illuminance, Incandescent lamp)					
Vibration resistance		10 to 55Hz Double amplitude 1.5mm 2 h per XYZ axes					
Shock resistance		50G (500m/s ²) X,Y,Z 3times					
Cable extension		Up to 50 m using an optional extension cable (unbundled)					
Material		Sensor head housing : Diecast aluminum cover of emitting / receiving part : Glass					
Weight		Appx. 250 g (Including cable)					

ข้อมูลทางเทคนิค [ต่อ]

Sensor head

Model	CD5-W350	CD5-W500	CD5-W2000
Optical method	Diffuse reflection		
Measurement dist.	350mm	500mm	2000mm
Measurement range	±100mm	±200mm	±500mm
Light source	Red Laser Diode Wavelength 658nm / Maximum output 1mW		
Laser class	IEC/JIS	Class 2	
	FDA	CLASS II	
Spot size (*1) (μm)	Appx.700×2,400	Appx.1,000×3,700	Appx.2,100×7,800
Light receiving element	Linear image sensor		
Linearity	±0.08% F.S.	±0.08% F.S.	±0.1% F.S.
Resolution (*2)	5μm	10μm	30μm
Sampling period (*3)	100 / 200 / 400 / 800 / 1600 / 3200μs Setup to be done through the controller (CD5A series)		
Temperature drift (*4)	±0.01% F.S. / °C		±0.05% F.S. / °C
Serial I/F	RS-422 9.6k to 843.2kbps		
Supply voltage	12 - 24VDC ±10% or from controller (CD5A series)		
Indicator	Laser emission indicator : Green (ON during laser emission) Distance indicator : Orange (Lights around center) Distance indicator : Green (Lights at the far side) Distance indicator : Red (Lights at the near side) Distance indicator : Alternative Red / Green (Out of range)		
Protection category	IP67 (Including connecting part)		
Operating temp / humidity	-10 to +50°C (No condensation) / 35% to 85%RH		
Storage temp / humidity	-20 to +60°C (No condensation) / 35% to 85%RH		
Ambient illuminance	Max. 3,000lx (Surface illuminance, Incandescent lamp)		
Vibration resistance	10 to 55Hz Double amplitude 1.5mm 2 h per XYZ axes		
Shock resistance	50G (500m/s ²) X,Y,Z 3times		
Cable extension	Up to 50 m using an optional extension cable (unbundled)		
Material	Sensor head housing : Diecast aluminum cover of emitting / receiving part : Glass		
Weight	Appx. 250 g (Including cable)		Appx. 450 g (Including cable)

〈Measurement condition〉

Unless otherwise designated, measurement condition is as follows. Using special controller / operating temperature, 23°C (ordinary temperature) / supply voltage, 24 V DC / sampling period : 100μs (CD5-W350 / -W500 / -W2000 : 800μs) 256 times in average / center / standard testing object (specular reflection: evaporated aluminum mirror, diffuse reflection: white ceramic) / digital measured value.

*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 4096 times in average. Other conditions are same as the above condition.

*3 Default setting of sampling period is as follows.

CD5-□□25~□150 : 100μs

CD5-W350~W2000 : 800μs

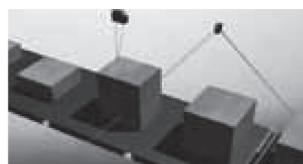
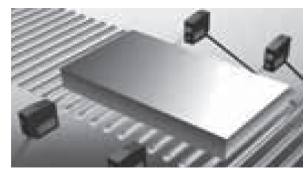
*4 The typical value in the above condition.

Application



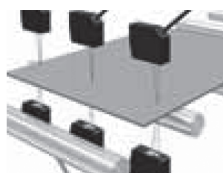
Specular mode

Measurement range : 26.1 ±2.5mm
Resolution : 0.1 μm
Linearity : ±0.08% F.S.



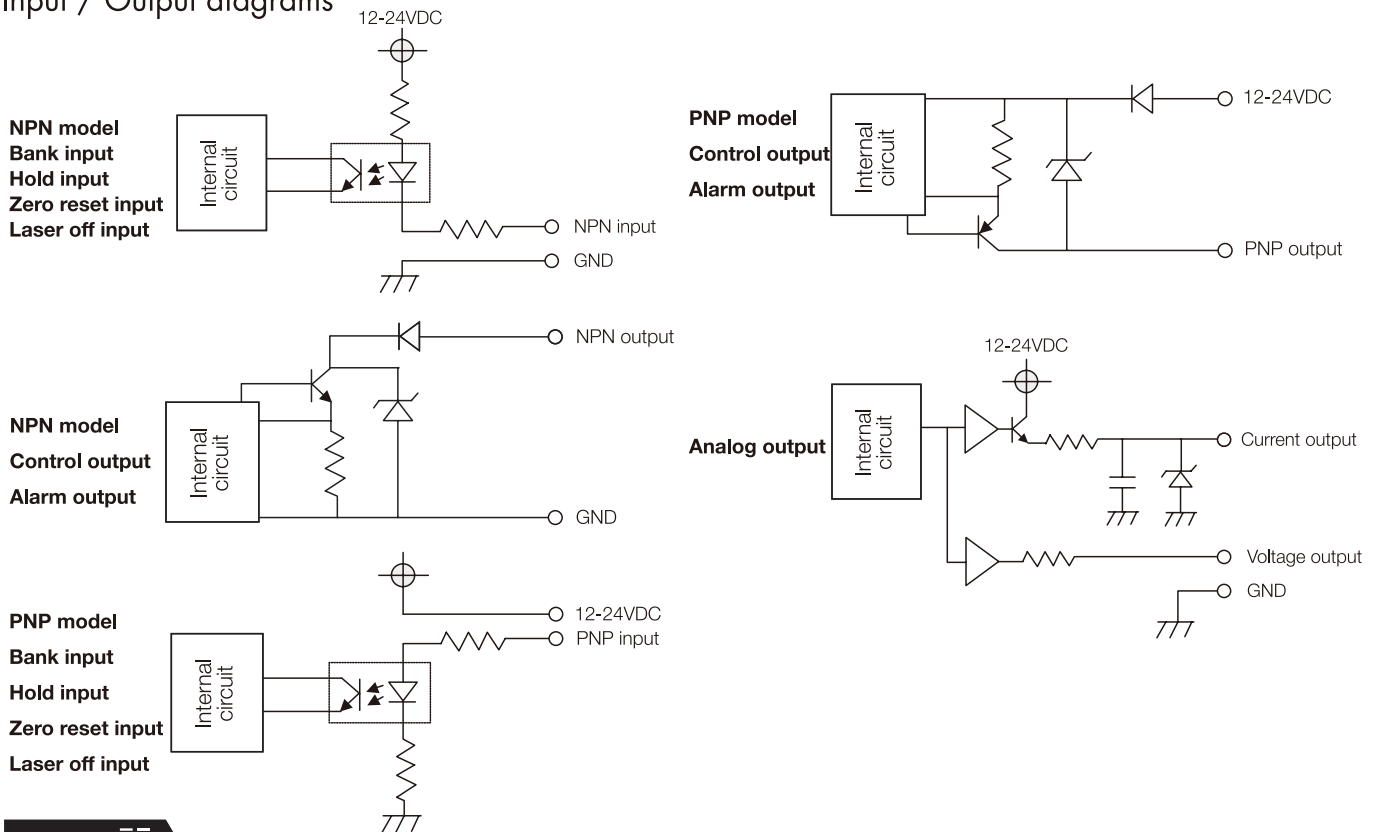
Specular mode

Measurement range : 82.3 ±10mm
Resolution : 0.5 μm
Linearity : ±0.08% F.S.



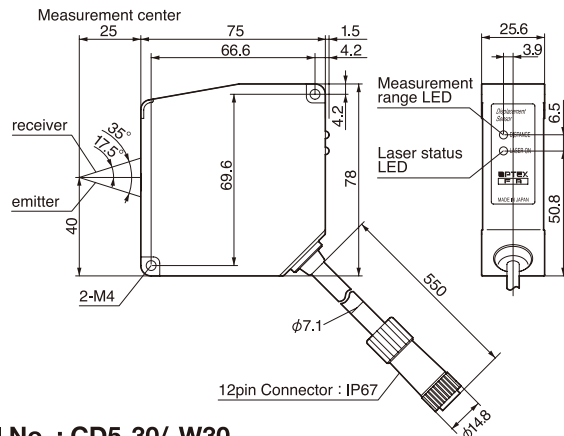
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Input / Output diagrams

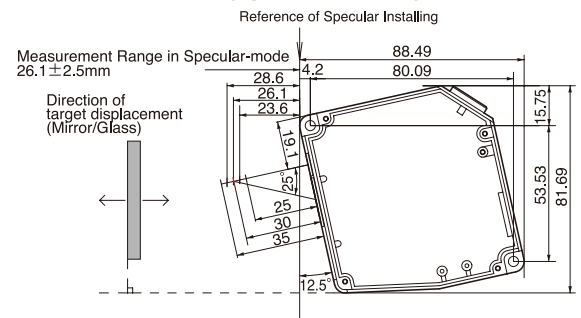


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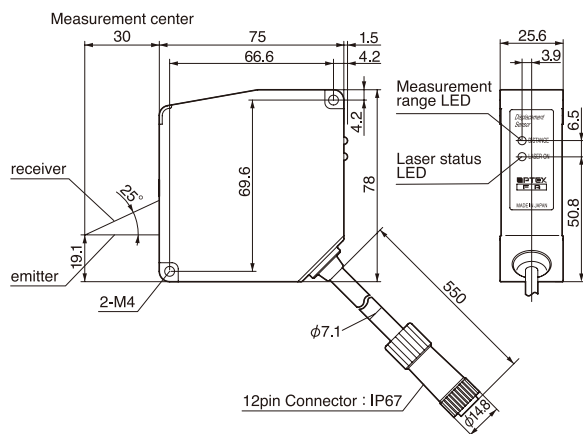
Model No. : CD5-L25/-LW25 (Specular type)



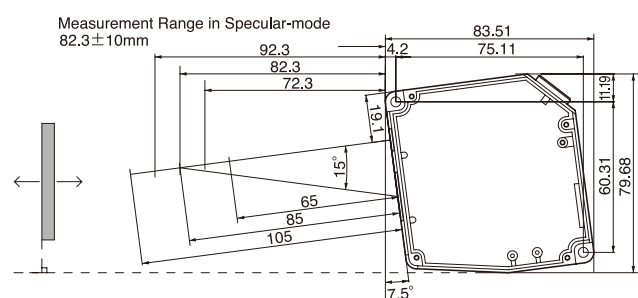
Model No. : CD5-30 / W30 (Specular mode)



Model No. : CD5-30/-W30

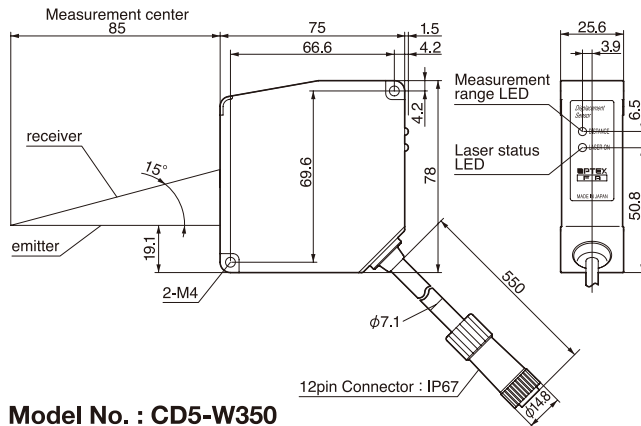


Model No. : CD5-85 / W85 (Specular mode)

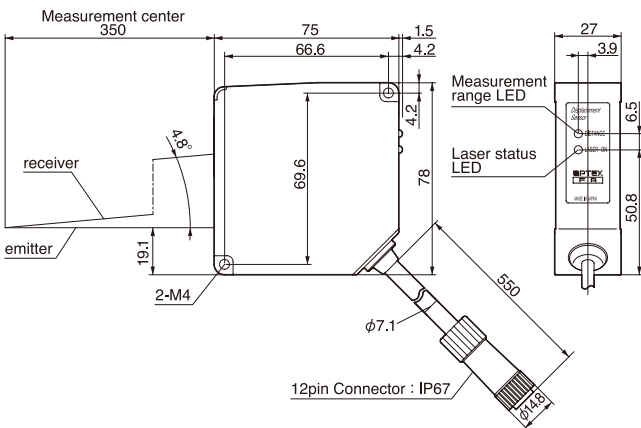


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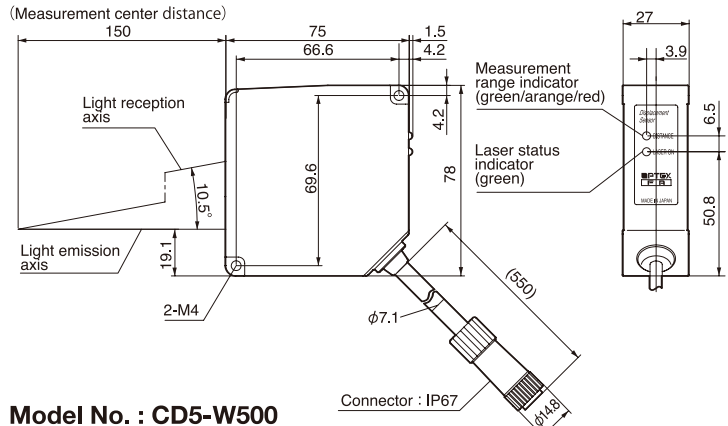
Model No. : CD5-85/-W85



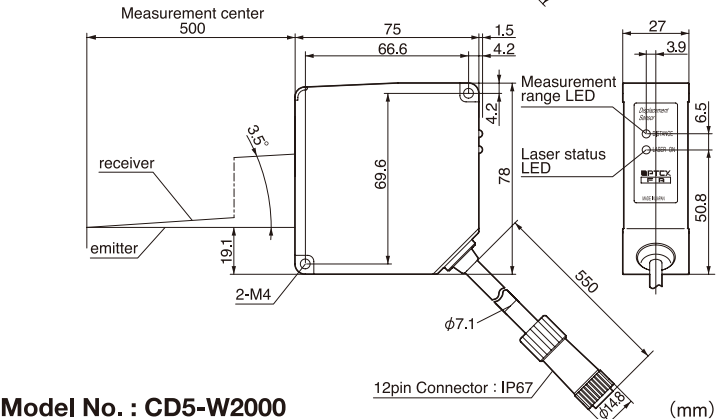
Model No. : CD5-W350



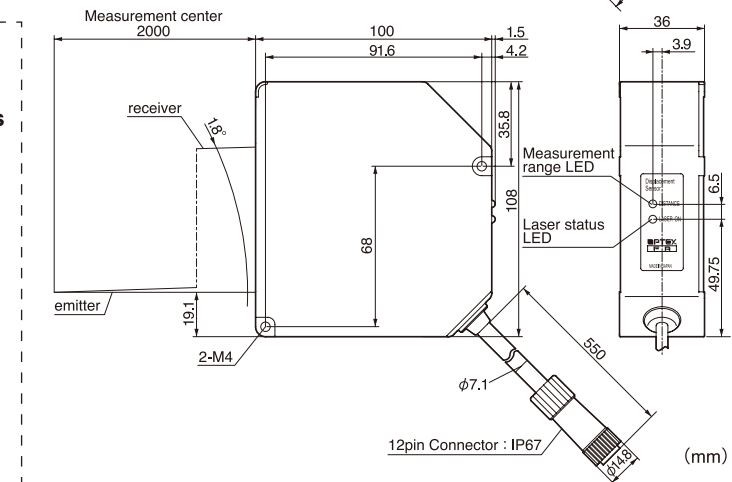
Model No. : CD5-150/CD5-W150



Model No. : CD5-W500

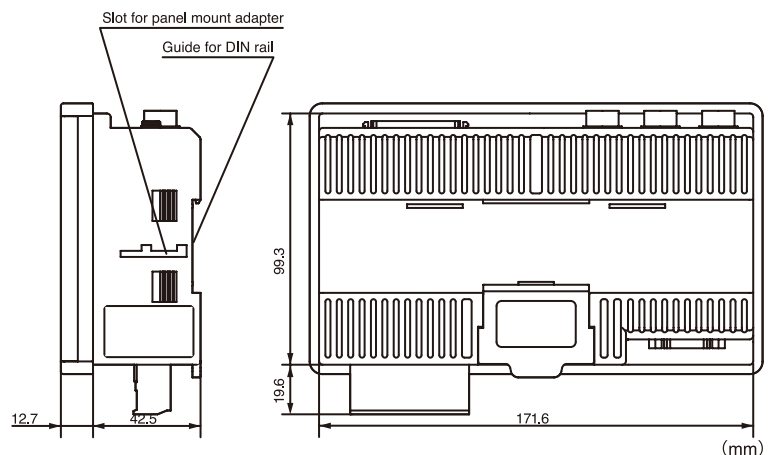
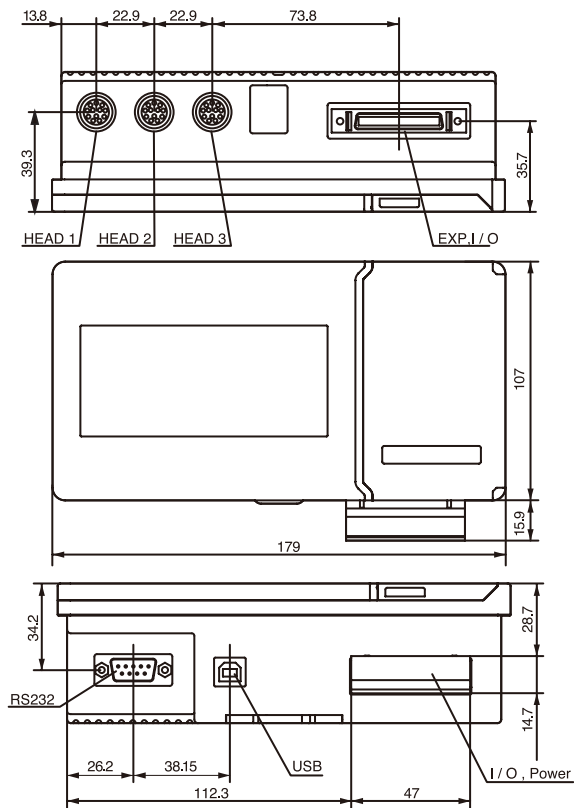


Model No. : CD5-W2000



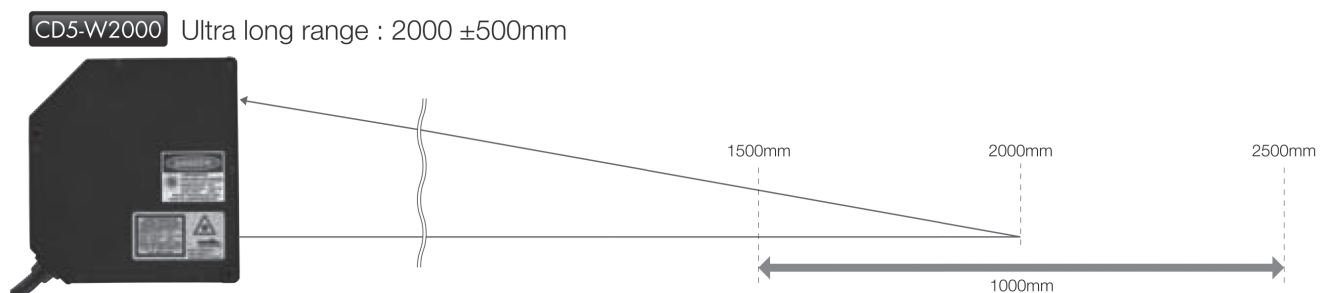
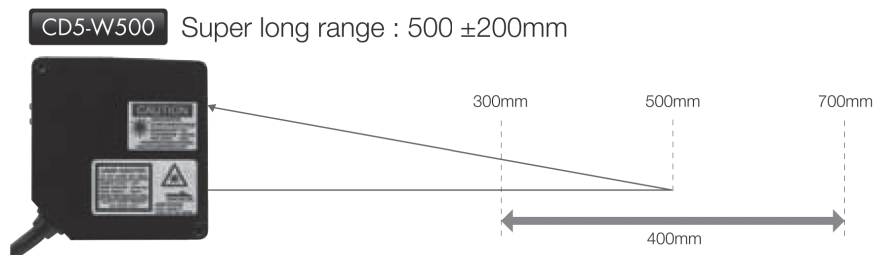
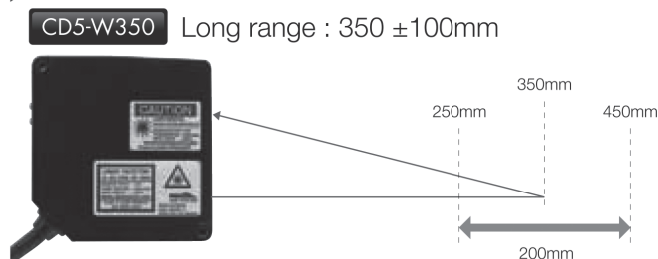
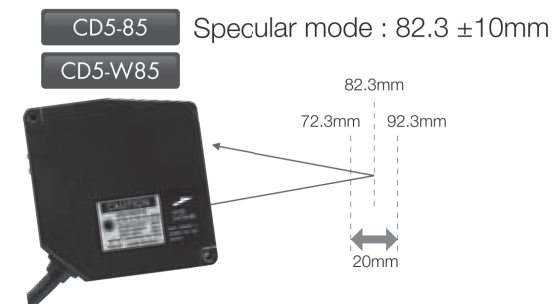
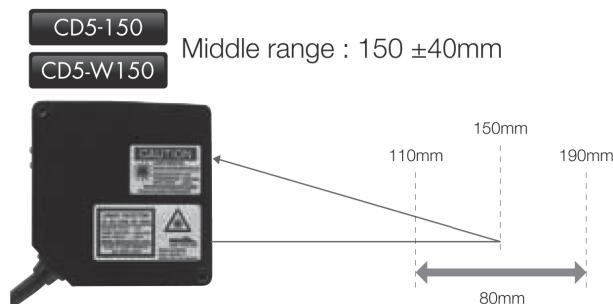
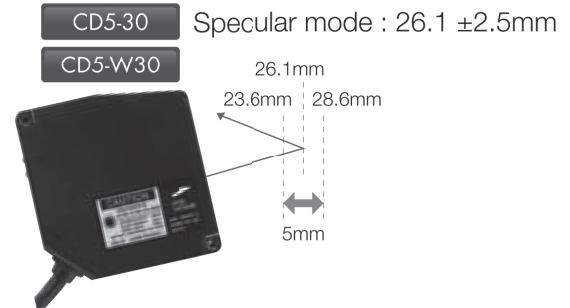
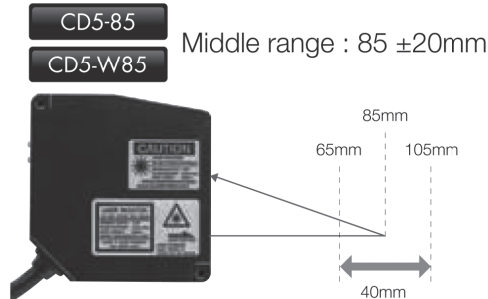
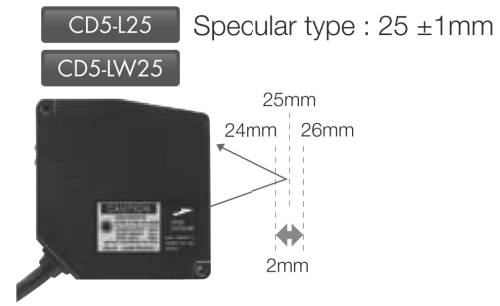
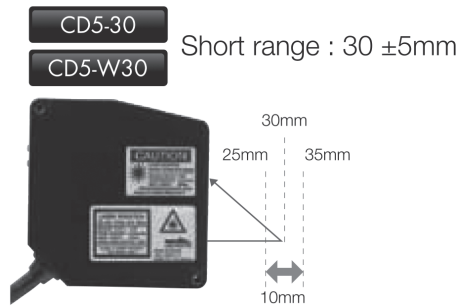
Controller

Model No. : CD5A-N(-P) common in NPN and PNP types



System Part Numbers

Sensorhead



Options

Cable for sensor head and controller

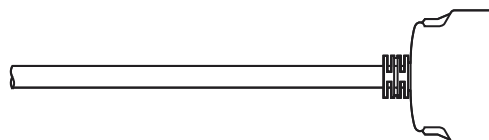
DSL-1212-G02M : 2m
Cable for sensor head to connect controller that can be connected in serial up to 50m

DSL-1212-G05M : 5m
Cable for sensor head to connect controller that can be connected in serial up to 50m



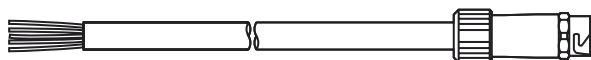
I/O Connector cable

IO-EXP-AOD5 : 3m
IEEE1284 half pitch 50pin

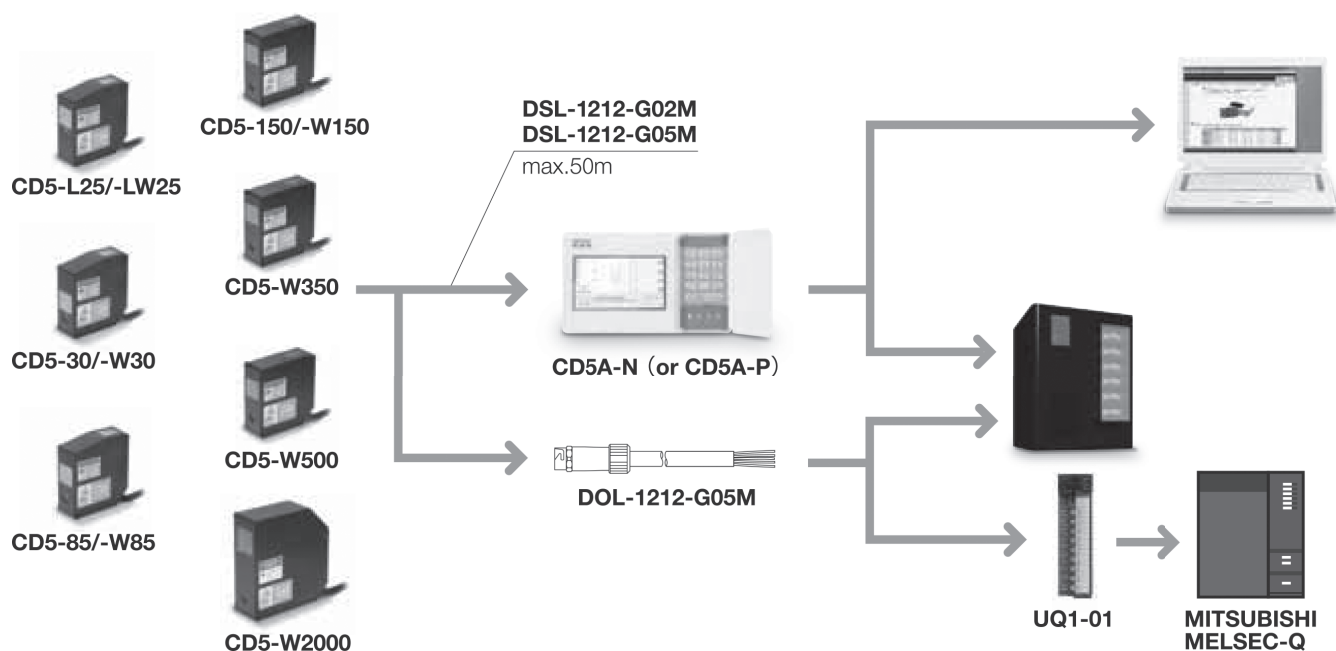


Cable for sensor head

DOL-1212-G05M : 5m
Cable for sensor head when use without controller



System configuration example



Controller



Model No. : CD5A-N (NPN), CD5A-P (PNP)

Type : CD5 controller

Description : Controller unit for CD5 system with 4.3" TFT LCD and Backlit Ten-key

Interface : Analog output NPN input/output, RS-232C, USB