

Sensing Guide

Sensing
Guide

Smart
Sensors

Displacement
Sensors

Other
Information

Displacement Sensor

Sensor for measuring/determining distance/height (Select either Laser, Proximity, Contact, or LED Sensor).




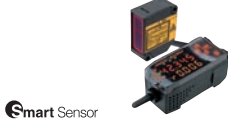
Profile Measurement Sensor

Sensor for measuring profile.









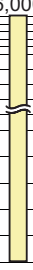



Dimension Measuring Sensor

Sensor for measuring/determining external diameter, width, and thickness.





Displacement Sensor

Classification		Laser Model					
							
Features		Enables measurement of all types of materials.					
		Advanced Type • High precision • Ultra long range		Standard Type • Compact head • Wide beam/spot beam		Compact size comparable to Photoelectric Sensors	
Model		ZS-HL		ZS-L		ZX-L-N	
Appearance							
Sensing Object	Solid	<input type="radio"/>		<input type="radio"/>		<input type="radio"/>	
	Transparent Body	<input type="radio"/>		<input type="radio"/>		<input type="radio"/>	
	Glossy	<input type="radio"/>		<input type="radio"/>		<input type="radio"/>	
	Liquid	<input type="radio"/>		<input type="radio"/>		<input type="radio"/>	
Measuring Range (mm)		Diffuse Reflective	Regular Reflective	Diffuse Reflective	Regular Reflective	Diffuse Reflective	Regular Reflective
		1000		270		400	
	100						
	90						
	80						
	70						
	60						
	50						
	40						
	30						
20							
10							
	Min.	±5 mm	±0.5 mm	±5 mm	±1 mm	±10 mm	±2 mm
	Max.	±500 mm	±1 mm	±135 mm	±2.5 mm	±200 mm	
Measuring Center Distance	Min.	50 mm	10 mm	50 mm	20 mm	40 mm	30 mm
	Max.	1,500 mm	20 mm	350 mm	40 mm	300 mm	
Resolution	Min.	0.1 μm	0.001 μm	0.8 μm	0.001 μm	2 μm	0.25 μm
	Max.	500 μm	0.15 μm	20 μm	0.4 μm	300 μm	
Linearity	Min.	±0.07% F.S.	±0.05% F.S.	±0.1% F.S.	±0.1% F.S.	±0.2% F.S.	±0.2% F.S.
	Max.	±0.2% F.S.	±0.1% F.S.	±0.25% F.S.		±2% F.S.	
Measurement Cycle *		110 μs	110 μs	110 μs	110 μs	150 μs	150 μs
Page		394		412		426	

* The measurement cycle indicated is the maximum performance. For details, refer to the respective pages.

Classification		Proximity Model	Contact Model	LED Model	Ultrasonic Model
					
Features		Highly precise measurement of magnetic metals	Enables highly precise and stable measurement that cannot be realized using Non-contact Sensors • Small diameter of 6 mm dia. • Long range head of 10 mm	Handy Displacement Sensor with Built-in Amplifier Resolution of 10 μm	Enables measurement of transparent bodies • Long distance • Wide range
Model		ZX-E	ZX-T	Z4W-V	E4PA-N
Appearance					
Sensing Object	Solid	<input type="radio"/> (Magnetic Metal)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Transparent Body		<input type="radio"/>		<input type="radio"/>
	Glossy		<input type="radio"/>		<input type="radio"/>
	Liquid				<input type="radio"/>
Measuring Range (mm)	100				
	90				
	80				
	70				
	60				
	50				
	40				
	30				
	20				
	10				
Min.	0 mm	1 mm	±4 mm	50 mm	
Max.	7 mm	10 mm		6,000 mm	
Measuring Center Distance	Min.	---	---	25 mm	---
	Max.				
Resolution	Min.	0.25 μm	0.1 μm	10 μm	---
	Max.	2.8 μm	0.4 μm		
Linearity	Min.	±0.5% F.S.	±0.04% F.S.	±3% F.S.	±1% F.S.
	Max.	±1.0% F.S.	±0.1% F.S.		
Measurement Cycle *		150 μs	—	Response 5 ms	Response 63 to 850 ms
Page		446	458	500	508

* The measurement cycle indicated is the maximum performance. For details, refer to the respective pages.

		Profile Measurement Sensor		Dimension Measuring Sensor	
Classification		Laser Model 		Laser Model 	
Features		Enables simultaneous measurement of height and width		<ul style="list-style-type: none"> • CCD type • Enables glass positioning 	Compact size comparable to Photoelectric Sensors
Model		ZG		ZX-GT	
Appearance					
Sensing Object	Solid	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>
	Transparent Body			<input type="radio"/>	
	Glossy	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>
	Liquid	<input type="radio"/>			
Measuring Range (mm)		Diffuse Reflective	Regular Reflective		
	100				
	90				
	80				
	70				
	60				
	50				
	40				
	30				
	20				
10					
	Min.	±3 mm (Width 8 mm)	±0.5 mm (Width 3 mm)	Width Measurement 28-mm dia.	Width Measurement 1-mm dia.
	Max.	±30 mm (Width 70 mm)			Width Measurement 30 mm
Measuring Center Distance	Min.	50 mm	20 mm	---	---
	Max.	210 mm			
Resolution	Min.	1 μm (vertical direction)	0.2 μm	10 μm	4 μm
	Max.	10 μm (vertical direction)			12 μm
Linearity	Min.	±0.5% F.S.	±0.5% F.S.	±0.1% F.S.	—
	Max.				
Measurement Cycle *		5 ms	5 ms	0.5 ms	150 μs
Page		480		470	426

* The measurement cycle indicated is the maximum performance. For details, refer to the respective pages.

Smart Sensor

The concept of the Smart Sensor is to make a high level of sensing performance readily available to users.

The different detection systems provide a similar feel of operation, thus allowing users to introduce “Smart” in various scenes.

A wide array of information-based tools is also available, which offers new digital sensing styles to users.

