Unique Plug & Play Concept

ZX LASER SENSORS

for precise measurement

Advanced Industrial Automation

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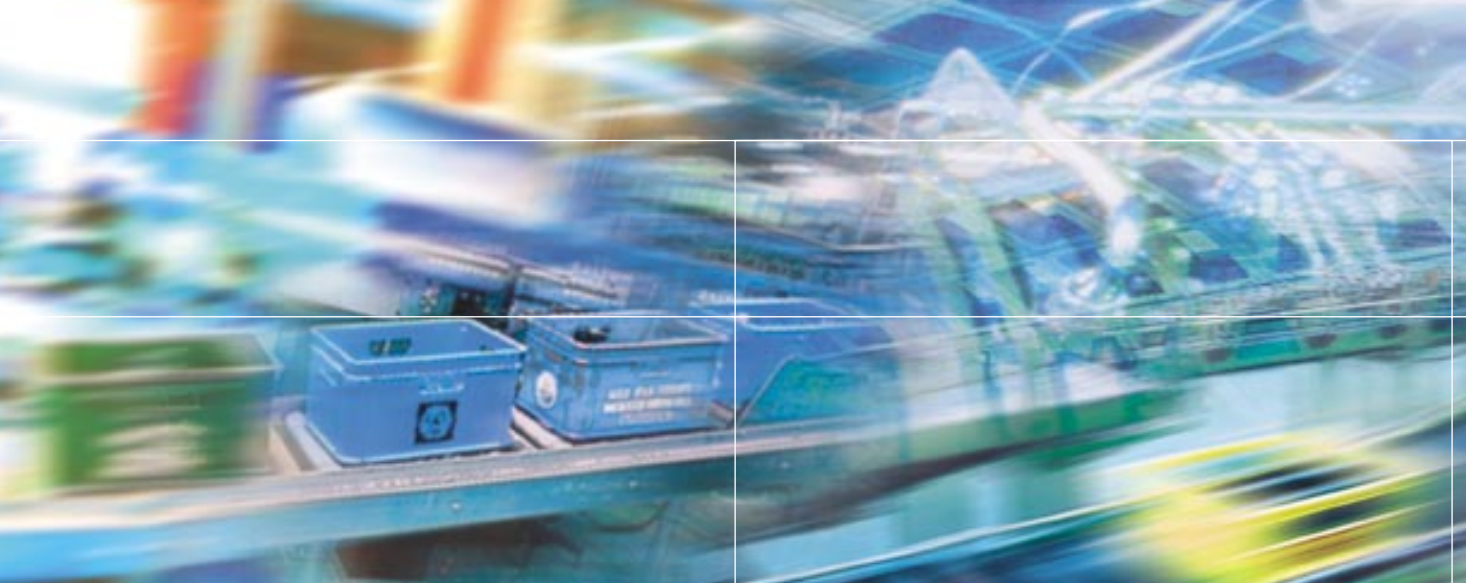
PLUG & PLAY
THE ZX SENSOR

The ZX laser sensor series from Omron, the world's leading sensor manufacturer, sets new standards in precise measurement sensing. Based on a unique Plug & Play concept, the ZX enables a variety of interchangeable sensor heads to be connected to the same amplifier. This concept not only covers all of your measurement requirements, it also takes the costly and time-consuming 'trial-and-error' process out of selecting the best sensor heads for the job!

Unique measurement sensing concept from Omron

The ZX is the world's smallest and lightest laser measurement sensor, which really expands the design possibilities for production systems. Its body size is similar to that of a photoelectric sensor, making it a very attractive solution where space around the location and installation is at a premium. The ZX also features a host of remarkable features and functions, including auto calibration, Auto Thickness Calculation, flexible mounting direction, and flexible quality control, which enables it to detect and log data for more efficient and effective quality control.

Read on, and see why Omron's ZX is ideal for all your measurement sensing needs.



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Designed to suit your every measurement need

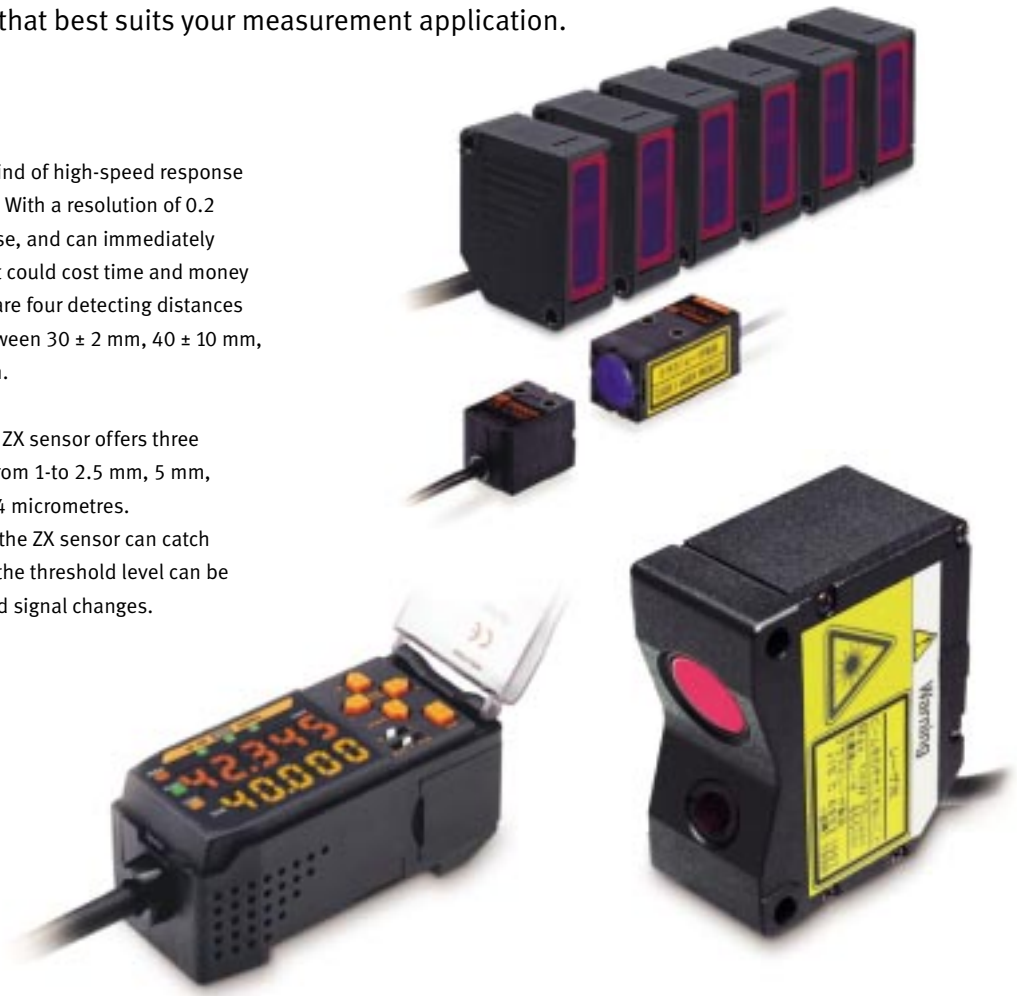
ZX LASER SENSORS

What's really innovative about the ZX sensors is that the same amplifier unit can be attached to any one of the six diffuse reflection laser displacement heads, two mirror reflection-type laser displacement heads or three through-beam types laser displacement heads in the range. You simply select the sensor head that best suits your measurement application.

Very precise

The ZX sensor offers the same kind of high-speed response as that of photoelectric sensors. With a resolution of 0.2 micrometres it is also very precise, and can immediately spot errors or discrepancies that could cost time and money in production processes. There are four detecting distances for reflection types, ranging between 30 ± 2 mm, 40 ± 10 mm, 100 ± 40 mm and 300 ± 200 mm.

With the through-beam type the ZX sensor offers three different measurement widths from 1-to 2.5 mm, 5 mm, and 10 mm with a resolution of 4 micrometres.
In differential calculation mode the ZX sensor can catch minute changes in signals, and the threshold level can be set to catch upward or downward signal changes.



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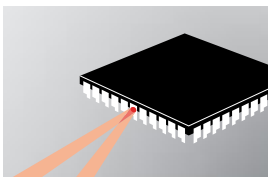
Meeting multiple application needs

Line beam



Spot beam

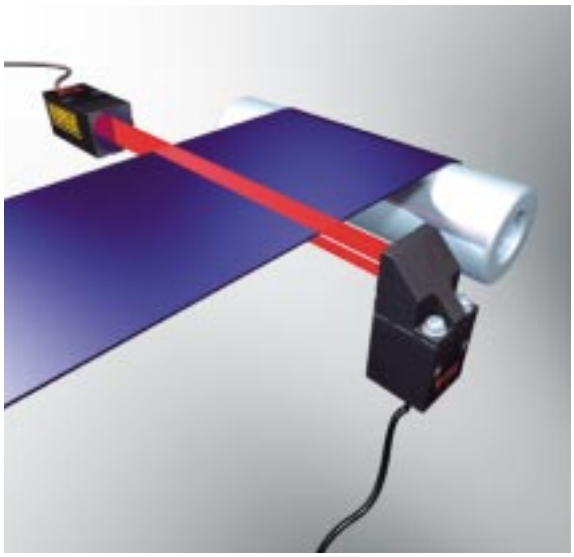
The ultra small Laser-Spot can detect minute items like IC-pins. For rough surfaces like wood or paper the Laser-Beam type will detect stable and without any influence by the surfaces. Ideal function settings are possible by using both the displacement mode and the light-intensity mode to meet multiple application needs.

Instant results

Simply by connecting the amplifier unit to the sensor head and applying power, the distance value and threshold level between the sensor head and object is displayed instantaneously. The built in dual-digital display provides the real distance and can be changed to voltage/ current display or display for intensity of reflective light.

Calculation unit for thickness-measurement

By inserting a 'calculation unit' between two amplifiers the thickness-measurement is easily obtained, and the thickness of measured products will be displayed on the sensor head. This technology (patent pending) eliminates the need for connecting a digital panel meter and the troublesome wiring and setting up associated with it.

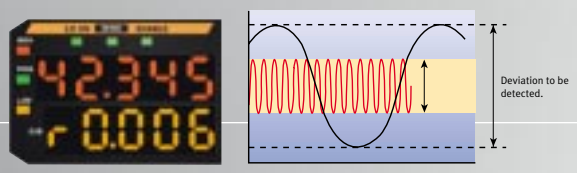


Advanced easy-to-use functions

Advanced easy-to-use functions provided by the ZX sensor include Scaling, Reverse Display, Display-OFF Mode, ECO Mode, Display Digit Change, Measurement (Timer/Hold Functions), Threshold Setting, I/O Setting, Mutual Interference, Function Lock, Initial Reset, Zero Reset, Derivative Function, Sensitivity Selection and Monitor Focus.

Flexible mounting direction

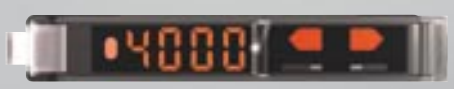
Thanks to the compact size of the sensor head Omron has been able to develop a side-view attachment (sold separately) that enables a variety of mounting possibilities.
This attachment can be used with any of the sensor heads in the ZX sensor range.



Easy-to-see resolution (patent pending).

Equipped with a laser lifetime monitor to warn of laser deterioration.

Easy to read digital display shows measurement results or multifunctional settings.



OMRON E3X-DA-N Fibre Amplifier.

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Easy to set up and operate

The ZX sensor's auto calibration features means that it senses itself before it starts sensing! This eliminates the need for time-consuming calibration routines. In addition, the sensor automatically recognises whether a reflective or through-beam sensor head is connected, and changes to the optimum function setting for fast, accurate operation.

Easy-to-see resolution (patent pending)

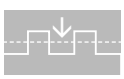
With the resolution display function, a differing resolution based on the object (repeatable high level of accuracy) can be easily verified in real time. This function can verify the resolution by a beam hitting and measuring the object.
By displaying the resolution, it is possible to control the level of flexibility over the threshold set-up, and detection results can be quickly confirmed.

Teaching functions for fast and easy set-up

The ZX sensor features three teaching functions that rival the performance of current photoelectric sensors. These include:

Position teaching
For high-precision positioning applications.

2-point teaching
For detecting ultra-small level differences between two points.



Automatic teaching
For teaching under production conditions without stopping the work-piece.

Easy to maintain

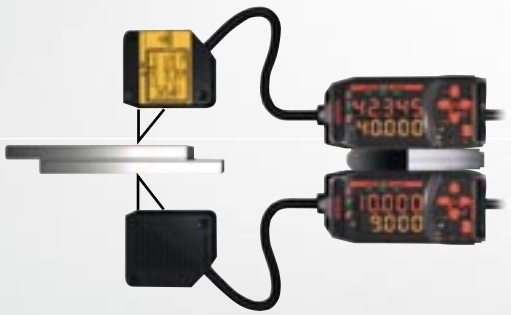
The ZX sensor is easy to set up and practically maintains itself. Here's why:

Self-diagnostics

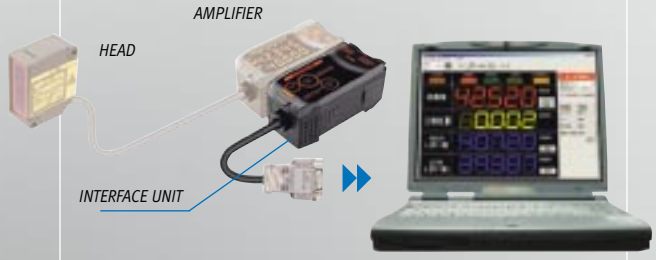
The ZX sensor features a built-in laser lifetime monitor so that as soon as laser diode deterioration is detected, a warning appears on the sub-digital display. This early detection system enables timely, trouble-free replacement.

Easy-to-read display

Setting up and maintaining the ZX sensor is an easy process, thanks to the easy-to-read display on the sensor head.
This display clearly shows detected measurement results, which can be anything from the distance value, threshold level and the difference value between the sensor head and object to Auto Thickness calculation. The dual-digit display can be changed from 'distance' display to 'voltage/current' display or a display for intensity of reflective light. In addition, the resolution based on the real object to be measured can be displayed.



Calculation unit for thickness-measurement between two amplifiers (patent pending).



Smart Monitor software tool enables easy system set-up via PC or Notebook.

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Setting up and monitoring via PC

The ZX sensor can be equipped with the Smart Monitor option, a software sensor set-up tool whose standard RS-232 connection enables it to be used with a Notebook or PC.
This software package is ideal for quickly and easily setting up parameters and values via the menu screen from a floppy or hard disk. Data logging results can be processed using this software for quality control information, leading to smoother production runs.
Additional easy waveform monitoring (such as an oscilloscope) can be used to analyse the signal, and by using the drag & drop tool the threshold setting is easily obtained.

Technical overview of the ZX laser Sensors

Amplifier ZX-LDA

- Power supply 12-24 VDC, PNP or NPN
- Two digital 5-digit displays
- Measurement time: max. 0.15 ms, incrementally adjustable
- 1 to 4096 sensing cycles, incrementally adjustable
- 3 digital outputs: LOW, PASS, HIGH
- 1 analogue output, incrementally adjustable (-5 to 5 Volts or 0 to 20 mA)
- 4 digital inputs: LASER OFF, TIMER, RESET, ZERO
- Switching between intensity, distance or differentiation sensing

Sensor Heads ZX-LD

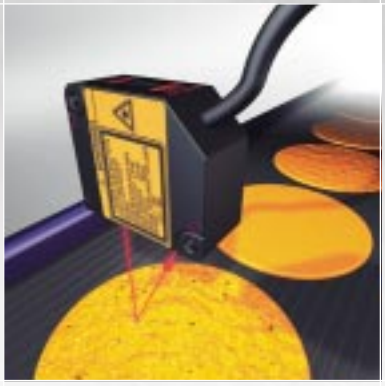
- Measurement range: 40 mm ± 10 mm, 100 mm ± 40 mm, 300 mm ± 200 mm
- Sensing accuracy: up to 0.002 mm (4096 sensing cycle on white ceramics surface)
- Size of sensing head: 33 mm x 39 mm x 17 mm
- Two models: each as focussing spot beam or line beam
- Resolution up to 2 µm

Special Sensor Heads ZX-LD_V

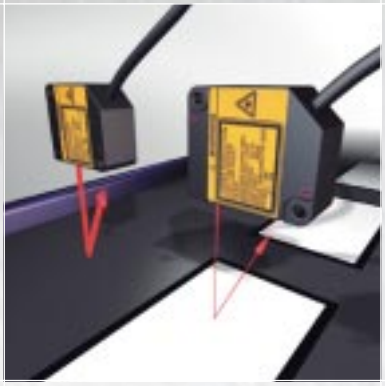
- Measurement range: 30 mm ± 2 mm
- Sensing accuracy: up to 0.25 µm (4096 sensing cycles on polished, white ceramics surface)
- Size of sensing head: 45 mm x 55 mm x 21 mm
- Two models: each as focussing spot beam or line beam

Optical Band Sensors -ZX-LT

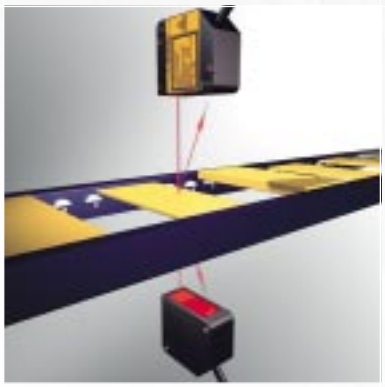
- Measurement width: 1 to 2.5 mm, 5 mm, 10 mm
- Sensing distance:
  1 mm measurement width: up to 500 mm
  2.5 mm measurement width: up to 500 to 2000 mm
  5 and 10 mm measurement width: up to 500 mm
- Resolution: 4 µm



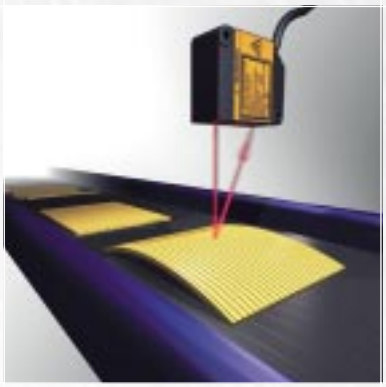
Moving objects
Continuous measurement in the production line combined with self-trigger modus to detect moving objects



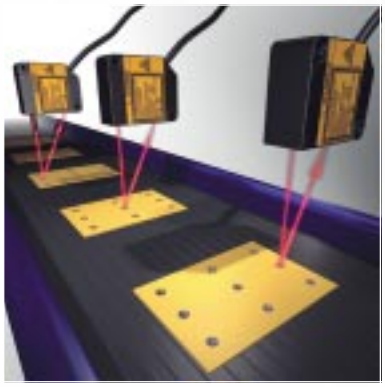
In-line thickness control
Two ZX sensors combined with a calculation unit and the A-B modus detect the thickness of a product



Through-line thickness control
Two ZX sensors combined with a calculation unit and the A+B modus detect the thickness of a product

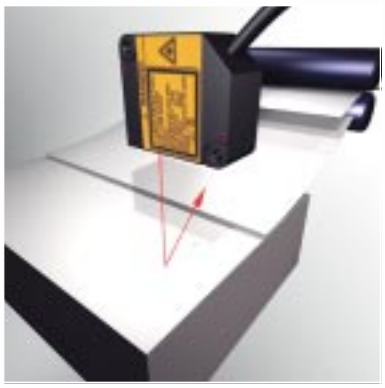


Warp
Measurement of warping level difference with one sensor

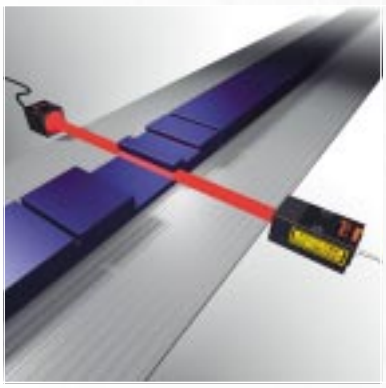


Measuring thickness
while ignoring the holes on the work piece

Rotating objects
Using the P-P Mode the ZX measures the eccentricity of rotating objects



Sheet counting
The ZX can detect a single sheet of paper for up or down sheet counting during the printing process



Through beam
The ZX through-beam type measures height, width or gaps in the production process

Sensor head (reflection type)

Optical method	Beam shape	Sensing distance	Resolution *	Model
Diffuse-reflective	Spot beam 	40 ± 10 mm	2 µm	ZX-LD40
		100 ± 40 mm	16 µm	ZX-LD100
		300 ± 200 mm	300 µm	ZX-LD300
	Line beam 	40 ± 10 mm	2 µm	ZX-LD40L
		100 ± 40 mm	16 µm	ZX-LD100L
		300 ± 200 mm	300 µm	ZX-LD300L
Definite reflection type	Spot beam	30 ± 2 mm	0.25 µm	ZX-LD30V
	Line beam	30 ± 2 mm	0.25 µm	ZX-LD30VL

* At average count of 4,096 times

Parallel Through-beam Sensor

Optical method	Measurement width	Sensing distance	Resolution *	Model
Parallel Through-beam 	1- mm dia.	0 to 2,000 mm	4 µm	ZX-LT001
	5 mm	0 to 500 mm	4 µm	ZX-LT005
	10 mm	0 to 500 mm	4 µm	ZX-LT010

* At average count of 64 times

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