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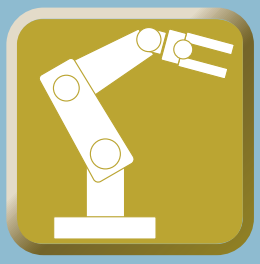

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Semiconductors and Electronic Components

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134	Confirming the Application of Sealing Material	E32-D32/ E39-F3A	
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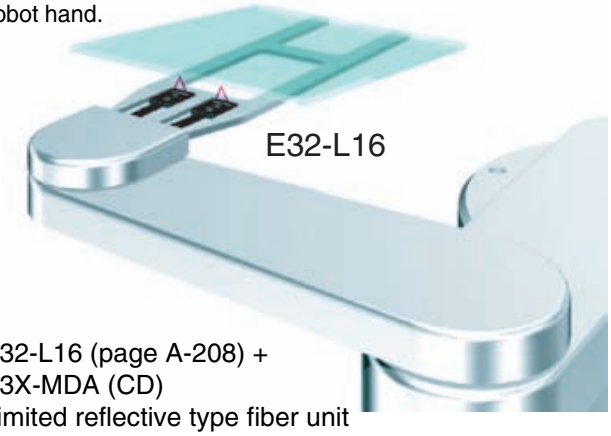
Semiconductors and Electronic Components

1. Detecting the Placement of a Transparent Liquid Crystal Glass with the Limited Reflective Type Fiber units

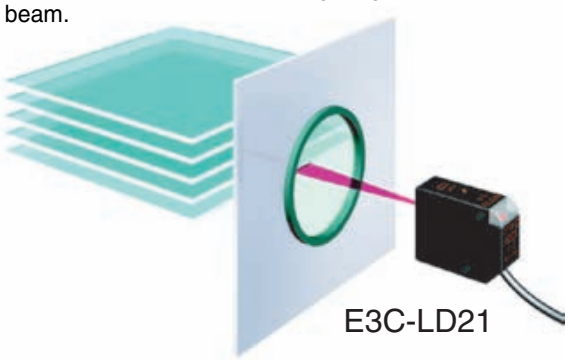
Stable detection of placement is possible only with two fiber units and one amplifier. The fiber units are embedded at the robot hand.



E32-L16 (page A-208) +
E3X-MDA (CD)
Limited reflective type fiber unit

2. Detecting the Liquid Crystal Glass with the Line Beam

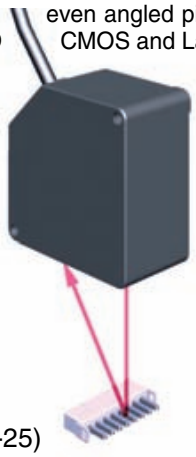
The edge of the liquid crystal glass surfaces are detected from outside of the view port, using long-distance and wide line beam.



E3C-LD21 + E3C-LDA (CD)
Photoelectric Sensors with Separate Digital Amplifiers

3. Measuaring the Co-planarity of Connector Pins

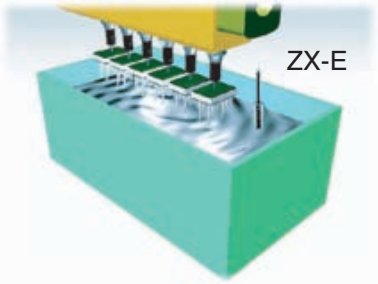
Stable measurement of even angled pins is ensured by the combination of a 2D CMOS and Laser beam.



ZS-L Series (page B-25)
Smart Sensor (2-Dimensions CMOS and Laser Beam)

4. 200 °C Solder Surface Inspection with Linear Proximity Type

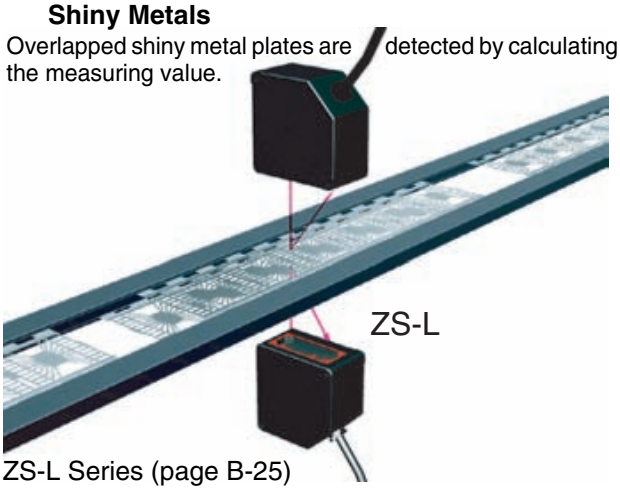
Precise measurement of the surface of solder at the linear proximity which is excellent in environment-proof, if it can inspect for a short distance from the tank upper part.



ZX-E Series (page B-61)
Smart Sensor (Linear Proximity Type)

5. Detecting Overlapped Lead Frames and Other Shiny Metals

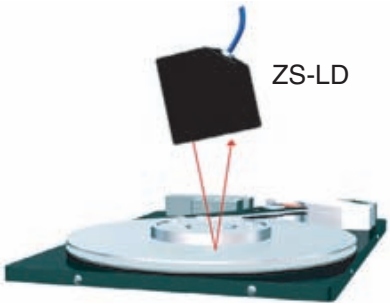
Overlapped shiny metal plates are detected by calculating the measuring value.



ZS-L Series (page B-25)
Smart Sensor (2-Dimensions CMOS and Laser Beam)

6. Deflection Inspection of a Specular Surface

High precision inspection of specular surface, such as an HDD aluminum deposition side, is possible by CMOS laser.



ZS-L Series (page B-25)
Smart Sensor (2-Dimensions CMOS and Laser Beam)

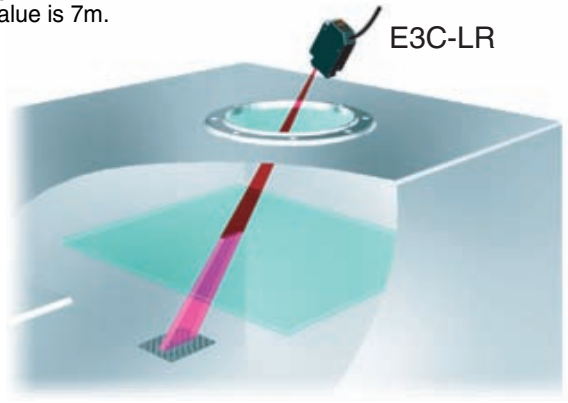
Applications

OMRON

Semiconductors and Electronic Components

7. 7m Long-Range Glass Inspection

Retroreflective long-range glass inspection with spot laser light over a view port.The detection distance of the catalog value is 7m.

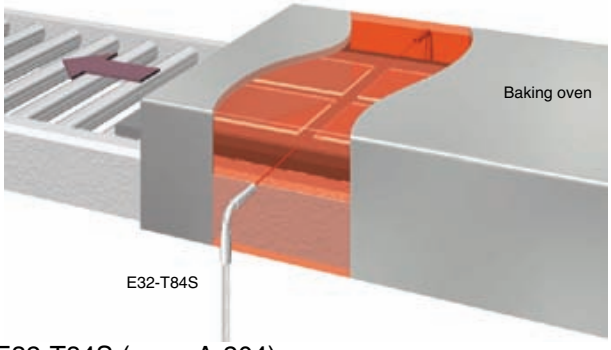


E3C-LR + E3C-LDA (CD)

Photoelectric Sensors with Separate Digital Amplifiers

8. Detecting Glass Substrates in Baking Ovens

An L-shaped side-view sensor requiring little space and providing 200°C heat resistance is used. The detection distance of 1,300 mm (for E3X-DA-N Standard Mode) is more than sufficient to detect even large glass substrates.

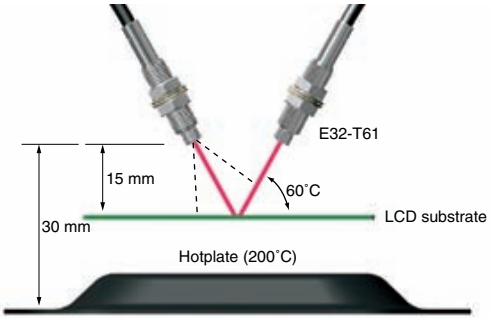


E32-T84S (page A-204)

Heat-resistant, Narrow-beam Fiber Unit

9. Detecting Liquid Crystal Substrates in Ovens

Regular reflective light from the LCD substrates is received with a fiber to detect the presence or absence of the substrates. The large spot ensures stable detection of substrates even if positioning is not completely consistent.

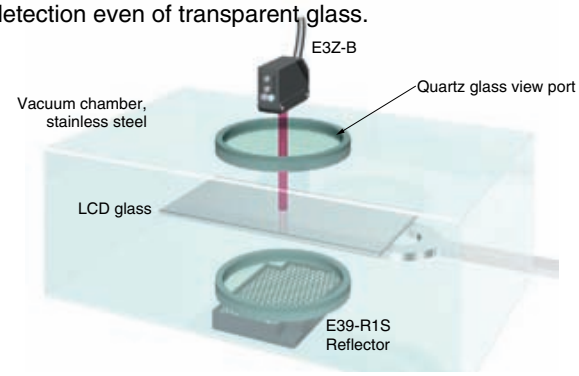


E32-T61 (page A-203)

Heat-resistant Fiber Unit

10. Detecting Glass Substrates in Vacuum Chambers

The E3Z-B is a retroreflective sensor that enables accurate detection even of transparent glass.

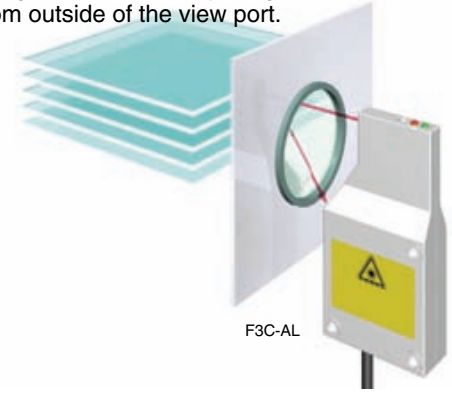


E3Z-B (page A-43)

Photoelectric Sensors for Detecting Transparent Objects

11. Detecting the Edges of Liquid Crystal Glass through a View Port

The edges of the liquid crystal glass substrates are detected from outside of the view port.

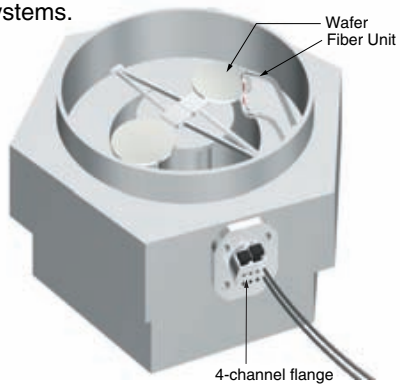


F3C-AL (CD)

Distance-controlled Laser Photoelectric Sensors

12. Detecting Wafers in a Vacuum Conveyance System

The E32-V provides an easy-connecting fiber and easy-to-use 4-channel flange system, making it ideally applicable to vacuum systems.

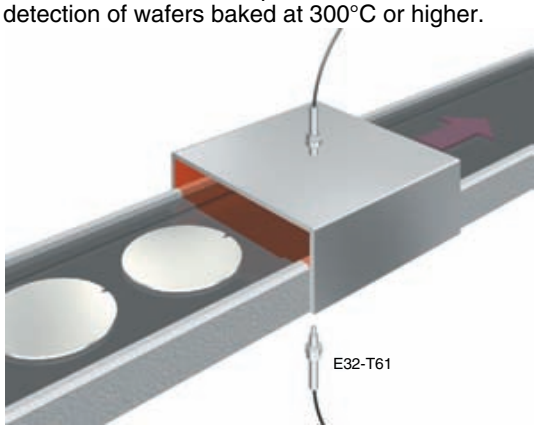


E32-V (CD)

Vacuum Sensors

13. Detecting Wafers under High Temperatures

The E32-T61 features a temperature-resistant fiber for stable detection of wafers baked at 300°C or higher.



E32-T61 (page A-203)
Heat-resistant Fiber Unit

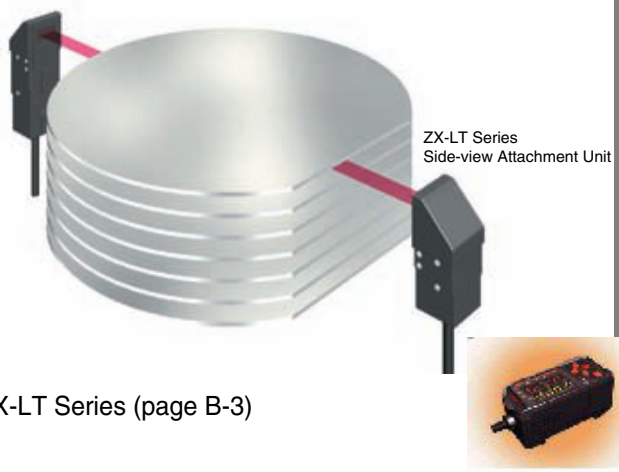
14. Mapping Wafers with a Through-beam Side-view Sensor

The narrow beam permits the detection of single wafers, even of wafers with mirror surfaces.

E32-A03/A04 (page A-211)
Mapping Fiber Units

15. Mapping Wafers with a Through-beam Laser Sensor

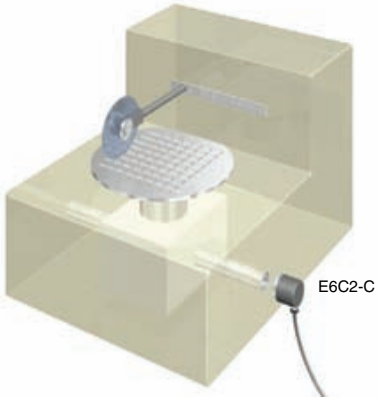
The ZX-LT Series even detects transparent objects and glossy wafers.



ZX-LT Series (page B-3)

16. Positioning for Wafer Cutting Machines

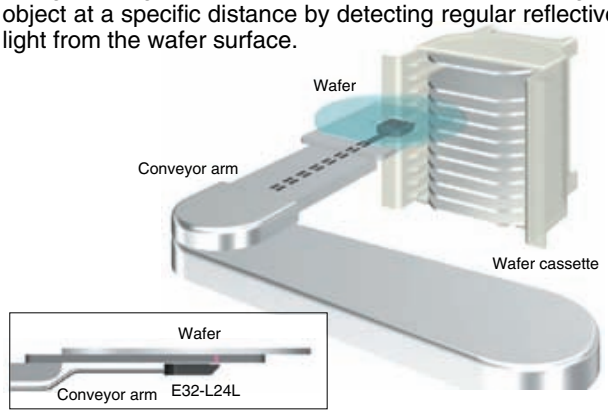
This sturdy rotary encoder enables positioning at a consistent cutting pitch when cutting silicon wafers.



E6C3-C (page E-7)
Incremental Rotary Encoders

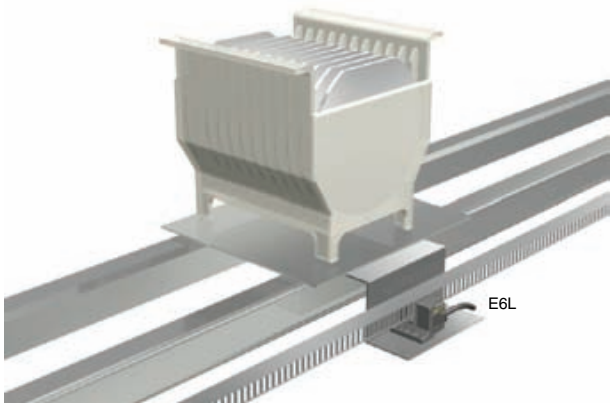
17. Detecting the Bottom Wafer

Using convergent reflective operation enables detecting an object at a specific distance by detecting regular reflective light from the wafer surface.



E32-L24L (page A-209)
Convergent Reflective Fiber Unit

18. Wafer Positioning and High-speed Detection



E6L (CD)
Easy-scale Linear Encoder

Applications

OMRON

Semiconductors and Electronic Components

19. Wafer Cassette Mounting Confirmation

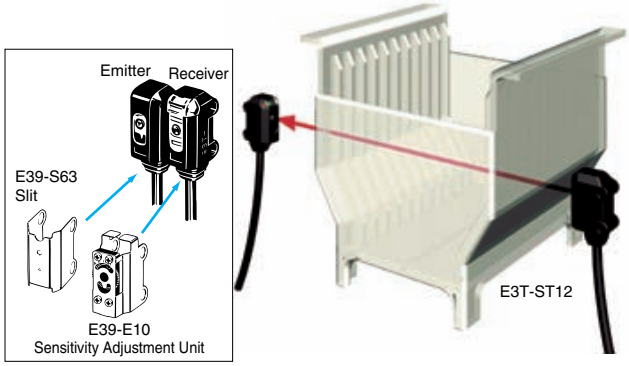
This slim sensor is only 3.5 mm thick to allow installation in small gaps and spaces.

E3T (page A-67)

Subminiature Photoelectric Sensors with a Built-in Amplifier

20. Detecting Wafer Cassette Racks

The installation of a Slit and Adjustment Unit permits a restricted light for stable detection even when there is inconsistency in the cassette resin or individual units.



E3T (page A-67)

Subminiature Photoelectric Sensors with a Built-in Amplifier

21. Positioning Wafer Notches

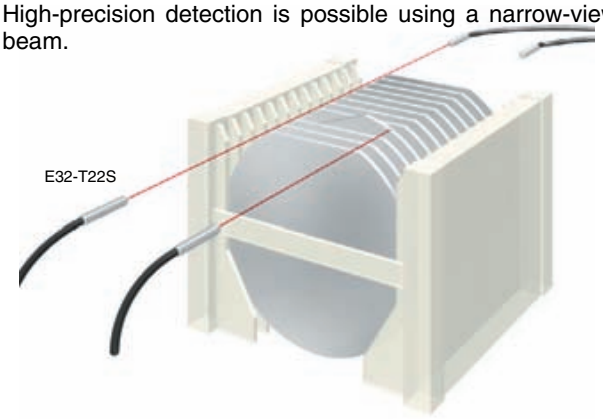
The small spot with a 0.1 mm diameter allows high-precision notch positioning.

E32-T16J (page A-184)

Area-detecting Fiber Unit

22. Checking Orientation Flat Directions with a Fiber Unit

High-precision detection is possible using a narrow-view beam.

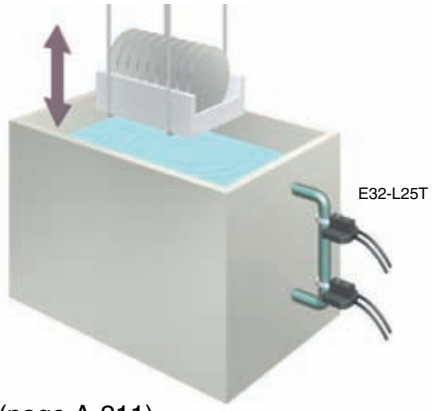


E32-T22S (page A-207)

Narrow-view Fiber Unit

23. Chemical Level Detection with Pipe Mounting

A minimum level difference of 4 mm can be detected in stages to control resist liquid levels.

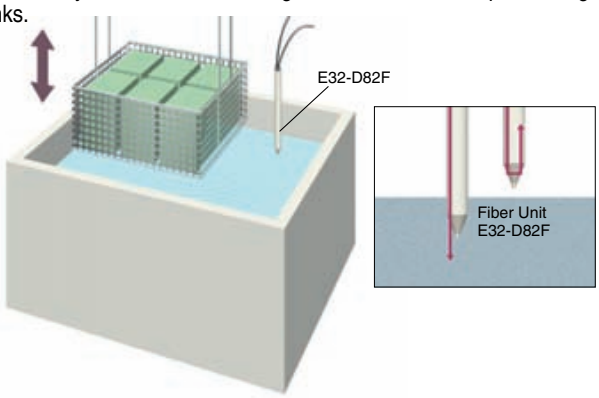


E32-L25T (page A-211)

Fiber Pipe-mounting Liquid Level Sensor

24. Level Detection in Heated Chemicals

The Fiber Unit uses PTFE so that chemical levels can be precisely and directly detected in cleaning tanks or chemical processing tanks.

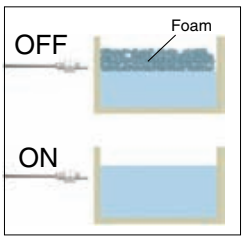


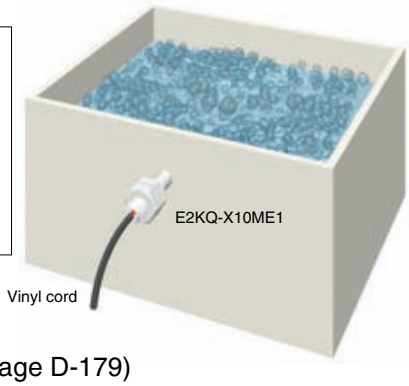
E32-D82F (page A-211)

Contact Liquid Level Sensors

25. Detecting Levels of Corrosive Liquids

Sensitivity adjustment can prevent detection errors previously caused by foam in cleaning tanks containing soap. Application in corrosive liquids is also possible by using a PTFE Sensor.

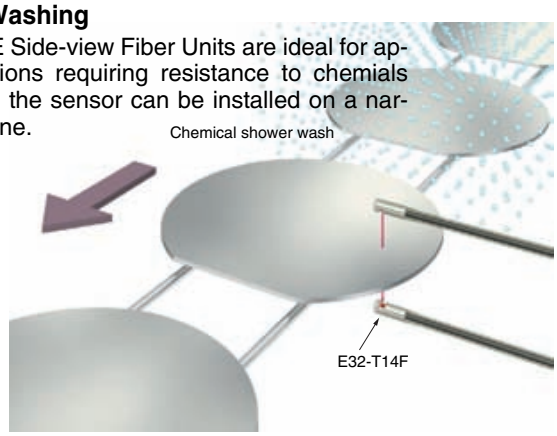




E2KQ-X10ME1 (page D-179)
Chemical-resistant Capacitive Proximity Sensor

26. Detection on Narrow Lines for Chemical Washing

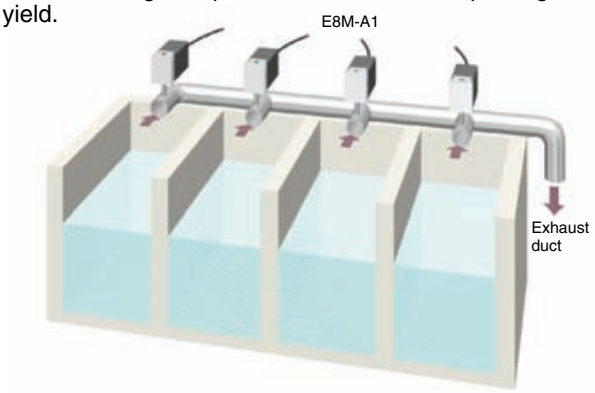
PTFE Side-view Fiber Units are ideal for applications requiring resistance to chemials when the sensor can be installed on a narrow line.



E32-T14F (page A-201)
PTFE Side-view Fiber Unit

27. Controlling Exhaust Pressure for Individual Cleaning Tanks

Sensors detect the exhaust pressure of each cleaning tank, enabling independent control and improving wafer yield.



E8M-A1/K3C-MP8-T1Z (CD)
Minute Pressure Sensors

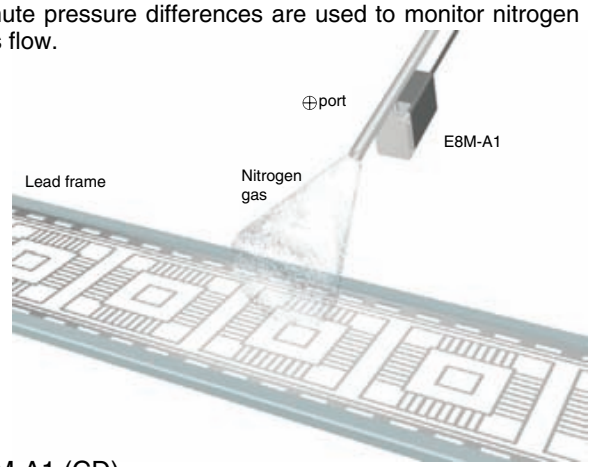
28. Detecting Workpieces by Robot Hand

An allowable bending radius of 4 mm enables the E32-D11/D21 to withstand repeated bending, making it ideally applicable to moving parts subject to frequent bending.

E32-D11/D21 (page A-181)
Moving-piece-mounting Fiber Unit

29. Controlling Nitrogen Gas Pressure

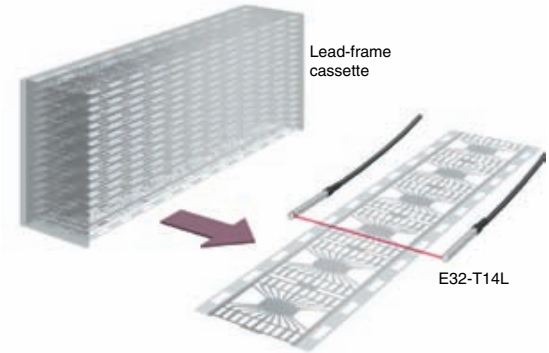
Minute pressure differences are used to monitor nitrogen gas flow.



E8M-A1 (CD)
Minute Pressure Sensors

30. Detecting Lead Frames in Tight Spaces

Side-view configuration allows use in spaces that are too small to install ordinary through-beam sensors. Highly effective, space-saving installation.



E32-T14L (Through-beam) (page A-193) /
E32-D24 (Reflective) (page A-197)
Side-view Fiber Units

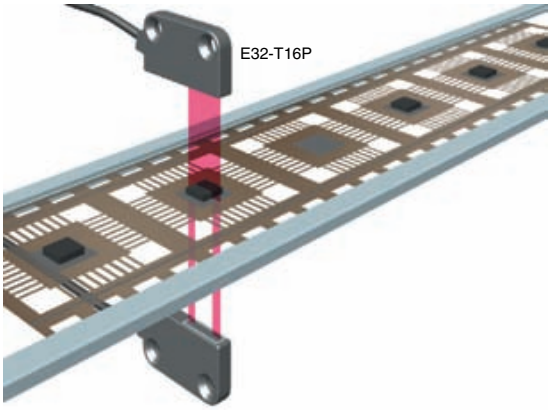
Applications

OMRON

Semiconductors and Electronic Components

31. Detecting Chips on TAB Films

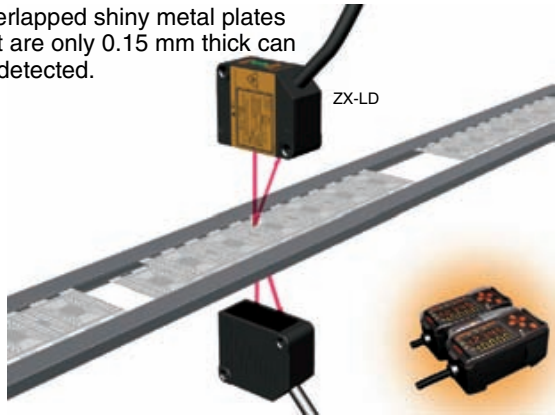
Chips are detected in an area of 11 mm.



E32-T16P (page A-185)
Area-detecting Fiber Unit

32. Detecting Overlapped Lead Frames and Other Shiny Metals

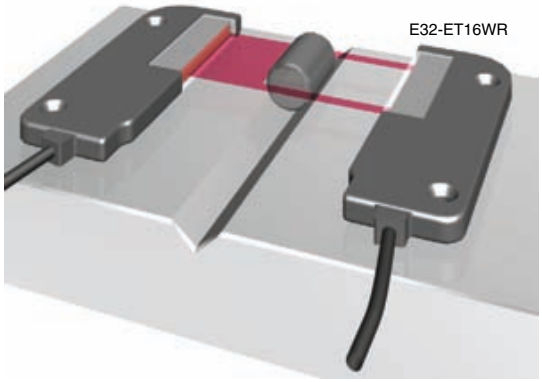
Overlapped shiny metal plates that are only 0.15 mm thick can be detected.



ZX Series (page B-3)
Smart Sensors

33. Distinguishing the Length of IC Resin Tablets

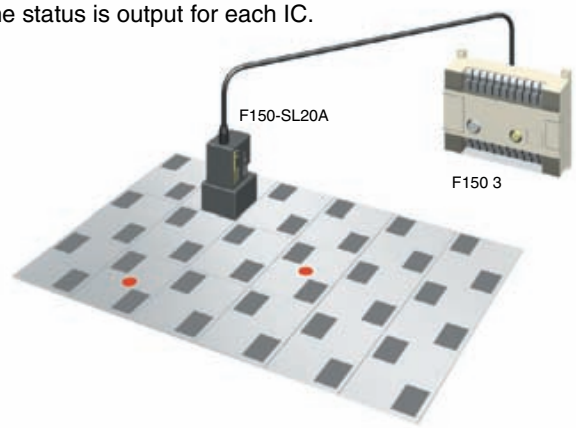
The length of resin tablets for different IC types can be distinguished by the amplifier's monitor output.



E32-ET16WR Area-detecting Fiber Unit (CD)
E3X-DA-21-N Digital Fiber Amplifier with Monitor Output

34. Determining Defective IC Chips by Identifying Bad Marks

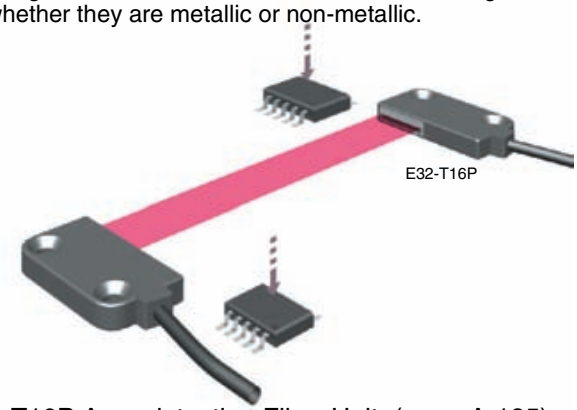
The bad marks applied to ICs on wafer plates are read, and the status is output for each IC.



F150-3 (page C-11)
Vision Sensors

35. Detecting the Passage of Chip Components

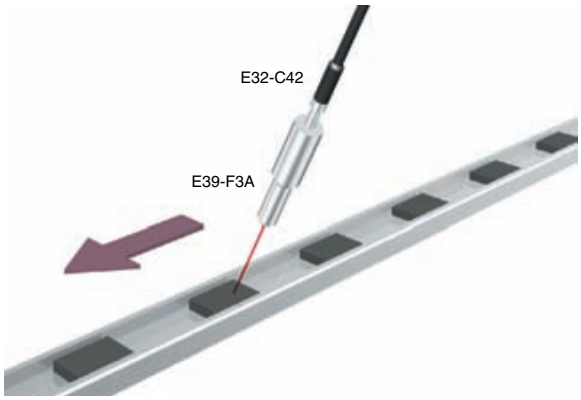
The passing of chip components is detected even if the passing location varies within a width of 11 mm, regardless of whether they are metallic or non-metallic.



E32-T16P Area-detecting Fiber Unit (page A-185)
E3X-DAD Digital Fiber Amplifier with Differential Output

36. Detecting Chip Components

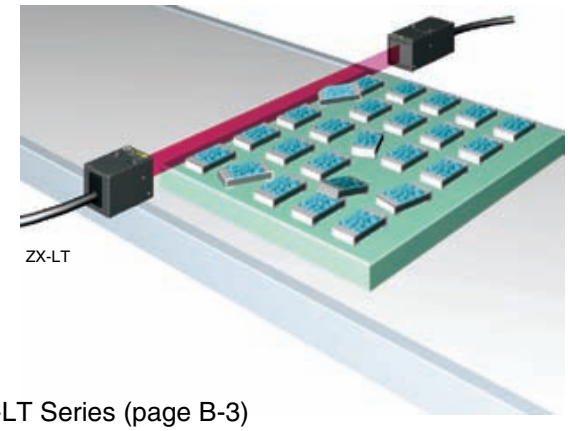
Adding a Lens Unit to a fiber sensor enables the spot to be varied from 0.1 to 0.6 mm in diameter.



E32-C42 Fiber Unit (page A-199)
E39-F3A Lens Unit (page A-245)

37. Detecting the Alignment of Chip Components

Raised or angled chips can be found on trays. Inspection time is shortened by handling an entire tray with a single inspection.

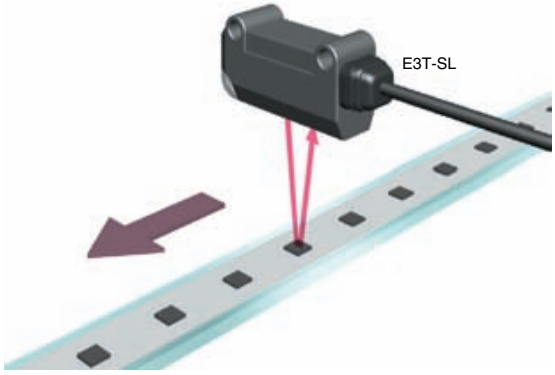


ZX-LT Series (page B-3)

Parallel Beam Linear Sensors with a Separate Amplifier

38. Detecting Chip Components on the Tapes of Taping Machines

The E3T is capable of detecting objects as small as 0.15 mm. Detection remains stable, with minimal effect from backgrounds or surrounding metals.

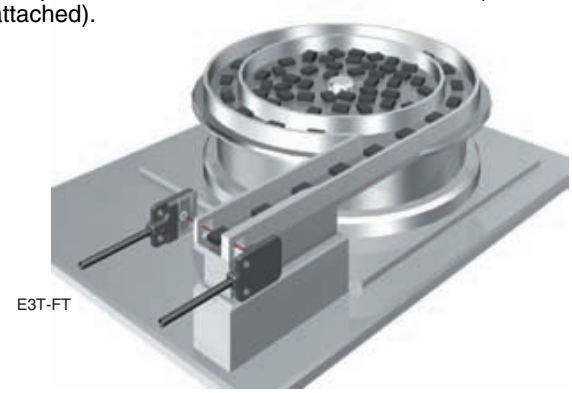


E3T (page A-67)

Subminiature Photoelectric Sensors with a Built-in Amplifier

39. Detecting the Passage or Retention of Components by a Parts Feeder

The use of a visible pinpoint beam permits the detection of workpieces smaller than 0.5 mm in diameter (when slit is attached).

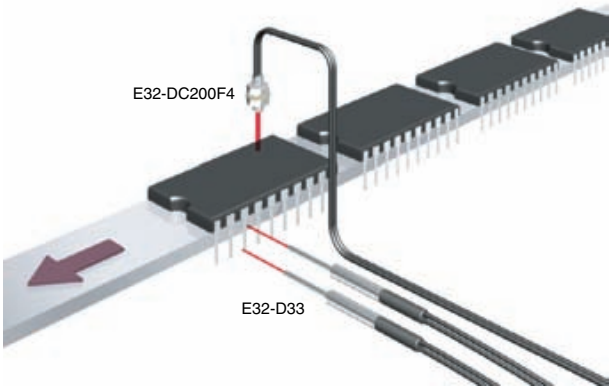


E3T (page A-67)

Subminiature Photoelectric Sensors with a Built-in Amplifier

40. Detecting Bent or Missing IC Pins

Three sensors are used to simultaneously detect bent or missing pins.

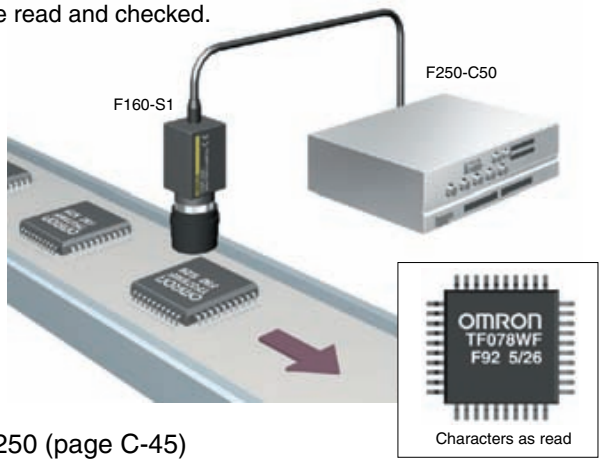


E32-D33 (page A-189)

Thin Head Fiber Unit

41. Verifying IC Models, Lot Numbers, and Printed Characters

IC model numbers, lot numbers, and other information can be read and checked.

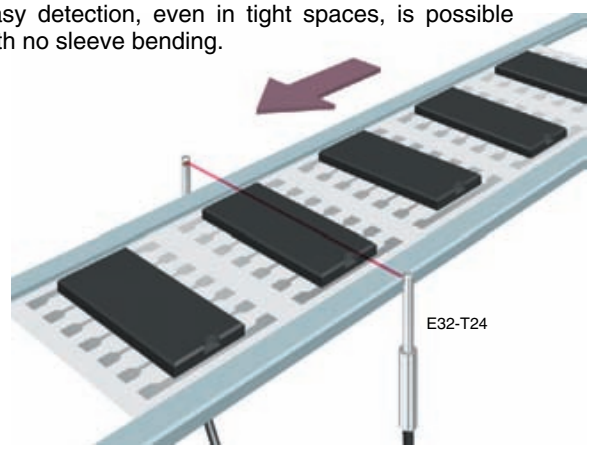


F250 (page C-45)

High-performance Vision Sensor

42. Detecting Rises in Lead Frames

Easy detection, even in tight spaces, is possible with no sleeve bending.



E32-T24 (page A-194)

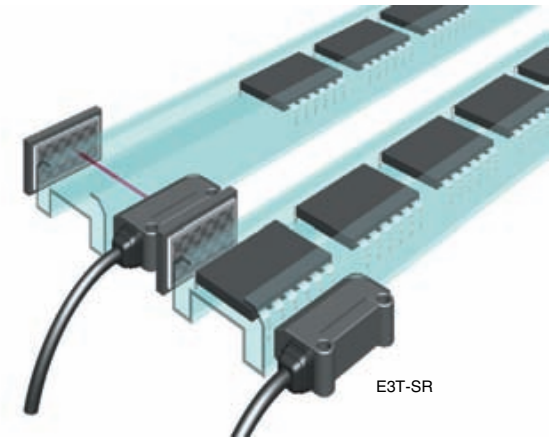
Thin Side-view Fiber Unit

Applications

OMRON

Semiconductors and Electronic Components

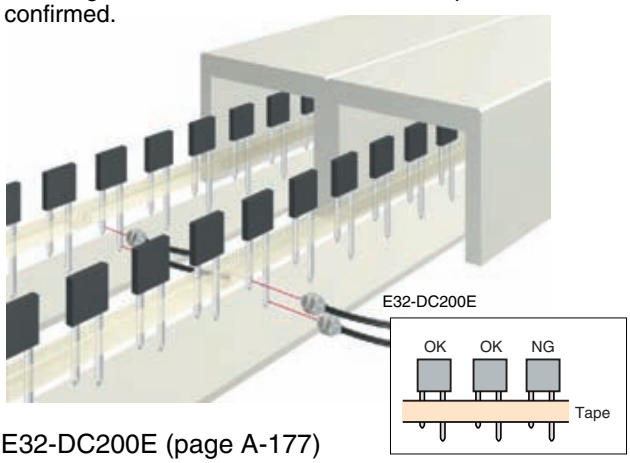
43. Detecting Full IC Sticks



E3T (page A-67)
Subminiature Photoelectric Sensors with a Built-in Amplifier

44. Distinguishing Lead Wire Defects in Components

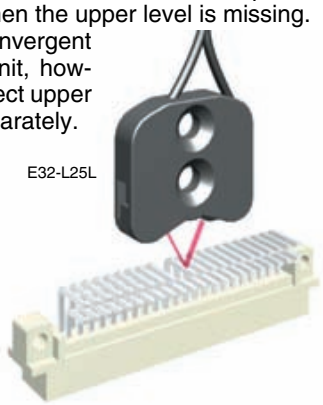
The length of lead wires of electronic components can be confirmed.



E32-DC200E (page A-177)
Fiber Unit

45. Detecting Connector Pins

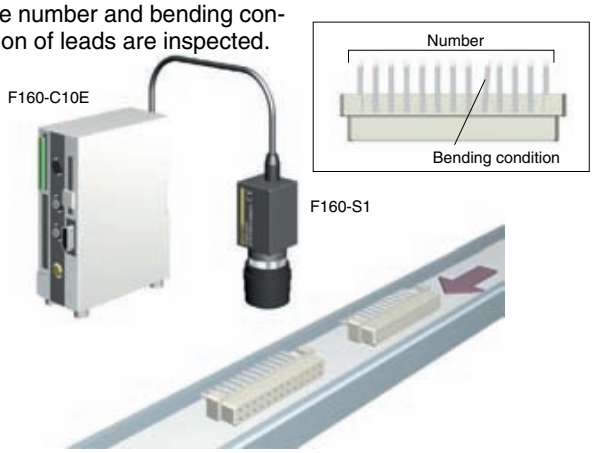
When inspecting two levels of connector pins with an ordinary fiber unit, the lower set of connector pins caused an ON signal even when the upper level is missing. The E32-L25L Convergent Reflective Fiber Unit, however, is able to detect upper and lower sets separately.



E32-L25L (page A-209)
Convergent Reflective Fiber Unit

46. Inspecting Connector Leads

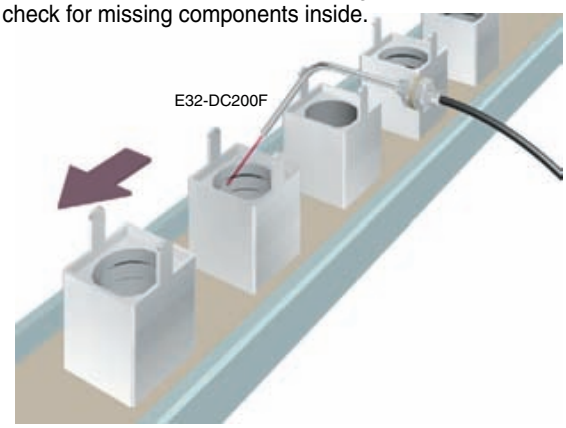
The number and bending condition of leads are inspected.



F160 (page C-25)
Vision Sensor

47. Detecting Parts Inside Metal Cases

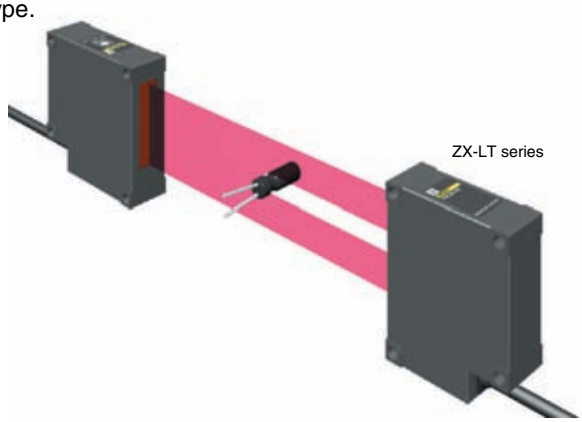
The E32-DC200F detects reflected light from internal threads to check for missing components inside.



E32-DC200F (page A-188)
Thin Sleeve Fiber Unit

48. Classifying Capacitors

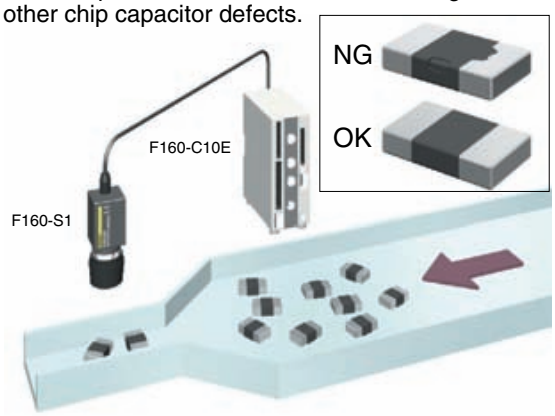
The diameter of each capacitor is used to determine its type.



ZX-LT Series (page B-3)
Parallel Beam Linear Sensors with a Separate Amplifier

49. Inspecting for Defects on Chip Capacitors

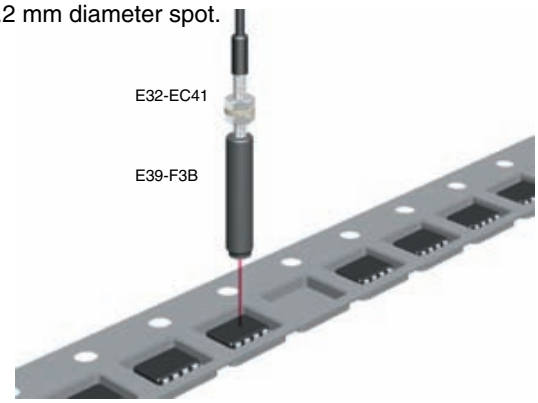
Inspection is possible for mold defects, missing terminals, and other chip capacitor defects.



F160 (page C-25)
Vision Sensor

50. Detecting Missing Chips on Embossed Tape

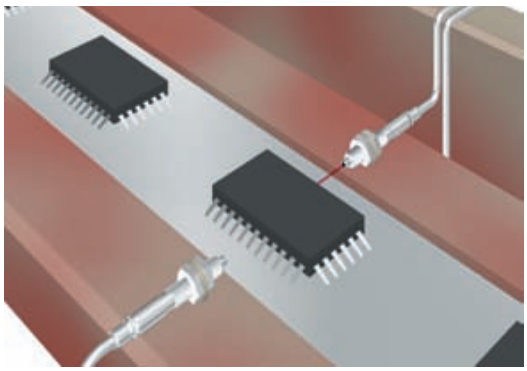
Adding a Lens Unit to a fiber sensor permits the detection of very small workpieces at a detection distance of 17 mm with a 0.2 mm diameter spot.



E32-EC41 Fiber Unit (page A-199)
E39-F3B Lens Unit (page A-245)

51. Detecting ICs in a High-temperature Handler

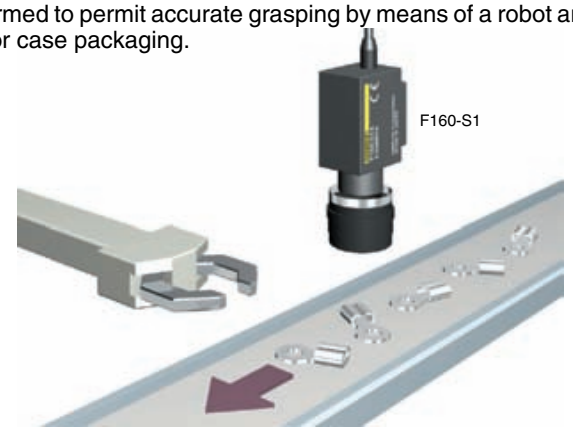
A PTFE coating eliminates the weak spot of heat-resistance fibers (i.e., hard and difficult to bend) to achieve a bending radius of 10 mm.



E32-T81R (page A-203)
Heat-resistant Fiber Unit

52. Terminal Picking

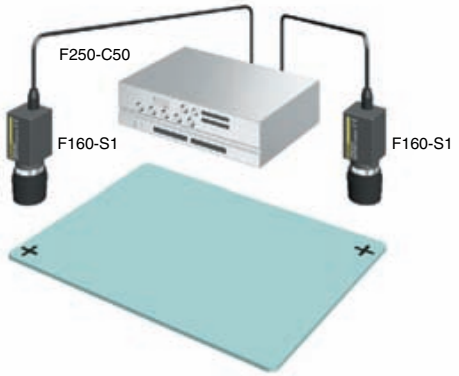
The position and orientation of workpieces can be confirmed to permit accurate grasping by means of a robot arm for case packaging.



F250 (page C-45)
High-performance Vision Sensor

53. Liquid Crystal Position Measurement

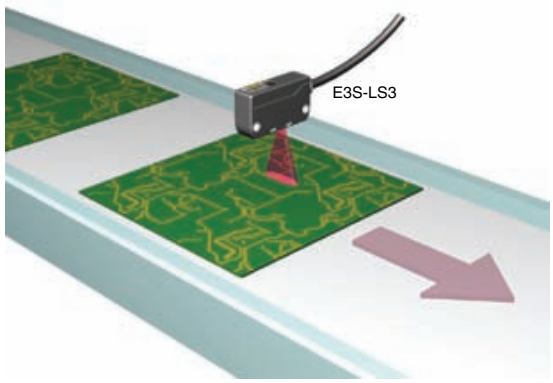
The positions of liquid crystal reference marks can be measured using two cameras to determine the overall position. Stable measurement is achieved at low cost for moving objects.



F250 (page C-45)
High-performance Vision Sensor

54. Detecting PCBs

Stable detection is possible because the large spot is not affected by the color, holes or notches of the boards.



E3S-LS3 (page A-145)
PCB Sensors

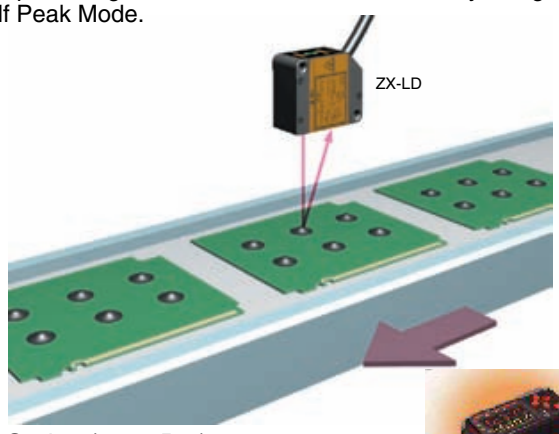
Applications

OMRON

Semiconductors and Electronic Components

55. Inspecting Board Mold Height

The peak height of a board can be measured by using the Self Peak Mode.

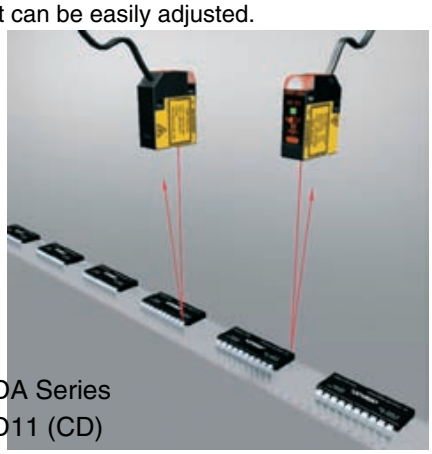


ZX Series (page B-3)

Smart Sensors

56. Detection of fine pins

E3C-LD11 detects with it's small laser spot of 50 µm each small IC-pin. Due to very high response time of 80 µs it can be done in the real process. The optical axis and focus of the spot can be easily adjusted.



E3C-LDA Series

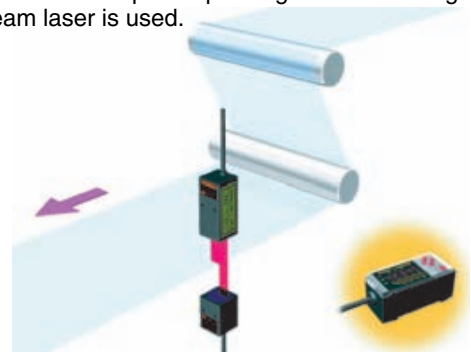
E3C-LD11 (CD)

OMRON

Packing, Food Products, Chemicals, and Sanitation

57. Meandering Inspection of a Transparent Packing Film

The stable inspection of an edge position or meandering is possible for a transparent packing film. The through type of line beam laser is used.

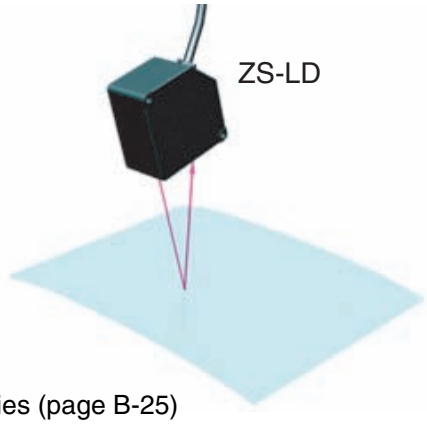


ZX-LT010

ZX-L-N (page B-3)
Smart Sensor (Laser type)

58. Measuring Plastic Board Warping with 2-Dimensions CMOS

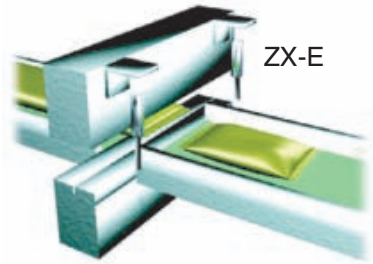
The warping of clear plastic boards can be measured with high precision.



ZS-L Series (page B-25)
Smart Sensor (2-Dimensions CMOS and Laser Beam)

59. Packing Miss Inspection with Linear Proximity Type

It can inspect the height of machine of packing miss, contents get caught in the machine.



ZX-E Series (page B-61)
Smart Sensor (Linear Proximity Type)

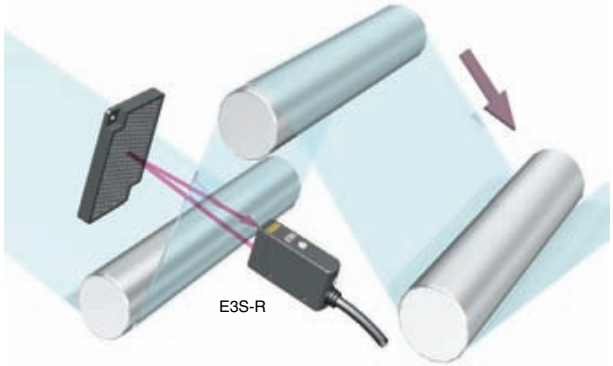
60. Inspection of the Slope of a Cap

Right-and-left comparison and the degree of parallel are checked for the slope of a cap.

ZX-L-N (page B-3)
Smart Sensor (Laser Type)

61. Detecting Clear Film

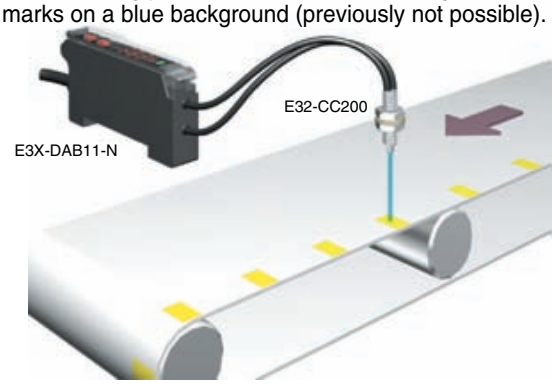
Clear film can be detected with a reflector, reducing the amount of wiring.



E3S-R (CD)
Transparent Object Photoelectric Sensors

62. Detecting Registration Marks

Teaching is also possible, and sensitivity can be adjusted without aligning the register marks. A blue LED light source enables detecting yellow marks on a white background or purple marks on a blue background (previously not possible).



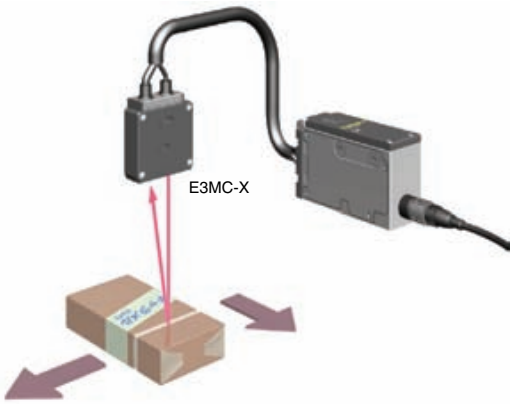
E32-CC200 (page A-198)
E3X-DAB11-N
Blue LED Teaching Fiber Amplifier

Applications

OMRON

Packing, Food Products, Chemicals, and Sanitation

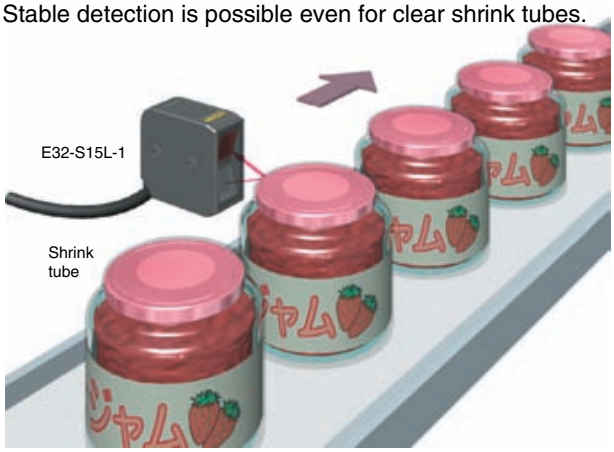
63. Detecting Out-of-place Candy Wrapper Tapes



E3MC (CD)
RGB Color Sensors

64. Detecting Shrink Tubes

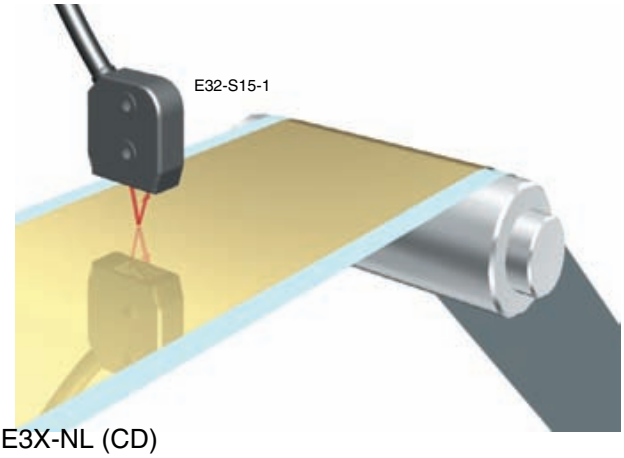
Stable detection is possible even for clear shrink tubes.



E3X-NL (CD)
Optical Fiber Glossy Object Sensor

65. Detecting Coatings on Paper or Metal

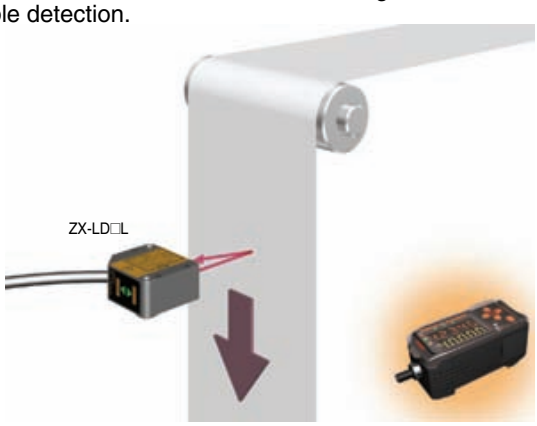
Differences in gloss can be used to detect coatings.



E3X-NL (CD)
Optical Fiber Glossy Object Sensor

66. Detecting Looseness in Sheets

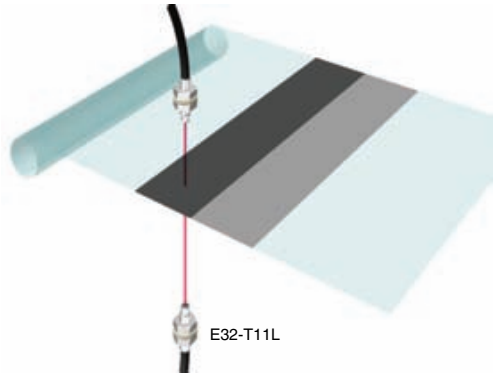
Small surface variations can be averaged out to enable stable detection.



ZX Series (page B-3)
Smart Sensors

67. Detect Shades of Black on Sheets

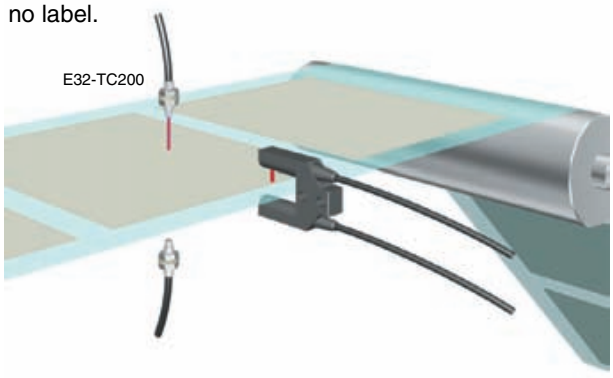
Differences in mark density can be used to permit detection using an infrared light source and through-beam sensor.



E32-T11L Long-distance Fiber Unit (page A-190)
E3X-DAH11-N Infrared Digital Fiber Amplifier

68. Detecting Labels

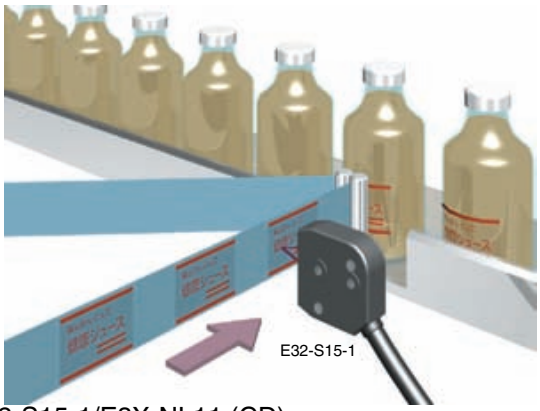
Detection is possible with a through-beam fiber sensor if the backing material is translucent. The light beam is interrupted when a label is detected and received when there is no label.



E32-TC200 Fiber Unit (page A-173)
E3X-DAB11-N Blue LED Teaching Fiber Amplifier

69. Detecting Clear Labels on Support Paper

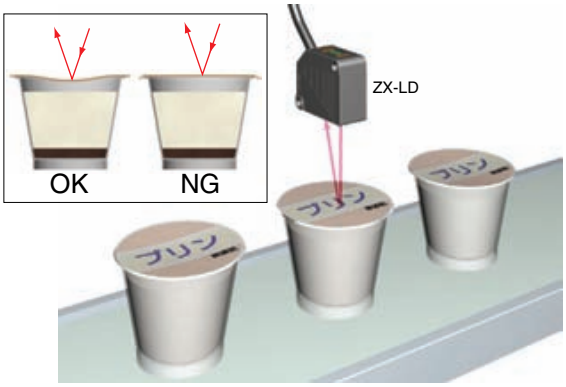
Even clear labels at close intervals on support paper can be positioned without contact.



E32-S15-1/E3X-NL11 (CD)
Optical Fiber Glossy Object Sensor

70. Detecting Pinholes in Sealed Containers

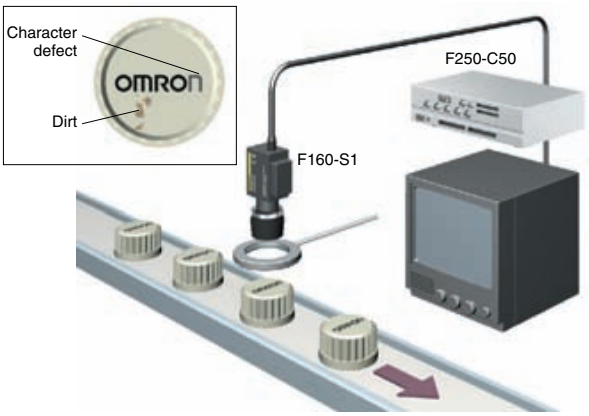
Differences in the depression of the film on the top of the container can be used to detect pinholes.



ZX Series (page B-3)
Smart Sensors

71. Detecting Dirt on Caps

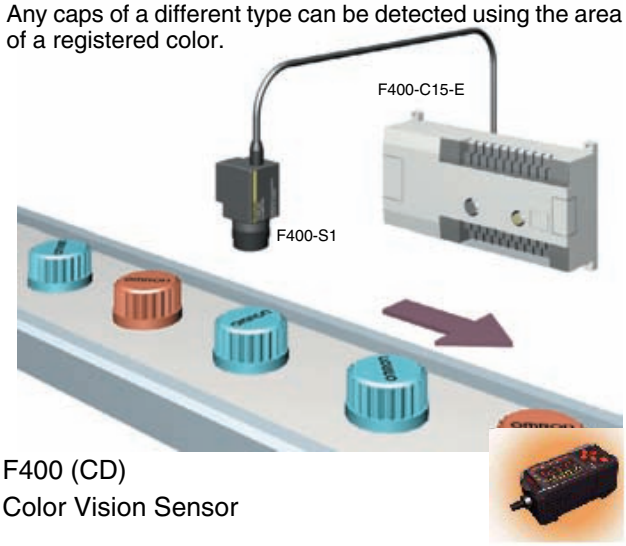
Character defects and other defects can also be detected.



F250 (page C-45)
High-performance Vision Sensor

72. Detecting Incorrect Caps

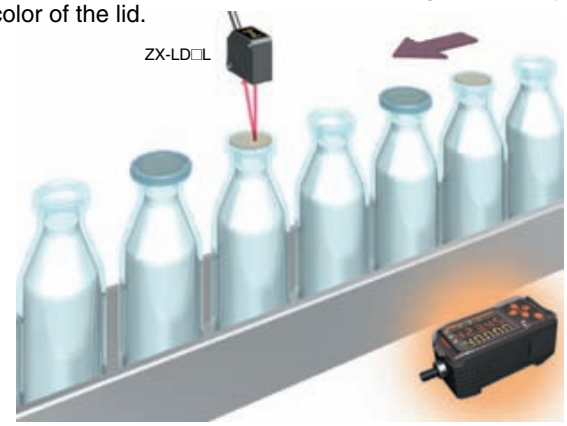
Any caps of a different type can be detected using the area of a registered color.



F400 (CD)
Color Vision Sensor

73. Detecting Lids on Milk Bottles

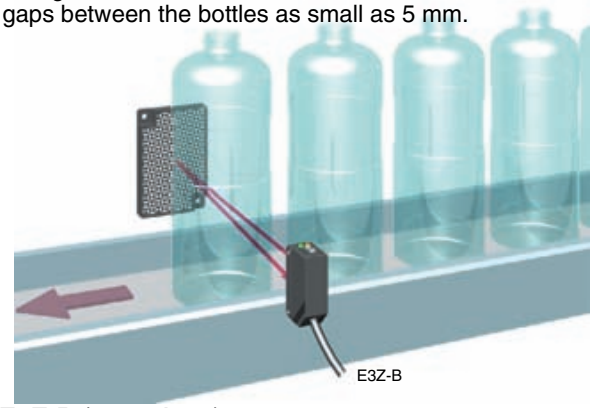
Stable detection is possible without being affected by the color of the lid.



ZX Series (page B-3)
Smart Sensors

74. Detecting PET Bottles

A retrospective reflex sensor that saves both space and wiring can achieve stable detection of PET bottles with gaps between the bottles as small as 5 mm.



E3Z-B (page A-43)
Photoelectric Sensors for Detecting Transparent Bottles

Applications

OMRON

Packing, Food Products, and Sanitation

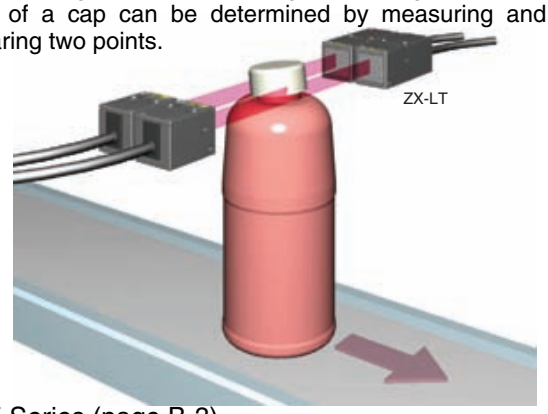
75. Position Detection of Glass Bottle Hollows

The 2- to 3-mm hollow on the bottom of bottles can be used for positioning and other operations.

ZX Series (page B-3)
Smart Sensors

76. Detecting Cap Height

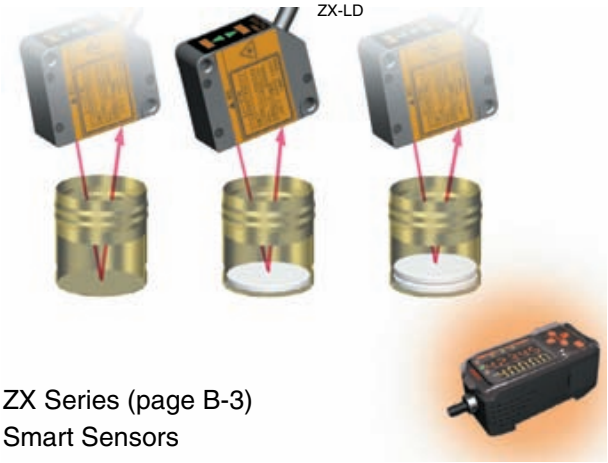
A check can be made for caps that are not straight by comparing the height of a cap left-to-right. The height and inclination of a cap can be determined by measuring and comparing two points.



ZX-LT-Series (page B-3)
Smart Sensors

77. Determining the Number of Inner Linings in Bottle Caps

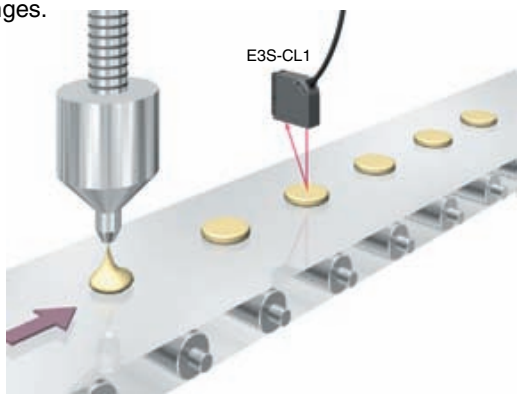
The evaluation output of the amplifier can be used to determine the number of cap linings.



ZX Series (page B-3)
Smart Sensors

78. Detecting Candy and Cookies on Conveyor Belts

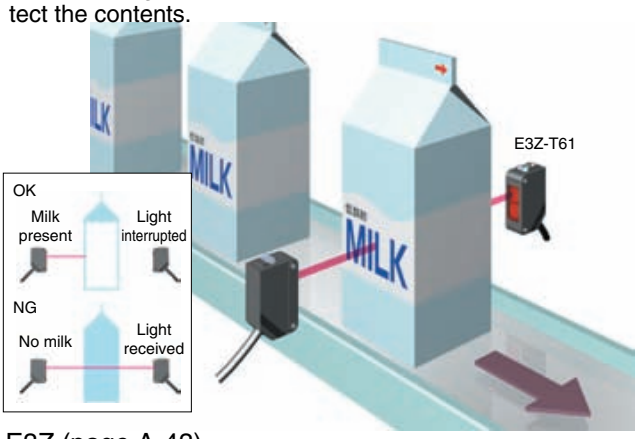
Detection is even possible from overhead. Sensitivity adjustment is not required even if the color of the product changes.



E3S-CL Distance-controlled (page A-111)
Photoelectric Sensors

79. Detecting Liquid in Paper Cartons

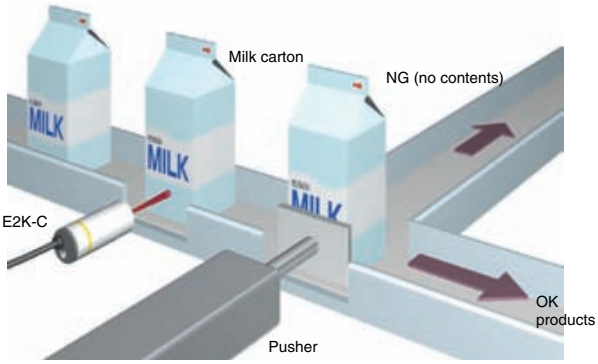
A powerful light beam can penetrate paper cartons to detect the contents.



E3Z (page A-43)
Photoelectric Sensors with a Built-in Amplifier

80. Detecting Milk in Paper Cartons

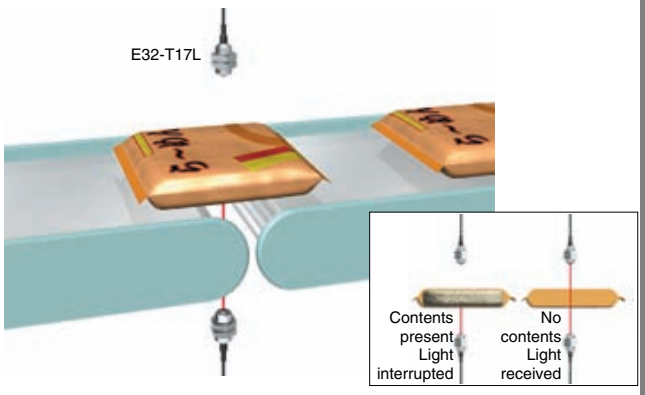
Milk in opaque paper cartons can be detected using a capacitive sensor.



E2K-C (page D-183)
Long-distance Capacitive Proximity Sensors

81. Detecting the Contents of Opaque Packages

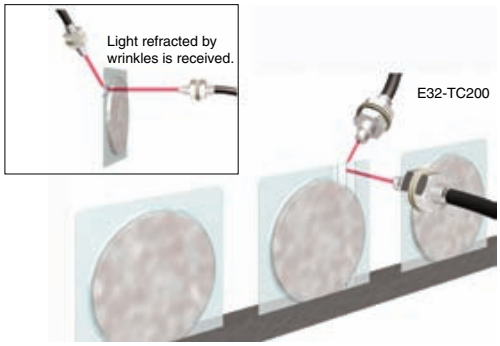
The E3X-DA-N Long-distance Sensor enables detecting the contents of opaque packages.



E32-T17L (page A-180)
Long-distance Fiber Unit

82. Inspecting Food Packages

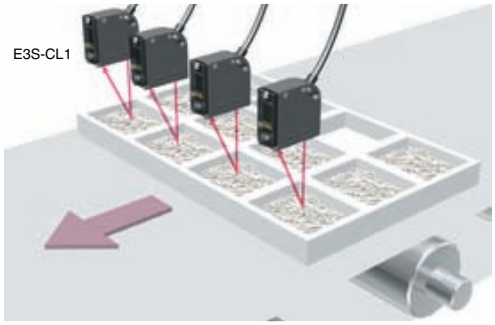
Wrinkles in package materials can be detected. As shown below, light diffused by wrinkles in the package is received if the emitter and receiver are installed at an angle to each other.



E32-TC200 (page A-173)
Fiber Unit

83. Detecting Noodles in Trays

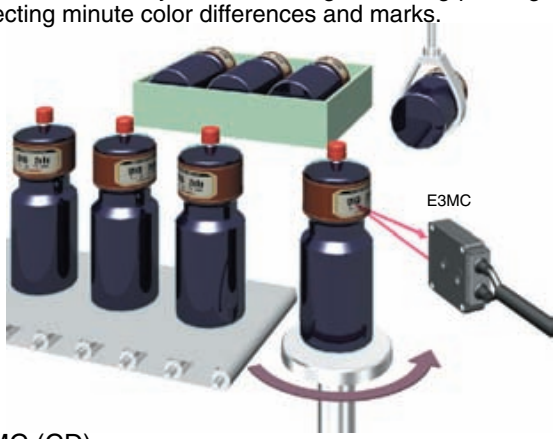
Being able to differentiate between the tray separators and the tray bottoms enables stable detection of noodles without chattering. Water resistance of IP67 is provided for application in water rinsing processes in the food industry.



E3S-CL Distance-controlled (page A-111)
Photoelectric Sensors

84. Aligning Object Direction during Packing

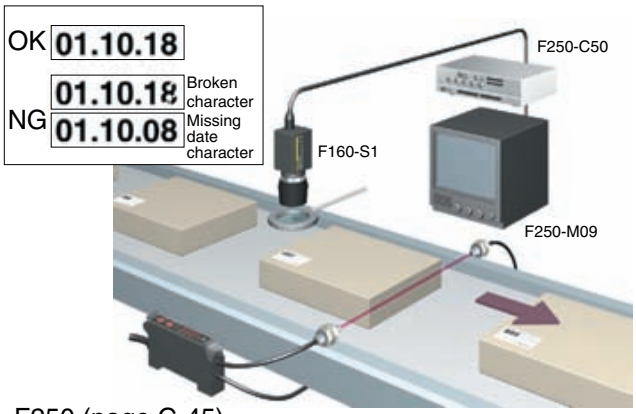
The direction of objects can be aligned during packing by detecting minute color differences and marks.



E3MC (CD)
RGB Color Sensors

85. Verifying Expiration Dates

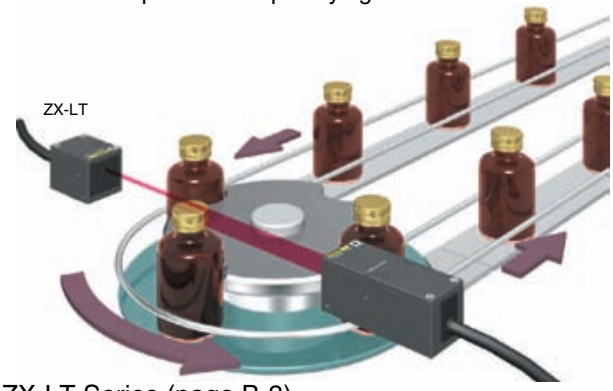
The characters in expiration dates can be read and confirmed.



F250 (page C-45)
High-performance Vision Sensor

86. Inspecting the Tightening Condition of Caps on Bottled Chemicals

The amount of blocked light is measured at the end of the rotary table. The amount that is blocked increases when the bottle cap is not completely tightened.



ZX-LT Series (page B-3)
Parallel Beam Linear Sensors with a Separate Amplifier

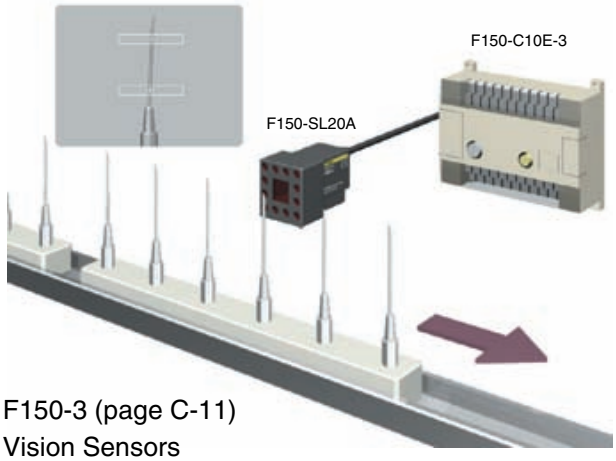
Applications

OMRON

Packing, Food Products, Chemicals, and Sanitation

87. Inspecting for Bent Hypodermic Needles

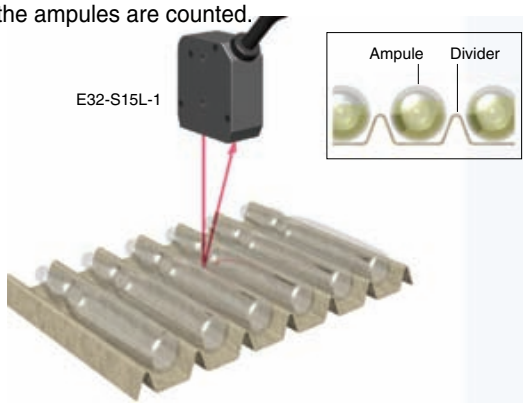
Bending can be determined by measuring the difference between the base and the tip of the needle.



F150-3 (page C-11)
Vision Sensors

88. Counting Glass Ampules

The difference in glossiness is used to differentiate between the ampules and the dividers between them, to ensure that only the ampules are counted.



E3X-NL (CD)
Optical Fiber Glossy Object Sensor

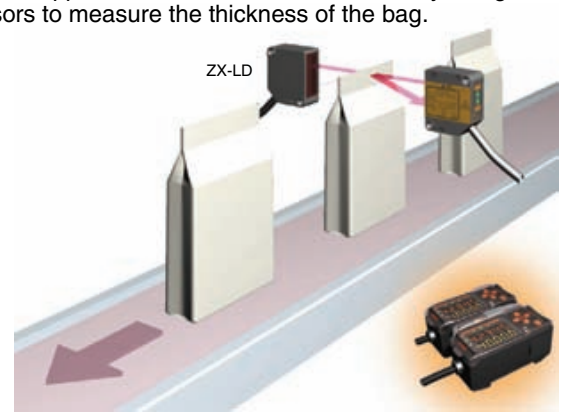
89. Detecting the Powdered Chemicals Passing through a Transparent Tube

Powdered chemicals passing within a specific area can be detected, and adjustments can be made by teaching. Teaching can be done without a workpiece.

E32-D36P1 (page A-186)
Area-detecting Fiber Unit

90. Detecting Adhesive Application on Bags of Chemicals

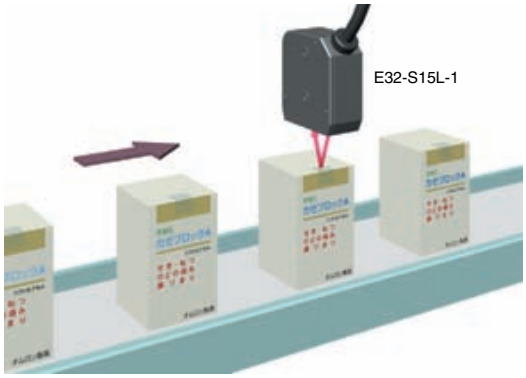
The application of adhesive is detected by using two sensors to measure the thickness of the bag.



ZX Series (page B-3)
Smart Sensors

91. Checking Sealing Tape on Boxes of Pharmaceuticals

The difference in glossiness is used to detect sealing tape without being affected by the colors or patterns on the box.



E3X-NL (CD)
Optical Fiber Glossy Object Sensor

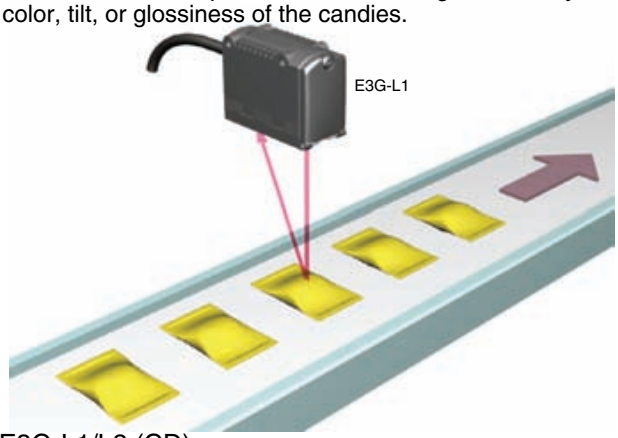
92. Liquid Color Detection

The E3MC RGB Color Sensors distinguish colors by detecting differences between them and registered reference colors. Stability can be further enhanced by placing a white panel in the background.

E3MC (CD)

93. Detecting Wrapped Candies

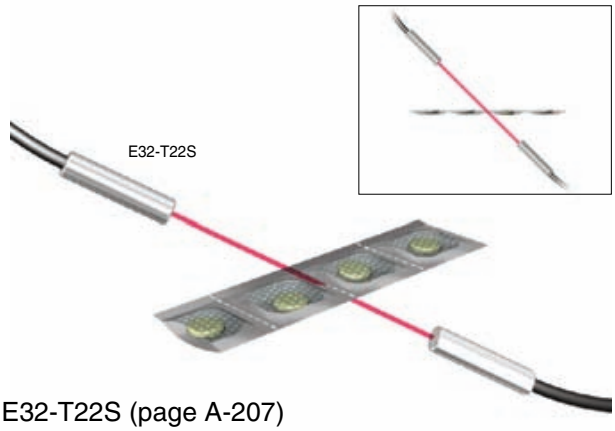
Stable detection is possible without being affected by the color, tilt, or glossiness of the candies.



E3G-L1/L3 (CD)
Distance-controlled Photoelectric Sensors

94. Counting Desiccant Packets

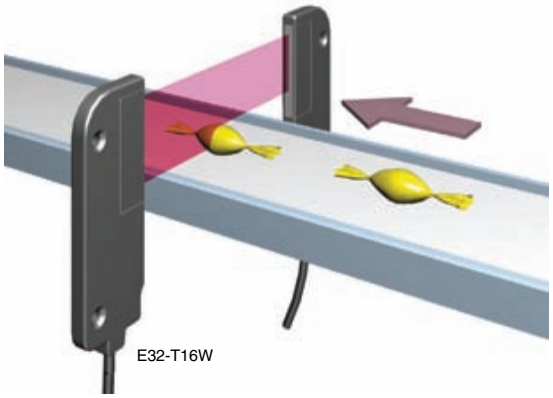
The perforations between desiccant packets are detected by the E32-T22S Narrow-view Fiber Unit.



E32-T22S (page A-207)
Narrow-view Fiber Unit

95. Detecting the Front Edge Location of Candies

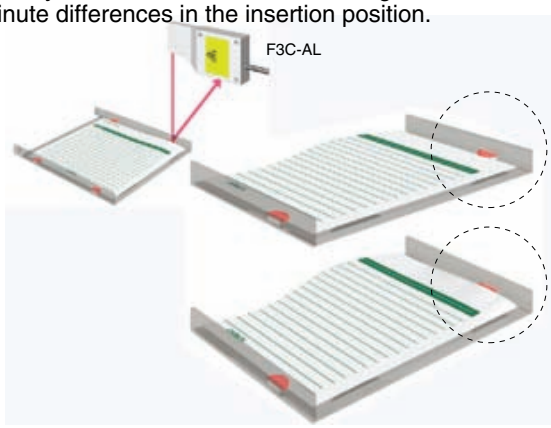
Area detection using a screen fiber enables positioning of even irregularly shaped objects.



E32-T16W (page A-183)
Area-detecting Fiber Unit

96. Detecting Title Cards Inside CD Cases

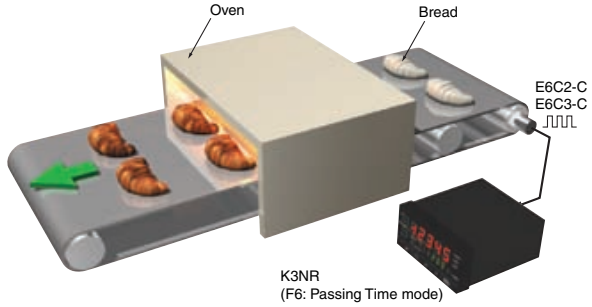
Low hysteresis in the distance setting enables detecting minute differences in the insertion position.



F3C-AL (CD)
Distance-controlled Laser Photoelectric Sensors

97. Display of Bread Baking Time

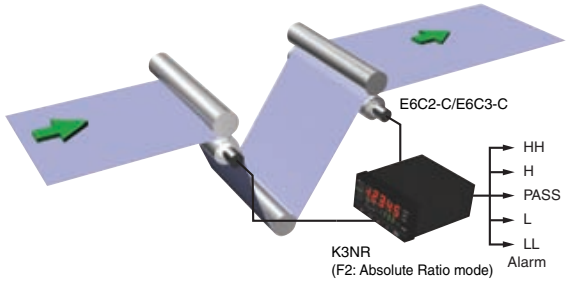
To control the baking condition of conveyor-transported bread by monitoring the time elapsed while passing through the oven, the speed of the conveyor belt is detected by the Rotary Encoder, and the result is converted to passage time and displayed by the frequency/ratemeter.



E6C2-C/E6C3-C Rotary Encoders (page E-7)
K3NR Frequency/ratemeters

98. Measuring the Rotational Ratio of a Roller

The rotational ratio between two rollers being used to take-up film, textiles, paper, wire, etc., is measured to monitor and control tension and slackness.



E6C2-C/E6C3-C Rotary Encoders (page E-7)
K3NR Frequency/Rate Meters

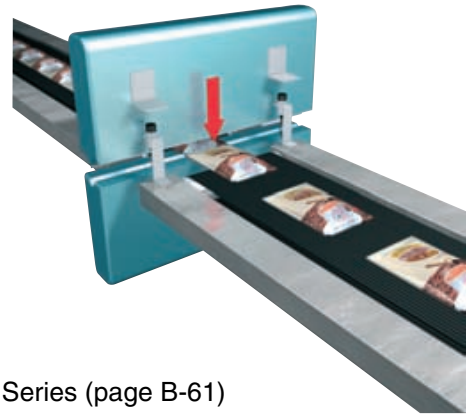
Applications

OMRON

Packing, Food Products, Chemicals, and Sanitation

99. Jamming detection in packaging process

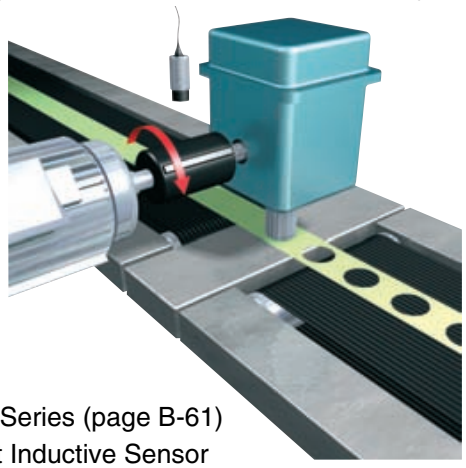
ZX-E controls the gap while sealing the products and stops the machine if jamming is detected.



ZX-E Series (page B-61)
Smart Inductive Sensor

100. Monitoring the cutting process

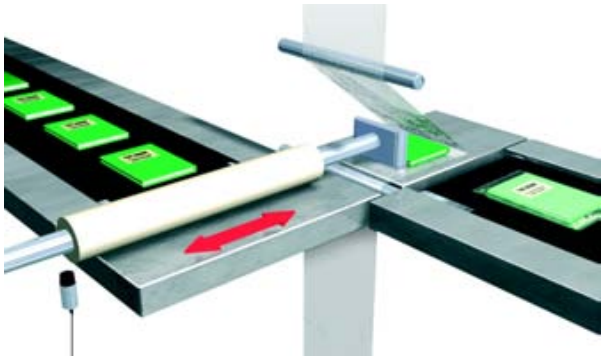
ZX-E sensor measures the bottom-dead-end point of the cutting tool in order to ensure the proper quality of products



ZX-E Series (page B-61)
Smart Inductive Sensor

101. Distance monitoring in vertical packaging machines

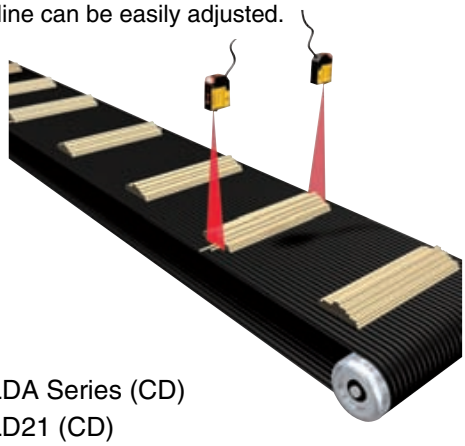
ZX-E sensor monitors the distance of a mechanical movement in a vertical packaging machine.



ZX-E Series (page B-61)
Smart Inductive Sensor

102. Noodle protrusion in food industry

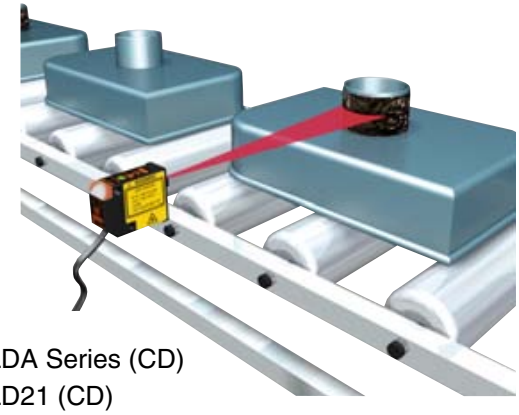
E3C-LD21 with a laser line beam can detect the protrusion of noodles before packaging. Thanks to the laser, the sensing distance can be up to 1 m. The optical axis and focus of the line can be easily adjusted.



E3C-LDA Series (CD)
E3C-LD21 (CD)

103. Label detection

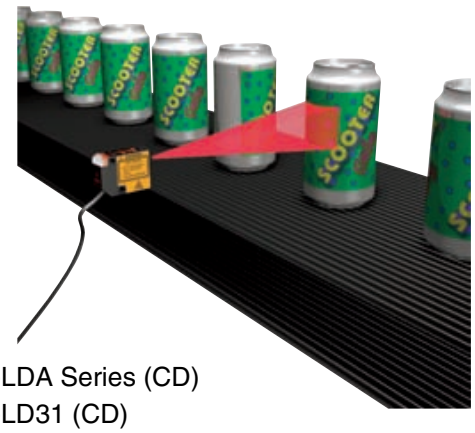
The E3C-LD21 detects the label from a long sensing distance, so therefore the sensor head can be mounted outside from moving parts. The optical axis and focus of the line beam can be easily adjusted.



E3C-LDA Series (CD)
E3C-LD21 (CD)

104. Detection of product orientation

By using the E3C-LD31 with an area laser beam it is possible to control the orientation in a certain area. The optical axis and focus of the area can be easily adjusted.



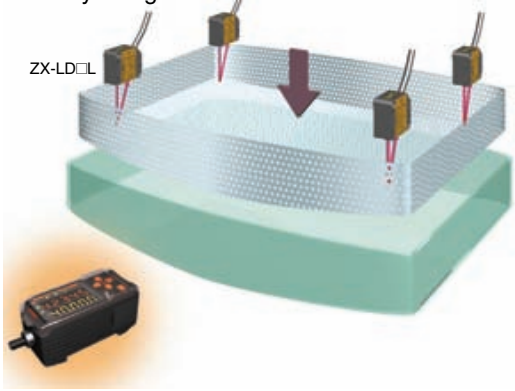
E3C-LDA Series (CD)
E3C-LD31 (CD)

OMRON

Household Appliances and Office Automation

105. Confirming the Insertion of Shadow Masks into CRTs

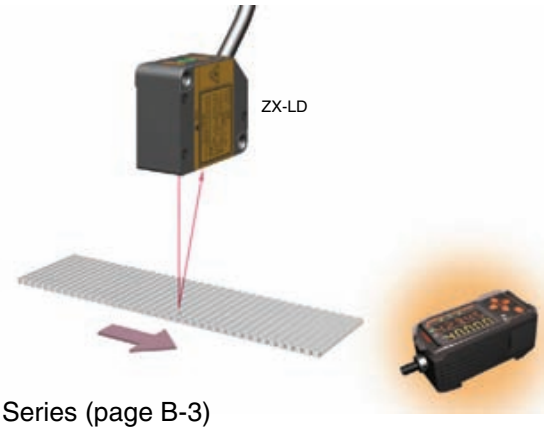
Stable detection of even mesh-type shadow masks is achieved by using a line beam.



ZX Series (page B-3)
Smart Sensors

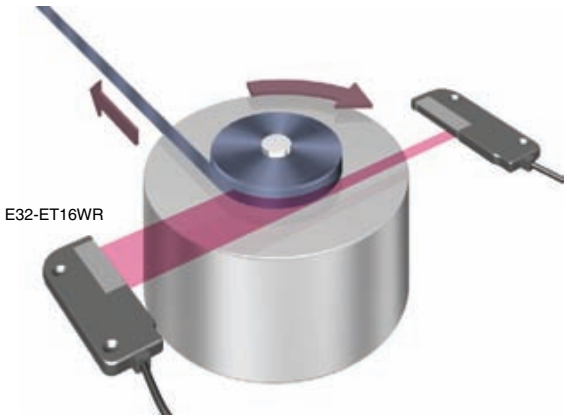
106. Counting Copy Machine Staples

The ultra-small spot of the ZX Series enables counting by precisely detecting the grooves between the staples.



ZX Series (page B-3)
Smart Sensors

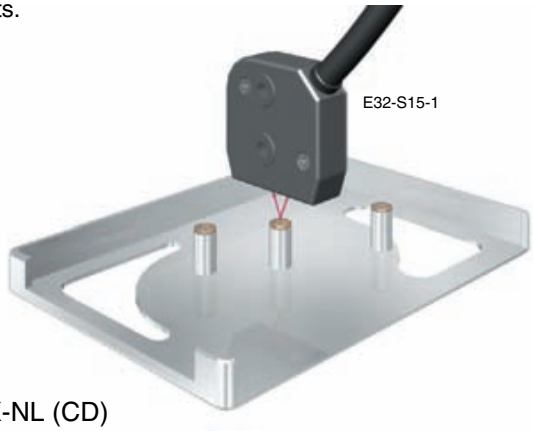
107. Inspection of Tape Remaining in Tape Take-up Applications



E32-ET16WR (CD)
Area-detecting Fiber Unit

108. Confirming the Application of Adhesive/Grease onto Components

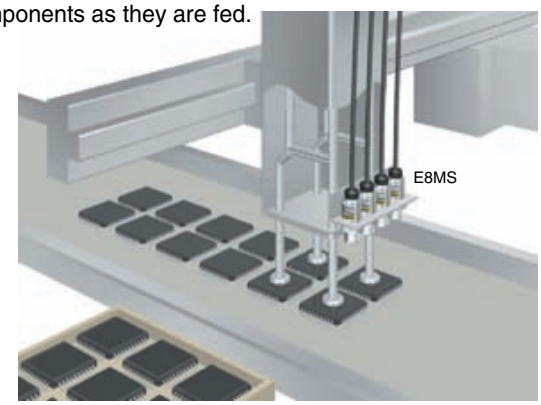
The small 2 mm diameter spot can detect even minute amounts of adhesive or grease applied to precision components.



E3X-NL (CD)
Optical Fiber Glossy Object Sensor

109. Confirming Suction of Chip Components

As part of the chip component inspection process, the E8MS/K3C Pressure Sensors are able to confirm the suction of components as they are fed.



E8MS/K3C (CD)
Pressure Sensors

110. Inspecting the Position of Rotary Switches

The F150-3 Vision Sensors permit the detection of switches and buttons, and the inspection of the position of adjusted dials, prior to shipment.

F150-3 (page C-11)
Vision Sensors

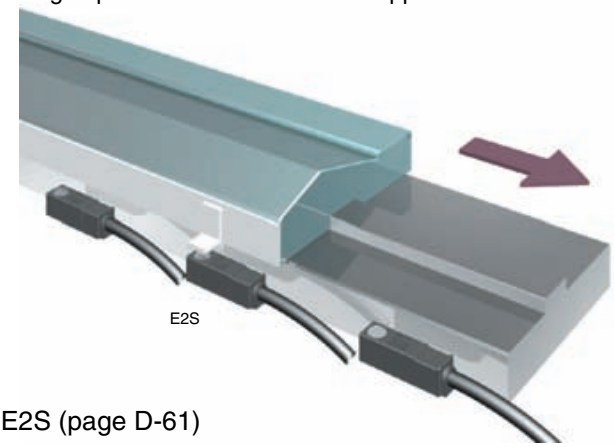
Applications

OMRON

Automobiles, Machine Tools, and Robots

111. Inspection of High-speed Table Movement

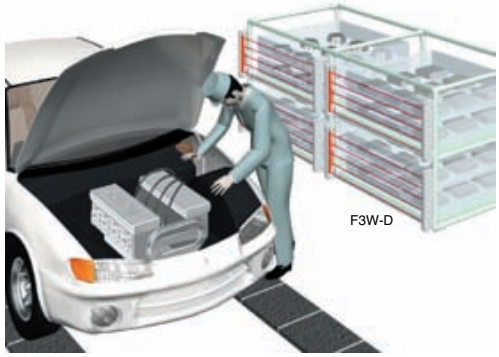
A response frequency of 1 kHz makes the E2S well suited to high-speed machine and device applications.



E2S (page D-61)
Compact Square Inductive Proximity Sensors

112. Confirming the Indication and Picking of Assembly Components

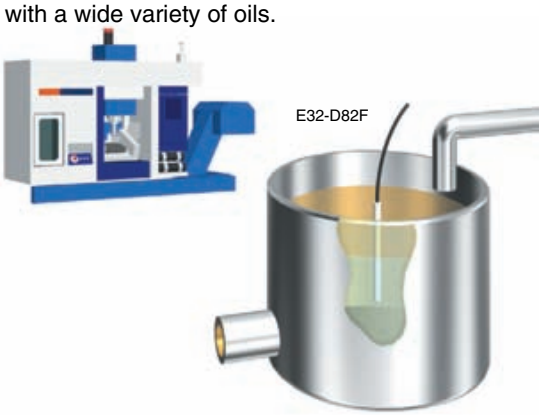
An F3W-D Sensor makes it possible to confirm that components are not forgotten in automotive assembly lines.



F3W-D (CD)
Picking Sensors

113. Managing Liquid Level for Lubricating Oils

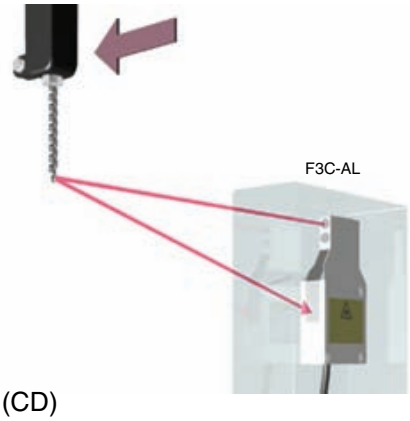
The use of PTFE makes these Sensors ideal for applications with a wide variety of oils.



E32-D82F (CD)
Contact Liquid Level Sensors

114. Detecting Bent Drill Bits

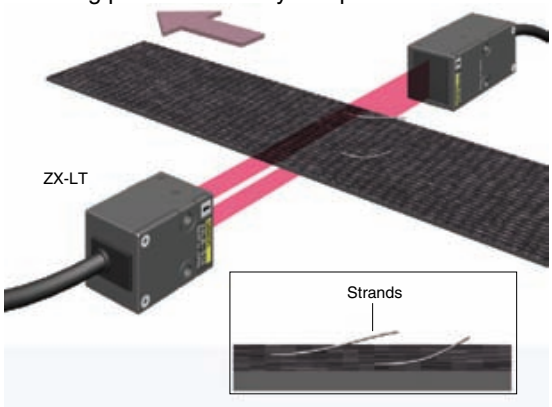
The installation of a transparent shield in front of these sensors protects them from splattering oil.



F3C-AL (CD)
Distance-controlled Laser Photoelectric

115. Detecting Frayed Edges on Safety Belts

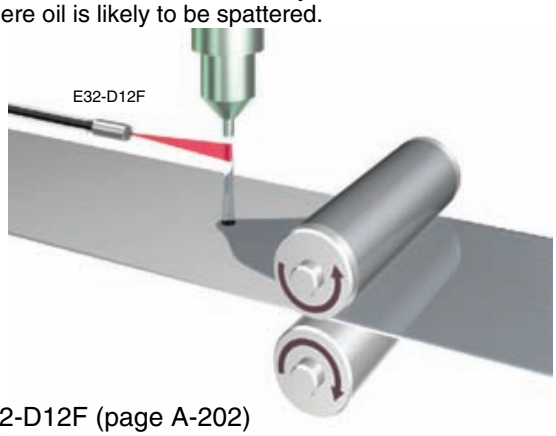
The ZX-LT can detect the strands of frayed edges during the weaving process in safety belt production.



ZX-LT Series (page B-3)
Smart Sensors

116. Detecting Oil Drops

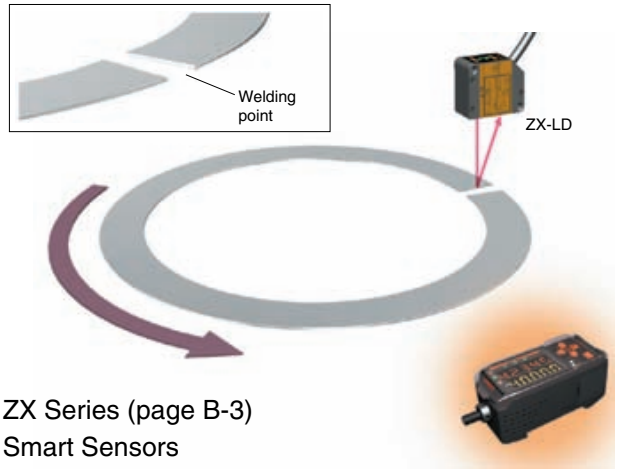
The E32-D12F can detect light reflected from oil drops. The PTFE fiber can also be safely used in an environment where oil is likely to be spattered.



E32-D12F (page A-202)
Chemical-resistant Fiber Unit

117. Positioning the Welding Point on Ring Gears

The compact size makes it possible for these Sensors to be mounted on welding machines in small spaces.



ZX Series (page B-3)
Smart Sensors

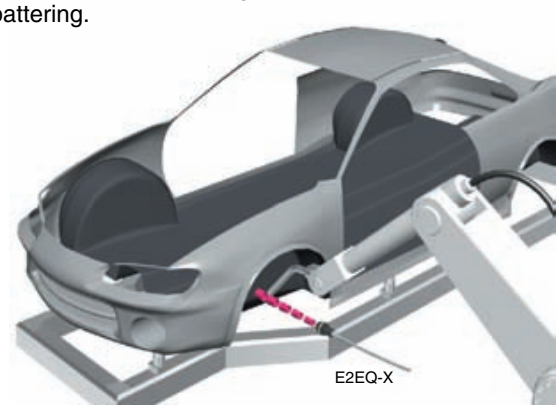
118. Detecting Weld Locations on Metal Pipes

Because teaching without a workpiece is possible for the E3X-DA-N, the sensitivity for detecting weld locations can be set without having to stop the workpiece.

E32-CC200 (page A-198)
Fiber Unit

119. Positioning at the Welding Site

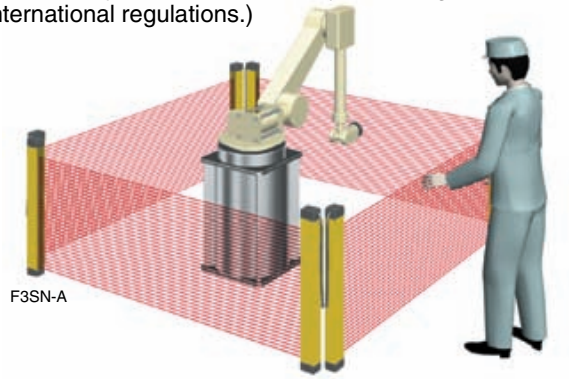
These Sensors are designed for use in places subject to spattering.



E2EQ (page D-171)
Antispatter Proximity Sensors

120. Detection of People Entering the Work Area of Robots

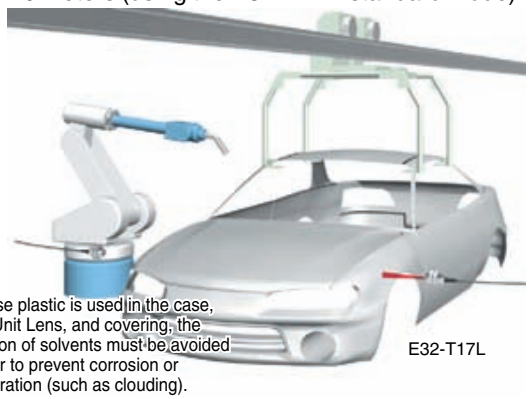
F3SN-A Safety Light Curtains help to provide a protection measure by detecting the entry of people into dangerous areas. (They help to ensure safety according european and international regulations.)



F3SN-A/F3SH-A (page G-3), F3S-TGR (page G-49)
Safety Light Curtains

121. Detecting Workpieces in the Automotive Coating Process

A fiber length of 10 meters permits a long-distance detection up to 20 meters (using the E3X-DA-N standard mode).

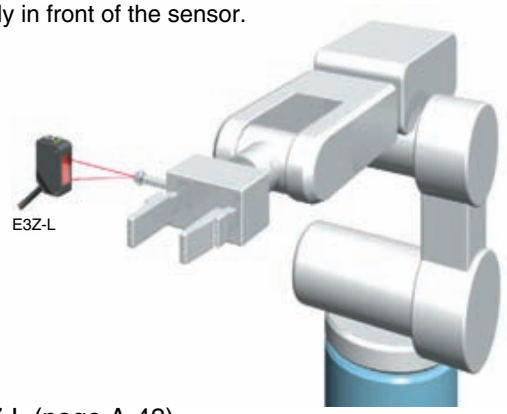


Note: Because plastic is used in the case, Fiber Unit Lens, and covering, the adhesion of solvents must be avoided in order to prevent corrosion or deterioration (such as clouding).

E32-T17L (page A-180)
Fiber Unit with Lens

122. Detecting the Position of Robot Arms

Due to a small metal ball installed on the robot arm, the position of the arm can be detected when the ball moves directly in front of the sensor.



E3Z-L (page A-43)
Narrow-beam Photoelectric Sensors with a Built-in Amplifier

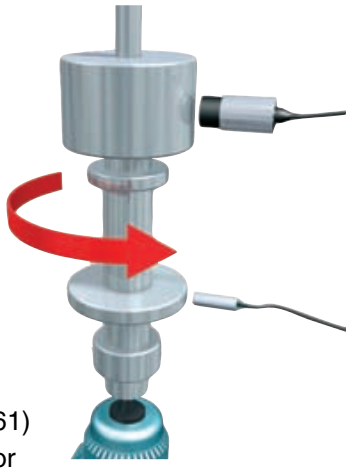
Applications

OMRON

Automobiles, Machine Tools, and Robots

123. Eccentricity control of shaft and bearings

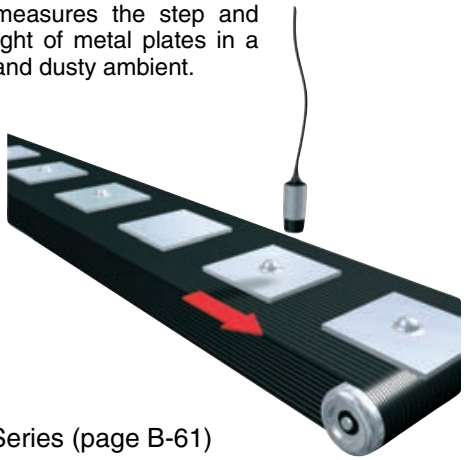
ZX-E measures the eccentricity of shaft and bearings while rotating without influence of oil and water due to inductive principle.
The control function can be used to stop the machine at a curtain point.



ZX-E Series (page B-61)
Smart Inductive Sensor

124. Height and step measurement in rough metal plates

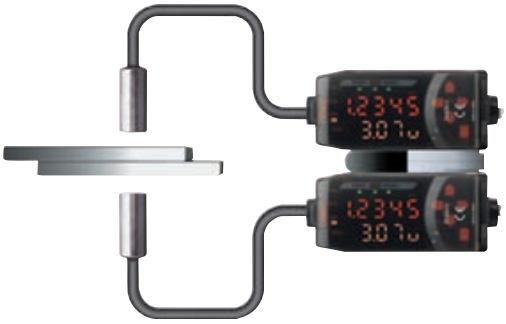
ZX-E measures the step and the height of metal plates in a rough and dusty ambient.



ZX-E Series (page B-61)
Smart Inductive Sensor

125. Thickness measurement of metal plates

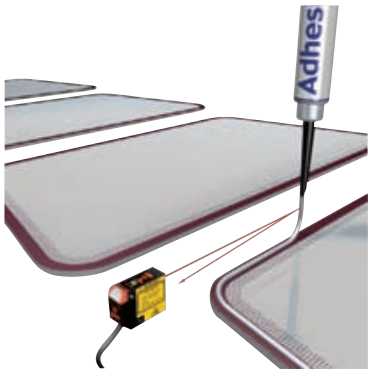
By simply connecting two sensors with a calculation unit the thickness can be measured and monitored using the digital outputs.



ZX-E Series (page B-61)
Smart Inductive Sensor

126. Adhesive and seal inspection

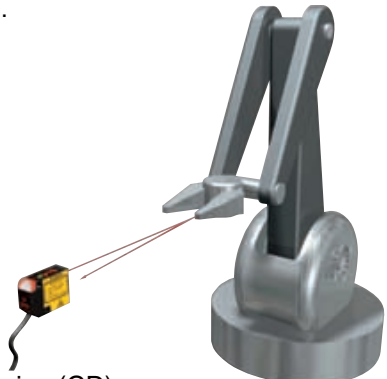
The small sensor head can be easily mounted on a robot arm and the line beam can detect the profile of sealing and adhesive. The optical axis and focus of the line can be easily adjusted



E3C-LDA Series (CD)
E3C-LD21 (CD)

127. Repeatability of robot arm teaching

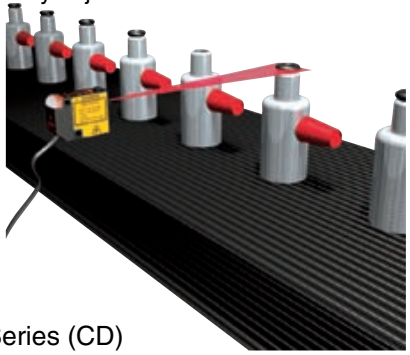
The small laser spot size of the E3C-LD11 ensures a high repeat accuracy from a long sensing distance, therefore the sensor head can be mounted with safety distance to the robot arm.



E3C-LDA Series (CD)
E3C-LD11 (CD)

128. Detecting of a sealing rubber in the assembly process

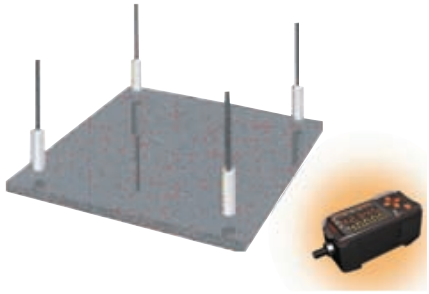
The E3C-LD21 detects even black rubber from a long distance, so therefore the sensor head can be mounted outside from moving parts. The optical axis and focus of the line can be easily adjusted.



E3C-LDA Series (CD)
E3C-LD21 (CD)

129. Warping control of metal plate

For multiple measurements it is possible to connect up to five sensors without mutual interferences. Warping is controlled by using (A-B) calculation



ZX-E Series (page B-61)
Smart Inductive Sensors

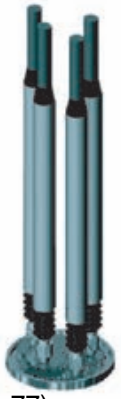
Applications

OMRON

Automation and Inspection Equipment

130. Measurement of Watch Small Parts

The height and vertical interval of small parts of watch can be measured precisely even if small space.

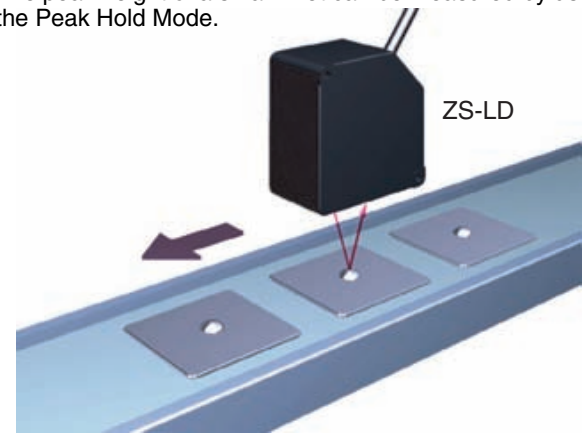


ZX-T Series (page B-77)

Smart Sensor (High Precision contact type)

131. Inspection of Small Rivet Height

The peak height of a small rivet can be measured by using the Peak Hold Mode.

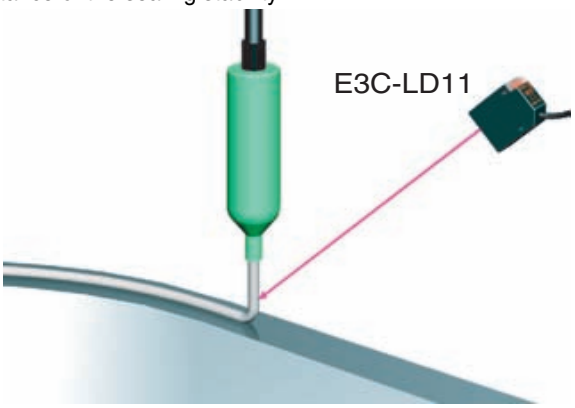


ZS-L Series (page B-25)

Smart Sensor (2-Dimensions CMOS and Laser Beam)

132. Confirming the Sealing Material

Long distance (1m) and small spot laser beam can inspect existance of the sealing stability.

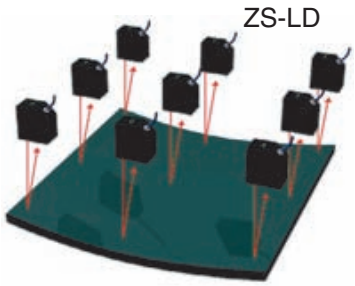


E3C-LD11 + E3C-LDA (CD)

Photoelectric Sensors with Separate Digital Amplifiers

133. Flattness Inspection of resin or metal

Stable flatness can be inspected even if the black resin or gloss metal at many points.

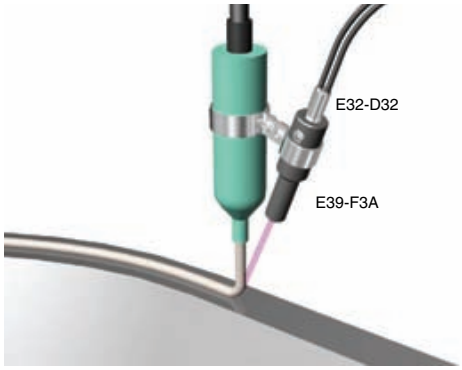


ZS-L Series (page B-25)

Smart Sensor (2-Dimensions CMOS and Laser Beam)

134. Confirming the Application of Sealing Material

The use of a small-diameter fiber head makes it possible to install the Fiber Unit and Lens Unit on the nozzle tip. The Lens Unit permits a stable detection of the sealing material.

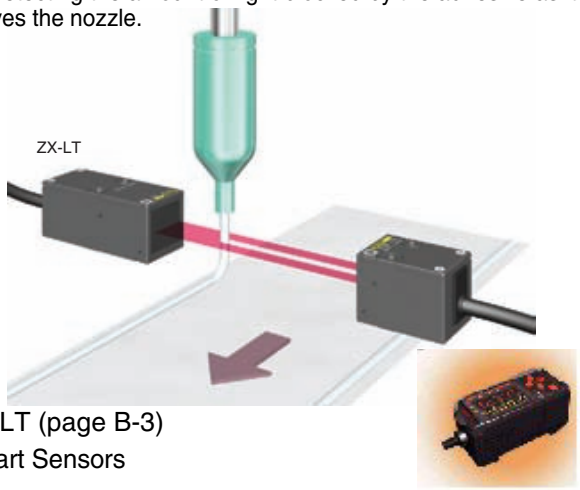


E32-D32 Fiber Unit (page A-200)

E39-F3A Lens Unit (page A-245)

135. Detecting and Determining Proper Quantity of Adhesive during Packing Box Assembly

The quantity of adhesive being dispensed can be monitored by detecting the amount of light blocked by the adhesive as it leaves the nozzle.

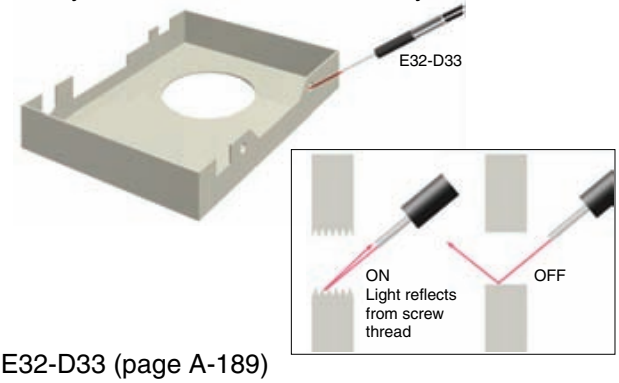


ZX-LT (page B-3)

Smart Sensors

136. Detection of Screw Threads

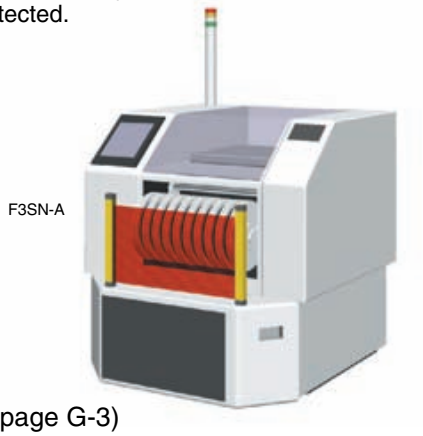
The E32-D33 Thin Head Fiber Unit is able to determine whether threads have been cut into aluminum die-cast workpieces. Because the light strikes at an angle, even extremely small threads can be accurately detected.



E32-D33 (page A-189)
Thin Head Fiber Unit

137. Safety Sensor to Protect People from Dangerous Machinery

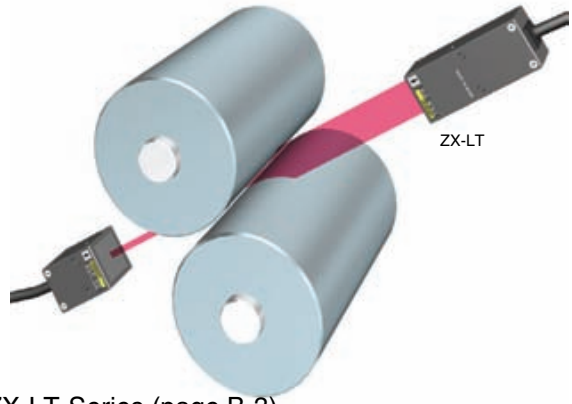
The entry of people into the danger zones on and around high-speed machinery, such as chip inserters, presses etc. can be detected.



F3SN-A (page G-3)
Safety Light Curtains

138. Measuring the Distance between Rollers

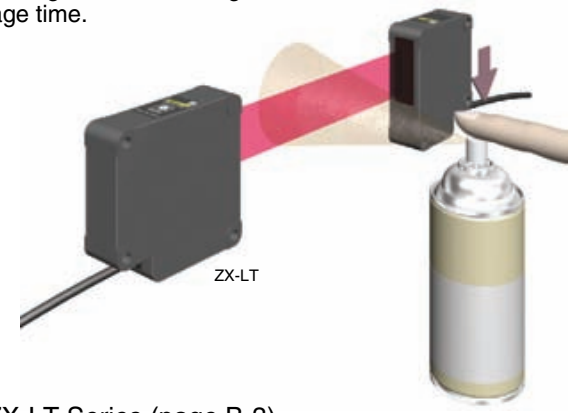
These Sensors ensure the distance between metal rollers to be measured.



ZX-LT-Series (page B-3)
Smart Sensors

139. Inspecting Spraying Coverage by Detecting the Spray Angle

The spray angle of a substance can be measured by detecting the amount of light that it blocks and the total blockage time.



ZX-LT Series (page B-3)
Parallel Beam Linear Sensors with a Separate Amplifier

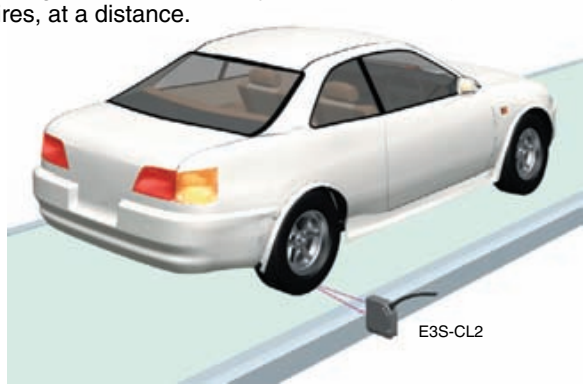
Applications

OMRON

Rubber, Molding Machines, and Molds

140. Long-distance Detection of Black Tires

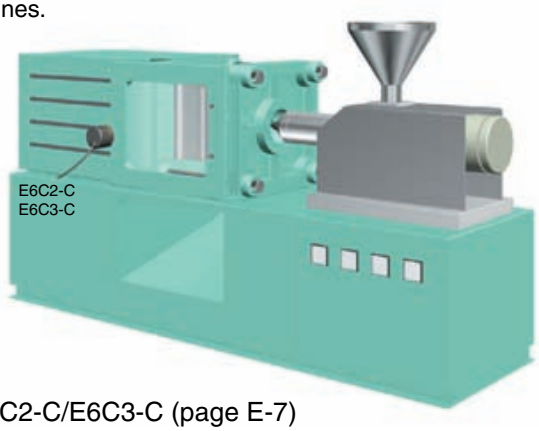
These sensors are minimally affected by backgrounds, enabling them to accurately detect black objects, such as tires, at a distance.



E3S-CL (page A-111)
Distance-controlled Photoelectric Sensors

141. Positioning Dies in Injection Molding Machines

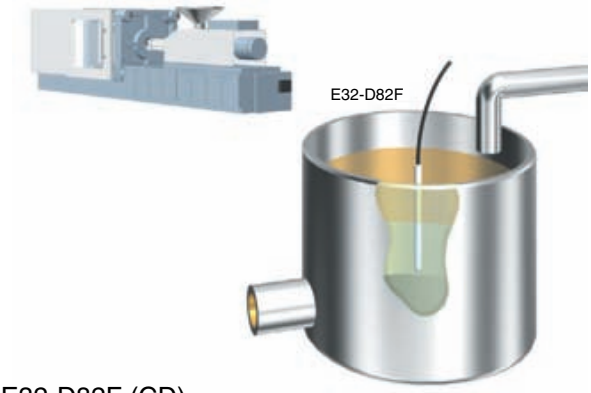
The strengthened axial load of this Rotary Encoder permits clamp positioning for the dies of injection molding machines.



E6C2-C/E6C3-C (page E-7)
Rotary Encoders

142. Detecting the Level of Heat-medium Oils

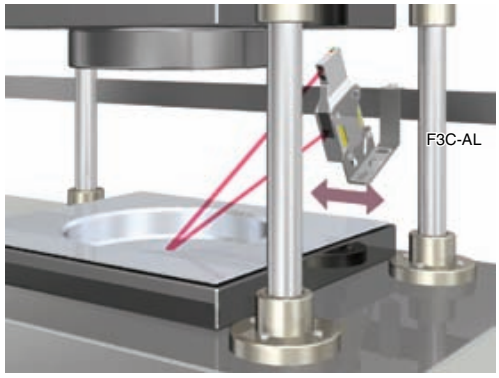
The 200°C heat resistance of these Sensors permits the use with extremely high-temperature liquids.



E32-D82F (CD)
Contact Liquid Level Sensors

143. Detecting Errors Due to Residual Materials in Press Dies

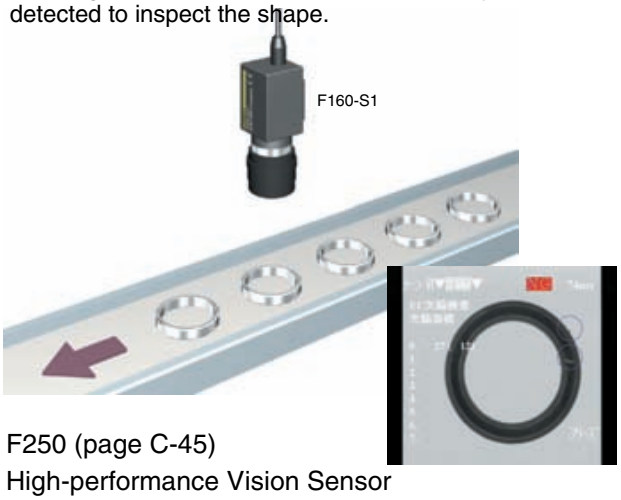
The edges of materials remaining inside press dies after the pressing process are detected, and an error is output.



F3C-AL (CD)
Distance-settable Laser Photoelectric Sensors

144. Inspecting Component Shapes

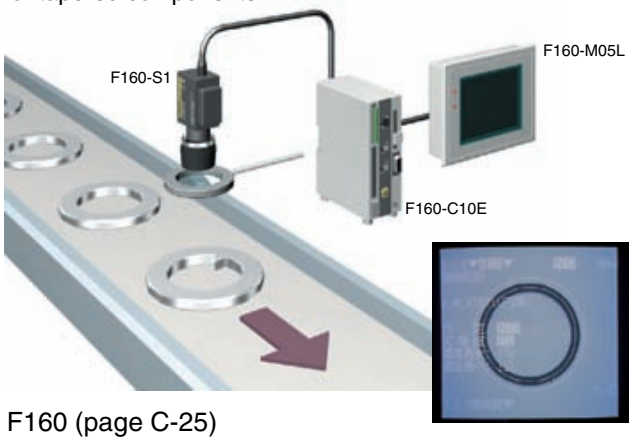
The edges of measured objects captured by camera are detected to inspect the shape.



F250 (page C-45)
High-performance Vision Sensor

145. Inspecting for Chipping or Burrs in Components

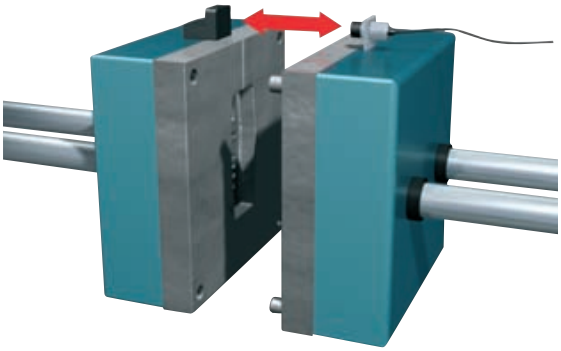
Chips, burrs, or light-colored dirt can be detected on curved or tapered components.



F160 (page C-25)
Vision Sensor

146. Gap control in mould press machines

ZX-E controls the minute tool-gap in a mould press machine and prevent the production of fault products. The sensor head is heat resistant up to 200 °C.



ZX-E Series (page B-61)

Smart Inductive Sensors

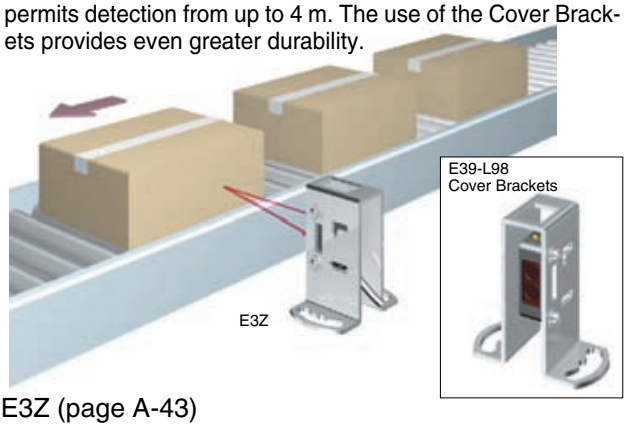
Applications

OMRON

Conveyance and Automatic Warehouses

147. Detecting Cardboard Boxes

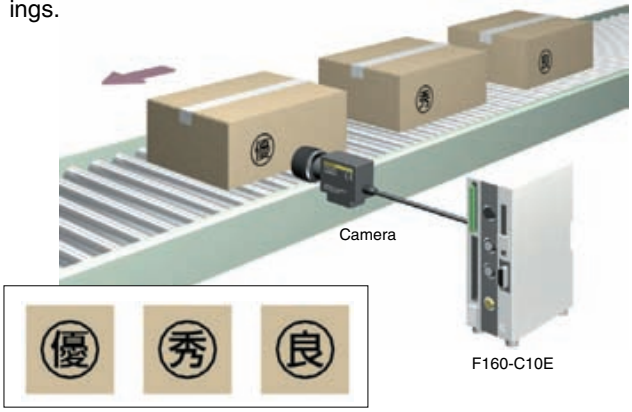
A diffuse reflective sensor can be used to detect cardboard boxes from a distance of up to 1 m. A retroreflective sensor permits detection from up to 4 m. The use of the Cover Brackets provides even greater durability.



E3Z (page A-43)
Photoelectric Sensors with a Built-in Amplifier
E39-L98 Cover Brackets

148. Sorting Packed Fruit Boxes by Grade

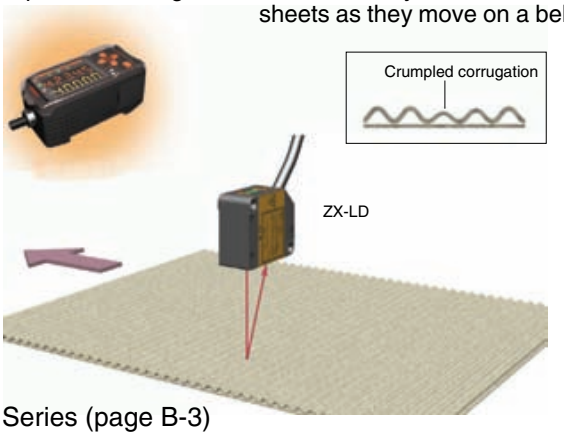
The boxes are sorted by distinguishing printed grade markings.



F160 (page C-25)
Vision Sensor

149. Inspecting the Height of Corrugations in Cardboard Boxes

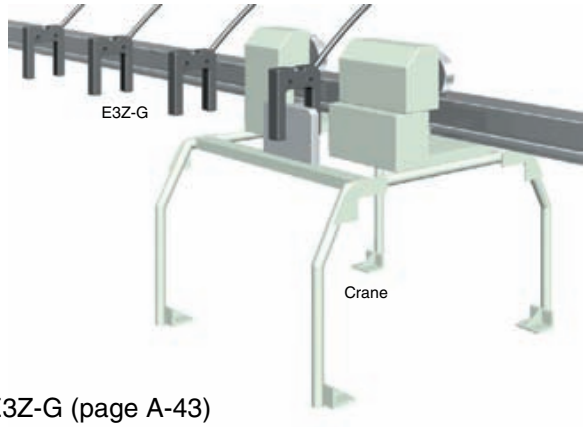
Crumpling can be detected by measuring the distance to the top of the corrugations in the inner layer of cardboard sheets as they move on a belt.



ZX Series (page B-3)
Smart Sensors

150. Warning Alarms for Cranes

The direction of crane movement can be distinguished, and the crane's entry into danger zones can be detected.

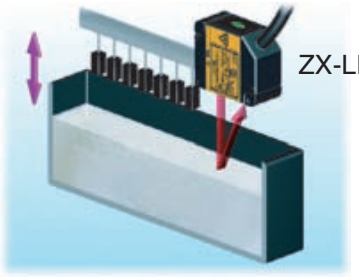


E3Z-G (page A-43)
Grooved-type Photoelectric Sensors with a Built-in Amplifier

Other Applications

151. Liquid Surface Inspection with Diffuse Reflection type Area Laser Beam

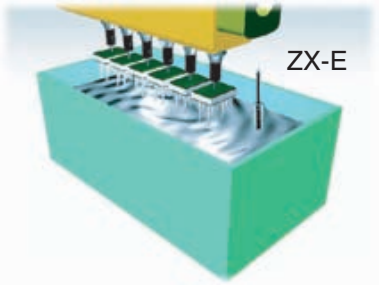
An inspection highly precise with the linear output if the liquid is colored and it can inspect for a short distance from the tank upper part.



ZX-L-N (page B-3)
Smart Sensor (Laser Type)

152. Liquid Surface Inspection with Linear Proximity Type

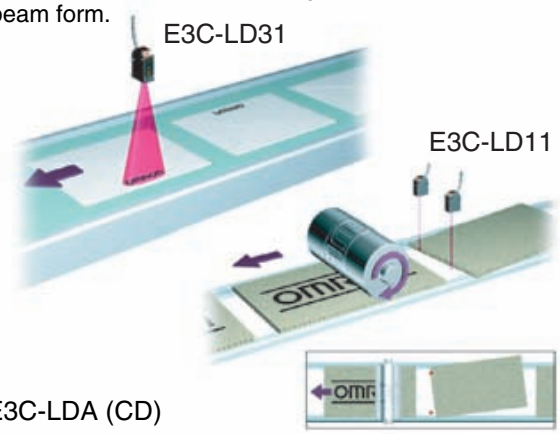
Precise measurement of the surface of liquid at the linear proximity which is excellent in environment-proof, if it is magnetic liquid and it can inspect for a short distance from the tank upper part.



ZX-E Series (page B-3)
Smart Sensor (Linear Proximity Type)

153. Inspection of a Mark and a Gap of Various Sheets

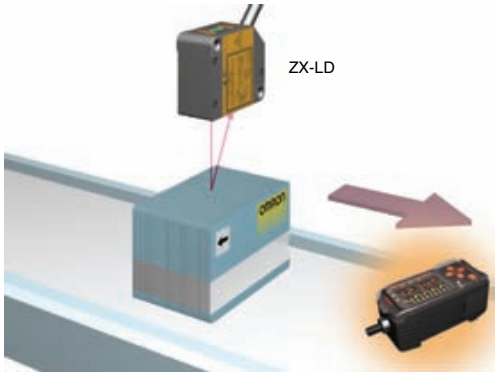
A mark and inspection of a gap are possible in various beam form.



E3C-LDA (CD)
Photoelectric Sensors with Separate Digital Amplifiers

154. Counting Cards

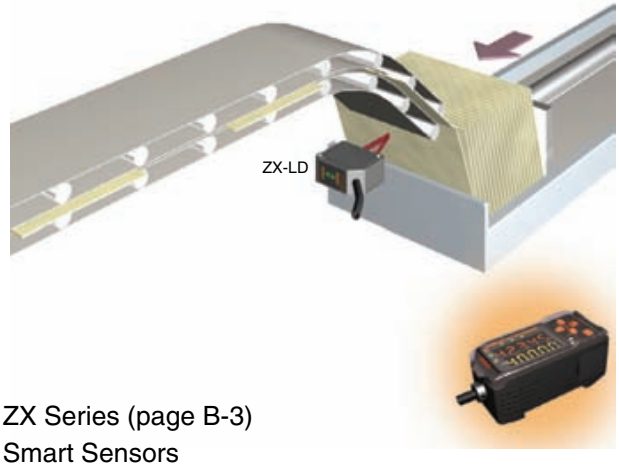
Bundles of cards, such as prepaid telephone cards, can be counted by detecting the card edges.



ZX Series (page B-3)
Smart Sensors

155. Counting Sheets of Paper

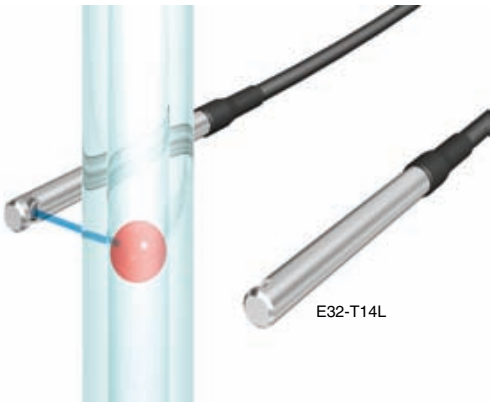
The number of sheets in a stack can be counted by detecting the level difference resulting from a single sheet.



ZX Series (page B-3)
Smart Sensors

156. Detecting Gas Flowmeter Balls

The red transparent ball in gas flowmeters can be detected with high stability by the Blue LED Teaching Fiber Amplifier.



E32-T14L Side-view Fiber Unit (page A-193)
E3X-DAB11-N Blue LED Teaching Fiber Amplifier

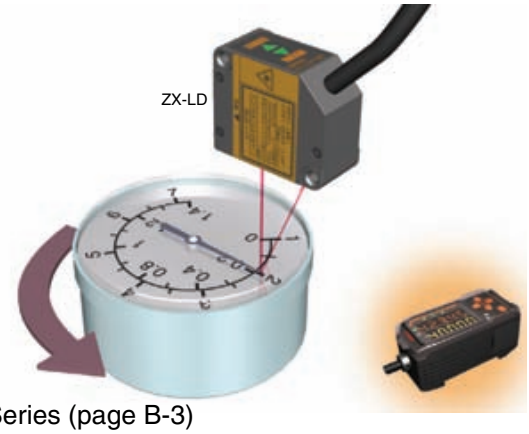
Applications

OMRON

etc. Other Applications

157. Inspecting the Gap between the Dial Plate and Indicator Needle in Pressure Indicators

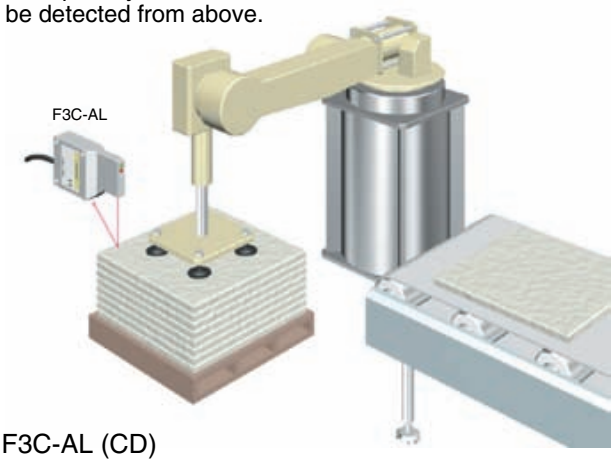
The gap between the dial plate and indicator needle can be measured through the transparent glass cover.



ZX Series (page B-3)
Smart Sensors

158. Detection of Remaining Boards for Construction Use

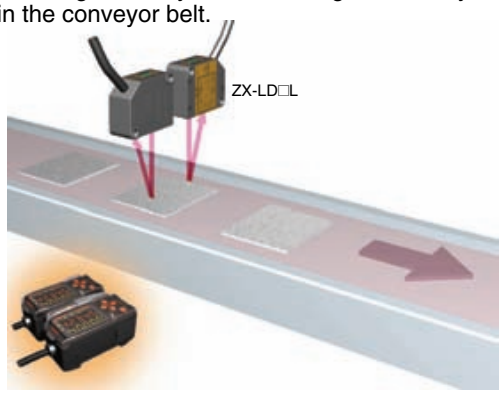
The quantity of boards or other construction materials can be detected from above.



F3C-AL (CD)
Distance-controlled Laser Photoelectric Sensors

159. Distinguishing Ceramic Types

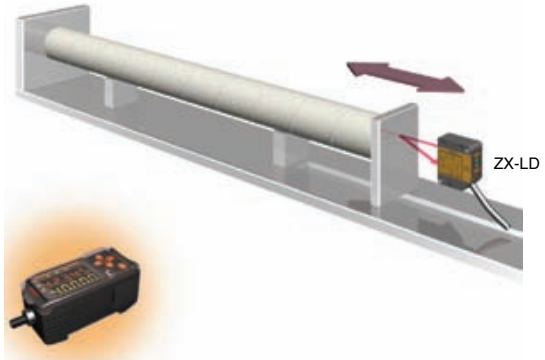
Using two Sensors, the changes in thickness can be measured with high stability, without being affected by fluctuations in the conveyor belt.



ZX Series (page B-3)
Smart Sensors

160. Inspecting the Length of Paper Tubes

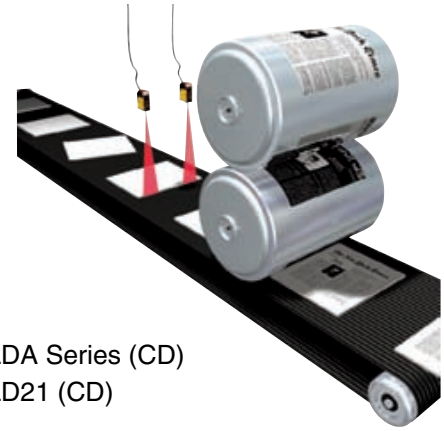
By using an end plate and detecting from the tube side, detection is possible without being affected by paper splinters.



ZX Series (page B-3)
Smart Sensors

161. Sheet alignment for printing and finishing process

E3C-LD21 detects the alignment of paper sheets before printing or before packaging. The twin output model allows to set up two threshold levels for tolerance



E3C-LDA Series (CD)
E3C-LD21 (CD)