TAKEX

PHOTO SENSORS

TAKENAKA ELECTRONIC INDUSTRIAL CO.,LTD.

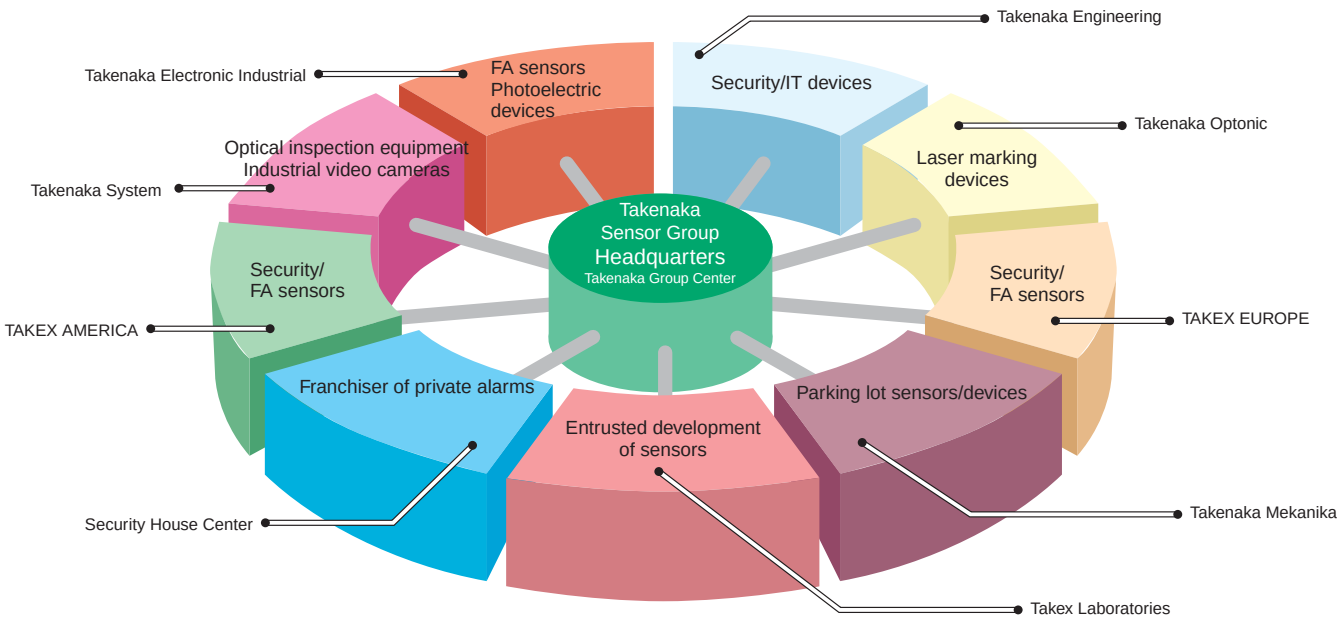
Takenaka Sensor Group

TAKEX

The Takenaka Sensor Group concentrates its unique sensor technology to offer desirable products to all companies and people in a variety of fields. The individual group member companies are committed to the enhancement of creativity and fostering of technological innovations as well as further globalization to contribute to the creation of more affluent society in the future.

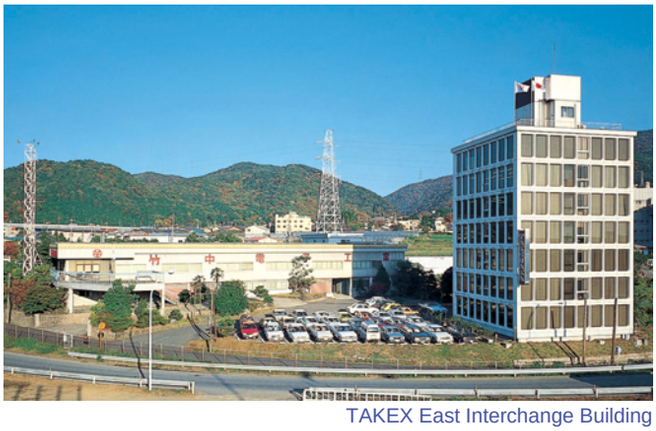
TAKENAKA SENSOR GROUP

We provide sensor technology and service



We are a venture enterprise group of a select few

TAKEX Higashino Building Main Building
(west of subway Higashino Station, Kyoto City)



TAKEX East Interchange Building
(Meishin Expressway Kyoto East Interchange, Kyoto City)

TAKEX Higashino Building North Building
(west of subway Higashino Station, Kyoto City)

TAKEX Nishino Building
(Yamashina Nishino on Gojo Street, Kyoto City)

TAKEX Nishino Distribution Center
(Yamashina Nishino, Kyoto City)

TAKEX Kitakazan Building
(east of Oishimichi on Gojo Street, Kyoto City)

General Table of Contents (Product Guide)

Fiber Optic Sensors

Photo Sensors with Built-in Amplifier

Light Curtain Sensors

Background Suppression Photo Sensors

Ultrasonic Sensors

AC/DC Power Supply Photo Sensors

Mark Sensors

Color Sensors

Control Units

Image Sensors

Photo Sensors for Steel and Heavy Industries

Products for Specific Applications

Digital Devices

Selection Guide

This Selection Guide for different industries, purposes of detection and operating environments provides useful guidelines for model selection and use of sensors.

Application → / Page No. / Product name ↓	Page No.	Selection according to industry														Presence detection	Positioning	Minute object detection	Transparent object detection	Color distinction	Register mark
		Delivery/logistics	Food/packaging/drug	Printing	Automated machine	Robot	Semiconductor	Electric/electronic device	Steel/heavy industry	Textile	Chemicals/oil	Paper/rubber/plastic	Glass/ceramic	Banking/service	Automobile						
Fiber optic sensors	1		●	●	●	●	●	●				●	●		●	●	●	●	●	●	●
Embedded amplifier photo sensors	163	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●		●		●
Light curtain sensors	265	●	●		●	●		●				●	●		●	●	●				
Background suppression photo sensors	327	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●				
Ultrasonic sensors	367	●	●		●	●		●			●	●	●		●	●	●		●		
AC/DC power supply photo sensors	385	●	●					●						●	●	●					
Mark sensors	409		●	●	●			●				●				●	●	●			●
Color sensors	433		●	●	●		●	●				●								●	●
Image sensors	455	●	●		●		●					●				●	●	●			
Photo sensors for steel and heavy industries	469								●				●			●	●				
Products for specific applications	541		●	●			●	●								●	●	●	●		●
Digital devices Guest counter/shift register	571	●			●									●							

Suitable models are marked with ●.

Selection according to purpose of detection													Selection according to environment							Application / Page No. / Product name	
Turbidity	Distance	Dimension	Number of rotations	Infrared/temperature	Liquid level (water detection)	Wafer	Glass substrate	Illumination check	Ignition check	Safety/wide area	Missing tablet	Security	Small area	High/low temperature	Dusty	Subject to splashes of water	In vacuum	Chemical	Explosive environment		
●		●	●		●	●	●	●					●	●			●	●	●	1	Fiber optic sensors
●		●	●		●	●	●						●		●	●		●		163	Embedded amplifier photo sensors
							●			●										265	Light curtain sensors
	●	●	●			●	●						●		●	●				327	Background suppression photo sensors
	●				●		●								●	●				367	Ultrasonic sensors
																				385	AC/DC power supply photo sensors
●		●	●																	409	Mark sensors
																				433	Color sensors
	●	●																		455	Image sensors
				●										●	●	●				469	Photo sensors for steel and heavy industries
			●		●	●	●	●	●		●						●	●	●	541	Products for specific applications
																				571	Digital devices Guest counter/shift register

The page numbers show the numbers for the first pages of the articles for the respective products.

How to Use This Catalog

Products covered in body text

The body of this catalog contains the products manufactured/offered for sale by Takenaka as of the date of publication of this catalog.

Model Index and page numbers

The products covered in this catalog are listed in the Index at the end of this catalog along with the corresponding page numbers.

Use of International System of Units (SI)

In agreement with the revision of the Measurement Law, the indication and designation of units of measurement such as specifications have been changed from JIS-based to SI.

Change of lead wire colors

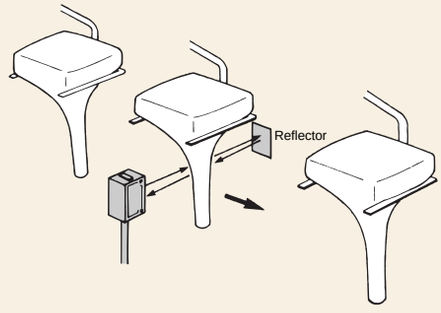
Lead wire	New color	Old color
+V	Brown	Red
0V	Blue	Black
Detection output	Black	White
Self-diagnosis output	Orange	Yellow
Synchronization	Orange/purple Stripe	Pink
Mode switching	Pink	Green

Color-coding of product groups and Series Index

The products are classified into 19 product groups and outlined in the General Table of Contents preceding the Text body. The Series Index lists the 19 product groups together with the corresponding page numbers.

Sample applications

The set of sample applications contained in the catalog are useful as a reference for correct sensor use. Note that the applications are listed only for informational purposes and may need adaptation for use in actual situations.



Symbols

- ·····Through-beam type
- ·····Diffuse reflective type
- ·····Polarization reflector type
- ·····Reflector type
- ·····Limited reflection
- ·····EMC-compliant
- ·····UL Standard-compliant (UL Mark)
- ·····UL Standard-compliant (U.S.A., Canada)
- ·····UL Standard-compliant (UR Mark)
- ·····CAD data

Series Index

Standard Certification/Environment Declaration

Environment Management System "ISO 14001" Certified

Takenaka Electronic Industrial Co., Ltd. has acquired the environment management system ISO 14001 certification.

With the pride and responsibility of an ISO-certified organization, we will continue to strive for the reduction of environmental burdens as an environmentally-conscious company.

Certification body	: Japan Quality Assurance Organization (JQA)
Certificate No.	: JQA-EM4788
Date of certification	: May 27, 2005
Company name	: Takenaka Electronic Industrial Co., Ltd.
Scope of products/services	: R&D, contract production management and sale of photoelectric devices (photo sensors) and related devices (sensor systems)
Business establishments concerned	: Takenaka Electronic Industrial Co., Ltd.

- Otsu Factory
  [Storage and shipping of products]
- Kitakazan Building
  [R&D and sales engineering activities of photoelectric devices (photo sensors) and related devices (sensor systems)

091-C

Environment Declaration

Environmental philosophy

With the awareness of global environment conservation as one of the most important issues shared by the entire human race, Takenaka Electronic Industrial Co., Ltd. will endeavor to reduce environmental burdens with concerted

Environment Policies

Takenaka Electronic Industrial Co., Ltd. will promote environment management activities based on the following policies to reduce the environmental impact of all business activities in relation to the manufacture and sale of control

1. Compliance to environment-related laws

We will observe environment-related laws including the Basic Environment Law along with other requirements and strive for improved environment conservation.

2. Promotion of the saving of energy and resources

We will direct our effort towards resource conservation by working on improvement activities for efficient use of energy including electricity and the reduction of use and reuse of papers.

3. Harmony with global natural environment

We will maintain full awareness of our wonderful environment of business activities blessed with scenic beauty and history of an ancient capital and contribute to the creation of beautiful regional environment surrounding the business establishments.

4. Continuous improvement

We will review our conservation targets on a regular basis and work on continuous improvement of environment management activities to prevent pollution for the accomplishment of these environment policies.

5. Development of environment awareness activities

We will announce this Environment Declaration to the outside as well as to all employees and cooperating factories so that each individual can actively implement activities to reduce environmental burdens.

September 1, 2003
Noboru Hayashi
President
Takenaka Electronic Industrial Co., Ltd.

Sample applications

Note and disclaimer

- The case examples contained in this collection of applications may require adaptation for use depending on various conditions of the actual situations.
  In some cases, models not mentioned in the applications may be capable of the detection described.
  Use these examples as hints on the use of our products and consult your sales representatives for information on the actual applications.

- A fiber optic sensor consists of an amplifier and a fiber optic cable. If the sample applications only mention the models of the fiber optic cables, amplifiers are always required.

Semiconductor

Electronic Component Mounting

Automatic assembly

Automatic assembly

Consumer electronics/OA

Metal processing

Steel/Ceramic

Delivery/Transportation

Logistics

Logistics

Automobile

Textile

Rubber/Plastic

Printing

Packaging/Food/Drug

Packaging/Food/Drug

Safety

Sanitary/Amusement

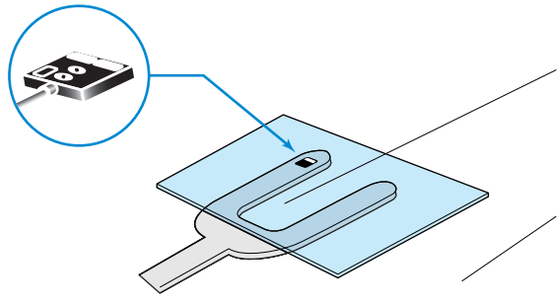
etc.

Applications

Semiconductor

1 Sensor flush-mounted in robot End-Effector

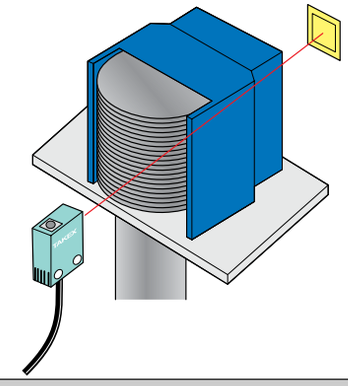
Built-in amplifier photo sensor of only 4 mm in thickness is flush-mounted in robot hand carrying liquid crystal glass for detecting the presence of clear glass.



Amplifier built-in photo sensor **ASG-S20R** See P.170

2 Detection of wafers in wafer carrier

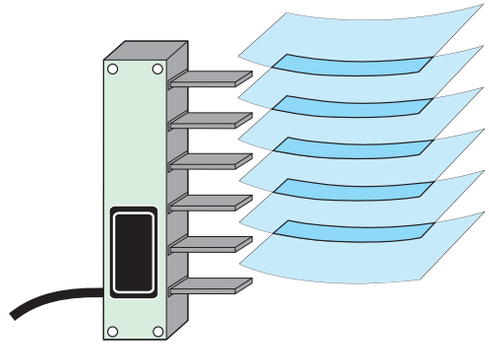
Wafer detected with sensor light axis slanted.



Amplifier built-in photo sensor **GA-M3R** See P.202

3 Collective detection of glass substrates

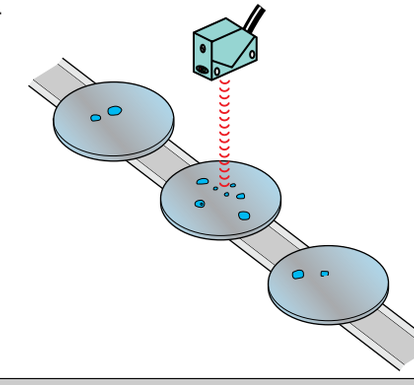
Detection of glass substrates in cassette.



Glass substrate sensor **ASW** Series See P.562

4 Glass wafer detection

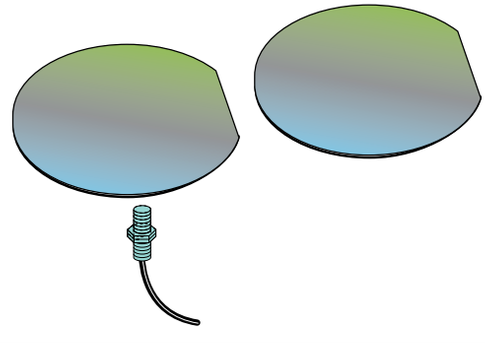
Ultrasonic sensor reliably detects wafers with water drops on them.



Ultrasonic sensor **US-R25** See P.376

5 Silicon wafer detection

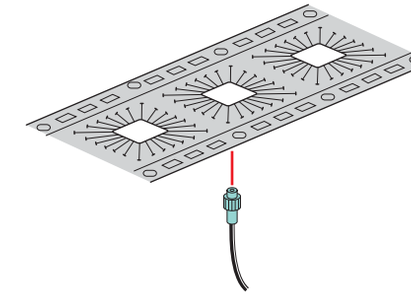
Compact ultrasonic sensor used for “underneath” detection.



Ultrasonic sensor **US-S25AN** See P.378

6 Detection of IC frame pitch holes

Small holes reliably detected with fiber cable in combination with lens unit.

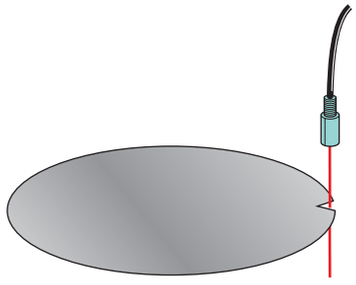


Fiber optic sensor **FX84BC FA240** See P.112

Semiconductor

7 Wafer notch detection

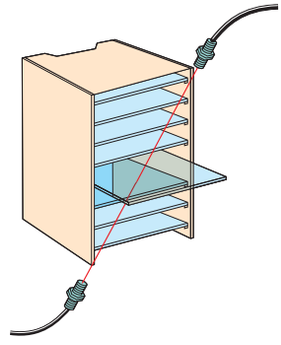
Coaxial reflective-type fiber cable with lens unit detecting small spot for notch detection.



Fiber optic sensor **FX84BC FA200** See P.112

8 Detection of glass substrate protrusion

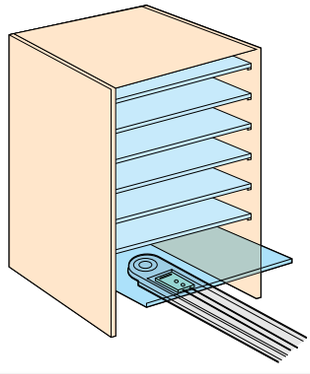
Narrow-view fiber optic cable detecting substrate protrusion from cassette.



Fiber optic sensor **FTN5BC** See P.76

9 Robot arm-mounted sensor

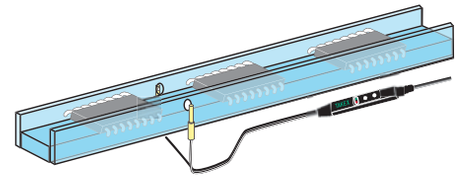
Limited reflection type fiber optic cable integrated in arm.



Fiber optic sensor **FZV8301BC** See P.117

10 Detection of work on IC tester

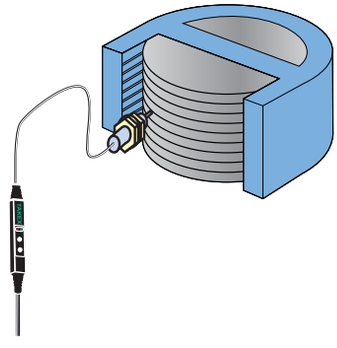
Passage of flat ICs checked.



Fiber optic sensor **F2R FT8BC** See P.69

11 Detection of wafers in carrier

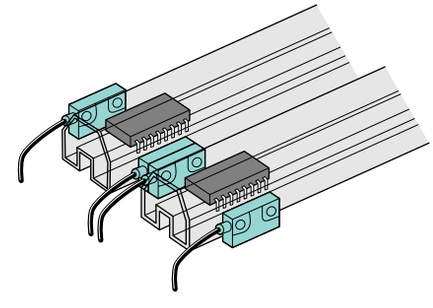
Wafer edges detected.



Fiber optic sensor **F2R FR7BC** See P.97

12 Detection of ICs in transparent sticks

Ultra-thin sensor fitting in space between sticks.



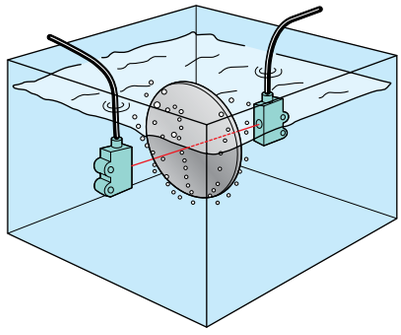
Amplifier built-in photo sensor **UM2-T15DT** See P.172

Applications

Semiconductor

13 Detection of wafer in cleaning tank

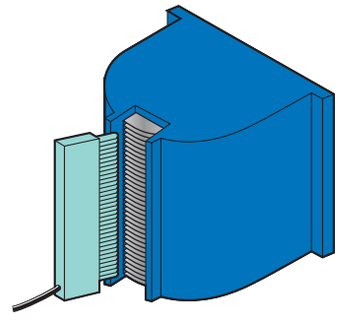
PFA sensor installed inside tank.



Amplifier built-in photo sensor **PF-T3DS** See P.240

14 Collective detection of wafers

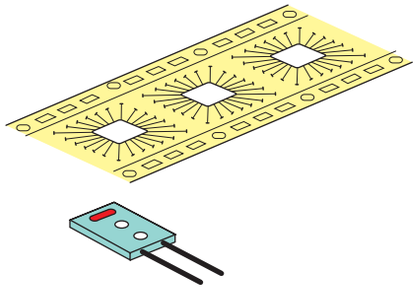
Presence of wafers in cassette collectively checked for mapping.



Wafer sensor **ASW-SG** Series See P.556

15 Lead frame detection

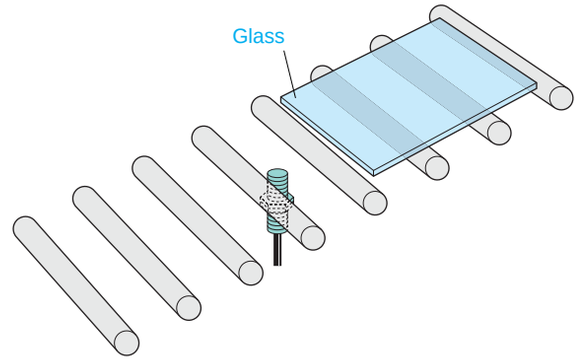
Thin head of only 2 mm in thickness detecting lead frames from underneath.



Fiber optic sensor **F70AR FZV8202BC** See P.119

16 Detection of glass substrate for PDP

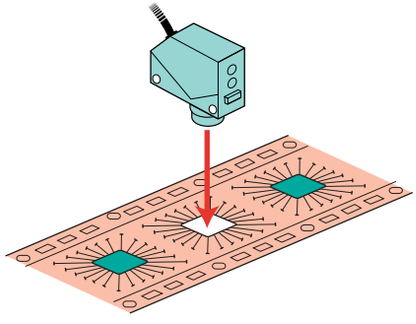
Glass substrates detected in vacuum chamber.



Vacuum fiber optic cable **GXHN710V** See P.130

17 Detection of chips on lead frames

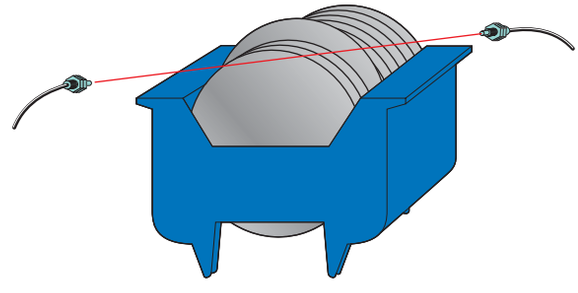
Variable-focus spot type reflective laser sensor checking presence of chips.



Laser sensor **LD-S20R** See P.228

18 Detection of protrusion of wafers

Protrusion of wafer detected for prevention of trouble.

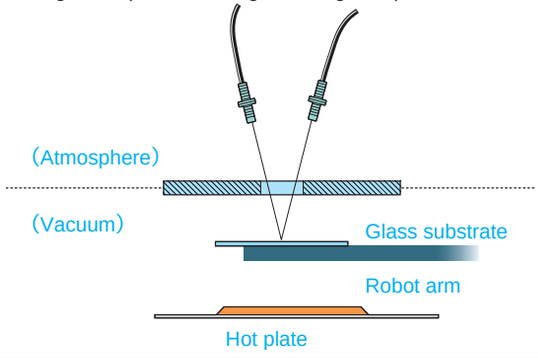


Fiber optic sensor **FTV7BC** See P.73

Semiconductor

19 Detection of LCD board in vacuum tank

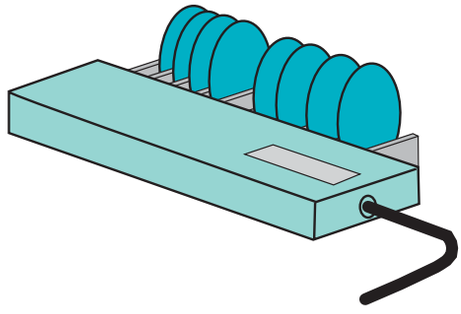
General-purpose fiber optic cable mounted in V-shape detecting through view-port and taking advantage of specular reflection.



Fiber optic sensor **FT105BC** See P.68

20 Hard disk mapping

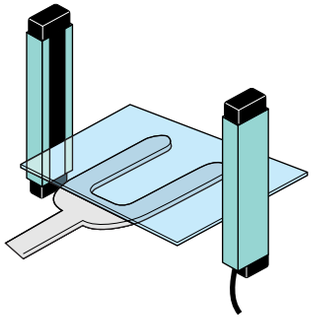
Smaller-pitch of LCD glass substrate sensor is ideal for this application.



Glass substrate sensor **ASW** Series See P.562

21 Robot hand detection

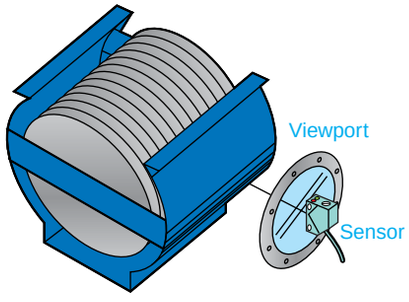
Detection of Robot hand with glass substrate mounted on it in order to initate stopping XY stage movement.



Wide area sensor **SSC-T800** Series See P.276

22 Wafer carrier detection

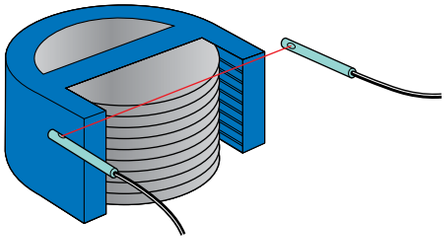
Wafer carrier detected through viewport of vacuum tank.



Background suppression photo sensor **DL-S10R** See P.348

23 Wafer position detection

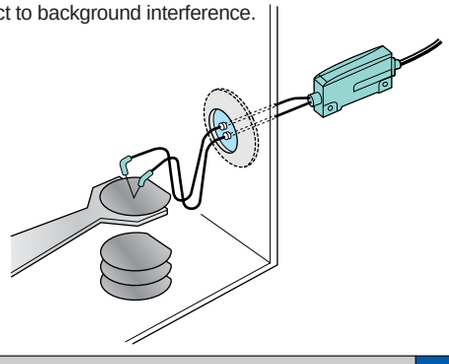
Narrow-view fiber optic cable allowing high-accuracy detection.



Fiber optic sensor **FTVN5BC** See P.76

24 Detection of wafers in vacuum tank

Heat-resistant vacuum fiber optic cable mounted in V-shape to achieve limited reflection, therefore, making detection less subject to background interference.



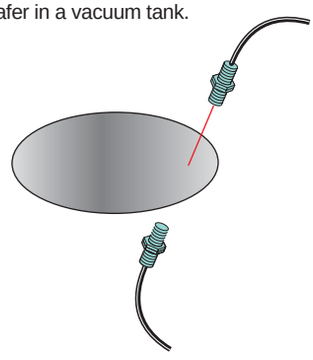
Vacuum fiber optic cable **GTSH/GTH** Series See P.127

Applications

Semiconductor・Electronic Component Mounting

25 Wafer detection

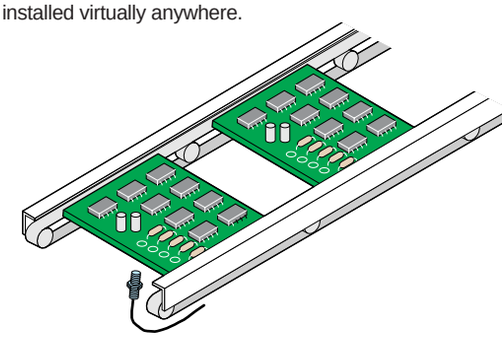
Heat-resistant vacuum through-beam type fiber optic cable detecting wafer in a vacuum tank.



Fiber optic sensor **GTHN700V** Series See P.128

26 Detection of passage of boards

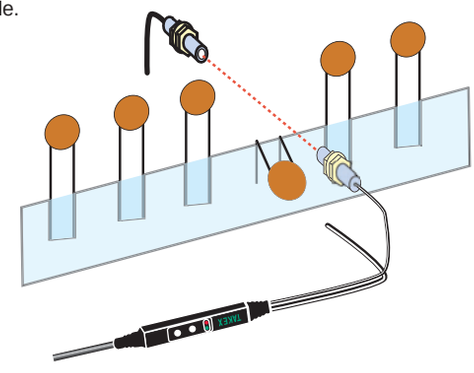
Boards detected on insertion machine.
Fiber optic cable with allowable bending radius of 1 mm can be installed virtually anywhere.



Fiber optic sensor **F70R FR7YBC** See P.101

27 Detection of defects in capacitors

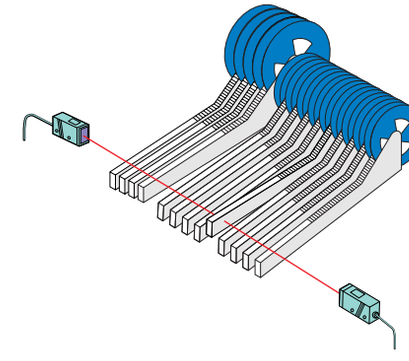
Bends above taping detected with through-beam type fiber optic cable.



Fiber optic sensor **F2R FT5BC** See P.70

28 Detection of lifting of tape feeder

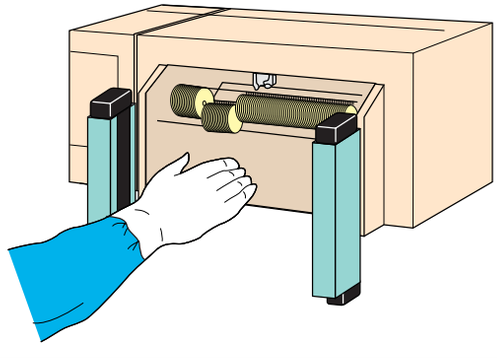
Lifting of any one of ten feeders in line can be detected.



Laser sensor **LD-T20R** See P.234

29 Safety check of insertion machine

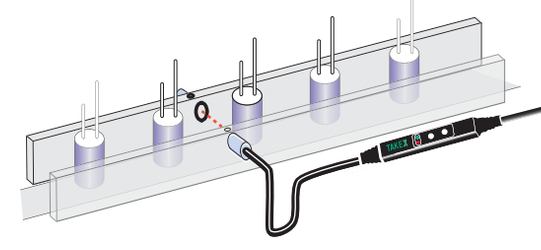
Operation of machine stopped if hand, etc. is detected during operation.



Light curtain sensor **SSC-T800** Series See P.276

30 Capacitor pass/fail check

Fiber optic cable embedded in guide for detection.

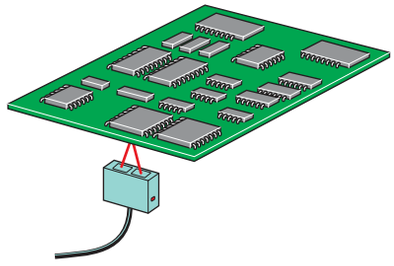


Fiber optic sensor **F2R FT81BC** See P.71

Electronic Component Mounting

31 Board detection

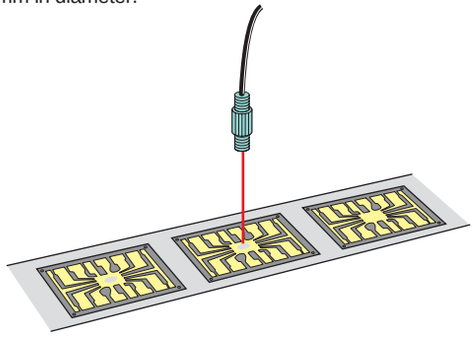
Boards detected in insertion machine by limited reflection method, unaffected by board color or background.



Amplifier built-in photo sensor **DLZ-S30** See P.224

32 Checking of presence of silver paste

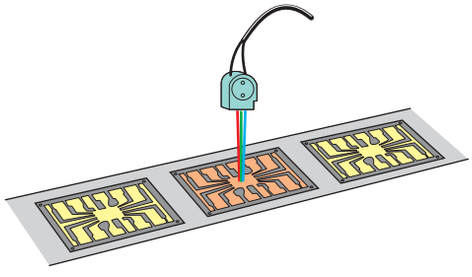
Even a small amount of paste can be detected with a spot size of 0.5 mm in diameter.



Fiber optic sensor **F70AR FX210J FA240** See P.114

33 Detection of lead frame plating

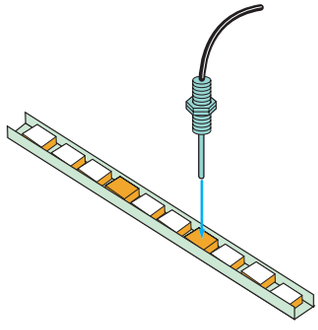
Reliable detection achieved by determination of RGB color component and brightness.



Color sensor **CS-D3 CS-DF30** See P.434

34 Checking for upside-down electronic components

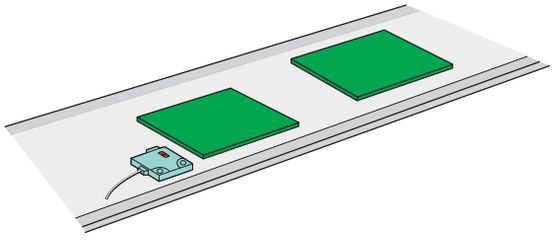
Blue light fiber optic sensor used for determining whether the right sides of electronic components are facing up in part chute.



Fiber optic sensor **F70AB FRS83BC** See P.104

35 PCB detection

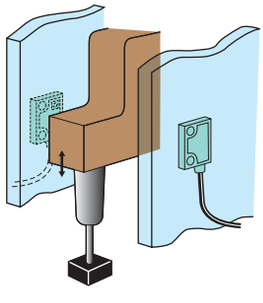
Ultra-thin sensor allowing installation virtually anywhere.



Amplifier built-in photo sensor **UM-R5T** See P.184

36 Positioning of mounter head

Ultra-thin sensor for space saving in head positioning.



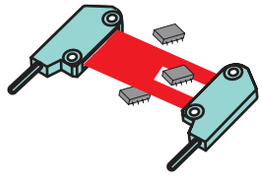
Amplifier built-in photo sensor **UM2-T15DT** See P.172

Applications

Electronic Component Mounting

37 Counting of minute parts

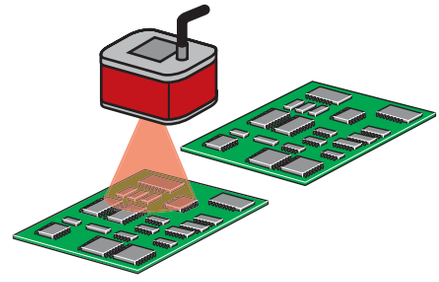
Wide area fiber optic cable allowing wide-view detection.



Fiber optic sensor **FTLV702BC** See P.88

38 Geometric defect inspection

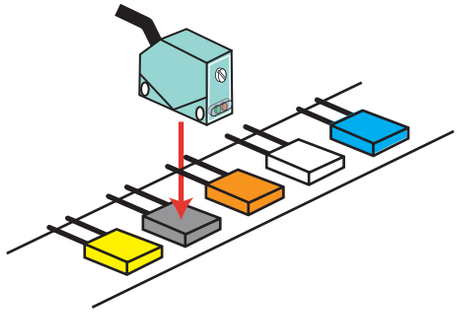
Missing parts on boards, etc. detected.



BGS compound-eye sensor **VS** Series See P.196

39 Electronic component detection

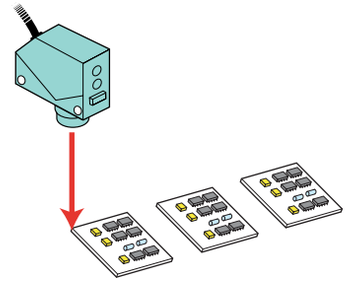
Molded parts detected with background suppression photo sensor unaffected by color variation.



Background suppression photo sensor **DL-S10R** See P.348

40 Positioning of hybrid boards

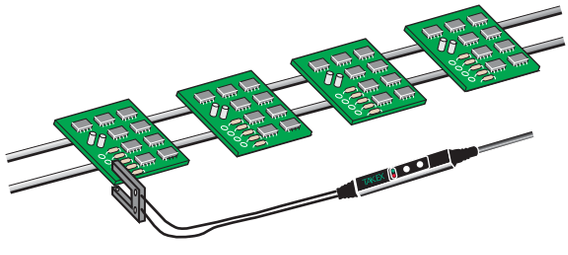
High-precision positioning achieved with micro-spot laser beam.



Laser sensor **LD-S20R** See P.228

41 Positioning of PCBs

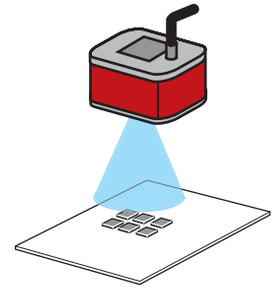
Stop position of PCBs determined with U-shaped through-beam type photo sensors that are unaffected by color, gloss and warp of boards.



Fiber optic sensor **F2R FU712BC** See P.83

42 Quantity/position check

Quantity and position of work in view checked.

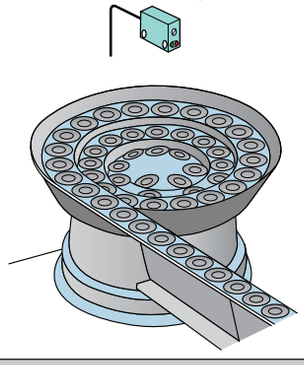


BGS compound-eye sensor **VS** Series See P.196

Automatic assembly

43 Detection of exhaused parts in parts feeder

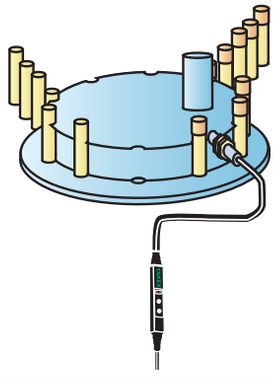
Parts assumed to have run out when a certain level of light continuously detected for a certain period of time by reflective type sensor.



Amplifier built-in photo sensor **GSZ5RS** See P.200

44 Checking for the presence of caps

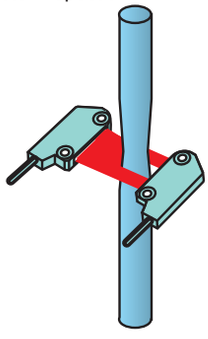
Presence of caps on works checked by reflective-type fiber optic cable.



Fiber optic sensor **F2R FR8EBC** See P.95

45 Outer diameter inspection

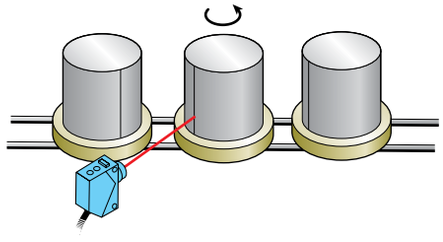
Wide area fiber optic cable used in combination with two-output amplifier for diameter inspection.



Fiber optic sensor **F70TR FTVW7YBC** See P.88

46 Weld joint detection

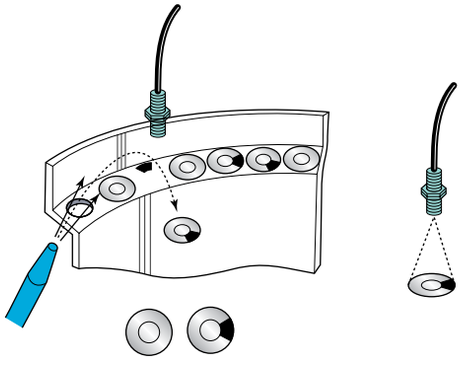
Joint of motor body detected before welding. Variable-focus spot type sensor allowing optimized adjustment according to distance.



Laser sensor **LD-S20R** See P.228

47 Checking for upside-down parts

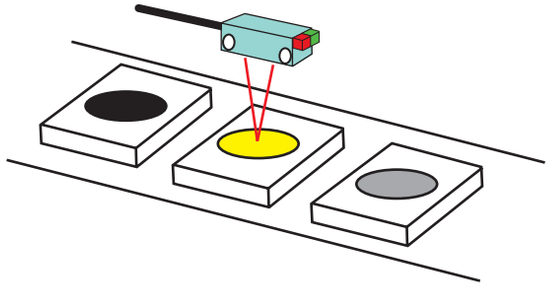
The side of parts facing up determined by level of reflected light.



Fiber optic sensor **F70AR FX84BC** See P.112

48 Checking of parts assembly

Limited reflection type sensor used for detecting works to be assembled into small parts.



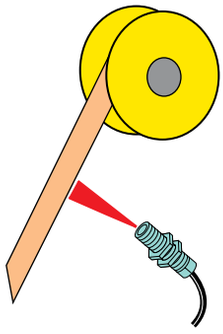
Amplifier built-in photo sensor **UM2-Z3SV** See P.172

Applications

Automatic assembly

49 Position control of stick-on tape

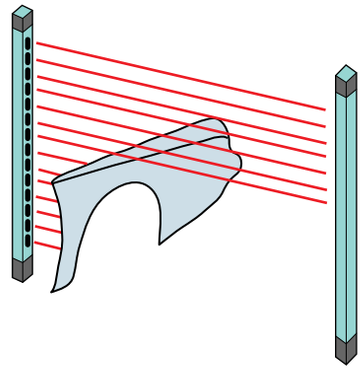
Analog-output fiber optic sensor used for detecting edge of tape for prevention of displacement of tape.



Fiber optic sensor **F71RAN FX801BC** See P.112

50 Checking the shape of coated work

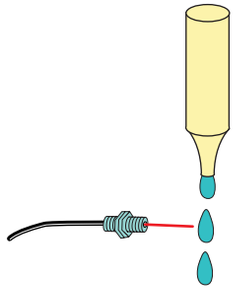
Height of coated work determined by separate outputs for light axes.



Light curtain sensor **SS-CH** Series See P.324

51 Counting of drops of liquid

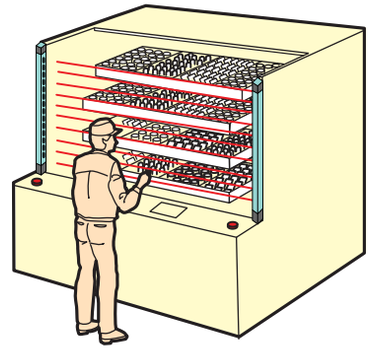
Number of drops of adhesive, etc. counted with fiber optic sensor equipped with preset counter function.



Fiber optic sensor **F70VR** See P.42

52 Controlling a parts stocker

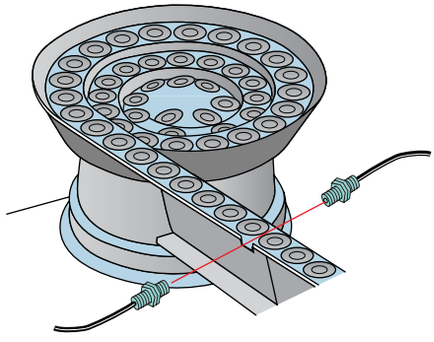
Rotation of shaft prevented while parts are being taken out.



Light curtain sensor **SS10·20·40** See P.290

53 Work detection

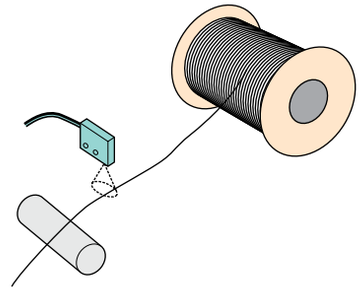
Work detected on parts feeder chute.



Fiber optic sensor **F70AR FT5BC** See P.70

54 Checking of presence of wire

Wide-view fiber optic cable used for detecting breakage of wire achieving reliable detection even with swaying work.

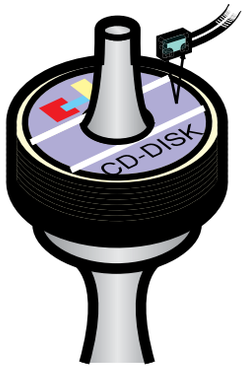


Fiber optic sensor **FRL732BC** See P.122

Consumer electronics/OA

55 Checking of presence of CD

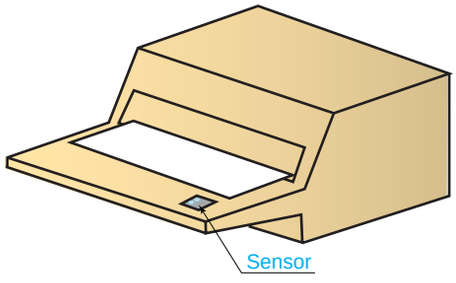
Reliable detection achieved without being affected by patterns printed on CD.



Background suppression photo sensor **DL-S** Series See P.348

56 FAX arrival notification

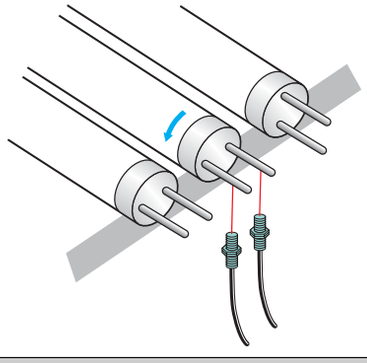
FAX arrival detected at delivery point and then reported.



Amplifier built-in photo sensor **UM-R3T** See P.184

57 Positioning of fluorescent tubes

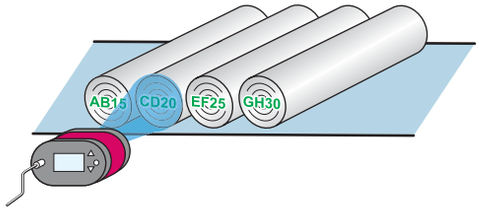
Detection of electrodes for the purpose of positioning and marking fluorescent tubes.



Fiber optic sensor **F71R FR1083BC** See P.94

58 Checking for print

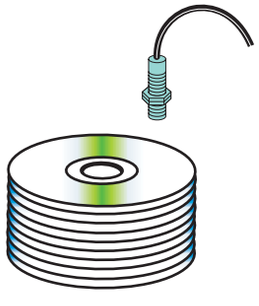
Paper rolls checked for missing print.



BGS compound-eye sensor **VS-S20B** See P.196

59 Checking for upside-down CD-ROMs

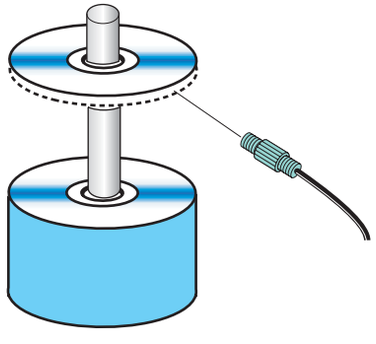
High resolution of F70R allows distinction between sides of CD that would otherwise be difficult with the human eye.



Fiber optic sensor **F70R FR8EBC** See P.95

60 Detection of double feed of CDs

Detected from the side with small spot beam.



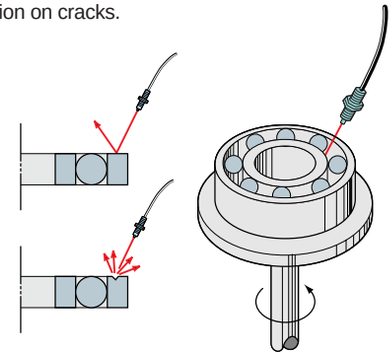
Fiber optic sensor **FX84BC FA240** See P.112

Applications

Metal processing

61 Detection of crack in bearing bushings

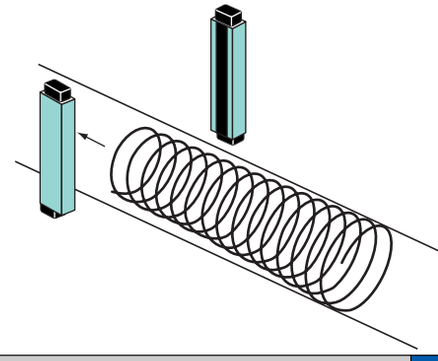
Surface cracks detected by taking advantage of irregular light reflection on cracks.



Fiber optic sensor **F70R FX716BC** See P.115

62 Detection of passage of coils

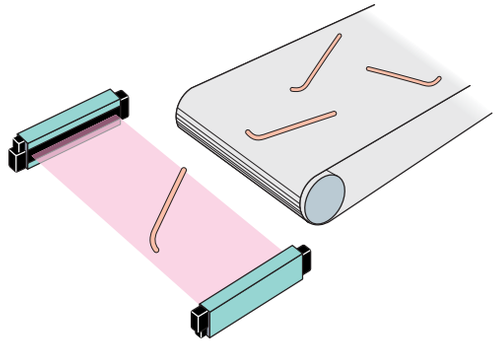
Radial cross-ray-type wide area sensor capable of detecting coils, which do not have enough mass to block light.



Light curtain sensor **SSC-T800** Series See P.276

63 Detection of falling processed works

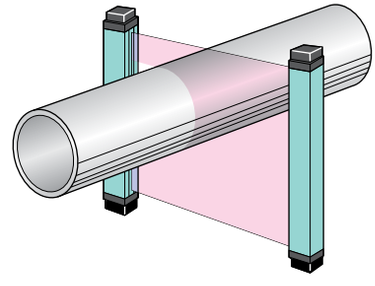
Works with irregular forms falling at arbitrary points and then detected with radial cross ray-type wide area sensor.



Light curtain sensor **SSC-T800** Series See P.276

64 Measurement of outer diameter of pipes

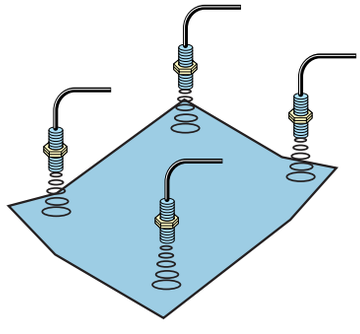
Wide area sensor with separate outputs for individual light axis is used for the purpose of measuring outer diameter of sorting pipes.



Light curtain sensor **SS-CH** Series See P.324

65 Checking of evenness of steel plates

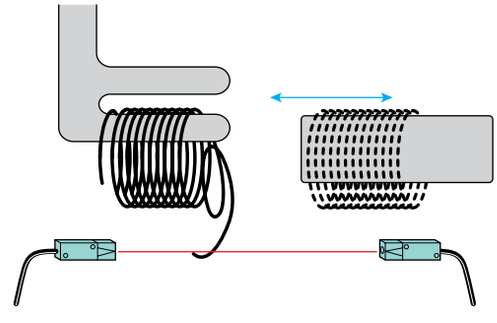
Measurements taken at four corners of steel plate to determine evenness.



Ultrasonic sensor **US-S303AN** See P.380

66 Detection of loose wire rods

Wire hanging from loose wire rod carried by hook conveyor is detected (sensor used in combination with pinhole plates).

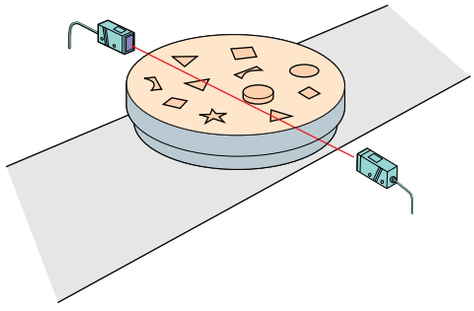


Amplifier built-in photo sensor **NT30F-30P3** See P.216

Metal processing・Steel/Ceramic

67 Detection of tools in turret

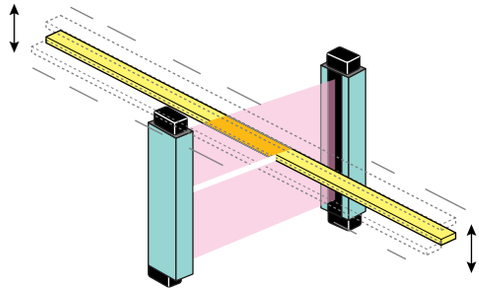
Any tool raised above turret surface due to a failed placement is detected during movement or rotation of turret.



Laser sensor **LD-T20R** See P.234

68 Thin work detection

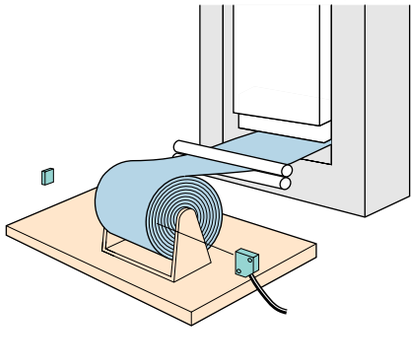
Plate-shaped work passing in arbitrary area is detected with radial cross-ray-type wide area sensor. Detection is unaffected by plate width.



Light curtain sensor **SSC-T800** Series See P.276

69 Detection of remaining amount of coiled material

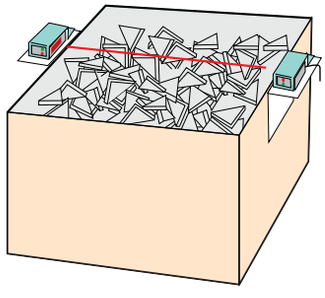
Remaining amount of coiled material is checked to preven operation without material and also for material joining.



AC/DC power supply photo sensor **NE-M5RD** See P.392

70 Detection of overfill of press cuttings

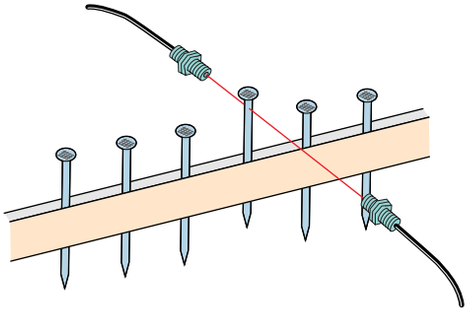
Press cuttings detected as they fill the container. Note: Separate SUS protective covers are available.



Amplifier built-in photo sensor **GT5RSN** See P.210

71 Detection of defective taping of nails

Through-beam type fiber optic sensor used for detecting nails displaced in taping.



Fiber optic sensor **F2R FT5BC** See P.70

72 Winding control

Control of large winder.
Long detection distance allows for safe detection of large rolls.

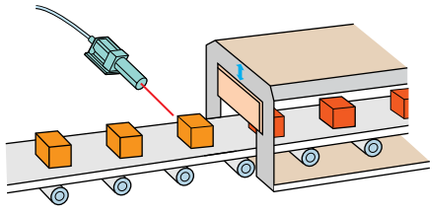
Background suppression photo sensor **DX-7AH** See P.342

Applications

Steel/Ceramic・Delivery/Transportation

73 Detection of red-hot steel

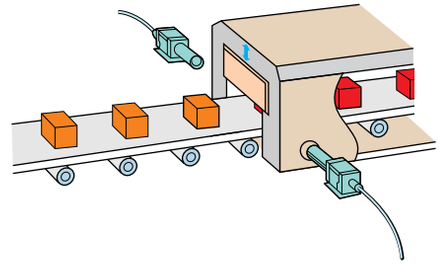
Position of material detected at outlet of furnace for closing shutter.



Fiber type **HMD FD300A/600A** See P.482

74 Detection of material in furnace

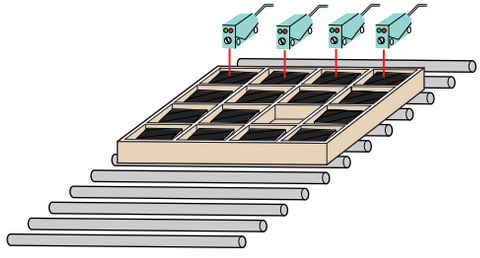
Position of material detected at outlet of furnace.



Fiber type **CMD FT44A** See P.504

75 Checking for missing tile

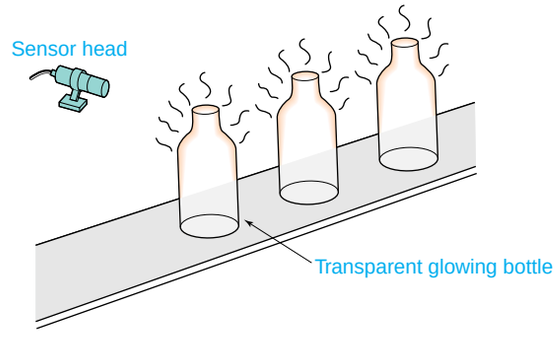
Pallet checked for any missing tile. Reliable detection is achieved without being affected by tile color variation.



Background suppression photo sensor **DL-S** Series See P.348

76 Detection of formed bottles

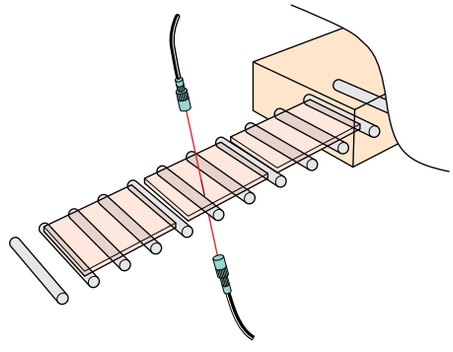
HMD used for the detection of hot-formed bottles.



Fiber type **HMD FD-A310C FA-0051** See P.488

77 Detection of glass plate at outlet of furnace

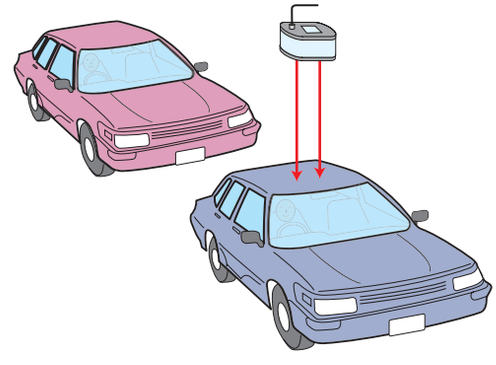
Heat-resistant through-beam type fiber optic cable with lens unit attached to accomplish long-distance detection.



Heat-resistant fiber optic sensor **GTH500JFA514** See P.91

78 Detection of passage of automobiles

Phase difference detection allowing for distances of up-to 7 m.



Background suppression photo sensor **DX-7AH** See P.342

Delivery/Transportation・Logistics

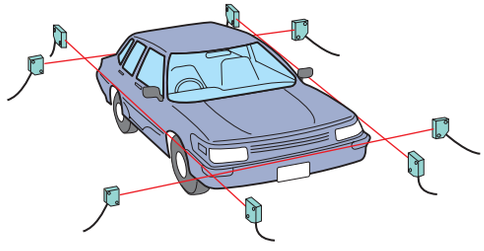
79 Detection of height of vehicles

High-powered sensor for detecting distances of up-to 30 m and then alarming due to excessive height.

AC/DC power supply photo sensor **NA-T30** See P.396

80 The detection of a vehicle in a multilevel parking garage.

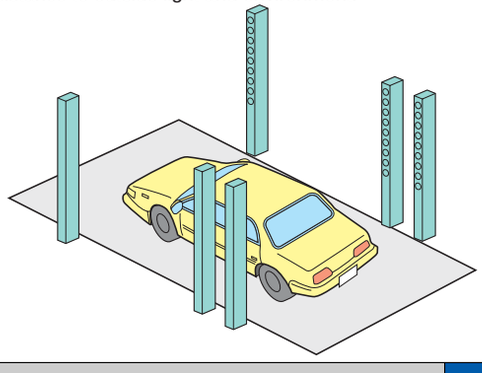
Detecting the protrusion of a vehicle in a multilevel parking garage hanger.



AC/DC power supply photo sensor **NE-T10RD** See P.392

81 Detection of vehicles for ETC

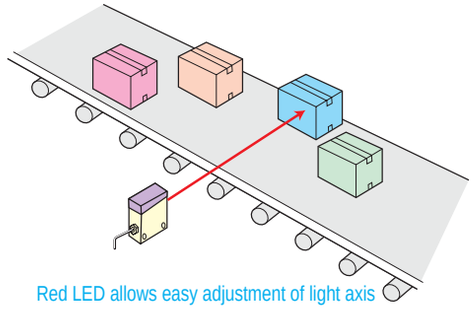
Detection via a through-beam type sensor with excellent resistance to outside light and environment.



Outside-use light curtain sensor **LST** Series See P.552

82 Detection of works in limited range

Detecting range limited by means of zone teaching. Objects passing/moving in front of sensor may be canceled.

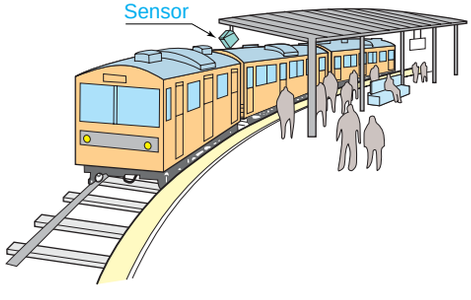


Red LED allows easy adjustment of light axis

Background suppression photo sensor **DA-S100RP** See P.334

83 Detection of approaching train

Detection of a train approaching the station in orderto activate an alert announcement and video monitor



Background suppression photo sensor **DL-S200P** See P.360

84 Prevention of collision

Crain bodies directly detected without reflector to prevent the collision of overhead traveling crains and unmanned crains.

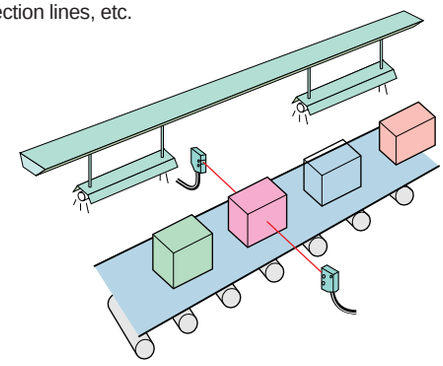
Background suppression photo sensor **DX-7AH** See P.342

Applications

Logistics・Automobile

85 Detection of object under strong ambient light

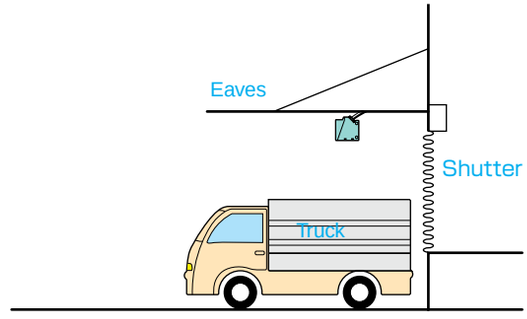
Detection unaffected by bright inverter fluorescent light on inspection lines, etc.



Inverter-protection photo sensor **NEF** Series See P.258

86 Checking of arrival of delivery trucks

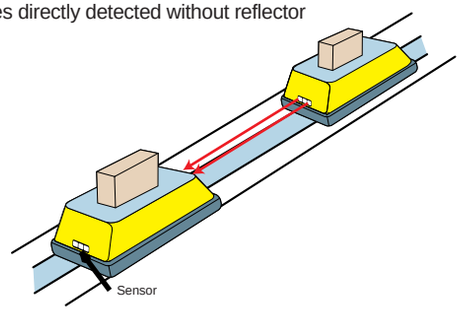
Arrival of trucks at yard detected.



Background suppression photo sensor **DA-S200P** See P.334

87 Distance control

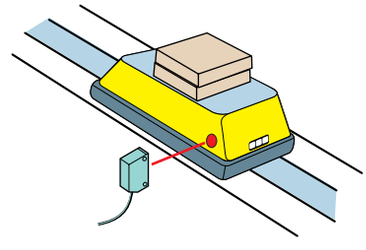
Used for deceleration and stopping control of high-speed unmanned carriages, etc. Analog output used for controlling distance from carriage ahead according to speed. Carriage bodies directly detected without reflector



Background suppression photo sensor **DX-7AH** See P.342

88 Transmission of signals to AGV carriages

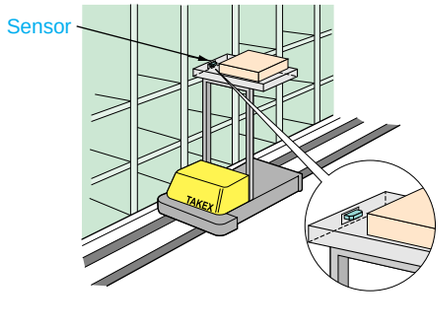
Through-beam type sensor used for sending signals from station.



Amplifier built-in photo sensor **GT7SN** See P.190

89 Detection of previously stored goods in automatic warehouse

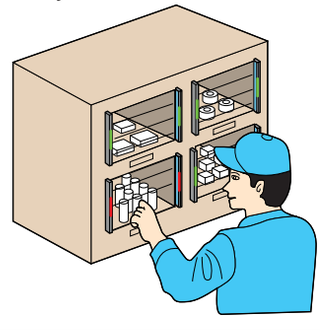
Sensor mounted on lift used for detection of previously stored goods.



Background suppression photo sensor **DL-S202** See P.354

90 Picking sensor

Picking sensor used for verifying and instruction of the removal of parts characterized by a large job-light allowing high visibility with a rigid thin metal body of 13 mm.

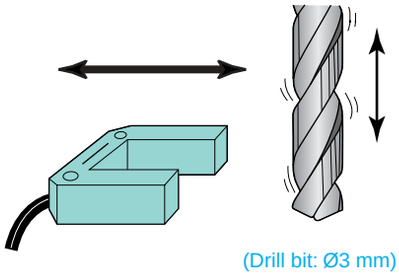


Picking sensor **SSP-T200** Series See P.284

Automobile • Textile

91 Detection of breakage of drill bit

Drill bit checked for breakage at each stroke. U-shaped sensor of IP 67 requires zero light axis adjustment and provides reliable detection.

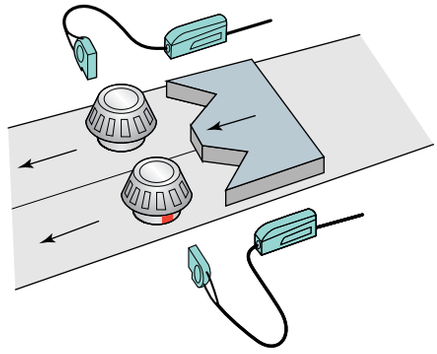


(Drill bit: Ø3 mm)

Amplifier built-in photo sensor **AS-U25** See P.260

92 Checking for mixed bearing outer cases

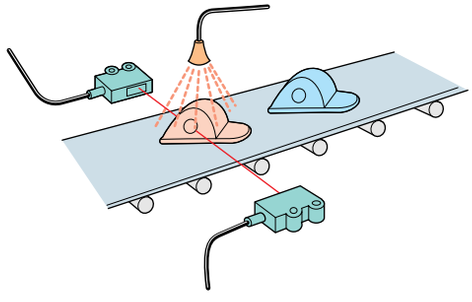
Outer bearing cases checked by color marking for the purpose of mixing different models.



Color sensor **CS-D3** **CS-DF10** See P.434

93 Detection of parts on conveyor

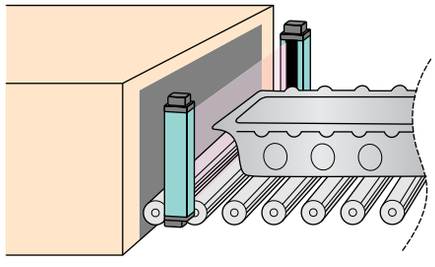
Highly chemical-resistant PFA sensor used for detecting parts in anticorrosive spraying process.



Amplifier built-in photo sensor **PF-T3DS** See P.240

94 Detection of engine head covers

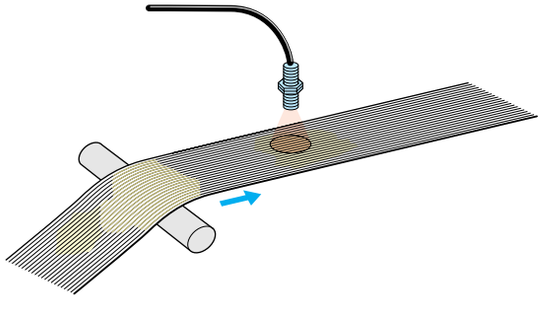
Wide area sensors provide reliable detection of works in different shapes otherwise unachievable with a single-axis sensor.



Light curtain sensor **SSC-T800** Series See P.276

95 Detection of thread dyeing unevenness

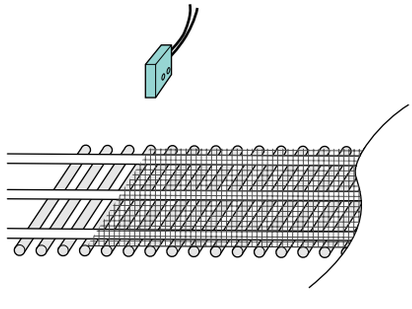
Inconsistent dyeing detected in the dyeing process. High resolution of F70R for arbitrary setting.



Fiber optic sensor **F70R** **FX84BC** See P.112

96 Detection of edge of lace/mesh fabric

Reflective-type fiber optic cable with wide detecting area provides reliable detection.



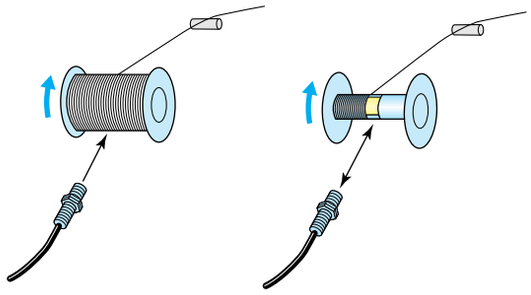
Fiber optic sensor **F71R** **FRL732BC** See P.122

Applications

Textile・Rubber/Plastic

97 Checking for presence of thread in industrial sewing machine

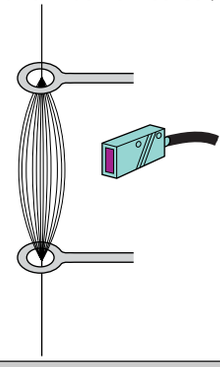
Reflective tape on bobbin shaft is detected therefore providing notification of thread running out.



Fiber optic sensor **F2R FX84BC** See P.112

98 Broken thread detection

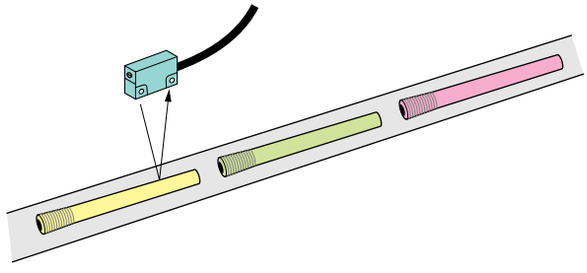
Loss of reflection of light caused by fluctuation or presence of detected thread with a wide-view sensor, therefore, assumes broken thread.



Amplifier built-in photo sensor **GS5N** See P.190

99 Bobbin detection

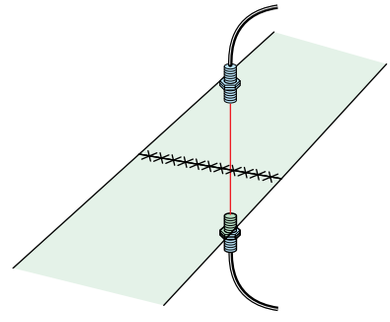
Background suppression photo sensor provides reliable detection and is unaffected by variation of bobbin color or shape.



Background suppression photo sensor **DL-S10R** See P.348

100 Fabric seam detection

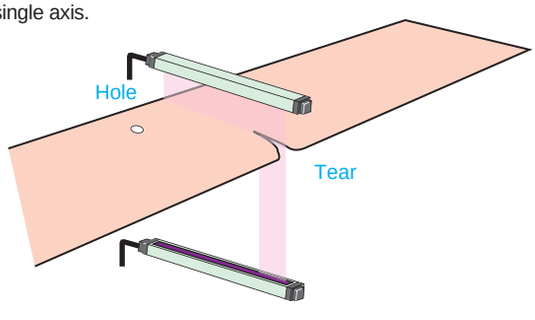
Seam of adjacent cloths detected in dyeing process.



Fiber optic sensor **F70R FT5BC** See P.70

101 Detection of hole or tear in opaque sheet

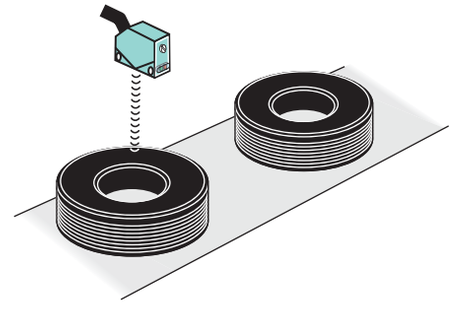
Wide area sensor equipped with the ability to switch between one-axis output and all-axis output modes provides the detection of a hole or tear by activating the output when light is received in a single axis.



Light curtain sensor **SS10/20/40** See P.290

102 Tire detection

Ultrasonic sensor used for detection regardless of tire size or conveyor color.

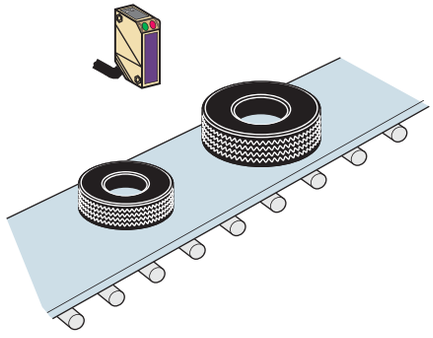


Ultrasonic sensor **US-R25** See P.376

Rubber/Plastic • Printing

103 Long-distance tire detection

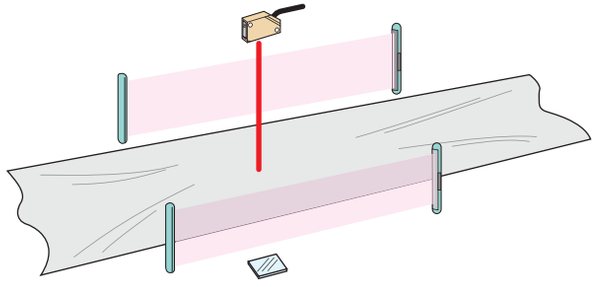
Long-distance sensor used for extra detecting distance, provides detection of tires in different sizes.



Background suppression photo sensor **DL-S202** See P.354

104 Sensors for detection of hard transparent film and safety

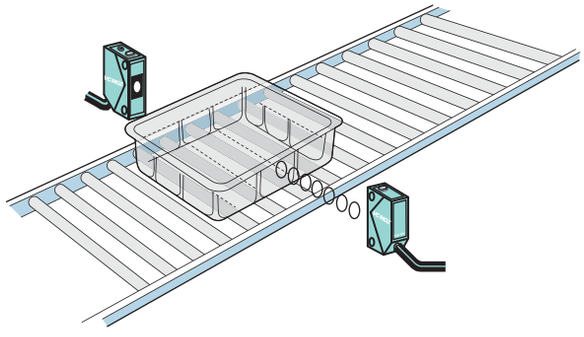
NES Series sensor provides a simple setting by self-teaching and therefore, reliable detection of transparent film. Wide area sensor is used for safety purposes while in winding process.



Light curtain sensor **ESN-T12** Transparent object detection sensor **NES-MT1D** See P.270

105 Transparent tray detection

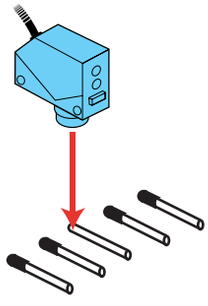
Passage of transparent tray detected with ultrasonic sensor.



Ultrasonic sensor **US-T50** See P.376

106 Rubber cap detection

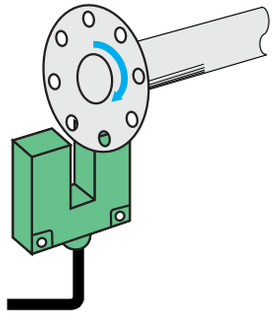
Diffuse reflective type laser sensor used for checking presence of black rubber cap on tip of metal rods. Variable-focus function provides optimal focusing of light spot according to distance.



Background suppression photo sensor **LD-S20R** See P.228

107 Sensor for counting number of rotations

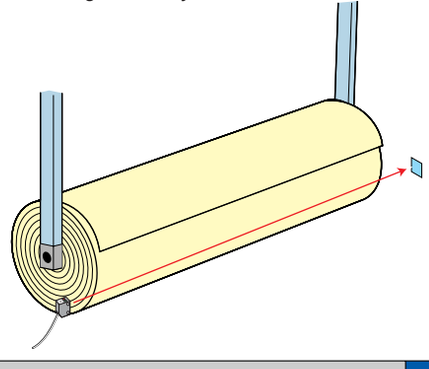
Holes in rotating disk detected for measuring number of rotations or speed (RPM).



Amplifier built-in photo sensor **PU5** See P.260

108 Positioning of rolled paper

Rolled paper positioned on printer. Sensor with focused laser beam ensures high accuracy.



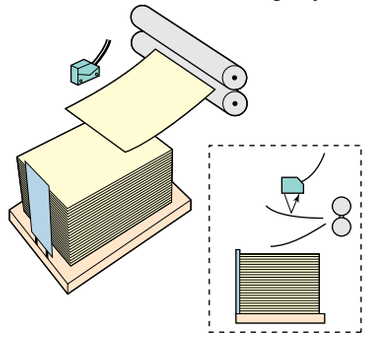
Laser sensor **LD-M10R** See P.228

Applications

Printing

109 Detection of lifting of ejected paper

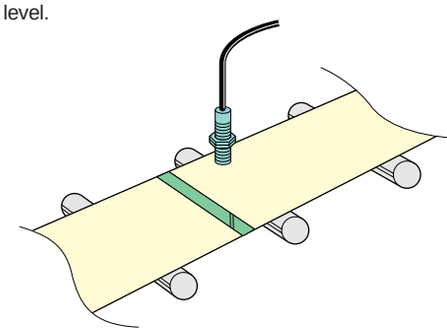
Background suppression photo sensor is unaffected by color variation and therefore used for detecting any lifting of ejected paper.



Background suppression photo sensor **DL-S** Series See P.348

110 Detection of tapes on paper joint lines

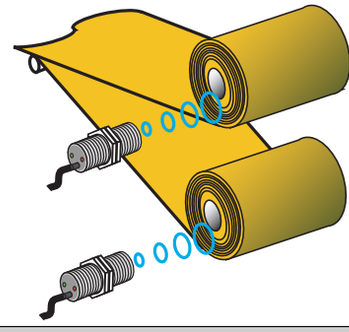
Tapes applied on paper joint lines are detected. Only variations in the level of light received are used to determine gradual changes in light level.



Fiber optic sensor **F10R-AT FR105BC** See P.93

111 Displacement control of corrugated board feed in a gluing process

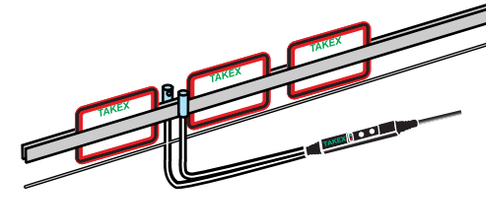
High-powered ultrasonic sensors stably measure distance from sides of corrugated boards, preventing displacement of boards in process of gluing them together by edge control.



Ultrasonic sensor **US-S303AN** See P.380

112 Prepaid card detection

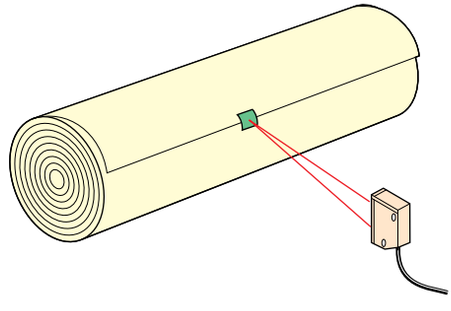
Slim amplifier resembling cable fitting in narrow space in line.



Fiber optic sensor **F2R FTV74BC** See P.72

113 Detection of tape on rolled paper

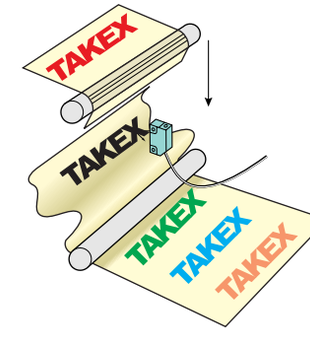
Tape on end of rolled paper detected with long-distance mark sensor.



Laser sensor **LD-S33R** See P.234

114 Detection of broken paper on rotary press

Limited-distance sensor not affected by print colors.

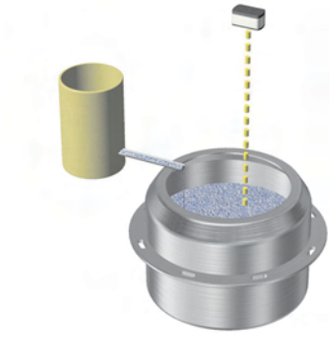


Background suppression photo sensor **DL-S** Series See P.348

Packaging/Food/Drug

115 Level control

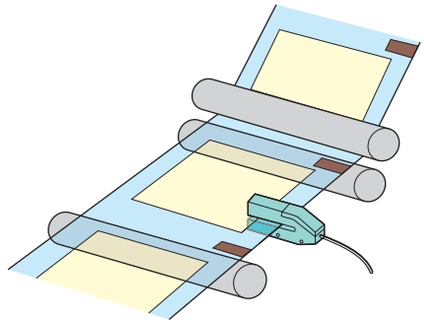
Grain or fine particles in tank are detected. Stable detection is ensured even with materials absorbing ultrasonic wave.



Background suppression photo sensor **DX-7AH** See P.340

116 Mark detection

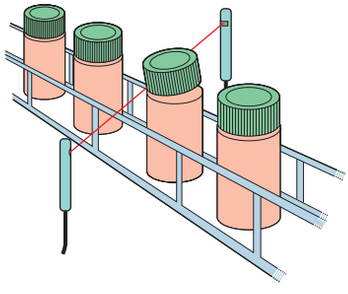
U-shaped sensor provide easy installation. Register marks on paper are detected by adjusting power of emitted light.



Mark sensor **MC-U2R** See P.428

117 Detection of lifting of caps

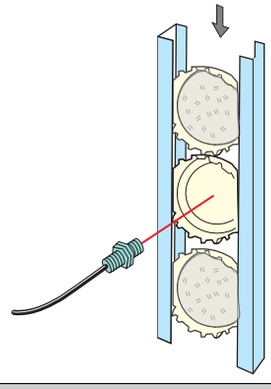
Lifting of caps due to inadequate tightening, etc. detected with narrow-view fiber optic sensor therefore achieving high accuracy.



Fiber optic sensor **FTVN5BC** See P.76

118 Bottle cap packing detection

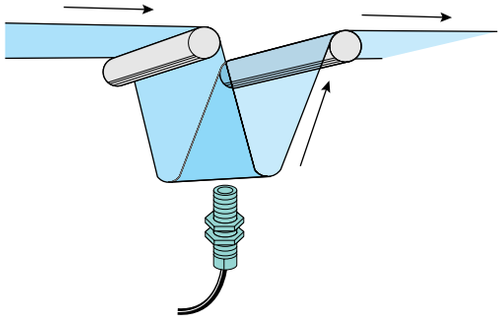
Detecting the presence of packing on back of bottle caps at high speed.



Fiber optic sensor **F70AR FR8EBC** See P.95

119 Transparent film loop control

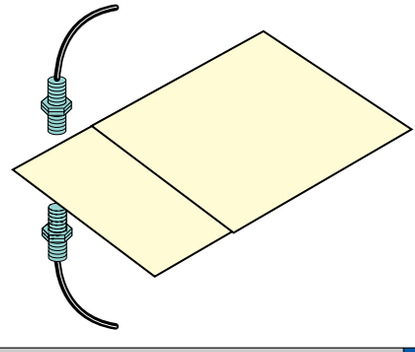
Winding speed controlled by output in proportion to size of loop.



Ultrasonic sensor **US-S25AN** See P.378

120 Distinction between one sheet and two sheets

Two-output fiber optic sensor used for distinguishing between one sheet and two sheets.



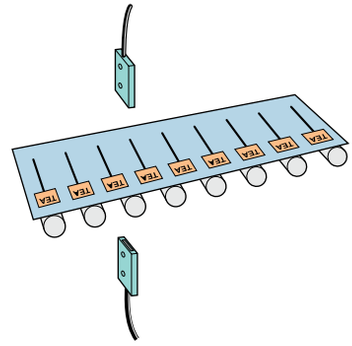
Fiber optic sensor **F70TR FT5BC** See P.70

Applications

Packaging/Food/Drug

121 Detection of teabag strings

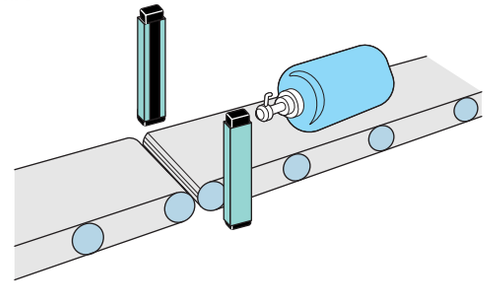
Wide-type fiber optic cable used for detecting teabag strings on nonwoven fabric conveyor.



Fiber optic sensor **F70AR FTL716BC** See P.86

122 Detection of shampoo bottles

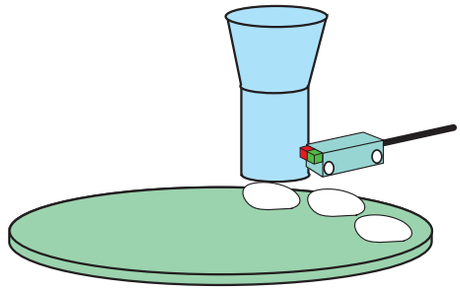
Shampoo bottles positioned before packaging. Wide area sensor achieving stable detection regardless of bottle shape variation.



Light curtain sensor **SSC-T800** Series See P.276

123 Detection of rice balls for sushi

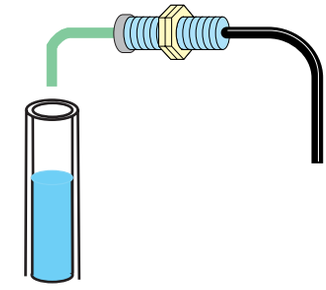
Rice balls detected on automatic sushi machine.



Amplifier built-in photo sensor **UM2-Z3SV** See P.172

124 Detection of level of liquid in glass tube

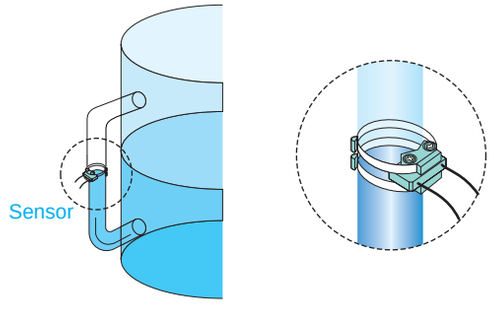
Ultrasonic sensor equipped with wave guide is used for detecting the level of liquid in a glass tube.



Ultrasonic sensor **USA-S1AN** See P.368

125 Detection of level of liquid in pipe

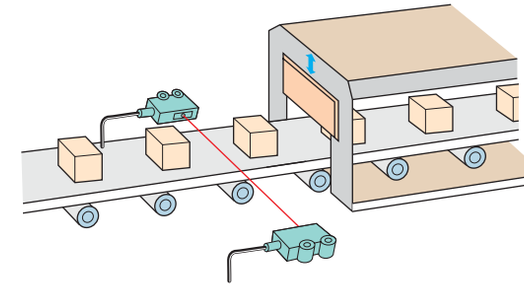
Level of transparent or translucent liquid detected. Mounting with zip-tie bands allowes easy mounting change.



Fiber optic sensor **FU901BC** See P.133

126 Detection in chemical atmosphere

Food material in an atmosphere of alcohol can be detected with sensor in PFA case even with high environment resistance.

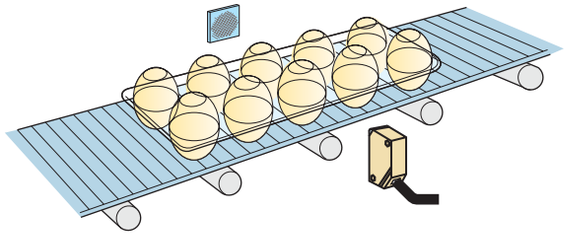


Amplifier built-in photo sensor **PF-T3DS** See P.240

Packaging/Food/Drug

127 Egg package detection

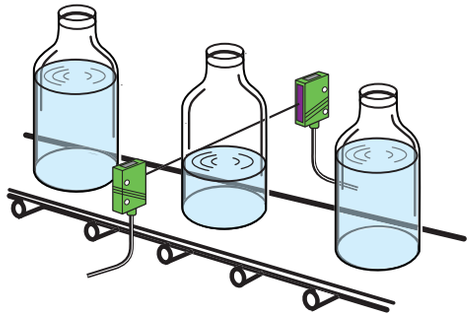
Egg packages detected in packaging process.



Transparent object detection sensor **NES-MT1D** See P.248

128 Detection of presence of liquid in transparent bottles

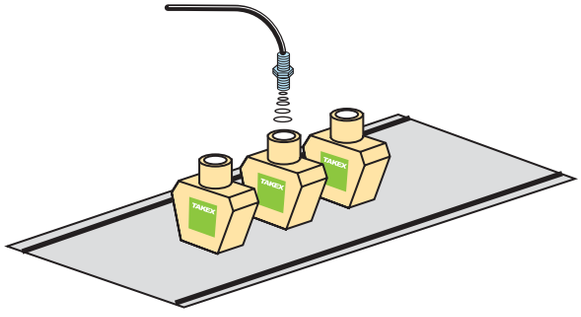
Wavelength of light source used that is easily absorbed by water, therefore, ensuring detection of transparent water.



Water detection sensor **GT2S-WS** See P.542

129 Content checking

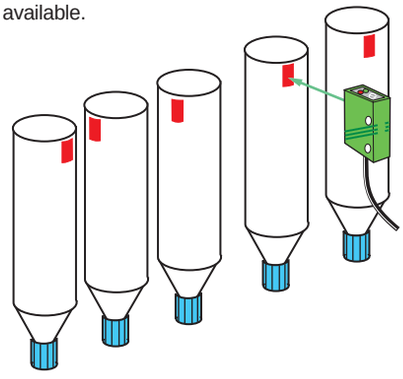
Ultrasonic sensor used for detecting liquid content from outside of bottles through openings.



Ultrasonic sensor **US-S25AN** See P.378

130 Detection of marks on tubes on filler

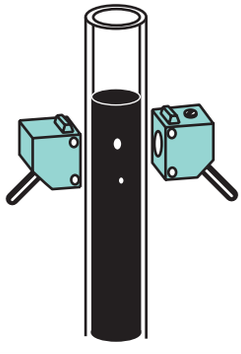
Tubes oriented for sealing by positioning marks. Green and red light sources available.



Mark sensor **GR-12GS** See P.420

131 Detection of air bubbles in black liquid

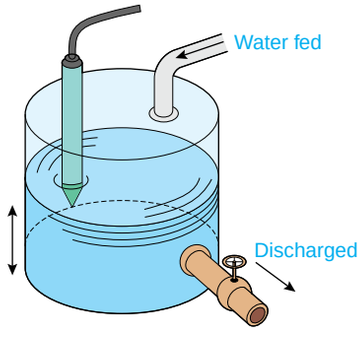
Air bubbles in black liquid detected with through-beam type ultrasonic sensor mounted on tube.



Ultrasonic sensor **US-T50** See P.376

132 Detection of level of liquid in tank

Level of liquid detected with chemical-resistant PFA fiber optic cable installed inside tank.



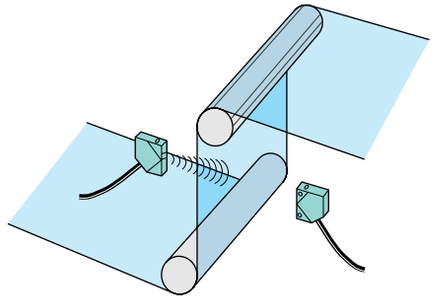
Fiber optic sensor **F70AR FL-7013** See P.132

Applications

Packaging/Food/Drug • Safety

133 Transparent film detection

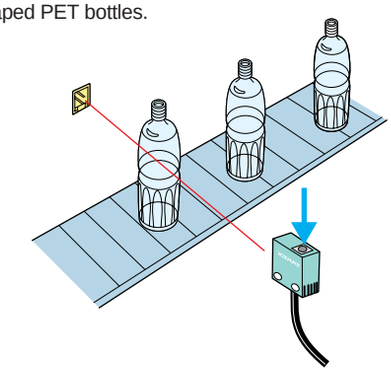
Ultrasonic sensor allowing detection regardless of degree of transparency, color or material.



Ultrasonic sensor **US-T50** See P.376

134 Transparent PET bottle detection

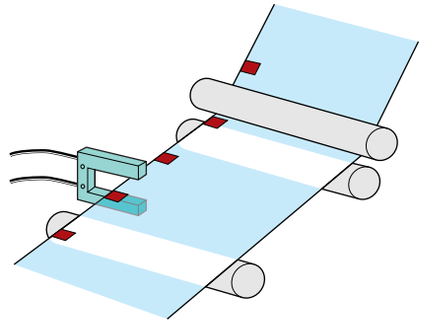
Transparent package detection sensor allowing stable detection of odd-shaped PET bottles.



Transparent package detection sensor **GA-MT1R** See P.244

135 Detection of marks in red or yellow

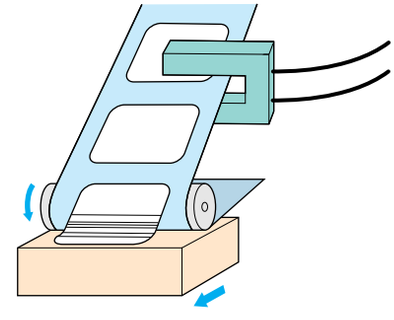
Mark sensor with green or blue light source achieving stable detection of red or yellow marks.



Fiber optic sensor **F70AG F70AB FU712BC** See P.83

136 Label detection

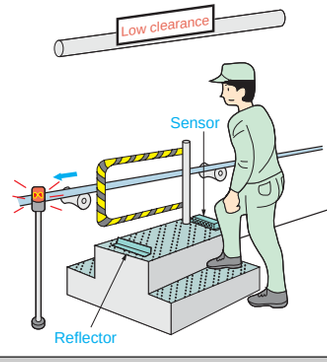
Integrated U-shaped fiber optic cable available for detecting labels for timing operation of labeler.



Fiber optic sensor **F70AR FU712BC** See P.83

137 Safety sensor for overhead hazard protection

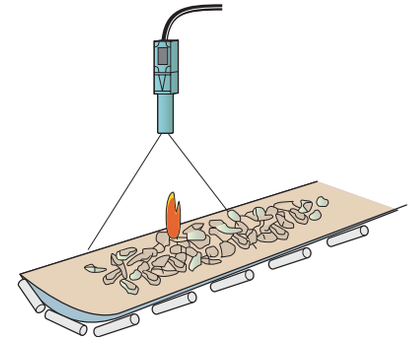
Wide area sensor used to alert operators when they go up stairs as position of their heads is raised.



Light curtain sensor **SSR** Series See P.314

138 Detection of ignition

Ultraviolet radiation from flame selectively detected for checking for spontaneous ignition on dust conveyor

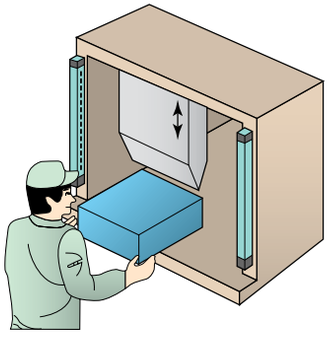


UV detection sensor **UV-R200** See P.554

Safety・Sanitary/Amusement

139 Processing machine safety check

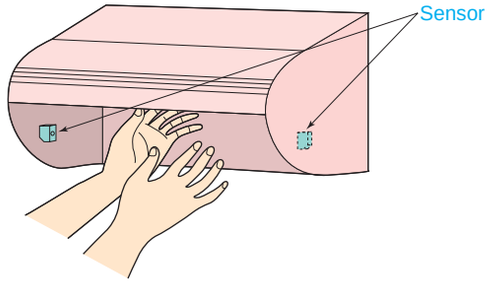
Wide area sensor used for safety check on processing machines.



Light curtain sensor **SS40** Series See P.290

140 Sensor for air towel

Hands held up are detected for starting hot air.



Amplifier built-in photo sensor **UM2-T50DT** See P.172

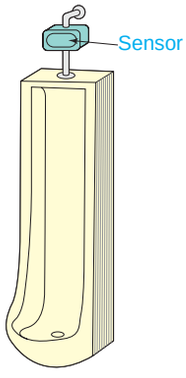
141 Sensor for automatic faucet

Hands held up are detected to turn on water.

Amplifier built-in photo sensor **GN-R40RS** See P.178

142 Sensor for automatic flushing

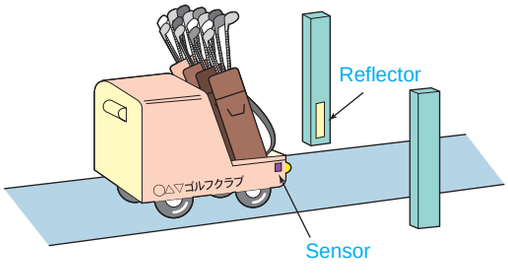
Users' approaching and leaving detected for flushing.



Amplifier built-in photo sensor **NE-R10-DC** See P.254

143 Sensor for stopping carts

Stationary reflector detected for stopping carts.



Amplifier built-in photo sensor **GMR2RSN** See P.210

144 Sensor for activating game machine

Hand detected through smoked glass for activating game machine.

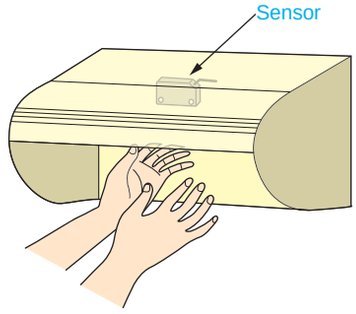
Amplifier built-in photo sensor **CX-R01** See P.220

Applications

Sanitary/Amusement・etc.

145 Sensor for hot air drying

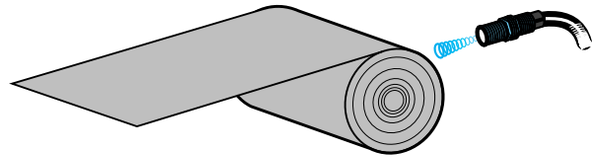
Hands held up are detected for activating sterilization lamp and hot air motor.



Amplifier built-in photo sensor **GS20SN** See P.190

146 Detection of roll thickness (distance)

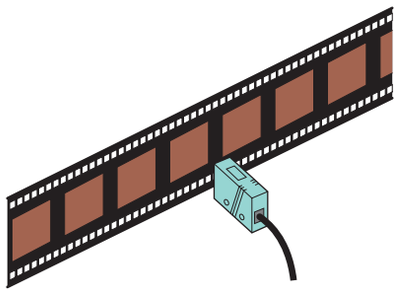
Thickness of material wound on roll or distance stably detected without being affected by paper dust or dirt.



Ultrasonic sensor **USA** Series See P.368

147 Detection of film in dark room

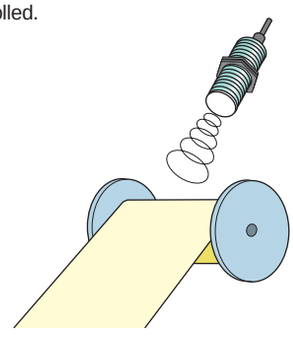
Sensor for film manufacturing line using infrared light causing less influence on film.



Amplifier built-in photo sensor **GR02-DR** See P.546

148 Drum rotation control

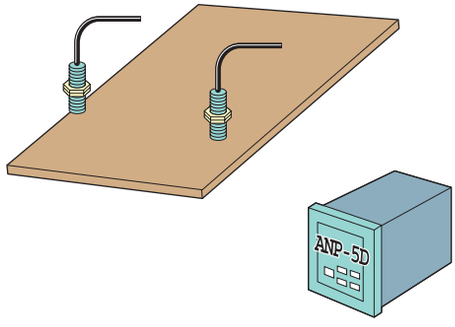
Rotational speed of drum for winding or unwinding sheet material controlled.



Ultrasonic sensor **US-S303AN** See P.380

149 Detection of levelness of top panel

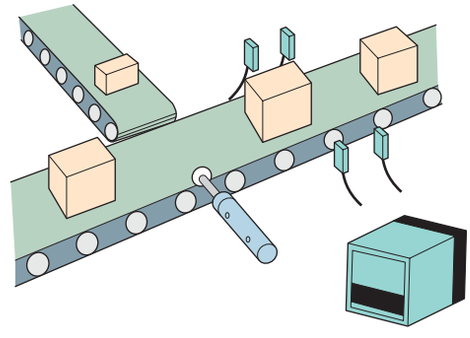
Two ultrasonic sensors used for differential detection.



Ultrasonic sensor **US-S305AN** See P.380

150 Divergence control

Signal transmitted to divergence point.

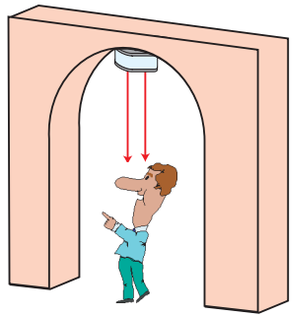


Shift register **SRB/SRS** Series See P.574

etc.

151 Detection of person at entrance

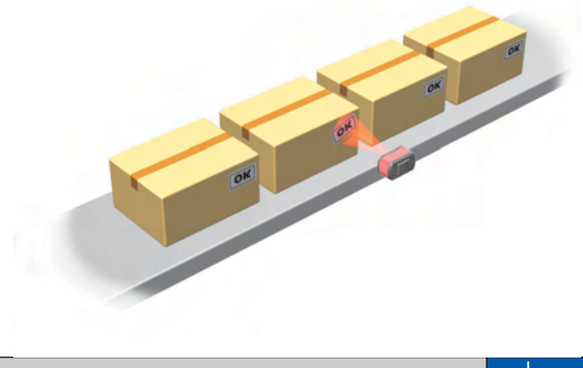
Detection from high ceiling preventing adverse effect on appearance.



Background suppression photo sensor **DX-7AH** See P.342

152 Detection of labels in place

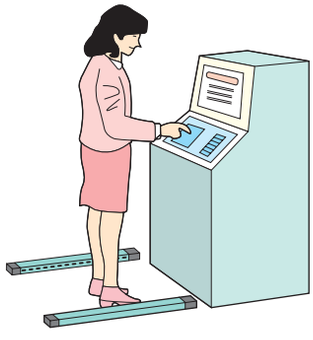
Presence of sticker in specified position detected.



BGS compound-eye sensor **VS-S20R** See P.196

153 Detection of remaining person

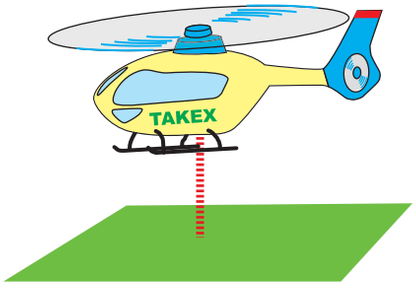
CD area checked for remaining person at closing time.



Light curtain sensor **SS40** Series See P.290

154 Control of height of industrial radio-controlled helicopter.

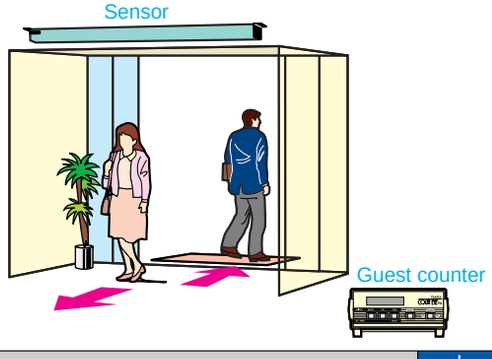
Long-distance photo sensor used for detecting height of helicopter from ground.



Background suppression photo sensor **DX-7AH** See P.342

155 Guest counting

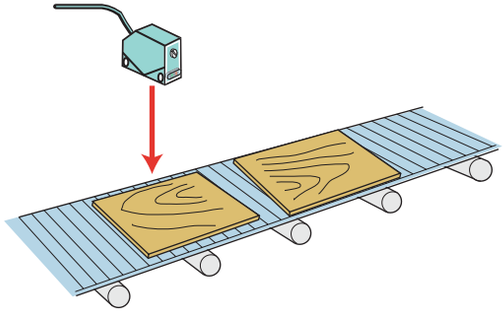
Various count control available with sensor installed above entrance in combination with counter.



Background suppression wide photo sensor **DW-S** See P.550

156 Detection of coated plywood board

Plywood board detected in adverse environment subject to dust.



Background suppression photo sensor **DL-S20** See P.348

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  (5) Cause of defect other than delivered goods

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