TYPICAL APPLICATIONS INDEX by application

F-23~F-33

PRESENCE

1	Sensing of photovoltaic cell wafer	F-23
2	Confirming suction of wafer	F-23
3	Confirming arrival of FOUP	F-23
4	Wafer sensing (Retroreflective type)	F-23
5	Address sensing within a FOUP (Reflective type)	F-23
6	Sensing wafer in corrosive environment	F-23
7	Seating confirmation of wafer	F-24
8	IC detection within a high temperature handler	F-24
9	Number of IC pins checking	F-24
10	Sensing wafer position in wafer cassette	F-24
11	Detecting optical lens	F-24
12	Sensing over-soldering of solder paste printer	F-25
13	Detecting narrow pitch holes of the key unit	F-25
14	Detecting IC height	F-25
15	Confirming suction with low vacuum	F-25
16	Confirmation if parts have been taken out or not	F-25
17	Pin detection in case	F-25
18	Detection of silicone resin drips	F-26
19	Sensing PCB rack	F-26
20	Parts feeder surplus detection	F-26
21	Verifying operation of solenoid valve	F-26
22	IC suction confirmation	F-26
23	Detecting the protrusion of stainless plate	F-26
24	IC pin check from remote position	F-27
25	Confirming of chuck for plug on the index table	F-27
26	Detecting end of screw supply	F-27
27	Verifying clamping by robot hand	F-27
28	Identifying type of workpiece by palette dogs	F-27
29	Wire breakage detection	F-27
30	Packing detection	F-28
31	Sensing rotating bodies	F-28
32	Confirming presence of oil-seal	F-28
33	Sensing presence of leaflet in DVD case	F-28
34	Sensing hot-melt for bonding magnetic disk	F-28
35	Parts picking verification in cell production	F-28
36	Detecting capacitors in tray	F-29
37	Detecting label	F-29
38	Conservative wiring for conveyor passage confirmation	F-29
39	Detecting an object in front of AGV	F-29
40	Detection of objects when using a stacker crane	F-29
41	Detecting post-cards	F-29
42	Confirmation of the passage of packages on a conveyor belt	F-30
43	Verifying proper workpiece seating	F-30
44	Detecting the presence of semicircle bimetal	F-30
45	Distinguishing the sides of bonded metal plate	F-30
46	Steel pipe detection in pipes	F-30
47	Object sensing during the painting process	F-30
48	Large-scale engine component wrong picking prevention	F-31
49	Verifying position of car at multistoried parking	F-31

50 Controlling edge of sheet	F-31
51 White pack sensing under a steam environment	F-31
52 Detecting quantity of labels in label magazine	F-31
53 Detection of overlapped papers	F-31
54 Sensing of hot melt	F-32
55 Detection of biscuits with different colors	F-32
56 Chemical filler	F-32
57 Detecting a loop	F-32
58 Sensing the presence of candy wrappers	F-32
59 Confirming the popping out of medical pallets	F-32
60 Wood detection	F-33

TRANSPARENT OBJECT DETECTION F-33~F-34

61	Mapping, alignment & seating confirmation of glass substrate	F-33
62	Detection of glass substrate in vacuum chamber	F-33
63	Detecting transparent film for TAB protection	F-34
64	Sensing plastic bottles stacked on pallets	F-34
65	Transparent tube sensing	F-34
66	Detection of transparent seals on transparent sheet	F-34
67	Transparent film sensing	F-34
68	Detecting transparent bottles	F-34

LIQUID DETECTION F-35

69 Detecting liquid level in a tank	F-35
70 Leak detection for use in semiconductor device manufacturing	F-35
71 Sensing liquid levels in glass tubes	F-35
72 Liquid sensing utilizing pipe-mountable type	F-35
73 Liquid detection in color bottle	F-35
74 Detecting clear liquid level	F-35

POSITIONING F-36~F-37

75	Positioning wafer	F-36
76	Sensing wafer eccentricity/notch	F-36
77	Sensing the starting point and overrun of a moving body	F-36
78	Determining the pallet position	F-36
79	Synchronized sensing for image processing systems	F-36
80	Controlling depth of drilling	F-36
81	High-precision positioning	F-37
82	Sensing pasta position in pasta making machines	F-37
83	Positioning syrup containers	F-37
	76 77 78 79 80 81 82	80 Controlling depth of drilling81 High-precision positioning

F-19

SAFEGUARD F-3

F-37~F-38

84	Detection of entry through the no-entry line	F-37
85	Safeguard for press machine	F-37
86	Safeguard for processor	F-38
87	Safeguard for special purpose machine	F-38
88	Intrusion detection in areas with moving robots	F-38
89	Robot activation input	F-38

COLOR DETECTION F-38~F-39

90	Distinguishing color when there is background object	F-38
91	Color mark detection of screw head	F-38
92	Detecting register marks on a packaging sheet	F-39
93	Color mark detection	F-39

EXAMINATION AND MEASUREMENT F-39~F-45

94	Managing supply of purge gas/air blow	F-39
95	Sensing inclination or notch of wafer	F-39
96	Measurement of the positions of patterned glass	F-39
97	Measuring glass substrate thickness	F-39
98	Detecting defective lead frame seating	F-40
99	Wafer slicer blade product life detection	F-40
100	Sensing thickness difference of contact points	F-40
101	Inspecting screw height	F-40
102	Confirmation of depressions on molded objects	F-40
103	Detecting o-ring at PVC pipe	F-40
104	Checking ICs for burrs	F-41
105	Detecting the protrusion of pitch connector pins	F-41
106	Confirming vibration of vibration blades	F-41
107	Measurement of the difference in levels	F-41
108	Confirmation of the type of plates	F-41
109	Checking the positioning of chip components	F-41
110	Measurement of HDD surface fluctuation	F-42
111	Inspection for surface fluctuation of hard disk	F-42
112	Detecting hole drilling error of metal component	F-42
113	Detecting broken spool of film	F-42
114	Measurement of the thickness of copper clad laminate	F-42
115	Measuring the eccentricity of metal shaft	F-42
116	$\label{eq:measurement} \text{Measurement of the difference in levels on metal processing parts}$	F-43
117	Stroke end sensing	F-43
118	Rotation / eccentricity sensing	F-43
119	Distinguishing automobile console models	F-43
120	Detection of a defect connector for automobile	F-43
121	Detection of overlapped press parts	F-43
	Vacuum level confirmation for vacuum molding	F-44
	Detection of black rubber conditions	F-44
124	Inspecting tire form	F-44
125	Sheet width measurement	F-44
126	Sensing defects on plastic molded products	F-44

127 Determining types of containers	F-45
128 Soup bag (sheet) seam detection	F-45
129 Distinguishing opacity of glass	F-45

STATIC ELECTRICITY PREVENTION F-45~F-47

130 Surface potential measurement during chip release electrification	F-45
131 Surface potential measurement during loading and unloading	F-45
132 Removing charges from IC trays	F-46
133 Removing charges during pickup from dicing tape	F-46
134 Removing charges from adjacent lead frame conveyor lines	F-46
135 Measurement of frictional electrification of printed circuit boards	F-46
136 Measurement of frictional electrification of LCD modules	F-46
137 Removing electric charges from drum-type parts feeders	F-46
138 Charge removal and dust removal of relay and switch contacts	F-47
139 Pinpoint charge removal of electronic components	F-47
140 Dust removal during light cover assembly	F-47
141 Removing charges surfaces of CDs / DVDs	F-47
142 Neutralizing the work area during the cell production assembly process	F-47

MARKING

F-48

143	Marking on thin packages	F-48
144	Marking on automobile parts (bearing)	F-48
145	Marking RSS codes	F-48
146	Marking on high-speed lines of plastic bottles	F-48

ENDOSCOPE

F-49

147 Inspecting engine parts

F-49

The applications given here are practical examples. However, their applicability may differ depending upon the actual situation in which the sensors are used. Should you face any difficulty in your sensing application, please contact our office.

F-21

TYPICAL APPLICATIONS INDEX by industry

SEMICONDUCTOR / LIQUID CRYSTAL

1	Sensing of photovoltaic cell wafer	F-23
2	Confirming suction of wafer	F-23
3	Confirming arrival of FOUP	F-23
4	Wafer sensing (Retroreflective type)	F-23
5	Address sensing within a FOUP (Reflective type)	F-23
6	Sensing wafer in corrosive environment	F-23
7	Seating confirmation of wafer	F-24
8	IC detection within a high temperature handler	F-24
9	Number of IC pins checking	F-24
10	Sensing wafer position in wafer cassette	F-24
61	Mapping, alignment & seating confirmation of glass substrate	F-33
62	Detection of glass substrate in vacuum chamber	F-33
63	Detecting transparent film for TAB protection	F-34
69	Detecting liquid level in a tank	F-35
70	Leak detection for use in semiconductor device manufacturing	F-35
71	Sensing liquid levels in glass tubes	F-35
72	Liquid sensing utilizing pipe-mountable type	F-35
75	Positioning wafer	F-36
76	Sensing wafer eccentricity/notch	F-36
94	Managing supply of purge gas/air blow	F-39
95	Sensing inclination or notch of wafer	F-39
96	$\label{eq:measurement} \mbox{Measurement of the positions of patterned glass}$	F-39
97	Measuring glass substrate thickness	F-39
98	Detecting defective lead frame seating	F-40
	Wafer slicer blade product life detection	F-40
130	Surface potential measurement during chip release electrification	F-45
131	Surface potential measurement during loading and unloading	F-45
	Removing charges from IC trays	F-46
	Removing charges during pickup from dicing tape	F-46
134		F-46
143	Marking on thin packages	F-48

AUTOMATIC ASSEMBLY / MOUNTING

11	Detecting optical lens	F-24
12	Sensing over-soldering of solder paste printer	F-25
13	Detecting narrow pitch holes of the key unit	F-25
14	Detecting IC height	F-25
15	Confirming suction with low vacuum	F-25
16	Confirmation if parts have been taken out or not	F-25
17	Pin detection in case	F-25
18	Detection of silicone resin drips	F-26
19	Sensing PCB rack	F-26
20	Parts feeder surplus detection	F-26
21	Verifying operation of solenoid valve	F-26
22	IC suction confirmation	F-26
23	Detecting the protrusion of stainless plate	F-26
24	IC pin check from remote position	F-27
25	Confirming of chuck for plug on the index table	F-27
26	Detecting end of screw supply	F-27

27	Verifying clamping by robot hand	F-27
28	Identifying type of workpiece by palette dogs	F-27
29	Wire breakage detection	F-27
30	Packing detection	F-28
31	Sensing rotating bodies	F-28
32	Confirming presence of oil-seal	F-28
77	Sensing the starting point and overrun of a moving body	F-36
78	Determining the pallet position	F-36
79	Synchronized sensing for image processing systems	F-36
84	Detection of entry through the no-entry line	F-37
90	$\label{eq:def-Distinguishing} \text{Distinguishing color when there is background object}$	F-38
100	Sensing thickness difference of contact points	F-40
101	Inspecting screw height	F-40
102	Confirmation of depressions on molded objects	F-40
103	Detecting o-ring at PVC pipe	F-40
104	Checking ICs for burrs	F-41
105	Detecting the protrusion of pitch connector pins	F-41
106	Confirming vibration of vibration blades	F-41
107	Measurement of the difference in levels	F-41
108	Confirmation of the type of plates	F-41
109	Checking the positioning of chip components	F-41
135	Measurement of frictional electrification of printed circuit boards	F-46
136	Measurement of frictional electrification of LCD modules	F-46
137	Removing electric charges from drum-type parts feeders	F-46
138	Charge removal and dust removal of relay and switch contacts	F-47
139	Pinpoint charge removal of electronic components	F-47

ELECTRONIC PRODUCTS / ELECTRIC APPLIANCES

33	Sensing presence of leaflet in DVD case	F-28
34	Sensing hot-melt for bonding magnetic disk	F-28
35	Parts picking verification in cell production	F-28
36	Detecting capacitors in tray	F-29
37	Detecting label	F-29
110	Measurement of HDD surface fluctuation	F-42
111	Inspection for surface fluctuation of hard disk	F-42
141	Removing charges surfaces of CDs / DVDs	F-47
142	Neutralizing the work area during the cell production assembly process	F-47

MATERIAL HANDLING

38 Conservative wiring for conveyor passage confirmation	F-29
--	------

- 39 Detecting an object in front of AGV F-29
- 40 Detection of objects when using a stacker crane F-29
- 41 Detecting post-cards F-29
- 42 Confirmation of the passage of packages on a conveyor belt $\ensuremath{\textbf{F-30}}$

METAL PROCESSING

43	Verifying proper work piece seating	F-30
44	Detecting the presence of semicircle bimetal	F-30
45	Distinguishing the sides of bonded metal plate	F-30
46	Steel pipe detection in pipes	F-30
80	Controlling depth of drilling	F-36
81	High-precision positioning	F-37
85	Safeguard for press machine	F-37
86	Safeguard for processor	F-38
112	Detecting hole drilling error of metal component	F-42
113	Detecting broken spool of film	F-42
114	Measurement of the thickness of copper clad laminate	F-42
115	Measuring the eccentricity of metal shaft	F-42
116	Measurement of the difference in levels on metal processing parts	F-43
117	Stroke end sensing	F-43
118	Rotation / eccentricity sensing	F-43

AUTOMOBILES

47	Object sensing during the painting process	F-30
48	Large-scale engine component wrong picking prevention	F-31
87	Safeguard for special purpose machine	F-38
88	Intrusion detection in areas with moving robots	F-38
89	Robot activation input	F-38
91	Color mark detection of screw head	F-38
119	Distinguishing automobile console models	F-43
120	Detection of a defect connector for automobile	F-43
121	Detection of overlapped press parts	F-43
140	Dust removal during light cover assembly	F-47
144	Marking on automobile parts (bearing)	F-48
147	Inspecting engine parts	F-49

MULTISTORIED PARKING

49 Verifying position of car at multistoried parking **F-31**

RUBBER / PLASTIC

50 (Controlling edge of sheet	F-31
64 (Sensing plastic bottles stacked on pallets	F-34
22	Vacuum level confirmation for vacuum molding	F-44
23	Detection of black rubber conditions	F-44
24	Inspecting tire form	F-44
25	Sheet width measurement	F-44
26	Sensing defects on plastic molded products	F-44

PHARMACEUTICAL AND FOOD PROCESSING / PACKAGING

51	White pack sensing under a steam environment	F-31
52	Detecting quantity of labels in label magazine	F-31
53	Detection of overlapped papers	F-31
54	Sensing of hot melt	F-32
55	Detection of biscuits with different colors	F-32
56	Chemical filler	F-32
57	Detecting a loop	F-32
58	Sensing the presence of candy wrappers	F-32
59	Confirming the popping out of medical pallets	F-32
65	Transparent tube sensing	F-34
66	Detection of transparent seals on transparent sheet	F-34
67	Transparent film sensing	F-34
68	Detecting transparent bottles	F-34
73	Liquid detection in color bottle	F-35
74	Detecting clear liquid level	F-35
82	Sensing pasta position in pasta making machines	F-37
83	Positioning syrup containers	F-37
92	Detecting register marks on a packaging sheet	F-39
93	Color mark detection	F-39
127	Distinguishing types of containers	F-45
128	Soup bag (sheet) seam detection	F-45
145	Marking RSS codes	F-48
146	Marking on high-speed lines of plastic bottles	F-48

WOOD PROCESSING

60 Wood detection

F-33

GLASS

129 Distinguishing opacity of glass **F-45**

The applications given here are practical examples. However, their applicability may differ depending upon the actual situation in which the sensors are used. Should you face any difficulty in your sensing application, please contact our office.