

Chapter 5 Precision Instruments Sector

5-1. Industrial Measuring Instruments, Electrical Measuring Instruments, Analytical Instruments & Electrical Controllers

5-1-1. Trends in Supply & Demand

(1) Overview

The total monetary value of electrical measuring instruments and applied electronics production in 2005 rose 3.8% over the previous year to JPY 1.5927 trillion. However, production of electrical measuring instruments alone actually dropped 7.6% below the previous year to JPY 580.4 billion.

The value of industrial measuring instrument production in 2005 rose 6.9% over the previous year to JPY 449.4 billion. Production of switch-

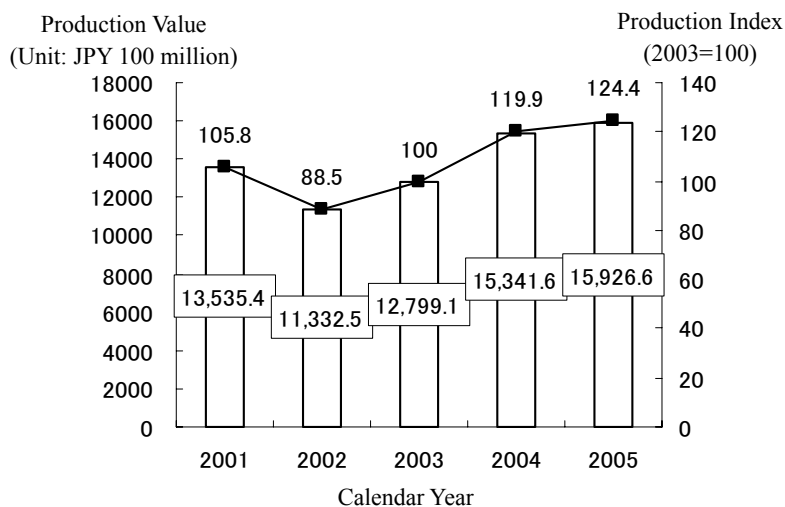
gear/controllers/switches rose 5.7% over the previous year to JPY 1.3680 trillion. The value of electrical controller shipments in 2005 remained at basically the same level as the previous year.

The monetary values of both imports and exports of industrial and electrical measuring instruments, and analytical instruments indicated an upward trend.

(2) Production

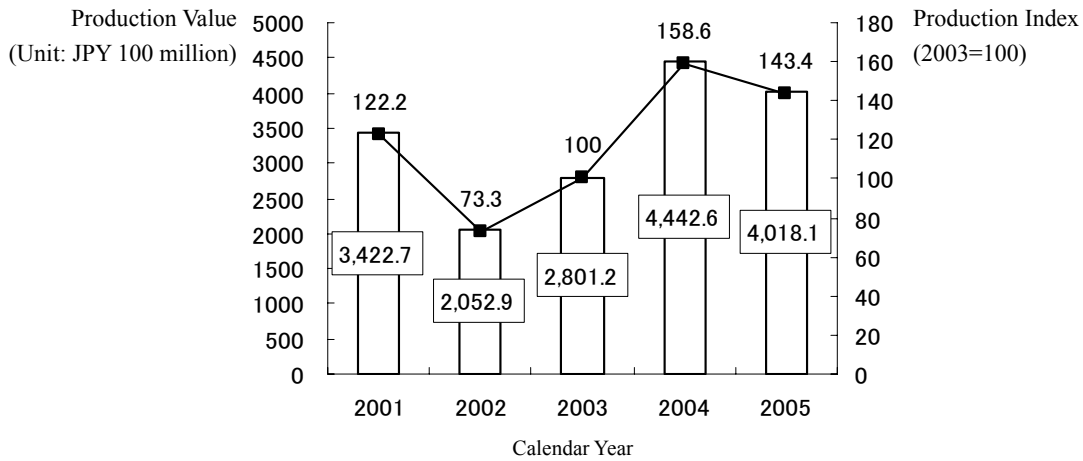
The values of the production of electrical measuring instruments and applied electronics, industrial measuring instruments, analytical instruments, and switchgear/controllers/switches in 2005 indicated an upward trend. As mentioned above, the total monetary value of electrical measuring instruments and associated electronics production in 2005 rose 3.8% over the previous year to JPY 1.5927 trillion. However, production of electrical measuring instruments alone actually dropped 7.6% below the previous

year to JPY 580.4 billion (see Diagram 5-1-2). On the other hand, production of X-ray equipment and other applied electronics rose 10.7% over the previous year to JPY 1.0023 trillion. Production of X-ray equipment stood out the most, soaring 23.5% over the previous year to JPY 204.8 billion. However, the production of radiometric instruments, devices that incorporate radioactive materials, and devices that employ high-frequency electricity decreased.



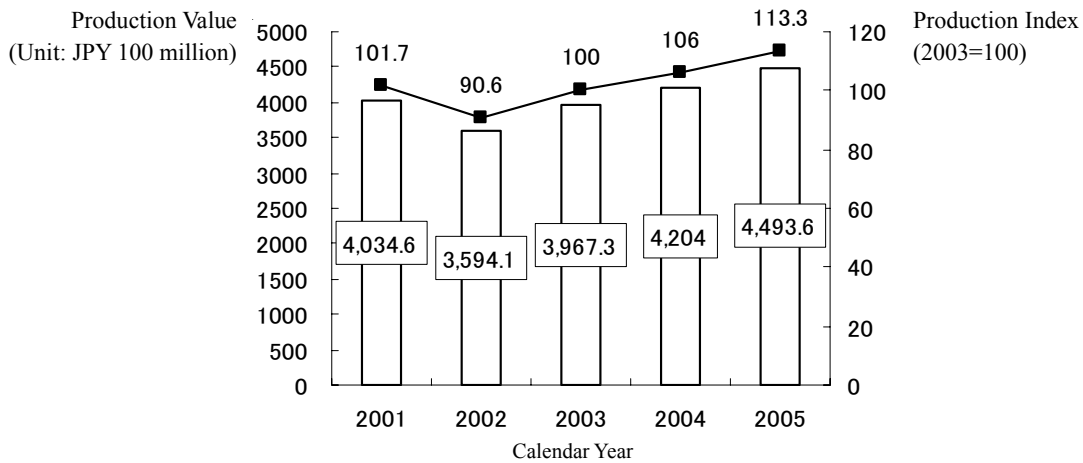
Source: Nippon Electric Control Equipment Industries Association

Diagram 5-1-1. Monetary Value of Electrical Measuring Instrument & Applied Electronics Production



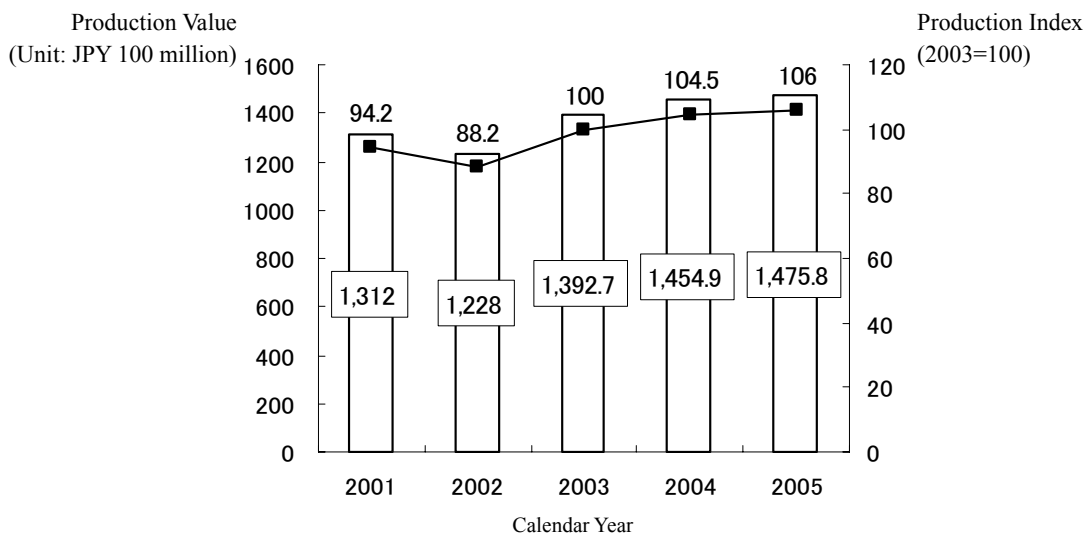
Source: Nippon Electric Control Equipment Industries Association

Diagram 5-1-2. Monetary Value of Electrical Measuring Instruments



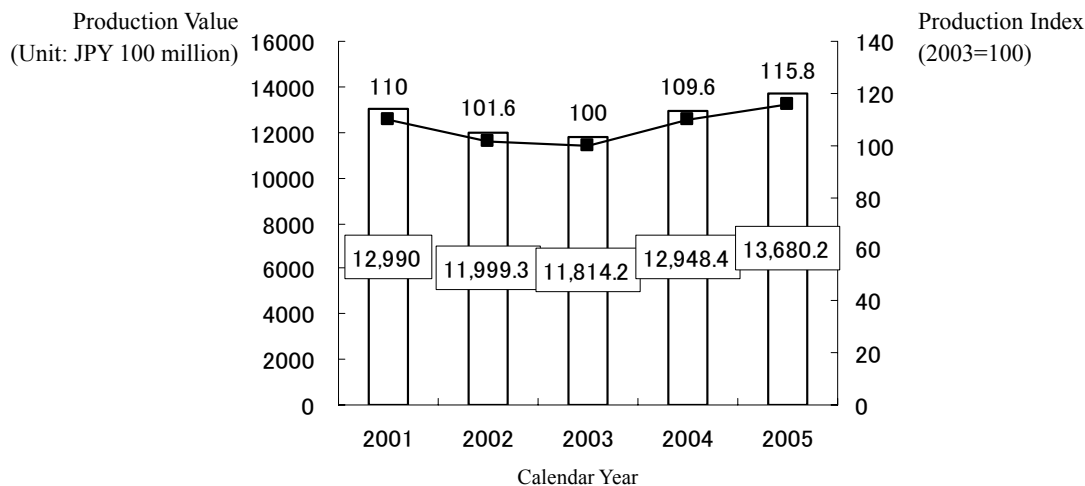
Source: Nippon Electric Control Equipment Industries Association

Diagram 5-1-3. Monetary Value of Industrial Measuring Instrument Production



Source: Nippon Electric Control Equipment Industries Association

Diagram 5-1-4. Monetary Value of Analytical Instrument Production



Source: Nippon Electric Control Equipment Industries Association

Diagram 5-1-5. Monetary Value of Switchgear/Controller/Switch Production

As mentioned previously, the total monetary value of industrial measuring instrument production in 2005 rose 6.9% over the previous year to JPY 449.4 billion. Specifically, production increased in these categories: industrial measures, displacement meters, pressure gauges, and precision measuring instruments. In particular, production of precision measuring instruments rose considerably (26.3%) over the previous year. In contrast, the total value of industrial weighing equipment, environmental measuring instruments, testing equipment, and surveying equipment dropped slightly. Environmental measuring instrument production fell considerably (11.4%) below the previous year.

The total monetary value of analytical instrument production in 2005 rose 1.4% over the previous year to JPY 147.6 billion. Photometric analysis instrument production rose 5.8% over the previous year, and electromagnetic analysis instrument pro-

duction rose 5.2%. On the other hand, production of chromatography instruments, separation equipment, and distillers fell 0.5%, and production in the “other analytical instruments” category fell 0.9%.

The total monetary value of switchgear/controllers/switches production in 2005 rose 5.7% over the previous year to JPY 1.368 trillion. Production of switchgear and controllers alone rose 9.1% to JPY 682.1 billion, and production of switches rose 2.4% to 685.9 billion.

Based on all of the above figures, it is possible to say that, overall, production in the areas of electrical measuring instruments and applied electronics, industrial measuring instruments, analytical instruments, and switchgear/controllers/switches experienced an upward trend in 2005. On the other hand, the downward trend in the production of electrical measuring instruments and industrial weighing/control equipment did not reverse in 2005.

Diagram 5-1-6. Monetary Value of Electrical Measuring Instruments & Applied Electronics Production by Category

(Unit: JPY 100 million, rounded up to the nearest 10 million)

	2001	2002	2003	2004	2005	Y/Y (2005)	Percentage of Total (2005)
Electrical measuring instruments & applied electronics	13,535.4	11,332.5	12,799.1	15,341.6	15,926.6	3.8%	100.0%
Electrical measuring instruments	5,720.4	4,101.8	4,719.3	6,284.6	5,803.9	▲7.6%	36.4%
Electric meters	426.9	353.8	386.1	387.4	426.2	10.0%	2.7%
Electric measurement device	3,422.7	2,052.9	2,801.2	4,442.6	4,018.1	▲9.6%	25.2%
Industrial measurement and control equipment	1,870.9	1,695.1	1,532.1	1,454.6	1,359.6	▲6.5%	8.5%
Gas alarm devices	—	—	—	—	100.2	—	0.6%
Applied electronics	7,815.0	7,230.7	8,079.9	9,057.0	10,022.5	10.7%	62.9%
X-ray equipment	1,721.1	1,606.2	1,734.1	1,657.6	2,047.8	23.5%	12.9%
Devices that incorporate radioactive materials	218.1	265.1	219.1	239.9	230.4	▲4.0%	1.4%
Radiometric instruments	156.9	145.3	128.2	101.7	99.6	▲2.0%	0.6%
Devices that employ high-frequency electricity	42.2	39.7	45.5	63.4	56.6	▲10.7%	0.4%
Other	3,984.4	3,503.2	4,241.6	5,194.1	5,885.3	13.3%	37.0%

Note: Years shown are calendar years.

Source: Nippon Electric Control Equipment Industries Association

Diagram 5-1-7. Monetary Value of Industrial Measuring Instrument Production by Category

(Unit: JPY 100 million, rounded up to the nearest 10 million)

	2001	2002	2003	2004	2005	Y/Y (2005)	Percentage of Total (2005)
Non-electrical measuring instruments	4,034.6	3,594.1	3,967.3	4,204.0	4,493.6	6.9%	100.0%
Industrial measures	315.7	233.2	267.1	321.0	374.1	16.5%	8.3%
Displacement meters	660.3	628.1	629.3	553.4	615.9	11.3%	13.7%
Industrial weighing equipment	349.1	323.4	329.5	338.8	337.6	▲0.4%	7.5%
Pressure gauges	119.0	100.0	111.6	128.8	137.8	7.0%	3.1%
Precision measuring instruments	551.8	450.7	540.3	665.9	841.3	26.3%	18.7%
Environmental measuring instruments	179.9	172.0	180.1	208.1	184.4	▲11.4%	4.1%
Testing equipment	323.8	276.9	315.6	295.4	293.3	▲0.7%	6.5%
Surveying equipment	223.1	181.9	201.2	237.8	233.7	▲1.7%	5.2%
Analytical instruments	1,312.0	1,228.0	1,392.7	1,454.9	1,475.8	1.4%	32.8%
Photometric analysis instruments	188.8	171.0	171.3	210.8	223.2	5.8%	5.0%
Electromagnetic analysis instruments	280.2	225.8	283.4	305.1	321.1	5.2%	7.1%
Chromatography instruments, separation equipment, and distillers	259.4	238.0	290.4	312.6	311.1	▲0.5%	6.9%
Other analytical instruments	583.6	593.2	647.7	626.4	620.4	▲0.9%	13.8%

Note: Years shown are calendar years.

Source: Nippon Electric Control Equipment Industries Association

Diagram 5-1-8. Monetary Value of Switchgear/Controller/Switch Production by Category

(Unit: JPY 100 million, rounded up to the nearest 10 million)

	2001	2002	2003	2004	2005	Y/Y (2005)	Percentage of Total (2005)
Switchgear, controllers, and switches	12,990.0	11,999.3	11,814.2	12,948.4	13,680.2	5.7%	100.0%
Switchgear and controllers	7,001.8	6,406.4	5,796.2	6,252.0	6,820.9	9.1%	49.9%
Switches	5,988.2	5,592.9	6,018.0	6,696.4	6,859.3	2.4%	50.1%

Note: Years shown are calendar years.

Source: Nippon Electric Control Equipment Industries Association

Diagram 5-1-9 shows the value of FY 2005 electrical controller shipments, which remained at basically the same level as the previous year.

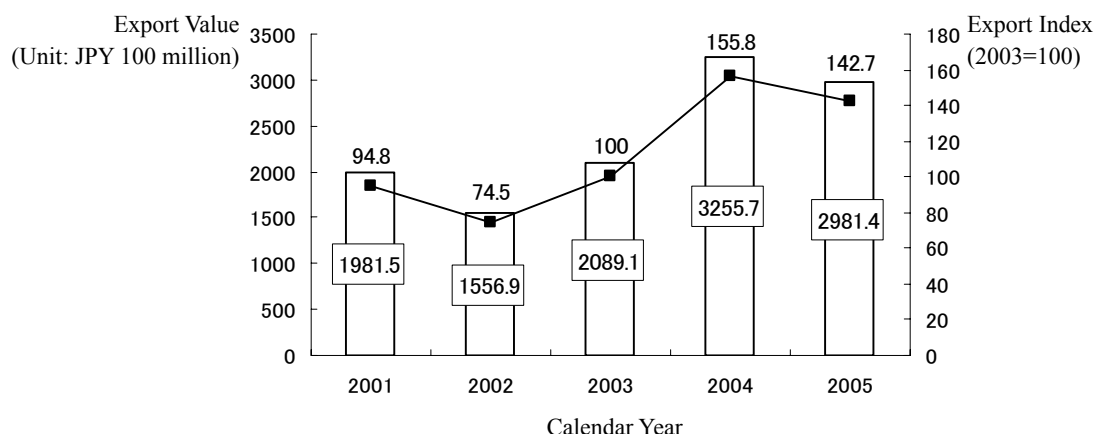
Diagram 5-1-9. Monetary Value of Electrical Controller Shipments (Unit: JPY 100 million)

	Value of Shipments	Y/Y (%)
Relay controllers	1,363.2	99.9
Operating switches	405.2	98.6
Detector switches	1,190.0	98.8
Special controller devices	1,208.8	108.7
PLC/FA system equipment	2,058.7	103.9
TOTAL	6,225.9	102.5

Source: Nippon Electric Control Equipment Industries Association

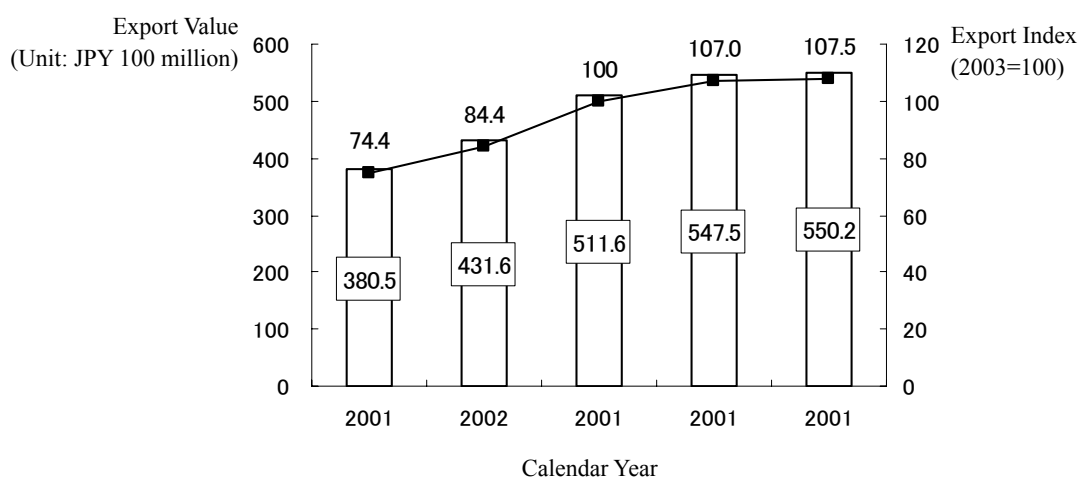
(3) Imports & Exports

Diagrams 5-1-10 through 5-1-13 show the monetary values of exports of electrical measuring instruments, industrial measuring instruments, and analytical instruments in 2005. As indicated, each category has in recent years been in an upward trend.



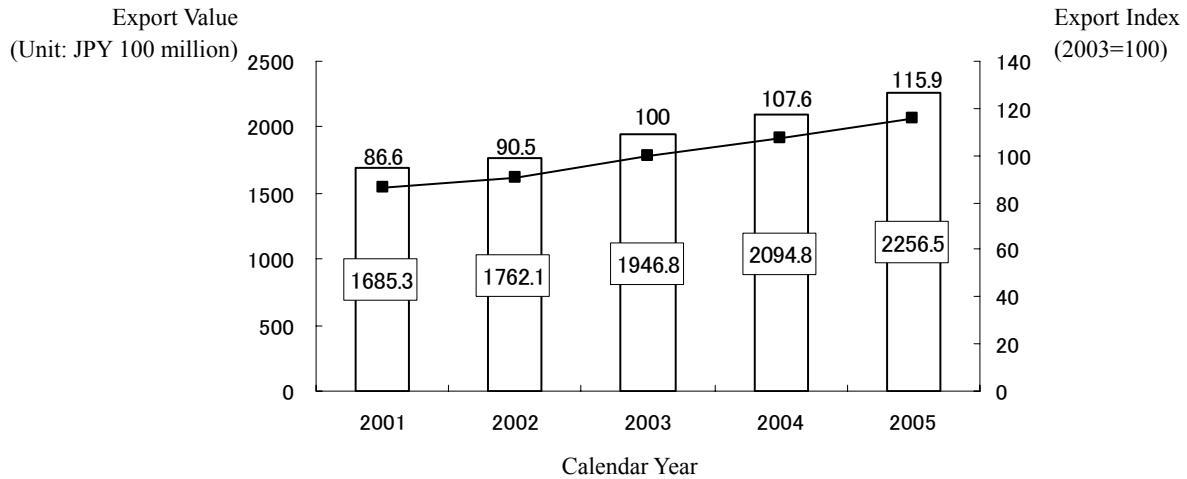
Source: Ministry of Finance trade statistics

Diagram 5-1-10. Monetary Value of Electrical Measuring Instrument Exports



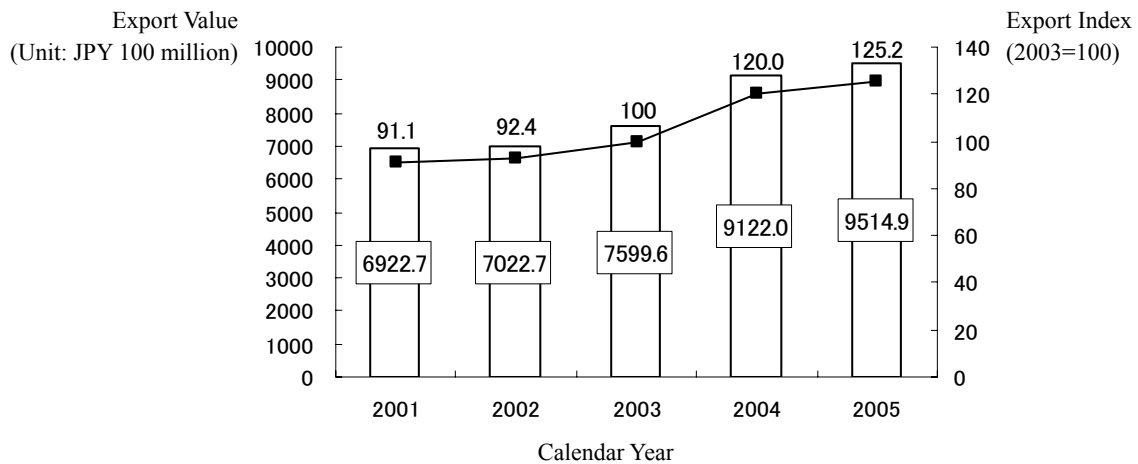
Source: Ministry of Finance trade statistics

Diagram 5-1-11: Monetary Value of Industrial Measuring Instrument Exports



Source: Ministry of Finance trade statistics

Diagram 5-1-12. Monetary Value of Analytical Instrument Exports



Source: Ministry of Finance trade statistics

Diagram 5-1-13. Monetary Value of Switchgear/Controller/Switch Exports

Diagram 5-1-14 indicates that the value of electrical controller exports has remained at about the same level as the previous year.

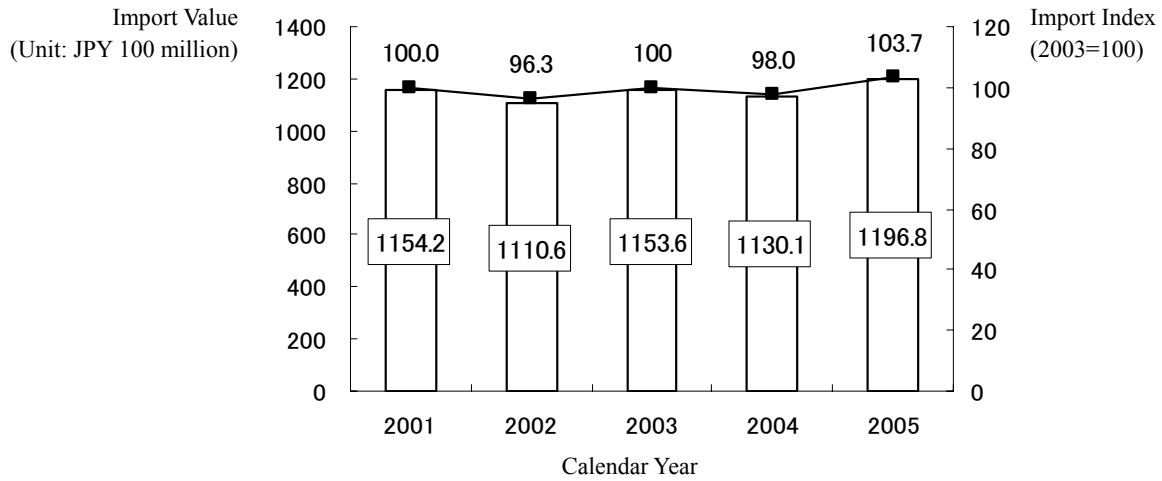
Diagram 5-1-14. Monetary Value of Electrical Controller Exports (Unit: JPY 100 million)

	Value of Exports	Y/Y (%)
Relay controllers	571.4	98.4
Operating switches	75.9	97.8
Detector switches	326.9	94.3
Special controller devices	338.4	137.4
PLC/FA system equipment	574.2	105
TOTAL	1,886.8	104.9

Source: Nippon Electric Control Equipment Industries Association

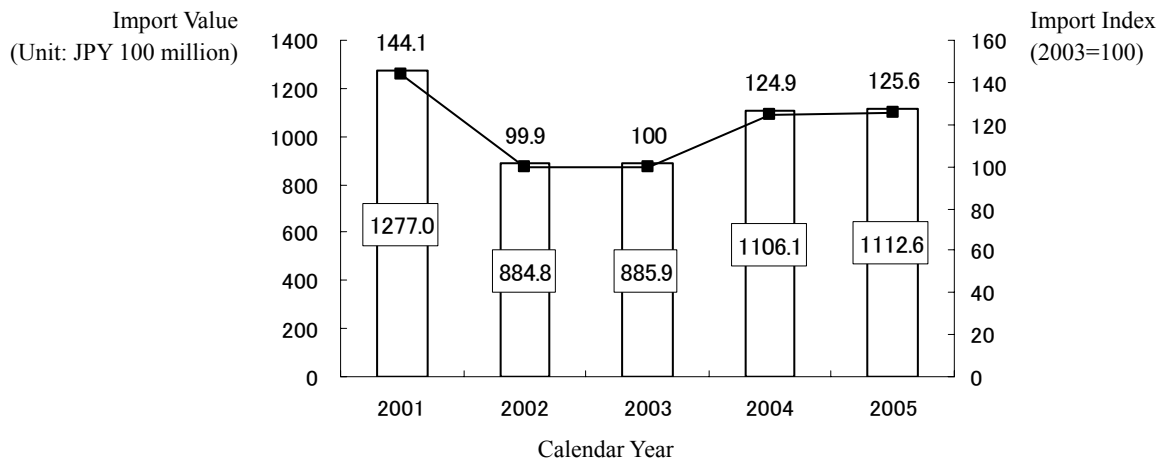
Diagrams 5-1-15 through 5-1-18 show the monetary values of imports of electrical measuring instruments, industrial measuring instruments, and

analytical instruments in 2005. As with exports, each category has in recent years been in an upward trend.



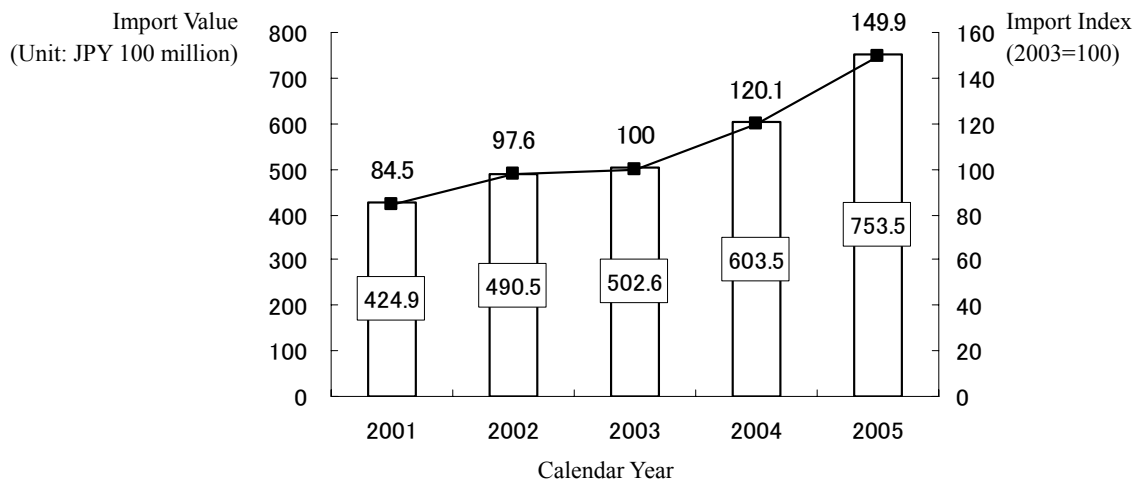
Source: Ministry of Finance trade statistics

Diagram 5-1-15. Monetary Value of Electrical Measuring Instrument Imports



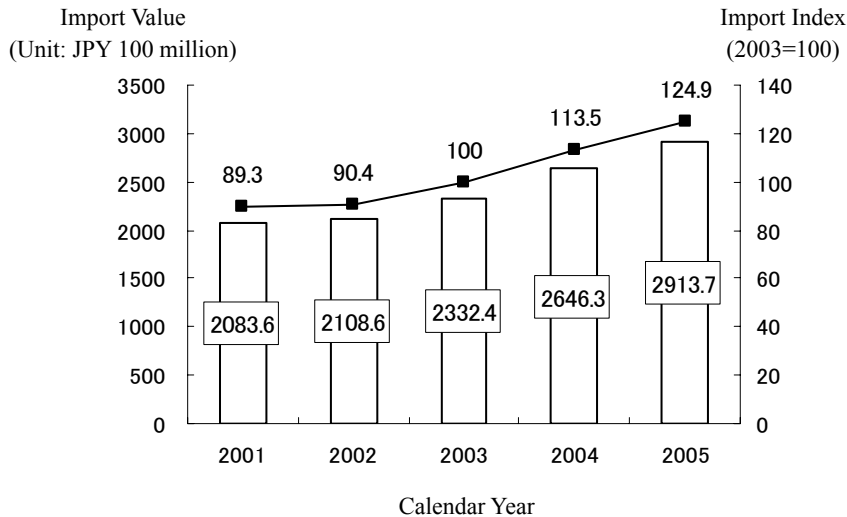
Source: Ministry of Finance trade statistics

Diagram 5-1-16. Monetary Value of Industrial Measuring Instrument Imports



Source: Ministry of Finance trade statistics

Diagram 5-1-17. Monetary Value of Analytical Instrument Imports



Source: Ministry of Finance trade statistics

Diagram 5-1-18. Monetary Value of Switch and Controlling Equipment Imports

5-1-2. Business Conditions & Industry Trends

(1) Business Trends

Diagram 5-1-19 shows FY 2005 financial results for the top five manufacturers of electrical measuring instruments, industrial measuring instruments, and analytical instruments.

- Mitutoyo

Mitutoyo's FY 2005 sales rose 12.9% over the previous year, and its operating profits rose 34.3%. This may be attributed to solid increases in private-sector capital investments in the domestic market and to favorable conditions in overseas markets.

- Tokyo Seimitsu

Tokyo Seimitsu saw its sales rise 16.3% and operating profits rise 17.6% over the previous year. This may be attributed to increased demand in the automobile and machine tool industries.

- Anritsu

Like Tokyo Seimitsu, Anritsu also saw its sales and operating profits rise over previous year figures

in 2005. In Anritsu's case, however, this upward trend may be attributed to increased demand for measuring instruments among portable device manufacturers.

- Shimadzu Corp.

Shimadzu, too, saw its sales increase over the previous year. This is attributed to increased demand for environmental measuring instruments as a result of European hazardous materials regulations.

- Hitachi High-Technologies

Hitachi High-Technologies enjoyed favorable sales of genetic testing equipment in the U.S. As a result, both sales and operating profits rose above previous year figures.

- Kimmon Manufacturing Co.

Due to fierce price wars in the water meter market, Kimmon Manufacturing saw FY 2005 sales decrease.

Diagram 5-1-19. FY 2005 Consolidated Financial Results for the Top Five Manufacturers of Electrical Measuring Instruments, Industrial Measuring Instruments & Analytical Instruments

	FY 2004		FY 2005		Y/Y	
	Sales	Operating Profit	Sales	Operating Profit	Sales	Operating Profit
Industrial measures						
Mitutoyo	949	170	1,071	229	12.9%	34.3%
Precision measuring instruments						
Tokyo Seimitsu Measuring instrument business	181	43	210	50	16.3%	17.6%
Anritsu Measuring instrument business	553	42	651	53	17.8%	24.9%
Analytical instruments						
Shimadzu Corp. Measuring instrument business	1,319	227	1,387	219	5.1%	▲3.6%
Hitachi High-Technologies Life sciences business	851	55	871	88	2.4%	60.8%
Gas & water meters						
Kimmon Manufacturing Co. Weighing and measuring equipment business	325.5	16	324.7	21	▲0.2%	29.9%
Aichitokeidenki Corporation Measuring instrument business	348	19	337	16	▲3.3%	▲13.1%
Electricity meters						
Osaki Electric Co. Measuring and controlling equipment business	233	17	231	20	▲1.0%	17.8%

Notes:

1) Aichitokeidenki Corp. figures are based on total sales/profits.

Source: Corporate financial reports

According to Aichitokeidenki Corp., its FY 2005 sales and operating profits dropped below previous year levels due to declining demand in the city gas meter market and falling prices.

Osaki Electric Co. saw its measuring and controlling equipment business sales drop due to de-

clining sales of fiber-optic-related products and other products that it sells commercially.

Based on the financial results shown in the chart above, it is possible to say that, overall, leading companies experienced favorable results in FY 2005.

(2) Technological Innovation & Business Environments

Diagram 5-1-20 shows the R&D efforts in which leading companies in the fields of electrical measuring instruments, industrial measuring in-

struments, and analytical instruments were involved in FY 2005.

Diagram 5-1-20. R&D Projects of Manufacturers of Electrical Measuring Instruments, Industrial Measuring Instruments and Analytical Instruments

	R&D Results
Mitutoyo	“MACH V9106” 3D measuring device “3D LSI” contactless 3D measuring system
Tokyo Seimitsu	“Surfcom C5” surface texture measuring instrument
Shimadzu Corp.	Energy-dispersion-type fluorescent X-ray analyzer
Hitachi High-Technologies	Next-generation automated analyzer
Kimmon Manufacturing Co.	New type of liquid propane gas meter Next-generation computerized gas meter
Aichitokeidenki Corp.	New type of liquid propane gas meter Improved water meter functionality
Osaki Electric Co.	Low-cost, multifunctional electronic measuring instrument development

Source: Annual securities reports

As Diagram 5-1-20 indicates, leading companies in this industrial sector are involved in a broad range of R&D projects. Mitutoyo in FY 2005 continued working on the development of 3D measuring devices, and Tokyo Seimitsu was involved in the development of a surface texture measuring instrument, a circularity measurement instrument, and a laser interferometer that incorporates fiber optic technology.

Shimadzu was involved in the development of energy-dispersion-type fluorescent X-ray analyzer tailored to meet the needs of European hazardous chemical substance regulations. Additionally, the company is also working on the development of a

scanning probe microscope that enables high-magnification observation of 3D shapes via the scanning of a sample surface.

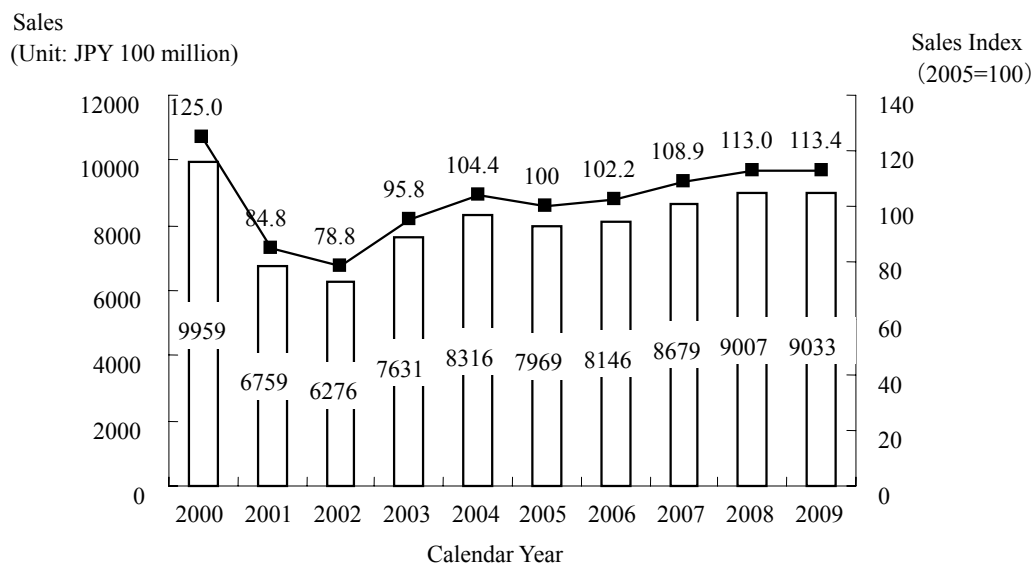
Hitachi High-Technologies, in an effort to improve the quality of laboratory tests in the medical field, developed and is already selling next-generation automated blood analyzers.

Kimmon Manufacturing and Aichitokeidenki both devoted resources to the development of new-type liquid propane gas meters in FY 2005.

Osaki Electric, in response to the liberalization of the electric power industry, has devoted resources to the development of low-cost, multifunctional electronic measuring instruments.

(3) Future Prospects & Challenges

Diagram 5-1-21 shows electrical measuring instrument sales estimates for the next four years.



Note: FY 2005-'09 figures are based on estimates.

Source: Japan Electric Measuring Instruments Manufacturers' Association (JEMIMA)

Diagram 5-1-21. Electrical Measuring Instrument Sales Estimates

Future demand for electrical measuring instruments, industrial measuring instruments, and analytical instruments is expected to remain favor-

able due to increases in domestic capital investments and favorable conditions in overseas markets.