

MA334T(06)-1

## Current Industrial Reports

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### SUMMARY OF FINDINGS

During 2006, the total value of shipments of meters and test devices totaled \$17.1 billion,

up from the 2005 value of \$16.2 billion. The 2006 figure includes electrical integrating instruments which increased \$101 million from the 2005 revised value, an increase of 17 percent. Geophysical and meteorological products increased by \$226.9 million, a 17-percent increase from 2005. Physical properties testing equipment also saw an increase of 11 percent. The largest significant decrease was in semiconductor component test equipment which decreased by \$104 million within the electrical testing component category which included memory, microprocessor, and semiconductor test equipment. This decreased was more than offset by increases in combination test sets and wave measuring equipment. Overall, the test equipment industry has grown 6 percent.

For general CIR information, explanation of general terms and historical note, see the appendix.

Address inquiries concerning these data to Investment Goods Industries Branch, Manufacturing and Construction Division (MCD), Washington, DC 20233-6900, or call Jesse Dawson, 301-763-4746.

For mail or fax copies of this publication, please contact the Information Services Center, MCD, Washington, DC 20233-6900, or call 301-763-4673.

# U S C E N S U S B U R E A U

*Helping You Make Informed Decisions*

U.S. Department of Commerce  
Economics and Statistics Administration  
U.S. CENSUS BUREAU

Table 1. Value of Shipments of Meters and Test Devices: 2002 to 2006  
 [Millions of dollars]

Product class	Product description	2006	2005	2004	2003	2002
3345141	Integrating and totalizing meters for gas and liquids.....	1,546.6	1,449.4	1,427.5	1,329.2	1,232.8
3345143	Counting devices.....	571.7	475.6	506.9	504.8	446.8
3345151	Integrating instruments, electrical.....	702.8	r/ 601.6	r/ 502.5	r/ 547.7	586.9
3345153	Test equipment for testing electrical, radio and communication circuits, and motors.....	9,399.7	9,226.5	9,325.7	r/ 9,084.5	7,682.5
3345155	Instruments to measure electricity.....	387.2	r/ 406.7	331.9	389.7	384.5
3345194	Physical properties and kinematic testing equipment.....	1,996.6	1,801.4	1,732.9	1,581.3	1,703.5
3345195	Nuclear radiation detection and monitoring instruments.....	628.5	r/ 601.2	592.4	534.4	517.3
3345197	Commercial, geophysical, meteorological, and general purpose instruments .....	1,863.7	r/ 1,596.8	1,367.1	1,290.3	1,383.8

r/Revised by 5 percent or more from previously published data.

Table 2. Value of Shipments of Meters and Test Devices: 2006 and 2005  
 [Value in thousands of dollars]

Product code	Product description	No. of cos.		2006		2005
3345141	Integrating and totalizing meters for gas and liquids.....	37	a/	1,546,568		1,449,402
3345141108	Gas meters, consumption registering.....	12		220,589	r/	225,482
3345141116	Liquid meters, positive displacement with registers and counters.....	26		950,855		854,488
3345141119	Parts, components, and accessories for gas and liquid meters, sold separately.....	29	b/	375,124		369,432
3345143	Counting devices, excluding motor vehicle instruments vehicle instruments.....	40		571,698		475,599
3345143104	Mechanical, electrical, and electronic input counting devices.....	31	b/	178,873	r/	159,457
3345143108	All other counting devices, including parts (toll meters, fare collection equipment systems, parking lot systems, taximeters, parking meters, etc. ....	19		392,825		316,142
3345151	Integrating instruments, electrical.....	16	a/	702,849	a/r/	601,574
3345151104	A.C. watt meters.....	8	a/	380,268		314,326
3345151105	Demand meters.....	9	a/	213,031	r/	208,129
3345151107	Other electrical integrating meters.....	5		(D)		(D)
3345151109	Parts and accessories for integrating meters.....	10		(D)		(D)
3345153	Total test equipment for testing electrical, radio and communication circuits, and motors.....	223	a/	9,399,726		9,226,463
3345153102	Voltage, current, and resistance measuring equipment.....	41		222,097		198,437
3345153111	Multimeters.....	14		230,795		229,438
3345153114	Power and energy measuring equipment.....	15		70,409		68,617
3345153126	Waveform measuring and/or analyzing equipment, including oscilloscopes and spectrum analyzers.....	26	a/	1,416,074	r/	1,317,091
3345153136	Signal generating equipment.....	26	a/	228,587	r/	221,358
3345153141	Field strength and intensity measuring equipment.....	15		118,949	r/	109,031
	Impedance and standing wave ratio measuring equipment (transfer function measuring equipment):					
	Automatic test and measuring equipment:					
3345153149	Combination and/or group test sets.....	39		1,446,762		1,304,566
	Component part test sets:					
	Semiconductor component test equipment:					
3345153153	Memory.....	10	a/	30,393	r/	64,954
3345153157	Microprocessor.....	13	c/	700,696		628,093
3345153159	Other semiconductor component test equipment.....	22		2,005,791		2,148,638
3345153161	Loaded circuit board test equipment.....	11		190,685	r/	130,750
3345153163	Other component part test sets and equipment.....	17		205,823		199,051
3345153165	Equipment and subassembly test equipment.....	10	b/	208,493		179,953
3345153168	Standards and calibration equipment.....	22	a/	177,725		155,724
	Communications test equipment:					
3345153175	Network analyzers.....	12	b/	563,337		618,698
3345153179	Fiber optics.....	6		64,831	a/	81,597
3345153183	Microwave.....	5	c/	56,888	c/	36,858
3345153185	Other communications test equipment.....	25		544,912		587,202
3345153196	Other test equipment.....	75		698,493	a/	746,303
3345153197	Parts and components for test equipment.....	39		217,986		200,104
3345155	Total other instruments to measure electricity:					
3345155114	Electrical indicating instruments: panel type.....	18	a/	60,039	a/	75,173
3345155121	Electrical indicating instruments: portable.....	13	a/	91,252		100,359
3345155124	Electrical recording instruments.....	16	b/	94,196	a/	80,902
3345155127	Other instruments to measure electricity.....	6		(D)		(D)
3345155135	Parts and accessories for indicating and recording instruments.....	25		(D)		(D)

Table 2. Value of Shipments of Meters and Test Devices: 2006 and 2005  
 [Value in thousands of dollars]

Product code	Product description	No. of cos.	2006	2005
3345194	Physical properties testing and inspection equipment and kinematic testing and measuring equipment.....	127	b/ 1,996,635	a/ 1,801,431
3345194101	Physical properties testing equipment, including hardness, tensile, stress, strain, abrasion, strength, torsion, wear, and similar testing equipment, including components and sold separately: For testing of metals.....	22	522,393	506,549
3345194104	Other, including parts.....	50	b/ 503,292	a/ 465,353
3345194107	Physical properties inspection equipment, including flaw detection, thickness measuring, and similar detection equipment: For testing of metals.....	17	c/ 276,435	b/ 220,030
3345194109	Measuring and checking flow of fluids.....	15	a/ 87,858	a/ 78,654
3345194112	Other, including parts.....	48	a/ 336,282	321,585
3345194116	Kinematic testing and measuring equipment, including parts (including vibration, acceleration, and other motion testing equipment).....	26	a/ 219,527	a/r/ 209,260
3345195	Nuclear radiation detection and monitoring instruments.....	32	628,491	a/r/ 601,240
3345195105	Nuclear monitoring instruments, (include environment, personal dosimetry, and medical monitors).....	12	182,470	a/ 179,781
3345195125	Nuclear instrument modules, n.e.c. ....	9	a/ 58,514	b/ 47,698
3345195126	Radiation detecting elements, nuclear power supplies, and measuring and control devices that use beta, gamma, or neutron gauge technology.....	21	169,414	r/ 134,604
3345195127	Other nuclear radiation detection and monitoring instruments.....	18	a/ 139,299	a/ 178,265
3345195129	Parts and components for nuclear radiation and detection and monitoring instruments.....	11	b/ 39,763	a/r/ 60,892
3345197	Commercial, geophysical, meteorological, and general-purpose instruments.....	80	1,863,697	a/r/ 1,596,843
3345197119	Thermometers (all kinds).....	37	a/ 179,697	a/ 149,524
3345197124	Meteorological electronics equipment and instruments.....	33	a/ 437,307	a/ 369,609
3345197127	Seismic instruments.....	10	b/ 456,992	r/ 321,245
3345197135	All other instruments not listed above, including compasses, altimeters, humidity indicating and recording instruments, environmental gas detectors, air sampling instruments, dynamometers, etc. ....	77	a/ 789,701	a/r/ 756,465

D Withheld to avoid disclosing data for individual companies. n.e.c. Not specified by kind. r/Revised by 5 percent or more from previously published data.

Note: Percent of estimation of each item is indicated as follows: a/10 to 25 percent of this item has been estimated. b/26 to 50 percent of this item has been estimated. c/Over 50 percent of this item has been estimated.

Table 3. Shipments, Exports and Imports of Meters and Test Devices: 2006  
 [Value in thousands of dollars]

Product code	Product description	Manufacturers' shipments (value f.o.b. plant)	Exports of domestic merchandise (value at port) 1/	Imports for consumption 2/ (value) 3/
3345141108	Gas meters, consumption registering (except parts).....	220,589	41,713	14,868
3345141116	Liquid meters (except parts).....	950,855	78,886	8,515
3345141119	Parts, components, and accessories for gas and liquid meters, sold separately.....	375,124	120,069	208,925
3345143104, 108	Counting devices, n.e.c., including taxi meters, parking meters and parts.....	571,698	110,100	245,431
3345151	Electricity meters.....	702,849	118,650	108,757
3345153102	Voltage, current, and resistance measuring equipment.....	222,097	259,233	171,208
3345153136	Signal generating equipment.....	228,587	116,834	58,185
3345153111, 126, 141, 149, 153, 157, 159, 161, 163, 165, 168, 175, 179, 183, 185, 196	Test equipment for testing multimeters, electrical, radio and communication circuits, and motors, n.e.c. ....	8,660,647	3,235,333	992,283
3345194	Physical properties testing and inspection equipment and kinematic testing and measuring equipment.....	1,996,635	648,220	126,467
3345195	Nuclear radiation detection and monitoring instruments and equipment.....	628,491	395,965	134,924
3345197119	Thermometers.....	179,697	21,893	232,888
3345197127	Seismic instruments.....	456,992	19,586	25,779

n.e.c. Not elsewhere classified.

1/Source: Census Bureau report, EM 545, U.S. Exports.

2/Source: Census Bureau report, IM 145, U.S. Imports for Consumption.

3/Value represents the c.i.f. (cost, insurance, and freight) value at first port of entry in the United States plus import duties.

Table 4. Comparison of North American Industry Classification System (NAICS)-Based Product Codes with Schedule B Export Codes and HTSUSA Import Codes: 2006

Product code	Product description	Export code 1/	Import code 2/
3345141108	Gas meters, consumption registering (except parts).....	9028.10.0000	9028.10.0000
3345141116	Liquid meters (except parts).....	9028.20.0000	9028.20.0000
3345141119	Parts, components, and accessories for gas and liquid meters, sold separately.....	9028.90.0080	9028.90.0080
3345143104, 108	Counting devices, n.e.c., including taxi meters, parking meters and parts.....	9106.20.0000 9028.90.0040 9029.10.0000 9029.90.0000	9106.20.0000 9029.10.4000 9028.90.0040 9029.10.8000 9029.90.2000 9029.90.8080
3345151	Electricity meters.....	9028.30.0000	9028.30.0000
3345153102	Voltage, current, and resistance measuring equipment (except multimeters).....	9030.39.0040	9030.39.0040
3345153136	Signal generating equipment.....	8543.20.0000	8543.20.0000
3345153111, 126, 141, 149, 153, 157, 159, 161, 163, 165, 168, 175, 179, 183, 185, 196	Test equipment for testing multimeters, electrical, radio and communication circuits, and motors, n.e.c. ....	9029.20.6000 9030.31.0000 9030.82.0000 9030.20.0000 9030.90.8010 9030.90.8020 9030.90.8030 9030.90.8040 9030.90.8050 9030.90.8060 9031.80.8060	9029.20.6000 9030.31.0000 9030.82.0000 9030.90.4500 9030.90.8400 9030.90.8810 9030.90.8820 9030.90.8830 9030.90.8840 9030.90.8855 9030.90.8860 9031.80.8060
3345194	Physical properties testing and inspection equipment and kinematic testing and measuring equipment.....	9024.10.0000 9024.80.0000 9024.90.0000	9024.10.0000 9024.80.0000 9024.90.0040 9024.90.0080
3345195	Nuclear radiation detection and monitoring instruments and equipment.....	9030.10.0000 9030.90.4000	9030.10.0000
3345197119	Thermometers.....	9025.11.4000 9025.19.8040	9025.11.4000 9025.19.8080
3345197127	Seismic instruments.....	9015.80.6000	9015.80.6000

n.e.c. Not elsewhere classified.

1/Source: 2006 edition, Harmonized System-Based Schedule B, Statistical Classification of Domestic and Foreign Commodities Exported from the United States.

2/Source: Harmonized Tariff Schedule of the United States, Annotated (2006).

# Appendix.

## General CIR Survey Information, Explanation of General Terms and Historical Note

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### GENERAL

The CIR program has been providing monthly, quarterly, and annual measures of industrial activity for many years. Since 1904, with its cotton and fats and oils surveys, the CIR program has formed an essential part of an integrated statistical system involving the quinquennial economic census, manufacturing sector, and the annual survey of manufactures. The CIR surveys, however, provide current statistics at a more detailed product level than either of the other two statistical programs.

The primary objective of the CIR program is to produce timely, accurate data on production and shipments of selected products. The data are used to satisfy economic policy needs and for market analysis, forecasting, and decision making in the private sector. The product-level data generated by these surveys are used extensively by individual firms, trade associations, and market analysts in planning or recommending marketing and legislative strategies, particularly if their industry is significantly affected by foreign trade. Although production and shipments information are the two most common data items collected, the CIR program collects other measures also such as inventories, orders, and consumption. These surveys measure manufacturing activity in important commodity areas such as textiles and apparel, chemicals, primary metals, computer and electronic components, industrial equipment, aerospace equipment, and consumer goods.

The CIR program uses a unified data collection, processing, and publication system. The U.S. Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic census, manufacturing sector. The manufacturing sector provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is too large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. The CIR program includes a group of mandatory and voluntary surveys. Typically the monthly and quarterly surveys are conducted on a voluntary basis. Those companies that choose not to respond to the voluntary surveys are required to submit a mandatory annual counterpart corresponding to the more frequent survey.

### NORTH AMERICAN INDUSTRY CLASSIFICATION SYSTEM (NAICS), 1997

The adoption of the North American Industry Classification System (NAICS) in the 1997 Economic Census has had a major impact on the comparability of current and historic data. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those that left manufacturing are logging and portions of publishing. Prominent among the industries that came into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. The net effect of the classification changes are such that if the 1997 value of shipments data for all manufacturers were tabulated on an SIC basis, it would be approximately 3 percent higher.

Listed below are the NAICS sectors:

- 21 Mining
- 22 Utilities
- 23 Construction
- 31–33 Manufacturing
- 42 Wholesale Trade
- 44–45 Retail Trade
- 48–49 Transportation and Warehousing
- 51 Information
- 52 Finance and Insurance
- 53 Real Estate and Rental and Leasing
- 54 Professional, Scientific, and Technical Services
- 55 Management of Companies and Enterprises
- 56 Administrative and Support and Waste Management and Remediation Services
- 61 Educational Services
- 62 Health Care and Social Assistance
- 71 Arts, Entertainment, and Recreation
- 72 Accommodation and Foodservices
- 81 Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

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The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

## FUNDING

The Census Bureau funds most of the surveys. However, a number of surveys are paid for either fully or partially by other Federal Government agencies or private trade associations. A few surveys are mandated, but all are authorized by Title 13 of the United States Code.

## RELIABILITY OF DATA

Survey error may result from several sources including the inability to obtain information about all cases in the survey, response errors, definitional difficulties, differences in the interpretation of questions, mistakes in recording or coding the reported data, and other errors of collection, response, coverage, and estimation. These nonsampling errors also occur in complete censuses. Although no direct measurement of the biases due to these nonsampling errors has been obtained, precautionary steps were taken in all phases of the collection, processing, and tabulation of the data in an effort to minimize their influence.

A major source of bias in the published estimates is the imputing of data for nonrespondents, for late reporters, and for data that fail logic edits. Missing figures are imputed based on period-to-period movements shown by reporting firms. A figure is considered to be an impute if the value was not directly reported on the questionnaire, directly derived from other reported items, directly available from supplemental sources, or obtained from the respondent during the analytical review phase. Imputation generally is limited to a maximum of 10 percent for any one data cell. Figures with imputation rates greater than 10 percent are suppressed or footnoted. The imputation rate is not an explicit indicator of the potential error in published figures due to nonresponse, because the actual yearly movements for nonrespondents may or may not closely agree with the imputed movements. The range of difference between the actual and imputed figures is assumed to be small. The degree of uncertainty regarding the accuracy of the published data increases as the percentage of imputation increases. Figures with imputation rates above 10 percent should be used with caution.

## DATA REVISIONS

Statistics for previous years may be revised as the result of corrected figures from respondents, late reports for which imputations were originally made, or other corrections. Data that have been revised by more than 5 percent from previously published data are indicated by footnotes.

## DISCLOSURE

The Census Bureau collects the CIR data under the authority of Title 13, United States Code, which specifies that the information can only be used for statistical purposes and cannot be published or released in any manner that would identify a person, household, or establishment. "D" indicates that data in the cell have been suppressed to avoid disclosure of information pertaining to individual companies.

## EXPLANATION OF GENERAL TERMS

**Capacity.** The maximum quantity of a product that can be produced in a plant in 1 day if operating for 24 hours. Includes the capacity of idle plants until the plant is reported to be destroyed, dismantled, or abandoned.

**Consumption.** Materials used in producing or processing a product or otherwise removing the product from the inventory.

**Exports.** Includes all types of products shipped to foreign countries, or to agents or exporters for reshipment to foreign countries.

**Gross shipments.** The quantity or value of physical shipments from domestic establishments of all products sold, transferred to other establishments of the same company, or shipped on consignment, whether for domestic or export sale or use. Shipments of products purchased for resale are omitted. Shipments of products made under toll arrangements are included.

**Interplant transfers.** Shipments to other domestic plants within a company for further assembly, fabrication, or manufacture.

**Inventories.** The quantity or value of finished goods, work in progress, and materials on hand.

**Machinery in place.** The number of machines of a particular type in place as of a particular date whether the machinery was used for production, prototype, or sampling, or was idle. Machinery in place includes all machinery set up in operating positions.

**Net receipts.** Derived by subtracting the materials held at the end of the previous month from the sum of materials used during the current month.

**Production.** The total volume of products produced, including: products sold; products transferred or added to inventory after adjustments for breakage, shrinkage, and obsolescence, plus any other inventory adjustment; and products that undergo further manufacture at the same establishment.

**Quantities produced and consumed.** Quantities of each type of product produced by a company for internal consumption within that same company.



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**Quantity and value of new orders.** The sales value of orders received during the current reporting period for products and services to be delivered immediately or at some future date. Also represents the net sales value of contract change documents that increase or decrease the sales value of the orders to which they are related, when the parties concerned are in substantial agreement as to the amount involved. Included as orders are only those that are supported by binding legal documents such as signed contracts or letter contracts.

**Quantity and value of shipments.** The figures on quantity and value of shipments represent physical shipments of all products sold, transferred to other establishments of the same company, or shipped on consignment, whether for domestic or export sale. The value represents the net sales price, f.o.b. plant, to the customer or branch to which the products are shipped, net of discounts, allowances, freight charges, and returns. Shipments to a company's own branches are assigned the same value as comparable appropriate allocation of company overhead and profit. Products bought and resold without further manufacture are excluded.

**Unfilled orders (backlog).** Calculated by adding net new orders and subtracting net sales from the backlog at the end of the preceding year.

#### HISTORICAL NOTE

Data on selected instruments and related products have been collected by the Census Bureau since 1961 on survey MA334B.

Beginning in 2005, a portion of data for MA334B, Selected Instruments and Related Products, will be published under the new survey MA334D, Defense, Navigational and Aerospace Electronics. Additional data for MA334B can be found on surveys MA334A, Analytical and Biomedical Instruments, MA334C, Control Instruments, and MA334T, Meters and Test Devices. Historical data may be obtained from Current Industrial Reports available at your local Federal Depository Library.

**Stocks.** Total quantity of ending finished inventory.