

Switchgear, Switchboard Apparatus, Relays, and Industrial Controls

1998

Issued March 2000

MA335A(98)-1

(Formerly Series No. MA36A)

Information about the scope of the survey, methodology, explanation of terms and historical notes for this survey may be found in the introduction of the 1997 Manufacturing Profiles, issued August 1999.

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NOTE:

Data are now published on the new North American Industry Classification System (NAICS) basis and therefore are not always comparable to the old Standard Industrial Classification

(SIC) code. For further information on NAICS, see www.census.gov/epcd/www/naics.html.

Summary of Findings

During 1998, the total value of shipments of switchgear and switchboard apparatus was \$6.8 billion, up 3.4 percent from the 1997 value of \$6.6 billion. The 1998 shipments include power circuit breakers valued at \$481.1 million, an increase of 4.7 percent from 1997; low voltage panelboards, valued at \$2.2 billion, an increase of 2.2 percent from 1997; fuses and fuse equipment, valued at \$602.6 million, an increase of 8.1 percent from 1997; molded case circuit breakers, valued at \$1.4 billion, an increase of 5.3 percent from 1997; duct, valued at \$278.1 million, a decrease of 2.1 percent from 1997; and switchgear, valued at \$1.9 billion, an increase of 2.4 percent from 1997. During 1998, the total value of shipments of relays and industrial controls was \$8.9 billion, up 1.9 percent from the 1997 value of \$8.8 billion. The 1998 shipments include general-purpose relays valued at \$795.5 million, a decrease of 4.1 percent from 1997; specific-purpose industrial controls, valued at \$3.7 billion, an increase of 4.1 percent from 1997; general-purpose industrial controls, valued at \$4.4 billion, an increase of 1.3 percent from 1997; and motor controller accessories, valued at \$503.9 million, a decrease of 10.8 percent from 1997.

Current
Industrial
Reports

Address inquiries concerning these data to Investment Goods Industries Branch, Manufacturing and Construction Division (MCD), Washington, DC 20233-6900, or call Tempie Whittington, 301-457-4800.

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

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Table 1. Value of Shipments of Switchgear, Switchboard Apparatus, Relays, and Industrial Controls: 1992 to 1998
 [Millions of dollars]

Product code	Product description	1998	1997	1996	1995	1994	1993	1992
3353131000	Power circuit breakers.....	481.1	459.5	412.7	442.9	550.9	520.8	480.8
3353133000	Low-voltage panelboards.....	2,218.2	2,169.4	2,093.3	2,025.4	1,750.8	1,687.1	1,531.1
3353135000	Fuses and fuse equipment.....	602.6	557.4	522.2	500.1	382.1	319.9	412.8
3353137000	Molded case circuit breakers.....	1,368.7	1,299.7	1,218.1	1,173.4	1,132.9	1,009.8	954.7
3353139000	Duct, 1,000 volts and under.....	278.1	284.0	254.5	238.5	227.9	200.1	189.1
335313A000	Switchgear (except ducts).....	1,875.3	1,830.5	1,868.2	1,758.3	1,663.7	1,581.3	161.5
3353141000	Relays, general purpose.....	795.5	829.7	786.6	808.1	804.0	750.6	781.5
3353143000	Specific purpose industrial controls.....	3,714.3	3,568.2	3,454.9	3,312.4	2,747.9	2,321.6	1,915.7
3353145000	General purpose industrial controls.....	4,417.8	4,362.7	4,323.8	4,189.2	3,840.3	3,326.3	2,778.2
3353147000	Motor controller accessories and parts for industrial controls.....	503.9	564.8	516.4	503.3	511.6	476.4	447.9

Table 2. Shipments of Switchgear, Switchboard Apparatus, Relays, and Industrial Controls: 1998 and 1997
 [Quantity in number of units. Value in thousands of dollars]

Product code	Product description	No. of cos.	1998			1997			
			Quantity		Value	Quantity		Value	
335313 --	Switchgear and switchboard apparatus.....	(NA)	(X)		6,824,012	(X)		6,600,501	
3353131 -	Power circuit breakers, all voltages.....	34	(X)	a/	481,119	(X)		459,522	
3353131001	Power circuit breakers (sold separately) for use in metal-clad switchgear, oil and oilless, over 1,000 volts, (number of breakers).....	10	a/	3,769	c/	44,861	4,246	a/	45,524
3353131004	Parts for power circuit breakers for use in metal-clad switchgear 1/.....	5		(X)		(D)	(X)		(D)
3353131007	Power circuit breakers, free standing, oil and oilless, from 15.5 kV through 800 kV and above, (number of breakers).....	8		4,659		183,448	4,426		165,061
3353131011	Parts for power circuit breakers, free standing, oil and oilless, from 15.5 kV through 800 kV and above 1/.....	4		(X)		11,601	(X)		12,723
3353131013	Power circuit breakers (sold separately) in individual enclosures and/or for use in low-voltage switchgear, 1,000 volts and below, excluding molded case circuit breakers) (number of breakers) 2/.....	9		(D)		(D)	(D)		(D)
3353131016	Parts for power circuit breakers in individual enclosures and/or for use in low-voltage switchgear, 1,000 volts and below, excluding molded case circuit breakers) 2/.....	5		(X)		(D)	(X)		(D)
3353131019	All other power circuit breakers (sold separately), oil and oilless, network protectors and automatic circuit reclosers 2/.....	9		(X)		190,814	(X)	r/	184,272
3353131022	Parts for all other power circuit breakers, oil and oilless, network protectors and automatic circuit reclosers.....	14		(X)	c/	50,395	(X)		51,942
3353133 -	Low voltage panelboards, distribution boards, and other switching and interrupting devices, 1,000 volts and below.....	119		(X)	b/	2,218,186	(X)		2,169,372
3353133201	Panelboards, including enclosing cabinets: Fusible, including combination switch fuse.....	43		(S)	b/	130,642	(S)		154,516
3353133104	Circuit breaker.....	52	b/	1,278,100	b/	592,373	1,193,896		551,937
3353133207	Distribution switchboards: Fusible.....	30	a/	39,314	a/	153,824	33,045		108,510
3353133211	Circuit breaker.....	43		73,008	a/	298,062	84,539		343,635
3353133213	Other, including theater switchboards.....	7		(D)		(D)	(D)		(D)
3353133216	Switches (except switches commonly known as snap, toggle, and rotary switches and switch devices intended primarily to be used with electric motor controls): Knife switches, enclosed: Heavy duty.....	11	a/	1,596,789	a/	185,657	1,612,169		181,832
3353133219	General duty.....	7		1,530,157		77,410	1,382,275		68,621
3353133222	Enclosed fusible, service entrance, and branch circuit cutouts.....	7		(D)		(D)	(D)		(D)
3353133225	Circuit breaker type.....	17		11,506,848		286,639	10,228,560		265,107

Continued

Table 2. Shipments of Switchgear, Switchboard Apparatus, Relays, and Industrial Controls: 1998 and 1997
 [Quantity in number of units. Value in thousands of dollars]

Product code	Product description	No. of cos.	1998		1997				
			Quantity	Value	Quantity	Value			
3353133228	Load centers: Grouped metering panels (combinations of two or more meters and related switching units with overcurrent protection associated with each meter, including accessory components, excluding single socket load combinations).....	13	(S)	37,124	(S) a/	35,089			
3353133231	Other switches, excluding snap, bolted, toggle, push, etc., including open knife switches, motor contact, motor disconnect, meter service equipment other than metermounting, and test devices.....	21	(X) a/	138,437	(X) a/	163,399			
3353133234	Other low voltage switchgear apparatus.....	27	(X) b/	294,963	(X) a/	279,015			
3353135	Fuses and fuse equipment, under 2,300 volts (except power distribution cutouts)	21	(X) c/	602,551	(X) b/	557,356			
3353135001	Nonrenewable plug fuses 3/.....	2	(X) (D)	(D)	(X) (D)	(D)			
3353135004	Nonrenewable cartridge fuses.....	9	(X) c/	274,990	(X) b/	261,953			
3353135007	Renewable plug and cartridge fuses, including renewable links 3/.....	3	(X)	3,905	(X)	4,382			
3353135011	Other fuses and open fuse material, including cutouts, clips, bases, etc.....	19	(X) c/	323,656	(X) b/	291,021			
3353137	Molded case circuit breakers, 1,000 volts and under.....	34	(X) a/	1,368,720	(X)	1,299,688			
3353137001	Industrial type, assembled as complete units in supporting and enclosing housing of insulating materials, with or without accessories or attachments: With ground fault detection capability.....	14	b/	76,842	31,384	74,665	29,264		
3353137004	Without ground fault detection capability.....	18	b/	36,098,958	a/	687,598	31,578,925	680,198	
3353137007	Residential or light duty type, (primarily) for load center application, assembled as complete units in supporting and enclosing housing of insulating materials: With ground fault detection capability 4/.....	7	(D)	(D)	(D)	(D)	(D)		
3353137011	Without ground fault detection capability 4/.....	6		58,673,804	312,656	51,634,044	r/	285,544	
3353137013	Individually enclosed industrial type, excluding panelboards and busway plugs 5/.....	13	(D)	(D)	(D)	(D)	(D)		
3353137016	Other molded case circuit breakers: Marine and Navy type 6/.....	4	(D)	(D)	(D)	(D)	(D)		
3353137019	Aircraft and aerospace 6/.....	6	c/	1,550,445	c/	136,200	r/	1,513,154	127,551
3353137022	Automotive 5/.....	2	(D)	(D)	(D)	(D)	(D)		
3353137025	Electronic 5/.....	6	(D)	(D)	(D)	(D)	(D)		
3353137028	All other types 5/.....	12	(S)	200,882	(S)	(S)	177,131		
3353139	Duct, including plug-in units and accessories, 1,000 volts and under, consisting of enclosed sectionalized prefabricated bus bars rated 20 amperes or more and associated structures and fittings.....	21	(X)	278,125	(X)	(X)	284,024		
3353139001	Busways 7/.....	19	(D)	(D)	(D)	(D)	(D)		
3353139004	Trolley-type and lighting distribution duct 7/.....	3	a/	(S)	278,125	(S)	284,024		
335313A	Switchgear (except ducts).....	126	(X) a/	1,875,311	(X)	(X)	1,830,539		
335313A101	Automatic and manual control panels (generators, transformers, feed-controls, etc.).....	66	(X) a/	255,650	(X) r/	254,182			

Continued

Table 2. Shipments of Switchgear, Switchboard Apparatus, Relays, and Industrial Controls: 1998 and 1997
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Product code	Product description	No. of cos.	1998		1997					
			Quantity	Value	Quantity	Value				
335313A204	Metal-clad switchgear (using power circuit breakers, oil and oilless), all voltages above 1,000 volts, up to and including 38 kV, excluding load interrupter switchgear.....	41	(X) a/	367,366	(X) a r/	331,153				
335313A307	Metal-enclosed load interrupter switchgear assemblies, all voltages, including parts.....	40	(X)	185,387	(X)	186,912				
335313A311	Metal-enclosed low-voltage power circuit breaker switchgear assemblies 1,000 volts and below, including parts and excluding load interrupter switchgear.....	33	(X) b/	134,099	(X) r/	137,849				
335313A313	Metal-enclosed bus bars when sold separately, above 1,000 volts, including isolated, segregated, nonsegregated and cable bus bars.....	16	(X)	39,669	(X) a/	45,104				
	Power switching equipment, 2,300 volts and over, including attachments, auxiliaries, bus supports and fittings, and accessories, but excluding power fuses, sold separately. Also includes single-phase circuit reclosers:									
335313A316	Outdoor, excluding structures.....	27	(X)	364,192	(X)	372,840				
335313A319	Indoor.....	11	(X)	10,345	(X) a r/	8,452				
335313A322	Power fuses and fuse links for 2,300 volts and over, ac service, excluding distribution cutouts 8/.....	11	(X)	(D)	(X)	(D)				
335313A325	Power and ground connectors generally used in substation construction 8/.....	7	(X)	185,931	(X) r/	167,261				
335313A328	Overhead transmission and distribution connectors (clamps, taps, terminals, and splices).....	5	(X)	47,219	(X)	46,298				
335313A331	Transmission and distribution connectors, n.e.c., including underground deadends, hot line taps, stirrups, and repair sleeves, etc. 9/.....	4	(X)	(D)	(X)	(D)				
335313A334	Distribution cutouts.....	8	(X)	80,431	(X)	84,291				
335313A337	Other switchgear devices, including regulators and miscellaneous switchboard devices (for sale separately) 9/.....	22	(X) a/	205,122	(X) a r/	196,197				
335314 --	Relays and industrial controls.....	(NA)	(X)	8,927,615	(X) r/	8,760,684				
3353141 -	General-purpose and other relays.....	112	(X) b/	795,525	(X) a/	829,733				
3353141001	Industrial-control relays (all voltages), n.e.c.	41	(S) a/	263,596	(S) a/	247,517				
	General-purpose electromechanical relays:									
	Over 100 MW actuating power and sealed (either hermetically or environmentally):									
3353141004	0 through 2.0 amperes contact rating 10/.....	8	(D)	(D)	(D)	(D)				
3353141007	Over 2.0 through 10.0 amperes contact rating 10/.....	16	(D)	(D)	(D)	(D)				
3353141011	Over 10.0 amperes contact rating 10/.....	7	b/	2,329,371	2,472,848	r/	48,403			
	Over 100 MW actuating power and not sealed:									
3353141013	0 through 10.0 amperes contact rating.....	14	a/	859,326	a/	8,383	a/	955,637	a/	9,376
3353141016	Over 10.0 amperes contact rating 11/.....	12	(D)	(D)	(D)	(D)	(D)			
3353141019	0 through 100 MW actuating power (both sealed and not sealed) 11/.....	2	a/	723,292	a/	10,002	859,216	9,842		

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Product code	Product description	No. of cos.	1998		1997	
			Quantity	Value	Quantity	Value
	Miniature printed circuit mounted electromechanical relays, excluding reed relays (profile height 1/2-inch max.):					
	Sealed (either hermetically or environmentally):					
3353141022	0 through 2.0 amperes contact rating 12/.....	4	(D)	(D)	(D)	(D)
3353141025	Over 2.0 amperes contact rating 12/.....	3	11,271,984	13,409	11,115,959	13,276
3353141028	Not sealed.....	4	(D)	(D)	(D)	(D)
	DIP or SIP footprint:					
3353141031	Sealed (either hermetically or environmentally).....	2	(D)	(D)	(D)	(D)
	Telephone relays, all types:					
3353141034	Sealed (either hermetically or environmentally) 13/.....	4	(D)	(D)	(D)	(D)
3353141037	Not sealed 13/.....	4 b/	16,075,112 b/	15,193	b/ 12,844,017	b/ 14,205
3353141041	General-purpose solid-state relays, pure solid-state and hybrid solid-state, excluding time delay.....	9	(D)	(D)	(D)	(D)
	High performance military/aerospace/ aircraft relays and contactors (generally pertaining to Mil-R5757, 6106, 19523, 25108, and 39016):					
3353141043	Round and square can multipole airframe relays and contractors (both sealed and not sealed) (all sizes).....	5	(D)	(D)	(D)	(D)
	Crystal can types (sealed):					
3353141046	Larger than full size.....	5	372,268	24,683	(S)	25,317
3353141049	Full size.....	5 a/	145,775 a/	9,759	184,164	12,564
3353141052	Half size and smaller, including TO-5 package 14/.....	5	(D)	(D)	(D)	(D)
3353141055	RF, antenna and coaxial relays (sealed and not sealed), excluding reed relays 14/.....	6 a/	1,389,006 a/	55,017	b r/ 1,234,957	b r/ 59,080
	Reed relays:					
	Dry reed:					
3353141058	Miniature size (glass length less than .85 inch) 15/.....	10	(D)	(D)	(D)	(D)
3353141061	Standard size 15/.....	7	13,558,947	29,462	21,898,795	42,432
3353141064	Mercury wetted reed 16/.....	6	(D)	(D)	(D)	(D)
3353141067	Stepping switches, stepping and impulse relays 16/.....	3	(D)	(D)	(D)	(D)
3353141071	Switchgear and protective relays 16/.....	5	579,986	b/ 27,031	627,879	25,811
	Timing relays (timers):					
3353141073	Solid-state/EMR combination.....	22 b/	1,240,257 b/	35,363	a/ 1,169,993	a r/ 34,060
3353141076	Solid-state-pure.....	18 a/	338,473	14,204	r/ 394,866	14,897
3353141079	All other timing relays (timers), including pneumatic, motor driven, electronic, etc.	14 c/	407,585 c/	18,147	450,148	18,829
3353141082	All other general-purpose and special-purpose relays, n.e.c.	23	(X) a/	153,239	(X)	169,215
3353141085	Parts for general-purpose and special-purpose relays (sold separately).....	8	(X) b/	10,566	(X) b/	16,769
3353143 -	Specific-purpose industrial controls..	245	(X) b/	3,714,337	(X)	3,568,210
3353143301	U.S. Coast Guard, Navy, and Marine auxiliary controls and accessories.	21 a/	77,704 b/	156,039	62,807	137,411
3353143104	Metal mill controls and accessories (all voltages).....	8	(D)	(D)	(D)	(D)
3353143307	Crane and hoist controls, constant and adjustable voltage, including operators' desks and stations.....	18 a/	40,257	137,635	36,472	131,630
3353143311	Definite-purpose contactors and starters (600 volts and less).....	18	11,708,724 b/	138,449	10,789,899	135,262

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 [Quantity in number of units. Value in thousands of dollars]

Product code	Product description	No. of cos.	1998		1997	
			Quantity	Value	Quantity	Value
	Machine tool applications (motion controllers):					
	Stand-alone controls for numerically controlled machine tools:					
3353143313	Computer numerical controls (CNC); postioning (point-to-point).....	11	9,266	19,892	9,523	23,097
3353143316	Computer numerical controls (CNC); continuous path (contouring).....	11	b/ 35,389	b/ 292,891	46,732	r/ 351,460
3353143319	Robotic controls.....	3	(D)	(D)	(D)	(D)
3353143322	Other stand-alone motion controls	16	94,580	a/ 97,663	r/ 73,946	r/ 110,537
3353143325	Subordinate motion controls	12	(S)	c/ 15,911	(S)	a r/ 14,053
3353143228	Programmable controllers, sold separately.....	58	(S)	a/ 1,497,301	(S)	1,222,620
3353143331	Other specific- or special-purpose ac and dc controllers, other definite-purpose devices.....	150	(X)	a/ 1,276,587	(X)	a/ 1,348,732
3353145 -	General-purpose industrial controls and power circuit devices.....	257	(X)	b/ 4,417,753	(X)	4,362,741
	General-purpose controls:					
3353145001	Ac full voltage noncombination magnetic starters (1,000 volts or less)	27	b/ 942,880	a/ 159,249	b/ 968,714	155,910
	Ac full voltage combination magnetic starters (1,000 volts or less):					
3353145004	Combination starters (less pumping panels)	23	103,153	75,598	106,476	69,106
3353145007	Pumping panels	18	61,919	38,639	62,505	36,411
3353145011	Disconnect switches (600 volts or less).....	20	2,395,614	116,049	2,519,221	55,758
	Ac full voltage manual controllers, 1,000 volts or or less:					
3353145013	Designed and rated to U. S. National Standards (NEMA).....	12	1,155,747	48,072	1,285,192	48,515
3353145016	Designed and rated to International Standards (IEC).....	5	(D)	(D)	(D)	(D)
	Ac contactors, 1,000 volts or less, excluding controls for packaged adjustable speed drives and synchronous motor controls:					
3353145019	Designed and rated to U. S. National Standards (NEMA).....	12	593,680	84,789	577,622	82,837
3353145022	Designed and rated to International Standards (IEC).....	16	(D)	(D)	(D)	(D)
3353145025	Ac reduced voltage controls, 1,000 volts or less, excluding synchronous motor starters.....	20	b/ 78,525	b/ 56,740	a/ 87,398	a/ 61,967
3353145028	Synchronous motor starters, 1,000 volts or less, including both full and reduced voltage.....	4	(D)	(D)	(D)	(D)
3353145031	Motor control centers, 1,000 volts or less.....	40	(X)	445,395	(X)	437,942
3353145034	Starters and contactors for squirrel cage and wound rotor and synchronous and nonsynchronous motors, over 1,000 to 7,200 volts, air break, vacuum, and oil immersed.....	8	(S)	76,628	43,844	77,887
3353145037	Brakes and clutches.....	19	(S)	70,615	1,474,894	70,047
3353145041	Digital readout systems, including dial or plugboard type.....	21	c/ 7,663	b/ 6,275	r/ 7,177	a/ 4,677

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Product code	Product description	No. of cos.	1998		1997	
			Quantity	Value	Quantity	Value
	Presence sensors and motion measurement devices:					
	Limit switches (positioning sensors):					
3353145043	Electromechanical positioning sensors.....	29	(X)	137,673	(X)	135,698
3353145046	Movement sensors.....	20	(X)	38,528	(X)	37,892
	Solid-state positioning sensors:					
3353145049	Nonoptical proximity sensors.....	19	(X)	82,369	(X)	90,302
3353145052	Optical proximity sensors.....	17	(X)	175,992	(X)	152,990
3353145055	All other pilot circuit devices, excluding relays and limit switches.....	10	(X) c/	10,607	(X) c/	15,780
3353145058	Dc power circuit devices (all voltages).....	11	(X) b/	24,714	(X) a r/	25,093
3353145061	Other control sensors (all voltages).....	18	(X)	107,019	(X)	104,253
	Pushbuttons and pushbutton stations, excluding operators' desks and stations:					
3353145064	Pushbuttons, 18 mm and smaller....	12	(X)	7,267	(X)	7,581
3353145067	Pushbuttons, 19 mm to 29 mm.....	20	(X)	64,140	(X)	62,319
3353145071	Pushbuttons, 30 mm and larger.....	24	(X)	220,502	(X)	211,561
3353145073	Rheostats and resistors (except for electronic applications) sold separately, n.e.c.	13	(X)	26,046	(X)	24,215
	Controls for adjustable speed drives, including electronic and nonelectric and operators' desks and stations:					
3353145076	Controls for ac packaged drives.....	41 a/	585,727 a/	490,103 r/	621,078 a r/	436,291
3353145079	Controls for dc packaged drives.....	27 a/	125,949	70,126 r/	230,743	102,456
3353145082	Ac drives systems.....	38 c/	59,496 a/	205,262 c/	70,912 a r/	220,568
3353145085	Dc drives systems.....	26	(S)	107,357	347,035 r/	96,827
3353145088	Solid-state motor controllers (all voltages).....	48 b/	1,318,870 b/	245,539	1,715,272	249,627
3353145091	All other general industry devices and systems.....	96	(X) a/	1,138,356	(X) r/	1,199,884
3353147	Motor controller accessories and parts for industrial controls.....	122	(X) a/	503,927	(X)	564,796
3353147001	Motor controller accessories, including those items that are sold separately, but become part of a motor controller. Includes overload relays, auxiliary contacts, heater elements, mechanical interlocks, control transformers, kits to add push buttons, selector switches, pilot lights, separate controller enclosure fittings, reset mechanisms, etc., excluding motor circuit switches sold, separately.....	38	(X) a/	168,182	(X)	184,389
3353147004	Parts for industrial controls.....	104	(X) a/	335,745	(X)	370,407

D Withheld to avoid disclosing data for individual companies. NA Not available. n.e.c. Not elsewhere classified.
 r/Revised by 5 percent or more from previously published data. S Does not meet publication standards. X Not applicable.

- 1/Product codes 3353131004 and 3353131011 are combined to avoid disclosing data for individual companies.
- 2/Product codes 3353131013, 3353131016 and 3353131019 are combined to avoid disclosing data for individual companies.
- 3/Product codes 3353135001 and 3353135007 are combined to avoid disclosing data for individual companies.
- 4/Product codes 3353137007 and 3353137011 are combined to avoid disclosing data for individual companies.
- 5/Product codes 3353137013, 3353137022, 3353137025 and 3353137028 are combined to avoid disclosing data for individual companies.
- 6/Product codes 3353137016 and 3353137019 are combined to avoid disclosing data for individual companies.
- 7/Product codes 3353139001 and 3353139004 are combined to avoid disclosing data for individual companies.

Table 2. Shipments of Switchgear, Switchboard Apparatus, Relays, and Industrial Controls: 1998 and 1997
[Quantity in number of units. Value in thousands of dollars]

- 8/Product codes 335313A322 and 335313A325 are combined to avoid disclosing data for individual companies.
- 9/Product codes 335313A331 and 335313A337 are combined to avoid disclosing data for individual companies.
- 10/Product codes 3353141004, 3353141007 and 3353141011 are combined to avoid disclosing data for individual companies.
- 11/Product codes 3353141016 and 3353141019 are combined to avoid disclosing data for individual companies.
- 12/Product codes 3353141022 and 3353141025 are combined to avoid disclosing data for individual companies.
- 13/Product codes 3353141034 and 3353141037 are combined to avoid disclosing data for individual companies.
- 14/Product codes 3353141052 and 3353141055 are combined to avoid disclosing data for individual companies.
- 15/Product codes 3353141058 and 3353141061 are combined to avoid disclosing data for individual companies.
- 16/Product codes 3353141064, 3353141067 and 3353141071 are combined to avoid disclosing data for individual companies.

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

Table 3. Shipments, Exports, Imports, and Apparent Consumption of Switchgear, Switchboard Apparatus, Relays, and Industrial Controls: 1998
 [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/
3353131001 3353131007 3353131013 3353131019	Power circuit breakers.....	416,614	137,686	85,306
3353133201 3353133104 3353133207 3353133211 3353133213	Low voltage panelboards and distribution boards.....	1,181,191	124,711	325,628
3353133216 3353133219	Knife switches.....	263,067	3,634	10,113
3353133228 3353133234	Grouped metering panels, including accessory components and other low voltage switchgear apparatus.....	332,087	34,144	28,331
3353135001 3353135004 3353135007 3353135011	Fuses and fuse equipment, under 2,300 volts.....	602,551	194,584	87,681
3353137001 3353137004 3353137007 3353137011 3353137013 3353137016 3353137019 3353137022 3353137025 3353137028	Molded case circuit breakers, 1,000 volts and under.....	1,366,936	114,661	349,852
3353139001 3353139004	Duct, including plug-in units and accessories.....	278,125	34,808	11,062
335313A101 335313A204 335313A307 335313A311 335313A313 335313A316 335313A319 335313A334 335313A337	Switchgear and switchgear assemblies 3/.....	(D)	(D)	(D)

Continued

Table 3. Shipments, Exports, Imports, and Apparent Consumption of Switchgear, Switchboard Apparatus, Relays, and Industrial Controls: 1998
 [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/
335313A322	Power fuses and fuse links, 2,300 volts and over 3/.....	(D)	(D)	(D)
335313A325 335313A328 335313A331	Power and ground connectors and transmission and distribution connectors 3/.....	1,875,311	220,659	105,398
3353141001 3353141004 3353141007 3353141011 3353141013 3353141016 3353141019 3353141022 3353141025 3353141028 3353141041 3353141043 3353141046 3353141049 3353141052 3353141055 3353141058 3353141061 3353141064 3353141067 3353141071 3353141076 3353141079 3353141082	Relays.....	780,152	468,956	718,457
3353143313 3353143316	Controls for numerically controlled machine tools.....	312,783	38,240	46,662
3353143228	Programmable controllers.....	1,497,301	136,068	389,680
3353145001 3353145004 3353145007 3353145028	Motor starters.....	274,401	51,289	44,952
3353145031	Motor control centers, 1,000 volts or less.....	445,395	62,347	39,734

Continued

Table 3. Shipments, Exports, Imports, and Apparent Consumption of Switchgear, Switchboard Apparatus, Relays, and Industrial Controls: 1998
 [Value in thousands of dollars]

Product code	Product description	Manufac- facturers' shipments (value f.o.b. plant)	Exports of domestic merchandise (value at port) 1/	Imports for consumption 2/
3353145037	Brakes and clutches.....	70,615	39,501	82,108
3353145073	Rheostats and resistors.....	26,046	7,678	10,679

D Withheld to avoid disclosing data for individual companies.

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

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

3/Data for "Switchgear and switchgear assemblies" and "Power fuses and fuse links" are combined with "Power and ground connectors" and "Transmission and distribution connectors" to avoid disclosing data for individual companies.

Table 4. Comparison of North American Industry Classification-Based Product Codes with Schedule B Export Numbers, and HTSUSA Import Numbers: 1998

Product code	Product description	Export number 1/	Import number 2/
3353131001	Power circuit breakers.....	8535.21.0000	8535.21.0000
3353131007		8535.29.0020	8535.29.0020
3353131013		8535.29.0040	8535.29.0040
3353131019		8536.20.0040	8536.20.0040
3353133201	Low voltage panelboards and		
3353133104	distribution boards.....	8537.10.9050	8537.10.9050
3353133207			
3353133211			
3353133213			
3353133216	Knife switches.....	8536.50.9045	8536.50.9045
3353133219			
3353133228	Grouped metering panels, including		
3353133234	accessory components and other low voltage switchgear apparatus.....	8537.10.9020	8537.10.9020
3353135001	Fuses and fuse equipment, under		
3353135004	2,300 volts.....	8535.10.0040	8535.10.0040
3353135007		8536.10.0020	8536.10.0020
3353135011		8536.10.0040	8536.10.0040
3353137001	Molded case circuit breakers, 1,000		
3353137004	volts and under.....	8536.20.0020	8536.20.0020
3353137007			
3353137011			
3353137013			
3353137016			
3353137019			
3353137022			
3353137025			
3353137028			
3353139001	Duct, including plug-in units and		
3353139004	accessories.....	8536.90.8010	8536.90.8010
335313A101	Switchgear and switchgear		
335313A204	assemblies	8537.20.0020	8537.20.0020
335313A307			
335313A311			
335313A313			
335313A316			

Continued

Table 4. Comparison of North American Industry Classification-Based Product Codes with Schedule B Export Numbers, and HTSUSA Import Numbers: 1998

Product code	Product description	Export number 1/	Import number 2/
3353131001	Power circuit breakers.....	8535.21.0000	8535.21.0000
3353131007		8535.29.0020	8535.29.0020
3353131013		8535.29.0040	8535.29.0040
3353131019		8536.20.0040	8536.20.0040
335313A319			
335313A334			
335313A337			
335313A322	Power fuses and fuse links, 2,300 volts and over	8535.10.0020	8535.10.0020
335313A325	Power and ground connectors and transmission and distribution		
335313A328	connectors	8535.90.8040	8535.90.8040
335313A331			
3353141001	Relays.....	8536.41.0005	8536.41.0005
3353141004		8536.41.0020	8536.41.0020
3353141007		8536.41.0030	8536.41.0030
3353141011		8536.41.0045	8536.41.0045
3353141013		8536.41.0050	8536.41.0050
3353141016		8536.41.0060	8536.41.0060
3353141019		8536.49.0050	8536.49.0050
3353141022		8536.49.0055	8536.49.0055
3353141025		8536.49.0065	8536.49.0065
3353141028		8536.49.0075	8536.49.0075
3353141041		8536.49.0080	8536.49.0080
3353141043			
3353141046			
3353141049			
3353141052			
3353141055			
3353141058			
3353141061			
3353141064			
3353141067			
3353141071			
3353141076			
3353141079			
3353141082			
3353143313	Controls for numerically controlled		
3353143316	machine tools.....	8537.10.9030	8537.10.9030

Continued

Table 4. Comparison of North American Industry Classification-Based Product Codes with Schedule B Export Numbers, and HTSUSA Import Numbers: 1998

Product code	Product description	Export number 1/	Import number 2/
3353131001	Power circuit breakers.....	8535.21.0000	8535.21.0000
3353131007		8535.29.0020	8535.29.0020
3353131013		8535.29.0040	8535.29.0040
3353131019		8536.20.0040	8536.20.0040
3353143228	Programmable controllers.....	8537.10.9060	8537.10.9060
3353145001	Motor starters.....	8536.50.4000	8536.50.4000
3353145004			
3353145007			
3353145028			
3353145031	Motor control centers, 1,000 volts or less.....	8537.10.6000	8537.10.6000
3353145037	Brakes and clutches.....	8505.20.0000	8505.20.0000
3353145073	Rheostats and resistors.....	8533.40.0040 8533.40.8040	8533.40.8040

1/Source: 1998 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 (1998).