HP Calculator Master Patent List[1]– July 4, 2009 V9
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All HP calculator patents are shown on this list, both desktop and handheld. The handheld related patents are shaded. The desktop/handheld selection is based on interpreting the patent and the location of the inventors, especially California vs. Colorado. This does not mean that other more general purpose patents won't also apply to the handheld machines. The text "calculator" only appears in 92 (2/3rds) of the 140 titles. See additional information at the end of the list.

#	Patent Number	Patent Date YYMMDD	Title Handheld and General Patents are Shaded	Related Model Etc.[2]	Inventors Handheld and General Patents are Shaded	PDF File Size
1	3,381,279	680430	Read only memory	HP9100	Arndt B. Bergh, Charles W. Near	336K
2	3,388,385	680611	Nondestructive round-off display circuit	HP9100	Joseph A. Lukes	481K
3	3,566,160	710223	Simplified race-preventing flip-flop having a selectable noise immunity threshold	HP9100	Thomas E. Osborne	3.2M
4	3,588,873	710628	Information display apparatus	HP9100	Thomas E. Osborne, Kay B. Magleby, Joseph A. Lukes	326K
5	3,623,156	711123	Calculator employing multiple registers and feedback paths for flexible subroutine control	HP9100	Thomas E. Osborne	2.9M
6	3,641,328	720228	Keyboard entry means and power control means for calculator	HP9100	Thomas E. Osborne	2.8M
7	3,668,697	720606	Noncontacting keyboard	Mech.	David S. Cochran, Glenn E. McGhee	313K
8	3,675,213	720704	Stored data recall means for an electronic calculator	Memory	Richard M. Spangler	197K
9	3,678,466	720718	Electronic Calculator	Prog.	Richard M. Spangler	191K
10	3,693,162	720919	Subroutine call and return means for an electronic calculator	General	Richard M. Spangler	213K
11	3,711,690	730116	Calculator and tester for user therewith	HP9100	Thomas E. Osborne	3.2M
12	3,749,899	730731	Binary/BCD arithmetic logic unit	General	Jindrich Kohoutek, Charles W. Near	325K
13	3,755,697	730828	Light-emitting diode driver	Classic series	Donald K. Miller	328K
14	3,757,068	730904	Keyboard actuating mechanism with particular feel and contact mechanisms	General	Bernard E. Musch, Donn D. Lobdell	401K
15	3,769,621	730930	Calculator with provision for automatically interposing memory access cycles between otherwise regularly recurring logic cycles	HP9100	Thomas E. Osborne	2.9M
16	3,781,820	731225	Portable Electronic Calculator	HP-65A	David S. Cochran, Thomas E. Osborne	462K
17	3,825,736	740723	Calculator with provision for efficiently manipulating factors and terms	HP9100	Thomas E. Osborne	4.1M
18	3,839,630	741001	Programmable calculator employing algebraic language	HP9820	Emil E. Olander, Jr., Rex L. James, Ivar W. Larson, Wayne F. Covington, Jack M. Walden, Robert E. Watson, Francis J. Yockey, Fred Wenninger, Jr., Homer C. Russell	16M
19	3,855,461	741217	Calculator with key code association and display features	HP-65	Richard K. Stockwell	392K
20	3,859,635	750107	Programmable Calculator	9810	Robert E. Watson, Jack M. Walden, Charles W. Near	17M
21	3,863,060	750128	General purpose calculator with capability for performing interdisciplinary business calculations	HP-80	France Rode, William L. Crowley Jr., Alexander D.R. Walker, David S. Cochran	3.6M
22	3,867,649	750218	Differential pair	Circuit	David S. Cochran	414K
23	3,892,958	750701	Inverse/complementary function prefix key	HP-65	Chung C. Tung	229K
24	3,893,173	750701	Miniaturized magnetic card reader/recorder for use in hand-held calculator	HP-65	Robert B. Taggart, Richard H. Barth, John S. Bailey	359K
25	3,941,953	760302	Keyboard having switches with tactile feedback	Mech.	William W. Misson, Clarence K Studley, William J. West, Edward T. Liljenwall	446K
26	3,946,218	760323	General purpose calculator with capability for performing yield-to-maturity of a bond calculation	HP-80	France Rode, William L. Crowley Jr., Alexander D.R. Walker, David S. Cochran	253K
27	3,955,074	760504	General purpose calculator having keys with more than one function assigned thereto	HP-80	France Rode, William L. Crowley Jr., Alexander D.R. Walker	211K
28	3,967,370	760706	Method of manufacturing a multicontact switch	Mech.	Harry C. Griffin, Thomas E. Holden, Orland E. Upton	679K

#	Patent Number	Patent Date YYMMDD	Title Handheld and General Patents are Shaded	Related Model Etc.[2]	Inventors Handheld and General Patents are Shaded	PDF File Size
29	3,971,925	760727	Adaptable programmed calculator having provision for plug-in keyboard and memory modules	HP9805	Freddie W. Wenninger, Donald E. Morris, Jindrich Kohoutek, David S. Maitland, Douglas M. Clifford, Louis T. Schulte	8.0M
30	3,973,110	760803	Circulating shift register time-keeping circuit	HP-01	France Rode, Eric A. Slutz	2.3M
31	3,976,926	760824	Digital DC motor speed control circuit	HP-91	William E. Egbert	267K
32	3,986,186	761012	Automatic display segment intensity control		David S. Cochran	191K
33	3,987,290	761019	Calculator apparatus for displaying data in engineering notation	HP-25	Peter D. Dickinson	521K
34	3,996,562	761207	Programmable electronic calculator for evaluating mathematical problems	Math	Roy W. Reach, William M. Kahn, David Shapiro	2.1M
35	3,997,765	761214	Circulating shift register incrementer/decrementer	HP-01	Vijay V. Marathe	305K
36	4,000,389	761228	Printed circuit board and contact assembly for keyboard switch assemblies	Logic	William W. Misson, Clarence K. Studley, William J. West, Edward T. Liljenwall	401K
37	4,001,569	770104	General purpose calculator having selective data storage, data conversion, and time-keeping capabilities	HP-45	Peter D. Dickinson, Thomas E. Osborne, France Rode, Allen J. Baum	4.2M
38	4,009,379	770222	Portable programmable calculator displaying absolute line number addresses and key codes and automatically altering display formats	HP-55	Bernard E. Musch	2.6M
39	4,012,725	770315	Programmable Calculator	HP 9830	Richard M. Spangler, Eugene V. Burmeister, Frank E. Cada, Wayne F. Covington, Chris J. Christopher, Myles A. Judd, Freddie W. Wenninger, Robert E. Watson, Kent W. Simcoe	22M
40	4,028,538	770607	Programmable calculator employing algebraic language	HP 9820	Emil E. Olander, Jr., Rex L. James, Ivar W. Larson, Wayne F. Covington, Jack M. Walden, Robert E. Watson, Francis J. Yockey, Fred Wenninger, Jr., Homer C. Russell	1.1M
41	4,035,627	770712	Scientific calculator	HP-45	Peter D. Dickinson, Thomas E. Osborne, France Rode, Allen J. Baum	547K
42	4,037,092	770719	Calculator having preprogrammed user-definable functions	HP-65	Thomas E. Osborne, Richard K. Stockwell	389K
43	4,047,012	770906	General purpose calculator having factorial capability	HP-45	Peter D. Dickinson, Thomas E. Osborne, France Rode, Allen J. Baum, David S. Cochran, Chung C. Tung	233K
44	4,052,604	771004	Binary adder	Logic	David Steven Maitland, Billy E. Thayer	511K
45	4,054,788	771018	Modular binary half-adder	Logic	David Steven Maitland, Sandy Lee Chumbley, Havyn E. Bradley	407K
46	4,055,757	771025	Calculator apparatus with annuity switch for performing begin- and end-period annuity calculations	HP-22	Lynn W. Tillman, Kent R. Henscheid, Larry D. Smith	497K
47	4,059,750		General purpose calculator having selective data storage, data conversion and time-keeping capabilities	HP-45	Peter D. Dickinson, Thomas E. Osborne, France Rode, Allen J. Baum	276K
48	4,063,221	771213	Programmable calculator	HP 9810	Robert E. Watson, Jack M. Walden, Charles W. Near	1.9M
49	4,075,679	780221	Programmable calculator	HP 9825	Chris J. Christopher, Fred W. Wenninger, Donald E. Morris, Wayne F. Covington, Jerry B. Folsom, Joseph W. Beyers, John H. Nairn, Jeffrey C. Osborne	26M
50	4,078,257	780307	Calculator apparatus with electronically alterable key symbols	General	Alan S. Bagley	654K
51	Re. 2,040 4,078,257	851126	Calculator apparatus with electronically alterable key symbols	General	Alan S. Bagley	666K
52	4,089,059	780509	Programmable calculator employing a read-write memory having a movable boundary between program and data storage sections thereof	HP 9815	Bradley W. Miller, Franklin T. Hickenlooper, David C. Uhlrich, Marl D. Godfrey, Douglas M. Clifford, Rex L. James, Robert E. Watson, John C. Keith, Allan C. Mortensen	13M
53	4,091,270	780523	Electronic calculator with optical input means	HP 82153A	Bernard E. Musch, Roy E. Martin	722K

#	Patent Number	Patent Date YYMMDD	Title Handheld and General Patents are Shaded	Related Model Etc.[2]	Inventors Handheld and General Patents are Shaded	PDF File Size
54	4,099,246	780704	Calculator having merged key codes	HP-65	Thomas E. Osborne, Richard K. Stockwell	1.5M
55	4,106,677	780815	Wrist wearable electronic device with an engagedly stored selected tool	HP-01	Bennie E. Helmso, Thomas E. Holden, Edward T. Liljenwall	269K
56	4,109,315	780822	Wristwatch calculator with selectively scanned keyboard	HP-01	Michael Pan	461K
57	4,126,898	781121	Programmable calculator including terminal control means	HP 9830	Richard M. Spangler, Eugene V. Burmeister, Frank E. Cada, Wayne F. Covington, Chris J. Christopher, Myles A. Judd, Freddie W. Wenninger, Robert E. Watson, Kent W. Simcoe	1.1M
58	4,127,897	781128	Programmable calculator having extended input/output capability	HP 9830	Richard M. Spangler, Eugene V. Burmeister, Frank E. Cada, Wayne F. Covington, Chris J. Christopher, Myles A. Judd, Freddie W. Wenninger, Robert E. Watson, Kent W. Simcoe	1.0M
59	4,143,809	790313	Optical bar code reader	HP 82153A	John J. Uebbing, Perry Jeung	167K
60	4,145,742	790320	Programmable calculator including user-definable keys	HP 9820	Emil E. Olander, Jr., Rex L. James, Ivar W. Larson, Wayne F. Covington, Jack M. Walden, Robert E. Watson, Francis J. Yockey, Fred Wenninger, Jr., Homer C. Russell	2.1M
61	4,145,752	790320	Programmable calculator including separate line numbering means for user-definable functions	HP 9820	Emil E. Olander, Jr., Rex L. James, Ivar W. Larson, Wayne F. Covington, Jack M. Walden, Robert E. Watson, Francis J. Yockey, Fred Wenninger, Jr., Homer C. Russell	2.0M
62	4,152,769	790501	Programmable calculator including means for permitting data entry during program execution	HP 9820	Emil E. Olander, Jr., Rex L. James, Ivar W. Larson, Wayne F. Covington, Jack M. Walden, Robert E. Watson, Francis J. Yockey, Fred Wenninger, Jr., Homer C. Russell	1.6M
63	4,152,770	790501	Programmable calculator including means for programmability controlling magnetic storage units	HP 9820	Emil E. Olander, Jr., Rex L. James, Ivar W. Larson, Wayne F. Covington, Jack M. Walden, Robert E. Watson, Francis J. Yockey, Fred Wenninger, Jr., Homer C. Russell	1.8M
64	4,152,771	790501	Programmable calculator including display means for signalling the user to indicate the exhaustion of a printer paper supply	HP 9820	Emil E. Olander, Jr., Rex L. James, Ivar W. Larson, Wayne F. Covington, Jack M. Walden, Robert E. Watson, Francis J. Yockey, Fred Wenninger, Jr., Homer C. Russell	1.6M
65	4,152,773	790501	Programmable calculator including means for establishing a priority for executing algebraic operations	HP 9820	Emil E. Olander, Jr., Rex L. James, Ivar W. Larson, Wayne F. Covington, Jack M. Walden, Robert E. Watson, Francis J. Yockey, Fred Wenninger, Jr., Homer C. Russell	1.6M
66	4,152,774	790501	Programmable calculator including keyboard function means for raising the number ten to any designated power	HP 9820	Emil E. Olander, Jr., Rex L. James, Ivar W. Larson, Wayne F. Covington, Jack M. Walden, Robert E. Watson, Francis J. Yockey, Fred Wenninger, Jr., Homer C. Russell	1.7M
67	4,156,282	790522	Programmable calculator including relational operator means	HP 9820	Emil E. Olander, Jr., Rex L. James, Ivar W. Larson, Wayne F. Covington, Jack M. Walden, Robert E. Watson, Francis J. Yockey, Fred Wenninger, Jr., Homer C. Russell	1.6M
68	4,156,285	790522	Programmable calculator including keyboard functions whose argument may be a numeric constant, a storage register, or an arithmetic expression	HP 9820	Emil E. Olander, Jr., Rex L. James, Ivar W. Larson, Wayne F. Covington, Jack M. Walden, Robert E. Watson, Francis J. Yockey, Fred Wenninger, Jr., Homer C. Russell	1.7M
69	4,156,917	790529	Programmable calculator including separate user program and data memory areas	HP 9820	Emil E. Olander, Jr., Rex L. James, Ivar W. Larson, Wayne F. Covington, Jack M. Walden, Robert E. Watson, Francis J. Yockey, Fred Wenninger, Jr., Homer C. Russell	1.6M
70	4,156,918	790529	Programmable calculator including means for performing computed jumps during program execution	HP 9820	Emil E. Olander, Jr., Rex L. James, Ivar W. Larson, Wayne F. Covington, Jack M. Walden, Robert E. Watson, Francis J. Yockey, Fred Wenninger, Jr., Homer C. Russell	1.6M
71	4,156,921	790529	Adaptable programmed calculator including automatic decimal point positioning	HP 9805	Freddie W. Wenninger, Donald E. Morris, Jindrich Kohoutek, David S. Maitland, Douglas M. Clifford,	496K

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					Louis T. Schulte, John C. Keith	
72	4,158,228	790612	Programmable calculator including alphanumeric error display means	HP 9820	Emil E. Olander, Jr., Rex L. James, Ivar W. Larson, Wayne F. Covington, Jack M. Walden, Robert E. Watson, Francis J. Yockey, Fred Wenninger, Jr., Homer C. Russell	1.7M
73	4,158,231	790612	Programmable calculator including program listing means	HP 9820	Emil E. Olander, Jr., Rex L. James, Ivar W. Larson, Wayne F. Covington, Jack M. Walden, Robert E. Watson, Francis J. Yockey, Fred Wenninger, Jr., Homer C. Russell	1.6M
74	4,158,233	790612	Programmable calculator including means for performing implied multiply operations	HP 9820	Emil E. Olander, Jr., Rex L. James, Ivar W. Larson, Wayne F. Covington, Jack M. Walden, Robert E. Watson, Francis J. Yockey, Fred Wenninger, Jr., Homer C. Russell	1.6M
75	4,158,285	790619	Interactive wristwatch calculator	HP-01	Edward A. Heinsen, Andre F. Marion, Thomas E. Osborne	7.0M
76	4,159,525	790626	Programmable calculator employing computed memory addresses	HP 9820	Emil E. Olander, Jr., Rex L. James, Ivar W. Larson, Wayne F. Covington, Jack M. Walden, Robert E. Watson, Francis J. Yockey, Fred Wenninger, Jr., Homer C. Russell	1.7M
77	4,161,031	790710	Programmable calculator including Boolean flag variable means	HP 9820	Emil E. Olander, Jr., Rex L. James, Ivar W. Larson, Wayne F. Covington, Jack M. Walden, Robert E. Watson, Francis J. Yockey, Fred Wenninger, Jr., Homer C. Russell	1.6M
78	4,162,532	790724	Programmable calculator including data format display control means	HP 9820	Emil E. Olander, Jr., Rex L. James, Ivar W. Larson, Wayne F. Covington, Jack M. Walden, Robert E. Watson, Francis J. Yockey, Fred Wenninger, Jr., Homer C. Russell	1.6M
79	4,164,019	790707	Programmable calculator including alphanumeric display means	HP 9820	Emil E. Olander, Jr., Rex L. James, Ivar W. Larson, Wayne F. Covington, Jack M. Walden, Robert E. Watson, Francis J. Yockey, Fred Wenninger, Jr., Homer C. Russell	1.6M
80	4,164,039	790707	Programmable calculator including a key for performing either a subtraction or a unary minus function	HP 9820	Emil E. Olander, Jr., Rex L. James, Ivar W. Larson, Wayne F. Covington, Jack M. Walden, Robert E. Watson, Francis J. Yockey, Fred Wenninger, Jr., Homer C. Russell	1.6M
81	4,177,518	791204	Programmable calculator including scrolling alphanumeric display means	HP 9820	Emil E. Olander, Jr., Rex L. James, Ivar W. Larson, Wayne F. Covington, Jack M. Walden, Robert E. Watson, Francis J. Yockey, Fred Wenninger, Jr., Homer C. Russell	1.8M
82	4,177,520	791204	Calculator apparatus having a single-step key for displaying and executing program steps and displaying the result	HP-25	Randall B. Neff	546K
83	4,178,633	791211	Programmable calculator including multifunction keys	HP 9820	Emil E. Olander, Jr., Rex L. James, Ivar W. Larson, Wayne F. Covington, Jack M. Walden, Robert E. Watson, Francis J. Yockey, Fred Wenninger, Jr., Homer C. Russell	1.5M
84	4,180,854	791225	Programmable calculator having string variable editing capability	HP 9845A	Jack M Walden, William D. Eads, Ray J. Cozzens, John L. Bidwell, Robert A. Jewett, Martin S. Wilson, Daniel J. Griffin, Robert E. Kuseski, Louis T. Schulte	21M
85	4,181,965	80010	Programmable calculator including program trace means	HP 9820	Emil E. Olander, Jr., Rex L. James, Ivar W. Larson, Wayne F. Covington, Jack M. Walden, Robert E. Watson, Francis J. Yockey, Fred Wenninger, Jr., Homer C. Russell	1.6M
86	4,181,966	800101	Adaptable programmed calculator including a percent keyboard operator	HP 9805	Freddie W. Wenninger, Donald E. Morris, Jindrich Kohoutek, Davis S. Maitland, Douglas M. Clifford, Louis T. Shulte, John C. Keith	529K
87	4,187,547	800205	Programmable calculator including means for controllably introducing blank lines on a printed record during program execution	HP 9820	Emil E. Olander, Jr., Rex L. James, Ivar W. Larson, Wayne F. Covington, Jack M. Walden, Robert E. Watson, Francis J. Yockey, Fred Wenninger, Jr., Homer C. Russell	1.5M

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88	4,197,586	800408	Electronic calculator assembly	HP3xC/E	Charles A. Nidiffer	424K
89	4,198,684	800415	Electronic calculator with keyboard-controlled unary function capability	Math	Roy W. Reach, William M. Kahn, David Shapiro	1.8M
90	4,203,152	800513	Programmable calculator including key-log printing means	HP 9810	Robert E. Watson, Jack M. Walden, Charles W. Near	3.0M
91	4,232,382	801104	Incrementing signal hold circuit for a clock/calculator	HP-01	Edward A. Heinsen, Vijay V. Marathe	414K
92	4,281,390	810728	Programmable calculator including means for performing computed and uncomputed relative branching during program execution	HP 9820	Emil E. Olander, Jr., Rex L. James, Ivar W. Larson, Wayne F. Covington, Jack M. Walden, Robert E. Watson, Francis J. Yockey, Fred Wenninger, Jr., Homer C. Russell	1.5M
93	4,291,385	811022	Calculator having merged key codes	HP-65	Thomas E. Osborne, Richard Kent Stockwell	1.4M
94	4,309,761	820105	Calculator for evaluating numerical answers to problems	Math.	Roy W. Reach, William M. Kahn, David Shapiro	1.9M
95	4,314,112	820202	Keyboard having switches with tactile feedback	Keybrd	William W. Misson, Clarence K Studley, Bernard M. Oliver, Edward T. Liljenwall	438K
96	4,322,816	820330	Programmable calculator having structure for controlling an x-y plotter	HP 9830	Richard M. Spangler, Eugene V. Burmeister, Frank E. Cada, Wayne F. Covington, Chris J. Christopher, Myles A. Judd, Freddie W. Wenninger, Robert E. Watson, Kent W. Simcoe	951K
97	4,330,839	820518	Programmable calculator including means for automatically processing information stored on a magnetic record member	HP 9815	Bradley W. Miller, Franklin T. Hickenlooper, David C. Uhlrich, Marl D. Godfrey, Douglas M. Clifford, Rex L. James, Robert E. Watson, John C. Keith, Allan C. Mortensen	657K
98	4,366,553	821282	Electronic computing apparatus employing basic language	HP 9830	Richard M. Spangler, Eugene V. Burmeister, Frank E. Cada, Wayne F. Covington, Chris J. Christopher, Myles A. Judd, Freddie W. Wenninger, Robert E. Watson, Kent W. Simcoe	915K
99	4,381,554	830426	Calculator for storing source data and evaluating numerical answers to problems	Math.	Roy W. Reach, William M. Kahn, David Shapiro	1.9M
100	4,384,328	830517	Programmable calculator including magnetic reading and recording means	HP 9810	Robert E. Watson, Jack M. Walden, Charles W. Near	2.5M
101	4,412,300	831025	Programmable calculator including alphabetic output capability	HP 9810	Robert E. Watson, Jack M. Walden, Charles W. Near	2.9M
102	4,424,563	840103	Data processor including a multiple word processing method and device	HP-85	Todd R. Lynch	1.1M
103	4,437,156	840313	Programmable calculator	HP 9825	Chris J. Christopher, Fred W. Wenninger, Donald E. Morris, Wayne F. Covington, Jerry B. Folsom, Joseph W. Beyers, John H. Nairn, Jeffrey C. Osborne	12M
104	4,455,607	840619	Programmable calculator having keys for performing angular measurement unit conversion	HP 9810	Robert E. Watson, Jack M. Walden, Charles W. Near	2.5M
105	4,455,618	840619	Programmable calculator	HP 9845A	Jack M Walden, William D. Eads, Ray J. Cozzens, John L. Bidwell, Robert A. Jewett, Martin S. Wilson, Daniel J. Griffin, Robert E. Kuseski, Louis T. Schulte	801K
106	4,456,964	840626	Calculator including means for displaying alphanumeric prompting messages to the operator	HP 9820	Emil E. Olander, Jr., Rex L. James, Ivar W. Larson, Wayne F. Covington, Jack M. Walden, Robert E. Watson, Francis J. Yockey, Fred Wenninger, Jr., Homer C. Russell	1.4M
107	4,460,974	840717	Electronic computer with access to keyboard status information	BASIC Lang.	Vincent C. Jones	589K
108	4,480,305	841030	Programmable calculator including editing capability	HP 9810	Robert E. Watson, Jack M. Walden, Charles W. Near	3.1M
109	4,546,448	851008	Programmable calculator including program variable initialization means and definition means array	HP 9815	Richard M. Spangler, Eugene V. Burmeister, Frank E. Cada, Chris J. Christopher, Wayne F. Covington, Myles A. Judd, Freddie W. Wenninger, Robert E. Watson, Kent W. Simcoe	866K
110	4,566,072	860121	Programmable calculator including means for	HP 9815	Allan C. Mortensen, Bradley W. Miller, Franklin T. Hickenlooper, David C. Uhlrich, Marl D. Godfrey, Douglas	859K

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			digitizing the position of an X-Y plotter pen		M. Clifford, Rex L. James, Robert E. Watson, John C. Keith	
111	4,611,307	860909	Function analyzing	Math	Roy W. Reach, William M. Kahn, David Shapiro	1.9M
112	4,615,015	860930	Self-contained electronic computer including means for immediately executing or storing alphanumeric statements entered into the computer	HP 9820	Emil E. Olander, Jr., Rex L. James, Ivar W. Larson, Wayne F. Covington, Jack M. Walden, Robert E. Watson, Francis J. Yockey, Fred Wenninger, Jr., Homer C. Russell	1.6M
113	4,821,228	890411	Method and apparatus for computation stack recovery in a calculator	HP-28C	William C. Wickes, Laurence W. Grodd	1.0M
114	4,825,395	890425	Apparatus with torsionly stressed conductors routed through a hollow articulated hinge	HP-28C	Ralph W. Kinser Jr., Ward L. Shriver, Judith A. Layman	657K
115	4,845,652	890704	Generic equation solver interface for solving mathematical equations	HP-28C	Christopher M. Bunsen	1.1M
116	4,852,057	890725	Algebraic expression method and implementation for an electronic data processing apparatus	HP-28C	Charles M. Patton	1.3M
117	4,868,745	891019	Data processing system and method for the direct and indirect execution of uniformly structured object types	HP-28C	Charles M. Patton, Laurence Grodd, William C. Wickes	1.1M
118	4,878,293	891107	Method of connecting assemblies using torsionly stressed conductors routed through a hollow articulated hinge	HP-28C	Ralph W. Kniser, David L. Shriver, Judith A. Layman	658K
119	4,885,430	891205	Flexible printed circuit assembly with torsionly rotated conductors	HP-28C	Ralph W. Kniser, David L. Shriver, Judith A. Layman	658K
120	4,885,714	891205	Calculator having a user-accessible object stack for the uniform application of mathematical functions and logical operations to a multiplicity of object types	HP-28C	Gabe L. Eisenstein, Laurence W. Grodd, Paul J. McClellan, Robert M. Miller, Charles M. Patton, William C. Wickes	934K
121	5,007,008	910409	Method and apparatus for selecting key action	HP48SX	Theodore W. Beers	539K
122	5,020,012	910528	Method and apparatus for matching menu labels with keys	HP-32S	Randall L. Stockberger, Christopher M. Bunsen	392K
123	5,025,403	910618	Fraction entry and display	HP-32S	Bruce A. Stephens	873K
124	5,060,990	911029	Multi-stage door snap	Clmshell	Mark A. Smith, David L. Smith, Tom L. Linderg	442K
125	5,065,356	911112	Shared use of keyboard and memory lines	General	Robert B. E. Puckette	407K
126	5,067,102	911119	Method and apparatus for displaying and editing mathematical expressions in textbook format	HP48SX	Gabe L. Eisenstein	523K
127	5,075,792	911224	Low power optical transceiver for portable computing devices	HP48SX	Preston D. Brown, Lester S. Moore, Dennis C. York	566K
128	5,089,980	920218	Double keystroke fraction entry and interface method	HP-32S	Chris M. Bunsen, Bruce A. Stephens	353K
129	5,123,102	920616	Method and apparatus for suspending computation due to detection of electrostatic discharge.	General	Robert B. E. Puckette	285K
130	5,128,887	920707	Numerical accuracy indicator for rounded numeric value display method	HP-32S	Mark A. Smith, Chris M. Bunsen	316K
131	5,155,697	921013	Most precise fraction display method	HP48SX	Chris M. Bunsen	388K
132	5,175,700	921229	Method and apparatus for solving multiple equations	HP 82211A	Eric L. Vogel, Chris M. Bunsen	585K
133	5,216,627	930601	Method and apparatus for computing with terms having units	HP48SX	Paul J. McClellan, Eric L. Vogel, William C. Wickes	1.0M
134	5,258,748	931102	Accessing and selecting multiple key functions with minimum keystrokes	HP48SX	Robert W. Jones	385K
135	5,260,886	960625	Default denominator for fraction entry and display	HP48SX	Chris M. Bunsen	266K
136	5,530,234	960625	Handheld calculator having a retractable cover	HP38	Philip K. N. Lob, Soo H. Quek	660K
137	7,272,621	070918	Previous Calculation Reuse in A Calculator	Graphical	Cyrille de Brebisson	363K
138	7,325,020	080129	Input and evaluation of fractions using a calculator	Math	Cyrille de Brebisson	864K
139	7,337,958	080224	Calculator device having a USB connection	HP49	Sasha Lapeira, Maria Pinsky, Jessie Kraemer, Cyrille de Brebisson	389K
140	7,403,189	080722	Graphical calculator	Graphical	Cyrille de Brebisson	590K

(1) This list is based on Eric Smiths list, with permission. The date, #, and PDf size columns have been added and all blanks are filled in. Additional patents have been included. See: http://www.brouhaha.com/~eric/hpcalc/patents/ to easily down load most of the patents themselves. You may also use the following websites to download at no cost the complete patent as a PDF file: http://www.pat2pdf.org/pat2pdf/foo.pl and the recent Google Patents: http://www.google.com/patents

(2) Many patents do not apply to a specific model. If they do, the model is provided, otherwise a general idea of what the patent is about (aside from its title) is provided. See the abbreviated designations for this column below – in the order they appear.

Mech – Mechanical   Prog. – Programming   Keybrd – Keyboard   Clmshell – Clamshell (HP19B, HP28C, etc.)

It is important to avoid coming to unrealistic conclusions from this list. For example, the years 1968 to 2008 that HP was not issued a calculator related patent are '69 & 70, '87 & '88, '90, '94 & '95, and the ten year period '97 to '06 does not indicate that nothing new regarding calculators was developed by HP during those 17 years. The average number of calculator related patents for the 41 years is 3.4 patents per year. The USPTO sets a time line between their patents as 1976 to the present and those before (historical?). In the HP Corporate patent date period of January 6, 1976 to August 9, 2008 (11,905 days) HP was issued a total of 18,865 patents. This is 1.5 corporate patents issued each and every day during this period.

Below is an example of what might be a misleading patent. This is HP's most recent handheld calculator patent shown on this list.

Is this the most interesting patent? This will depend on your interest, but from a futuristic perspective the last patent on the Master list, 7,403,189 (#140), July 22, 2008, "Graphical Calculator" is especially informative because it represents a significant graphing calculator philosophical change. Is this the direction HP will take in the future? This patent also has very poor figures in terms of clarity. The idea that a reduced number of calculator keys (a good thing as in the iPhone?) is certainly the approach used for this machine. In addition, the patent includes the full user manual, specifies 30 keys, and a display of 96 x 64 pixels. A patent that has very specific and narrow features makes it an "easy" patent to prepare and get approved.

Quote from the patent Summary: *"It is therefore an object of the present invention to provide an improved graphical calculator. Another objective of the present invention is to provide an improved graphical calculator package. The present invention provides an improved graphical calculator and graphical calculator package. A hand-held graphical calculator according to an embodiment of the present invention has a display and an input area. The input area includes a maximum of 30 keys and an input device. An improved hand-held graphical calculator package according to an embodiment of the present invention includes a hand-held graphical calculator for graphically displaying a user-entered expression and a user manual. The user manual is a single sheet of instructions fully describing operation of the graphical calculator."*
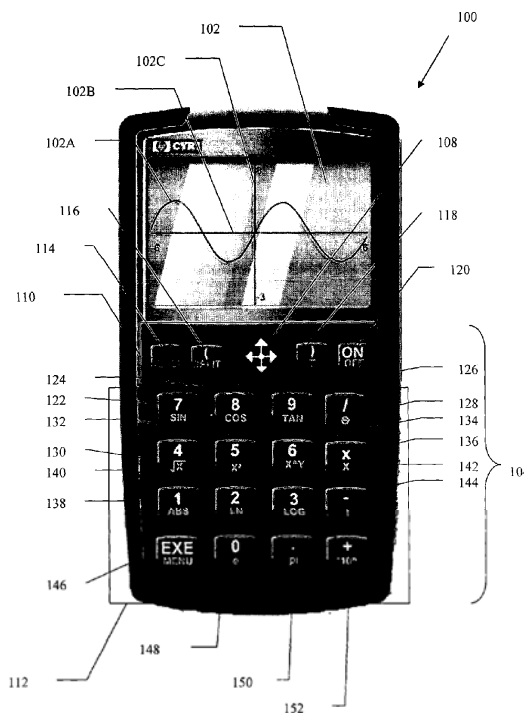

Fig. 1 – Poor patent figure in terms of quality.

Still another example that the list could be misleading is that several patents (primarily the desktop patents) are essentially reissued (divisional, see the HP 9820 related patents) and do not represent new art. These patents make the list longer than it would otherwise be. The patents themselves, however, are very educational and make good tutorials.

The examples above should illustrate why you cannot make valid conclusions with regard to HP's technology, development status, knowledge of the art, accomplishments, or management. From a research perspective it should be kept in mind that some developments are corporate trade secrets.

HP Calculator Patent Trivia

1. What is the first HP calculator patent to reference a TI web page? "Previous calculation reuse in a calculator" by Cyrille de Brebisson. 10 pp. 7,272,621 (#137) issued September 18, 2007.

2. What is the number of women who are listed as the inventor on the HP Calculator Master Patent List? Four; Judith A. Layman on three patents (#114, 118, 119) , Kay B. Magleby on one (#4), Sandy Lee Chumbley on one (#45), and Maria Pinsky on one (#139).

3. On the Master List there are 74 Handheld (& general) and 66 Desktop (only); 53% Handheld, 47% Desktop.

4. How many pages of calculator patents has HP been issued? 6,054 pages with an average of 43 pages per patent.

5. When was the year that HP was issued the highest number of calculator patents? 1979 with 26 patents issued.

6. How many pages of calculator patents has HP been issued? 6,054 pages with an average of 43 pages per patent.

7. What is HP's longest calculator patent? The patent, 4,075,679 (#49), for the HP 9825 issued February 21, 1978 at 606 pages. The shortest patent is the only three pager, 4,143,809 (#59), "Optical bar code reader," issued march 13, 1979 with three claims, two figures, and two inventors.

8. The primary legal basis for a patent is its claims. Which HP calculator related patent has the highest number of claims? "Interactive wristwatch calculator" for the HP-01, 4,158,285 (#74), issued June 19, 1979 with 66 claims. The average number of claims for HP's 140 calculator related patents is 10 claims per patent.

9. The patent with the fewest claims and figures - one each - is "Binary/BCD arithmetic logic unit", 3,749,899 (#12) issued July 31, 1973 to the HP desktop calculator team.

10. When was the first HP calculator related patent issued? April 4, 1968 for ROM memory – 3,381,279 (#1).

11. When was the year that HP was issued the highest number of calculator patents? 1979 with 26 patents issued.

12. What were the years (1968 to 2008) that HP was not issued a calculator related patent? '69 & 70, '87 & '88, '90, '94 & '95, and the ten year period '97 to '06. The average number of calculator related patents for the 41 years is 3.4 patents per year. The USPTO sets a time line between their patents as 1976 to present and those before (historical?). In the HP Corporate patent date period of January 6, 1976 to August 9, 2008 (11,905 days) HP was issued 18,865 patents. This is 1.5 corporate patents issued each and every day during this period.

13. If a picture is worth a thousand words how many figures does HP require to represent their 140 calculator related patents? 3,320 total figures or an average of 24 figures per patent. Nine calculator related patents only have one figure. Five were for desktop patents and four were for handhelds (or both). Eight of the 140 HP calculator patents have 100 or more figures.

14. Which HP calculator patent has the highest number of figures? "Programmable calculator having string variable editing capability", 4,180,854 (#84), for the HP 9845A issued on Christmas in 1979 with 470 figures. One other HP calculator related patent was issued on Christmas, "Portable electronic calculator, 3,781,820 (#16), for the HP-65A issued in 1973. Does the USPTO work on Christmas, a national holiday? How does this happen?

15. How many inventors does it take to "invent" an HP Calculator? The 140 calculator patents are plotted in figure 1 below. There must be at least one inventor, but what about five or nine? The latter is explained by the fact that many of the desktop patents were filed by the same team of people and there were nine of them.
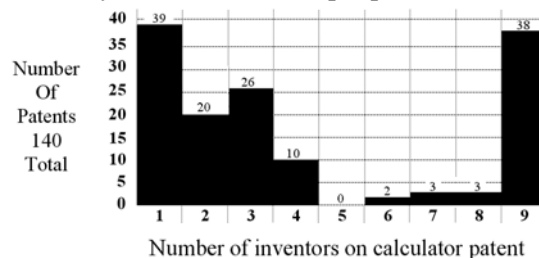
Fig. 1 – Bar chart plot of the number of inventors on HP Calculator patents

HP Calculator Inventor Patent Tally August 23, 2008

This list covers the 140 HP Calculator patents issued from April 30, 1968 to July 22, 2008. Shading groups and separates the first name ordered inventors.

#	Inventor	Tot. Pats	#	Inventor	Tot. Pats	#	Inventor	Tot. Pats
1	Alan S. Bagley	2	41	Frank E. Cada	6	81	Peter D. Dickinson	1
2	Alexander D.R. Walker	3	42	Franklin T.	3	82	Philip K. N. Lob	1
3	Allan C. Mortensen	3	43	Fred Wenninger	28	83	Preston D. Brown	1
4	Allen J. Baum	4	44	Freddie W. Wenninger	9	84	Ralph W. Kinser Jr.	1
5	Andre F. Marion	1	45	Gabe L. Eisenstein	2	85	Ralph W. Kniser	2
6	Arndt B. Bergh	1	46	Glenn E. McGhee	1	86	Randall B. Neff	1
7	Bennie E. Helmso	1	47	Harry C. Griffin	1	87	Randall L. Stockberger	1
8	Bernard E. Musch	3	48	Havyn E. Bradley	1	88	Ray J. Cozzens	2
9	Billy E. Thayer	1	49	Homer C. Russell	28	89	Rex L. James	31
10	Bradley W. Miller	3	50	Ivar W. Larson	28	90	Richard H. Barth	1
11	Bruce A. Stephens	2	51	Jack M. Walden	35	91	Richard K. Stockwell	3
12	Charles M. Patton	3	52	Jeffrey C. Osborne	2	92	Richard M. Spangler	8
13	Charles W. Near	9	53	Jerry B. Folsom	2	93	Robert A. Jewett	2
14	Chris J. Christopher	8	54	Jessie Kraemer	1	94	Robert B. E. Puckette	2
15	Christopher M. Bunsen	7	55	Jindrich Kohoutek	4	95	Robert B. Taggart	1
16	Chung C. Tung	2	56	John C. Keith	5	96	Robert E. Kuseski	2
17	Clarence K Studley	2	57	John H. Nairn	2	97	Robert E. Watson	44
18	Clarence K. Studley	1	58	John J. Uebbing	1	98	Robert M. Miller	1
19	Cyrille de Brebisson	4	59	John L. Bidwell	2	99	Robert W. Jones	1
20	Daniel J. Griffin	2	60	John S. Bailey	1	100	Roy E. Martin	1
21	David C. Uhlrich	3	61	Joseph A. Lukes	2	101	Roy W. Reach	5
22	David L. Shriver	2	62	Joseph W. Beyers	2	102	Sandy Lee Chumbley **	1
23	David L. Smith	1	63	Judith A. Layman **	3	103	Sasha Lapeira	1
24	David S. Cochran	7	64	Kay B. Magleby **	1	104	Theodore W. Beers	1
25	David S. Maitland	2	65	Kent R. Henscheid	1	105	Thomas E. Holden	2
26	David Shapiro	5	66	Kent W. Simcoe	6	106	Thomas E. Osborne	16
27	David Steven Maitland	2	67	Larry D. Smith	1	107	Todd R. Lynch	1
28	Dennis C. York	1	68	Laurence W. Grodd	2	108	Tom L. Linderg	1
29	Donald E. Morris	5	69	Lester S. Moore	1	109	Vijay V. Marathe	2
30	Donald K. Miller	1	70	Louis T. Schulte	4	110	Vincent C. Jones	1
31	Donn D. Lobdell	1	71	Lynn W. Tillman	1	111	Ward L. Shriver	1
32	Douglas M. Clifford	6	72	Maria Pinsky **	1	112	Wayne F. Covington	36
33	Edward A. Heinsen	1	73	Mark A. Smith	2	113	William C. Wickes	4
34	Edward T. Liljenwall	4	74	Marl D. Godfrey	3	114	William D. Eads	2
35	Emil E. Olander	28	75	Martin S. Wilson	2	115	William E. Egbert	1
36	Eric A. Slutz	1	76	Michael Pan	1	116	William J. West	2
37	Eric L. Vogel	2	77	Myles A. Judd	6	117	William L. Crowley	3
38	Eugene V. Burmeiste	6	78	Orland E. Upton	1	118	William M. Kahn	5
39	France Rode	8	79	Paul J. McClellan	2	119	William W. Misson	3
40	Francis J. Yockey	28	80	Perry Jeung	1			

The total number of inventors for 140 HP Calculator patents is 119 for an average or 1.2 patents per inventor. The inventor with the greatest number of patents is desktop inventor Robert E. Watson with his name on 44 HP calculator patents. Nine others have a double digit number of patents. The handheld inventor with the highest number of patents is France Rode with 8 patents. ** indicates that four women inventors have their name on six HP calculator patents.