C

System Flags

This appendix lists the calculator's system flags. You can set, clear, and test all flags, although certain flags are used for specific purposes by the CAS and should not be altered. The default state of the flags is *clear* — except for flags –17, –27, –34, –90, –95 and –128 and the Binary Integer Math flags (flags –5 through –12).

System Flags

| Flag	Description
–1	Principal Solution. *Clear*: Symbolic commands return a result representing all possible solutions. *Set*: Symbolic commands return only the principal solution.
–2	Symbolic Constants. *Clear*: Symbolic constants (e, i, π, MAXR, and MINR) retain their symbolic form when evaluated, unless the Numerical Results flag –3 is set. *Set*: Symbolic constants evaluate to numbers, regardless of the state of the Numerical results flag –3.
–3	Numerical Results. *Clear*: Functions with symbolic arguments, including symbolic constants, evaluate to symbolic results. *Set*: Functions with symbolic arguments, including symbolic constants, evaluate to numbers.
–4	*Not used.* (Originally intended to control the careful evaluation mode in the HP 48SX, though it was never implemented.)
–5 through –10	Binary Integer Wordsize. Combined states of flag –5 through –10 (the most significant bit) set the wordsize from 1 to 64 bits.
–11 and –12	Binary Integer Base. HEX (default): –11 *set*, –12 *set*. DEC: –11 *clear*, –12 *clear*. OCT: –11 *set*, –12 *clear*. BIN: –11 *clear*, –12 *set*.
–13	*Not used.*
–14	Financial Payment Mode. *Clear*: TVM calculations assume end-of-period payments. *Set*: TVM calculations assume beginning-of-period payments.
–15 and –16	Coordinate System. Rectangular: –16 *clear*. Polar/Cylindrical: –15 *clear*, –16 *set*. Polar/Spherical: –15 *set*, –16 *set*.
–17 and –18	Trigonometric Angle Mode. Radians (default): –17 *set*. Degrees: –17 *clear*, –18 *clear*. Grads: –17 *clear*, –18 *set*.
–19	Vector/Complex. *Clear*: →V2 creates a 2-dimensional vector from 2 real numbers. *Set*: →V2 creates a complex number from 2 real numbers.

Flag	Description
–20	Underflow Exception. *Clear*: Underflow exception returns 0, sets flag –23 or –24. *Set*: Underflow exception treated as an error.
–21	Overflow Exception. *Clear*: Overflow exception returns ± 9.99999999999E499 and sets flag –25. *Set*: Overflow exception treated as an error.
–22	Infinite Result Exception. *Clear*: Infinite result exception treated as an error. *Set*: Infinite result exception returns ± 9.99999999999E499 and sets flag –26.
–23 –24 –25 –26	Negative Underflow Indicator. Positive Underflow Indicator. Overflow Indicator. Infinite Result Indicator. When an exception occurs, corresponding flag (–23 through –26) is set only if the exception is not treated as an error.
–27	Display of symbolic complex numbers. *Clear*: Displays symbolic complex numbers in coordinate form (i.e. `'(x,y)'`). *Set* (default): Displays symbolic complex numbers using `'i'` (i.e. `'x+y*i'`).
–28	Simultaneous Plotting of Multiple Functions. *Clear*: Multiple equations are plotted serially. *Set*: Multiple equations are plotted simultaneously.
–29	Draw Axes. *Clear*: Axes are drawn for two-dimensional and statistical plots. *Set*: Axes are not drawn for two-dimensional and statistical plots.
–30	*Not used*.
–31	Curve Filling. *Clear*: Curve filling between plotted points enabled. *Set*: Curve filling between plotted points suppressed.
–32	Graphics Cursor. *Clear*: Graphics cursor always dark. *Set*: Graphics cursor dark on light background and light on dark background.
–33	I/O Device. *Clear*: I/O directed to USB/serial port. *Set*: I/O directed to IrDA port.
–34	Printing Device. *Clear*: Prints via IR to the HP 82240 printer. Flag –33 is ignored. *Set* (default): Printer output directed to USB/serial port if flag –33 is clear, or to IrDA compatible printer otherwise.
–35	Kermit I/O Data Format. *Clear*: Objects transmitted in ASCII form. *Set*: Objects transmitted in binary (memory image) form.

Flag	Description
–36	I/O Receive Overwrite. *Clear*: If file name received by the calculator matches existing variable name, new variable name with number extension is created to prevent overwrite. *Set*: If file name received by the calculator matches existing variable name, existing variable is overwritten.
–37	Double-Spaced Printing. *Clear*: Single-spaced printing. *Set*: Double-spaced printing.
–38	Line Feed. *Clear*: Linefeed added at end of each print line. *Set*: No linefeed added at end of each print line.
–39	I/O Messages. *Clear*: I/O messages displayed. *Set*: I/O messages suppressed.
–40	Clock Display. *Clear*: Clock is not displayed. *Set*: Ticking clock displayed at all times, provided the header height is 2.
–41	Clock Format. *Clear*: 12-hour clock. *Set*: 24-hour clock.
–42	Date Format. *Clear*: Month/Day format. *Set*: Day/Month format.
–43	Repeat Alarm Not Rescheduled. *Clear*: Unacknowledged repeat appointment alarms automatically rescheduled. *Set*: Unacknowledged repeat appointment alarms not rescheduled.
–44	Acknowledged Alarms Saved. *Clear*: Acknowledged appointment alarms deleted from alarm list. *Set*: Acknowledged appointment alarms saved in alarm list.
–45 through –48	Number of Decimal Digits. Combined states of flags –45 through –48 sets the number of decimal digits in Fix, Scientific, and Engineering modes.
–49 thru –50	Number Display Format. Standard: –49 *clear*, –50 *clear*. Fix: –49 *set*, –50 *clear*. Scientific: –49 *clear*, –50 *set*. Engineering: –49 *set*, –50 *set*.
–51	Fraction Mark. *Clear*: Fraction mark is . (period). *Set*: Fraction mark is , (comma).
–52	Single-Line Display. *Clear*: Display gives preference to object in level 1, using multiple lines of stack display. *Set*: Display of object in level 1 restricted to one line.

Flag	Description
−53	Precedence. *Clear*: Certain parentheses in algebraic expressions suppressed to improve legibility. *Set*: All parentheses in algebraic expressions displayed.
−54	Tiny Array Elements. *Clear*: Singular values computed by RANK (and other commands that compute the rank of a matrix) that are more than 1×10^{-14} times smaller than the largest computed singular value in the matrix are converted to zero. Automatic rounding for DET is enabled. *Set*: Small computed singular values (see above) not converted. Automatic rounding for DET is disabled.
−55	Last Arguments. *Clear*: Command arguments saved. *Set*: Command arguments not saved.
−56	Error Beep. *Clear*: Error, key click and BEEP-command beeps enabled. *Set*: Error, key click and BEEP-command beeps suppressed.
−57	Alarm Beep. *Clear*: Alarm beep enabled. *Set*: Alarm beep suppressed.
−58	Verbose Messages. *Clear*: Parameter variable data automatically displayed. *Set*: Automatic display of parameter variable data is suppressed.
−59	*No longer used.* (It was the Fast Catalog/Browser Display flag in the HP 48SX/GX).
−60	Alpha Lock. *Clear*: Single-Alpha activated by pressing [ALPHA] once. Alpha lock activated by pressing [ALPHA] twice. *Set*: Alpha lock activated by pressing [ALPHA] once. (Single-Alpha not available.)
−61	User-Mode Lock. *Clear*: 1-User mode activated by pressing [◄] [USER] once. User mode activated by pressing [◄] [USER] twice. *Set*: User mode activated by pressing [◄] [USER] once. (1-User mode not available.)
−62	User Mode. *Clear*: User mode not active. *Set*: User mode active.
−63	Vectored [ENTER]. *Clear*: [ENTER] evaluates command line. *Set*: User-defined [ENTER] activated.
−64	Index Wrap Indicator. *Clear*: Last execution of GETI or PUTI did not increment index to first element. *Set*: Last execution of GETI or PUTI did increment index to first element.

Flag	Description
–65	Multi-line Mode. *Clear*: Displays all levels over multiple lines. *Set*: Displays only the first level over multiple lines. Depends on flag –52.
–66	Multi-line Strings. *Clear*: Displays long strings in multiple lines. *Set*: Displays long strings in single lines. Depends on flags –52 and –65.
–67	Digital Clock. *Clear*: When the clock is displayed (see flag –40), it is digital-style. *Set*: When the clock is displayed (see flag –40), it is analog-style.
–68	Auto-indenting. *Clear*: Command line does not automatically indent, like the HP 48GX. *Set*: Command line automatically indents.
–69	Full-screen Editing. *Clear*: The cursor cannot move out of the text line, like the HP 48GX. *Set*: Full-screen editing allowed.
–70	Multi-line Text Grobs. *Clear*: →GROB can accept only single-line strings. Newlines are turned into blobs. *Set*: →GROB can accept multi-line strings.
–71	Disassembler Addresses. *Clear*: Disassembler shows (non-re-assemblable) addresses. *Set*: Disassembler does not show addresses.
–72	Stack Font. *Clear*: The stack display uses the current system font. *Set*: The stack display uses mini-font.
–73	Command Line Font. *Clear*: Command line editing uses the current system font. *Set*: Command line editing uses mini-font.
–74	Stack Setting. *Clear*: The stack is right-justified, like the HP 48GX calculator. *Set*: The stack is left-justified.
–75	Keystroke Beep. *Clear*: Silent keyboard. *Set*: Key click activated if flag –56 is clear.
–76	File Manager Purge Confirmation. *Clear*: File Manager purges need confirmation. *Set*: No purge confirmation in File Manager.
–77	*Not used*. (Originally intended to be a filer confirmation flag in the HP 49G, though it was never implemented.)
–78	I/O Device for wire. Used only when flag –33 is clear, and only on the HP 50g and 48gII. *Clear*: I/O directed to USB port. *Set*: I/O directed to serial port.

Flag	Description
–79	Pretty Print Mode. *Clear*: Algebraic objects appear on the stack in textbook (EQW) form. (Only in multi-line levels, see flag –65). *Set*: Algebraic objects appear on the stack in linear form.
–80	Font used to show algebraics on stack if flag –79 is clear. *Clear*: Textbook stack display uses the current system font. *Set*: Textbook stack display uses mini-font.
–81	Font used by →GROB on algebraics. *Clear*: Editing a textbook grob uses current font. *Set*: Editing a textbook grob uses mini-font.
–82	Equation Writer Font. *Clear*: Current font used to edit algebraics in textbook mode. *Set*: Mini-font used to edit algebraics in textbook mode.
–83	Grob Display. *Clear*: Grob contents (picture) displayed on the stack. *Set*: Grob description (dimensions) displayed on the stack.
–84	*Not used*. (Originally intended to control the menu font size in the HP 49G, though it was never implemented.)
–85	Stack Display. *Clear*: Standard stack display. *Set*: System-RPL stack display. In textbook mode (see flag –79), objects displayed on multiple lines (see flag –65) are always shown in standard form.
–86	Program Prefix. *Clear*: Program prefix off. *Set*: Program prefix on.
–87	Recursive Stack Display. *Clear*: Non-recursive stack display. *Set*: In System-RPL stack display (see flag –85), unsupported (unnamed) entry points are exploded into their elements.
–88	*Not used*. (Originally intended to control recursive editing in the 49G, though it was never implemented.)
–89	*Not used*. (Originally intended to control extable library usage editing in the HP 49G, though it was never implemented.)
–90	Choose Box Font. *Clear*: Choose boxes displayed in current font. *Set* (default): Choose boxes displayed in mini-font.
–91	Matrix Writer Object Type. *Clear*: Matrix Writer returns arrays only, like the HP 48GX calculator. *Set*: Matrix Writer returns a list of lists.
–92	Assembler Mode. *Clear*: Assembler defaults to making code objects. *Set*: Assembler defaults to making System-RPL programs.
–93	Erable Header. *Not used*.

Flag	Description
−94	Auto-saving. *Clear*: In RPN mode, results are stored in LASTCMD. *Set*: In RPN mode, results are not stored in LASTCMD.
−95	Entry Mode. *Clear*: RPN mode *Set* (default): Algebraic mode.
−96	*Not used*. (Originally intended to toggle the softmenu in the editor in the HP 49G, though it was never implemented.)
−97	Vertical Lists. *Clear*: Lists on stack are displayed horizontally only, like the HP 48GX. *Set*: Lists are displayed vertically.
−98	Vertical Vectors. *Clear*: Vectors on stack are displayed horizontally only, like the HP 48GX. *Set*: Vectors are displayed vertically.
−99	Verbose CAS Mode. *Clear*: CAS concise mode. *Set*: CAS verbose mode.
−100	Step-by-step CAS Mode. *Clear*: Step-by-step mode. *Set*: Final result mode.
−101	*Internal use only*. (Set if VXXL success).
−102	GCD Computations. *Clear*: GCD computations allowed. *Set*: No GCD computations.
−103	Real/Complex Mode. *Clear*: Real mode. "R" annunciator in header. *Set*: Complex mode. "C" annunciator in header.
−104	*Internal use only*. (If set, LN$\rightarrow$ –INV[–LN]]).
−105	Exact/Approximate Mode. *Clear*: Exact mode. "=" annunciator in header. *Set*: Approximate mode, like the HP 48GX calculator. "~" annunciator in header.
−106	TSIMP Calls. *Clear*: TSIMP calls are allowed in SERIES. *Set*: TSIMP calls are not allowed in SERIES.
−107	*Internal use only*. (Modular computation).
−108	*Internal use only*. (Testing remainder to be zero).
−109	Numeric/Symbolic Factorization. *Clear*: Numeric factorization is not allowed. *Set*: Numeric factorization is allowed.
−110	Large Matrices. *Clear*: Use normal-size-matrix code, like the HP 48GX calculator. *Set*: Use code optimized for large matrices.
−111	Simplifying Inside Non-rational Expressions. *Clear*: Recursive simplification in EXPAND and TSIMP. *Set*: No recursive simplification in EXPAND and TSIMP.

Flag	Description
–112	Simplifying 'i'. *Clear*: 'i' can be simplified (i.e. $i^2 = -1$) *Set*: 'i' cannot be simplified.
–113	Linear Simplification Mode. *Clear*: Apply linearity simplification when using integration CAS commands. *Set*: Do not apply linearity simplification when using integration CAS commands.
–114	Polynomial Term Order. *Clear*: Polynomial expressed in decreasing power order. *Set*: Polynomial expressed in increasing power order.
–115	SQRT Simplification. *Clear*: Square roots can be simplified. *Set*: Square roots cannot be simplified.
–116	Trigonometric Manipulations. *Clear*: Simplification to cosine terms. *Set*: Simplification to sine terms.
–117	Menu Display Mode. *Clear*: Menus displayed as choose boxes. *Set*: Menus displayed as softkeys, like the HP 48GX calculator.
–118	INT Simplification. *Clear*: INT is simplified. *Set*: INT is not simplified.
–119	Rigorous Mode. *Clear*: Rigorous mode on: $|X|$ is not simplified to X. *Set*: Rigorous mode off: $|X|$ is simplified to X.
–120	Silent Mode Switch. *Clear*: Calculator prompts when it needs to change modes. *Set*: Calculator changes modes when necessary without prompting.
–121	*Internal use only*. (LN returns LN[ABS()] if set).
–122	*Internal use only*. (0/0 occurred).
–123	Mode Switch. *Clear*: Mode switch allowed. *Set*: Mode switch not allowed.
–124	CAS Object Evaluation. *Clear*: Non-algebraic CASCOMPEVAL is allowed. *Set*: Non-algebraic CASCOMPEVAL is not allowed.
–125	Sign Determination Mode. *Clear*: Accurate sign determination using polynomial Sturm sequences. *Set*: Fast sign determination. Polynomial Sturm sequences are not used. Auto-simplification of square roots canceled.
–126	Row Reduction Mode. *Clear*: RREF done with last column. *Set*: RREF done without last column.
–127	*Not used*.
–128	*Clear*: Complex variables allowed. *Set* (default): All variables are real.

Four user flags are also used by the system:

User Flags

Flag	Description
60	Units Type. *Clear*: The Equation Library and Constants Library use SI units. *Set*: The Equation Library and Constants Library use English units.
61	Units Usage. *Clear*: The Equation Library and Constants Library display units. *Set*: The Equation Library and Constants Library do not display units.
62	Payment Mode. *Clear*: The Time Value of Money solver uses End payment mode. *Set*: The Time Value of Money solver uses Begin payment mode.
63	State Change Mode. *Clear*: Must use the MUSE, MCAL, and ALL softkeys in the Multiple Equation Solver to change the state of a variable from undefined to user-defined. *Set*: Simply pressing a softkey in the Multiple Equation Solver toggles its undefined/user-defined status, hiding the MUSE and MCAL softkeys, but making it more difficult to retrieve the variable's value.