HP49g+ Flags

Flags are mode settings and mode indicators.

Pressing `MODE` you'll get access to the "Calculator modes" screen. Here – and in the Input forms accesible via the soft menu buttons – you can change general, CAS and display behaviour of your calculator: that is, modify the system flags. To see a partial list of system flags press `F` (`FLAGS`); you'll get access to the most used ones with a brief description.

You can also *set*, *clear*, or *test* a system or user flag by specifying its number as argument of the UserRPL flag commands: they are accessible via `PRG` `TEST` `NXT` `NXT` (in SysRPL there are specific commands for both types).

−SF: Sets the specified flag.

−CF: Clears the specified flag.

−FS?: Tests whether the flag on level 1 is set. Returns 1 if true, 0 otherwise.

−FS?C: Tests whether the flag on level 1 is set, returning a corresponding test result, then clears it.

−FC?: Tests whether the flag on level 1 is clear. Returns 1 if true, 0 otherwise.

−FC?C: Tests whether the flag on level 1 is clear, returning a corresponding test result, then clears it.

The following conventions have been used compiling the list below:
- Default state of the flag is **bold**.
- Relevant notes about flags are written in *italic*.
- If a flag's behaviour is affected by another flag setting, or it's meaning is altered by the state of another flag, this is always indicated by enclosing in square brackets [ ].
- For modes with more than two states (e.g. decimal positions after fraction mark) the calculator uses more than one flag: these are always grouped and described together.
- "Fuzzy" flags are written in blue: they can refer to no more present or not fully implemented functions. Also flags internally defined but which don't produce any known effect (?!) belong to this category. See each flags description for more details.
- Flags used for internal purposes (CAS) are written in dark red and should not be used.
- Unused flags are also listed and clearly indicated.

Note:

System Flags *are identified by negative numbers -1÷-128.*
Flags -1÷-64: Same of the HP48 series.
Flags -65÷-98: New flags introduced with the HP49G.
Flags -99÷-128: CAS (Computer Algebra System) flags.

User Flags *are positive 1÷128.*

Flag	Description
-1 Set:	Symbolic commands return principal solution.
Clear:	Symbolic commands return general solutions.
-2 Set:	Symbolic constants evaluate to numbers.
Clear:	Symbolic constants stay symbolic [if flag -3 is clear].
-3 Set:	Symbolic arguments evaluate to numbers.
Clear:	Symbolic arguments stay symbolic.
-4 Set	UNUSED
Clear	
	Binary Integer Wordsize. From 1 to 64 bits:
-5 **Set:**	1st bit (value 1) is 1.
Clear:	1st bit (value 1) is 0.
-6 **Set:**	2nd bit (value 2) is 1.
Clear:	2nd bit (value 2) is 0.
-7 **Set:**	3rd bit (value 4) is 1.
Clear:	3rd bit (value 4) is 0.
-8 **Set:**	4th bit (value 8) is 1.
Clear:	4th bit (value 8) is 0.
-9 **Set:**	5th bit (value 16) is 1.
Clear:	5th bit (value 16) is 0.

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-10	Set:	6th bit (value 32) is 1.
	Clear:	6th bit (value 32) is 0.
		Note: Read these flags as a binary number and add one to obtain the current wordsize. See also the commands STWS and RCWS.
-11	**Set**	Base Modes:
	Clear	-11 CF -12 CF: DECimal.
-12	**Set**	-11 CF -12 SF: BINary.
	Clear	-11 SF -12 CF: OCTal.
		-11 SF -12 SF: HEXadecimal.
-13	Set	UNUSED
	Clear	
-14	Set:	TVM calculations use BEGIN payment mode.
	Clear:	TVM calculations use END payment mode.
-15	Set:	Spherical coordinate mode [if flag -16 is set].
	Clear:	Cylindrical coordinate mode [if flag -16 is set].
-16	Set:	Polar coordinate mode.
	Clear:	Rectangular coordinate mode.
-17	**Set**	Angle Measurement:
	Clear	-17 SF: Radians.
-18	**Set**	-17 CF -18 CF: Degrees.
	Clear	-17 CF -18 SF: Grads.
		Note: Radians mode does not mind about flag -18.
-19	Set:	→V2 creates a complex number.
	Clear:	→V2 creates a 2-D vector.
-20	Set:	Underflow treated as an error.
	Clear:	Underflow returns 0 and sets flag -23 or -24.
-21	Set:	Overflow treated as an error.
	Clear:	Overflow returns ± MAXR and sets flag -25.
-22	Set:	Infinite result returns ± MAXR and sets flag -26.
	Clear:	Infinite result treated as an error.
-23	Set:	Negative underflow condition exists [if flag -20 is clear].
	Clear:	No negative underflow condition exists.
-24	Set:	Positive underflow condition exists [if flag -20 is clear].
	Clear:	No positive underflow condition exists.
-25	Set:	Overflow condition exists [if flag -21 is clear].
	Clear:	No overflow condition exists.
-26	Set:	Infinite result condition exists [if flag -22 is set].
	Clear:	No infinite result condition exists.
-27	**Set:**	Symbolic complex expression displays as 'x + yi'.
	Clear:	Symbolic complex expression displays as '(x,y)'.
-28	Set:	Multiple equations plot simultaneously.
	Clear:	Multiple equations plot sequentially.
-29	Set:	No axes drawn for 2-D and statistical plots.
	Clear:	Axes drawn for 2-D and statistical plots.
-30	Set	UNUSED
	Clear	
-31	Set:	No curve filling (connecting of points) in plots.
	Clear:	Curve filling (connecting of points) in plots.
-32	Set:	Graphics cursor is inverse of background.
	Clear:	Graphics cursor is always dark.
-33	Set:	I/O directed to IrDA port.
	Clear:	I/O directed to USB port.
		Note: Device managers – & Conn4x, the XModem Connectivity Kit provided with the calculator – see the 49g+ as an USB device as long as it is physically connected and turned on, regardless of this flag state; so, in a sense, there is some sort of communication, but apparently no data I/O via USB with flag -33 set.

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-34	**Set:**	Printer output directed to USB port [flag -33 clear] or IrDA compatible printing (was "Serial IR") [flag -33 set].
	Clear:	Printer output in "Red-Eye" format; required by the HP82240A/B infrared printers. *Note: HP49G+ can't act as an USB server, only as a client: so the combination [flag -33 clear & flag -34 set] seems to be unusable at this time.*
-35	Set:	I/O objects transferred in binary mode (only applies to Kermit protocol).
	Clear:	I/O objects transferred in ASCII mode (only applies to Kermit protocol). *Note: Some object types, such as libraries, graphics objects (GROBs), fonts, and minifonts, are always transferred in binary mode.*
-36	Set:	In receiving an object, a matching name overwrites.
	Clear:	In receiving object, a matching name is changed.
-37	Set:	Double-spacing printing.
	Clear:	Single-spacing printing.
-38	Set:	No linefeed added at end of each print line.
	Clear:	Linefeed added at end of each print line.
-39	Set:	I/O messages suppressed.
	Clear:	I/O messages displayed.
-40	Set:	Clock is displayed.
	Clear:	Clock is not displayed. *Note: Clock will be displayed providing that the header size is 2.*
-41	Set:	24-hour clock format.
	Clear:	12-hour clock format.
-42	Set:	DD.MM.YY date format.
	Clear:	MM/DD/YY date format.
-43	Set:	Unacknowledged repeat alarms are not rescheduled.
	Clear:	Unacknowledged repeat alarms are automatically rescheduled.
-44	Set:	Acknowledged alarms are retained in the alarm list.
	Clear:	Acknowledged alarms are deleted from alarm list.
		Number of decimal digits in Fixed, Scientific and Engineering modes:
-45	Set:	1st bit (value 1) is 1.
	Clear:	1st bit (value 1) is 0.
-46	Set:	2nd bit (value 2) is 1.
	Clear:	2nd bit (value 2) is 0.
-47	Set:	3rd bit (value 4) is 1.
	Clear:	3rd bit (value 4) is 0.
-48	Set:	4th bit (value 8) is 1.
	Clear:	4th bit (value 8) is 0. *Note: These 4 flags can be read as a nibble representing in binary format the number of decimal digits. The maximum number of decimal digits is 11, even if you set an higher binary number.*
-49	Set	Number display format:
	Clear	-49 CF -50 CF: Standard mode.
-50	Set	-49 SF -50 CF: Fixed mode.
	Clear	-49 CF -50 SF: Scientific mode.
		-49 SF -50 SF: Engineering mode.
-51	Set:	Fraction mark is a comma.
	Clear:	Fraction mark is a period.
-52	Set:	Objects are forced to stay on a single line.
	Clear:	Objects are displayed on multiple lines when needed.
-53	Set:	All parentheses are shown in algebraic expressions.
	Clear:	Extra parentheses in algebraic expressions are removed.
-54	Set:	Small matrix values not set to 0; DET does not round.
	Clear:	Small matrix values are set to 0; DET rounds.
-55	Set:	Most-recent arguments are not saved.
	Clear:	Most-recent arguments are saved.

-56	Set:	Beep tone is disabled.
	Clear:	Beep tone is enabled.
-57	Set:	Alarm tone is disabled.
	Clear:	Alarm tone is enabled.
-58	Set:	Parameter and variable INFO not displayed.
	Clear:	Parameter and variable INFO are displayed.
-59	Set:	Show variables names only.
	Clear:	Show variables names and contents.
-60	Set:	Press ALPHA once for alpha mode lock.
	Clear:	Press ALPHA twice for alpha mode lock.
-61	Set:	Press USER once for user mode lock.
	Clear:	Press USER twice for user mode lock.
-62	Set:	User mode on.
	Clear:	User mode off.
-63	Set:	User-defined (vectored) ENTER is activated [if flag -62 is clear].
	Clear:	ENTER evaluates the command line. _Note: The "ENTER routine" can be executed in various circumstances (E.G.: by a program or a key call); it doesn't strictly imply that the ENTER button is pressed, just that the routine is executed. See also αENTER and βENTER reserved names._
-64	Set:	The last GETI or PUTI wrap the index (to 1).
	Clear:	The last GETI or PUTI does not wrap the index.
-65	Set:	Only level 1 can be multi-line.
	Clear:	All stack levels can be multi-line.
-66	Set:	Displays strings with line feeds in a single line (newline symbols will appear as a control chars).
	Clear:	Displays strings with line feeds on multiple lines.
-67	Set:	If clock is on [flag -40 set], use analog display.
	Clear:	If clock is on [flag -40 set], use digital display.
-68	Set:	Command line automatically indents.
	Clear:	Command line does not automatically indent.
-69	Set:	Full-screen editing allowed.
	Clear:	The cursor cannot move out of the text line.
-70	Set:	→GROB can accept multi-line strings.
	Clear:	→GROB can accept only single-line strings.
-71	Set:	No addresses - uses labels - in ASM.
	Clear:	Add addresses in ASM.
-72	Set:	The stack display uses mini-font.
	Clear:	The stack display uses the current font.
-73	Set:	Command line editing uses minifont.
	Clear:	Command line editing uses the current font.
-74	Set:	The stack is left-justified.
	Clear:	The stack is right-justified.
-75	Set:	Keystrokes "click" [if flag -56 is clear].
	Clear:	Silent keyboard.
-76	Set:	No purge confirmation in File Manager.
	Clear:	Purge confirmation needed in File Manager. _Note: The regular PURGE command never asks!_
-77	Set	Duplicate flag -76.
	Clear	
-78	Set	Related to some sort of Kernel Parameter.
	Clear	
-79	Set:	Standard-style algebraics on stack.
	Clear:	Textbook-style algebraics on stack. _Note: Only multi-line levels [flags -52 and -65] can show textbook._
-80	Set:	Textbook stack display [-79 CF] uses minifont.
	Clear:	Textbook stack display [-79 CF] uses the current font.
-81	Set:	Editing a textbook grob uses minifont.
	Clear:	Editing a textbook grob uses current font.
-82	Set:	Minifont used to edit algebraic in textbook mode.
	Clear:	Current font used to edit algebraic in textbook mode.
-83	Set:	Grob description displayed on the stack.
	Clear:	Grob contents displayed on the stack.

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Flag		Description
-84	Set:	Menu items are shown with a reduced size font.
	Clear:	Menu items are shown with the standard font.
-85	Set:	SysRPL stack display.
	Clear	Standard stack display.
		Note: if textbook is on [flag -79 clear], objects allowed to be displayed on multiple lines [flags -52 and -65] are shown in standard form, regardless of this flag state.
-86	Set:	Program prefix off.
	Clear:	Program prefix on.
-87	Set:	Recursive stack display. Unnamed (unsupported: not listed in an entry points and addresses table) composite pointers are exploded in the display into their elements.
	Clear:	Non-recursive (normal) stack display.
		Note: the recursive style only applies to SysRPL stack display [flag -85 set].
-88	Set:	Objects are shown recursively.
	Clear:	Objects are not shown recursively.
-89	Set:	Unknowns shown as mnemonics (Extable on).
	Clear:	Unknowns shown as addresses (Extable off).
		Note: Extable library contains the supported entry points with their addresses, allowing one to see the name for each SysRPL command instead of the address pointer.
-90	**Set:**	CHOOSE boxes use minifont.
	Clear:	CHOOSE boxes use current font.
-91	Set:	Matrix Writer operates with lists of lists.
	Clear:	Matrix Writer accepts arrays only.
-92	Set:	MASD SysRPL mode.
	Clear:	MASD Assembler mode.
-93	Set:	Mathematical header.
	Clear:	Standard header.
-94	Set:	In RPN mode, results are not stored in LASTCMD.
	Clear:	In RPN mode, results are stored in LASTCMD.
-95	Set:	Algebraic mode.
	Clear:	RPN mode.
-96	Set	Turn off the soft menu.
	Clear	Turn on the soft menu.
		Note: DO NOT set this flag, because the feature never got fully implemented! Your calc may crash!
-97	Set:	Lists are displayed vertically.
	Clear:	Lists are displayed horizontally.
-98	Set:	Vectors are displayed vertically.
	Clear:	Vectors are displayed horizontally.
-99	Set:	CAS verbose mode.
	Clear:	CAS quiet mode.
-100	Set:	CAS Step by Step mode on.
	Clear:	CASe Step by Step mode off.
-101	Set:	Internal use: VXXL success.
	Clear:	Internal use: VXXL failed.
-102	Set:	No GCD computations.
	Clear:	GCD computations allowed.
-103	Set:	Complex mode.
	Clear:	Real mode.
-104	Set:	Internal use: $LN(x) \rightarrow -INV(-LN(x))$.
	Clear:	Internal use: $LN(x) \rightarrow INV(LN(x))$.
-105	Set:	Approximate mode.
	Clear:	Exact mode.
-106	Set:	TSIMP calls are not allowed in SERIES.
	Clear:	TSIMP calls are allowed in SERIES.
-107	Set	Internal use: modular computation.
	Clear	
-108	Set	Internal use: testing remainder = 0.
	Clear	

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-109 Set:	Numeric factorization is allowed.	
	Clear:	Numeric factorization is not allowed. *Note: "Default" is symbolic factorization.*
-110 Set:	Large matrices (use optimized algorithms).	
	Clear:	Normal matrices.
-111 Set:	Do not simplify non rational expression (no recursive simplification in EXPAND and TSIMP).	
	Clear:	Simplify non rational expression (recursive simplification in EXPAND and TSIMP).
-112 Set:	'i' can not be simplified.	
	Clear:	'i' can be simplified (treated as the irrational square of –1).
-113 Set:	Do not apply linearity simplification when using integration CAS commands.	
	Clear:	Apply linearity simplification when using integration CAS commands.
-114 Set:	Polynomials expressed in increasing power order.	
	Clear:	Polynomials expressed in decreasing power order.
-115 Set:	Square roots can not be simplified (SQRT not as irrational square).	
	Clear:	Square roots can be simplified (SQRT as irrational square).
-116 Set:	Prefer sine over cosine when simplificating.	
	Clear:	Prefer cosine over sine when simplificating.
-117 Set:	Menus displayed as function keys (Soft MENU).	
	Clear:	Menus displayed as choose lists (CHOOSE boxes).
-118 Set:	xINT is not simplified.	
	Clear:	xINT is simplified.
-119 Set:	Non-rigorous mode (simplify |X| to X).	
	Clear:	Rigorous mode (do not simplify |X| to X).
-120 Set:	Silent mode on: calculator changes mode when necessary without prompting.	
	Clear:	Silent mode off: calculator prompts when it needs to change mode.
-121 Set:	Internal use: xLN returns LN(ABS()) (Real Rigorous Mode).	
	Clear:	Internal use: calling LN does not add an ABS.
-122 Set:	Internal use: a 0/0 has occurred.	
	Clear:	
-123 Set:	Mode switch not allowed.	
	Clear:	Mode switch allowed.
-124 Set:	Non algebraic CASCOMPEVAL is not allowed.	
	Clear:	Non algebraic CASCOMPEVAL is allowed.
-125 Set:	Fast sign determination. Do not use polynomial Sturm sequences to try to find sign of expression. Also cancels square roots auto-simplification.	
	Clear:	Accurate sign determination. Try to find sign of expressions using polynomial Sturm sequences. *Note: Remember that some commands always assume that square roots are in normal form.*
-126 Set:	Row reduction (rref) done without last column.	
	Clear:	Row reduction (rref) done with last column.
-127 Set **Clear**	UNUSED	
-128 Set:	All variables are real variables.	
	Clear:	Complex variables are allowed.
+60 Set:	CONST returns constants with English units.	
	Clear:	CONST returns constants with SI units. *Note: Constants are returned with units providing that [flag 61 is clear].*
+61 Set:	CONST returns constants without units.	
	Clear:	CONST returns constants with units.