The System Variables of the Sinclair ZX81

The bytes in memory from 16384 to 16508 are set aside for specific uses by the system. You can peek them to find out various things about the system, and some of them can be usefully poked. They are listed here with their uses.

These are called system variables and carry names, but do not confuse them with the variables used by the BASIC. You cannot use the names in a BASIC program; they are simply mnemonics that are used to make it easier to refer to the variables.

The abbreviations in column 1 have the following meanings.

X The variable should not be poked, because the system might crash.
N Poking the variable will have no lasting effect.
S The variable is saved by **SAVE**.

The number in column 1 is the number of bytes in the variable. For two bytes, the first one is the less significant byte - the reverse of what you might expect. So to poke a value v to a two-byte variable at address n, use

POKE n,v - 256***INT** (v/256)

POKE n + 1,**INT** (v/256)

and to peek its value, use the expression

PEEK n + 256***PEEK** (n+1)

Notes	*Address*	*Name*	*Contents*
1	16384	ERR_NR	1 less than the report code. Starts off at 255 (for -1), so **PEEK** 16384, if it works at all, gives 255. **POKE** 16384,n can be used to force an error halt: 0 W n W 14 gives one of the usual reports, 15 W n W 34 or 99 W n W 127 gives a nonstandard report, and 35 W n W 98 is likely to mess up the display file.

X1	16385	FLAGS	Various flags to control the BASIC system.
X2	16386	ERR_SP	Address of first item on machine stack (after **GOSUB** returns).
2	16388	RAMTOP	Address of first byte above BASIC system area. You can poke this to make **NEW** reserve space above that area (see Chapter 26) or to fool **CLS** into setting up a minimal display file (Chapter 27).
N1	16390	MODE	Specifies K, L, F or G cursor.
N2	16391	PPC	Line number of statement currently being executed. Poking this has no lasting effect except in the last line of the program.
S1	16393	VERSN	0 identifies 8K ROM in saved programs.
S2	16394	E_PPC	Number of current line (with program cursor).
SX2	16396	D_FILE	See Chapter 27.
S2	16398	DF_CC	Address of **PRINT** position in display file. Can be poked so that **PRINT** output is sent elsewhere.
SX2	16400	VARS	See Chapter 27.
SN2	16402	DEST	Address of variable in assignment.
SX2	16404	E_LINE	See Chapter 27.
SX2	16406	CH_ADD	Address of the next character to be interpreted: the character after the argument of **PEEK**, or the **ENTER** at the end of a **POKE** statement.
S2	16408	X_PTR	Address of the character preceding the marker.
SX2	16410	STKBOT	} } See Chapter 27.
SX2	16412	STKEND	}
SN1	16414	BREG	Calculator’s b register.
SN2	16415	MEM	Address of area used for calculator’s memory. (Usually MEMBOT but not always.)
S1	16417	not used	

SX1	16418	DF_SZ	The number of lines (including one blank line) in the lower part of the screen.
S2	16419	S_TOP	The number of the top program line in automatic listings.
SN2	16421	LAST_K	Shows which keys pressed
SN1	16423		Debounce status of keyboard.
SN1	16424	MARGIN	Number of blank lines above or below picture - 31.
SX2	16425	NXTLIN	Address of next program line to be executed.
S2	16427	OLDPPC	Line number to which **CONT** jumps.
SN1	16429	FLAGX	Various flags.
SN2	16430	STRLEN	Length of string type designation in assignment.
SN2	16432	T-ADDR	Address of next item in syntax table (very unlikely to be useful).
S2	16434	SEED	The seed for **RND**. This is the variable that is set by **RAND**.
S2	16436	FRAMES	Counts the frames displayed on the television. Bit 15 is 1. Bits 0 to 14 are decremented for each frame sent to the television. This can be used for timing, but **PAUSE** also uses it. **PAUSE** resets bit 15 to 0 and puts in bits 0 to 14 the length of the pause. When these have been counted down to zero, the pause stops. If the pause stops because of a key depression, bit 15 is set to 1 again.
S1	16438	COORDS	x-coordinate of last pointed **PLOT**ted.
S1	16439		y-coordinate of last pointed **PLOT**ted.
S1	16440	PR_CC	Less significant byte of address of next position for **LPRINT** to print at (in PRBUFF).
SX1	16441	S_POSN	Column number for **PRINT** position.
SX1	16442		Line number for **PRINT** position.
S1	16443	CDFLAG	Various flags. Bit 7 is on (1) during compute and display mode.
S33	16444	PRBUFF	Printer buffer (33rd character is **ENTER**).

SN30	16477	MEMBOT	Calculator’s memory area; used to store numbers that cannot conveniently be put on the calculator stack.
S2	16507	not used	

Source: *ZX81 BASIC Programming* by Steven Vickers, (c) Sinclair Research Limited.

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