Appendix A: Reference Information

System Parameter Settings

The calculator has several parameters which can be set and reset to different conditions. These parameters are affected when you change batteries, reset the calculator, turn the calculator off and on, clear the calculator, or use the HELP function. The information in this table lists the effects of these actions on each parameter.

Parameter	Effect of New Batteries* (Default Condition)	Effect of [RESET] or [OFF] [ON]	Effect of [CLEAR]	Effect of [HELP] <YES>
Display	cleared	cleared	cleared	cleared
Display format	standard	standard	removes EE	standard
Decimal point	floating	floating	no effect	floating
Number base	decimal	decimal	no effect	decimal
Memory partition	125 data registers, 1000 program steps, and 5200 file bytes	no effect	no effect	**
Data registers	cleared	no effect	no effect	no effect
Program registers	cleared	no effect	no effect	no effect
File space	cleared	no effect	no effect	no effect
Statistics registers	cleared	no effect	no effect	no effect
Temporary register	cleared	cleared	no effect	cleared
AOS™ stack	cleared	cleared	cleared	cleared
User subroutine stack	cleared	cleared	no effect	no effect

* You can use a PC-324 printer (if available) to power the calculator while you change batteries to avoid these effects.

** Memory not used as file space is equally divided into program steps and data registers.

Parameter	Effect of New Batteries* (Default Condition)	Effect of [RESET] or [OFF] [ON]	Effect of [CLEAR]	Effect of [HELP] <YES>
Angle mode	degrees	no effect	no effect	degrees
Alpha mode	reset	reset	no effect	reset
Alpha registers	TI-95 PROCALC	TI-95 PROCALC	no effect	no effect
Uppercase/ lowercase lock	uppercase	uppercase	no effect	no effect
Learn mode	reset	reset	no effect	no effect
Printer device number	set to 12	* usually no effect	no effect	no effect
Print width	set to 24	** usually no effect	no effect	no effect
Word break	off	no effect	no effect	no effect
Trace	off	off	no effect	no effect
User flags	reset	reset	no effect	resets flag 15 (Halt On Error) only
System memory	protected	protected	no effect	protected
Halt on error	off	off	no effect	off

* Set to 12 if PC-324 printer is attached

** Set to 24 if original device was not 12, but PC-324 is attached now

System Menus

The following lists show the functions assigned to the F1-F5 keys when certain other keys are pressed. Many of these redefined keys also have inverse functions. Although they do not appear in the menu, they are shown here. Detailed information on how to use these system menus is contained in sections of this manual and in the *TI-95 Programming Guide*.

- **ALPHA**
  - DEL: delete alpha character
  - INS: insert alpha characters
  - COL: move cursor to column
  - MRG: merge with alpha register
  - RCA: recall to alpha register
  - STA: store from alpha register
  - CHR: enter a character code
  - LC: set/reset lowercase lock
- **CONV** conversions
  - MET: metric conversions
    - F-C: Fahrenheit to Celsius
    - INV F-C: Celsius to Fahrenheit
    - G-L: gallons to liters
    - INV G-L: liters to gallons
    - #-K: pounds to kilograms
    - INV #-K: kilograms to pounds
    - i-m: inches to millimeters
    - INV i-m: millimeters to inches
    - f-M: feet to meters
    - INV f-M: meters to feet
  - DMS: degrees/minutes/seconds to decimal degrees
  - INV DMS: decimal degrees to degrees/minutes/seconds
  - ANG: degrees/radians/grads
    - D-R: degrees to radians
    - INV D-R: radians to degrees
    - D-G: degrees to grads
    - INV D-G: grads to degrees
    - R-G: radians to grads
    - INV R-G: grads to radians
  - P-R: polar to rectangular
  - INV P-R: rectangular to polar
  - BAS: number base
    - DEC: decimal mode
    - HEX: hexadecimal mode
    - OCT: octal mode
    - 2sC: two's complement mode
    - INV 2sC: signed mode
    - UNF: unformatted mode
- **STAT** statistics
  - CLR: clear statistics registers
    - CS1: 1-variable statistics
    - CS2: 2-variable statistics
  - FRQ: frequency for entry
  - MN: mean
  - s: sample standard deviation
  - INV s: population standard deviation
  - m-b: slope-intercept
  - r: correlation coefficient
  - y': predicted y value
  - INV y': predicted x value
  - SHW: show statistics values
    - (1-VARIABLE)
    - n: number of points
    - Sx: sum of x's
    - Sxx: sum of x^2's
    - Lfr: last frequency
    - Lx: last x entered
    - (2-VARIABLE)
    - n: number of points
    - Sy: sum of y's
    - Syy: sum of y^2's
    - Ly: last y entered
    - Sxy: sum of xy's
    - Sx: sum of x's
    - Sxx: sum of x^2's
    - Lfr: last frequency
- **NUM** numeric functions
  - INT: integer
  - FRC: fraction
  - R#: random number
  - INV R#: random number generator seed
  - RND: round internal value
  - SGN: signum
  - LCM: least common multiple/greatest common divisor
  - PF: prime factors
  - ABS: absolute value
- REG: list registers
- LIST PGM: list program
  - 1st: start at first step
  - PC: start at current step
- LBL: list program labels
- ST: list calculator status
  - 1st: start search at first step
  - PC: start search at current step

(continued)

- **FILES**
  - GET: load program or data from files
  - INV GET: load program or data from RAM cartridge (program only)
  - PUT: save program or data in files
  - INV PUT: save program or data in RAM cartridge (program only)
  - DF: delete specified file
  - INV DF: delete specified file in RAM cartridge (program only)
  - CAT: show catalog of directory
  - INV CAT: show catalog of RAM cartridge (program only)
  - CD: clear all files in directory
  - INV CD: clear all files in RAM cartridge (program only)
  - NAM: rename a RAM cartridge
- **I/O**
  - TAP: tape storage functions
    - RD: read from tape
    - WRT: write to tape
    - VFY: verify tape
  - PRT: printer setup
    - DEV: set printer device #
    - WID: set print width
    - WB: word break on
    - INV WB: word break off
  - CIO: call I/O subroutine
  - KW: key wait
- **TESTS** conditional tests
  - IF>: if greater than
  - INV IF>: if less than or equal
  - IF<: if less than
  - INV IF<: if greater than or equal
  - IF=: if equal
  - INV IF=: if not equal
  - DSZ: decrement and skip if zero
  - INV DSZ: decrement and skip if not zero
  - Y/N: yes/no input test

- **RUN**
  - PGM: run program in program memory
  - MEM: run program from file space
  - MTH, STA, or NEW: run program in named cartridge*
  - ESC: escape
- **LEARN**
  - 1st: show first step
  - PC: show current step
  - END: show last step
  - ESC: escape
- **PART**
  - PS: specify program steps
  - REG: specify registers
  - FIL: specify file space
  - SET: accept current setting
  - ESC: escape
- **HELP**
  - YES: set all defaults
  - NO: set selected defaults
  - ESC: escape
- **FLAGS**
  - CLR: clear flags
  - SF: set flag
  - RF: reset flag
  - TF: test for flag set
  - INV TF: test for flag reset
- **FUNC** extended functions
  - QAD: quadratic equations
  - CUB: cubic equations
  - SYS: system functions
    - STB: store byte
    - RCB: recall byte
    - SBA: call assembly language subroutine

* The name may be the name of a library cartridge or a name assigned to a Constant Memory™ cartridge.

Accuracy Information

The calculator maintains values internally to greater accuracy than the values it displays. Occasionally, the difference between a displayed number and its internal value can produce unexpected results.

Numeric Accuracy

Any displayed number is a rounded representation of an internally stored 13-digit value. This internal value, not the displayed number, is used during calculations.

The additional digits kept internally are referred to as "guard digits." Although you can usually disregard these digits, they can be important in interpreting unexpected results.

As an example of the effect of guard digits, it is possible for an expression equal to zero to produce a nonzero result (for example $1 \div 3 \times 3 - 1$).

Press	Display
1 [+] 3 [×]	.3333333333 *
3 [−] 1 [=]	−1. −13

Differences in guard digits are especially important if you write a program that compares two values for equality.

If you suspect these differences are responsible for an unexpected result of a comparison, use the ROUND numeric function before making the comparison. This sets the internal value of the number to the value shown in the display.

Internal Values

The 13 digits of the mantissa are displayed when you use the [2nd] [13d] key sequence.

All the digits of the internal value are shown in the unformatted mode (a selection of [CONV] ⟨BAS⟩). An unformatted number has three parts:

- The left 13 digits are the base 10 mantissa with the decimal implied after the first digit.
- The 14th digit conveys the sign of both the mantissa and the exponent. (Because the signs are indicated by a digit, the [+/−] key has no effect in this mode.)

Mantissa Sign	Exponent Sign	Sign Digit
+	+	0
−	+	4
+	−	8
−	−	C

- The last two digits are the exponent of scientific notation.

The main use of the unformatted mode is the entry of hexadecimal values for CIO (call I/O) instead of numeric calculations.

Number Limits

The range of numbers that can be displayed depends on the display format in use. This table lists the allowable range of numbers for each format.

Display Format	Allowable Range
Standard notation	-9999999999 to -0.000000001 zero 0.000000001 to 9999999999
Scientific or engineering notation	-9.999999×10^{99} to -1×10^{-99} zero 1×10^{-99} to 9.999999×10^{99}
Hexadecimal	$-$FFFFFFFFF to FFFFFFFFF
Octal	-7777777777 to 7777777777

Index

Use this list of items to find a topic of reference. Also see the Key Index inside the front cover.