

HP 82160A

HP-IL Module

Quick Reference Card

While the HP 82160A HP-IL Module is plugged into the calculator, the following functions are available for your use. All functions are programmable except as noted below. Appropriate peripherals must be connected to the Hewlett-Packard Interface Loop for the functions to be executed normally.

Calculator flags indicated below determine how the interface module performs certain operations. When a flag is set, operations are performed as described.

Printer Operations

Functions marked with * are for the HP 82162A Thermal Printer only.

ACA	Accumulates the ALPHA register into the print buffer.
ACCHR	Accumulates a character into the print buffer. Uses X-register.
ACCOL *	Accumulates a specified column of dots into the print buffer. Uses X-register.
ACSPEC *	Accumulates a special character into the print buffer. The character is defined by using BLDSPEC . Uses X-register.
ACX	Accumulates the X-register contents into the print buffer.
ADV	Advances the printer paper and prints the print buffer right-justified.
BLDSPEC	Executed up to seven times, builds a special character using specified columns of dots. Accumulate using ACSPEC or store in a register. Uses X- and Y-registers.
FMT	Accumulates a format specifier into the print buffer. Leading or trailing specifier centers output; internal specifier prints left- and right-justified.

LIST	Lists specified program lines. Not programmable.
PRA	Prints the ALPHA register left-justified.
PRAXIS *	Prints and labels a y-axis. Uses R_{00} , R_{01} , R_{02} (column width), R_{04} .
PRBUF	Prints the print buffer left-justified.
PRFLAGS	Prints flag status and other calculator information.
PRKEYS	Prints a list of currently reassigned keys.
PRP	Prints a program. Not programmable.
PRPLOT *	Plots a function interactively. Prompts for parameters and stores data in R_{00} through R_{11} .
PRPLOT P *	Plots a function noninteractively. Uses R_{00} through R_{11} : R_{00} (Y MIN), R_{01} (Y MAX), R_{03} (optional plot symbol), R_{04} (AXIS), R_{08} (X MIN), R_{09} (X MAX), R_{10} (X INC), R_{11} (NAME). R_{06} contains x value.
PRREG	Prints the contents of all storage registers.
PRREGX	Prints the contents of registers specified by X (bbb.eee).
PR Σ	Prints the contents of the statistics registers.
PRSTK	Prints the contents of the X-, Y-, Z-, and T-registers.
PRX	Prints the contents of the X-register.
REGPLOT *	Plots a single function value (from X-register). Uses R_{00} , R_{01} , R_{02} (nnn.aaa), R_{03} .
SKPCHR	Accumulates skipped characters into the print buffer. Uses X-register.
SKPCOL *	Accumulates skipped dot columns into the print buffer. Uses X-register.
STKPLOT *	Plots a single function value using X (nnn.aaa), Y (Y MAX), Z (Y MIN), T (y value).

Printer Flags

- Flag 12: Double Wide**
Prints and accumulates characters double width.
- Flag 13: Lowercase**
Prints and accumulates characters in lowercase.
- Flag 21: Printer Enable**
Performs printer operations normally in programs. `VIEW` and `AVIEW` print and do not halt program execution. (Automatically set when flag 55 is set.)
- Flag 55: Printer Existence**
Indicates a printer is connected to the system. (Automatically set when printer is first detected.)

Flags 15 and 16: Print Mode (not used for HP 82162A Thermal Printer)

Flag 15	Flag 16	Print Mode
clear	clear	MAN (<i>manual</i>)
clear	set	NORM (<i>normal</i>)
set	clear	TRACE
set	set	TRACE with stack option

Mass Storage Operations

- `CREATE` Creates a new data file with specified number of registers and filled with zero values. Uses ALPHA and X-registers.
- `DIR` Displays (and prints) a directory of stored files. Indicates file type: PR (program), DA (data), KE (key assignment), ST (status), and WA (“write-all”). Indicates file options: A (automatic), P (private), and S (secure).
- `NEWM` Prepares a new medium for storing files. Prompts for number of files in directory space. Not programmable.
- `PURGE` Removes a file from the medium. Uses ALPHA register.

READA	Reads a “write-all” file and sets the calculator accordingly. Uses ALPHA register.
READK	Reads a key-assignment file and re-assigns keys accordingly. Uses ALPHA register.
READP	Copies a program file into program memory, replacing the last program in memory. Executed in USER mode, program key assignments become active also. Uses ALPHA register.
READR	Copies a data file into the calculator’s registers until all file registers copied or all storage registers filled. Uses ALPHA register.
READRX	Copies part of a data file into registers specified by X (bbb.eee). Starts at current register in data file.
READS	Reads a status file and sets the calculator status. Pending program returns are lost. Uses ALPHA register.
READSUB	Copies a program file into program memory, placing it after the last program in memory. Executed in USER mode, program key assignments become active also. Uses ALPHA register.
RENAME	Renames a stored file. Uses ALPHA register.
SEC	Makes a stored file secured against being erased, renamed, or altered. Uses ALPHA register.
SEEKR	Positions the medium to a specified data file and register. Uses ALPHA and X-registers.
UNSEC	Makes a stored file not secured. Uses ALPHA register.
VERIFY	Verifies that a stored file can be read. Uses ALPHA register.
WRTA	Stores a “write-all” file onto the medium. Uses ALPHA register.

WRTK	Stores key assignments of system functions onto the medium. Uses ALPHA register.
WRTP	Stores a program and its key assignments onto the medium. Uses ALPHA register.
WRTPV	Stores a program and its key assignments onto medium and makes the file private. Uses ALPHA register.
WRTR	Copies all storage registers into a data file. Uses ALPHA register.
WRTRX	Copies some storage registers into a data file as specified by X (bbb.eee). Starts at current register in data file.
WRTS	Stores calculator status onto the medium. Uses ALPHA register.
ZERO	Fills a data file with zero values. Uses ALPHA register.

Mass Storage Flag

Flag 11: Automatic Program Execution

Used with **WRTP**, **WRTPV**, or **WRTA**, sets a program for automatic execution when copied back into the calculator from the keyboard. (For **WRTA**, execution set to start at current position in program memory.)

Interface Control Operations

AUTOIO	Sets the interface to Auto mode.
FINDID	Finds the address of a specified device type and places the address in X. If the device is not found, zero is returned. Uses ALPHA register.
INA	Inputs an ALPHA string of up to 24 characters from primary device.
IND	Inputs a decimal number from primary device.
INSTAT	Inputs status information from primary device, sets or clears flags 00 through 07 accordingly, and places decimal status number in X.

LISTEN	Sets a device as a listener, or removes all listeners for X = 31. Uses X-register.
LOCAL	Sets primary device to its local operating mode.
MANIO	Sets the interface to Manual mode.
OUTA	Outputs an ALPHA string to primary device. Uses ALPHA register.
PWRDN	Sets all devices to their low power state.
PWRUP	Sets all devices to their operating power state.
REMOTE	Sets primary device to its remote operating mode.
SELECT	Selects a device as the primary device. Uses X-register.
STOPIO	Stops I/O communication in the loop.
TRIGGER	Triggers all devices set to respond (listeners).

Interface Control Flags

Flags 00 through 07: Device Status

When set by **INSTAT**, indicate that corresponding status bits of a device are 1's.

Flag 17: Suppress End-of-Line

End-of-line indicator is not used. **OUTA** does not send CR and LF. **INA** ignores CR and LF.

Flag 32: Manual Mode

Indicates interface is in Manual mode.

