HP 82104A Card Reader
Quick Reference Card

While the HP 82104A Card Reader is plugged into the HP-41C, the following functions are active in the system. These functions and programs containing these functions are executable only while the card reader is plugged in. You can list all of these functions by executing `CATALOG` 2.

Function Index

`MRG`   Merges program from card. Replaces all program lines after current line with card program. HP-41C must be positioned to last program or `MRG` must be in last program.

`RDTA`   Reads data card. Places data on card into memory beginning with R_{00}.

`RDTAX`   Reads data card as directed by number in X. Format of X is bbb.eee where bbb is beginning address and eee is ending address.

`RSUB`   Reads subroutine. Replaces last program in memory with card program. If last program contains executing `RSUB` or HP-41C is positioned to last program (`RSUB` executed from keyboard), card program added after last program.

`VER`   Verifys track (not programmable). Shows *TYPE t TR nn* where **t** is P(program), D(data), S(status), A(write-all), 7P(HP-67/HP-97 program), 7D(HP-67/HP-97 data); **nn** is track number. Bad card results in *CHECKSUM ERR* Blank or unrecognizable card shows *CARD ERR*.

`WALL`   ''Write-all'' (not programmable). Writes all information in HP-41C.

`WDTA`   Writes data card. Writes all current registers beginning with R_{00}.

WDTAX	Writes data card as directed by number in X. Format of X is bbb.eee where bbb is beginning register to write and eee is ending register.
WPRV	Writes private program card (not programmable). Writes current program.
WSTS	Writes status card. Writes status of flags 0 thru 43; statistics register location; number of data storage registers; standard and plug-in function key assignments; contents of X, Y, Z, T, LAST X, ALPHA.
7CLREG	Clears R_{00} thru R_{09}, R_{20} thru R_{25}. Same as HP-67/HP-97 CL REG.
7DSP0 thru 7DSP9	Displays 0 thru 9 decimal digits. Same as HP-67/HP-97 DSP 0 thru 9.
7DSPI	Displays 0 thru 9 digits using R_{25} for indirect control. Same as HP-67/HP-97 DSP (i).
7DSZ	Decrement and skip on zero. Same as HP-67 DSZ, HP-97 DSZ I.
7DSZI	Decrement and skip on zero using R_{25} for indirect control. Same as HP-67 DSZ(i), HP-97 DSZ (i).
7ENG	Engineering notation. Does not change number of displayed digits. Same as HP-67/HP-97 ENG.
7FIX	Fixed notation. Does not change number of displayed digits. Same as HP-67/HP-97 FIX.
7GSBI	Go to subroutine using R_{25} for indirect control. Same as HP-67/HP-97 GSB (i). Negatives result in **NONEXISTENT**.
7GTOI	Go to label using R_{25} for indirect control. Same as HP-67/HP-97 GTO (i). Negatives result in **NONEXISTENT**.

`7ISZ`	Increment and skip on zero. Same as HP-67 `ISZ`, HP-97 `ISZ` `I`.
`7ISZI`	Increment and skip on zero using R_{25} for indirect control. Same as HP-67 `ISZ (i)`, HP-97 `ISZ` `(ii)`.
`7P<>S`	Exchange primary and secondary register contents. Exchanges R_{00} thru R_{09} with R_{10} thru R_{19}. Same as HP-67/HP-97 `P⇄S`.
`7PRREG`	If printer is attached, prints R_{00} thru R_{09}, R_{20} thru R_{25}. If not, displays register number then contents. Same as HP-67/HP-97 `REG`.
`7PRSTK`	If printer is attached, prints T, Z, Y, X. If not, displays them. Same as HP-67 `STK`, HP-97 `STACK`.
`7PRTX`	If printer is attached, prints X-register. If not, displays X. Same as HP-67 `-x-`, HP-97 `PRINTX`.
`7RCLΣ`	Recalls contents of statistics register. Same as HP-67/HP-97 `RCL` `Σ+`.
`7SCI`	Scientific notation. Does not alter displayed digits. Same as HP-67/HP-97 `SCI`.

Card Types

Track 1
(16 registers) →

←Track 2
(16 registers)
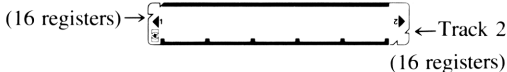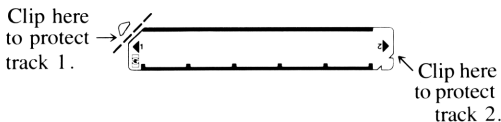
Program cards contain program instructions. Data cards contain data from storage registers. Status cards contain status information (refer to `WSTS`). ''Write-all'' cards contain all information in the HP-41C.

Protected (Clipped) Cards

Clip here
to protect →
track 1.

↖Clip here
to protect
track 2.

Clipping corner off of recorded track prevents recording of new information on that track. Clipped card can be read normally. To force recording of clipped card, set Overwrite Flag, 14.

Writing Programs onto Cards

In PRGM mode, position HP-41C to the desired program and insert card. HP-41C prompts for cards with *RDY kk OF nn* where **kk** is next track to be written and **nn** is total tracks required. Execute $\boxed{\text{WPRV}}$ to write private program card. Cannot view, alter, or record private programs.

Reading Program Cards

Three ways to read program card: 1. Insert card while HP-41C is *not* in PRGM mode; 2. Execute $\boxed{\text{RSUB}}$; 3. Execute $\boxed{\text{MRG}}$. HP-41C prompts for cards with *RDY kk OF nn* where **kk** is lowest numbered track not yeat read and **nn** is total tracks to be read. Insert cards in any order. Terminate session at any time with $\boxed{\text{R/S}}$ or $\boxed{\leftarrow}$.

Automatic Execution

Set flag 11 and write program card. Each time that card is read, program will begin execution at line 0 and beeper will sound.

Writing Data onto a Card

Two programmable functions used to write the contents of data storage registers onto cards: $\boxed{\text{WDTA}}$ and $\boxed{\text{WDTAX}}$. HP-41C prompts for cards with *RDY kk OF nn*.

Reading Data from a Card

Three ways to read data cards: 1. Insert card while HP-41C is *not* in PRGM mode (places data on card into memory beginning with R_{00}); 2. Execute $\boxed{\text{RDTA}}$; 3. Execute $\boxed{\text{RDTAX}}$. HP-41C prompts for cards with *RDY*

kk OF nn where **kk** is lowest numbered track not yet read and **nn** is total tracks to be read. Insert cards in any order. Terminate session at any time with $\boxed{\text{R/S}}$ or $\boxed{\leftarrow}$.

Writing Status Cards

While HP-41C is *not* in PRGM mode, execute $\boxed{\text{WSTS}}$. HP-41C prompts for cards with **RDY kk OF nn**.

Reading Status Cards

Ensure that HP-41C is *not* set to PRGM mode and insert track one first. HP-41C prompts for cards with **RDY kk OF nn**.

Writing and Reading "Write-all" Cards

To write, execute $\boxed{\text{WALL}}$. HP-41C prompts for cards with **RDY kk OF nn**. Premature termination results in incomplete $\boxed{\text{WALL}}$ card which cannot be read.

To read, ensure that HP-41C is *not* set to PRGM mode and insert complete $\boxed{\text{WALL}}$ set in any order. Interrupting session results in **MEMORY LOST**.

XROM Functions

Programs containing card reader functions show XROM number while card reader is not plugged into HP-41C. Refer to *HP 82104A Card Reader Owner's Handbook* for XROM numbers.

HP-67/HP-97 Compatibility

HP-67/HP-97 card programs are translated to run on HP-41C (refer to compatibility functions listed in function index). To execute translated programs, set HP-41C to USER mode and press corresponding label letter (A thru E, ■ a thru ■ e) just as on HP-67/HP-97.

HP-41C Registers	**HP-67/HP-97 Registers**
R_{00} thru R_{09}	Primary Registers
R_{10} thru R_{19}	Secondary Registers
R_{20} thru R_{24}	A thru E
R_{25}	I

HEWLETT
PACKARD

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