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 \texttt{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 \texttt{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 \texttt{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 \texttt{RSUB} or HP-41C is positioned to last program (\texttt{RSUB} executed from keyboard), card program added after last program.
- **VER**: Verifies track (not programmable). Shows \texttt{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 \texttt{CHECKSUM ERR}. Blank or unrecognizable card shows \texttt{CARD ERR}.
- **WALL**: "Write-all" (not programmable). Writes all information in HP-41C.
- **WDTA**: Writes data card. Writes all current registers beginning with \( R_{00} \).
WPRV

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 R00 thru R09, R20 thru R25. Same as HP-67/HP-97 CLREG.

7DSP0

Displays 0 thru 9 decimal digits. Same as HP-67/HP-97 DSP 0 thru 9.

7DSP9

Displays 0 thru 9 digits using R25 for indirect control. Same as HP-67/HP-97 DSP (ii).

7DSZ

Decrement and skip on zero. Same as HP-67 DSZ, HP-97 DSZ 1.

7DSZI

Decrement and skip on zero using R25 for indirect control. Same as HP-67 DSZ (ii), HP-97 DSZ (ii).

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 R25 for indirect control. Same as HP-67/HP-97 GSB (ii). Negatives result in NONEXISTENT.

7GTOI

Go to label using R25 for indirect control. Same as HP-67/HP-97 GTO (ii). Negatives result in NONEXISTENT.
Increment and skip on zero. Same as HP-67 \texttt{ISZ}, HP-97 \texttt{ISZ I}.

Increment and skip on zero using R_{25} for indirect control. Same as HP-67 \texttt{ISZ (i)}, HP-97 \texttt{ISZ (i)}.

Exchange primary and secondary register contents. Exchanges R_{00} thru R_{09} with R_{10} thru R_{19}. Same as HP-67/HP-97 \texttt{P\leftrightarrow S}.

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 \texttt{REG}.

If printer is attached, prints T, Z, Y, X. If not, displays them. Same as HP-67 \texttt{STK}, HP-97 \texttt{STACK}.

If printer is attached, prints X-register. If not, displays X. Same as HP-67 \texttt{PRINTX}, HP-97 \texttt{PRINTX}.

Recalls contents of statistics register. Same as HP-67/HP-97 \texttt{RCL \Sigma^+}.

Scientific notation. Does not alter displayed digits. Same as HP-67/HP-97 \texttt{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 \texttt{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 \textit{RDY kk OF nn} where \textit{kk} is next track to be written and \textit{nn} is total tracks required. Execute [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 \textit{not} in PRGM mode; 2. Execute [RSUB]; 3. Execute [MRG]. HP-41C prompts for cards with \textit{RDY kk OF nn} where \textit{kk} is lowest numbered track not yet read and \textit{nn} is total tracks to be read. Insert cards in any order. Terminate session at any time with [R/S] or [–].

**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: [WDTA] and [WDTAX]. HP-41C prompts for cards with \textit{RDY kk OF nn}.

**Reading Data from a Card**

Three ways to read data cards: 1. Insert card while HP-41C is \textit{not} in PRGM mode (places data on card into memory beginning with R\textsubscript{00}); 2. Execute [RTA]; 3. Execute [RDTA]. HP-41C prompts for cards with \textit{RDY}
**Writing Status Cards**

While HP-41C is *not* in PRGM mode, execute "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 "WALL". HP-41C prompts for cards with RDY kk OF nn. Premature termination results in incomplete WALL card which cannot be read.

To read, ensure that HP-41C is *not* set to PRGM mode and insert complete 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

R₀₀ thru R₀₉
R₁₀ thru R₁₉
R₂₀ thru R₂₄
R₂₅

HP-67/HP-97 Registers

Primary Registers
Secondary Registers
A thru E
I