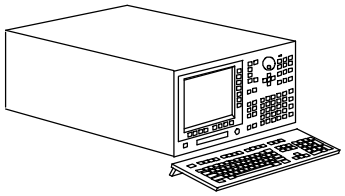
Module 8

File Management and HELP

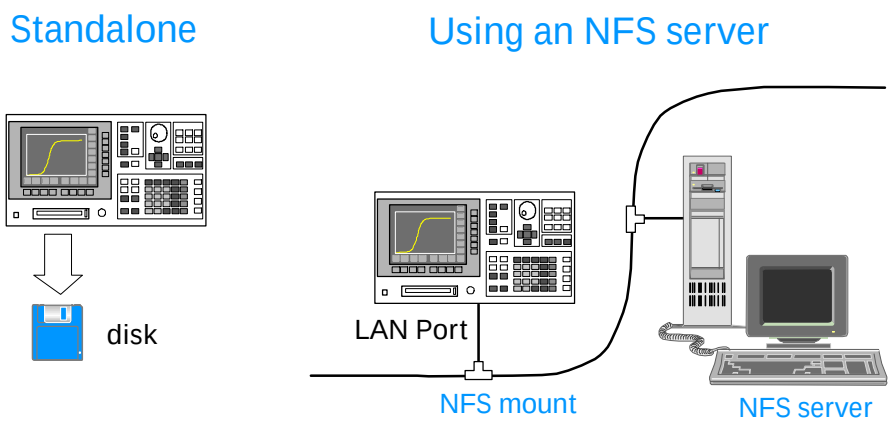


Topics Covered In This Module

- SYSTEM: FILER Functions
- Filer Limitations
- Special Initialization Files
- Setup Items Saved to *.CST Files
- Using MEM Files For Fast Testing
- MS-DOS Compatibility/4145 LIF Compatibility
- Creating Spreadsheet Files
- Hints For Best Graphics Export
- HELP Screens and Typing Aids

This module covers important information on the different file types created by the 4155 and 4156. It also covers 4145 file compatibility issues. This is the only module that discusses how to use spreadsheet and graphics dump files.

File Operation



The HP 4155B/4156B allows you to save the following data to a disk using the internal flexible disk drive, or a directory on an NFS server.

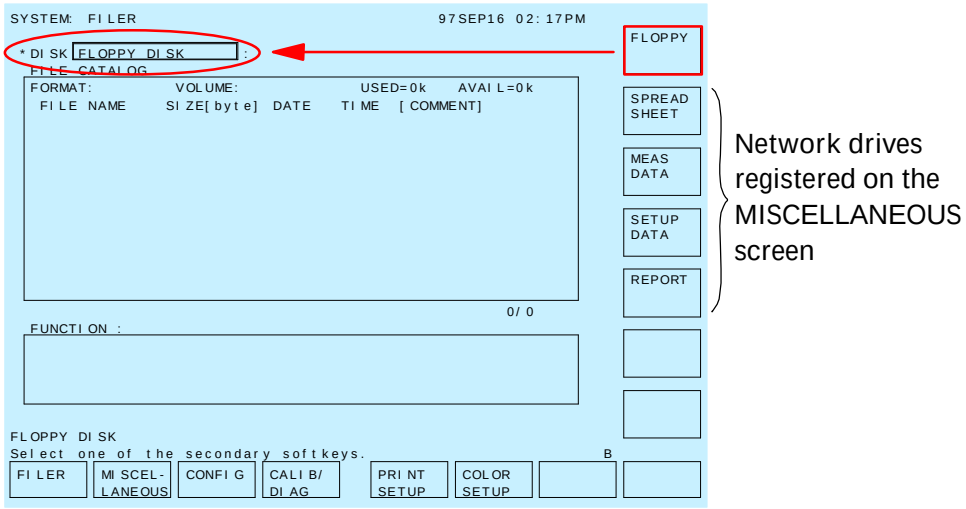
1. Measurement setup data (.MES file)
2. Measurement result data with setup data (.DAT file)
3. Stress setup data (.STR file)
4. System customized data (.CST file)
5. ASCII data for spreadsheets (.TXT file) using GRAPH/LIST: LIST page
6. Screen image/print/plot output data (.PCL, .PGL, .TIF file) using the PRINT/PLOT function

The HP 4155B/4156B also allows you to get the following data from a disk or a directory.

1. Measurement setup data (.MES file)
2. Measurement result data with setup data (.DAT file)
3. Stress setup data (.STR file)
4. System customized data (.CST file)
5. HP 4145B setup and measurement data (.PRO file)

SYSTEM: FILER Main Menu

Press the [System] key to display the FILER screen



The FILER main menu is displayed by pressing the [System] key on the front panel.

To perform a file operation, specify the DISK using the softkeys. Up to 5 softkeys are available.

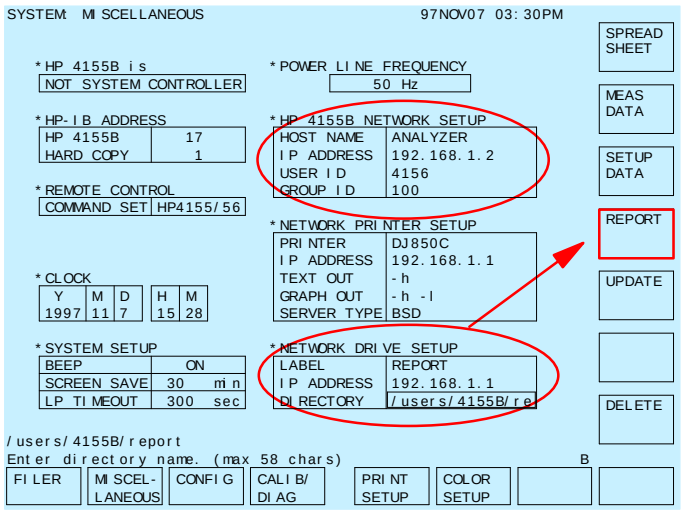
FLOPPY softkey:
This softkey selects the internal flexible disk drive.
Select this softkey to save data on a disk, or get data from a disk.

Softkeys for network drives (up to 4 softkeys are available):
These softkeys are used to select the network drive registered on the SYSTEM: MISCELLANEOUS screen. The softkey label will be the same as the entry in the LABEL field on the MISCELLANEOUS screen.

If you use a network drive (network file system), complete the SYSTEM:MISCELLANEOUS screen.

MISCELLANEOUS Page for using NFS server

Press the [System] key, then select [MISCELLANEOUS]



Network drive setups

Up to 4 setups can be stored

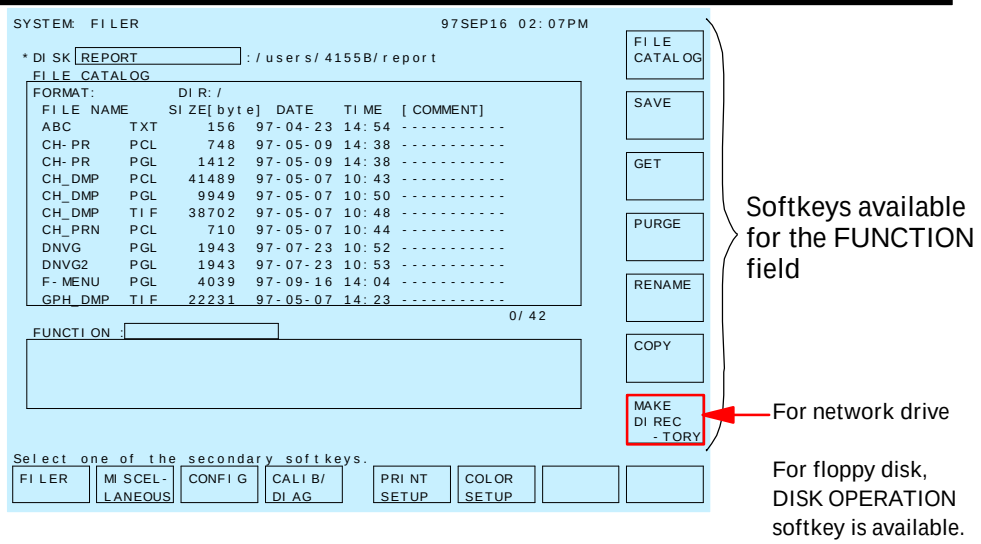
To use the NFS server, you must register the network drive setup.

1. Connect the HP 4155B/4156B to your LAN.
   The NFS server must be connected to your LAN, and must export a directory to be mounted by the HP 4155B/4156B.
2. Press the [System] key, then select [MISCELLANEOUS].
3. Complete the HP 4155B/4156B NETWORK SETUP table as shown:
   a. Enter the host name of the HP 4155B/4156B in the HOST NAME field.
   b. Enter the IP address of the HP 4155B/4156B in the IP ADDRESS field.
   c. Enter your user ID in the USER ID field.
   d. Enter your group ID in the GROUP ID field.
4. Complete the NETWORK DRIVE SETUP table as shown:
   a. Enter the name (softkey label) for the network drive (network file system) in the LABEL field.
   b. Enter the IP address of the NFS server in the IP ADDRESS field.
   c. Enter the directory name to be mounted by the HP 4155B/4156B in the DIRECTORY field.

Up to 4 network drive setups can be stored in internal memory by selecting the [ADD] softkey. The softkeys for selecting a network drive/file system will be displayed. The softkey labels are the same as the entries in the LABEL field.
To change a softkey setup, use the [UPDATE] softkey.

Available Functions

Press the [System] key, then move the pointer to the FUNCTION field



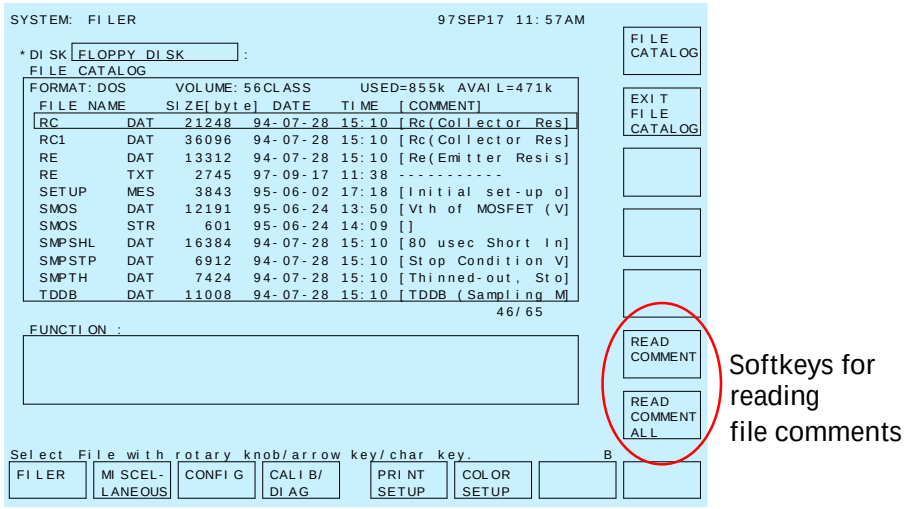
On the FILER screen, the following functions are available:

- Displays file catalog (FILE CATALOG softkey).
- Saves .DAT, .MES, .STR, or .CST file (SAVE softkey).
- Gets .DAT, .MES, .STR, CST, or .PRO file (GET softkey).
- Purges a file (PURGE softkey).
- Renames a file (RENAME softkey).
- Copies a file (COPY softkey).
- Makes a directory (MAKE DIRECTORY softkey, for network drive).
- Initializes a disk (DISK OPERATION softkey, for internal flexible disk drive).
- Copies disk data (DISK OPERATION softkey, for internal flexible disk drive).

To select a function, move the field pointer to the FUNCTION field, then select the desired softkey.

FILE CATALOG Functions for disks

Select the [FILE CATALOG] softkey in the FUNCTION field



When FLOPPY DISK is set to the DISK field, pressing [FILE CATALOG] will display a list of files on the disk. File comments will not be displayed.

The following softkeys are available:

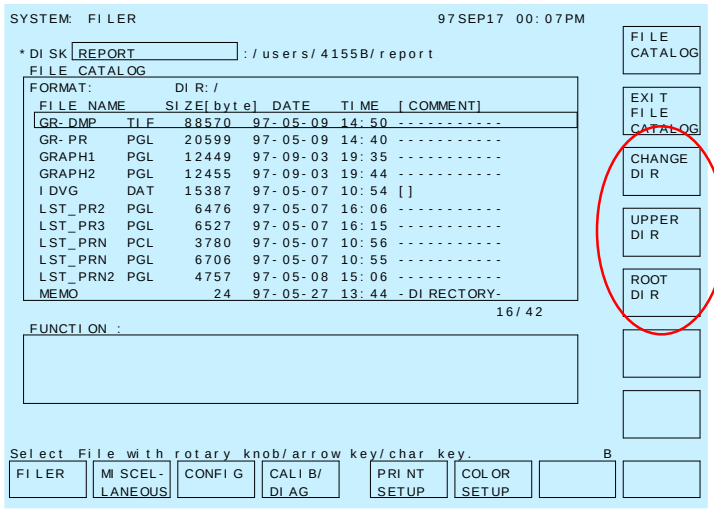
EXIT FILE CATALOG: Exits the file catalog and returns to the function selection menu.
READ COMMENT: Reads the comments for the file specified by the pointer.
READ COMMENT ALL: Reads the comments for all files.

In the COMMENT area,
- - - - - - - - - - - indicates a file type which cannot contain comments.
[ ] indicates a file without comments.

The COMMENT field displays a maximum of 16 characters.

FILE CATALOG Functions for network drives

Select the [FILE CATALOG] softkey in the FUNCTION field



Softkeys for changing working directories

If a network drive is selected in the DISK field, the [FILE CATALOG] softkey will display the following softkeys:

EXIT FILE CATALOG: Exits the file catalog and returns to the function selection menu.
CHANGE DIR: Used to change the working directory.
UPPER DIR: Changes the working directory to one level higher.
ROOT DIR: Changes the working directory to the root directory mounted by the HP 4155B/4156B.

In the COMMENT area,
- - - - - - - - - - - indicates a file type which cannot contain comments.
- DIRECTORY - indicates the directory.
[ ] indicates a file without comments.

The COMMENT field displays a maximum of 16 characters.

SYSTEM:FILER Limitations

- File name must be less than :
  - 36 characters, or 56 characters including directory path (for network drive)
  - 8 characters (for DOS formatted disks)
  - 6 characters (for LIF formatted disks)
- _ is not allowed as the last character of file name (for LIF formatted disks)
- File name must be upper case (for disk)
- No directory hierarchy is allowed (for disk)
- Comments must be less than 16 characters

The HP 4155/4156 supports both LIF and DOS format disks. However, it doesn't contain as many features as a PC-based system.

You are encouraged to use your favorite PC-based filer system when large amounts of file management are required (renaming many files, copying many files, etc.). You can also use your DOS formatted disks directly. There is no need to use the DOS format function provided in the 4155/4156 system filer.

Initialization Files

Files that boot from a disk during instrument power-on

File Name	File Type
INIT.MES	Measurement setup file
INIT.STR	Stress setup file
INIT.DAT	Measurement setup/result file
INIT.CST	Customize file
AUTOST	Program file

Measure, stress, data, or custom setup files can be set up to boot from a disk every time the instrument is powered up. These files will override the defaults (the settings used when no disk is present at turn-on.)

An INIT.DAT file will override an INIT.MES file if they are both present on the disk.

The INIT.CST file is quite useful if you prefer custom system defaults, rather than the factory defaults. For example, you can set the printer destination, form feed, color, etc. so you do not have to change these parameters if power to the instrument is lost.

The AUTOST program is also very important. If there is a file named AUTOST on the disk, it will be run during the instrument power-on sequence. This means you can load your favorite algorithms, set custom softkeys, or boot important programs (such as the demo disk) automatically when the power to the instrument is cycled on.

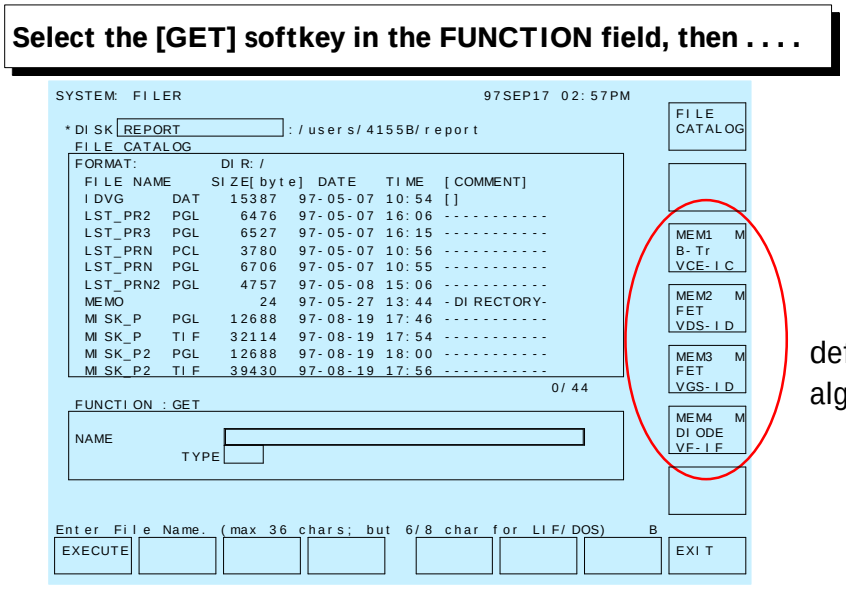
Setup Items Saved to *.CST Files

- SYSTEM:PRINT/PLOT setup screen
  - Destination
  - Language
  - Form Feed
  - Color/B/W
  - Column
  - Trailer String
  - Line
  - Resolution
  - Paper
  - Output Item
  - Init String
- SYSTEM:COLOR SETUP screen
  - Hue
  - Saturation
  - Brightness
  - Luminosity
  - Plotter Pen No.
- SYSTEM:MISCELLANEOUS screen
  - Remote Control
  - Beep
  - Network Printer Setup
  - Network Drive Setup
- ASCII SAVE window
  - Unit
  - Delimiter
  - String Mark
- HARDCOPY SETUP window
  - Destination
  - File Name
  - Output Region
  - Print/Plot Comment
  - Output Page
  - Graph Trace Only
  - Output Data
  - Print Setup Data
- INIT file start screen displayed after getting the INIT file

Useful system setup conditions can be forced to be different than the default conditions.
When you create a set of system conditions optimized for a particular task, save them in a file with the format *.CST. Loading this file will immediately set all these conditions at once.

If the file has the special name INIT.CST, it will boot automatically from the disk during the instrument power-on process.

Using MEM1 to MEM4



The HP 4155B/4156B has four internal memories (MEM1 to MEM4) for storing .MES, .DAT or .STR data. These internal memories allow fast save/get operations. They also allow you to copy data between internal memory and a mass storage device (disk or network drive).
Using the internal memory, you can recall data quickly (faster than using a mass storage device).

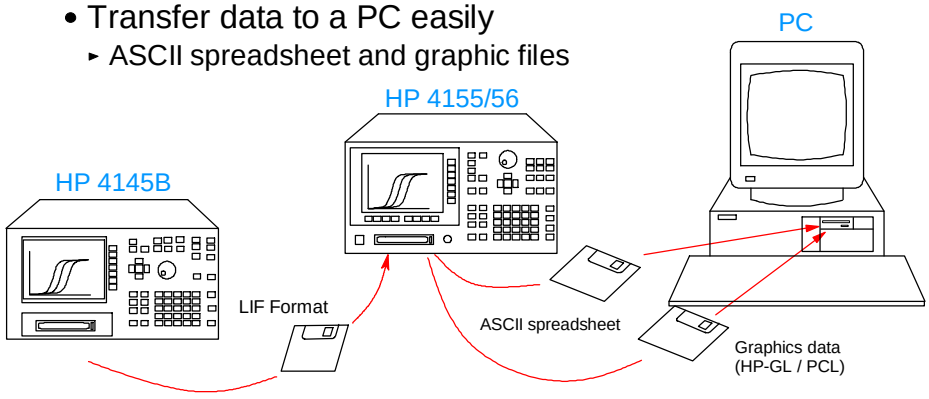
Internal memory initially stores the following four algorithms (.MES file, measurement setup data) during power-on:

MEM1: Bipolar transistor Vce-Ic characteristics measurement setup data
MEM2: MOS FET Vds-Id characteristics measurement setup data
MEM3: MOS FET Vgs-Id characteristics measurement setup data
MEM4: Diode Vf-If characteristics measurement setup data

You can override these defaults with custom algorithms at power-on. Put your custom algorithms on a disk and load them with an AUTOST program.
For details on how to do this, refer to "Auto-loading of Files" in the Programmer's Guide.

MS-DOS / 4145 LIF Compatibility

- Load 4145B data files from LIF formatted disks
- Store data on DOS formatted disks
  - setup files, measurement data, IBASIC programs, and HP-GL / PCL / TIFF graphic files
- Transfer data to a PC easily
  - ASCII spreadsheet and graphic files



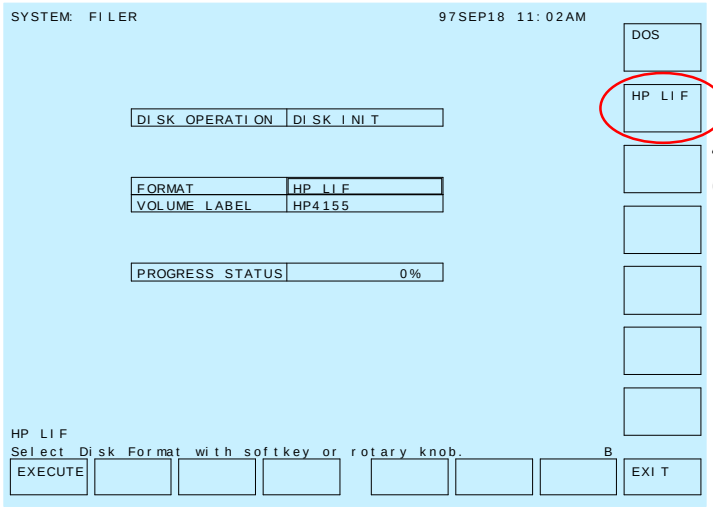
Measurement data can be stored in ASCII or MS-DOS format for easy and quick data analysis on PCs without any format conversion. In addition to measurement data, graphics can be stored in TIFF or HP-GL format. This allows you to put actual graphic displays in documentation.

The 4155/4156 also supports 4145B LIF disks. Setups and measurement data stored on 4145B disks can be read with the 4155/4156.

If you use a network drive (network file system) instead of a disk, you do not need to pay attention to the disk format to transfer data to a PC. ASCII spreadsheet and graphic files can be read on a PC without any format conversion.

Both LIF and DOS Formats are Supported

Select the [DISK OPERATION] softkey in the FUNCTION field, then . . . .



4145B Compatible

You can format a diskette in LIF or DOS, but you must format in DOS if you want to save ASCII text or graphics screen dumps to be read by a PC.

Use LIF if you plan to transfer data to an HP workstation or share programs with the HP 4145B.

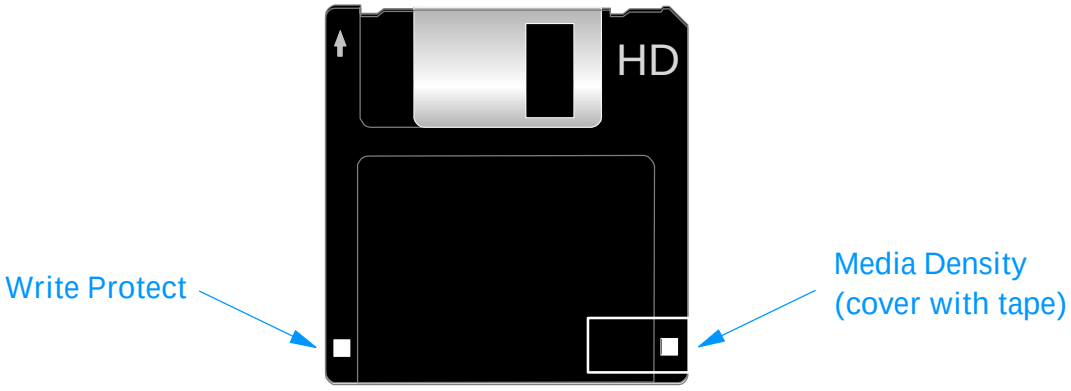
The 4155/4156 system filer provides a convenient way to translate files between LIF and DOS formats:

1) Load a file from disk in the HP 4155/4156 memory (not MEM).
2) Switch the disk from LIF to DOS (or DOS to LIF).
3) Save the file from memory on the disk.

If you use a network drive, this menu is not displayed. The [DISK OPERATION] softkey is not available if a network drive has been selected in the DISK field on the SYSTEM:FILER screen.

4145 Media Compatibility?

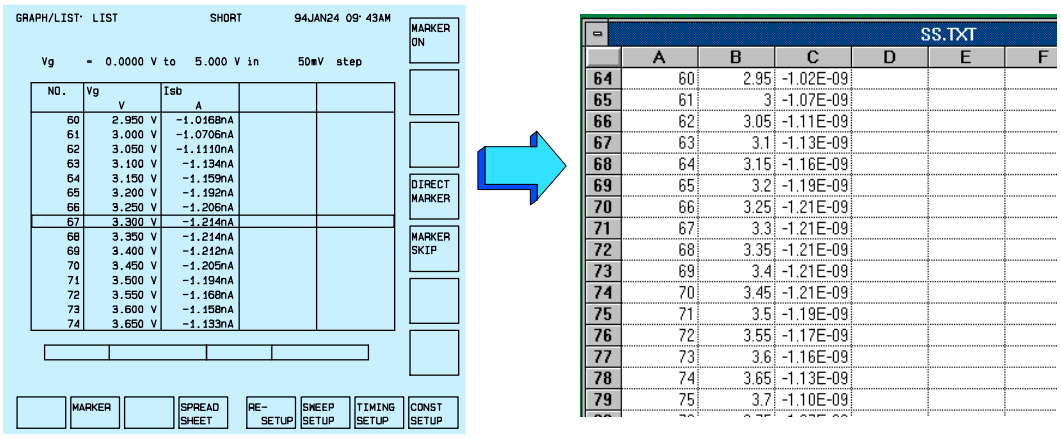
- ✓ Low density (750K) disk is compatible
- ✓ High density (1.44Mb) disk - cover hole with tape



The 1.44Mb HD disk has two sensing holes. The second hole is open to indicate high density format. If a high density disk is initialized using the low density 4145 format, the 4155/4156 will not be able to read it.

Placing clear office tape over the media density hole solves the compatibility problem.

Easy File Transfer to Spreadsheet



GRAPH/LIST:LIST screen

Microsoft Excel

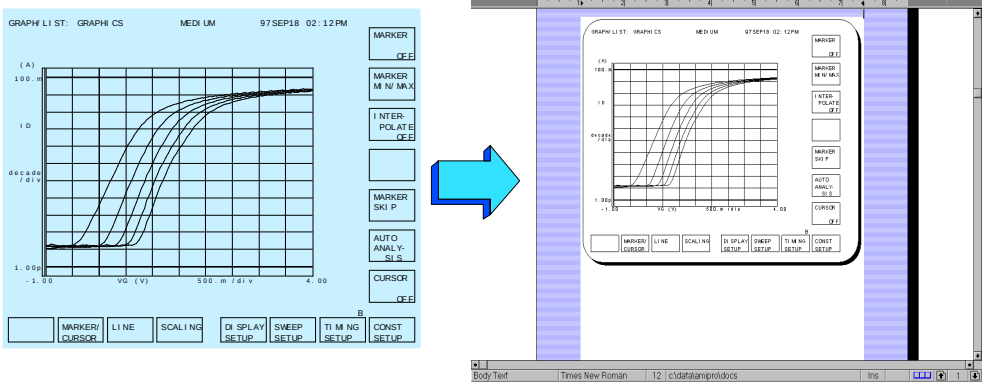
This powerful feature was added by large customer demand. The .TXT files created by the 4155/4156 are compatible with all popular spreadsheet programs on a PC.
You may be surprised to find an ASCII data save feature on the LIST screen, but not accessible through the SYSTEM FILER: SAVE menus. ASCII data is created and viewed on the LIST screen, and so it is more convenient to use this page to save data.

Save ASCII data as follows: (Before executing this procedure, set the DESTINATION on the FILER screen.)

1. Display the GRAPH/LIST:LIST screen by pressing the [Graph/List] front panel key.
2. Select the [SPREAD SHEET] softkey. The ASCII SAVE menu will be displayed on the screen.
3. Enter the file name in the NAME field.
4. Enter a data index number to save with the file in the OUTPUT DATA (INDEX NO) field.
5. Select [YES] or [NO] in the UNIT field.
   YES causes the units (V, A, ms, etc.) to be output with the data.
   NO disables this unit output.
6. Select [SPACE], [COMMA] or [TAB] softkey in the DELIMITER field.
7. Select [NONE], [" "], or [' '] softkey in the STRING MARK field.
8. Select the [EXECUTE] softkey to save ASCII data.

For details and output examples, refer to Chapter 3 of User's Guide: General Information.

Graphics Transfer to Documents



GRAPH/LIST:GRAPHICS screen

Lotus Ami Pro

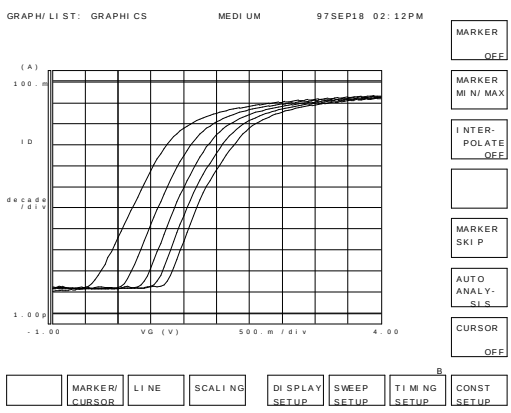
An important part of benchtop test is the documentation process. Now, screen shots from the 4155/4156 can be transferred to a PC via a mass storage device (disk or network file system). You are not limited to the GRAPHICS page. Any screen may be copied (except 4155/4156 HELP screens).

To copy a screen image: (Before executing this procedure, set the DESTINATION on the FILER screen.)

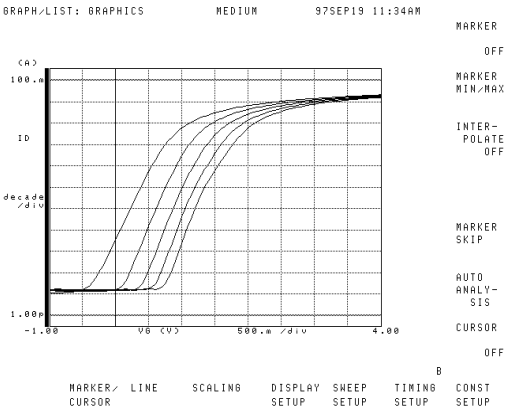
1. Display the GRAPH/LIST:GRAPHICS screen by pressing the [Graph/List] front panel key.
2. Press the green key and [Plot/Print] key in this order. The SCREEN DUMP dialog box will be displayed.
3. Complete the SCREEN DUMP dialog as you did in Module 7 Printing and Plotting. Then note below.
   a. Select [FILE] in the DESTINATION field.
   b. Enter the file name in the FILE NAME field.
   c. Set the LANGUAGE field by selecting the desired softkey.
      To transfer a screen image to a PC, select HP-GL or TIFF (HRTIFF).
4. Select [PRINT PLOT] to save the screen image (screen dump).

For details and output examples, refer to Chapter 4 of User's Guide: General Information.

Class Exercise
Screen Dump - HP-GL and TIFF



HP-GL



TIFF

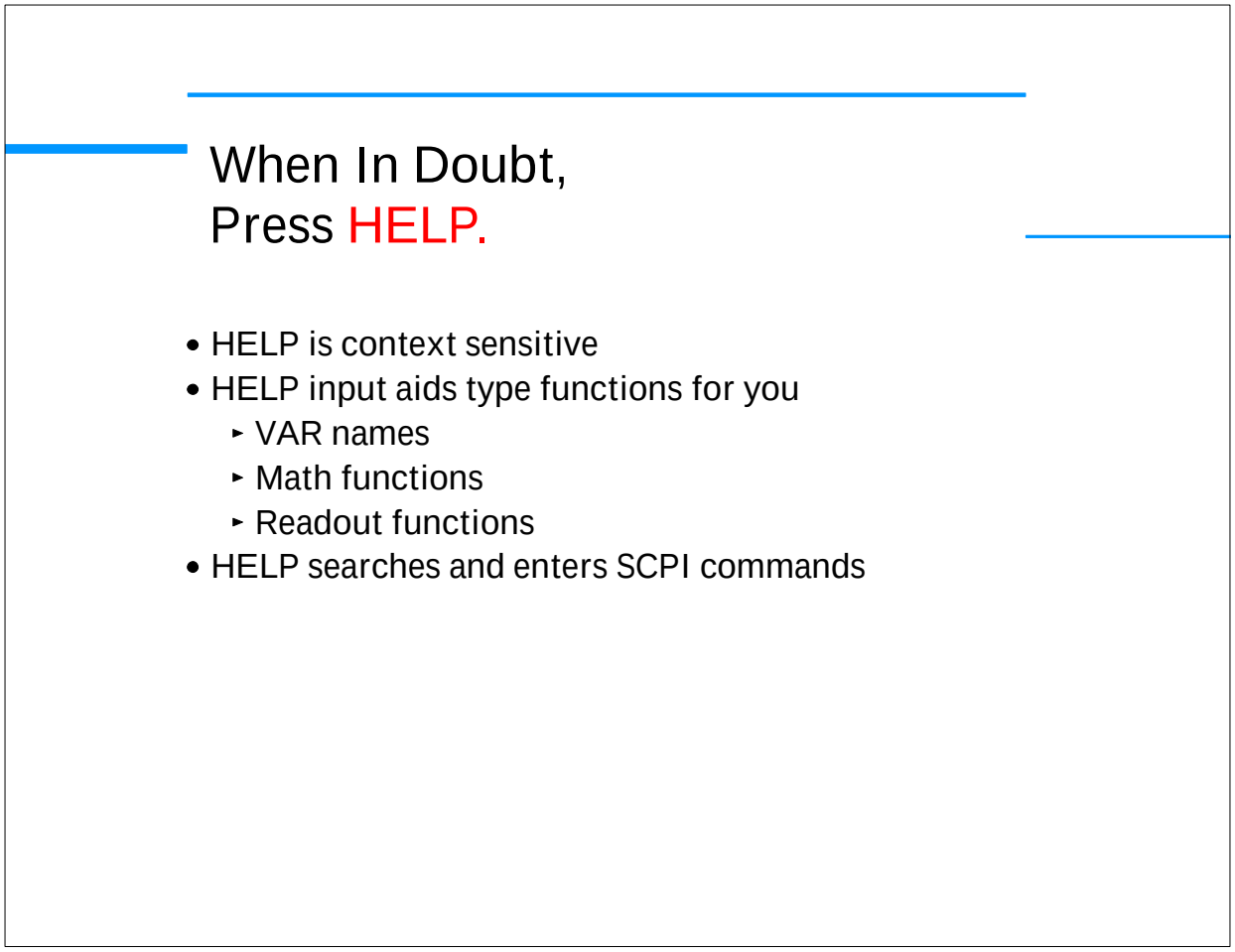
Copy a graphics screen plot using the Dump function (press the green key, then the [Plot/Print] key).

1. Set the LANGUAGE to HP-GL and save the file to the demo disk.
2. Set the LANGUAGE to TIFF and save the same screen.
3. Set the LANGUAGE to PCL and save the same screen.
4. Observe file size and speed of execution.
5. Use the SYSTEM:FILER PURGE function to erase the files.

This exercise verifies that you know how to dump a screen image to a file.
HP-GL and TIFF are much faster, and take less disk space than PCL.

HR TIFF and HR PCL are the high resolution/quality version of each format. However, they will take more time than the standard format.

To transfer the file to PC software, use HP-GL, TIFF or HR TIFF, not PCL or HR PCL.

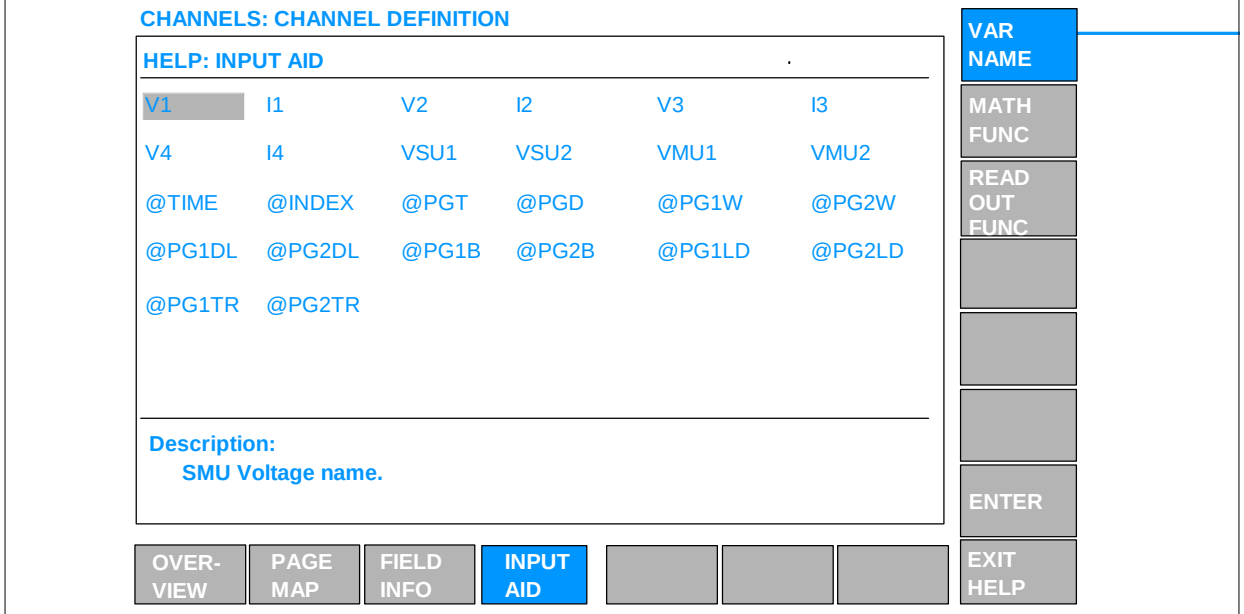


When you press the [HELP] key, the help message will pertain to the present screen.

When inputting user variables and functions, you can use HELP to type the actual functions into the formula. Highlight the correct function from the help display, then press [ENTER]. When you exit HELP, the highlighted area is typed into the user formula for you.

When programming, you can use HELP to scan all legal commands and enter them into the line of text being edited. This function is available for the SCPI commands, not for the FLEX commands and the 4145 syntax commands.

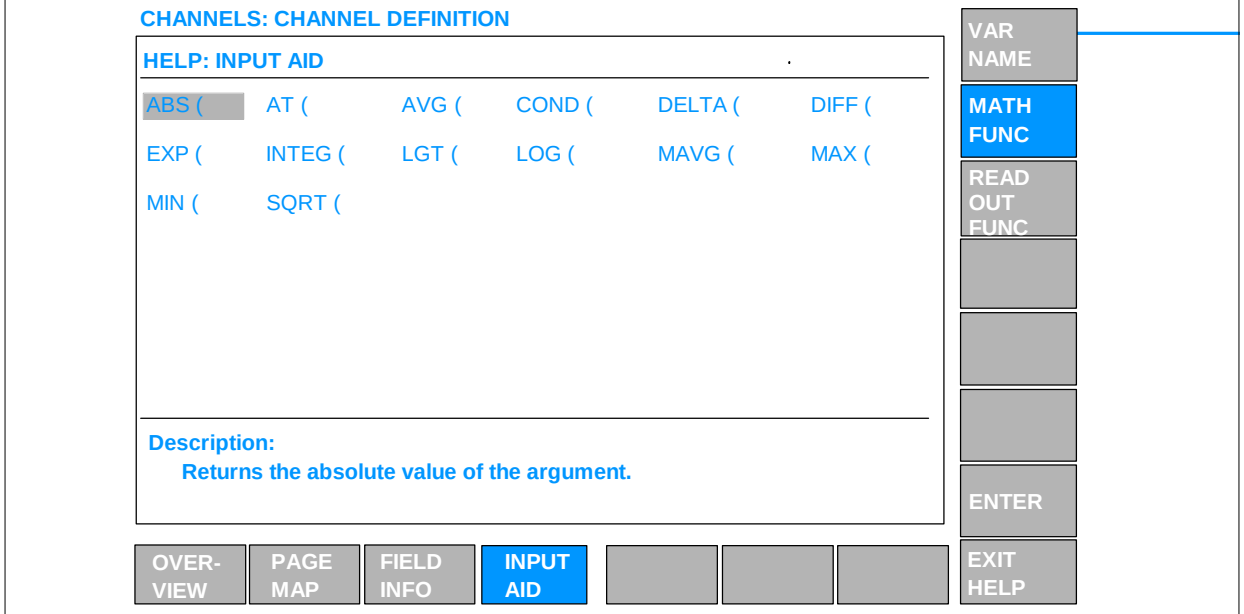
Help Screen For Variable Names



This screen shows the possible unit or time variables which can be used in user functions, as display variables, or in read out analysis formulas.

Notice the large number of pulse generator variables. These are all variable pulse generator parameters available for plotting and analysis.

Help Screen For Math Functions



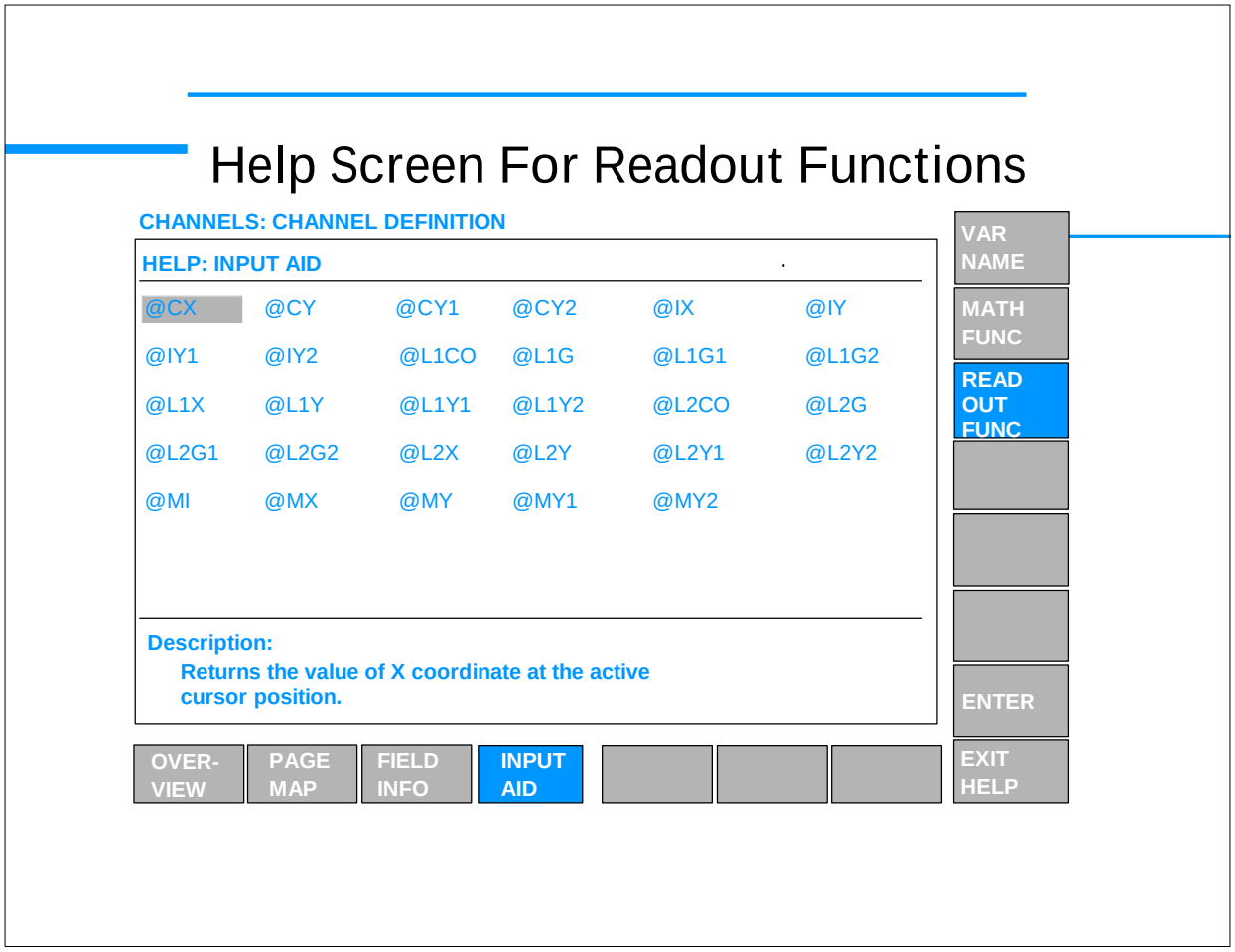
This is an enhanced set of built-in functions compared to the 4145.

AT (Returns the value at a specified index point.
Example: Id-AT(Id,1) returns the difference of Id from its first value.

COND (Returns a 3rd or 4th expression depending on the difference between a 1st and 2nd expression.
Example: COND (Vth, .5, Vth, Vg)
Returns Vth if Vth < .5
Returns Vg if Vth > or = .5

DIFF (Returns the differential coefficient.

INTEG (Returns the numerical integration.



These are all of the graphical analysis features available for use in Read Out Functions.

C Cursor

CO Correlation coefficient of regression line

G Gradient (Slope)

I Intercept

L Line

M Marker

Example: @L1G returns the slope of line L1.