

6. PC PROGRAMS

While RAMCHECK is a stand-alone unit, the product includes the Communications Programs that allow you to upgrade your RAMCHECK's flash EPROM from our Web site (www.innovations.com). The PC programs software also provides you with all the essential communication functions you will need between all members of the RAMCHECK product line and your PC. This program comes with the RAMCHECK product and includes the following main features:

The RAMCHECK Communications program provides you with:

- The capability to download updated firmware files from our FTP server onto the RAMCHECK Flash memory. This process can now be done in a single operation called Automated Firmware Update.
- A Realtime interface between RAMCHECK and the PC so that you can control RAMCHECK from your PC and also view, save, and print test results from the Test Log.
- SPD support for editing, saving, and programming of the SPD chip on your tested memory devices.
- Setup support for RAMCHECK.
- Graphics interface between RAMCHECK's screen to your PC display.
- Extensive, context-sensitive On-Line Help and Tutorials.

HARD DISK INSTALLATION:

Insert the enclosed CD Companion into your CD ROM drive (assumed as drive D) and from the Start menu, select RUN and type D:\SETUP.exe.

After following the instructions during the installation process, the PC PROGRAMS will be installed in a newly created RAMCHECK directory; the software will also create a short cut icon on your desktop. Also included is an UNINSTALL utility which will remove the program and its components from your system should you ever wish to do so.



**This program
requires Windows
95/98/NT.**

6.1 RAMCHECK DOWNLOADER

The RAMCHECK Downloader portion of the PC Programs is the key utility for performing a RAMCHECK FLASH upgrade. By visiting our Web site (<http://www.innoventions.com>), you can download the current version of the RAMCHECK firmware.

Use the enclosed serial cable to connect RAMCHECK to an available serial port on your PC. In most modern PCs, the serial ports use the standard 9-pin D-SUB connector. Older computers may use a 25-pin D-SUB connector, for which will require the use of a 25-pin to 9-pin serial port adapter. NOTE: Conforming to the RS-232C standard, the RAMCHECK serial interface uses pin 2 for transmitting (TxD), pin 3 for receiving (RxD), and pin 5 for ground.



You may also click on



to activate the Automatic Firmware Upgrade Process.



See Section 6.1.2 to review the Manual Firmware Upgrade function.

6.1.1 AUTOMATIC FIRMWARE UPGRADE

If your computer has a dial-up or direct connection to the Internet, you may use an automated process to upgrade your RAMCHECK with the latest firmware version automatically. From the RAMCHECK menu, simply select Automatic Firmware Upgrade.

It first connects to INNOVENTIONS' FTP server and downloads the "rcf.zip" file to the RAMCHECK program directory. It then unzips the "rcf.zip" into a new "rcf.bin" firmware file (after backing up any existing firmware file with the same name to "rcf.bak"). Finally, it activates the firmware Downloader program and prompts you to upgrade your RAMCHECK. Selecting SEND FIRMWARE will then begin your upgrade.

If your computer is configured for an automatic dial-up connection, simply start the process by clicking the Connect button.



If your computer is not configured for an automatic dial-up connection (that is, you always need to manually activate the connection before accessing the Internet with your other programs), please activate your Internet connection before starting the process.

The FTP connection dialog box shows UserID as "anonymous" and the password field should show your correct e-mail address (if you have completed the Software Setup section of this program). The status portion of the FTP connection dialog box shows the progress of the download process. At the successful end of the download process from the FTP server, the firmware Downloader is activated, prompting you to send the new firmware to RAMCHECK. Selecting SEND FIRMWARE will initiate the download to RAMCHECK. After a successful download, RAMCHECK must be reset in order to start with the new firmware.

While the process is automatic, it allows you to abort at various key points. If you abort during the FTP download, your older "rcf.bin" firmware file remains intact. If you abort the firmware Downloader program, your RAMCHECK will not be upgraded, but the firmware file "rcf.bin" will be updated. Please note that this process replaces your previous firmware file and keeps only one backup as "rcf.bak". You may want to keep previous hardware versions by renaming them "rcf_201.bin" or "rcf_203.bin (for versions 2.01 and 2.03 respectively).

If your computer is not connected to the Internet, and you usually download the firmware file with another computer at your organization, you cannot use this Automated RAMCHECK

Upgrade process. However, you can still upgrade your RAMCHECK with the Firmware Downloader after copying the "rcf.bin" file to your computer or accessing it from a floppy diskette.



Be sure to upgrade every month to insure the best results from your RAMCHECK investment.

6.1.2 MANUALLY UPGRADING THE FIRMWARE

If you do not have a direct connection to the Internet, or you can only access our web site from a remote computer, you may elect to upgrade your tester manually by first acquiring the firmware file online, then downloading it to RAMCHECK using the RAMCHECK Downloader. The Downloader portion of the RAMCHECK Communications program sends a variety of file data to RAMCHECK, including Firmware files. We recommend that you review RAMCHECK development log on our Web site, which outlines the latest changes and added features of the new RAMCHECK firmware.

FIRMWARE FILES

Upgrading RAMCHECK is accomplished by following the procedure outlined below:

- **The RCF.BIN file is the current RAMCHECK firmware, which you must download from our Web Site to your computer (compressed as RCF.ZIP, when extracted produces RCF.BIN). Save the RCF.BIN in the RAMCHECK directory.**
- Enter the PC PROGRAM INTERFACE by double clicking on the RAMCHECK icon on your desktop.
- Select FILE from the menu bar and choose OPEN. Select the file RCF.BIN from the RAMCHECK directory. Click the OPEN button.
- With RAMCHECK ON, select RAMCHECK from the menu bar and then select SEND DATA. Click on SEND FIRMWARE when prompted by the dialog box. RAMCHECK should now be downloading the new program. During the download, you will observe a progress indicator on your PC screen as the program is being transmitted and is flashed to RAMCHECK's memory.

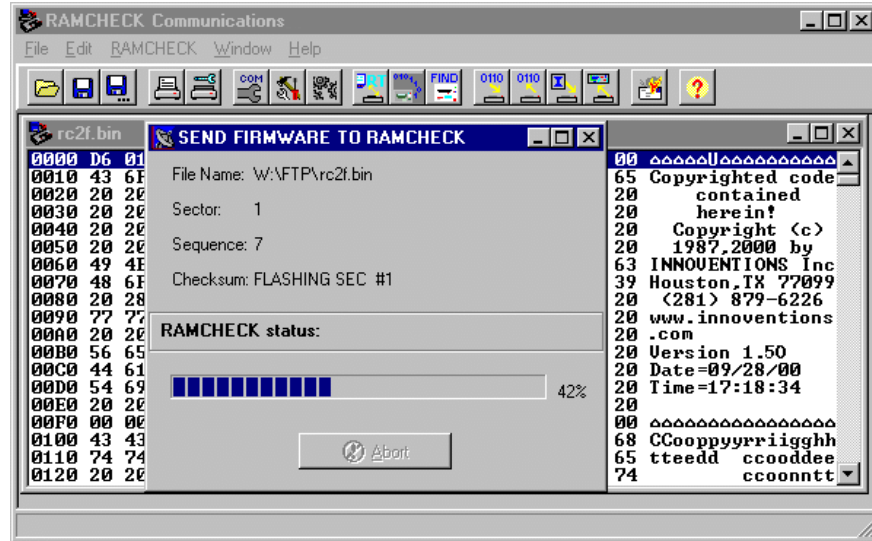


Once downloaded, you can quickly send the firmware file to RAMCHECK by pressing the buttons:



Select RCF.BIN





- When the transfer is complete, a brief message saying **DOWNLOAD END: SUCCESS** will appear on your monitor. You can now press **ESC** and allow RAMCHECK to reset with the new program.



You may also click on

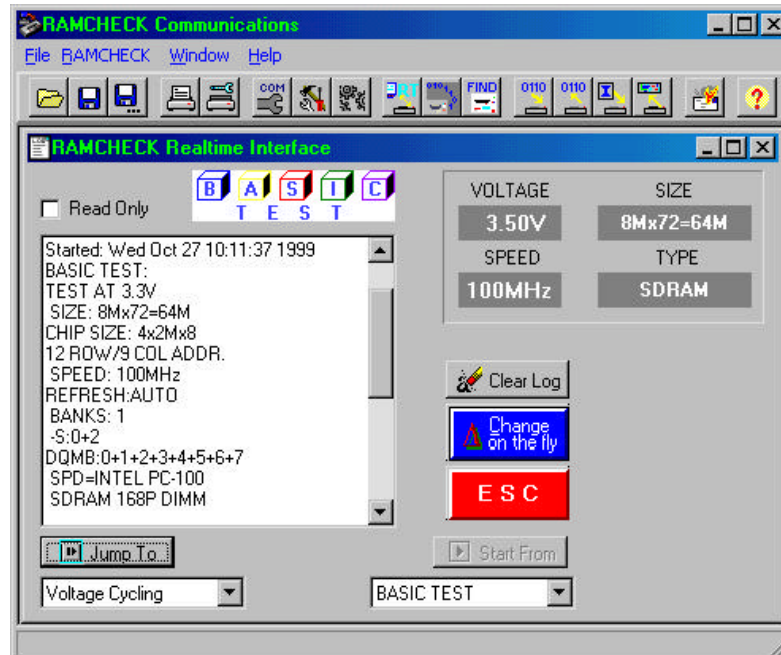


to activate the Realtime Interface.

6.2 REALTIME INTERFACE

The Realtime Interface allows you to control RAMCHECK from your PC. It also allows you to log data and to print the test results. Selecting Realtime Interface from the RAMCHECK menu activates this part of the program.

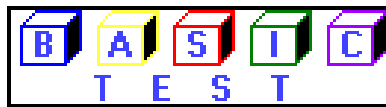
It includes a TEST LOG VIEWER, which provides a multitude of scrollable information on the tested module.



A summary of the module's size, mode type, access time, and cycle time (for EDO/FPM only), along with the list of the various control signals is displayed after the Basic Test.

This test log can be saved or printed by selecting the appropriate command from the FILE menu. The red ESC key can be pressed at any time to stop an existing test.

The RAMCHECK STATUS INDICATOR, located on the upper section of the test log window, monitors the existing stage of the module's test. This cycles from Basic Test, Extensive Test, etc, or error indications.



The CHANGE-ON-THE-FLY button allows you to change the speed and voltage parameters of the DUT during a test.



Upon selecting this function, the current test will pause while you select a different function from the change window. The options include dual voltage selection and speed override through a slide bar. The test will resume once a button is pressed. The test log will also reflect the new settings.

The START FROM button allows you to select a specific starting point for the test to be performed. The default is the Basic Test, but pressing the scroll button will allow you to select from the various test phases on the RAMCHECK program. After a selection is made, simply press the START FROM button to activate the function.

The JUMP TO button allows you to quickly switch to a different test phase during a test. Selecting the scroll button will display the different test phases to which you can jump to, with the default being the next phase in the standard test flow. Once the new phase is selected, pressing the JUMP TO button will redirect the test flow to the selected phase. The test flow will then continue normally from this point, unless you wish to activate the JUMP TO function once again. The test log will reflect the changed test flow in its viewer.



Please refer to Section 4.4 for further information on SPD Management.

6.3 SPD SUPPORT

RAMCHECK and the RAMCHECK Communications program provide you with useful tools for complete SPD management, including viewing, editing, file saving and retrieving, and actual SPD programming. As a stand-alone unit, RAMCHECK and its various adapters provide all the means to read and program the SPD. RAMCHECK incorporates a simple 256-byte buffer, which is used to read the SPD from a "master" module. The data in the buffer can then be used to program other modules. You can access the SPD Management Mode (on your RAMCHECK) from Standby mode by pressing F4 and selecting F3 for SPD MANAGEMENT. RAMCHECK then provides you with a straight forward menu with the following selections:

- **F1=READ SPD** - reads the contents of the SPD on the tested module into RAMCHECK's internal buffer.
- **F2=VIEW SPD BUFFER** - allows you to view RAMCHECK's SPD buffer on RAMCHECK itself, however, you would prefer to use your PC for viewing and editing as discussed below.
- **F3=PROGRAM** - Programs the SPD on the inserted module with the contents of the SPD buffer. Please note that in order to program the SPD, the SPD programming option in the RAMCHECK Setup mode should be enabled.
- **F4=VERIFY** - this function verifies your programming by comparing the SPD of the programmed module the SPD of RAMCHECK's buffer.

The RAMCHECK Communications program significantly enhances your SPD support. It allows you to read (upload) RAMCHECK's SPD buffer onto the PC.

It provides an advanced SPD Hex Editor with which you can change or print the SPD data. It provides unlimited filing on your PC hard disk for all your SPD files. You can download your edited SPD or stored SPD files back onto RAMCHECK for subsequent programming of your modules.

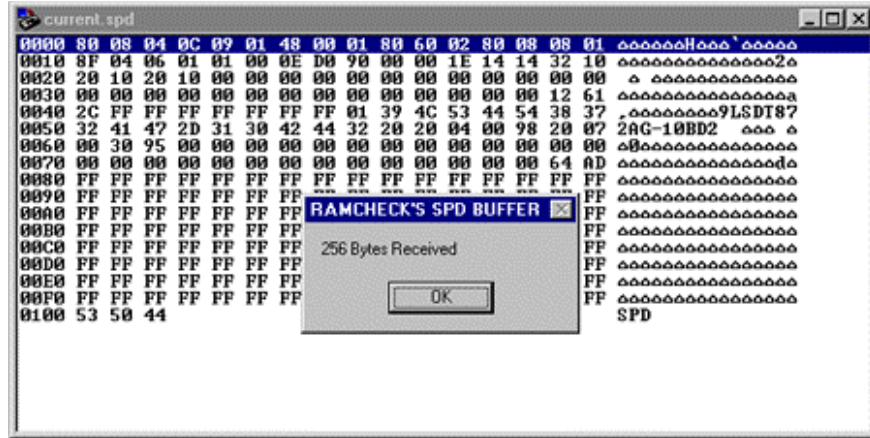


Press F1 to read the SPD data into RAMCHECK II's buffer. Now you may select RECEIVE DATA from the PC's RAMCHECK menu. The downloader will then acquire the 256 bytes of information as seen in the SPD viewer.

You may also press

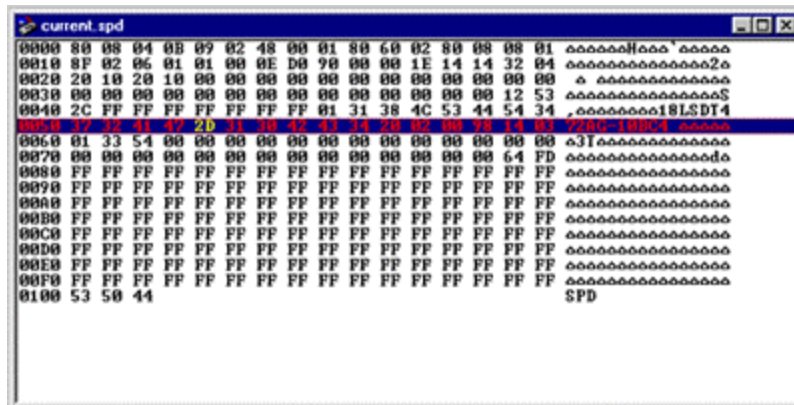


to send SPD data to the Communications Program.



The viewer is a hexadecimal line editor, with edits 16 bytes per line. The first column indicates the starting SPD address for the group of 16 bytes of the current line. The following 16 bytes (two hex digits each) are the actual data to be edited. The last wide column is the ASCII representation of the data, which is meaningless for the module memory parameters, but may reveal manufacturer's codes.

To edit this information, double click on any byte shown. The line will be highlighted and the selected byte will change its color and allow you to enter a new value. Use the mouse or the right/left arrow keys to navigate throughout the highlighted line.



Please note that any byte changes in the highlighted line will not be accepted until the <Enter> key is pressed or a new line is selected.

Once the SPD information is edited, it can be saved by choosing the SAVE AS function from the File menu and saved with a *.SPD extension, or it can be sent to RAMCHECK's buffer for subsequent programming the SPD of your modules.

6.4 RAMCHECK SETUP



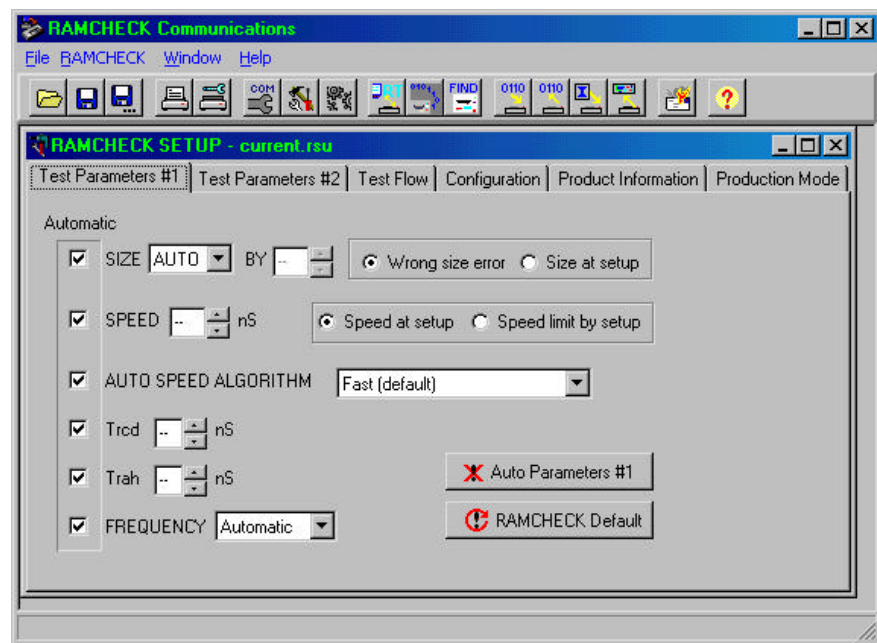
You may also select



to enter setup mode,
and press



to send setup data to
RAMCHECK.



See Section 5. to learn
more about
RAMCHECK Setup.

The setup screen uses a multi-tab dialog box. The following tabs are available:

- **Parameters #1** - Used for setting up size, speed, frequency, and other timing parameters.
- **Parameters #2** - Used for set up of Voltage, Mode, Refresh, Test Patterns, and some special setup codes.
- **Test Flow** - Used for setting RAMCHECK's testflow.
- **Configuration** - Used for set up of RAMCHECK's configuration. Also used to setup SPD programming.
- **Product Information** – Includes "read only" information,

including calibration data. This page also includes a setup file memo that you can append to a saved setup file on the PC.

When you finish selecting the setup options, choose SEND DATA from the RAMCHECK menu to transfer your setup changes to RAMCHECK where they are automatically saved.

Once the new setup is transferred, RAMCHECK will respond with a message indicating that the new setup data has been saved in the RAMCHECK non-volatile setup memory. RAMCHECK will not save unchanged setup data.



You may also press



to send an opened bitmap file to RAMCHECK and press



to capture a screen.

6.5 RAMCHECK GRAPHICS COMMUNICATIONS

The RAMCHECK Graphics Communications allows you to send graphics (bitmaps) to RAMCHECK and to capture RAMCHECK's LCD screen. Choose SEND BITMAP from the RAMCHECK menu to send graphics, or choose GET SCREEN to perform a screen capture. You may note that certain screens change in a matter of moments after being displayed, so if you wish to capture these screens, you must select GET SCREEN at the precise moment.

You may choose to save the bitmap under a different name, or you may use the default name of LCD.bmp. The saved file will be under the same directory as your RAMCHECK PC Software.

Clicking the DEMO ON button can enable the Graphics Demo Mode. It repeatedly displays RAMCHECK's LCD screen, providing an animated display connection to RAMCHECK during product demonstration. The bitmap graphic on the PC display can be increased or decreased, and can be printed by clicking the print button. The Graphics Communications function is generally of limited use for most end users. However, we use it extensively in developing the graphics for the RAMCHECK firmware. It is also a great tool for demonstrating the product.

6.6 RAMCHECK TEXT EDITOR

Selecting NEW from the file menu opens the RAMCHECK Text Editor. The text editor uses a standard Rich Edit to allow you to create, open and review, edit, print, and save various text files. Such files can be test log files (*.log) that are saved by the Realtime Test Log, or they can be any other type of text file for

that matter. You can also use the text editor to print the "ramcheck.ini" (the configuration file for this program). When you create a regular text file, please use the default *.txt extension. The text editor uses the same editing features that are available on other simple editors.



You may also press



to view the diagnostics window.

6.7 RAMCHECK DIAGNOSTICS

This mode allows you to view the actual ASCII characters that RAMCHECK uses in its communication with the PC via the serial port. Select COMMUNICATION DIAGNOSTICS from the RAMCHECK menu to open this window.

In addition to troubleshooting use, this mode is also utilized in some of our diagnostic procedures to view the structure of unsupported modules. You may be requested by our Tech Support department to set up RAMCHECK itself at some debug mode and then to view and print the communications' data.

```

Communications Diagnostics
[l]ATEST AT 3.3U SIZE: 2Mx64=16MCHIP SIZE: 2x1Mx811 ROW/9 COL ADDR. SPEED:
:AUTO100MHz CLOCKS=2-c1k CN0+2SINGLE WRITE OKREFRESHlu*
[s^
[v i
[l] BANKS: 1 -S:0+2DQMB:0+1+2+3+4+5+6+7 SPD=INTEL PC-100 SDRAM 168P DIMM
TEST TABLE #17 CODE=67 TYPE: UNBUFFERED ECC-N[s_
[l]_PAGE BURST=112MHzACCESS TIME FROM CLKTac <CL=3>: 5.5nSTac <CL=2>:
6.0nSTac RANGE: <PC-100>

Clear Input Clear Output

[r-100
[r-101

```