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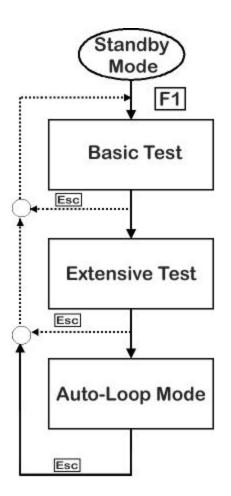
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QUICK SETUP

If you hate to read manuals and cannot wait to use your RAMCHECK, here is a quick short cut for you:

- Connect the power supply to RAMCHECK and to the AC line.
- Turn RAMCHECK on and press F3 to see the DEMO PROGRAM. This program should help you discover RAMCHECK's basic functions.
- Insert and remove any module only when the MODULE POWER RED LED is off.
- To test a module, insert it (notice the indication for Pin 1) into the 168-pin DIMM socket and press F1. See overview of test phase below.



You start the test from **Standby Mode**. Pressing the Esc key during or after any of the following test phases will return RAMCHECK to Standby Mode.

The initial test, called **BASIC Test**, looks for basic wiring, addressing, and data bit defects. It lasts a few seconds depending on module size. This test is sufficient for most testing needs.

During the **EXTENSIVE Test**, RAMCHECK subjects the devices to a variety of tests (voltage bounce, march, voltage cycling, etc). This test offers a more rigorous procedure than BASIC Test.

During **AUTO-LOOP Mode**, your module is continuously burned-in and subjected to varying test patterns. This test phase will be active until an error is reached, or you manually stop the test by pressing Esc.

- You can always use F4 from STANDBY to view the detailed Test Log of your last test
- The unit comes with a CD companion, which includes this manual, as well as the PC interface program used to download updated versions of the RAMCHECK firmware from http://www.innoventions.com, and also for printing and logging test results (see Section 6).
- Use ESC to terminate the test and return to Standby Mode during any test phase.
- Please remember to upgrade RAMCHECK's firmware every 3-4 months.

This manual is applicable to RAMCHECK units with FIRMWARE versions 2.00 and up. RAMCHECK's program version is displayed when RAMCHECK is turned on. Printed 1-15-2001

Please visit our web site (www.innoventions.com) for up-to-date manual information, including addendums for newly released products.

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RAMCHECK, SIMCHECK and SIMCHECK II were invented by David Y. Feinstein and its patent is licensed to INNOVENTIONS, Inc. Program Copyright 31987,2001 by INNOVENTIONS, Inc. All rights reserved. Special credits: Hardware and Software development: David Y. Feinstein. Graphics Design: Angel Garcia. Senior R&D Assistant: Angel Garcia. R&D Assistant: Calvin Mikeska Jr. Production Design Assistant: Sylvia Greer. Product Packaging Design Assistant: Janie DeMontoya. Manual Authors: David Y. Feinstein and Angel Garcia. Manual Drawings and Graphics: Angel Garcia.

SAFETY PRECAUTIONS

- WARNING: This instrument and the devices under test warm up significantly during operation due to the high data rate of memory accesses. Keep away from combustible materials, in a well-ventilated area within an ambient temperature of 0°C to 27°C. Do not set it on top of other high temperature equipment. Make sure that tested modules are free from combustible materials and residues.
- Never remove or insert a module when the Module Power is ON as indicated by the **red** LED.
- If using an optional adapter, please remember to turn RAMCHECK OFF before inserting or removing the adapter.
- The AC adapter is UL listed for indoor use only. Do not subject the product or adapter to rain or to excessive humidity. Never permit moisture to enter the interior of this instrument.
- The ZIF sockets on our products are expensive components. Never permit moisture to enter the interior of these sockets. Never use excessive force to insert a module into the ZIF socket.
- Never submit this instrument to a severe shock.
- Make sure that no conductive debris falls into any of the exposed sockets. It can cause a short circuit that will disable the unit.

ONE YEAR LIMITED WARRANTY

RAMCHECK is warranted in entirety against any defects of material or workmanship which may develop for any reason whatsoever, **except abuse and normal tear and wear of external test sockets**, within a period of ONE YEAR following the date of purchase by the original purchaser. If your RAMCHECK should become defective within the warranty period, INNOVENTIONS, Inc. will repair it or elect to replace it free of charge. For warranty service, the purchaser or user must first call to obtain a Return Authorization Number as well as instructions on where to send the defective product, postage prepaid and insured, along with a return shipping charge of \$15 and a proof of purchase.

Except as stated above, INNOVENTIONS makes no warranty or representation, either expressed or implied, with respect to this product, its quality, performance, merchantability, or fitness for any particular purpose.

INNOVENTIONS hereby specifically acknowledges the physical fact that memory testers cannot achieve exhaustive tests (that is, 100% accuracy) due to the virtually unlimited possibilities of data combinations which may be stored inside a memory device. Therefore, while INNOVENTIONS continuously thrives to improve its test algorithms, it cannot guarantee 100% accuracy of the test results.

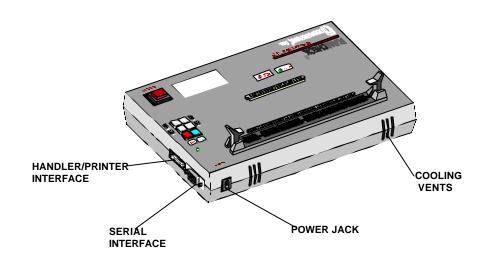
In no event will INNOVENTIONS be liable for direct, indirect, special, incidental, or consequential damages resulting from any defect in this product. Some states do not allow limitations on how long an implied warranty lasts, or exclusion or limitation of incidental or consequential damages, so exclusions or limitations may not apply to you. This warranty gives you specific legal rights, and you may also have other legal rights, which vary, from state to state.

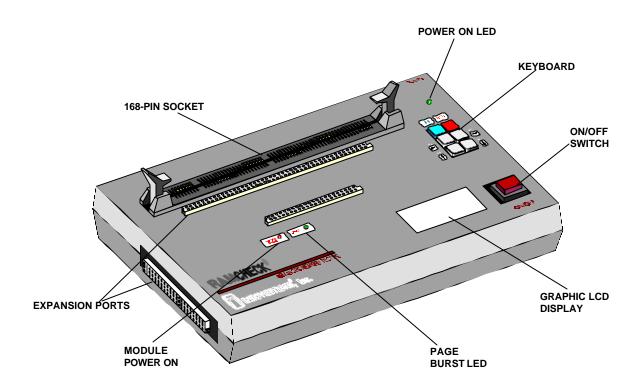
INNOVENTIONS continuously develops new test adapters to support new memory types, however, in view of the rapid emergence of new technologies, INNOVENTIONS cannot guarantee that the current product will be able to support all future memory technology.

Product operation and specifications are subject to change without prior notice.

The License Agreement for the PC software, which interfaces RAMCHECK, and the Internet upgrades for RAMCHECK's firmware appears in Appendix A.

RAMCHECK®





1. INTRODUCTION

RAMCHECK is the next generation memory tester from the company that pioneered the portable RAM testing industry. The latest addition to our product line is based on a powerful, high-speed processor and utilizes the most up-to-date time delay circuitry providing further enhanced testing capabilities.

With the mainstream in technology being SDRAM and higher-speed memory components, RAMCHECK has been engineered to support today's 133MHz and higher-rated memory devices. Its built-in 184MHz test engine now makes the capabilities of expensive desktop testers more affordable.

RAMCHECK tests all standard 168-pin DIMM memory modules including EDO/FPM and SDRAM DIMMs being PC133, PC100, PC66, registered and nonregistered. Current and planned adapters support 144-pin SDRAM/EDO/FPM SO DIMMs, individual SDRAM TSOP chips, the latest DDR SDRAM, as well as olderstyle 30-pin and 72-pin SIMM modules.

Using our revised proprietary algorithms, RAMCHECK performs a thorough test on your memory module. All cells are tested simultaneously, using the Page Burst feature where possible in order to yield a faster test, and to give it the capability of detecting errors that are caused by interference among the chips on the tested device. RAMCHECK is not merely a go/no-go tester. The menus provided give clear indications of faulty bits within a module, as well as give other important repair related information.

As an added benefit to our large installed base of SIMCHECK II PLUS/SIMCHECK II se PLUS users, we have incorporated an upgrade path so that users of these test systems can move to the RAMCHECK level.

RAMCHECK's user-friendly interface makes it easy to use by anyone, including non-technical personnel. Its test procedure is fully automatic, and its graphic LCD display shows clear instructions and test results. The built-in 168-pin ZIF DIMM socket allows easy insertion and removal of DIMM modules, supporting the different styles of DIMMs: 3V, 5V, buffered, unbuffered, SDRAM/EDO/FPM, registered, and nonregistered DIMMs. Pressing one button activates the Basic Test, which automatically measures and displays the module size, mode type, fastest functional frequency rate (or fastest RAS access time in

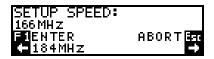
nanoseconds for EDO/FPM memory), and more. The BASIC test concludes with detailed structure information.



You have the option to terminate the procedure at this point, as this test is sufficient for most testing needs, however, if you decide to test the module more rigorously, you may elect to continue to the next phase.

The EXTENSIVE test follows the BASIC TEST with varying conditions of the main voltage supplied to the memory device (called Voltage Cycling and Voltage Bounce tests), all the while having memory performance monitored. The March Up/Down continues to exercise the module by using an algorithm to determine adjacent cell interference. Following is a set of Data Retention tests to provide you with information concerning the quality of the tested module. Our proprietary Chip-Heat Mode continues the test by automatically warming the module to test for temperature related problems, which may come in the form of speed degradation or memory failure. Such problems can be found at the conclusion of the EXTENSIVE TEST.

The AUTO-LOOP test provides an excellent means for module burn in and continual pattern testing. This test will continue indefinitely, until stopped by the user, or the module exhibits a memory failure.



RAMCHECK has been equipped with advanced setup capabilities to satisfy the needs of even the most demanding engineers. Major timing parameters can be accessed through a graphic interface, the standard test flow can be customized, or you may choose to edit the patterns used throughout the test.

Adding to the user-friendly interface of RAMCHECK is its ease of upgrading its stand-alone firmware. To protect your investment, we have equipped RAMCHECK with FLASH EPROM technology and included a Windows-based PC companion program (found in your CD companion packaged with your tester), which allow you to download later firmware revisions from our web site. The process is allowed through the use of a built-in serial interface that easily

mates to your PC.



To make sure that you become familiar with the capabilities of your RAMCHECK tester, we have included an easy to use DEMO program that explains its operation and numerous features. We recommend for you to read this manual in order to gain the most from this instrument.

Please visit our web site at www.innoventions.com for the latest manual updates, including addendums for newly released products, firmware revisions, and revision documentation.

We are confident that you will find RAMCHECK to be an indispensable tool.