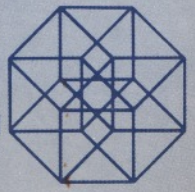
QuadMaster II Operations Manual



QUADRAM
CORPORATION
A Division of Intelligent Systems

QuadMaster II Operations Manual

Before attempting to use this software program, read this operations manual thoroughly.

CONTENTS

WARRANTY PROVISIONS

The Quadram Corporation warrants this product to be in good working order for a period of one year from the date of purchase as a new product. Should this product fail to perform properly any time within that one year period, Quadram Corporation will, at its option, repair or replace this product at no cost except as set forth in this warranty. Replacement parts or products will be furnished on an exchange basis only. Replaced parts and/or products become the property of Quadram Corporation. No warranty is expressed or implied for products damaged by accident, abuse, misuse, natural or personal disaster, or unauthorized modification.

Warranty service described herein may be obtained by delivering this product, during the one year warranty period, to any Authorized Quadram Dealer or to Quadram's Factory Service Center located at 4355 International Blvd., Norcross, Georgia, 30093. Whether delivering to a Dealer or to the Factory, product must be accompanied by proof of purchase date. If shipped by U.S. Mail or any common carrier, owner agrees to insure and accept all liability for loss or damage to this product, to prepay all shipping charges, and to use shipping container equivalent to original packaging.

WARRANTY LIMITATIONS

All warranties for this product expressed or implied, including merchantability and fitness for a purpose, are limited to a one year duration from date of purchase, and no warranties, expressed or implied, will apply after that period.

If this product does not perform as warranted herein, owner's sole remedy shall be repair or replacement as provided above. In no event will Quadram Corporation be liable to any purchaser for damages, lost revenue, lost wages, lost savings, or any other incidental or consequential damages arising from purchase, use or inability to use this product, even if Quadram has been advised of the possibility of such damages.

Periodic updates or changes to this material will be made in new editions of this publication.

Requests for dealer information, comments or other inquiries may be addressed to: Quadram Corporation, 4355 International Blvd., Norcross, Georgia 30093. Quadram Corporation has no obligation to return or hold confidential any material or information you supply unless arrangements are made pursuant to Quadram's receipt of said information.

INTRODUCTION

The QuadMaster II disk that comes packaged with your Quadram enhancement board contains a collection of useful and powerful utilities designed to help you get the most out of your Quadram product as well as your personal computer.

The programs contained on this disk will:

1) Create a single or multiple RAM Drives using part of your system's memory. RAM Drives simulate the operations of the computer's floppy disk drive units.

2) Create a disk cache using part of system memory. A disk cache increases the speed of data retrieval by storing frequently accessed information in RAM so the microprocessor will not have to continually retrieve it from a disk.

3) Establish a print spooler using part of system memory. A print spooler buffers information you send to the printer, giving you the ability to computer and print at the same time.

4) Accurately set the date and time of the chronograph on your Quadram enhancement board. (Plus, you'll be able to automatically feed this information directly into the system clock everytime you "boot-up" from an autoexec file.)

5) Install a line printer swap program that lets you electronically exchange your LPT1 and LPT2, designations between your parallel ports.

6) Perform diagnostics on all functions of your Quadram enhancement board for easy trouble-shooting and performance testing.

The programs contained on the QuadMaster II disk are easy to install using part of system memory.

The first thing you will want to do before using these programs is to make a copy of the original disk; then you'll want to prepare this back up as a work disk.

The backing-up process insures that you never accidentally erase the only copy you've got of the QuadMaster II programs. And producing a system work disk gives you a copy of the QuadMaster programs combined with specific IBM PC programs so that you may use QuadMaster II in your personal computer.

Making A Back-Up

It is always desirable to copy the QuadMaster II disk once you bring it home from the store. This will prevent any accidents—erasure, disk destruction, etc.—from robbing you of the use of your programs.

To copy your QuadMaster II disk, proceed as follows:

Two Drive System

1) Place your IBM DOS disk in Drive A.

2) Type:
DISKCOPY<RETURN>

3) Take the IBM DOS disk out of Drive A and insert the QuadMaster II disk.

4) Place a new blank disk in Drive B.

5) Press any key on the keyboard.

The computer will format the new disk as it copies all the QuadMaster II data over to it.

Single Drive System

1) Place your DOS disk in Drive A.

2) Type:
DISKCOPY<RETURN>

3) Take the IBM DOS disk out of Drive A and insert the QuadMaster II disk.

4) Press any key on the keyboard.

5) When the disk stops spinning, take out the QuadMaster II disk and insert a new, blank disk in the drive.

6) Press any key. The computer will format the new disk as it begins to copy the information from the original QuadMaster II disk.

7) Repeat steps 3 through 6 as often as the computer prompts you.

8) When the copying process is completed the computer will tell you so and you may remove the disk from the drive.

With the copying process complete, put away the QuadMaster II original. You will want to take this disk out only when you wish to make another copy of its programs.

You may also wish to cover the disk's write-protect notch with a write-protect tab. This will prevent you from accidentally writing inappropriate information to the disk or erasing vital data from the disk.

NOTE: Using DISKCOPY in DOS 1.1 is fine as long as you don't have any more than 320K RAM in your system. There is a slight bug in DOS 1.1 such that if you use DISKCOPY with more than 320K you will get format errors like "BAD SECTOR TRACK 40". To get around this, the following procedure should be used.

Place your IBM DOS 1.1 disk in Drive A and type: Format<RETURN>. Follow the instructions presented on the screen and you will get a formatted disk. Next, insert the QuadMaster II disk in Drive A and the newly formatted disk in Drive B (for two drive systems; for one drive systems the computer will prompt you for the change). From the A>, type copy *.*B:<RETURN>

This will copy all of the files on the QuadMaster II disk to the newly formatted disk making it a "bootable" QuadMaster II disk.

Preparing A Work Disk

Before some of the QuadMaster II programs (such as the diagnostic routines) can be used in your IBM Personal Computer you must first install BASICA onto the formatted copy of the QuadMaster disk. This is done in the following manner.

Two Drive System

1) Put a DOS disk in Drive A and your copy of the QuadMaster II disk in Drive B.

2) From the A>, type:

COPY BASICA.COM B:<RETURN>

The disk will spin as the computer writes the file BASICA.COM from the DOS disk onto the QuadMaster II work disk.

One Drive System

1) Place the IBM DOS disk in Drive A.

2) From the A>, type:

COPY BASICA.COM B:<RETURN>

3) After the drive stops spinning, take out the DOS disk and insert the QuadMaster copy.

4) Press any key on the keyboard.

5) After the drive stops spinning the QuadMaster disk will contain the file BASICA.COM.

Using An AUTOEXEC.BAT File

It is often handy to have some of the QuadMaster II programs automatically load and run whenever you boot your system. To accomplish this, you will want to copy the AUTOEXEC.BAT file onto your QuadMaster II working disk. Into this batch file goes the programs you wish to execute on boot-up. Details on setting up such and AUTOEXEC.BAT file are found on page 18.

QuadRAM Drive

The QuadRAM Drive — or RAM Drive — is a disk emulation program. It lets you establish the software equivalent of up to 3 floppy disk drives using only the memory in your system. You can read information from and write information to the RAM Drive. But you must remember that, unlike a physical drive, when power to the computer is turned off, all information stored in a RAM Drive is lost. Because of this, RAM Drive memory (like all RAM memory) is termed volatile. (Floppy disk memory is nonvolatile; when computer power is turned off, the information stored on the disk is not lost.) With the QuadRAM drive programs you can set up a single or multiple RAM Drives in your system using either DOS 1.0, 1.1, or 2.0.

There are three programs available on the QuadMaster II disk which you can use to create RAM Drives in your system. If you put the QuadMaster work disk in Drive A and call up a directory from the DOS prompt, A>, you'll see the programs listed as:

QM2.EXE
QM.EXE
QMXT.EXE

As we'll discuss in depth later, the QM2.EXE program allows you to set up the entire QuadMaster II package through an on-screen menu. Included in this menu is an option to set up a single RAM Drive. If you wish to set up a single RAM Drive without going through the screen menu, special QM2 RAM Drive command syntax can be used. Again, this is discussed later.

Occasionally you may wish to set up multiple RAM Drives using several portions of system memory. When this is the case, you will want to use the QM.EXE or QMXT.EXE program. These two programs are not initiated through the screen menu, but rather through the use of special QM RAM Drive command syntax.

QM.EXE is the multiple RAM Drive program designed to operate under DOS 1.0 or 1.1.

QMXT.EXE is simply the DOS 2.0 version of the above program. The difference is in the size of the memory blocks each allocates for disk space in the Drive. QM allocates space in 32K blocks; QMXT allocates space in 36K blocks. Also, the RAM space established by the QMXT program is set up as a DOS 2.0 formatted disk with 9 sectors per track instead of 8.

Disk Cache

QuadMaster II software also contains a disk cache program installed through QM2.EXE screen menu. This disk cache program sets aside a certain portion of system RAM in which to store information normally accessed from your system's floppy disk drives. Every physical drive in the system, including your hard drive if you have one, shares the space in the cache. The cache continuously copies the last information accessed from the drive units until all its space has been filled. As the information comes into the cache, it is tagged so that, when the program calls for this data again, the microprocessor can retrieve it from RAM instead of having to look to a disk. The result is faster computing times in your program work.

If you wish to install the cache without going through the screen menu, certain QM2 RAM cache command syntax can be used.

MasterSpool

MasterSpool is the QuadMaster II program that sets up part of your system memory as a print buffer. The program can be set up through the QM2 screen menu or through special QM2 Spooler command syntax. MasterSpool is configurable so that you can program a print operation to repeat itself, pause, move forward or backward in the print buffer.

Clock Software

A program is provided on the QuadMaster II disk to set the correct date and time on your Quadram enhancement board's chronograph. On the disk directory, this program is called:

SETCLOCK.COM

SETCLOCK.COM also feeds this date and time information directly into the PC's system clock. When the QM2.EXE program is used in an AUTOEXEC.BAT file, it automatically loads the date and time information into the system clock also so that the use of SETCLOCK is not necessary in this case.

Qswap

QSWAP.COM is the QuadMaster II program that lets you "float" your LPT designations between printer ports. With Qswap you can exchange LPT1 and LPT2 among one another as your printing needs change.

The README Files

When you call up the QuadMaster II directory you'll spot three files called README. One is a batch file and the other two are text files. These files provide you with operating instructions for using the QuadMaster II package. You may use these files much the same way you would use this manual.

Et Al.

The remaining files on the disk deal with diagnosing problems in the operation of your Quadram enhancement board. QUADTEST.BAS, MEMTEST.BAS, Q512TEST.BAS, MEMT512.BAS, AND HELPFILE.BAS check out the various problems you may encounter. A complete description of the testing utilities is included in the third section of this manual.

INSTALLATION

NOTE: Before the QuadMaster II utilities can be used in your system, the personal computer must have at least 98K RAM available: 64K for DOS, 2K for QuadMaster II patch utilities, and 32K for the minimim QuadMaster II configuration.

Due to the special nature of QuadMaster II driver software you should always make sure, when you are using more than one software driver in your system, that the QuadMaster II software driver is the first installed. If not, possible conflicts may arise. In some cases with multiple drivers the key sequence CTRL-ALT-DEL (or any other attempt to reconfigure the QuadMaster II package) might result in a hung system.

The QuadMaster II package is designed to be run from the menu mode. This is the easiest way to use the programs and, for many, the most convenient. The menu program is contained in the file QM2.EXE. QM2 can be installed two ways: either straight from the system DOS prompt or automatically, through an AUTOEXEC.BAT file.

Running QM2 from the DOS Prompt

With QM2.EXE copied onto your formatted work disk, installing the program is easy. It can be done in two steps.

1) Place the system disk in Drive A and boot the computer.

2) When the DOS A> appears (after the date and time information has been loaded), type:

QM2<RETURN>

When you press RETURN the screen will display the following QuadMaster II menu:

```
                        QuadMaster II by QuadRAM
          RAM disk, disk cache, print spooler, and power-up-clock
      Total Memory:  512 K          Available Memory:  446 K

  RAM Disk:
    Enter the number for the size of the RAM disk.  Your options are:

    0)  none    1)  36K    2)  72K    3) 108K    4) 144K    5) 180K
                6) 216K    7) 252K    8) 288K    9) 324K   10) 360K    : 0

  RAM Disk Drive Name:
    Enter the name of the RAM disk.  Your options are B to C:          : C

  Disk Cache:
    Enter the number for the size of the disk cache.  Your options are:

    0)  none    1)  32K    2)  64K    3)  96K    4) 128K    5) 160K
                6) 192K    7) 228K    8) 256K    9) 228K   10) 320K    : 0

  Print Spooler:
    Enter the size of the print spooler.  0) none,  1) 32K,  2) 64K    : 0
```

Configuring the Program through the Menu

The menu, titled QuadMaster II by Quadram, lets you establish a single RAM disk, a disk cache, and a print spooler using system RAM. The menu tells you the total amount of memory you have in your system (TOTAL MEMORY=) and the amount available for QuadMaster II configuration (AVAILABLE MEMORY=). At the beginning of menu set-up you'll notice that the amount of AVAILABLE MEMORY is always 66K less than the amount of TOTAL MEMORY.

RAM Disk

When the menu is first displayed, a blinking cursor will appear in the lower right corner of the first option block — RAM Disk. In this block you are asked to specify the size of the RAM Disk you wish to install in your system. The size of the RAM Disk will vary, depending on the amount of memory available and the version of DOS you are using.

If you are using DOS 1.0 or DOS 1.1, the RAM Disk is set up in 32K block increments from 0K to 320K: 10 increments in all. If you are using DOS 2.0 (or above), the RAM is set up in 36K block increments from 0K to 360K: again 10 increments. The QM2 program will adjust to your version of DOS automatically.

To set up the RAM Disk simply type in the corresponding number for the disk size you desire — the options range from 0 to 10 — and press RETURN.

For example, to set up a RAM Disk with 180K, type:

5<RETURN>

RAM Disk Drive Name

When you press RETURN the cursor will skip down to the next option block — RAM Disk Drive Name. Here you are asked to select the RAM Drive letter designation from a range of options. Type in the letter designation you wish to use and press RETURN.

For example, if you are given the range B to D and you wish to name the Drive C, type:

C<RETURN>

If you attempt to skip this block by pressing only RETURN the program will automatically assign the drive the next floppy letter basd on the number of floppy drive units in your system. (If you have two floppy drives, the RAM Disk would become C. If you have only one floppy drive the RAM Disk would become B. As the IBM PC will only recognize a maximum of four floppy drives, D is the last letter designation a RAM Disk can have. If you already have a physical drive D and you install a RAM Disk D, the physical drive will be disabled.)

You might notice here that the AVAILABLE MEMORY amount has decreased to reflect the installation of the RAM Disk.

NOTE: If you are running QM2 on an IBM PCXT you will not be given a choice for RAM Disk Name. Rather, the program will automatically assign the RAM Disk a floppy drive letter.

Disk Cache

Once the drive letter is designated the cursor will skip down to the next option block — Disk Cache. Here you are asked to select the size of the disk cache. You can choose from 0K to 320K in 32K increments by typing in the corresponding number and pressing RETURN.

For instance, to set up a disk cache with 256K of memory, type:

8<RETURN>

Again the AVAILABLE MEMORY value will decrease to reflect the size of the disk cache.

NOTE: When QM2 is used but Disk Caching is not, the key combination CTRL-ALT-DEL can be used to reset the system while at the same time preserving the RAM Disk and print spool buffer.

Print Spooler

The cursor will now skip down to the last option block — Print Spooler. Here you are asked to select the size of the print spooler you wish to install in your system. You can choose from 0K to 64K in 32K increments. Simply type the corresponding number for the spooler size and press RETURN.

To set up a 64K print spooler, type:

2<RETURN>

Running Out of Available Memory

If at any time in any of the option blocks you should specify an invalid memory amount the program will send you an error message, clearing the menu, and starting you over at the first option block.

Installing the QuadMaster II Configuration

Once the last option block has been successfully selected, the program will ask you:

Is everything correct? (Y or N)

If everything is NOT correct, type N<RETURN> and the cursor will start you over at the top of the menu.

If everything is correct, type: Y<RETURN>

When you press RETURN now the screen menu will scroll away and the DOS A> will appear under a status listing of the current QuadMaster II configuration.

Your status line might look something like this:

```
QuadMaster II by QuadRAM. (C) 1983 Central Point Software.   02:07:84, 15:27:31

System Memory: 314K  Print Spooler:  32K  RAM Disk:  36K (C:)  Disk Cache: 128K

Current date is Tue  1-01-1980
Enter new date:
Current time is 15:27:41.76
Enter new time:


The IBM Personal Computer DOS
Version 2.00 (C)Copyright IBM Corp 1981, 1982, 1983

A>
```

ADDENDA

Please substitute the following for that on page 18:

QM2 in an AUTOEXEC File

With **QM2** in an **AUTOEXEC.BAT** file, the Quadboard chronograph will **automatically** feed the system clock with the correct date and time — there is no need to call up the menu and enter the data manually each boot-up.

To produce an **AUTOEXEC.BAT** file which will automatically install QM2:

- Copy **QM2** onto a DOS system disk per your IBM Guide to Operations manual;
- With that working disk in Drive A, type the following command:

COPY CON: AUTOEXEC.BAT <RETURN>
QM2 BATCH <RETURN>
<F6> <RETURN>

After you press the F6 function key (or CTRL Z on some IBM compatibles) and the last RETURN, the disk drive will activate; when it stops, the system will tell you that one file has been copied.

Note that the time/date menu does not come up on display after you boot the system with **QM2** in **AUTOEXEC.BAT.**

Also note that if you enter the above command onto a system disk which already has an **AUTOEXEC.BAT** file, you will overwrite what was in that file with **QM2.** The lost data will have to be re-entered manually.

For more information on batch files, see page 23.

With the QuadMaster II configured to your specifications, you can now proceed with your regular program work.

QM2 in an AUTOEXEC File

Installing QM2 into an AUTOEXEC.BAT file is easy to do. With QM2 in an autoexec file, the Quadboard chronograph will automatically feed the system clock with the correct date and time. With QM2 on a system disk holding an AUTOEXEC.BAT file, simply type the following:

```
COPY CON:AUTOEXEC.BAT<RETURN>
QM2  BATCH<RETURN>
<F6>
<RETURN>
```

After you press the F6 function key (or Ctrl Z on some IBM compatibles) and the last RETURN, the disk will spin in the drive. When it stops the system will tell you that one file has been copied.

For more information on batch files, see page 23.

Using QM2 Without Going Through the Menu

The QuadMaster II package is designed to operate from the menu mode. For most users, menu selection will be the easiest way to set the operating parameters of the program. But for experienced users, or those of you who wish to set program parameters only once, the menu structure may seem a little slow and unnecessary.

By using QuadMaster II command syntax you can avoid the screen menu and enter the appropriate program parameters either directly from the DOS prompt or as part of an AUTOEXEC file.

QM2 Command Syntax

Each option block set through the screen menu can be alternately set as a program line in DOS. When this alternate method is selected the following syntax will apply. It should be noted that the following syntax specifications are parameters that follow QM2 when the QM2 command is entered.

RAM Disk

Syntax: QDn=dd

For this command, dd represents the number of 32K (for DOS 1.0 or 1.1 users) or 36K (DOS 2.0 users) blocks of RAM to set aside for the RAM Disk. The parameter dd can range from 0 to 10.

The n parameter represents the RAM Disk drive letter assignment. The n can be a letter that ranges from B to the highest drive letter plus 1. For instance, in a three drive system the range would be from B to C plus 1, or D. If n is omitted, the program will automatically assign the RAM Disk to the next contiguous drive letter.

Example: QM2 QD=3

This command sets up a RAM Disk of 96K for DOS 1.1 or 108K for DOS 2.0.

Disk Cache

Syntax: QC=cc

For the Disk Cache command the cc represents the number of 32K blocks of RAM to set aside for the Disk Cache. The parameter cc can be any value from 0 to 10.

Example: QM2 QC=1

This command sets up a Disk Cache of 32K.

Print Spooler

Syntax: QS=ss

Here the ss represents the number of 32K blocks to set aside for the print buffer. The range 0 to 2 is allowed.

Example: QM2 QS=1

This command sets up a print spooler buffer of 32K.

The following syntax is used to control the print spooling operation.

QS=PURGE

This command clears the buffer and stops printing.

Example: QM2 QS=PURGE

QS=STOP

This command stops printing until it is RESUMED.

Example: QM2 QS=STOP

Another option for stopping the printing process is to use ALT-NUM LOCK together as a toggle switch. Pressed once, printing will stop. Pressed again, printing will resume.

QS=RESUME

This command continues the print operation after it has been stopped.

Example: QM2 QS=RESUME

QS=RESTART

This command will repeat a print operation by printing from the beginning of the buffer contents.

QS=+L1111 or **QS=+−L1111** or **QS=+Ppppp** or **QS=+−Ppppp**

Here the +, −, 1111, and pppp represent the number of lines (1111) or pages (pppp) to move forward (+) or backward (−) in the print buffer, in case there is information you wish to skip or repeat in a printing operation. These operations can only be specified after printing has been stopped in one of the ways described on the previous pages.

Of the above options, only one may be used per command. For example, QS=STOP,−P5,RESUME is unacceptable.

QS=STOP
QS=−P5
QS=RESUME

is the appropriate replacement.

NORM

This command will clear the entire QM2 configuration, returning your system to normal.

Example: QM2 NORM

STAT

This command will display the current status of the QM2 set-up, showing RAM Disk, cache, and spooler size.

Example: QM2 STAT

BATCH

This word tells the QM2 program that it is being envoked from a batch command file (e.g., AUTOEXEC.BAT). If QM2 is being executed from a batch file (i.e., BATCH is specified) and there is already a prior QM2 RAM configuration set up in the computer, the QM2 command in the batch file will be ignored. If the batch parameter is left off the QM2 command, then this forces QM2 to reconfigure which wipes out any previous QM2 RAM configuration.

Examples: QM2 QD=5, QC=1, QS=1,BATCH

Such a command as this might appear in an AUTOEXEC.BAT file. It sets up a RAM Disk of 160K (DOS 1.1) or 180K (DOS 2.0), a disk cache of 32K and a print spooler buffer of 32K.

NOTE: When you type QM2 xxx, with xxx being any invalid command characters, the QuadMaster II program will display this syntax listing to you on the screen.

Using SETCLOCK.COM

The QM2 program automatically powers up the system clock whenever it is run. But only when it is run through an AUTOEXEC.BAT file does it feed the system clock with the date and time information stored in the Quadram chronograph. If you choose not to use QM2 in an AUTOEXEC.BAT file you can still set the system clock according to the chronograph (and also change the date and time of the chronograph) with the SETCLOCK.COM program.

To do this, from the A>, type: SETCLOCK <RETURN>

To change the date or time, type:
SETCLOCK MM-DD-YY HH:MM<RETURN>

The MM represents the number for the month (1 through 12); the DD represents the day (1 through

31); and the YY represents the last two digits of the year (83, 84, etc.).

The HH represents the hour based on the 24 hour clock (0 through 23) and the MM represents the minutes (0 through 59).

When you press RETURN the chronograph will be set with this new date and the information will be fed to the PC system clock.

Creating Multiple RAM Drives

Often you will find it very useful to have more than one RAM Drive operating in your system at the same time. There are two programs on the QuadMaster II disk for creating multiple RAM Drives: QM.EXE and QMXT.EXE.

Multiple RAM Drives Under DOS 1.0 and 1.1

The QM.EXE program is used for setting up more than one RAM Drive under DOS 1.0 or 1.1. With this program you can establish a total of up to three RAM Drives using system memory. The procedure is simple enough:

1) Boot your system with the QuadMaster work disk (or a system disk with the QuadMaster programs on it).

2) When the DOS prompt appears, type:

QM2<RETURN>

The regular screen menu will appear. Establish the first drive through the menu (along with any of the other options), install the configuration, and wait for the DOS prompt to reappear.

3) From the DOS prompt, type:

QM n<RETURN>

The value for n is the number of 32K blocks you wish to set aside for the RAM Drive. Any number from 0 to 10 is acceptable (always insert a space between the QM and the n value). As the IBM PC can only recognize a maximum of four floppy disk drive units, the number of RAM Drives you establish can never exceed 3 (the RAM Drive can never replace Drive A). Since the first RAM Drive is always installed through the QM2 program, a maximum of two drives can be installed using the QM.EXE program.

For instance, after you establish the first RAM Drive through QM2, you might type:

QM 3<RETURN>

After you press return, the system will install the second RAM Drive then return you to the DOS prompt where you'll type in the next RAM Drive designation. Perhaps...

QM 10<RETURN>

When you press RETURN the program will establish the third RAM Drive in your system. The second Drive will hold 96K of information (three 32K blocks) while the third will hold 320K (ten 32K blocks).

Multiple RAM Drives Under DOS 2.0

Setting up multiple RAM Drives under DOS 2.0 is performed in the exact manner as above, only now you must use the QMXT.EXE program. For instance, to set up 2 additional RAM Drives once the initial RAM Disk has been established, you might type from the DOS prompt:

QMXT 3<RETURN>

After you press RETURN the system will install the second drive then return you to the DOS prompt where you can type in the next RAM Drive designation.

QMXT 5<RETURN>

When this third RAM Drive is installed you'll end up with a second RAM Drive in your system holding 108K of information (three 36K blocks) and the third holding 180K (five 36K blocks).

NOTE: You cannot use the QM.EXE or QMXT.EXE program in an AUTOEXEC.BAT file.

The multiple RAM Drives can be cleared by resetting the system.

Assigning the Additional RAM Drives Drive Letters

The additional RAM Drives you create using the QM.EXE and QMXT.EXE programs are automatically assigned a drive letter designation based on the drive letter assigned to first RAM Drive (the one created through the QM2 program). The program assigns the RAM Drives the letters immediately following the designation of the initial drive.

So, if you selected the RAM Disk established through the menu to be Drive C, the next QM drive established would be automatically labeled D. (As the PC can only recognize four floppy drives, any other RAM Disks would be ignored by the system.)

Assigning the XT's Hard Disk a Drive Letter

The XT hard disk is usually accessed as Drive C in the system. When RAM Drives are created, the RAM Drives letter assignment will always be inserted between the last physical drive and the hard disk. If there is no room, the hard disk drive letter will move down one.

For example, if there is already a floppy Drive A and a RAM Drive B, the hard disk will be assigned C. If another RAM Drive is installed the new addition would become C and the hard disk would moves to D. The hard disk drive can move down until it is lettered E.

Using the Line Printer Swap Program

As your printing needs change you may find it convenient to be able to swap printer port designations electronically, without bothering with any system cables. The QuadMaster II program QSWAP.COM gives you this ability.

QSWAP can be used to exchange LPT1 and LPT2 amongst your parallel printer ports. To initiate this program, from the DOS prompt type:

QSWAP<RETURN>

This automatically swaps line printers 1 and 2.

QUADMASTER II DIAGNOSTICS

Available on the QuadMaster II disk are programs to test the functions of your Quadram expansion card. These programs are written in BASICA and need to be contained on a disk with this language before the programs can be run. The diagnostic programs are listed in the directory as:

QUADTEST.BAS
Q512TEST.BAS
MEMTEST.BAS
MEMT512.BAS
HELPFILE.TXT

Unless you own Quadram's Quad 512+ board, the programs you will want to use are QUADTEST.BAS and MEMTEST.BAS. If you own the Quad512+, you will need Q512TEST.BAS and MEMT512.BAS. HELPFILE.TXT is a text file explaining the operation of the testing programs. You can access it through either QUADTEST.BAS or Q512TEST.BAS.

Let's begin with QUADTEST.BAS (and its subset, MEMTEST.BAS).

Running QUADTEST

To run QUADTEST you must first make sure your IBM PC system board switches have been set to reflect the maximum amount of memory on the system board. Since Quadram expansion boards won't operate in systems not fully "stuffed" these switch settings should already be correct.

You should also make sure the Quadram board's starting address is set to reflect the amount of memory in the system before the Quadram product is installed, including any other expansion memory you have.

When you are ready to run QUADTEST, get into DOS so that an A> appears on the screen. Then, with your disk containing the above programs and BASICA in Drive A, type:

BASICA QUADTEST<RETURN>

When you press RETURN the following menu will come up on the screen:

Quadram Corporation
Quadtest
Testing and Diagnostics
for multifunction and expansion memory boards

1 - Memory Test
2 - Async Serial Test
3 - Parallel Printer Port Test
4 - Display Clock Time and Date
5 - Set Clock
6 - Dual Port Async Test
7 - Game Port Test
A - Test All Four Quadboard functions
E - Test All Quad I/O functions
R - Test Quad512+ Board functions
S - Test All Four Quadboard II functions
T - Test All Quadboard 384 functions
X - Exit program

Each of the tests performs a special set of diagnostic routines. The first test, Memory Test, performs a check of all expansion RAM you have installed in your system.

Test #1: Memory Test

To select Memory, simply enter the number selection next to it; in this case, a 1. The screen will scroll to display the board first message, asking you the type of Quadram enhancement board you have in your system. Once entered, the screen will scroll up to display the following image:

```
Expansion Memory Test

How much memory is installed on the PC system board (1-4)?

1.  64K
2. 128K
3. 192K
4. 256K
```

The computer wants you select the amount of memory you have installed on your PC's system board. If you own an older model PC you should have 64K installed on the system board. If you own a PCXT or a PCII, you should have 256K installed on the system board. Once you enter your numerical selection, the screen will scroll to display the following:

```
H -  HELP

How much expansion memory is installed?
```

It asks: How much expansion memory is installed? The answer includes all the RAM in your PC system that's not installed on the system board. Add it up then enter your numerical selection.

Once you've made your entry, the program will begin checking the status of this RAM in 64K increments. If no errors are encountered, four dots are displayed under each tested 64K increment, such as:

```
How much expansion memory is installed? 4

          256K 320K 384K 448K
PASS 1    .... .... ....
```

After each test completion, the total number of encountered errors is displayed at the end of each line, such as:

```
How much expansion memory is installed? 4

          256K 320K 384K 448K
PASS 1    .... .... .... ....   TOT ERRS= 0
PASS 2    .... .... .... ....   TOT ERRS= 0
PASS 3
```

If the program encounters an error, the program is indicated under the appropriate 64K increment.

Replacing Defective RAM Chips

The RAM chips installed on your Quadram enhancement board are 64K 200 nanoseconds RAM chips. If a defective one is spotted, it can be easily replaced.

The old RAM chip must first be removed with an IC extractor or a standard flat screwdriver. The new IC should be plugged in so that the end with the semi-circular, or half-moon, indentation is towards the socket's U-designator printed on the circuit board. Press the IC into the socket slowly, making sure that none of the pins are bent under or out. If a bent pin is spotted, the IC will have to be removed and the pin straightened.

CAUTION: Never install or remove RAM Chips with computer power ON. Always make sure power has been turned off and power cables disconnected. Installing memory chips with the system's power ON could result in damage to the system or the chip.

Terminating Memory Test

The Memory test will run automatically, testing and retesting all expansion RAM installed in your system. Quadram recommends letting each test run at least five times.

When you wish to exit the test, press the F10 key along with RETURN. (CTRL-BREAK also stops the program).

Test #2: Async Serial Test

This test tests the async port on your Quadram enhancement. To run the test, you must first make a loopback plug with a female 25 pin DB connector. This plug will snap onto the male 25 pin DB connector on the expansion card and must be configured so that, when connected, pins 2 and 3, 4 and 5, and 6 and 20 meet.

Plug the loopback plug in, get to the QuadTest main menu and press selection 2. If your async port is working properly, the following will be displayed on your screen:

RS232 TEST FIRST PORT --THE
QUICK BROWN FOX JUMPED
OVER THE FENCE 123456789

If this is not what your screen displays, your serial port is probably defective. The test is self-repeating. To exit, press F10 or CTRL-BREAK.

Test #3: Parallel Printer Port Test

This tests the parallel printer port on your Quadram enhancement. To initiate this test, make sure your printer is on-line and properly linked to the parallel port. Then select number 3 from the QuadTest main menu.

The following should be printed:

1234567890ABCDEFGWXYZjklmno!@%

If what is printed doesn't look anything like this, or if nothing is printed, chances are your parallel port is bad.

Test #4: Display Clock Time and Date

This test simply displays the current date and time information stored in the on-board chronograph. It is displayed as in the following example:

DATE 11-21-84

If this information is not current, you can change the date and time information by selecting the next test, test #5.

Test #5: Set Clock

When you select this option from the QuadTest main menu you are presented with screen prompts to insert the new date and time information into the on-board chronograph. The prompts are presented in the following manner:

Date 11-21-84, Time 16:50:14
Change Date (Y/N)?
Enter New Date (MM-DD-YY):
Change Time (Y/N)?
Enter New Time (HH:MM):
Press Enter to Set Date/Time:

Test #6: Dual Port Async Test

If you are using a Quadram enhancement with two serial ports you will want to use this test to test them both. To do so you will have to make two loopback plugs. When you have made the plugs, hook them to your async ports and choose option 7 from the QuadTest main menu. The test is executed exactly like Test #2.

Test #7: Game Port Test

This test tests the game port functions for the game ports on the Quadboard 384 and the Quad I/0. Make sure your joysticks are connected to the game port when this test is initiated.

The program will begin asking whether you wish to test one or two joysticks. After a response, the program will present cross-hairs on the screen with a round object to be centered. Use the joystick to center the object in the cross-hairs, then press the space bar.

Next the program will have you move the joystick to alter coordinate values on a display chart. You will also press the fire buttons to test them. Once complete, you can hit ESC or F10 to return to the main menu.

Tests A through T

The remaining tests are all automatic versions of the tests above. They each test all the functions of a specific board. Because they are automatic, before these tests can be run all loopback plugs must be in place, the printer must be on-line and ready, and the joysticks must be connected. The tests run the same way described above.

Exiting QUADTEST

To exit QUADTEST, simply select option X from the main menu. The key sequence CTRL-BREAK also stops the program, returning you to BASICA.

REMEMBER: All tests in QUADTEST are self-repeating. For an accurate error count, run each test 5 to 10 times.

QUADMASTER II OPERATION

After installation, the use of the QuadMaster II programs should be relatively transparent. However, there are some operational details that, once understood, will help you take full advantage of this software package.

Specifying RAM Disk Size

Common sense should tell you that you cannot specify RAM Drives larger than the amount of available memory installed in your system. You could not specify two RAM Drives of 160K each unless your system contained at least 386K RAM: 64K for system used, 2K for QuadMaster II software patches, and 320K for the RAM Drive space.

The memory requirements for QuadRAM Drive are dependent upon the version of DOS you are using. The following table lists the maximum number of blocks that can be specified when you are using each version of DOS.

Table 1: DOS 1.0

Table 1: QuadRAM Block Memory Allotments — DOS 1.0

Total System Memory	Maximum Number of 32K Blocks for QuadRAM Drive
less than 96K	Can't use QuadRAM Drive
96K	1 (32K)
128K	2 (64K)
160K	3 (96K)
192K	4 (128K)
224K	5 (160K)

Table 2: QuadRAM Block Memory Allotments — DOS 1.1

Total System Memory	Maximum Number of 32K Blocks for QuadRAM Drive
less than 96K	Can't use QuadRAM Drive
96K	1 (32K)
128K	2 (64K)
160K	3 (96K)
192K	4 (128K)
224K	5 (160K)
256K	6 (192K)
288K	7 (224K)
320K	8 (256K)
352K	9 (288K)
384K or more	10 (320K)

Table 3: QuadRAM Block Memory Allotments — DOS 2.0

Total System Memory	Maximum Number of 36K Blocks for QuadRAM Drive
less than 128K	Can't use QuadRAM Drive
128K	1 (36K)
192K	3 (108K)
256K	5 (180K)
320K	7 (252K)
384K	8 (288K)
488 or more	10 (360K)

RAM Disk Size

When you create a QuadRAM Drive in memory you tell the computer to read from and write to a segment of RAM which it sees as a standard floppy disk. If the system is operating under DOS 1.1 or 1.0 it looks for either a single sided disk with 160K worth of space or a double sided disk with 320K worth of space.

If the system is operating under DOS 2.0, the system looks for either a single sided disk with 180K worth of space or a double sided disk with 360K worth of space.

Therefore, if you set up a RAM Drive with 5 memory blocks, the system — under DOS 1.0 or 1.1 — will see a single sided disk with all good sectors. But if you set up a RAM Drive with less than 5 blocks, your system wil see a single sided disk with a certain amount of BAD SECTORS. As an example: If you're working under DOS 1.1 and you set up a RAM Drive with three 32K blocks, your system will see a single sided disk with 96K of good space and 64K of BAD SECTORS.

If you set up a RAM Drive with more than 5 blocks but less than 10, your system will see a double sided disk with a certain amount of BAD SECTORS. This can be seen using the DOS CHKDSK command. The BAD SECTOR specification will not affect your work.

If you enter a QuadRAM Drive command and the program cannot interpret what has been entered the system will send you a

Missing or Bad Parameters

message.

If there is less than 98K (or less than 102K for DOS 2.0) and you try to install a QuadRAM Drive in your system, the system will send you a

Not Enough Memory for RAM Drive

message.

Technical Operation

When a QuadRAM Drive command is entered correctly, the program allocates memory for use as a disk drive and updates the equipment flags to indicate to both the DOS and BIOS that there is another drive present. No system switches need to be set. The last thing the QuadRAM Drive does is reboot the system to force both BIOS and DOS to recognize the change in memory size and the number of disk drives. For the advanced user, QuadRAM Drive uses the highest memory area for the drive by changing the memory size in the BIOS data area and rebooting DOS. It is important to know that the AUTOEXEC.BAT file(if you are using one) is executed normally when the system is booted.

After the QuadRAM Drive has been installed, all calls to the BIOS disk rountines are intercepted by the QuadRAM Drive program. If the function involves an actual physical drive it is passed on to the ROM BIOS. If the function involves the QuadRAM Drive, the program performs the appropriate action and returns to the calling program.

Disk Cache Operation

The operation of the QuadMaster II disk cache feature should be 100% transparent once you set up the cache in system RAM. The only detectable evidence of its existence should be that your computer does not read directly from the disk as often as it did before the cache was there. Instead the computer now reads the data, when it is available, from the cache buffer.

For safety reasons (making sure the cache does not crash your disk, etc.) the buffer will be automatically cleared whenever any of the following DOS operations take place:

PROGRAM TERMINATE
OPEN FILE
DELETE FILE
RENAME FILE
TERMINATE BUT STAY RESIDENT
REMOVE A DIRECTORY
CREATE A FILE
CLOSE A FILE HANDLE
DUP A FILE HANDLE
EXEC A PROGRAM
DISK RESET
CLOSE FILE
CREATE PROGRAM SEGMENT
CREATE SUB-DIRECTORY
CHANGE CURRENT DIRECTORY
FORCE A DUPLICATE OF A HANDLE
TERMINATE A PROCESS

What this means is that not all of your programming operations will be sped up. For example, if the data base management package you are using opens and closes the file a lot, it will not show a noticeable increase in speed. This is an important advantage to the disk cache feature. If this were not present, errors could easily occur since the software would not know when a user had changed disks or began a new program. It would be possible to insert a new disk and have old or incorrect information written over from the uncleared buffer.

MasterSpool Operation

The MasterSpool print spooler operation lets you set up a print buffer to store the information you wish to send to the printer so that you may compute and print at the same time. This saves your computer from being tied up everytime you need to print.

You should be aware that MasterSpool is not compatible with all application software. There are a number of reasons, chief of which is the way a number of programs handle their print routine. MasterSpool is designed to intercept calls to the interrupts handling the IBM serial and parallel ports. Some programs (such as LOTUS 1-2-3) by-pass the interrupts and address the ports directly. MasterSpool does not work with these types of programs.

A second consideration involves the way some publishers copy protect their software. Because of MasterSpool's location in memory, it may conflict with some encryption schemes. A notable example is VISICALC by VISICORP. Setting the MasterSpool parameter higher than 1 while using VISICALC may cause the system to hang.

In these instances, you may wish to determine if these characteristics will cause a problem for your particular application.

Warranty Registration Card

Warranty registration must be mailed within 30 days of purchase of the product. Factory warranty is provided for one year from date of purchase.

Please check all applicable boxes.

NAME _____

ADDRESS _____

_____ ( ) _____
city state zip telephone

PRODUCT NAME _____ K RAM _____
if applicable

PURCHASE DATE _____ PURCHASE PRICE _____

PURCHASED FROM _____

_____ _____
city state zip serial number (if available)

Learned about this product from the following:

- ☐ Dealer
- ☐ Magazine Advertising in _____
- ☐ News or Product Story in _____
- ☐ Newspaper Advertising in _____
- ☐ Referral
- ☐ Other

Age of purchaser

- ☐ Under 25 years
- ☐ 26-35 years
- ☐ 36-45 years
- ☐ 46-55 years
- ☐ Over 55 years

Decision to buy this product based mainly on

- ☐ Price
- ☐ Product features
- ☐ Dealer advice
- ☐ Advertisements
- ☐ Packaging
- ☐ Other _____

Principle use of your microcomputer is

- ☐ Personal
- ☐ Small business
- ☐ Large business
- ☐ Professional
- ☐ Educational/Scientific
- ☐ Other _____

Place
Stamp
Here

Quadram Corporation
4355 International Boulevard
Norcross, Georgia 30093

QUADRAM
CORPORATION
An Intelligent Systems Company

4357 Park Drive/Norcross, Ga. 30093/(404) 923-6666
TWX 810-766-4915 (QUADRAM NCRS)

Part #9537-1