

A utility is a program that performs a basic task, such as copying a diskette, that is not specifically related to any particular application. Utilities are designed to serve a wide variety of users. The Tandy utilities enable you to:

- * Low-level format certain types of hard disks
- * Copy the contents of a diskette to another diskette
- * Park the drive heads on all hard disks before moving the computer
- * Examine or update your system configuration
- * Use extended memory as expanded memory
- * Create and change passwords
- * Change the CPU clock speed
- * Select the video mode that is most compatible with your software

Most of these utilities are accessible from the Utilities Menu. The utilities on the Utilities Menu are described in "Basic Utilities." The other utilities, described in "Advanced Utilities," are more specialized and are not included on the Utilities Menu. In general, advanced utilities should be used only by experienced operators. Incorrect use of these utilities can cause loss of data.

THIS SECTION DESCRIBES:

- * How to boot the system with the Utilities Diskette
- * The Utilities Menu
- * The basic utilities
- * The advanced utilities

HOW TO USE THE UTILITIES

Most of the utilities on the Utilities Diskette are accessible from the

Utilities Menu. To use the Utilities Menu, you must insert the Utilities Diskette into Drive A and then power up or reset the computer.

Some utilities are accessible only in an MS-DOS environment. For your convenience, you can copy these utilities to a diskette or hard disk that contains the operating system files. Copying these utilities to another diskette or to a hard disk eliminates the need to insert the Utilities Diskette each time you want to use these utilities.

The Setup utility is probably the most commonly used utility on the Utilities Diskette. The computer automatically prompts you to run Setup any time the power-on self-tests detect a configuration error. Your system configuration is recorded in CMOS RAM. A configuration error occurs when the actual

configuration and the recorded configuration do not match. For example, if you add or remove a disk drive, a configuration error results.

If the computer prompts you to run Setup, insert the Utilities Diskette into Drive A and press F1 to begin the Utilities session. The computer displays the Setup configuration screen. Refer to "Setup" for instructions on using this screen. To begin a Utilities session when the computer has not prompted you to run Setup, insert the Utilities Diskette into Drive A and reset the computer. To reset the computer, press the RESET button or CTRL+ALT+DEL. The computer displays the Utilities Menu.

RUNNING UTILITIES FROM MS-DOS

Use the MS-DOS copy command to copy utilities from the Utilities Diskette to your hard disk or to an MS-DOS diskette. For example, to copy the Setup utility to hard disk Drive C, type: copy a:setupdx.com c: and press ENTER.

To run utilities from the MS-DOS diskette, insert the MS-DOS diskette into a diskette drive. Then, at the MS-DOS operating system prompt (such as A>), type the program name that corresponds to the desired utility. To run utilities from a hard disk, type the appropriate program name at the hard disk prompt (such as C>). It is not necessary to enter the file extension, such as .com, to run a utility. The following utilities can be copied from the Utilities Diskette and run from the MS-DOS prompt:

Utility	Program Name
Setup	setupdx.com
Keyboard password	kp.exe
CPU speed*	speed16.com
Video mode control*	vga.exe

* Advanced utilities

The Utilities Diskette also includes temmdx.sys, an extended memory manager. Refer to "Temmdx" for more information about using the driver. To copy temmdx.sys and all the utilities in the preceding table to your hard disk, type: copy a:*. * c: and press ENTER.

THE UTILITIES MENU

The Utilities Menu is displayed when:

- * You use the Utilities Diskette to boot the system without a prompt from the computer
- * You exit to the Utilities Menu from the Setup configuration screen The Utilities Menu provides easy access to the basic utilities. To choose an option from the Utilities Menu, type the number of the desired utility and then press ENTER.

SELECT AN OPTION:

- 1 PASSWORDS
- 2 COPY DISKETTE
- 3 PREPARE SYSTEM FOR MOVING
- 4 SETUP

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5 FORMAT HARD DISK
9 END UTILITIES
SELECT THE ACTION DESIRED. ? _
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Each basic utility is described briefly in the following list and in detail in "Basic Utilities."

Passwords - Enables you to specify a power-on password. Requiring passwords can prevent unauthorized access to data and programs.

Copy Diskette - Copies the contents of one diskette to another diskette.

Prepare System for Moving - Parks the heads on all hard disks installed in your system. Use this utility before moving the computer.

Setup - Records your system configuration in CMOS RAM. Setup is the most commonly used utility. Run it after any configuration change.

Format Hard Disk - Performs a low-level format on certain types of hard disks. Do not use this utility on SmartDrives, other IDE hard disks, or SCSI hard disks.

End Utilities - Terminates a Utilities session and returns control to the operating system.

BASIC UTILITIES

This section explains how to use each utility on the Utilities Menu.

PASSWORDS

Passwords help protect your computer from unauthorized users. Your computer supports two passwords:

- * Power-On Password - Prevents unauthorized use of your computer when you are not present. When a power-on password is required, you must enter it each time you turn on the computer or press the RESET button.
- * Keyboard Password - Enables you to temporarily lock and unlock your computer's keyboard (and mouse if you have one) without turning off the computer. The keyboard password is cleared when you turn off the computer.

Use the Passwords option on the Utilities Menu to specify a power-on password. Use kp.exe (described later) to specify or change a keyboard password.

Each password can have as many as seven characters consisting of any characters on the keyboard. The system does not distinguish between uppercase and lowercase letters. Try to create passwords that are easy to remember but difficult to guess. For example, do not use your name. Use a word or number that has special meaning to you.

The system records the exact keys you press as you enter your password. For example, if you use the 6 from the typewriter keys, you cannot substitute the 6 from the numeric keys.

NOTE: The first time you specify a password, the characters in the password are displayed on the screen as you type them. When you enter a password, or if

you change a password, the characters in the password are not displayed on the screen as you type them.

If you forget the power-on password, you can disable it by disconnecting the battery. Disconnecting the battery will erase the power-on password. If you disconnect the battery:

1. Wait 20 minutes before reconnecting the battery.
2. Run Setup after reconnecting the battery.
3. Create new passwords if desired.

THE PASSWORDS MENU

The Passwords Menu enables you to specify a power-on password. To display the Passwords Menu, type 1 and press ENTER at the Utilities Menu: PASSWORDS MENU
POWER-ON PASSWORD RETURN TO MAIN MENU

SPECIFYING A POWER-ON PASSWORD

A power-on password enables you to restrict the use of the computer, keyboard, and mouse (if one is installed). If a user cannot supply the correct password, the computer will not accept input from the mouse or the keyboard. The computer must be reset or restarted before it will accept input, including another attempt at entering the password. To specify a power-on password:

1. At the Passwords Menu, highlight POWER-ON PASSWORD and press ENTER.

NOTE: If a power-on password already exists, you cannot use this option to change the password. See "Changing or Removing a Power-on Password" for more information.

2. Type the password, using the BACKSPACE key to correct any errors.

After typing the complete password, press ENTER. The following prompt is displayed: Is this correct? (Y/N) _

3. If the password is correct, type Y and press ENTER.

If the password is incorrect, type N, press ENTER, and enter the correct password.

4. To save the password, return to the Utilities Menu. From now on, you will be prompted to enter the correct password when you turn on the computer or press the RESET button.

ENTERING A POWER-ON PASSWORD

If you have specified a power-on password, the following prompt is displayed when you turn on the computer: Enter Password: _

Type the complete password, and press ENTER. The computer permits up to three attempts to enter the correct password. If the correct password is not entered in three tries, the computer will not accept any further input from the mouse or the keyboard. To try again, turn the computer off and then on again, or press the RESET button.

CHANGING OR REMOVING A POWER-ON PASSWORD

When the computer displays the power-on password prompt, you can change or remove the existing password. You cannot use the Passwords Menu to change or remove a power-on password. To change or remove the power-on password, follow these steps at the password prompt:

1. Type the current power-on password, but do not press ENTER.
2. Immediately following the current password, type a forward slash (/).
3. Immediately following the slash, type the new password and press ENTER. Or, to erase the current password without assigning a new one, simply press ENTER after the slash.

For example, if the current password is old and you want to change it to new, type old/new and press ENTER. If you remove the power-on password, the password prompt is no longer displayed when you turn on the computer.

KEYBOARD PASSWORD

A keyboard password enables you to lock the keyboard and mouse without turning off the computer. When the keyboard and mouse are locked, the computer will not process any input other than the current keyboard password.

NOTE: The keyboard password is cleared when you turn off the computer.

LOCKING AND UNLOCKING THE KEYBOARD

Use kp.exe to lock or unlock the keyboard (and mouse if one is installed). By default, the keyboard password is the same as the power-on password. If you wish, you can use kp.exe to specify a keyboard password that is different from the power-on password. To further protect your data, you can use kp.exe to clear the screen before locking the keyboard.

NOTE: You can copy kp.exe to your system disk. Follow these steps to lock the keyboard:

1. Be sure you are in the drive and directory containing kp.exe. Also, be sure you are at the MS-DOS operating system prompt.
2. If you do not want to specify a keyboard password that is different from the power-on password, type kp and press ENTER to lock the keyboard.

Type kp /b and press ENTER to clear the screen and lock the keyboard.

3. If you want to specify a keyboard password that is different from the power-on password, type kp /c and press ENTER. The system prompts you to enter a new password and then locks the keyboard.

Type kp /b /c and press ENTER to clear the screen, enter a new password, and lock the keyboard.

4. Type the password, using the BACKSPACE key to correct any errors, and press ENTER. The following prompt appears: Is this correct? (Y/N) _

5. If the password is correct, type Y and press ENTER.

If the password is not correct, type N, press ENTER, and type the correct password. To unlock the keyboard and mouse, type the keyboard password exactly and then press ENTER.

COPY DISKETTE

The Copy Diskette utility copies all information on the source diskette, including the operating system if present, to the target diskette. Copy Diskette formats the diskette while copying to it.

We recommend that you use the Copy Diskette utility to make a copy of the Utilities Diskette.

To use the Copy Diskette utility:

1. At the Utilities Menu, type 2 and press ENTER.
2. If the computer has two diskette drives, the utility prompts you to select the target and source drives. In response to these prompts, type the appropriate drive designation letter and press ENTER.

NOTE: If the computer has only one diskette drive, Copy Diskette automatically selects Drive A as both the source drive and the target drive.

3. After you select the drive(s) you wish to use, insert the source and target diskettes at the appropriate prompts.

Always use the same size and type of diskette for both the source and target diskettes. See the following chart:

Drive/Diskette Compatibility for the Copy Diskette Utility		
Source Drive	Target Drive	Use this type of diskette in both drives
Standard	Standard	Standard
Standard	High-Capacity	Standard
High-Capacity	Standard	Standard
High-Capacity	High-Capacity	High-Capacity
High-Capacity	High-Capacity	Standard

NOTE: The Copy Diskette utility cannot copy between non-matching media types. use your operating system instead of this utility if you need to copy from one type of diskette to another. For example, use your operating system to make copies from a 5-inch diskette to a 3-inch diskette or from a high-density diskette to a standard-density diskette. See your operating system documentation for details.

PREPARE SYSTEM FOR MOVING

If you have a hard disk, use the Prepare System for Moving utility to park the drive heads before moving the computer. Normally, the hard disk drive heads are positioned over the data area of the disk media. This utility parks the

hard disk drive heads away from the data area, reducing the chance of disk damage or data loss.

NOTE: The drive heads on some hard disks are automatically parked when you turn off the computer. Refer to your hard disk installation guide to determine whether it is necessary to use this utility on your hard disk. To use the Prepare System for Moving utility:

- * At the Utilities Menu, type 3 and press ENTER.

Wait for the TURN SYSTEM OFF prompt. Then, turn off the computer.

When you turn on the computer again, the heads automatically return to an active position, and the hard disk drive is operational.

SETUP

Your computer contains a battery-powered, real-time CMOS RAM chip that stores information about the drives, memory, and video support installed in your system. Use the Setup utility to record your current system configuration into CMOS RAM. The battery that powers the CMOS RAM also supplies power to the internal clock. The clock maintains current date and time information. If the

system clock fails to keep accurate time, it might indicate that the CMOS RAM battery is weak. If you need to replace the battery, contact a Radio Shack Service Center or refer to "Replacing the Battery" in the "Installing Optional Hardware" section. You must run the Setup utility each time you:

- * Install or remove a video display adapter, an optional diskette drive or hard disk drive, or memory
- * Change the CPU clock speed
- * Enable or disable the IDE interface or port, the diskette drive controller, or the mouse port
- * Replace the CMOS RAM battery The computer stores the hardware configuration record in memory until the battery fails or you change the information with the Setup utility.

THE SETUP CONFIGURATION SCREEN

The Setup utility summarizes your system configuration, as it is currently recorded in CMOS RAM, on a graphic screen. If you run Setup after receiving a power-on configuration error message, this screen is displayed automatically

when you insert the Utilities Diskette and press F1. This screen is also displayed when you run Setup from the Utilities Menu.

From the configuration screen, you can:

- * Enter the current date and time
- * Specify the amount of base memory and extended memory currently installed in the computer
- * Identify the type of video adapter in the computer
- * Set the CPU clock speed

- * Enable or disable the IDE controller
- * Identify any hard disk drives installed in the computer. For non-standard drives, you can specify:
 - * The number of heads
 - * The number of cylinders
 - * The number of the precompensation cylinder
 - * The head landing zone, where the heads are parked
 - * The number of sectors per track

NOTE: Your computer supports up to two hard disk drives. Setup designates one drive as Drive C, the other as Drive D. Logical drives (partitions within a physical drive) are not recognized by Setup.

- * Identify any diskette drives in your computer and enable or disable the on-board diskette drive controller
- * Enable or disable serial ports, including the mouse port
- * Enable or disable a parallel port and identify a parallel port as bidirectional or unidirectional

The keys listed on the bottom of the screen enable you to move among the various sections on the screen and provide the following functions:

- * ESC - Ends Setup without saving the displayed configuration. Returns to the Utilities Menu (if you are using the Utilities Diskette) or to the operating system prompt. If you changed any configuration settings, the changes will not be saved.
- * F1 - Displays help about the currently highlighted field.
- * F2 - Records the currently displayed configuration into CMOS RAM and reboots the computer. Press F2 when you are finished updating the system configuration.
- * CTRL+BRK - Restarts the computer without saving the currently displayed configuration.
- * Space bar - Displays the values that can be assigned to a Setup parameter. For hard drives, pressing the space bar displays a list of all predefined disk types. For the date and time, pressing the space bar clears the current entry. For all other fields, pressing the space bar changes the value displayed on the screen.
- * Direction keys - Enable you to move to the section of the screen you want to update, and to move among fields within a section.

NOTE: Keep a current list of your configuration on the worksheet at the end of this manual.

RUNNING SETUP AFTER THE POWER-ON SELF-TESTS

When you turn on the computer, it automatically runs a series of diagnostic power-on self-tests. If these tests reveal any differences between the actual system configuration and the recorded configuration, you will hear a warning signal (beep) and see a message that asks you to run Setup.

If you receive a configuration error:

1. Run Setup to correct the information recorded in CMOS RAM.
2. Make a note of the errors listed on the Setup Warning Information screen.
3. Update and save the system configuration.
4. Reset the computer after running Setup.

NOTE: If, after you reset the computer, it still sounds a warning signal and prompts you to run Setup, see the "Troubleshooting Checklists" section.

RUNNING SETUP FROM THE UTILITIES MENU

To run Setup from the Utilities Menu:

1. Type 4 and press ENTER.
2. Make a note of any configuration errors listed.
3. Press any key to display the Setup configuration screen.
4. Update and save the configuration screen.

RUNNING SETUP FROM THE MS-DOS PROMPT

For your convenience, you can copy the Setup utility to your operating system diskette or your hard disk. This enables you to change hardware configuration information without first restarting the computer and inserting the Utilities Diskette.

Use the MS-DOS copy command to copy Setup from the Utilities Diskette to another diskette or to a hard disk. To run the Setup utility from the operating system diskette or a hard disk, type the following command at the operating system prompt (A> or C>): setupdx and press ENTER.

FORMAT HARD DISK

The Format Hard Disk utility enables you to low-level format certain types of hard drives. Refer to your hard disk drive installation guide to determine whether a low-level format is required. If a low-level format utility is shipped with your hard disk (or is included in your operating system), use that utility instead of the Format Hard Disk utility.

CAUTION: Do not use the Format Hard Disk utility on SmartDrives (IDE hard disks) or SCSI hard disks. SmartDrives and SCSI drives are already low-level formatted. You must low-level format some ST-506 hard disks. Hard disks must be low-level formatted, partitioned, and high-level formatted before they can

be used. Refer to your operating system documentation for instructions on partitioning a hard disk and high-level formatting each partition.

To use the Format Hard Disk utility:

1. At the Utilities Menu, type 5 and press ENTER. The following prompt is displayed: Which hard drive do you want to format (C/D) ? _
2. To format the primary hard disk drive, type C and press ENTER.
To format the secondary hard disk drive, type D and press ENTER.

After you make your selection, the following warning is displayed: All data on drive x will be DESTROYED!! Do you want to continue Y/N) ? _

The purpose of this warning is to prevent you from accidentally erasing information on the hard disk. If you are formatting a new hard disk, you can continue safely. If you are reformatting a hard disk, be sure you have made a copy of any information on the disk that you want to keep.

3. If you do not want to continue, type N and press ENTER. The Utilities Menu will be displayed again. If you want to continue, type Y and press ENTER.

NOTE: If you answer Y and later decide not to continue, you can reset the computer to terminate the Format Hard Disk utility. However, if you changed your configuration and did not save it, you must update the configuration again after you reset the computer.

If you continue, the utility displays the following information: Hard drive x is type x Number of heads = x Number of cylinders = x Is this correct(Y/N) ? _

4. If this information matches the hard disk, type Y and press ENTER.

If the information does not match the hard disk drive, type N and press ENTER.

The utility prompts for the correct number of heads, the correct number of cylinders, and the interleave factor, displaying the range of acceptable values for each.

CAUTION: The default interleave factor is 3. Contact your Radio Shack Service Center for information and assistance if you think you need to change the interleave factor.

After you verify or change the hard disk information, the following prompt is displayed: Do you want to flag defective tracks (Y/N) ? _

5. To identify defective tracks, refer to the media error map that came with the hard disk drive.

If the map lists no defective tracks, type N and press ENTER.

If the map lists any defective tracks, type Y and press ENTER. The following prompt is displayed: Enter next head, cylinder pair or press ENTER to quit ? _

6. Enter the defective track information. For example, if the error map lists Head 4, Cylinder 100 and Head 5, Cylinder 100, type: 4,100 ENTER 5,100 ENTER

After entering all the defective heads and tracks noted on the media error

map, press ENTER to begin the formatting procedure.

CAUTION: Do not interrupt the program while it is formatting the drive. If formatting is interrupted, restart the Format Hard Disk utility from the Utilities Menu. You are now ready to install your operating system(s) on the hard disk drive. See your operating system documentation for details.

END UTILITIES

Type 9 and press ENTER at the Utilities Menu to end a Utilities session. The following prompt is displayed: UTILITIES ENDED PRESS > TO REBOOT SYSTEM or CTRL-C TO RETURN TO MAIN MENU.

After you press ENTER, the computer reboots, using the operating system installed on the hard disk or on a diskette in the diskette drive. If you do not have an operating system installed, you can install it now. Check the operating system documentation for the procedures required to install the operating system.

ADVANCED UTILITIES

The Utilities Diskette contains the following advanced utilities:

- * Speed16

- * Temmdx

- * Vga

Speed16 selects a CPU clock speed. Temmdx uses extended memory to emulate expanded memory. Vga selects the video mode for your computer. Refer to the "VGA Adapter" section for information about vga.exe.

SPEED16

Your CPU supports two CPU clock speed settings, fast (16 Mhz) and slow (8 Mhz). Use the Speed16 utility to choose either setting. If you want to copy this utility to your hard disk, insert the Utilities Diskette into Drive A and type the following command at the MS-DOS system prompt (A>> or C>>): copy a:speed16.com c: Then, press ENTER.

To set the CPU speed, type either of the following at the MS-DOS system prompt: speed16 fast speed16 slow Then, press ENTER.

The CPU speed changes immediately, but the new setting is not recorded in the CMOS memory. If you turn off the system or press the RESET button, the speed defaults to the setting saved in CMOS memory. If, however, you press CTRL+ALT+DEL, the new setting remains in effect. To change the default setting in CMOS memory, run Setup.

TEMMDX

Temmdx is an expanded memory manager driver.
To use Temmdx:

1. Use the MS-DOS copy command to copy temmdx.sys to your hard disk.

2. Add a device command to your config.sys file: device=\path\temmdx.sys

Refer to your MS-DOS documentation if you need more information about the copy command or the device command. Refer to "Using Temmdx" for more information about the Temmdx device command.

In order to understand the function of this driver, you need to know the definitions of shadow RAM, expanded memory, and extended memory.

SHADOW RAM

Your computer is equipped with 1MB (1024KB) of RAM (random access memory) on a 32-bit memory expansion adapter. By adding a second 32-bit memory expansion adapter and filling both adapters with 1MB SIMMs, you can configure your system with as much as 16MB of RAM.

The first 640KB of RAM in any system is called base RAM. Base RAM is reserved for your operating system and applications. Memory from 640KB to 1024KB (a total of 384KB) is called shadow RAM. Your system BIOS (Basic Input-Output System) uses a portion of shadow RAM. Video adapter BIOS and SCSI BIOS (if applicable to your computer) might also use shadow RAM.

The following diagram illustrates base RAM and shadow RAM in a 2MB memory configuration:

EXPANDED MEMORY

Early microprocessors were not equipped to recognize memory addresses beyond 1MB (1024KB) of memory. When additional memory was required, systems based on such processors relied on expanded memory. Expanded memory was stored on a separate adapter, and it used a different addressing protocol from base and shadow RAM. Expanded memory was accessed in blocks of 16KB. A group of four

16KB blocks is called a page. The blocks in a page are not necessarily adjacent in the available supply of physical expanded memory.

The following diagram shows two examples of valid pages. One includes sequential blocks; the other does not.

EXTENDED MEMORY

Current microprocessor technology supports memory beyond 1MB, so expanded memory is no longer required. Instead, current technology uses extended memory, defined as all memory (RAM) beyond the 1MB boundary, to emulate expanded memory.

To emulate expanded memory, the processor copies a 64KB page (four 16KB blocks) of extended memory into a 64KB segment of RAM between 640KB and 1024KB. The beginning of the 64KB segment is called the frame address. Since RAM from 640KB to 1024KB is within the 1MB boundary, it is accessible to the processor.

The following diagram shows base RAM, shadow RAM, and extended memory: (ext. memory illus.) 1/2 page

USING TEMMDX

Temmdx.sys uses all extended memory beyond 1MB, plus any shadow RAM not allocated for other purposes, to emulate expanded memory as defined in the LIM (Lotus/Intel/Microsoft) memory specification.

To use Temmdx:

1. Copy temmdx.sys from the Utilities Diskette to your hard disk. To do this, insert the Utilities Diskette into Drive A and type the following command at the MS-DOS system prompt (A>> or C>>): copy a:temmdx.sys c: Then, press ENTER.
2. Add a device command for Temmdx to your config.sys file. The format for the Temmdx device command is: device = temmdx.sys [/s] [xxxx] [Iy] [Mz]

The following table summarizes the Temmdx device command parameters:

Switch	Function
/s	Enables the software to access shadow RAM.
xxxxx	Specifies the amount of expanded memory (in kilobytes) to be emulated. Use a value from 304 to 8192 if you are using /s or 16 to 8192 if you are not using /s. Use a value that is a multiple of 16. The default value is 304KB with /s or 1024KB without /s.
Iy	Identifies the I/O port addresses emulated by temmdx.sys. If one or more hardware boards in your computer access port addresses that conflict with the addresses emulated by temmdx.sys, use the following chart to select addresses that can be emulated without conflict. The default y value is 5.

y Value	Port Addresses Used (Hex)			
0	208	4208	8208	C208
1	218	4218		