



M7100

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Handheld Terminal

## User's Manual Addendum

*M7100 with Expanded Memory*



# The M7100 Expanded Memory Handheld Terminal

This document describes the advanced features of the M7100 Expanded Memory Handheld Terminal.

The M7100 was designed with expandability in mind. The heart of the M7100 is a high speed processor and memory card. This card can be replaced with an expanded memory version which will greatly increase the M7100 internal memory capacity.

While the M7100 Standard Memory version is designed primarily for terminal emulation applications, the M7100 Expanded Memory version is capable of running countless existing Linux based applications as well as custom applications.

To determine if your M7100 handheld terminal is an expanded memory version, follow these simple steps.

## How to determine the memory size of the M7100 Handheld Terminal

```
Version Info
BOOTLOADER:
  AML Bootloader 1.1.6

RAM DISK IMAGE:
  1.1.3  03/06/03 10:54

LINUX KERNEL:
  Linux M7100 2.4.17
  Feb 24, 2003 16:24:11

DECODER:
  1.0M  Checksum 527B
```

M7100 with standard memory

```
Version Info
BOOTLOADER:
  AML Bootloader 1.1.7

RAM DISK IMAGE:
  1.1.4-32 03/13/03 10:23

LINUX KERNEL:
  Linux M7100-32 2.4.17
  Mar 12, 2003 14:26:54

DECODER:
  Unavailable
```

M7100 with expanded memory

To display the current firmware information on the M7100, enter the Menu system and select:

### Diagnostic Menu > Firmware Version

You should now see a screen similar to the ones above.

Note in the above examples, the standard memory version DOES NOT have a -32 extension listed with the RAM DISK IMAGE version or the LINUX KERNEL version.

The RAM DISK IMAGE for the **standard memory version** will not have a 32 listed in the file name.

The RAM DISK IMAGE for the **expanded memory version** will have a 32 listed in the file name.

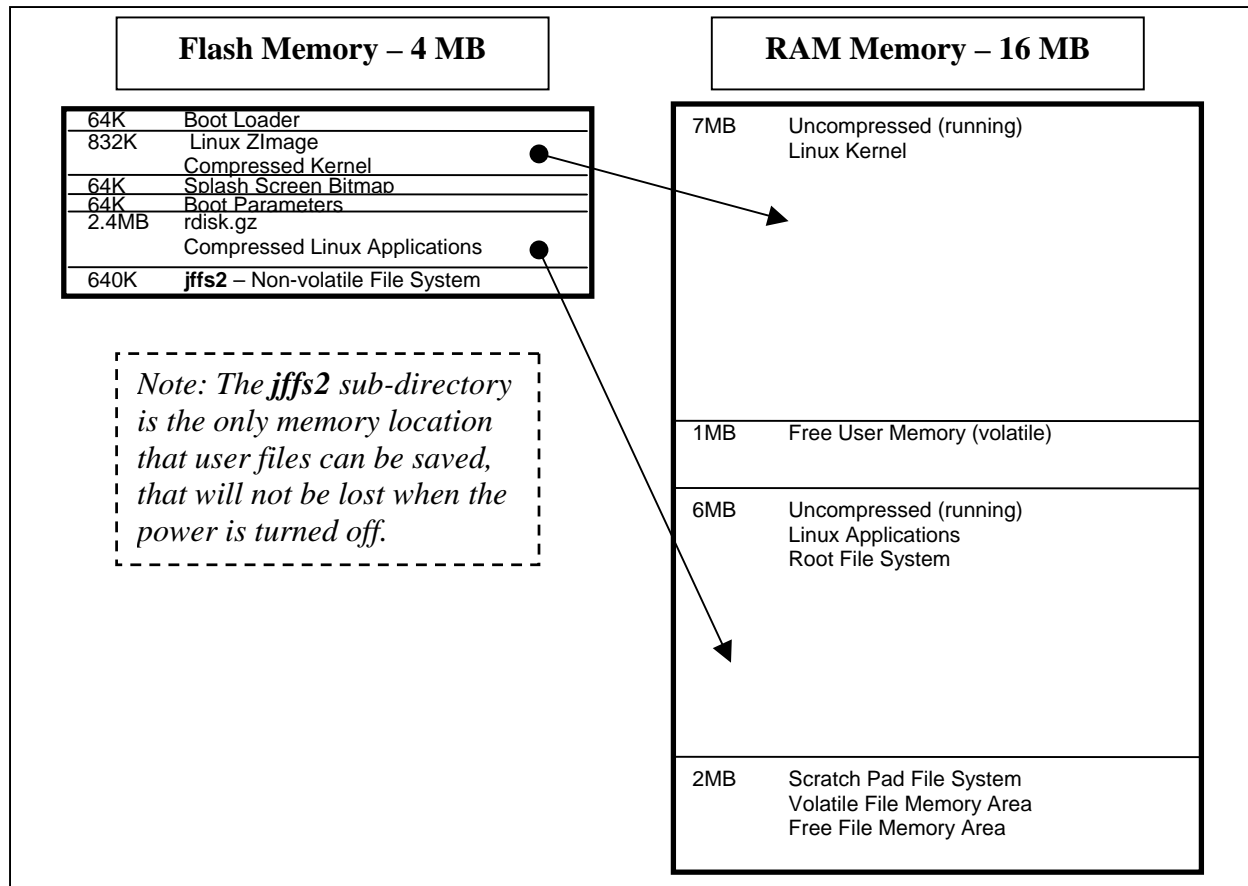
## The M7100 Memory Allocation

To reduce weight and increase reliability, the M7100 does not have a mechanical hard drive like a standard PC, and all programs and data must be stored in the M7100's electronic memory devices. The M7100 has two types of electronic memory devices, Flash and RAM.

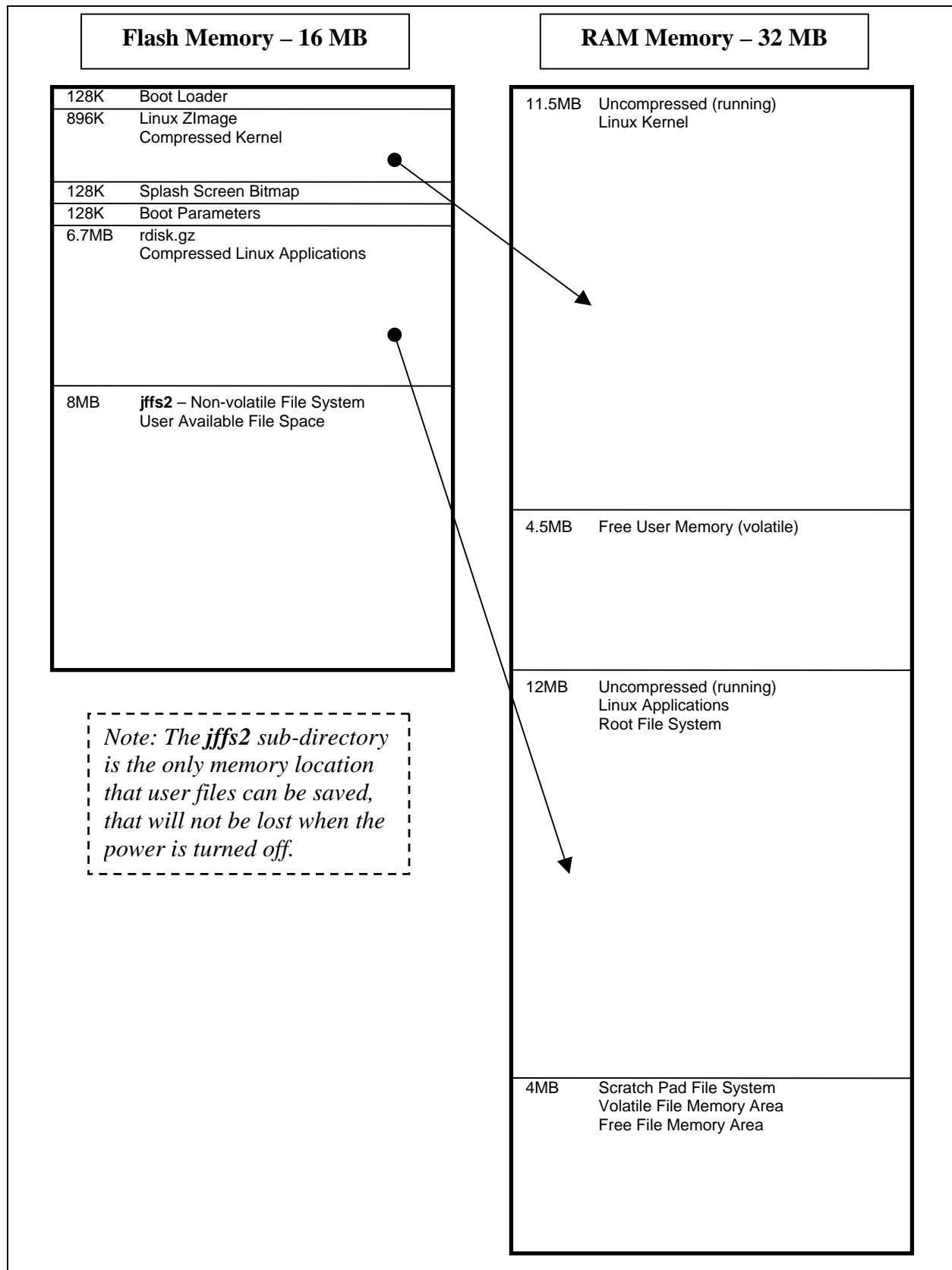
The RAM memory works much like a standard PC, The Linux operating system and any programs currently being executed, are utilizing the RAM memory. Very large programs that exceed the RAM memory storage size can not be executed on the M7100. Just like in a standard PC, this RAM memory is lost when the unit is powered off. All permanent storage of the operating system, programs and data must be done in the Flash memory.

Some of the Flash memory is used by the Linux operating system along with some associated programs. On the expanded memory version of the M7100, there is a large percentage of Flash memory available for user programs. These user programs are often added to the Linux kernel and downloaded to the M7100 as one large memory block.

Sometimes the users will wish to add programs at a later date or store temporary data in the Flash memory. The M7100 has a special sub-directory for all programs and data that are temporary but must be saved even when the unit is turned off. This is the "Journaling Flash File System" sub-directory also know as the "jffs2".



**The M7100 Standard Memory Map**



**The M7100 Expanded Memory Map**

## **File Transfer Protocol (FTP)**

The M7100 Handheld Terminal includes a client side FTP program which makes it very easy to upload and download files and data. Almost any computer using almost any FTP program can send and receive files to and from the M7100 using the radio link. The “host” computer must have a logical network connection to the M7100. This can be tested by either “pinging” the M7100 or “pinging” the host from the M7100. See the M7100 User Manual for more details.

Once you have established connectivity you will need the M7100’s IP address, the user name of “**aml**” and a password of “**turk182**” to start the FTP session. The current M7100 IP address can be determined by using the M7100 menu system and selecting Network Settings”

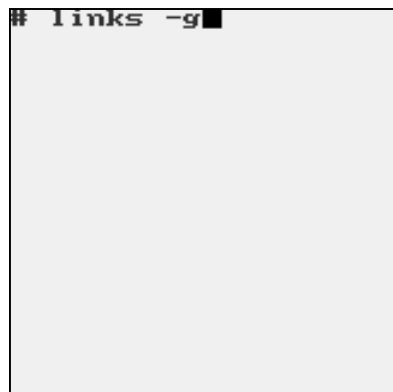
## **The M7100 Web Server Application**

The M7100 Handheld terminal includes a built-in web server which makes it incredibly easy to upgrade the operating system or add a new startup splash screen. The “host” computer must have a logical network connection to the M7100. This can be tested by either “pinging” the M7100 or “pinging” the host from the M7100. See the M7100 User Manual for more details.

By opening any standard web browser (i.e. Internet Explorer), you can type in the M7100’s IP address and the M7100 will send back a unique web page screen. By using this web page screen you can update the Linux operating system or modify the startup splash screen. The web page screen shows instructions on how this is done and update files can be downloaded off the AML website [www.amltd.com](http://www.amltd.com).

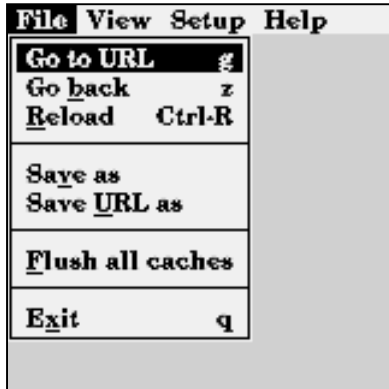
## **The Links Web Browser Application**

The M7100 Expanded Memory version handheld terminal includes a fully functional web browser application called “links”. The links program can be started by using the M7100 menu system and selecting the “Linux Prompt” and typing “links”. The optional “-g” turns graphics mode on, if this option is left off then the browser will start in text mode and graphic images will not be displayed. The screen shots below show the links program running on the M7100.

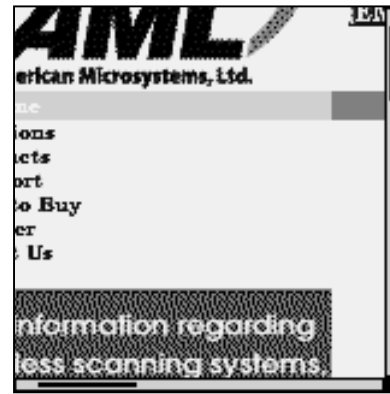


Once the operator hits “ENTER” from the welcome screen then the control menu for the links program is selected by hitting the “Esc” key. If the M7100 terminal has connectivity to the internet, then the operator can type in any valid URL and the M7100 will display the web page.

*If there is no connectivity to the internet or if a local firewall prohibits internet access, then the M7100 will display a blank screen.*



Once a web page is displayed, the operator can “pan around” the screen by using the “Shift” key then an arrow key (▲ ► ▼ ◀). The thin bars on the right side and bottom of the M7100 display shows how far the screen has shifted from the top left corner.



Because the M7100 has a much smaller screen than a standard PC, not much of the web page can be displayed at one time. The links program has several options that can make navigating the web page screen easier. To select these options go to View > Html options, using the links menu.



By changing “User font size” and “Scale all images by (%)” you can get more information on one M7100 display screen.

The M7100 Handheld Terminal can be setup to automatically start the links program and go directly to a predetermined website. This is done by using the M7100 menu system and selecting

Local Settings > Startup Options. The following screen shots show the M7100 set up to start the links program in the graphics mode and to go to the AML website.



Under “Start Dir :” we have added the startup directory “/bin/”  
Under “Start Prog :” we have added the startup program “links” (case sensitive).  
Under “Start Param:” we have added the start parameters “-g www.amltd.com”  
Remember to use the “<Save Settings>” to make your changes permanent.

We might also need to increase the “Network Delay:” to a larger value to give the network time to connect to the internet and find the requested website. The user can also use the M7100 menu system to force a “Reconnect” if the network is not ready when the M7100 is first powered on.

### ***The 3270 and 5250 Terminal Emulation Clients from Connect***

The M7100 Expanded Memory version handheld terminal can run an optional 3270 or 5250 terminal emulation client from Connect Inc.

The 3270 and 5250 TE clients are typically used with IBM AS/400 and IBM mainframe systems. This optional software allows the M7100 handheld terminal to work just like a standard IBM workstation terminal but with a smaller display.

The Connect TE software also has the ability to re-format the larger IBM workstation display screens into the smaller M7100 handheld screens. This process is referred to screen mapping, screen formatting or screen scraping. The ability to re-format the keyboard is also included with the Connect software as well as PC based terminal manager software.

### ***The M7100 Tool Chain***

The M7100 is supplied with open-source Linux as a standard feature. In accordance with the open-source or GNU license, all the M7100 source code is available to any M7100 owner upon request. To obtain a copy of this code simply request the Tool Chain CD.

The Tool Chain CD comes with a StrongARM-Linux-GCC cross compiler and source code that can be used on any Intel Linux platform to cross-compile applications. Technical information on using the Tool Chain are included.