

Technical Manual

WEBasDISK/xx

Rev. 1.3

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2. USER INFORMATION

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2.2. General

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2.3. Warranty

Each board is tested carefully and thoroughly before being shipped. If, however, problems should occur during the operation, please check your user specific settings of all boards included in your system. This is often the source of the fault. If a board is defective, it can be sent to your supplier for repair. Please take care of the following steps:

1. The board returned should have the factory default settings since a test is only possible with these settings.
2. In order to repair your board as fast as possible we require some additional information from you. Please fill out a Repair Form and include it with the defective board.
3. If possible the board will be upgraded to the latest version without additional cost.
4. Upon receipt of the board please be aware that your user specific settings were changed during the test.

Within the warranty period the repair is free of charge as long as the warranty conditions are observed. Because of the high test expenditure you will be charged with the test cost if no fault is found. Repair after the warranty period will be charged.

This **JUMPttec**[®] product is warranted against defects in material and workmanship for the warranty period from the date of shipment. During the warranty period **JUMPttec**[®] will at its option either repair or replace defective products.

For warranty service or repair the product must be returned to a service facility designated by **JUMPttec**[®].

The foregoing warranty shall not apply to defects resulting from improper or inadequate maintenance or handling by buyer, unauthorized modification or misuse, operation outside of the product's environmental specifications or improper installation or maintenance.

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2.4. Support, Problems, and Failure Analysis

It is not in the responsibility of **JUMPttec**[®] to supply you with information about standard PC technology.

Before contacting **JUMPttec**[®] please check first our web page for available information (newest manuals, application notes etc.). If you can't solve the problem on your own with this documents, do not hesitate to contact us by email or phone. Please prepare yourself to answer a few questions like

- Which **JUMPttec**[®] module(s) is(are) concerned?
- What serial numbers (xx??????)?
- What firmware version (at the bottom of the configuration web page)?
- Since when is this problem known?
- Is this problem already reported (to whom?)
- And so on...

Note: You can save time and increase the problem solving process by using the FAREq.DOT form from our web page www.jumpotec.de for problem reports.

3. INTRODUCTION

JUMPTec[®]'s **WEBasDISK** acts just like any 100% IDE compatible hard disk drive. But the contents of that drive are read on the fly from any location on the Internet or local file servers including any MS Windows workstation. **WEBasDISK** allows you to boot any operating system that has IDE support from LAN or the Internet.

WEBasDISK can be connected to any computer system (referred to as **target system** or **target**) that supports IDE hard disks. **WEBasDISK** behaves like any other hard disk in that computer system. The data read from that hard disk is not necessarily stored in **WEBasDISK** but can be dynamically synthesized from data found on any other computer (referred to as **server system** or **server**) connected to the local area network or through routers even the internet. The data must not necessarily be prepared to work with **WEBasDISK**. In that mode the data will be presented to that target system as a FAT compatible file system, which is supported by all major operating systems.

WEBasDISK can operate in two distinct modes: **image mode** and **file mode**.

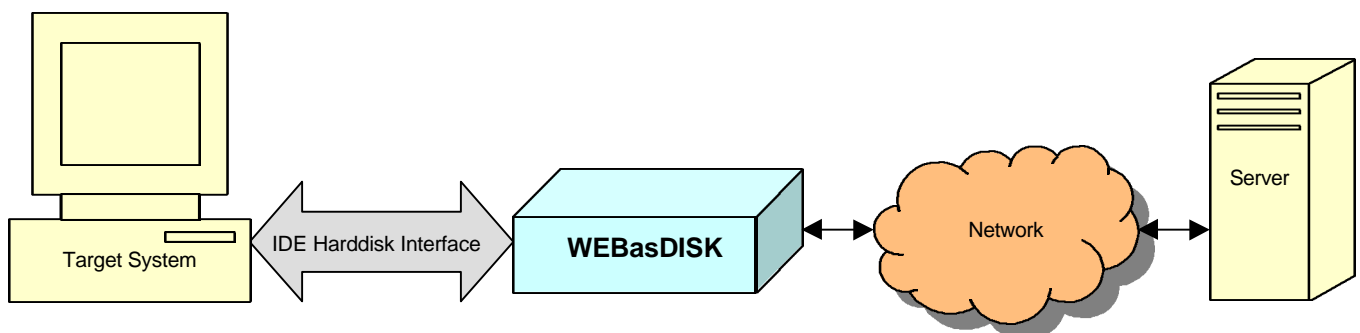
In **image mode** the server contains a disk image that has been prepared for use with **WEBasDISK**. This allows total operating system independence. The data can be formatted in any way and can contain any file system.

In **file mode** the server contains any file system in the form of a recursive directory tree. **WEBasDISK** builds a virtual FAT file system on the fly that is presented to the target machines OS. The data is not read from the server until the target's OS requires it. The server does not need to be aware of **WEBasDISK**.

WEBasDISK uses the TCP/IP network protocol on the network connection side. It uses either HTTP or SMB (CIFS) to access the files. HTTP allows **WEBasDISK** to read the data from any web server in the Internet. SMB allows **WEBasDISK** to read the files on any MS Windows workstation or server. This is regular Windows peer-to-peer file sharing. No special configuration is required to use **WEBasDISK** in that environment. Linux also contains SMB support in the SAMBA package.

The IDE interface allows **WEBasDISK** to be used as a regular hard disk in most computer systems.

WEBasDISK contains a web server that allows you change any configuration options with any web browser.



4. BENEFITS AND APPLICATIONS

- Remote hard disk
- Environment requires no moving parts
- Flash disk replacement
 - Faster than chipDISK
 - Auto update
 - Larger capacity
- Easy remote update
- Off-line boot on network failure
- No additional software required
 - on Server and
 - on Target
- Development and Testing

5. FEATURES

5.1. IDE interface

- Target system is provided with data from server via IDE port
- Target system connects via 44 pos. 2 mm IDE interface
- Module power can be supplied via PIN 41 and 42 of IDE interface
- Behaves on IDE side as ATA compliant hard disk
- Operates as Master or Slave drive
- Boot from local flash without network connection
- Write sector cache to allow using OS's that require writing to boot device
- Selectable boot sectors for popular operating systems

5.2. Supported Disk Formats

- FAT12 disk format
- FAT16 disk format
- FAT32 disk format

5.3. Network Interface

- Connects network via 10/100Base-T, RJ45 Ethernet
- Network status can be indicated via LINK/ACTIVITY/SPEED LED
- Transmission protocol for Ethernet communication is TCP/IP based
- Implemented HTTP server allows module configuration via browser
- DNS/NETBIOS name resolution

5.4. Supported Server Protocols

- SMB (CIFS) Protocol to use access files on Windows NT/9x/ME/2000/XP and Linux/Samba machines
- SMB password support
- HTTP Protocol
- HTML page URL analyzer
- DHCP

5.5. Soft-/Firmware Functionality

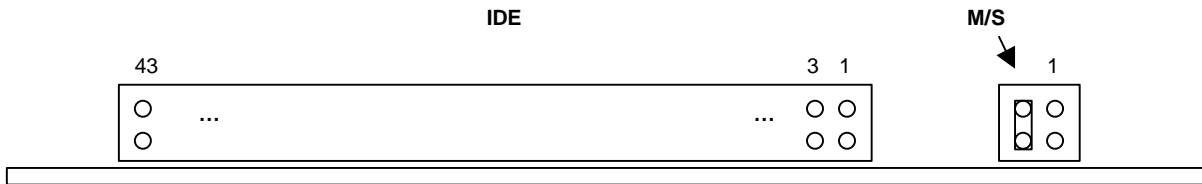
- Boot OS via Ethernet from shared server directory
- File mode with FAT disk builder
- Image mode supports all disk formats
- Read data from flash/network
- Read only mode reports errors on writes
- Write changes back to server in Image Mode
- Write changes back to server in File Mode to a delta sector file
- File connection cache
- Automatic Share redirection on server file change
- File tree description files in file mode
- Image mode auto detects drive parameters from image file
- Permanent share redirection
- Boot from flash if no server connection or server share is an empty string
- Creates a snapshot of the current server files to flash
- Save multiple configurations (in EEPROM)
- Configuration password support
- Firmware update via FTP

6. INSTALLATION

6.1. Hardware Installation

WEBasDISK can be connected to the target system just like any 2.5-inch IDE hard disk. Simply attach the 44-pin IDE connector with a standard IDE cable to your target system's IDE port. **WEBasDISK** receives its power through that connection.

By default **WEBasDISK** is configured as IDE master drive. **Remove** the M/S jumper closest to the IDE connector to have **WEBasDISK** operate as a slave drive.



Attach a standard Ethernet cable to the RJ-45 Ethernet connector and hook it up to your 10/100Base-T Ethernet LAN.

Turn on the power of the target system. The networking LEDs should light up if the networking connection is physically working. After a short while the **WEBasDISK** status LED should light up.

If required enter the target systems BIOS setup to enable or detect the hard disks. Newer BIOSes are usually set to auto detect hard disks so this step is not required.

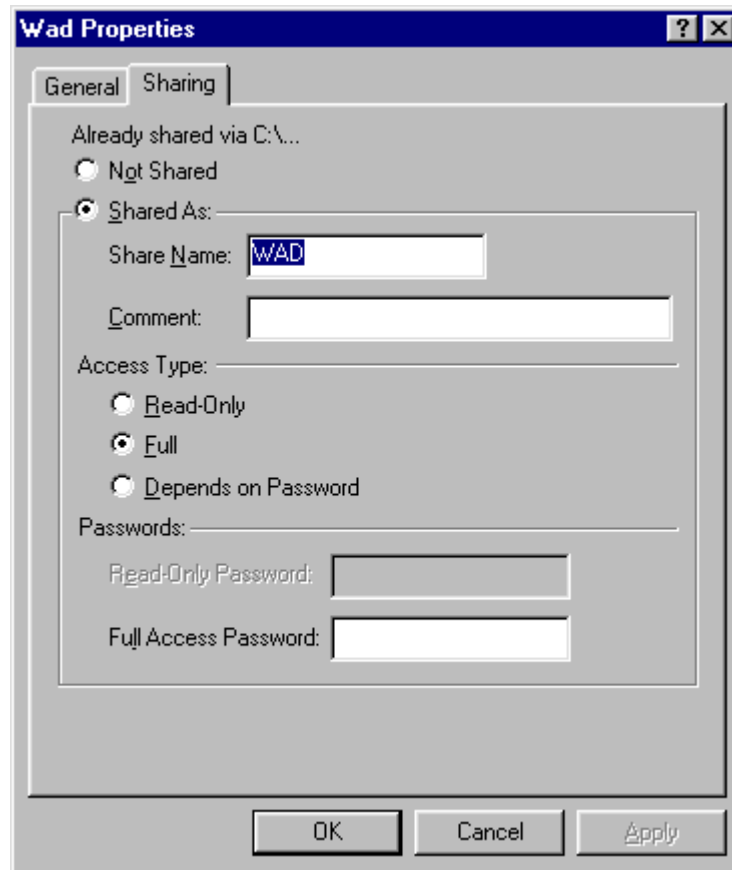
Some BIOSes may display the **JUMPtec® WEBasDISK** name or the drive's geometry.

If **WEBasDISK** is your boot drive and it has not been configured yet you may see a Boot Failure, No Operating System or similar error message. This is normal.

6.2. Server Preparation

If you want to use **WEBasDISK** with files located on a MS Windows Workstation or Server you need to:

- Create a new directory on server
- Copy operating system files or any files that you want to access on the target into that directory
- Right click on the directory in Explorer
- Select "Sharing..." from the menu
- Enter a "Share Name" in the dialog that appears and then press OK



To remotely boot MS-DOS you need at least the files IO.SYS, MSDOS.SYS, and COMMAND.COM in that shared directory.

6.3. WEBasDISK Express Setup

WEBasDISK contains a web server that allows you change all configuration options with a standard web browser. Simply type in the **WEBasDISK** IP address in the address or URL field of your browser. Some browsers might require the http:// prefix.

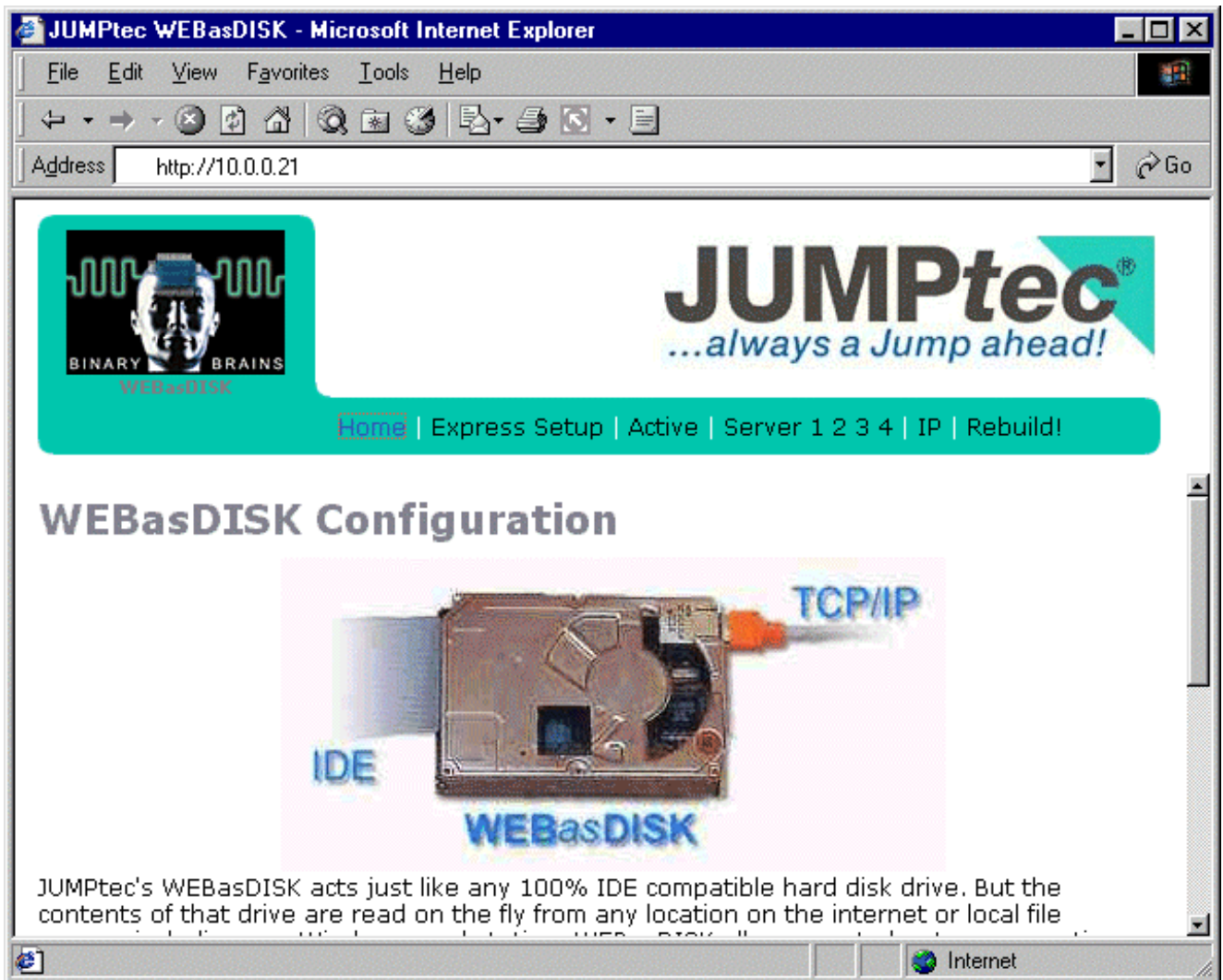
The first time you access **WEBasDISK** you need to type in the factory default IP address of **10.0.0.21**

For this to work your PC needs to be (temporarily) configured for any IP address that starts with 10.0.0.xxx (the subnet mask for that is 255.255.255.0).

Currently there is no other way to gain access to **WEBasDISK** for the first time.

If you are using MS Windows you can right click on the "Network Neighborhood", select "Properties" from the menu, select "TCP/IP -> your Ethernet card", then "Properties" to specify an IP address.

Your browser should display **WEBasDISK** configuration home page:



From the Navigation bar close to the top of the page click on "Express Setup" to display Express Setup page.

Express Setup

WEBasDISK IP Address	<input type="text" value="10.0.0.21"/>
WEBasDISK IP Mask	<input type="text" value="255.255.255.0"/>
URL or Server Share Name	<input type="text" value="\\SERVER\WAD"/>
Server IP (optional)	<input type="text" value="10.0.0.30"/>
Operating System	<input type="text" value="MS-DOS 6.22"/>
Emulated Disk Size	<input type="text" value="32 MB"/>
<input type="button" value="Save Changes"/>	

It is likely that **WEBasDISK's** factory default IP address and mask is not ideal for your LAN. The server's Computer Name must be set for your environment. Enter a server share like "\\SERVER\SHARE" to access files from a MS Windows or Samba server. Enter a web site or subdirectory like "http://www.**WEBasDISK.com**/wad". Then select the operating system that you would like to boot. This page allows you to adjust these settings.

Option	Explanation
WEBasDISK IP Address	Defaults to 10.0.0.21 and should be changed to match your networks address range.
WEBasDISK IP Mask	Defaults to 255.255.255.0, which should be appropriate for most LANs.
URL or Server Share Name	This is a combination of the server's Computer Name and the name of the shared directory. The syntax is \\server\share
Server IP (optional)	This is an optional field. If you know the server's IP address and it is fixed then specifying it in this field speeds up the connect phase. In all other cases this field should be blank or 0.0.0.0.
Operating System	Select the operating system that you want to use on your target system. This simply uses the correct boot sector. If your system is not listed or for a complete list of options refer to section 7.3 Server Configuration.
Emulated Disk Size	This is the disk size that will be emulated. It must be larger then the total size of all files in the shared directory on the server.

If you are using Windows you can right click on the "Network Neighborhood", select "Properties" from the menu, select the "Identification" tab to display or change the Computer Name.

Press the "Save Changes" button to have **WEBasDISK** save and retain the new settings. The new **WEBasDISK** IP address and mask take effect after power off the target system.

If everything was set up correctly the target system should boot the new operating system located in the server's shared directory when the power is turned back on.

After that you need to use the new IP to access the **WEBasDISK** configuration pages.

7. WEBasDISK CONFIGURATION

This section shows the configuration pages that are accessible with a standard web browser and describes the options in detail.

7.1. Navigation Bar

The navigation menu bar close to the top of the page is always present and allows you to quickly jump the various configuration sub pages



Option	Explanation
Home	Home page with basic instructions and firmware revision number
Express Setup	Easy initial configuration. Refer to section 6.3 WEBasDISK Express Setup
Active	Activate any of the four pre configurable server configurations
Server	Current server configuration
1, 2, 3, 4	Any of the four server configuration slots
IP	Internet gateway, IP, and DNS configuration
Rebuild!	Have WEBasDISK re-read the server directory structure. Note this takes effect immediately. In the current version of WEBasDISK you need to reboot the target system or it will be presented with inconsistent data.

Press the "Save Changes" button in the individual pages to have **WEBasDISK** save and retain the new settings from that page. To discard any changes you have made simply select another item from the navigation bar.

Depending on the nature of the settings they take effect immediately, after the next rebuild and reboot of the target system, or after the next power off.

Unless otherwise noted the changes take effect after the next rebuild of the directory structure and reboot of the target system. You can instruct **WEBasDISK** to automatically rebuild whenever the settings are saved. Refer to section 7.5 IP Configuration for details.

7.2. Home Page

This page gives a brief and general overview about the **WEBasDISK**.

Note: In the bottom left corner, the current programmed firmware revision is shown.

JUMPtec
...always a Jump ahead!

[Home](#) | [Express Setup](#) | [Active](#) | [Server 1 2 3 4](#) | [IP](#) | [Rebuild!](#)

WEBasDISK Configuration

IDE TCP/IP
WEBasDISK

JUMPtec's WEBasDISK acts just like any 100% IDE compatible hard disk drive. But the contents of that drive are read on the fly from any location on the internet or local file servers including any Windows workstation. WEBasDISK allows you to boot any operating system that has IDE support from LAN or the internet.

To configure WEBasDISK simply select one of the items from the menu on the top. To get started select the "[Express Setup](#)". Enter a server share like "\\SERVER\SHARE" to access files from a Windows or Samba server. Enter a website or subdirectory like "<http://www.webasdisk.com/wad>". Then select the operating system that you would like to boot.

For more advanced configuration select:

- "IP" for internet gateway, DNS configuration
- "Server" for current server configuration
- "1", "2", "3", "4" for any of the four server slots
- "Active" to activate any of the four server configurations
- "Rebuild!" to have WEBasDISK re-read the server directory structure

NET1R102.014

In this example, the current programmed firmware revision is 0.2 build 014.

7.3. Server Configuration

These settings describe how to access the server and how the emulated disk should be presented to the target system.

Server Configuration

URL or Server Share Name	<input type="text" value="\\SERVER\WAD"/>
Server IP (optional)	<input type="text" value="10.0.0.30"/>
User Name	<input type="text"/>
Password (if required)	<input type="password"/>
Disk Emulation	<input checked="" type="radio"/> File Mode (Simulated FAT) <input type="radio"/> Image Mode (Any Disk Format)
Write Protection	<input checked="" type="radio"/> Read Only <input type="radio"/> Read Source/Write Only To Cache <input type="radio"/> Read/Write
Operating System	<input type="text" value="MS-DOS 6.22"/>
Disk Size	<input type="text" value="16 MB"/>
Save As Configuration	<input checked="" type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 (Active server is 2)
<input type="button" value="Save Changes"/>	

Option	Explanation
URL or Server Share Name	This describes the server and the location of the file on the server. There are three different protocols implemented: <ul style="list-style-type: none"> SMB (CIFS) protocol to access MS Windows and Linux Samba Servers. This is a combination of the server's Computer Name and the name of the shared directory. The syntax is <code>\\server\share</code>. An optional subdirectory path can follow with each directory separated by backslashes. HTTP protocol to access any web server in the Intranet or Internet. The syntax is <code>http://servername</code> (i.e <code>http://www.WEBasDISK.com/wad</code>). An optional subdirectory path can follow with each directory separated by slashes. If this field remains blanks and no server is specified then the disk image that is stored in the on board flash is used.
Server IP (optional)	This is an optional field. If you know the server's IP address and it is fixed then specifying it in this field speeds up the connect phase. In all other cases this field should be blank or 0.0.0.0.
User Name (optional)	Login user name for the server. (Currently only used with SMB)
Password (if required)	Login password for the server. (Currently only used with SMB)

<p>Disk Emulation</p>	<ul style="list-style-type: none"> • File Mode (Simulated FAT): WEBasDISK builds the complete file system from the individual files located in the server directory. The synthesized file system will be any of the 3 FAT variants FAT12, FAT16 or FAT32. If a file named diskimg.bin is present WEBasDISK automatically switches to image mode even if file mode is selected. • Image Mode (Any Disk Format): A file named diskimg.bin must be stored in the shared directory on the server. This file is the complete sector snapshot of any hard or flash disk. This image must start with a valid partition root sector. WEBasDISK uses the information in this sector to initialize its drive geometry. All other sectors are transparent and simply passed through to the target system upon request. If there is no diskimg.bin file WEBasDISK automatically switches to File Mode.
<p>Write Protection</p>	<ul style="list-style-type: none"> • Read Only: All writes from the target system to the disk will fail. • Read Source/Write Only To Cache: All writes are cached in WEBasDISK internal RAM (up to 13 MB). If the cache is full writes fail. All changes are lost when the power is turned off • Read/Write: In Image Mode writes go directly to the image file on the server. In File Mode writes go to a delta file named waddelta.wdi and waddelta.wds in the shared server directory that contains only the written sectors. If the files are later deleted from the server only these changes are rolled back.
<p>Operating System</p>	<p>Select the operating system that you want to use on your target system. This simply uses the correct boot sector. If your system is not listed then choose the "None/Any/WADBOOT.SEC". In this case the disk is not bootable or a separate 512-byte boot sector file named wadboot.sec must be present in the shared server directory. A partition root sector file named wadboot.sec can optionally be present.</p> <ul style="list-style-type: none"> • None/Any/WADBOOT.SEC • Windows NT/NT Embedded • Windows CE • Windows 98 • Windows 95 • MS-DOS 6.22 • DR-DOS 7.03 • VxWorks • Linux FAT <p>If there is a file named wadboot.sec in the shared server directory this setting is without effect.</p>
<p>Emulated Disk Size</p>	<p>This is the disk size that will be emulated. It must be larger then the total size of all files in the shared directory on the server.</p> <ul style="list-style-type: none"> • 4 MB • 8 MB • 16 MB • 32 MB • 64 MB • 128 MB • 256 MB • 512 MB • 1 GB • 2 GB (Sizes larger than 2 GB will be available in new firmware)

Save As Configuration	WEBasDISK supports four independent server configurations. This selection determines in which slot the current settings should be written. Note you can use this to simply copy configurations.
-----------------------	--

7.4. Active Server Configuration

WEBasDISK supports four independent server configurations. Only one of these can be active. This page displays the server share names of all configurations and allows you to select the currently active server.

Active Server Configuration

Select Configuration	<input checked="" type="radio"/> 1 \\SERVER\WAD <input type="radio"/> 2 \\DIETERP\WAD <input type="radio"/> 3 \\Acer\WAD <input type="radio"/> 4
	<input type="button" value="Save Changes"/>

7.5. IP Configuration

This page allows you to change a variety of IP addresses to values appropriate for your network including **WEBasDISK's** own IP address and also its configuration password.

IP Configuration

	<input type="checkbox"/> Use DHCP
WEBasDISK IP Address	<input type="text" value="10.0.0.21"/>
IP Mask	<input type="text" value="255.255.255.0"/>
Gateway IP	<input type="text" value="0.0.0.0"/>
WINS Server IP	<input type="text" value="0.0.0.0"/>
DNS Server IP 1	<input type="text" value="0.0.0.0"/>
DNS Server IP 2	<input type="text" value="0.0.0.0"/>
WEBasDISK Password	<input type="password"/>
Confirm Password	<input type="password"/>
	<input checked="" type="checkbox"/> Automatically Rebuild Directory On All Saves
	<input type="button" value="Save Changes"/>

Option	Explanation
Use DHCP	WEBasDISK's IP must be fixed.
WEBasDISK IP Address	Defaults to 10.0.0.21 and should be changed to match your networks address range.
WEBasDISK IP Mask	Defaults to 255.255.255.0, which should be appropriate for most LANs.
Gateway IP	IP address of the gateway or router. This is necessary in a LAN with more than one subnet or to access the internet.
WINS Server IP	Not implemented yet. Currently a broadcast will be used to resolve computer names.
DNS Server IP 1	IP address of the primary DNS server. This is required to resolve names like www. WEBasDISK.com to the website's IP address.
DNS Server IP 2	IP address of the secondary DNS server. This is optionally used if the first server cannot be reached.
WEBasDISK Password	This password is used to protect the configuration pages of WEBasDISK . If a password is assigned the web browser will prompt you for this password whenever you access any WEBasDISK web page except the home page. The user name is always "admin".

Confirm Password	If you change the password you must retype it here to avoid assigning a misspelled password. If you forget the password that you have assigned you need to contact JUMPtec [®] . A handling surcharge may apply.
Automatically Rebuild Directory On All Saves	When checked all configuration saves also automatically trigger a rebuild of the cached server directory structure. We recommend to always check this option.

8. ADVANCED TOPICS

8.1. Storing Files in Flash

You can store a snapshot of the currently connected server shared directory into **WEBasDISK**'s flash memory. This snapshot will be used whenever there is no network connection, the server is down or a blank server share name has been set up in the Server Configuration page.

This example assumes that **WEBasDISK**'s IP address is the default 10.0.0.21.

- Wait until the **WEBasDISK** activity LED (see chapter 10 Connector Locations and Pinouts) is off.
- Access the **WEBasDISK** configuration web page with `http://10.0.0.21`
- Enter `http://10.0.0.21/snapshot` in your web browsers address field.
- The status LED will be turned on and **WEBasDISK** pulls in all server data and stores it to the local flash.
- This process may take a number of minutes depending of the size of the files in the server's shared directory. Currently up to 30 MB of sector data can be stored in this way. During this time the LED is blinking several times
- When the status LED stays off the process is complete.

Attention:

- The **Emulated disk size** of the system you want to flash has to be 32 MB or less.
- **Write Protection** must be read only when you are booting operating systems which write accesses the boot medium during startup (i.e. MS WIN98), because saving files in offline mode isn't implemented in this version

In the current firmware version this is the only way to use the onboard flash for data storage. This area will be heavily expanded in new firmware versions to include writing to flash from the target system and background copying of server data to flash with an automatic change detection.

8.2. Configuration Files on the Server

The following files can be located in the server's shared directory:

File name	Explanation
diskimg.bin	This file is the complete snapshot of all used sectors on any hard or flash disk. This image must start with a valid partition root sector. WEBasDISK uses the information in this sector to initialize its drive geometry. All other sectors are transparent and simply passed through to the target system upon request.
wadboot.sec	If "None/Any/WADBOOT.SEC" is chosen as an OS then the disk is not bootable unless this 512-byte boot sector file is present.
wadroot.sec	If "None/Any/WADBOOT.SEC" is chosen as an OS then this 512-byte partition root sector file can be presented if necessary.
waddelta.wdi waddelta.wds	In File Mode writes from the target go to these two delta files that contain only the written sectors. In Read/Write File Mode WEBasDISK automatically creates these files. The files, if present, are re-read when WEBasDISK is powered up. If the files are later deleted from the server all changes recorded in these files are discarded.
wadserv.ini	This file allows you to configure WEBasDISK from the server. You can also use it to redirect WEBasDISK to use another or new server share. This is useful when you have to change anything on the server side while WEBasDISK(s) are accessing these files.

	<p>Create a new share with the new files and a wadserve.ini in the old share which points to that. This procedure ensures consistent data at all times.</p> <p>The wadserve.ini is read whenever the directory is rebuild and also during power-on. The syntax of the file is similar to a MS Windows INI file. Currently two sections with optional settings are defined:</p>	
Sections of wadserve.ini	<pre>[Redirect] Server=\\server\share IP=10.0.0.30 Permanent=1 [Options] DiskSize=16</pre>	<p>Redirect section</p> <p>New server share name</p> <p>New optional server IP address</p> <p>If successful, store new server in EEPROM</p> <p>Options section</p> <p>Disk size in MByte</p>

8.3. WEBasDISK Button

The button S1 is **NOT** a reset button (see chapter 10 Connector Locations and Pinouts).

Avoid pressing it while you power on the system or while the status LED is on. If you do then **WEBasDISK** may switch its IP to 10.0.0.21 or 89.0.0.55. Turn **WEBasDISK** off and hold down until the status LED goes on to reverse the effect.

The current version of **WEBasDISK** rebuilds the directory whenever you press the button during normal operation. This behavior is likely to change in future firmware versions.

8.4. Creating Boot Sector Files

To create the wadboot.sec boot sector file under MS Windows or DOS open the Command Prompt and enter the commands shown in bold type:

```
C:\WINDOWS> debug
-l 100 2 0 1
-rcx
CX 0000
:200
-nwadboot.sec
-w
Writing 00200 bytes
-q

C:\WINDOWS> _
```

Copy the created wadboot.sec and all the other files to the server's shared directory and configure the OS for **WEBasDISK** as "None/Any/WADBOOT.SEC".

Note: Creating a wadboot.sec file for a 32 bit-filesystem will be supported in the future firmware versions.

9. FIRMWARE UPGRADE

WARNING: Following these instruction incorrectly, interrupting power during the firmware update, or using an incorrect or corrupt firmware file **might destroy WEBasDISK** and prevent it from operating properly. This has happened if all of the LEDs will remain dark when restoring the power after running an update. In this case **WEBasDISK** must be returned to **JUMPtec®** for repair at your expense.

This example assumes that **WEBasDISK**'s IP address is the default 10.0.0.21 and the firmware file name is net1r110.rom.

- Access the **WEBasDISK** configuration web page with `http://10.0.0.21`
- At the bottom of the page you will find the current firmware name that includes the version `xx` and build `bbb` number `NET1R1xx.bbb`.
- Obtain a new firmware file from **JUMPtec®** and decompress it if necessary. The file should be named `NET1R1xx.ROM` where `xx` is the version number.
- Please note that the file name must be all upper case or all lower case. Rename the file if necessary.
- Consult the readme file (if existent in the firmware file archive) for restrictions on which old firmware version can be upgraded to which new versions.
- Enter `http://10.0.0.21/init_flash` in your web browsers address field.
- A message "Ready for an FTP firmware upload!" should be returned and the status LED will be turned on.
- Upload the firmware file with an FTP client. To do this under MS Windows open the Command Prompt and enter the commands shown in bold type:

```
C:\WINDOWS> ftp 10.0.0.21

Connected to 10.0.0.21.
220 NET+ARM FTP Server 1.0 ready.
User (10.0.0.21:(none)): press <RETURN> here
230 User none logged in.
ftp> type binary
200 Type set to I.
ftp> put net1r110.rom
.....
ftp> bye

C:\WINDOWS> _
```

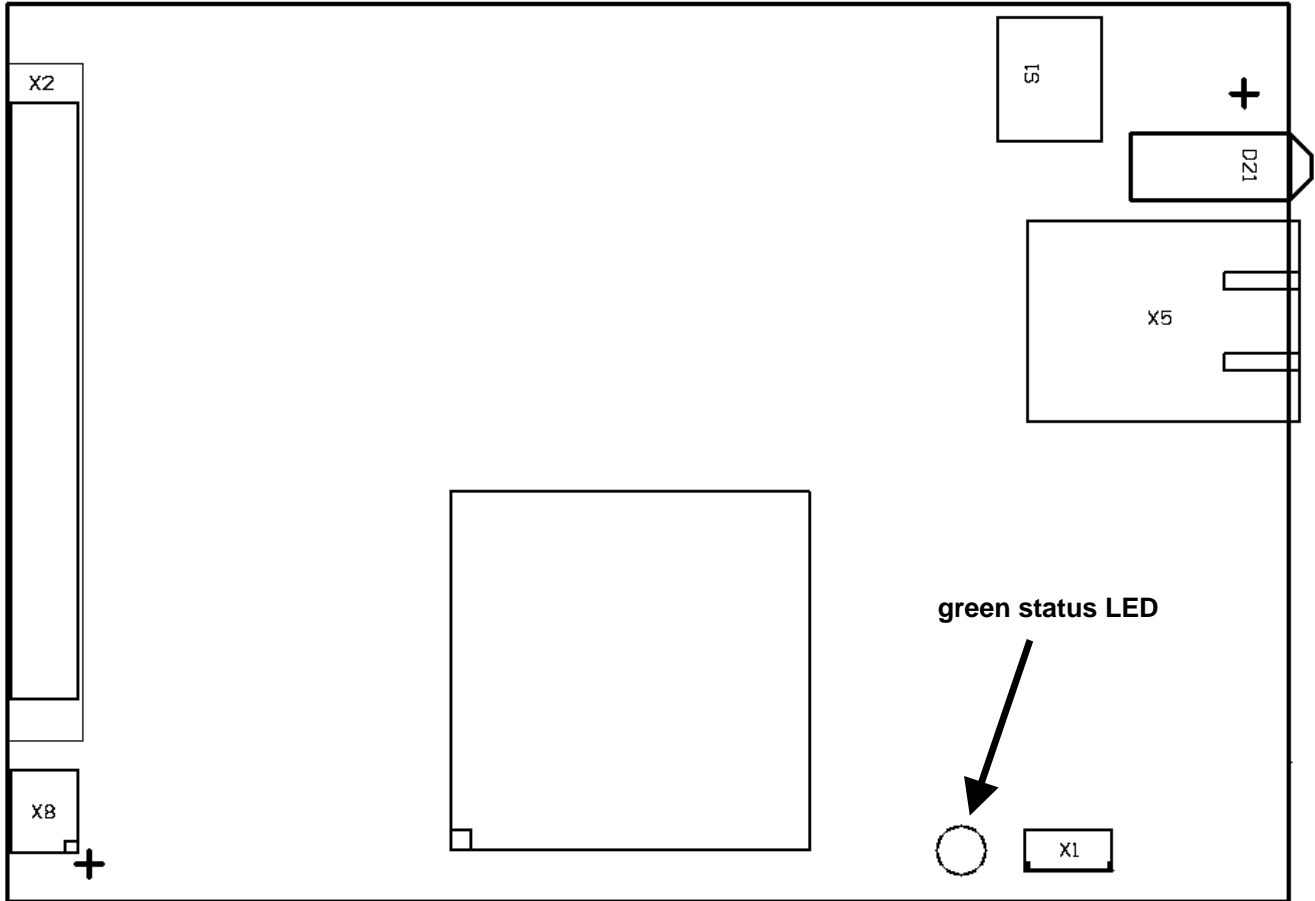
The file is stored in **WEBasDISK**'s RAM at first. The flash cycle will begin after the connection has been closed with the **bye** command. Up to that point you can upload a new file if a previous upload failed or forgot the **type binary**.

After issuing the **bye** command the status LED will remain on and will flicker every few seconds. The whole process can take a few minutes (currently less than two). When the firmware has been flashed completely the status LED will be turned off. After that recycle the power and verify that **WEBasDISK** is working and the configuration page shows the new version and build number.

DO NOT turn off the power while the STATUS LED is still on after issuing the **bye** command. If the status LED is still on after 5 minutes have passed the upgrade has failed.

10. CONNECTOR LOCATIONS AND PINOUTS

10.1. Connector Locations and LEDs



Note: PIN 1 of connectors is marked with a square pad on the bottom layer!

Note: S1 is **NOT** a RESET button! Please refer to chapter 8.3 WEBasDISK Button for its function.

D21 is a triple LED and indicates the network interface status.

- The upper **red** LED indicates that a 100 MBit network connection is established (**speed** indicator).
- The mid **yellow** LED indicates that **WEBasDISK** is connected to a network (**link** indicator).
- The bottom **green** LED indicates that data is transmitted (**activity** indicator).

10.2. Pinout Table

	IDE44 2.5" HDD	Ethernet	Jumper	I2C
Pin	X2	X5	X8	X1
1	/RESET	TXD+	Reserved	Vcc
2	GND	TXD-	GND	I2CLK
3	IDE D7	RXD+	/MASTER	I2DAT
4	IDE D8	NC	GND	GND
5	IDE D6	NC		
6	IDE D9	RXD-		
7	IDE D5	NC		
8	IDE D10	NC		
9	IDE D4			
10	IDE D11			
11	IDE D3			
12	IDE D12			
13	IDE D2			
14	IDE D13			
15	IDE D1			
16	IDE D14			
17	IDE D0			
18	IDE D15			
19	GND			
20	NC			
21	DMARQ			
22	GND			
23	/IOW			
24	GND			
25	/IOR			
26	GND			
27	IORDY			
28	BALE			
29	/DMACK			
30	GND			
31	IDEIRQ14			
32	/IOCS16			
33	IDEA1			
34	/PDIAG			
35	IDEA0			
36	IDEA2			
37	IDE CS0*			
38	IDE CS1*			
39	/DASP			
40	GND			
41	Vcc			
42	Vcc			
43	GND			
44	NC			

10.3. Pin Descriptions

X2 IDE and X5 Ethernet are standard interfaces so please refer to readily available documentation.

X8: /MASTER connect to GND to operate **WEBasDISK** as master drive. Leave open for slave operation.

X1: Vcc is 5V. I2CCLK and I2CDAT are the data and clock lines for the internal and external I2C bus.

11. COMPATIBILITY LIST

In the present hardware version of **WEBasDISK** there might be problems with some AT/ATX motherboards accessing **WEBasDISK**. On power up or reboot the BIOS auto detect is not able find **WEBasDISK**. This is caused by a missing IORDY support of the motherboard BIOS.

While a CPU BIOS tries to recognize an attached boot medium, it requests configuration data via a set of medium access registers from this storage medium. This registers are software emulated by the **WEBasDISK** and couldn't present information as fast as necessary. Therefor **WEBasDISK** drives the IORDY signal low to inform the attached CPU system about that delay. If this IORDY signal delay request is not detected by the motherboard BIOS, the CPU skips media detection after the preset timeout and continues startup process. Currently the only way to overcome this problem is a BIOS, which handles the IORDY signal correctly. Please contact your motherboard supplier in this case.

The following table shows different combinations of **JUMPtec®** mainboards (including shown BIOS version) and operating systems, which have been tested:

JUMPtec® device (used RAM)	BIOS	DOS	LINUX	MS WIN CE	MS WIN NTE	MS WIN 98 ¹⁾
coo/MONSTER (64 MByte)	LEU2R116	ok	ok	ok	ok	ok
coolMONSTER/P3 (64 MByte)	LEU6R111	ok	ok	ok	ok	ok
MOPS/cd4 (36 MByte)	P488R119	ok	ok	ok	ok	ok
MOPS/cd6 (64 MByte)	P588R118	ok	ok	ok	ok	ok
DIMM-PC/386I (16 MByte)	D201R125	ok	to be tested	to be tested	to be tested	to be tested
DIMM-PC/ SC520	D501R101	ok	ok	ok	to be tested	ok
ETX-mgx	MOD1R222	ok	ok	to be tested	to be tested	to be tested
ETX-P1	MOD5R120	ok	ok	ok	ok	ok
ETX-P3	MOD6R121	ok	ok	to be tested	ok	ok

¹⁾ = For running complete MS WIN 98 system you need to install WIN 98 first on the target system you are using for **WEBasDISK** then you can copy these files to your server share directory, otherwise there are problems with different device drivers for different mainboards.

Note:

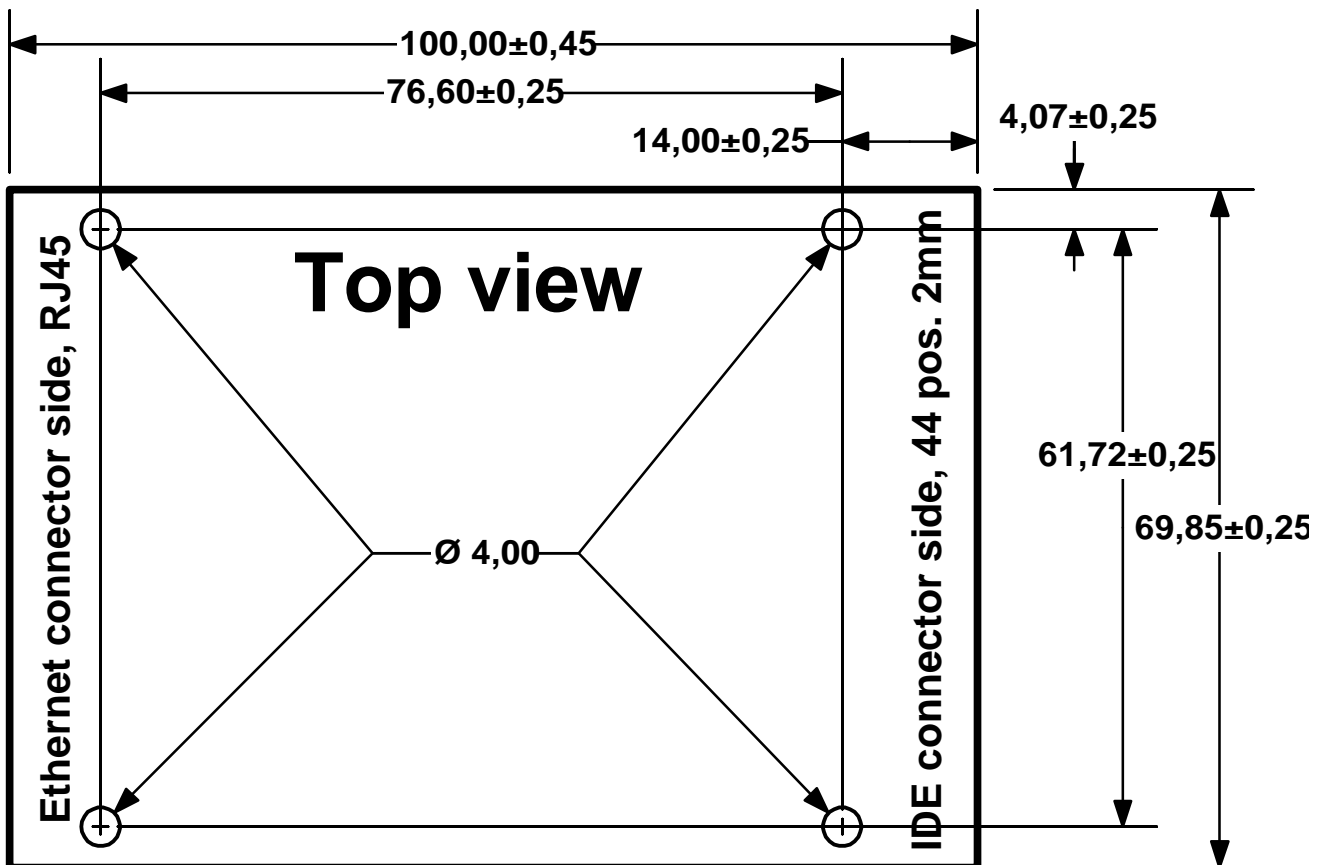
In **File mode** coping or deleting files in your server directory isn't possible after using this directory first time by **WEBasDISK** otherwise the system won't boot.

If you changed anything, you've to clear the two delta-files, what means all the changes you made so far with your **WEBasDISK** are lost, but then you can boot the system correctly again.

12. SPECIFICATIONS

Electrical	supply voltage	$5 \pm 5\%$	[V]
	supply current	max. 300	[mA]
Mechanical	board dimensions	see picture 1: all mechanical dimensions	[mm]
	height	max. 18	[mm]
	connectors	RJ45, 2 mm IDE	
	mounting	4 drill holes, diameter 4 mm	
Temperature ¹⁾	operating	± 0 to +70	°C
	non operating	-10 to +85	°C
Humidity	operating	10 to 90 (non-condensing)	%
	non operating	5 to 95 (non-condensing)	%

¹⁾ The maximum operating temperature is the maximum measurable temperature on any spot of the modules surface. It is the users responsibility to maintain this temperature within the above specification.



picture 1: all mechanical dimensions in [mm]

13. LITERATURE, STANDARDS, LINKS

It is not in the responsibility of **JUMPtec®** to supply you with information about standard PC technology. Please find below a selection of different information sources for your convenience.

13.1. PC/104-Bus

- **PC/104 Specification Version 2.3 June 1996**, PC/104 Consortium; www.pc104.org
- **Embedded PCs**, Markt&Technik GmbH, ISBN 3-8272-5314-4 (German)

13.2. ISA-Bus, Standard PS/2 Connectors

- **ISA System Architecture**, Addison-Wesley Publishing Company, ISBN 0-201-40996-8
- **AT BUS Design IEEE P996 Compatible**, Edward Solari, Annabooks San Diego CA. ISBN 0-929392-08-6
www.annabooks.com
- **PC Handbook, Sixth Edition**, John P. Choisser and John O. Foster, Annabooks San Diego CA. ISBN 0-929392-36-1, www.annabooks.com
- **AT IBM Technical Reference Vol 1&2**, 1985
- **ISA Bus Specifications and Application Notes**, January 30, 1990, Intel
- **Technical Reference Guide, Extended Industry Standard Architecture Expansion Bus**, Compaq 1989
- **Personal Computer Bus Standard P996**, Draft D2.00, January 18, 1990, IEEE Inc
- **Embedded PCs**, Markt&Technik GmbH, ISBN 3-8272-5314-4 (German)

13.3. PCI Specifications

- **PCI Special Interest Group**, c/o Intel Corporation
- **PCI System Architecture**, Addison-Wesley Publishing Company, ISBN 0-201-40993-3

13.4. RS232C

- **EIA-232-E Interface between data terminal equipment and data circuit-terminating equipment employing serial binary data interchange (ANSI/IEA-232-D)**

National Semiconductor's Interface Data Book includes several applications notes. These notes are also available online at <http://www.national.com/>. A search engine is provided to search the text of the available application notes. Entering „232“ as search criteria shows you a current list of related application notes.

14. DOCUMENT REVISION HISTORY

Filename	Date	Edited by	Changes to previous document revision
NET1M102.DOC	05-Oct-2001	DJP	first draft
NET1M110.DOC	09-Oct-2001	BRU	first release
NET1M111.DOC	23-Nov-01	MUP/BRU	release for SPS/IPC/Drives 2001
NET1M112.DOC	17-Dec-01	MUP/BRU	reworked version, added chapter 11 Compatibility List
NET1M113.DOC	15-Jan-02	MUP	expanded chapter 11 Compatibility List, completed temperature specification in chapter 12 Specifications, deleted note about disk size emulation restriction (only sizes < 1 GB available)