

USB Mass Storage Support





Section 1

Introduction	1-1
1. References.....	1-1
2. Abbreviations	1-1
3. Supported Controllers	1-1
4. Introduction	1-1
5. Operating Systems.....	1-1
6. LUN support.....	1-2
7. Minimum size under windows	1-2

Section 2

Memory Targets.....	2-3
1. Memories Supported.....	2-3
2. Dataflash card	2-3

Section 3

Frequently Asked Questions.....	3-5
1. How to use my USB Mass Storage Device under Windows 98SE ?	3-5
2. How can I disconnect my Mass Storage Device ?	3-5
3. I can't see the "Safe Disconnect" icon in the System Tray !	3-5
4. My device is enumerated but I can't see it under Linux !	3-6
5. Procedure for support 40 Invalid block per 1024 block	3-6



Section 1

Introduction

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| 1. | References | <ul style="list-style-type: none">■ Universal Serial Bus Specification, revision 2.0■ Universal Serial Bus Class Definition for Communication Devices, version 1.1■ USB Mass Storage Overview, revision 1.2■ USB Mass Storage Bulk Only, revision 1.0 |
|----|-------------------|--|
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|----|----------------------|---|
| 2. | Abbreviations | <ul style="list-style-type: none">■ USB: Universal Serial Bus■ VID: Vendor Identifier■ PID: Product Identifier■ LUN: Logical Unit Number |
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| 3. | Supported Controllers | <ul style="list-style-type: none">■ AT89C5130/31A & AT8xC5122D |
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| 4. | Introduction | <p>The aim of this document is to support the developer for Mass Storage Application.</p> |
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| 5. | Operating Systems | <p>The following OSs support the USB Mass Storage Device class:</p> <ul style="list-style-type: none">• Linux: USB mass storage is available in kernel 2.4 or later• USB mass storage is available in Mac OS 9/X or later• Windows XP: native driver• Windows 2000: native driver• Windows Me: native driver• Windows 98SE: Vendor specific driver required |
|----|--------------------------|--|

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6. **LUN support** In order to support multiple LUN, please verify that you have correctly intalled the latest service pack of your OS. Multiple LUN will works on:
- Windows XP SP1 or more
 - Windows 2000 SP4 or more
-
7. **Minimum size under windows** The minimum number of sectors to declare in order to be recognized by windows is 8.



Section 2

Memory Targets

1. Memories Supported

Supplier	Ref	Type	Manuf, Dev Code (hex)	Capacity (MB)	Supported by driver
Samsung	MT29F2G08AACWG	Nand Flash	2C, DA	256	1x2KB,2x2KB
Samsung	K9K1G08U0A	Nand Flash	EC, 79, xx, C0	128	1x512B
Atmel	AT45DB642	DataFlash	-	8	1x512B
Atmel	AT45DB321	DataFlash	-	4	1x512B
Atmel	AT45DB002 AT45DB004 AT45DB008	DataFlash Card	-		

2. Dataflash card

- Do not remove card during read/write action
- Because of the low write speed in dataflash, the Operating System can report an error when writing a file, but the file is correctly written. In case of failure, format the data flash using the Operating System tools.

3. Dataflash

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Section 3

Frequently Asked Questions

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- | | |
|---|--|
| 1. How to use my USB Mass Storage Device under Windows 98SE ? | <p>There is no native driver to support USB Mass Storage in Windows 98SE. Atmel provides drivers derivated from the SDK/DDK Microsoft example. For ATMEL products, we deliver this driver. The mass_storage_driver_for_Win98SE.zip file is in \Atmel\c5131-mass-storage-complete-x_x_x\doc folder.</p> <p>This driver is composed of 3 files:</p> <ul style="list-style-type: none">• atusbms.inf file• atusbms.sys file• atusbms.pdr file <p>The atusbms.sys and atusbms.pdr files are the system drivers for Windows 98SE.</p> <p>The .inf file describes the driver to load for your application. The application is recognized using the Vendor ID (VID) and Product ID (PID). Because you will use your own VID/PID in the final application, you have to modify the .inf file with the corresponding VID/PID. After driver installation :</p> <p>atusbms.inf is located in C:\windows\inf\</p> <p>atusbms.sys is located in c:\windows\system32\drivers\</p> <p>atusbpdr.pdr is located in c:\windows\system\iosubsys\</p> |
| 2. How can I disconnect my Mass Storage Device ? | <p>Under Windows, each Mass Storage device appears in the System Tray. Click on the corresponding icon in order to safely disconnect your USB device.</p> |
| 3. I can't see the "Safe Disconnect" icon in the System Tray ! | <p>There are 2 conditions for that:</p> <ul style="list-style-type: none">• be under Windows 2000 Professional, server• use a composite Mass Storage device (mass storage + mouse for example) <p>In such situation, no icon will appear in the System Tray. It's a bug from Microsoft. Please refers to this page:</p> <p>http://support.microsoft.com/default.aspx?scid=kb:en-us;841880&Product=win2000</p> |
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To solve this problem, use the Hotfix from Microsoft.

4. **My device is enumerated but I can't see it under Linux !**

Check with the USBview tool that your device is correctly enumerated.

The Linux kernel requires a Master Boot Record (MBR) and a Partition Boot Record (PBR). In root mode ("su" command), launch the fdisk tool for your device "fdisk /dev/sdx" (x is the number of your device), erase all existing partitions, and create a new partition. By default, this partition will use a Linux file system. You can change it to a FAT12 or FAT16 in order to be recognized by every OS.

```
$ su
Password:
# fdisk /dev/sdx
Command : d
number of the partition (1-4) : 1
Command : d
number of the partition (1-4) : 2
Command : d
number of the partition (1-4) : 3
Command : d
number of the partition (1-4) : 4
Command : n
   e Extended
   p Primary partition
p
First cylinder ():
Last cylinder():
Command: t
Number of the partition: 1
Code Hex : 6
Command: w
```

5. **Procedure for support 40 Invalid block per 1024 block**

1) You must modify the number of free blocks in the file "nf_drv.h" :

```
/* Number maximum of free block per zone */
#define NB_FREE_MAX          (24+20)
```

This variable increases the size of XDATA, and this one must be less than 2048 bytes. Change the MAX_FILE_FRAGMENT_NUMBER variable in "nf_drv.h" to reduce the xdata size.

```
#define MAX_FILE_FRAGMENT_NUMBER ((Byte)140) /* The maximum number
authorized
```

2) if the Nand Flash has been used with a firmware generated with other NB_FREE_MAX value, you must reinitialize the NF :

- modify in "config.h" the option format at TRUE :

```
#define NF_FULL_CHIP_ERASE    TRUE
```



- include the new value of NB_FREE_MAX
- compile, load and start the firmware
- format the NF via the player menu

At this step the NF correct, and you can change this option to FALSE.

3) You must format the NF



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