



Bitsy Linux BootROM Manual

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Revision History

REV	DESCRIPTION	DATE	BY
1.0	Preliminary version	9/13/01	WH









1 How it works.

1.1 Overview

Bitsy Linux Boot ROM is for managing Linux related files. It makes Linux boot from PCMCIA and On-Board Flash, copy files from PCMCIA to On-Board Flash, check memory size and type and more miscellaneous functions.

Bitsy Linux Boot ROM is different from that of Graphics Client Plus and Graphics Master. Those systems have separate Read-Only Boot ROM (Atmel 29V1024) to store boot code, but Bitsy doesn't have separate boot ROM like that. Instead of separate boot ROM, it use On-Board Flash as boot ROM and storage area. That is why Bitsy Linux boot ROM is written differently from other systems.

1.2 DIP Switch setting

Mode	DIP Switch			
	SW0	SW1	SW2	SW3
Normal			Don't Care	
			Don't Care	
Reserved for Future Use			Don't Care	
			Don't Care	

NOTE Set all DIP switches to OFF for normal status.

1.3 To boot from ATA PCMCIA Card

To boot from ATA PCMCIA card, ATA PCMCIA card should be formatted to FAT12 or FAT16. Boot ROM searches filename "Boot from PCMCIA.ads!" (Filename is case sensitive.)

If Boot ROM finds "Boot from PCMCIA.ads!" file from ATA PCMCIA card, it reads zImage and ramdisk.gz files and checks that zImage and ramdisk.gz are valid Linux image and ramdisk.gz file. If correct file, it copies files from ATA PCMCIA card to DRAM and boot Linux.

Following figure displays sample directory image of ATA PCMCIA card to boot from PCMCIA.

CAUTION : Filename is case sensitive. Use exact filename. If not, Boot ROM won't do boot from PCMCIA operation.

Name ▲	Size	Type	Modified
zImage	725 KB	File	6/1/1999 5:09 PM
RAMDISK.GZ	4,229 KB	WinZip File	6/1/1999 5:09 PM
Boot from PCMCIA.ads!	0 KB	ADS! File	6/1/1999 4:32 PM

Figure 1 Sample Snapshot of Files for Boot From PCMCIA Option

1.4 **To boot from On-Board Flash**

To boot from On-Board Flash, On-Board Flash should have valid zImage and ramdisk.gz. Boot ROM checks On-Board Flash to verify that there are valid zImage and ramdisk.gz.

If Boot ROM finds “Boot from Flash.ads!” file from ATA PCMCIA card, it reads zImage and ramdisk.gz from On-Board Flash even if there are zImage and ramdisk.gz in ATA PCMCIA card. And it verify that zImage and ramdisk.gz are valid Linux image and ramdisk.gz file. If correct file, it copies files from On-Board Flash to DRAM and boots Linux.

Following figure displays sample directory image of ATA PCMCIA card to boot from On-Board Flash.

CAUTION : Filename is case sensitive. Use exact filename. If not, Boot ROM won't do boot from Flash operation.

Name ▲	Size	Type	Modified
zImage	725 KB	File	6/1/1999 5:09 PM
RAMDISK.GZ	4,229 KB	WinZip File	6/1/1999 5:09 PM
Boot from Flash.ads!	0 KB	ADS! File	6/1/1999 4:30 PM

Figure 2 Sample Snapshot of Files for Boot From Flash Option

1.5 **To program zImage & ramdisk.gz to On-Board Flash**

To program zImage & ramdisk.gz to On-Board Flash, zImage and ramdisk.gz on ATA PCMCIA card must be valid file. Boot ROM checks those files during operation. If they are not valid files, it will stop operation to program zImage & ramdisk.gz to On-Board Flash to prevent system crash.

If Boot ROM finds “Program to Flash.ads!” file from ATA PCMCIA card, it reads zImage and ramdisk.gz from ATA PCMCIA card. And it verify that zImage and ramdisk.gz are valid Linux image and ramdisk.gz file. If correct file, it programs two files to On-Board Flash, copies zImage and ramdisk.gz from On-Board Flash to DRAM and boots Linux.

Following figure displays sample directory image of ATA PCMCIA card to boot from On-Board Flash.

CAUTION : Filename is case sensitive. Use exact filename. If not, Boot ROM won't do Program to Flash operation.

Name ▲	Size	Type	Modified
zImage	725 KB	File	6/1/1999 5:09 PM
RAMDISK.GZ	4,229 KB	WinZip File	6/1/1999 5:09 PM
Program to Flash.ads!	0 KB	ADS! File	6/1/1999 4:31 PM

Figure 3 Sample Snapshot of Files for Program to Flash Option

1.6 To Enter Boot ROM System Menu

Boot ROM has several functions like dump memory, set memory and erase flash. To enter that mode, there are two ways.

One is set DIP switch 0 to ON and switch 1 to OFF. This setting doesn't read ATA PCMCIA card to check file.

The other is using ATA PCMCIA card like others. Create "Goto BootROM Menu.ads!" file on ATA PCMCIA card and boot Bitsy with that ATA PCMCIA card.

Boot ROM doesn't care about other files than "Goto BootROM Menu.ads!" When Boot ROM find that file, it goes to Boot ROM system menu.

CAUTION: Filename is case sensitive. Use exact filename. If not, Boot ROM won't do Goto System Menu operation.

Name ▲	Size	Type	Modified
zImage	725 KB	File	6/1/1999 5:09 PM
RAMDISK.GZ	4,229 KB	WinZip File	6/1/1999 5:09 PM
Goto BootROM Menu.ads!	0 KB	ADS! File	6/1/1999 4:30 PM

Figure 4 Sample Snapshot of Files for Enter Boot ROM Menu Option

1.7 To Update Boot ROM

As wrote in this document, Bitsy doesn't have separate boot ROM like other systems. Instead of that, it shares On-Board Flash with Operating System file storage and Boot ROM. It means Boot ROM can be updated by software like zImage and ramdisk.gz. But, failure of this operation may make system un-bootable, so you should be careful to update BootROM image.

To update Boot ROM, create file named "Program ADS bootROM.ads!" on ATA PCMCIA card and copy Boot ROM image as filename, "adslinux.rom". Boot ROM verifies "adslinux.rom" file to make sure file is valid ADS Linux Boot ROM file.

NOTE: Bitsy Linux Boot ROM can program Windows CE boot ROM image, too. Copy Windows CE Bitsy Boot ROM to "adslinux.rom" filename.

CAUTION: Filename is case sensitive. Use exact filename. If not, Boot ROM won't do Updating Boot ROM operation.

Name ▲	Size	Type	Modified
adslinux.rom	54 KB	ROM File	6/26/2001 5:10 PM
Program ADS bootROM.ads!	0 KB	ADS! File	6/1/1999 4:31 PM

Figure 5 Sample Snapshot of Files for Updating Linux Boot ROM Option

1.8 **Without any command file**

Without any command file described above on ATA PCMCIA card, Boot ROM works as follows.

1. Check PCMCIA
2. If there is ATA PCMCIA card,
read zImage and ramdisk.gz form ATA PCMCIA card.
And boot.
3. If there is no zImage or ramdisk.gz in ATA PCMCIA card or invalid file,
read zImage and ramdisk.gz from On-Board Flash.
And boot.
4. If there is no zImage or ramdisk.gz in On-Board Flash or invalid file,
go to System Menu.

1.9 **Revision**

1.9.1 3.01

- Support Power Management (Sleep/Wakeup)

1.9.2 3.00

- Official Release of Bitsy Linux BootROM
- Different OnBoard Flash Memory area from 3.00B Beta Release
- Added BootROM area protection with LOCK/UNLOCK
- Sleep/Wakeup is **NOT** tested yet.

1.9.3 3.00B

- First Bitsy Linux Boot ROM Release
- Beta Version
- Use *filename* as command
- Sleep/Wakeup function is **NOT** tested yet.