



# Enabling SPI Flash Disk on Vortex86

## Summary

Application Note

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How to enable the on board SPI flash disk on the Vortex86

Many ICOP Vortex86 modules include an SPI flash device which can be enabled in the BIOS as the boot device. The flash device on the module comes pre-loaded with FreeDos so application development can begin out of the box.

This application note will give a step-by-step procedure for enabling the device and booting into FreeDos.

## Prepare the unit

If the module has a graphics card then connect to a VGA monitor and a PS2 or USB keyboard. Otherwise connect a PC running a terminal program to the remote console serial port. The remote console port generally by default is COM1 and is enabled by connecting GPIO 3.7 to GND (Refer to the user manual for the specific module to confirm these details).

The terminal program needs the communications to be set to 115200 BAUD, 8 data bits, No parity and 1 stop bit.

## Power up

As the unit boots you should see the BOOT information screen, the final display should be similar to figure 1.



```
Reboot and Select proper Boot device  
or Insert Boot Media in selected Boot device and press a key
```

Figure 1

## Enabling SPI Flash Disk on Vortex86

### Running the BIOS setup program

Power cycle the module to re-boot and during the boot process press the DEL key if using a PS2 or USB keyboard, if you are using the remote console press the F4 function key.

The display should say 'Entering Setup', followed by the screen shown in figure 2.

```

Main      Advanced  PCIPnP    Boot      Security  Chipset   Exit
*****
* System Overview                                     *
* *****                                           *
* Processor                                           *
* Vortex86DX A9121                                    *
* Speed      :800MHz                                  *
*
* System Memory                                       *
* Size       :256MB                                   *
* Speed      :300MHz                                  *
*
* System Time [12:48:26]                               *
* System Date [Tue 09/02/2008]                         *
*
* CPU MTBF    :65130 Hour(s) Remaining                *
* System Fault :0 Time(s)                             *
*
* **          Select Screen                            *
* **          Select Item                              *
* +-         Change Field                              *
* Tab       Select Field                              *
* F1        General Help                              *
* F10       Save and Exit                             *
* ESC       Exit                                       *
*****
v02.69 (C)Copyright 1985-2010, American Megatrends, Inc.
```

Figure 2



## Enabling SPI Flash Disk on Vortex86

There is a small SPI flash internal to the Vortex86 processor, but the device we wish to select is the larger, external device that is designed into the modules.

Use the up /down keys to select 'External' then press 'Enter'.

Press the 'Esc' key to navigate back to the top menu

```
Main  Advanced  PCIPnP  Boot  Security  Chipset  Exit
*****
*  Boot Settings  *
*  *****  *
*  * Boot Settings Configuration  *
*  *  *
*  *  *
*  *  *
```

Use left / right keys to navigate to the exit, menu. 'Save changes and Exit' should be highlighted.

```
Main  Advanced  PCIPnP  Boot  Security  Chipset  Exit
*****
*  Exit Options  *
*  *****  *
*  Save Changes and Exit  *
*  Discard Changes and Exit  *
*  Discard Changes  *
*  *  *
```

Press 'Enter'

```
*****
*  Save configuration changes and exit setup?  *
*  *  *
*  [Ok]  [Cancel]  *
*****
*  *  *  Selected
```

Press 'Enter' again and the unit should reboot.

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The unit should now detect the drive and boot into FreeDOS.

```
FreeDOS kernel build 2036 cvs [version Aug 18 2006 compiled Aug 18 2006]
Kernel compatibility 7.10 - WATCOMC - 80386 CPU required - FAT32 support

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WARRANTY; you can redistribute it and/or modify it under the terms of the
GNU General Public License as published by the Free Software Foundation;
either version 2, or (at your option) any later version.
- InitDiskno hard disks detected

FreeCom version 0.84-pre2 XMS_Swap [Aug 28 2006 00:29:00]
Current date is Tue 09-02-2008
Enter new date (mm-dd-ccyy):
Current time is 1:15:12.29 pm
Enter new time:
A:\>
```

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