

# **Rocket 100 Controller FreeBSD Installation Guide**

Version 1.1

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# 1 Overview

The purpose of this document is to provide clear instructions on how to install and use HPT370 UDMA/ATA100 Controller on a FreeBSD system.

## 2 Installing FreeBSD on Rocket 100 Controller

If you would like to install FreeBSD onto drives attached to Rocket 100 Controller, please perform the following operations:

### Step 1 Prepare Your Hardware for Installation

After you attach your hard disks to Rocket 100 Controller, you can use Rocket 100 BIOS Setting Utility to configure your hard disks. You can select a hard disk as boot disk otherwise Rocket 100 BIOS will automatically select the first one attached as boot disk.

#### Note

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If you have other SCSI adapters installed, you must make sure the Rocket 100 Controller BIOS will be loaded firstly. If not, try to move it to another PCI slot. Otherwise you may be unable to boot up your system.

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### Step 2 Check System BIOS Settings

In your system BIOS SETUP menu, change **Boot Sequence** in such a way that the system will first boot from CDROM, next from and then from floppy drive, and then from SCSI. Refer to your BIOS manual to see how to set boot sequence.

If your BIOS settings do not support such a boot sequence, you can first set it to boot from CDROM. After you finish installation, set SCSI as the first boot device to boot up the system.

### Step 3 Prepare the Driver Diskette

If you are installing FreeBSD, you must prepare a driver disk for Rocket 100 before installation.

First obtain the driver diskette image file: freebsd.img.

On a DOS or Windows system, you can make the boot diskette using rawrite.exe. It can be found on the FreeBSD CD (under \tools). Just run it under a command window and follow its prompt.

On a FreeBSD system, you can use the “dd” command to make the driver diskette. Insert a floppy disk into the floppy drive and type the command:

```
# dd if=freebsd.img of=/dev/fd0
```

## Step 4 Install FreeBSD

- 1) Start installing the FreeBSD by booting from FreeBSD CD.
- 2) If you are installing FreeBSD 5.0 or earlier versions, skip this step. When “**Welcome to FreeBSD**” screen appears, select “6”.
- 3) When “**Hit [enter] to boot immediately or any other key for command prompt**” screen appears, press SPACE key to stop loader from autobooting.

```
BTX loader 1.00  BTX version is 1.01
Console: internal video/keyboard
BIOS driver A: is disk0
BIOS driver B: is disk1
BIOS driver C: is disk2
BIOS 636kB/74512kB available memory

FreeBSD/i386 bootstrap loader, Revision 0.8
(mailto:jkhn@narf.osd.bsdi.com, Sat Apr 21 08:46:19 GMT 2001)
-
Hit [Enter] to boot immediagely, or any other key for command prompt.
Booting [kernel] in 9 seconds...
```

*<-press SPACE key*

A prompted label “ok” will appear at the bottom of the screen.

- 4) If you are installing FreeBSD 4.5 or later, please skip this step. Type in “load kernel” (without quotation mark) and then press **enter**.

```
Type '?' for a list of commands, 'help' for more detailed help.
ok load kernel
/kernel text=0x24f1db data=0x3007ec+0x2062c -
```

- 5) Insert the driver diskette into floppy drive now. Type in “load diskx:hpt370-x.x” and then press **enter**.

```
for FreeBSD 4.1-RELEASE
  ok load disk1:hpt370-4.1
  disk1:/hpt370-4.1.ko text=0xf571 data=0x2c8+0x254

for FreeBSD 4.3-RELEASE
  ok load disk1:hpt370-4.3
  disk1:/hpt370-4.3.ko text=0xf571 data=0x2c8+0x254

for FreeBSD 4.4-RELEASE
  ok load disk1:hpt370-4.4
  disk1:/hpt370-4.4.ko text=0xf571 data=0x2c8+0x254

for FreeBSD 4.5-RELEASE
  ok load disk1:hpt370-4.5
  disk1:/hpt370-4.5.ko text=0xf571 data=0x2c8+0x254

for FreeBSD 4.6-RELEASE
  ok load disk1:hpt370-4.6.2
  disk1:/hpt370-4.6.2.ko text=0xf571 data=0x2c8+0x254

for FreeBSD 4.7-RELEASE
  ok load disk1:hpt370-4.7
  disk1:/hpt370-4.7.ko text=0xf571 data=0x2c8+0x254

for FreeBSD 4.8-RELEASE
  ok load disk1:hpt370-4.8
  disk1:/hpt370-4.8.ko text=0xf571 data=0x2c8+0x254
for FreeBSD 4.9-RELEASE
  ok load disk1:hpt370-4.9
```

```
disk1:/hpt370-4.9.ko text=0xf571 data=0x2c8+0x254

for FreeBSD 5.0-RELEASE
  ok load disk0:hpt370-5.0.ko
  disk0:/hpt370-5.0.ko text=0xf571 data=0x2c8+0x254

for FreeBSD 5.1-RELEASE
  ok load disk0:hpt370-5.1.ko
  disk0:/hpt370-5.1.ko text=0xf571 data=0x2c8+0x254

for FreeBSD 5.2.1-RELEASE
  ok load disk0:hpt370-5.2.1.ko
  disk0:/hpt370-5.2.1.ko text=0xf571 data=0x2c8+0x254
```

- 6) Type in "boot" and continue the installation as normal. You can refer to FreeBSD installation guide.

```
ok boot
```

---

**Note**

The system device mapping order is the same as the order shown in Rocket 100 BIOS Setting Utility. If you have no other SCSI devices, the device marked as "BOOT" or "HDD0" will be /dev/da0, "HDD1" will be /dev/da1, "HDD2" will be /dev/da2, etc.

---

- 7) Before exit install, an additional step must be taken to copy the driver module to system. On the driver disk, there is a setup script "**postinstall**" which will do this work for you. Before you reboot the system, press **Alt-F4** to the command shell and type the following commands:

```
# mount -o ro /dev/fd0 /mnt
# sh /mnt/postinstall
# umount /mnt
```

Then press **Alt-F1** to return to the setup screen and choose [**X Exit Install**] to finish setup.

## 3 Installing Driver on an Existing System

If you are currently running FreeBSD and would like to access drives or arrays attached to the Rocket 100 Controller, you can perform the following steps.

### Step 1 Copy the Driver Module

Insert the driver diskette to floppy drive, then using the following commands to copy the driver module:

```
for FreeBSD 4.1-RELEASE
  # mount -o ro /dev/fd0 /mnt
  # cp /mnt/hpt370-4.1.ko /modules/hpt370.ko
  # umount /mnt

for FreeBSD 4.3-RELEASE
  # mount -o ro /dev/fd0 /mnt
  # cp /mnt/hpt370-4.3.ko /modules/hpt370.ko
  # umount /mnt
```

```
for FreeBSD 4.4-RELEASE
# mount -o ro /dev/fd0 /mnt
# cp /mnt/hpt370-4.4.ko /modules/hpt370.ko
# umount /mnt

for FreeBSD 4.5-RELEASE
# mount -o ro /dev/fd0 /mnt
# cp /mnt/hpt370-4.5.ko /modules/hpt370.ko
# umount /mnt

for FreeBSD 4.6-RELEASE
# mount -o ro /dev/fd0 /mnt
# cp /mnt/hpt370-4.6.2.ko /modules/hpt370.ko
# umount /mnt

for FreeBSD 4.7-RELEASE
# mount -o ro /dev/fd0 /mnt
# cp /mnt/hpt370-4.7.ko /modules/hpt370.ko
# umount /mnt

for FreeBSD 4.8-RELEASE
# mount -o ro /dev/fd0 /mnt
# cp /mnt/hpt370-4.8.ko /modules/hpt370.ko
# umount /mnt

for FreeBSD 4.9-RELEASE
# mount -o ro /dev/fd0 /mnt
# cp /mnt/hpt370-4.9.ko /modules/hpt370.ko
# umount /mnt

for FreeBSD 5.0-RELEASE
# mount -o ro /dev/fd0 /mnt
# cp /mnt/hpt370-5.0.ko /boot/kernel/hpt370.ko
# umount /mnt

for FreeBSD 5.1-RELEASE
# mount -o ro /dev/fd0 /mnt
# cp /mnt/hpt370-5.1.ko /boot/kernel/hpt370.ko
# umount /mnt

for FreeBSD 5.2.1-RELEASE
# mount -o ro /dev/fd0 /mnt
# cp /mnt/hpt370-5.2.1.ko /boot/kernel/hpt370.ko
# umount /mnt
```

## Step 2 Test the Driver Module

You can test out the module to ensure that it works for your system by load it during system booting.

If the module has been loaded successfully you should see the driver banner and a display screen of the attached drives. You can now access the drives as a SCSI device (if you have no other SCSI device, the first device is /dev/da0, then /dev/da1, etc.).

### Example

```
F1      FreeBSD
Default: F1

>> FreeBSD/i386 BOOT
Default: 0:ad(0,a)/boot/loader
boot:

BTX loader 1.00  BTX version is 1.01
Console: internal video/keyboard
```

```
BIOS driver A: is disk0
BIOS driver C: is disk2
BIOS 636kB/74512kB available memory

FreeBSD/i386 bootstrap loader, Revision 0.8
(mailto:jkh@narf.osd.bsdi.com, Sat Apr 21 08:46:19 GMT 2001)
Loading /boot/defaults/loader.conf
/kernel text=0x24f1db data=0x3007ec+0x2062c -
/
<- For FreeBSD 5.1 and later: select "6" on "Welcom to FreeBSD" screen.

Hit [Enter] to boot immediagely, or any other key for command prompt.
Booting [kernel] in 9 seconds...

<-press SPACE key
Type '?' for a list of commands, 'help' for more detailed help.
ok load hpt370
/modules/hpt370.ko text=0xf571 data=0x2c8+0x254
ok autoboot
```

---

If you have one disk attached to Rocket 100, it will be registered to system as device **/dev/da0**. You can use **“/stand/sysinstall”** to create partitions and disklabels (*like da0s1e*) on **da0**. Then you can create new filesystem using **“newfs /dev/da0s1e”**. Now you can mount **/dev/da0s1e** to somewhere to access it.

---

### Step 3 Configure System to Automatically Load the Driver

Most likely, you will not want to type “load hpt370” each time you boot up the system. Therefore you must install the module and tell the system about it. To configure system to automatically load the driver, type in the following commands:

```
# echo 'hpt370_load="YES"' >> /boot/defaults/loader.conf
```

This tells the loader to try loading the driver module together with the kernel.

Now, reboot the system. Driver module should be automatically loaded each time system start up.

### Step 4 Configure System to Mount Volumes when Startup

Now you can inform the system to automatically mount the array by modifying the file **/etc/fstab**. E.g. You can add the following line to tell the system to mount **/dev/da1s1e** to location **/mnt/hpt** after startup:

```
/dev/da1s1e      /mnt/hpt        ext2      defaults    0 0
```

## 4 Monitoring the Driver

Once the driver is running, you can monitor the running status of driver.

### Checking Devices Status

Using the following command to show driver status:

```
# sysctl hpt370.status
```

This command will show the driver version number, physical device list and logical device list.

## 5 Updating the Driver

You can update the driver if you have newer driver diskette.

Insert the driver diskette to floppy drive, then using the following commands to update the driver module:

```
for FreeBSD 4.1-RELEASE
# mount -o ro /dev/fd0 /mnt
# cp /mnt/hpt370-4.1.ko /modules/hpt370.ko
# umount /mnt

for FreeBSD 4.3-RELEASE
# mount -o ro /dev/fd0 /mnt
# cp /mnt/hpt370-4.3.ko /modules/hpt370.ko
# umount /mnt

for FreeBSD 4.4-RELEASE
# mount -o ro /dev/fd0 /mnt
# cp /mnt/hpt370-4.4.ko /modules/hpt370.ko
# umount /mnt

for FreeBSD 4.5-RELEASE
# mount -o ro /dev/fd0 /mnt
# cp /mnt/hpt370-4.5.ko /modules/hpt370.ko
# umount /mnt

for FreeBSD 4.6-RELEASE
# mount -o ro /dev/fd0 /mnt
# cp /mnt/hpt370-4.6.2.ko /modules/hpt370.ko
# umount /mnt

for FreeBSD 4.7-RELEASE
# mount -o ro /dev/fd0 /mnt
# cp /mnt/hpt370-4.7.ko /modules/hpt370.ko
# umount /mnt

for FreeBSD 4.8-RELEASE
# mount -o ro /dev/fd0 /mnt
# cp /mnt/hpt370-4.8.ko /modules/hpt370.ko
# umount /mnt

for FreeBSD 4.9-RELEASE
# mount -o ro /dev/fd0 /mnt
# cp /mnt/hpt370-4.9.ko /modules/hpt370.ko
# umount /mnt

for FreeBSD 5.0-RELEASE
# mount -o ro /dev/fd0 /mnt
# cp /mnt/hpt370-5.0.ko /boot/kernel/hpt370.ko
# umount /mnt

for FreeBSD 5.1-RELEASE
# mount -o ro /dev/fd0 /mnt
# cp /mnt/hpt370-5.1.ko /boot/kernel/hpt370.ko
# umount /mnt

for FreeBSD 5.2.1-RELEASE
# mount -o ro /dev/fd0 /mnt
# cp /mnt/hpt370-5.2.1.ko /boot/kernel/hpt370.ko
# umount /mnt
```



Reboot your system to make the new driver take effect.

## 6 Uninstalling

### Uninstalling the Driver

You can only uninstall the driver when your system is not booting from devices attached to Rocket 100 Controller. Just remove the line

```
hpt370_load="YES"
```

in `/boot/defaults/loader.conf`, and then delete the driver module `/modules/hpt370.ko` or `/boot/kernel/hpt370.ko` .