HiBurn

User Guide

Issue   **11**

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HiSilicon Technologies Co., Ltd.

About This Document

Purpose

This document describes how to use the HiBurn. By using the HiBurn, you can burn all program images to the flash memory of a board in one-click mode, burn images to the flash memory of a board with boot by the flash address, or burn only the boot image to the flash memory of a board.

Related Versions

The following table lists the product versions related to this document.

Product Name	Version
Hi3798M	V1*XX*
Hi3796M	V1*XX*
Hi3798C	V1*XX*
Hi3798C	V2*XX*
Hi3796C	V1*XX*
Hi3716C	V1*XX*
Hi3716M	V1*XX*
Hi3716C	V2*XX*
Hi3719C	V1*XX*
Hi3718C	V1*XX*
Hi3719M	V1*XX*
Hi3718M	V1*XX*
Hi3716M	V4*XX*
Hi3716M	V31*X*
Hi3716M	V32*X*
Hi3716M	V33*X*

Product Name	Version
Hi3798C	V1*XX*
Hi3712	V1*XX*
Hi3110E	V2*XX*
Hi3110E	V4*XX*
Hi3110E	V5*XX*
Hi3110E	V3*XX* (CA)
Hi3716C	V11*X* (CA)
Hi3716M	V2*XX* (CA)
Hi3716M	V3*XX* (CA)
Hi3716C	V2*XX* (CA)
Hi3719M	V100 (CA)
Hi3521	V1*XX*
Hi3531	V1*XX*
Hi3520D	V1*XX*
Hi3535	V1*XX*
Hi3536	V1*XX*
Hi3521A	V1*XX*
Hi3751	V8*XX*
Hi3751	V6*XX*
Hi3751L	V5*XX*
Hi3751	V5*XX*
Hi3251	V1*XX*
Hi3751	V3*XX*

Intended Audience

This document is intended for:

- Technical support engineers
- Hardware development engineers

Symbol Conventions

The symbols that may be found in this document are defined as follows.

Symbol	Description
⚠ **DANGER**	Alerts you to a high risk hazard that could, if not avoided, result in serious injury or death.
⚠ **WARNING**	Alerts you to a medium or low risk hazard that could, if not avoided, result in moderate or minor injury.
⚠ **CAUTION**	Alerts you to a potentially hazardous situation that could, if not avoided, result in equipment damage, data loss, performance deterioration, or unanticipated results.
⊶ **TIP**	Provides a tip that may help you solve a problem or save time.
📖 **NOTE**	Provides additional information to emphasize or supplement important points in the main text.

Change History

Changes between document issues are cumulative. Therefore, the latest document issue contains all changes made in previous issues.

Issue 11 (2016-04-12)

This issue is the eleventh official release, which incorporates the following change:

Section 10.22 is added.

Issue 10 (2016-03-03)

This issue is the tenth official release, which incorporates the following change:

Section 10.21 is added.

Issue 09 (2015-12-25)

HiM5 is renamed as Hi3251.

Issue 09 (2015-09-20)

This issue is the ninth official release, which incorporates the following changes:

Sections 1.2 and 1.3 are added.

Sections 1.5 and 2.2 are modified.

Issue 08 (2015-04-30)

This issue is the eighth official release, which incorporates the following change:

Section 10.20 is added.

Issue 07 (2015-03-10)

This issue is the seventh official release, which incorporates the following changes:

Hi3716M V320 and Hi3110E V500 are supported.

Section 10.19 is added.

Issue 06 (2014-12-31)

This issue is the sixth official release, which incorporates the following change:

The Hi3536 and Hi3521A series are supported.

Issue 05 (2014-11-06)

This issue is the fifth official release, which incorporates the following change:

The Hi3751 series are supported.

Issue 04 (2014-10-31)

This issue is the fourth official release, which incorporates the following change:

Hi3796M V100 is supported.

Issue 03 (2014-09-19)

This issue is the third official release, which incorporates the following change:

Hi3716M V310 is supported.

Issue 02 (2014-09-05)

This issue is the second official release, which incorporates the following changes:

Chapters 6 and 8 and section 9.4 are added.

Issue 01 (2014-05-20)

This issue is the first official release, which incorporates the following changes:

Chapter 8 FAQs

Sections 8.1 to 8.6, sections 8.11 to 8.13, and sections 8.15 to 8.18 are added.

Issue 00B01 (2014-03-20)

This issue is the first draft release.

Contents

Figures

Tables

1 Overview

1.1 Introduction to the HiBurn

The HiBurn is used to burn and upload images and create burner images.

1.2 Application Scenario

The three major functions of the HiBurn and corresponding application scenarios are as follows:

- Image burning: Burn the images to the corresponding flash address over the serial port and network port.
- Image upload: Export the data at the flash address to a file on the PC by using the DDR.
- Burner image creation: Package images in the partition table into the corresponding image file based on the format required by the burner and provide the image file to the burner for mass production burning.

1.3 Burning Principle

For the U-boot, after the HiBurn starts burning, the HiBurn starts to interact with the BOOTROM. To be specific, the DDR parameters of the HiBurn are transferred to the BOOTROM. At this time, the U-boot download progress bar indicates that 5% is complete. The DDR is initialized and the U-boot is transferred to the DDR. When the U-boot download progress bar indicates that 100% is complete, the transfer is complete. Then the U-boot is boot from the DDR. After the boot is complete, the HiBurn starts to interact with the U-boot. To be specific, the burning command is sent to burn the U-boot in the DDR to the corresponding flash address.

For other image partitions such as the kernel partition and rootfs partition, the HiBurn uses the network port transfer mode by default. Customers can choose the bare burning mode or the non-bare burning mode. In bare burning mode, images are burnt by partition, or images are burnt to the embedded multimedia card (eMMC). In this case, only the U-boot is selected, and the U-boot is burnt to the flash. In non-burning mode, all partitions are selected except the U-boot partition. In this case, ensure that there is U-boot on the current board. During the

burning process, the HiBurn starts the U-boot, sends the TFTP and write commands to the U-boot the implement burning.

1.4 Supported Components and Functions

The functions and components supported by the HiBurn vary according to the chip. For details, see Table 1-1.

Table 1-1 Components and functions supported by the HiBurn based on the chip model

Chip Model	Flash Type			File System				Advanced Function	
	SPI	NAND	eMMC	Yaffs	SquashFS	UBI	EXT3/4	CA	Bad Block Check
Hi3521 Hi3531 Hi3520D Hi3535	●	●	○	●	○	○	○	○	○
Hi3712	●	●	○	●	○	●	○	○	○
Hi3110E V200 Hi3110E V400	●	○	○	○	●	●	○	○	○
Hi3798M Hi3798C Hi3796C Hi3716C Hi3716H Hi3798C Hi3751V Hi3716M V100 Hi3716M V200 Hi3716M V300 Hi3716M V400 Hi3716C V200 Hi3718C V100 Hi3719C V100 Hi3719M V100 Hi3719M V100_A	●	●	●	●	○	●	●	○	●
Hi3110E V300 (CA)	●	○	○	●	○	●	○	●	○

Chip Model	Flash Type			File System				Advanced Function	
	SPI	NAND	eMMC	Yaffs	SquashFS	UBI	EXT3/4	CA	Bad Block Check
Hi3716C V110 (CA) Hi3716M V200 (CA) Hi3716M V300 (CA) Hi3716C V200 (CA) Hi3719M V100 (CA) Hi3719C V100 (CA)	●	●	●	●	○	●	●	●	○
S40 V100	●	●	○	○	●	○	○	○	○

Note that ● indicates supported and ○ indicates not supported.

1.5 Environment Preparation

Before using the HiBurn for burning, perform the following steps:

Step 1 Connect the PC and the board by using the serial port and network cable, and set bootrom_sel to **1** to enable the system to boot from the BOOTROM because the HiBurn needs to interact with the BOOTROM during the burning process.

Step 2 Copy **HiTool-*XXX-X.X.X*.zip** (in **$SDK_DIR/tools/windows/HiTool**) to a local hard disk drive on a PC that runs Windows 7 or Windows XP.

Preinstall JRE 1.6 (jre-6u1-windows-i586-p); otherwise, the HiTool may fail to run properly. You can download JRE 1.6 from http://www.oracle.com/technetwork/java/javase/downloads/java-archive-downloads-javase6-419409.html.
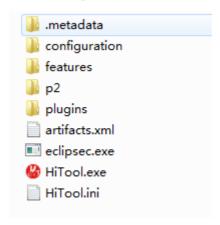
Choose **Start** > **Run**, enter **cmd**, click **OK**, and enter **java –version** in the displayed command-line interface (CLI) to check the version of the JRE installed on the PC. If the current version is later than version 1.6, see section 10.20 "What Do I Do If the HiTool Displays "Failed to create the Java Virtual Machine" When the JRE 1.7 or Later Version Is Installed on the PC?"

Step 3 Decompress **HiTool-*XXX-X.X.X*.zip**, and double-click **HiTool.exe** to open the HiTool, as shown in Figure 1-1.
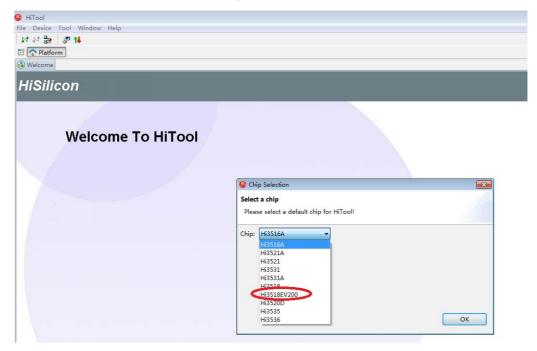
Figure 1-1 Opening the HiTool

Step 4 Select the model of the chip on the board (taking Hi3518E V200 as an example), as shown in Figure 1-2.
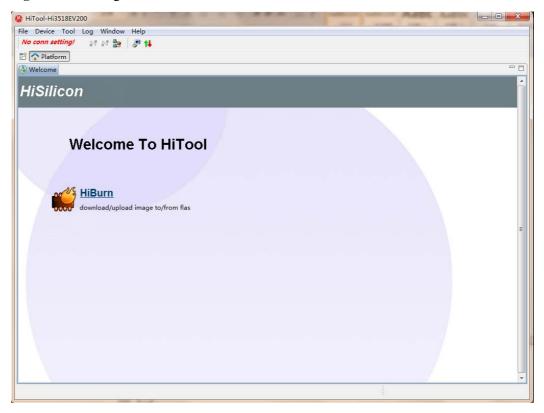
Figure 1-2 Selecting the model of the chip on the board

Step 5 Click **HiBurn** on the **Welcome To HiTool** UI, as shown in Figure 1-3.

Figure 1-3 Clicking HiBurn

Step 6 Select a serial port for connecting the board, select the IP address of the PC, and set the MAC address, IP address, subnet mask, and gateway of the board. See Figure 1-4.
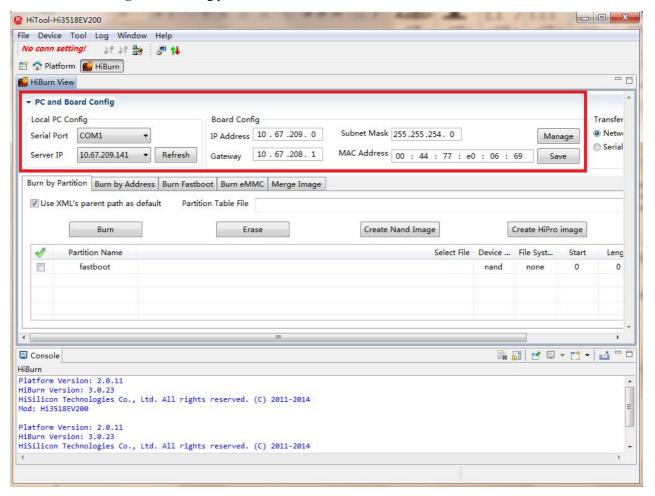
⚠ **CAUTION**

The IP addresses of the PC and the board must be on the same network segment. Otherwise, images cannot be burnt over the network port except the fastboot image that is burnt over the serial port.

Figure 1-4 Setting parameters

Prepare the board environment.

Connect the serial port, Ethernet port, and bootstrap jumper cap of the board. See Figure 1-5 and Figure 1-6. For some chips, the bootstrap jumper cap does not need to be connected, such as the Hi3521, Hi3531, Hi3520D, and Hi3535.

Figure 1-5 Bootstrap jumper cap for the Hi3716M board
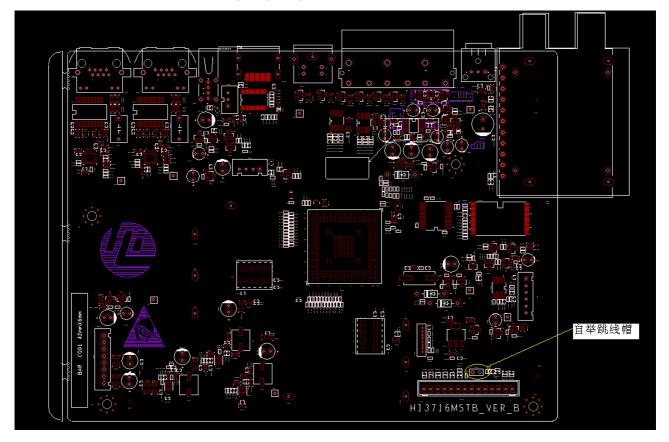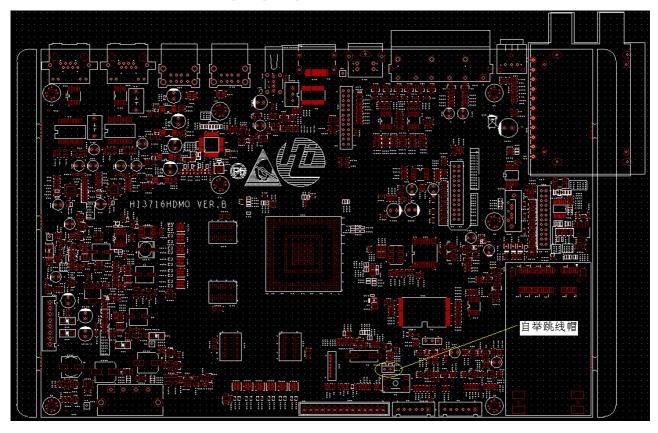
Figure 1-6 Bootstrap jumper cap for the Hi3716C/Hi3716H board

----End

2 Burning Images by Partition

2.1 Application Scenario

The function of burning images by partition applies to all boards. No matter whether boot exists on the board, images can be burnt by partition.

2.2 Burning Procedures

To burn images by partition, perform the following steps:

Step 1 Start the HiBurn. Click the **Burn by Partition** tab, as shown in Figure 2-1.
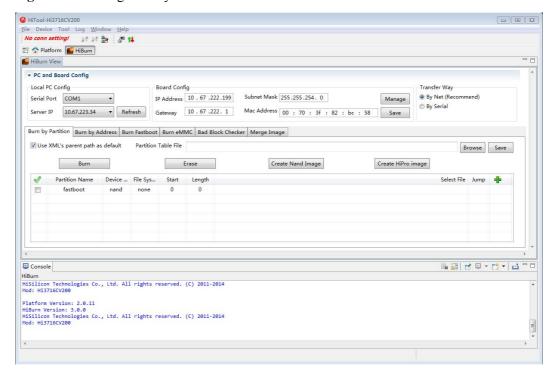
Figure 2-1 Clicking Burn by Partition
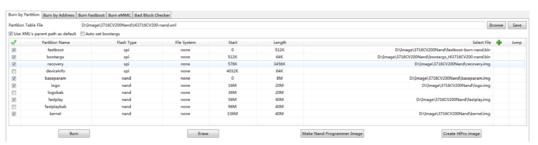
📖 **NOTE**

- When the HiBurn is started for the first time, it automatically generates default parameters. If the parameter configuration is changed, the HiBurn automatically records the modified parameter values, saves the values when it is exited normally, and uses the saved parameter values during the next startup. However, if the HiBurn is exited abnormally, the modified parameters may not be saved. In this case, the latest modifications are invalid.

- Clicking the **Save** button saves the current network configurations for the board; clicking the **Load** button allows you to select a group of saved configurations as the current configuration.

- If **Use XML's parent path as default** is selected, the HiBurn searches for the partition image in the directory where the .xml partition table file locates in priority. Otherwise, the HiBurn searches for the partition image in the absolute path specified in the .xml partition table in priority. If no image is found in the absolute path, the HiBurn then searches for the image in the directory where the .xml file locates.

Step 2   Click **Browse** to select a partition table to load it to the HiBurn, as shown in Figure 2-2.

Figure 2-2 Configuring partition information
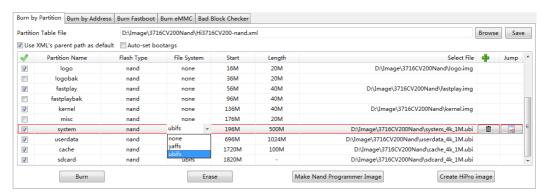
⚠️ **CAUTION**

- The partition information here is used only for burning images. The allocation of actual partitions of the board depends on the **bootargs** parameter of the board. The partition information here must be consistent with that specified by the **bootargs** parameter. Otherwise, errors may occur.

- The HiBurn allows the paths of partitions to be different, and it can burn remote images.

- If a partition is selected but no image is burnt, the HiBurn erases the partition.

- If you need to package all partition files as an image for burning, the image must contain fastboot and must be loaded to the fastboot partition for burning. (For the NAND flash, if the file system has the read and write properties, the partition files cannot be packaged together.) This burning method is not recommended because the fastboot partition is burnt over the serial port and the burning speed is slow.

To modify the partition information, you can directly modify the .xml partition information file, or modify the information in the HiBurn by clicking the row of the partition to be modified. See Figure 2-3.

Figure 2-3 Modifying partition information

To add a partition row, click [image]. After clicking each partition row, you can rename the partition, select the flash memory type, select the file system type, and change the start address of the partition and partition size.

⚠️ **CAUTION**

The start address of a partition and partition size are in the unit of KB or MB and must be an integral multiple of the flash memory size. Otherwise, an error may occur.

- To select or change the file to be burnt to a partition, click [image].
- To delete a partition, click [image].

⚠️ **CAUTION**

The fastboot partition cannot be deleted and its name cannot be changed. Otherwise, images cannot be burnt in one-click mode.

- To select all partitions to be burnt in one-click mode, click [image]; to deselect all partitions, click [image] again. To select a specific partition, select the corresponding check box [image].
- To save the edited partition table as a file, click **Save**.

📖 **NOTE**

There is no .xml partition information file when the HiBurn is started for the first time. When you close the HiBurn after setting or modifying the partition information, a dialog box shown in Figure 2-4 is displayed, asking you whether to save the partition information. Click **OK**. The **Save As** dialog box shown in Figure 2-6 is displayed. Select a save path, enter a file name, and click **Save**. An .xml partition information file is generated. If you click **Cancel**, the information is not saved and the HiBurn is not exited.

After the partition table is created, the dialog box shown in Figure 2-4 is displayed when you switch the chip. Click **OK**. Select a save path, enter a file name, and click **Save** in the displayed **Save As** dialog box. The partition information is saved as an .xml file. If you click **Cancel**, the chip is switched but the partition information is not saved. The file must be in .xml format. Otherwise, the partition information cannot be loaded during next startup.

Figure 2-4 Asking you whether to save the partition information
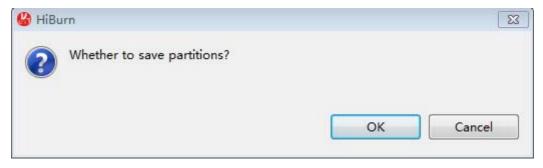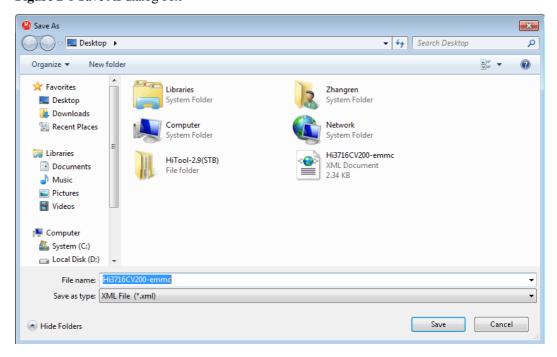
Figure 2-5 Asking you whether to save the partition information when the view is switched

Figure 2-6 Save As dialog box
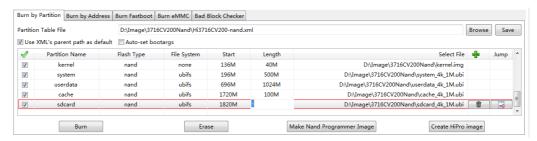
Select the last row, and click . A new last row is generated. Enter **-** in the **Length** column, and specify the partition name, file system, and file path. The length of this partition

---

can be calculated during burning, which is the available space of the component. See Figure 2-7.

Figure 2-7 Setting Length to -
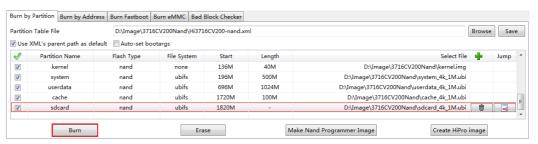
⚠ **CAUTION**

If you do not select the current last partition row when creating a partition row, the created partition may not be the last partition, and you cannot set **Length** to - in this case.

Step 3 Prepare the board environment. Connect the serial port and Ethernet port of the board. If the board is powered on, power it off and short-circuit the bootstrap jumper cap of the board. For details, see section 1.5 "Environment Preparation."

Step 4 Click **Burn** to start to burn files, see Figure 2-8.
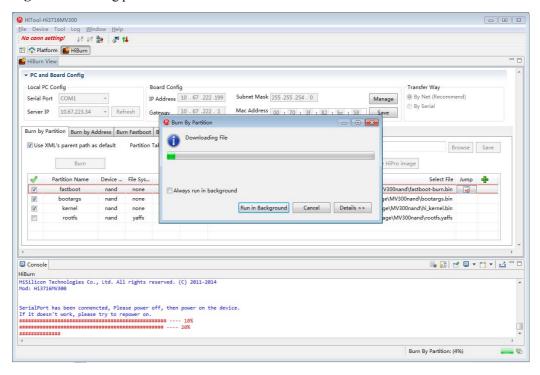
Figure 2-8 Clicking Burn

Step 5 Power on the board to burn the files. Figure 2-9 shows the burning process.

Figure 2-9 Burning process

The information about the burning process is displayed in the **Console**. If an error occurs:

- Check whether the correct serial port is selected.
- Check whether the IP address is correct and whether it is occupied.
- Check whether the bootstrap jumper on the board is short-circuited.

Step 6 Connect the terminal tool and restart the board.
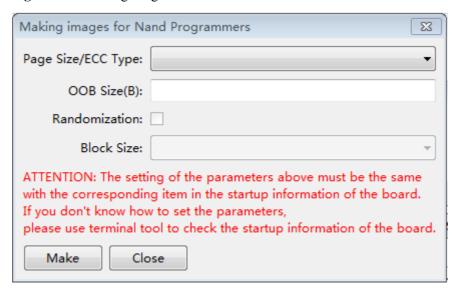
----End

2.3 Creating Images for the NAND Burner

The HiBurn allows you to create images for the NAND burner. After the partition information is configured, click **Make Nand Programmer Image**. The dialog box shown in Figure 2-10 is displayed.

Figure 2-10 Creating images for the NAND burner

Specify the parameters in the dialog box, and click **Make** to generate images for the NAND burner. Note that the **Randomization** can be selected if the page size of the NAND flash is 8 KB or larger.

⚠ **CAUTION**

- The specified parameter values must be consistent with those in the boot information of the board (you can view the boot information by using HyperTerminal).
- If a partition is not selected or the file to be burnt for a selected partition is not specified, the partition image is not created.
- For the image of the non-Yaffs partition, **File System** in the partition table cannot be set to **yaffs**. For the image of the Yaffs partition, **File System** in the partition table must be set to **yaffs**. Otherwise, the created image is incorrect.
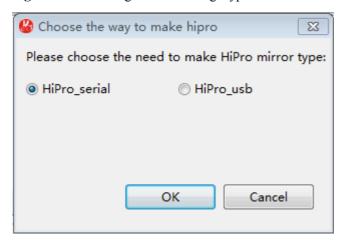
2.4 Creating Images for the HiPro

The HiBurn also allows you to create images for the HiPro. However, this function is not supported for the Hi3521, Hi3531, Hi3520D, and Hi3535.

After the partition table is configured, click **Create HiPro image**, and select the type of images to be created (**HiPro-Serial** or **HiPro-Usb**), as shown in Figure 2-11.
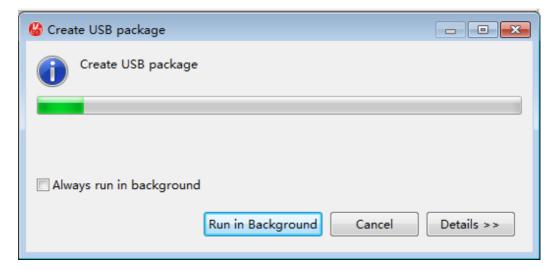
Figure 2-11 Selecting the HiPro image type

Specify the file path in the displayed dialog box. Then images for the HiPro can be created. See Figure 2-12.

Figure 2-12 Creating images for the HiPro

⚠ **CAUTION**

If a partition is not selected, or the file to be burnt for a selected partition is not specified, the partition image is not created.

2.5 Redirecting to the Burn by Address Page

The **Burn by Partition** tab page allows you to redirect the information of a partition (including the partition name, file system, file path, start address, and partition length) to the **Burn by Address** tab page. After redirection, the information is directly loaded on the **Burn**

by Address tab page. You only need to select a row in the partition table on the **Burn by Partition** tab page and click ![jump button]. Then the **Burn by Address** page is displayed. See Figure 2-13 and Figure 2-14.

Figure 2-13 Selecting a row
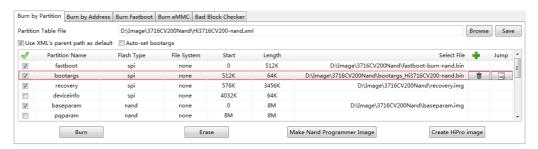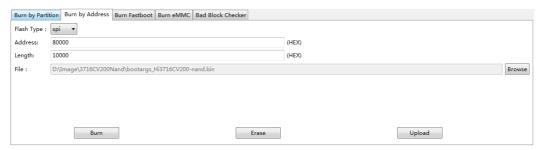
Figure 2-14 Redirecting to the Burn by Address tab page

![caution icon] **CAUTION**

The jump button ![jump button] is displayed only after you select a partition row.

3 Burning Images by the Flash Address

3.1 Application Scenario
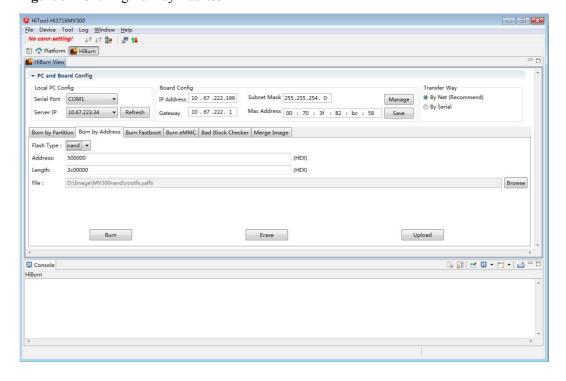
Boot exists on the board.

3.2 Burning Procedures

To burn images by address, perform the following steps:

Step 1 Click the **Burn by Address** tab, as shown in Figure 3-1.
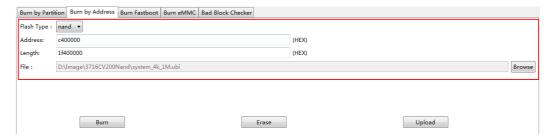
Figure 3-1 Clicking Burn by Address

Step 2 Set the flash memory type, set the start address and length of the file to be burnt, and click **Browse** to select the file to be burnt, as shown in Figure 3-2.

Figure 3-2 Setting parameters

Step 3 Prepare the board environment. Connect the serial port and Ethernet port of the board. If the board is powered on, power it off and short-circuit the bootstrap jumper cap of the board. For details, see section 1.5 "Environment Preparation."

Step 4 Click **Burn** to start to burn the images, as shown in Figure 3-3.

⚠️ **CAUTION**

When images are burnt by address, you need to select only the files to be burnt but not the file system type. The format of the Yaffs file (with OOB data) is different from that of other files (with no OOB data). The HiBurn automatically distinguishes the file type (**yaffs** or **none**) at the background based on the selected file and burns the file based on the type. When images are burnt by address, you need to power on the board again only when the **Burn** button is clicked for the first time.
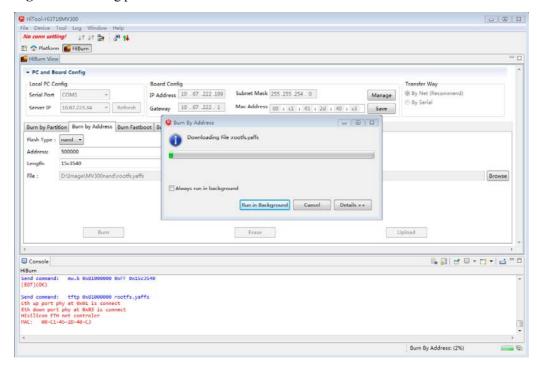
Figure 3-3 Clicking Burn

Step 5 Power on the board to burn the files. Figure 3-4 shows the burning process.

Figure 3-4 Burning process

The information about the burning process is displayed in the **Console**. If an error occurs:

- Check whether the correct serial port is selected.
- Check whether the IP address is correct and whether it is occupied.
- Check whether the bootstrap jumper on the board is short-circuited.

The process of the erase operation is similar to that of the burn operation.

Step 6 Connect the terminal tool and restart the board.

----End
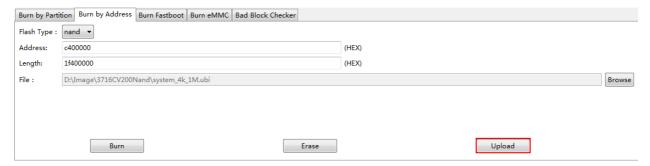
3.3 Uploading Procedures

The upload operation is the reverse of the burn operation. The burn function allows you to burn images to the board, and the upload function allows you to upload the data to the PC based on the specified start address and length. The uploading process is similar to the burning process.

Step 1 Click the **Burn by Address** tab.

Step 2 Set the flash memory type, set the start address and length for the data to be uploaded, and click **Browse** to select the file that is used to store the uploaded data. See Figure 3-5.
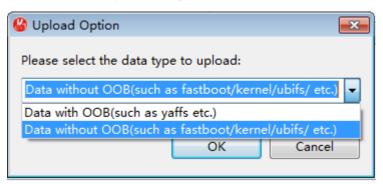
Figure 3-5 Upload information

Step 3 Prepare the board environment. Connect the serial port and Ethernet port of the board. If the board is powered on, power it off and short-circuit the bootstrap jumper cap of the board. For details, see section 1.5 "Environment Preparation."

Step 4 Click **Upload**. If images to be uploaded are fastboot, kernel, and ubifs images, select **Data without OOB**. If the images are Yaffs files, select **Data with OOB**. See Figure 3-6.

Figure 3-6 Selecting the data type

⚠ **CAUTION**

If data is uploaded by address, specify the type of the data to be uploaded in the dialog box that is displayed after you click **Upload**. If you select an incorrect data type, the uploaded data is inconsistent with the original file. If a Yaffs file system image is to be uploaded, the length must be an integral multiple of (page size + OOB size).

----End

3.4 Erasing Procedures
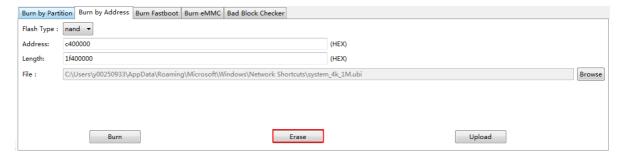
The erase function allows you to erase data of specific length from the specific start address from the board. The erasing process is similar to the burning process.

Step 1 Click the **Burn by Address** tab.
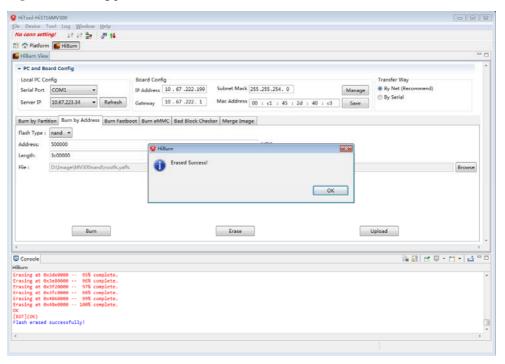
Step 2 Set the flash memory type, set the start address and length for the data to be erased in the flash memory. See Figure 3-7.

Figure 3-7 Erase information

Step 3 Prepare the board environment. Connect the serial port and Ethernet port of the board. If the board is powered on, power it off and short-circuit the bootstrap jumper cap of the board. For details, see section 1.5 "Environment Preparation."

Step 4 Click **Erase** and power on the board. See Figure 3-8.

Figure 3-8 Erasing process

⚠ **CAUTION**

The length of data to be erased must be an integral multiple of the block size.

----End

4 Burning the Boot

4.1 Application Scenario
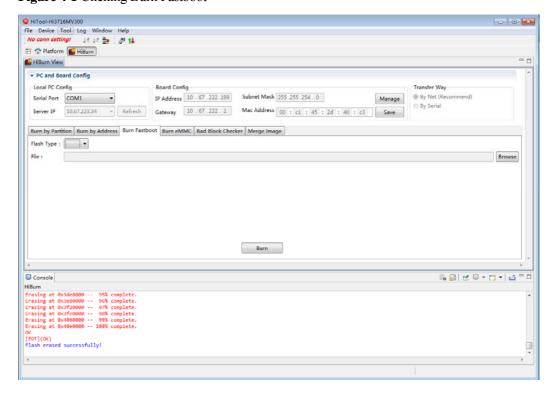
There is no fastboot program running on the board and all images can be burnt by address.

4.2 Burning Procedures

To burn the fastboot, perform the following steps:

Step 1 Click the **Burn Fastboot** tab, as shown in Figure 4-1.
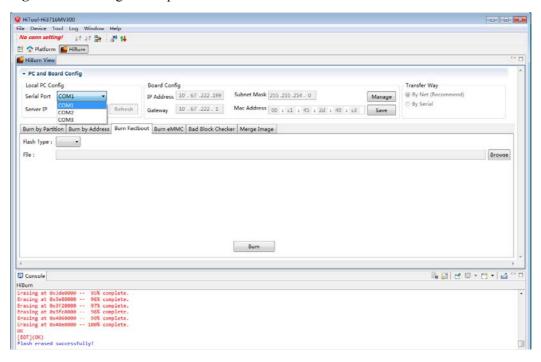
Figure 4-1 Clicking Burn Fastboot

Step 2 Select a serial port for connecting to the board, as shown in Figure 4-2.

Figure 4-2 Selecting a serial port

Step 3 Select the flash memory type and the fastboot image, as shown in Figure 4-3.

Figure 4-3 Setting the boot burning information

Step 4 Prepare the board environment. If the board is powered on, short-circuit the jumper, and power off the board; if the board is not powered on, short-circuit the board jumper. For details about the jumper position, see section 1.5 "Environment Preparation."

Step 5 Click **Burn** to start to burn the fastboot, as shown in Figure 4-4.
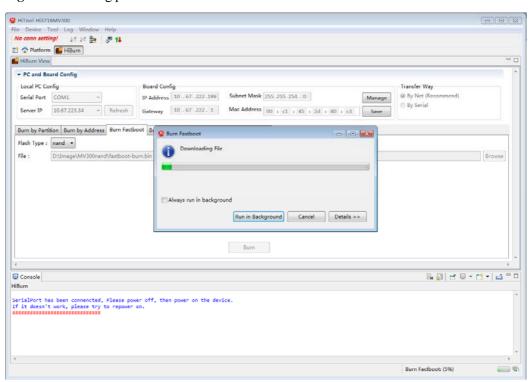
Figure 4-4 Clicking Burn

Step 6　Power on the board to burn the fastboot. Figure 4-5 shows the burning process.

Figure 4-5 Burning process

The information about the burning process is displayed in the **Console**. If an error occurs, do as follows:

- Check whether the correct serial port is selected.
- Check whether the bootstrap jumper on the board is short-circuited.

Step 7　Connect the terminal tool and restart the board.

　　----End

5 Burning Images to the eMMC

5.1 Application Scenario

This burning mode applies only to the embedded multimedia card (eMMC). No matter whether the fastboot program exists on a board, all images can be burnt in one-click mode.

However, this function is not supported for the following chips: Hi3521, Hi3531, Hi3520D, Hi3535, Hi3712, Hi3110E V200, Hi3110E V400, Hi3110E V300 (CA), and S40 V100.

5.2 Burning Procedures

To burn images to the eMMC, perform the following steps:

Step 1 Click the **Burn eMMC** tab, as shown in Figure 5-1.
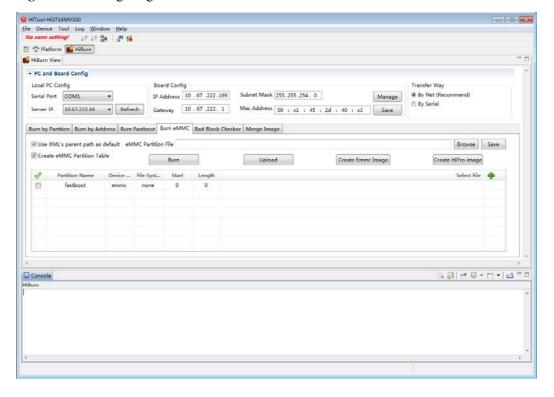
Figure 5-1 Burning images to the eMMC

☐ **NOTE**

- If **Use XML's parent path as default** is selected, the HiBurn searches for the partition image in the directory where the .xml partition table file locates in priority. Otherwise, the HiBurn searches for the partition image in the absolute path specified in the partition table in priority. If no file is found in the absolute path, the HiBurn then searches for the file in the directory where the .xml file locates. This option is selected by default.

- If **Create eMMC Partition Table** is selected, an eMMC partition table is created for the EXT3/4 file system partition. This option is selected by default. This option is available for only the Hi3716, Hi3716_CA series chips (except Hi3716C V200, Hi3716C V200_CA, and Hi3716C V200ES), Hi3712, and Hi3712_CA series chips.

Step 2 Click **Browse** to select a partition table to load it to the HiBurn, as shown in Figure 5-2.

Figure 5-2 Setting the partition information about the board

⚠ **CAUTION**
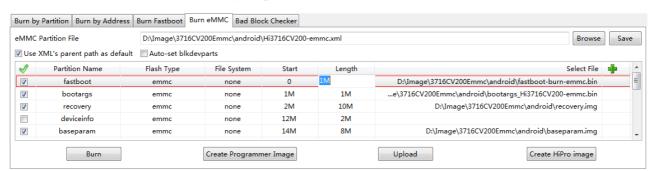
- If the images of all partitions are packaged as an image file, the image file must be placed in the fastboot partition and must contain the fastboot. In this case, the image file is burnt over a serial port, which takes a long time. Note that because a partition table must be created for the eMMC file system partition, the images of other file system partitions cannot be packaged. There is no such issue for the Android version.

- As the eMMC uses the DOS partition format, the kernel can identify the EXT3/4 file system partition only when a partition table is created for the EXT3/4 file system partition.

- If the partitions of the eMMC change, you must select **Create eMMC partition table** to create an eMMC partition table again. Otherwise, the kernel cannot identify the EXT3/4 partition.

To modify the information about a partition, modify the .xml partition information file or click the corresponding partition row in the HiBurn, as shown in Figure 5-3.

Figure 5-3 Modifying the partition information

⚠ **CAUTION**

The start position of a partition and partition size are in the unit of KB or MB and must be an integral multiple of the eMMC sector size. Otherwise, an error may occur.

- To add a partition row, click [+]. After clicking a partition row, you can rename the partition, select the required file system, select the file system type, and change the start position of the partition and partition size.

- To select the file to be burnt to a partition, click [📁].

- To delete a partition, click [🗑]. Note that the fastboot partition cannot be deleted and its name cannot be changed. Otherwise, one-click burning cannot be implemented.

- To select all partitions to be burnt in one-click mode, click [✓]; to deselect all partitions, click [✓] again. To select a specific partition, select the corresponding check box [☑].

- To save the edited partition table as a file, click **Save**.

📖 **NOTE**

After the partition table is created, the dialog box shown in Figure 2-4 is displayed when you switch the chip. Click **OK**. Select a save path, enter a file name, and click **Save** in the displayed **Save As** dialog box. The partition information is saved as an .xml file. If you click **Cancel**, the chip is switched but the partition information is not saved. The file must be in .xml format. Otherwise, the partition information cannot be loaded during next startup.

Figure 5-4 Asking you whether to save the partition information
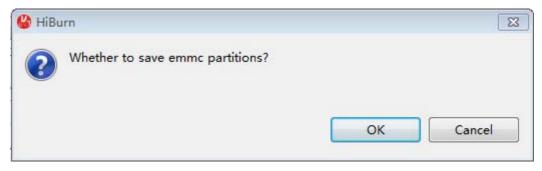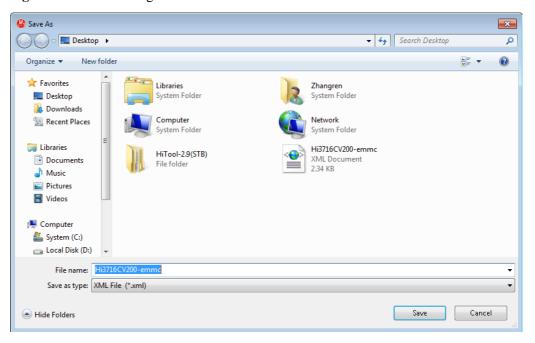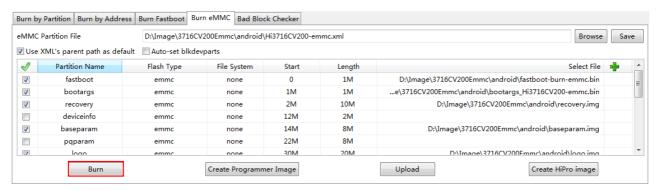
Figure 5-5 Save As dialog box

Step 3 Prepare the board environment. Connect the serial port and Ethernet port of the board. If the board is powered on, power it off and short-circuit the bootstrap jumper cap of the board. For details, see section 1.5 "Environment Preparation."

Step 4 Click **Burn** to start to burn files, see Figure 5-6.
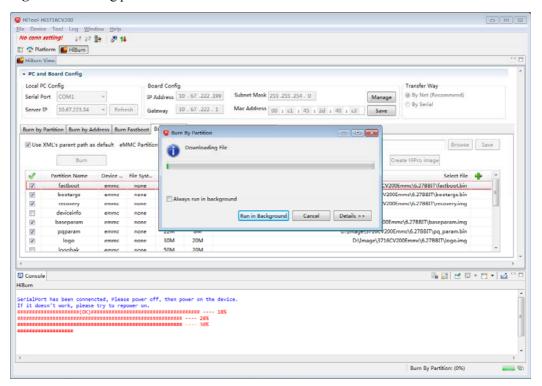
Figure 5-6 Clicking Burn

Step 5 Power on the board to burn the files. Figure 5-7 shows the burning process.

Figure 5-7 Burning process

The information about the burning process is displayed in the **Console**.

- Check whether the correct serial port is selected.
- Check whether the IP address is correct and whether it is occupied.
- Check whether the bootstrap jumper on the board is short-circuited.

Step 6 Connect the terminal tool and restart the board.
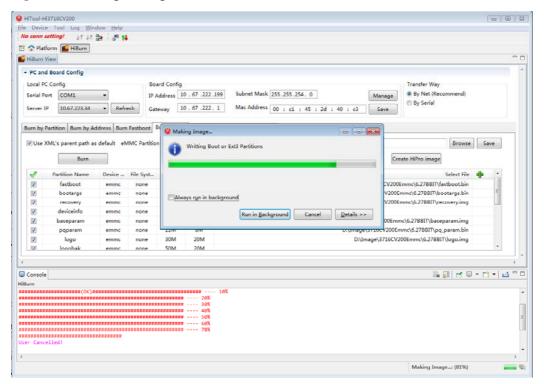
----End

5.3 Creating Images for the Burner

You can select a file from the current partition list to create an image for the burner. After the partition information is configured, click **Create Programmer Image** and specify the file path in the displayed dialog box, as shown in Figure 5-8.

Figure 5-8 Creating an image for the burner
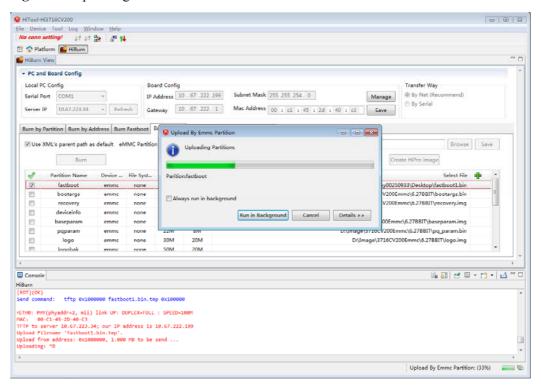
5.4 Uploading Procedures

Uploading data from the eMMC to the PC based on the start address and length is the reverse process of burning images to the eMMC. The uploading process is similar to the burning process.

Step 1   Click the **Burn eMMC** tab

Step 2   Configure the information for uploading. Set the start address in **Start** and length in **Length**, and specify a file path to save the content in a certain file on the PC.

Step 3   Connect the serial port and Ethernet port of the board. If the board is powered on, power it off and short-circuit the bootstrap jumper cap of the board. For details, see section 1.5 "Environment Preparation."

Step 4   Click **Upload** to save the data to the specific file. See Figure 5-9.

Figure 5-9 Uploading
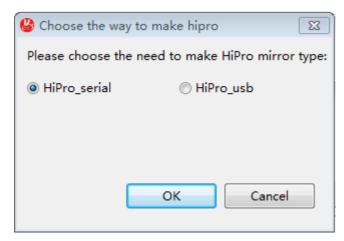
----End

5.5 Creating Images for the HiPro

The HiBurn allows you to create images for the HiPro. After the partition table is configured, click **Create HiPro image**, and select the type of images to be created (**HiPro-serial** or **HiPro-usb**), as shown in Figure 5-10.
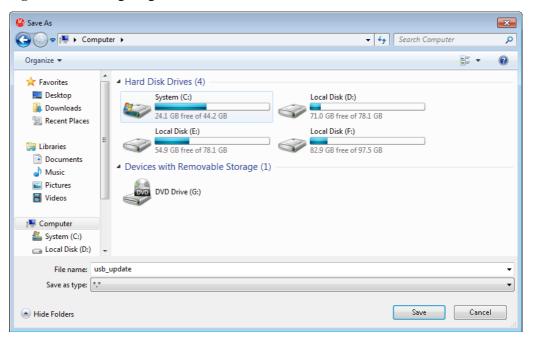
Figure 5-10 Selecting HiPro image type

Specify the file path in the displayed dialog box. Then images for the HiPro can be created. See Figure 5-11.

Figure 5-11 Creating images for the HiPro

⚠ CAUTION

- If a partition is not selected, or the file to be burnt for none file system partition is not specified, the partition image is not created.
- If the file to be burnt for the EXT3/4 file system partition is not specified, the HiBurn writes an empty partition to the image.
- The length of the last EXT3/4 file system partition must be specified.
- Because a partition table is attached to the eMMC, the actual addresses for the fastboot partition and all EXT3/4 partitions are shifted backwards slightly relative to the configured burning addresses.

6 Burning Images to the Advanced CA Boards

6.1 Difference

Before burning images to the advanced CA board, you need to specify a file that contains the commands and issue the file to the board because the fastboot may not contain the commands required for burning the images. This file is called the programmer file in the HiBurn.

If all the required commands are included, images can be burnt after you specify the programmer file or fastboot.

The following chips do not support this function: Hi3521, Hi3531, Hi3520D, Hi3535, Hi3712, Hi3110E V200, Hi3110E V400, Hi3716C, Hi3716H, Hi3716M V100, Hi3716M V200, Hi3716M V300, Hi3716C V200, Hi3718C V100, Hi3719C V100, Hi3719M V100, Hi3719M V100_A, and S40 V100.

6.2 Burning Procedures

Click **Browse** next to the **Programmer File** textbox, and select a programmer file. See Figure 6-1. (This section uses burning by partition as an example. The operations for other burners are similar.)

Figure 6-1 Burning images to the advanced CA boards

For details about the subsequent procedures, see chapters 2 to 5.

7 Bad Block Detection

7.1 Application Scenario

The bad block detection function applies to the board that supports the NAND flash and runs the boot.

This function is not supported for the following chips: Hi3521, Hi3531, Hi3520D, Hi3535, Hi3712, Hi3110E V200, Hi3110E V400, Hi3110E V300 (CA), Hi3716C V110, Hi3716M V200 (CA), Hi3716M V300 (CA), Hi3716C V200 (CA), Hi3719M V100 (CA), and S40 V100.
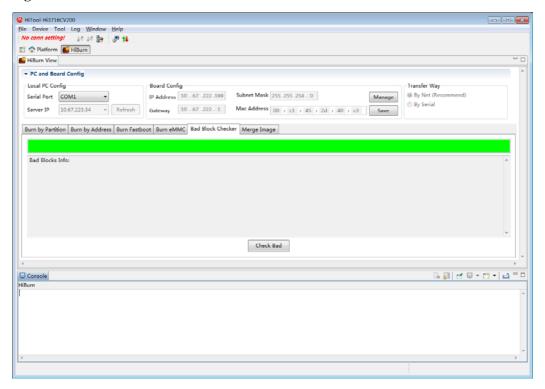
7.2 Detection Procedures

To detect bad blocks, perform the following steps:

Step 1 Click the **Bad Block Checker** tab, as shown in Figure 7-1.
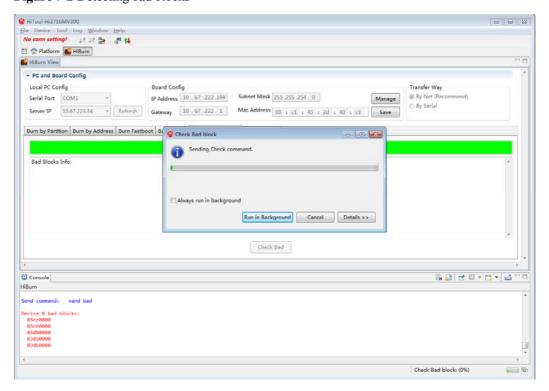
Figure 7-1 Bad Block Checker

Step 2   Click **Check Bad**. The dialog box shown in Figure 7-2 is displayed.
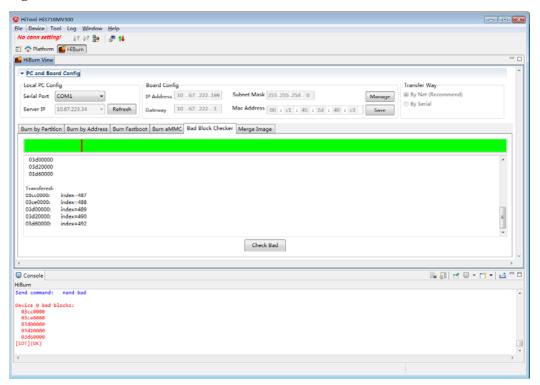
Figure 7-2 Detecting bad blocks

When a bad block is detected, a red line is displayed on the green bar, corresponding to the address on the board. Detailed information about the bad block is displayed in the pane below the green bar. See Figure 7-3.

Figure 7-3 Information about bad blocks

——**End**

8 Merging Images

8.1 Application Scenarios

When the SPI flash is used, multiple images can be merged into one to use blocks more efficiently as the storage space of the SPI flash is small. You can also use this function to merge images for other flash memories.

8.2 Procedures

To merge images, perform the following steps:

Step 1 Click the **Merge Image** tab, as shown in Figure 8-1.
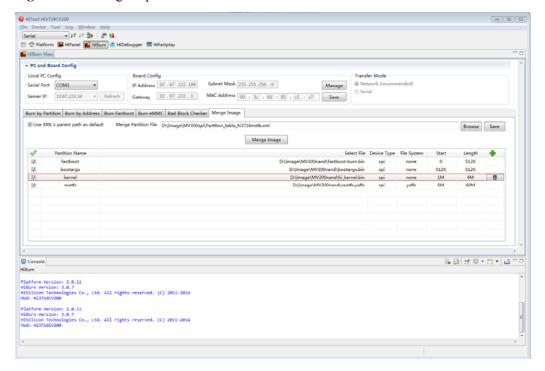
Figure 8-1 Merge Image tab page

Step 2 Click **Browse** to load a partition table or click ➕ to create a partition table, as shown in Figure 8-2.
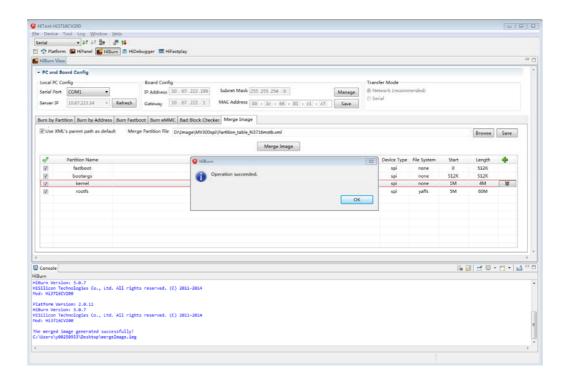
Figure 8-2 Loading the partition table

Step 3 Click **Merge Image**. See Figure 8-3.

Figure 8-3 Merging images

----End
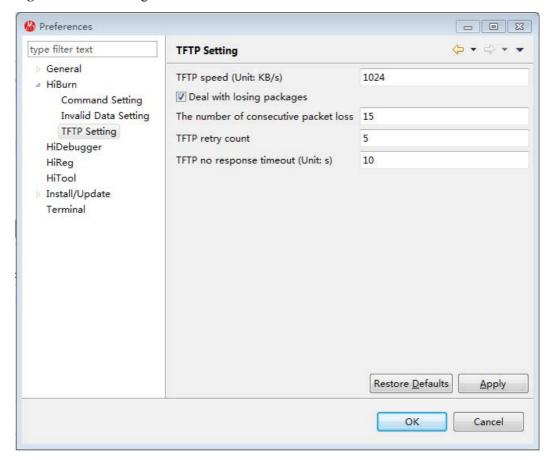
9 Preferences Settings

9.1 TFTP Settings

To set the Trivial File Transfer Protocol (TFTP) of the HiBurn, choose **Window** >
Preferences, and choose **HiBurn** > **TFTP Setting**, as shown in Figure 9-1.

Figure 9-1 TFTP settings

The setting options are described as follows:
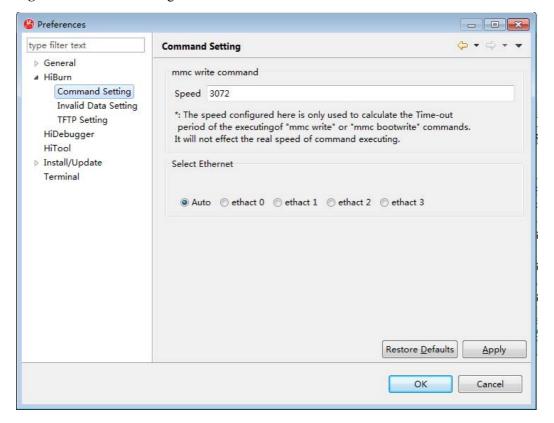
- **TFTP speed (Unit: KB/s)**: The timeout period can be calculated based on the configured TFTP speed and length of the transmitted file.

- **Deal with losing packages**: If this option is selected, the maximum number of lost consecutive packets can be configured. The transmission fails if the maximum number of lost consecutive packets is reached. If this option is not selected, the maximum number of lost consecutive packets cannot be configured, and packet loss during transmission is ignored.

- **The number of consecutive packet loss**: Sets the maximum number of lost consecutive packets allowed.

- **TFTP retry count**: Sets the times of TFTP retry attempts allowed. If the transmission fails, the tool retries for the configured times and then stops.

- **TFTP no response timeout (Unit: s)**: Sets the timeout period for no response. If there is no response during transmission in the configured timeout period, the transmission is considered failed.

9.2 Command Settings

To set the commands of the HiBurn, choose **Window** > **Preferences**, and choose **HiBurn** > **Command Setting**, as shown in Figure 9-2.

Figure 9-2 Command settings

9.2.1 mmc write Command

Speed: The timeout period can be calculated based on the configured speed and length of data to be written. The unit is byte/s.
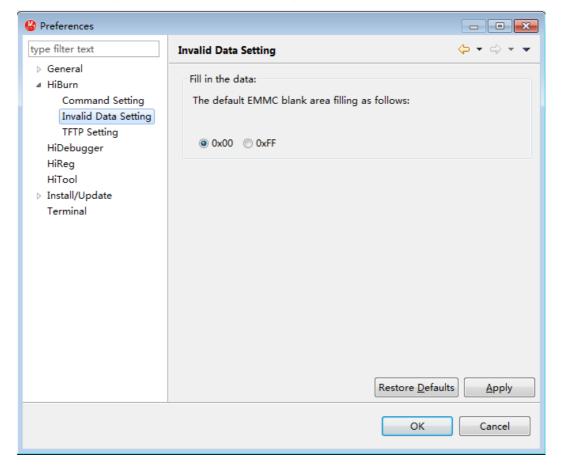
9.2.2 setenv ethact Command

The **setenv ethact** command is used to set the current network port.

9.3 Setting Invalid Data to Be Filled into Images

To set the invalid data to be filled in to the images for the eMMC burner and HiPro, choose **Window** > **Preferences**, and choose **HiBurn** > **Invalid Data Setting**, as shown in Figure 9-3.

Figure 9-3 Setting invalid data to be filled into images
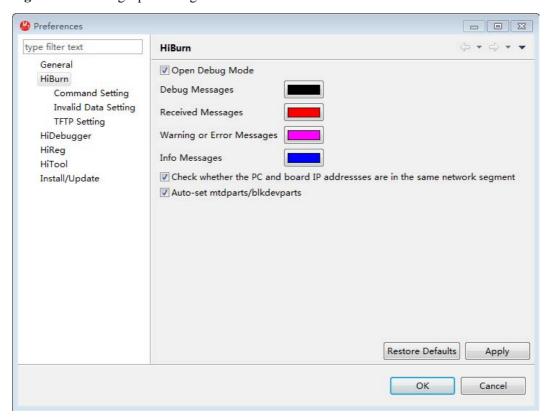
9.4 Other Settings

9.4.1 Setting the HiBurn-Debug Console

To set the HiBurn-Debug console, perform the following steps:

Step 1 Choose **Window** > **Preferences**, click **HiBurn**, and select **Open Debug Mode**, as shown in Figure 9-4.

Figure 9-4 Selecting Open Debug Mode

Step 2 After the burning starts, the HiBurn automatically creates the Debug console. Click ⬚▾ in the upper right corner of the console and choose **HiBurn-Debug**. Then the Debug console is displayed, as shown in Figure 9-5.
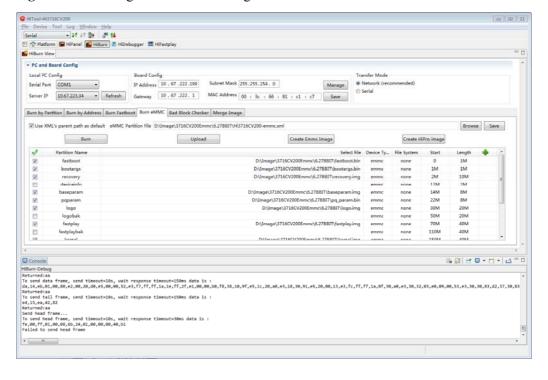
Figure 9-5 Switching to the HiBurn-Debug console
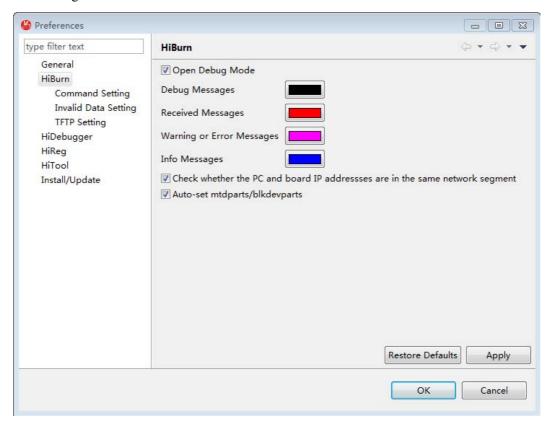
----End

9.4.2 Checking Whether the IP Addresses for the PC and that for the Board Are in the Same Network Segment

Choose **Window** > **Preferences**, click **HiBurn**, and select **Check whether the PC and board IP addresses are in the same network segment**, as shown in Figure 9-6. If this option is selected, the HiBurn checks whether the IP address for the PC and that for the board are in the same network segment before burning.

Figure 9-6 Checking whether the IP addresses for the PC and that for the board are in the same network segment

9.4.3 Automatically Updating mtdparts/blkdevparts in the Bootargs Partition

The HiBurn can automatically update the **mtdparts** or **blkdevparts** parameter in the bootargs partition. Choose **Window** > **Preferences**, click **HiBurn**, and select **Auto-set mtdparts**/**blkdevparts**, as shown in Figure 9-7. Then the HiBurn generates a temporary bootargs file during burning based on the current partition table and burns it to the board.
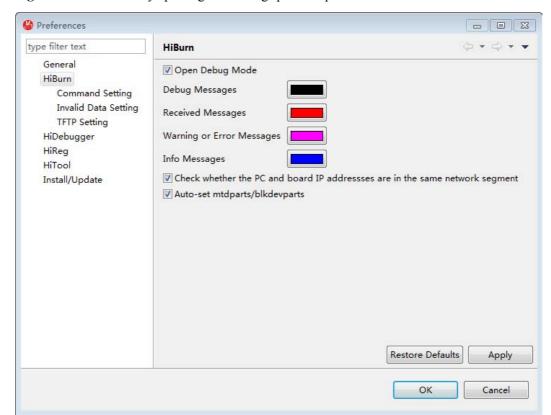
Figure 9-7 Automatically updating the bootargs partition parameter

⚠️ **CAUTION**

● The parameters **mtdparts** and **blkdevparts** have the same function in the bootargs partition. A bootargs file contains only one of the two parameters. For example, the parameter for the bootargs partition of Hi3716C V200 is **blkdevparts**.

● After **Auto-set mtdparts**/**blkdevparts** is selected, the HiBurn updates only the **mtdparts** or **blkdevparts** parameter in the bootargs partition and the CRC code in the **bootargs** file based on the updated parameter.

● After **Auto-set mtdparts**/**blkdevparts** is selected, the HiBurn does not modify the original **bootargs** file. If the current partition information is inconsistent with that specified in the original **bootargs** file, the HiBurn creates a temporary file **bootargs.temp** to replace the original **bootargs** file and burns the temporary file to the bootargs partition of the board.

10 FAQs

10.1 What Do I Do If the TFTP Timeout Error Occurs?

Problem Description

The TFTP timeout error occurs, as shown in Figure 10-1.

Figure 10-1 TFTP timeout error

Solution

Do as follows:

- Check whether the network configuration of the HiBurn is correct, as shown in Figure 10-2.

  Check whether the server IP address is correct. If not, select the correct IP address for the PC. Then check whether the subnet mask and network gateway are correct. If yes, check whether the board IP address is occupied (Run the **ping** command to check whether the current board IP address can be pinged. If no, the network is disconnected.) Ensure that all parameters are correctly configured and try to burn an image again.
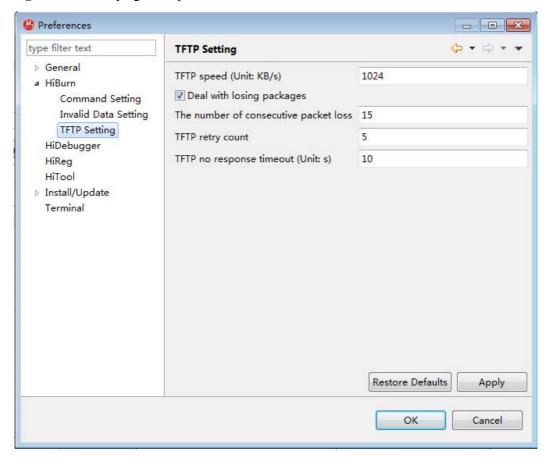
Figure 10-2 Checking the network configuration

- Use the external tftpd32 tool instead of the embedded TFTP to download images. If a timeout error also occurs, check whether the current network environment is normal. For details about how to use the external tftpd32 tool, see section 10.2 "How Do I Download Images by Using the External tftpd32?"

- Modify the TFTP parameters in the HiBurn to match the current network environment. Choose **Window** > **Preferences** > **HiBurn** > **TFTP Setting**, and set **The number of consecutive packet loss** and **TFTP no response timeout** to larger values, as shown in Figure 10-3. Then burn an image to check whether the tool is normal.

- Check whether the firewall is disabled. If not, disable the firewall.

Figure 10-3 Modifying TFTP parameters

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10.2 How Do I Download Images by Using the External tftpd32?

Problem Description
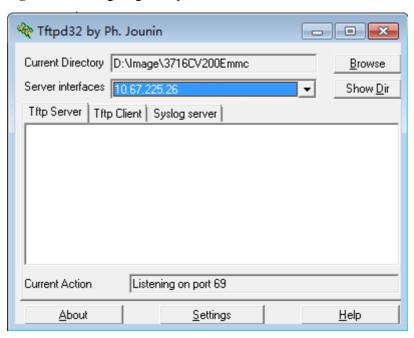
How do I download images by using the external tftpd32?

Solution

Perform the following steps:
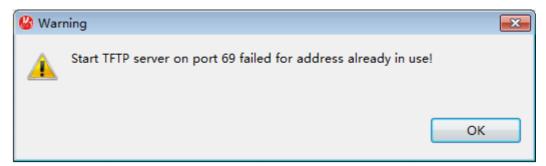
Step 1 Open the tftpd32, and select the correct PC IP address and the directory for storing the image to be burnt, as shown in Figure 10-4.

Figure 10-4 Configuring the tftpd32

Step 2 Click the burn button in the HiBurn. The dialog box shown in Figure 10-5 is displayed. Click **OK**. Then the external tftpd32 is used to download the image, as shown in Figure 10-6.

Figure 10-5 Information indicating TFTP startup failure

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Figure 10-6 Downloading images by using the tftpd32
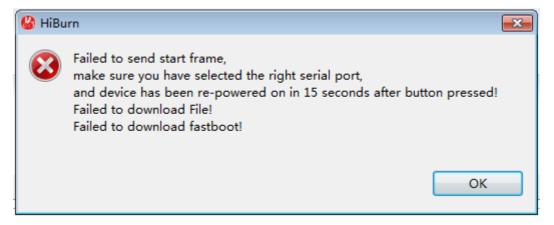
----End

10.3 What Do I Do If the System Displays "Failed to send start frame" When the Fastboot Partition Is Being Burnt?

Problem Description

The system displays "Failed to send start frame" when the fastboot partition is being burnt, as shown in Figure 10-7.

Figure 10-7 "Failed to send start frame" error

Solution

Check whether the board is restarted within 15 seconds after the burn button is clicked. If yes, check whether the serial port is properly connected to the board. If yes, check whether the serial port ID is correctly selected in the HiBurn, as shown in Figure 10-8. Then burn the image again.

Figure 10-8 Checking the serial port ID

10.4 What DO I Do If the Console Stops Displaying Information and the Error Message "Failed to send head frame" Is Displayed When the Fastboot Partition Is Being Burnt?

Problem Description

When the fastboot partition is being burnt, the console stops displaying information after "#########" is displayed, and the error message "Failed to send head frame" is displayed, as shown in Figure 10-9.

Figure 10-9 "Failed to send head frame" error

Solution

This issue may be caused due to the following reasons:

- There is a mismatch between the fastboot image being burnt and the current chip model. Check the chip model directly or over the serial port, as shown in Figure 10-10. The value of **CPU** is the chip model. Then select and burn the SDK image that matches the chip model.

- The board DDR is faulty. It cannot be initialized properly.

Figure 10-10 Checking the chip model over the serial port

```
Fastboot 3.3.0 (sdk@Jupiter) (Apr 16 2014 - 04:25:40)

Fastboot:      Version 3.3.0
Build Date:    Apr 16 2014, 04:27:32
CPU:           Hi3716Cv200
Boot Media:    eMMC
DDR Size:      2GB
```
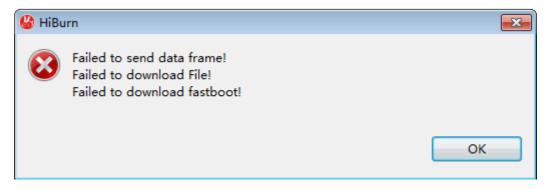
10.5 What Do I Do If the System Displays "Failed to send data frame" When the Fastboot Partition Is Being Burnt?

Problem Description

The system displays "Failed to send data frame" when the fastboot partition is being burnt, as shown in Figure 10-11.

Figure 10-11 "Failed to send data frame" error

Solution

This issue may occur because the serial port is not connected properly when the fastboot image is being burnt, which results in a data transmission failure during interaction between the HiBurn and the board. Therefore, check whether the serial port is properly connected.
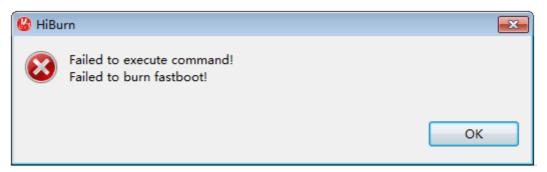
10.6 What Do I Do If the System Displays "Failed to execute command" When the Fastboot Partition Is Being Burnt?

Problem Description

The system displays "Failed to execute command" when the fastboot partition is being burnt, as shown in Figure 10-12.

Figure 10-12 "Failed to execute command" error

Solution

This issue occurs because the selected flash type of the fastboot partition is incorrect, as shown in Figure 10-13. Restart the board to check the **Boot Media** attribute of the board. If it is **eMMC**, the flash type of the fastboot partition must be eMMC, and the partition must be burnt in eMMC mode.

Figure 10-13 Checking Boot Media

10.7 What Are the Advantages and Disadvantages of File Transmission over the Serial Port?

Problem Description

What are the advantages and disadvantages of file transmission over the serial port?

Solution

If images are burnt over the serial port, the efficiency is low because a large amount of data needs to be transmitted to the board during burning and the transmission rate of the serial port is low. Therefore, you are advised to burn images over the Ethernet port. However, if your network environment is unstable, you are advised to use the serial port because burning images over the serial port is stable.

10.8 What Are the Requirements on the File Length On the Burnt by Address Page?

Problem Description

What are the requirements on the file length on the **Burn by Address** page?

Solution

The length of data to be erased must be an integral multiple of the block size, and the length of the Yaffs file system to be uploaded must be an integral multiple of (page size+OOB size).

10.9 What Do I Do If the HiBurn Does Not Start to Burn Images After the Burn Button Is Clicked and the Board is Restarted?

Problem Description

After the **Burn** button is clicked and the board is restarted, the HiBurn does not start to burn images.

Solution

This issue occurs if the selected serial port is incorrect or the serial port is not connected properly (view the serial port information by using the terminal tool). Wait for the console to display the related information.

10.10 What Are the Possible Causes If the Serial Port Cannot Be Detected, the TFTP Service Fails to Be Started, or the TFTP Port Is Occupied?

Problem Description

What are the possible causes if the serial port cannot be detected, the TFTP service fails to be started, or the TFTP port is occupied?

Solution

This issue occurs if you do not log in to the board as the root user, because only the root user has the permission to enable the TFTP service or use the serial port. If a message indicating that the TFTP port is occupied is reported, another software may be using the port.

10.11 What Is pure data length and len_incl_bad Displayed in the Console When Images Are Being Burnt to the NAND Flash?

Problem Description

The console displays **pure data length** and **len_incl_bad** when images are being burnt to the NAND flash. What do they mean?

Solution

As shown in Figure 10-14, **pure data length** indicates the length of the actually burnt data, and **len_incl_bad** indicates the length of burnt data including bad blocks. Both **pure data length** and **len_incl_bad** do not include the length of the OOB.

Figure 10-14 Length of burnt data displayed in the console

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10.12 What Should I Pay Attention to When Images Are Burnt to the eMMC?

Problem Description

There are two methods of burning images to the eMMC based on the chip model. The difference lies in whether a partition table needs to be created. What should I pay attention to when burning images by using the two methods?

Solution

A partition table must be created for the following chips: Hi3716H V100, Hi3716M V100, Hi3716M V200, Hi3716M V300, Hi3716C V110 (CA), Hi3716M V200 (CA), and Hi3716M V300 (CA). If the preceding chips are burnt for the first time or after partitions are adjusted, you must select **Create eMMC Partition Table** and burn the table to the board. Otherwise, the board cannot start properly.

10.13 What Do I Do If "Time out while receiving command execute result!" Is Displayed When Images Are Being Burnt to the eMMC?

Problem Description

"Time out while receiving command execute result!" is displayed when images are being burnt to the eMMC.

Solution

This issue occurs because after the **mmc write** command is executed, a timeout occurs when the HiBurn is waiting for the response from the board. Choose **Window** > **Preferences** > **HiBurn** > **Command Setting**, as shown in Figure 10-15, set the speed to a smaller value, and burn the image again.
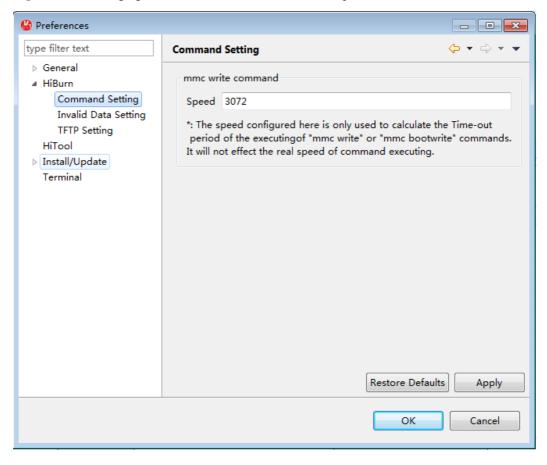
Figure 10-15 Changing the mmc write command execution speed

10.14 What Should I Pay Attention to When Burning Large Files or Burning Files to the eMMC (with Create eMMC Partition Table Selected)?

Problem Description

What should I pay attention to when burning large files or burning files to the eMMC (with **Create eMMC Partition Table** selected)?

Solution

You must have the write permission on the directory for the file to be burnt or the directory for the first selected file so that you can create temporary files in the directory.

10.15 What Should I Pay Attention to When Creating the Image to Be Burnt by Using the eMMC Burner?

Problem Description

What should I pay attention to when creating the image to be burnt by using the eMMC burner?

Solution

- When an image to be burnt is being created by using the eMMC burner, if the length of the last partition in the partition table is -, you need to enter the available length of the component on the board for calculating the length of the last partition. See Figure 10-16.

Figure 10-16 Entering the length of the component

- If the file system of the partition is EXT3 or EXT4, the partition image may be a sparse image. In this case, the console displays information similar to that shown in Figure 10-17. If the size of the sparse image after parsing exceeds the partition size, the console displays information similar to that shown in Figure 10-18, and the created image may be abnormal.

Figure 10-17 Information displayed in the console when the partition image is a sparse image
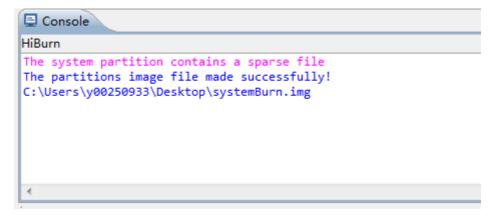
Figure 10-18 Information displayed in the console when the size of the sparse image after parsing exceeds the partition size

```
Console
HiBurn
The system partition contains a sparse file
The sparse file size is 524288000(byte), has exceeded the partition size, in the system partition
The partitions image file made successfully!
C:\Users\y00250933\Desktop\systemBurn.img
```

10.16 How Do I Change the Stuffed Value of Invalid Data to 0x00 or 0xFF When Creating Images to Be Burnt by Using the eMMC Burner?

Problem Description

When creating images to be burnt by using the eMMC burner, how do I change the stuffed value of invalid data to 0x00 or 0xFF?

Solution

Choose **Window** > **Preferences** > **HiBurn** > **Invalid Data Setting**, and select **0x00** or **0xFF**, as shown in Figure 10-19. After that, invalid data bits are stuffed with the specified value when you create images to be burnt by using the eMMC burner again.

Figure 10-19 Setting the stuffed value of invalid data

10.17 What Does the HiBurn Display When the DDR Training Fails?

Problem Description
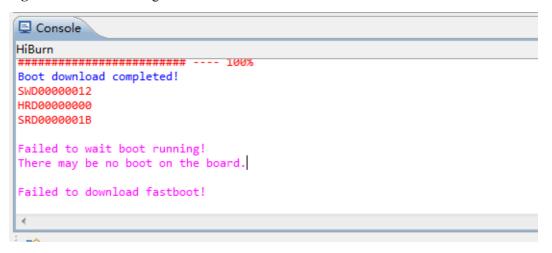
What does the HiBurn display when the DDR training fails?

Solution

If the DDR training fails, information shown in Figure 10-20 is displayed when the fastboot partition is being burnt.

Figure 10-20 DDR training failure information

10.18 What Information Should I Provide When Submitting Feedback on the HiBurn?

Problem Description

What information should I provide when submitting feedback on the HiBurn?

Solution

If an error occurs when you use the HiBurn, click the **Export** button on the console toolbar to export the displayed information in the console and provide the exported information when you submit feedback on the HiBurn. This helps locate and solve the problem.

10.19 How Do I Check Whether Port 69 of the TFTP Is Occupied?

Problem Description

Running the **tftp** command always returns a message indicating that the file cannot be found. However, all the configurations are correct. How do I check whether port 69 of the TFTP is occupied by a process?
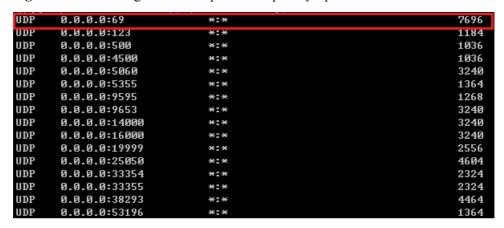
Solution

Port 69 may be occupied by a background process. You can check whether it is occupied by a process by using the following method:

Enter **netstat -ano -p udp** in the command-line interface. The information similar to that shown in Figure 10-21 is displayed.

```
UDP    0.0.0.0:69        *:*                         7696
UDP    0.0.0.0:123       *:*                         1184
UDP    0.0.0.0:500       *:*                         1036
UDP    0.0.0.0:4500      *:*                         1036
UDP    0.0.0.0:5060      *:*                         3240
UDP    0.0.0.0:5355      *:*                         1364
UDP    0.0.0.0:9595      *:*                         1268
UDP    0.0.0.0:9653      *:*                         3240
UDP    0.0.0.0:14000     *:*                         3240
UDP    0.0.0.0:16000     *:*                         3240
UDP    0.0.0.0:19999     *:*                         2556
UDP    0.0.0.0:25050     *:*                         4604
UDP    0.0.0.0:33354     *:*                         2324
UDP    0.0.0.0:33355     *:*                         2324
UDP    0.0.0.0:38293     *:*                         4464
UDP    0.0.0.0:53196     *:*                         1364
```

As shown in Figure 10-21, port 69 is occupied by the process with the PID 7696. Then run **tasklist|findstr "7696"** to check the name of the process. The information similar to that shown in Figure 10-22 is displayed.

Figure 10-22 Checking the name of a process with a specific PID

```
tftpd32.exe              7696 Console              1      2,636 K
```
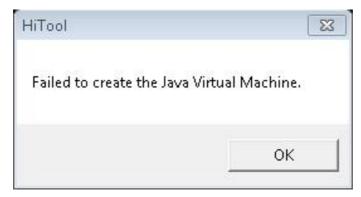
You can kill the process in the process manager.

10.20 What Do I Do If the HiTool Displays "Failed to create the Java Virtual Machine" When the JRE 1.7 or Later Version Is Installed on the PC?

Problem Description

The HiTool displays an error message when it is started if JRE 1.7 or later version is installed on the PC, as shown in Figure 10-23.

Figure 10-23 An error message displayed on HiTool

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Solution

At present, the HiTool relies on the JRE 1.6 and needs to load it during startup. When the JRE 1.7 or later version is installed, the HiTool may fail to locate the JRE 1.6 and therefore displays the error message "Failed to create the Java Virtual Machine".

Create a .text file, enter the following content:

```
set PATH=path of JRE 1.6;%PATH%
Path of HiTool
```

For example:

```
set PATH=C:\Program Files\Java\jre1.6.0_01\bin;%PATH%
C:\Users\y00250933\Desktop\HiTool-STB-3.0.19\HiTool\HiTool.exe
```

Save the .text file as .bat file, and then click the .bat file to start the HiTool.

10.21 What Do I Do If an Error Is Displayed on the HiTool When the PC runs the 64-bit JRE?

Problem Description

What do I do if an error is displayed on the HiTool when the PC runs the 64-bit JRE?

Solution

Currently, the HiTool supports only the 32-bit JRE version. Before using the HiTool, you need to first go to the official website of the JRE to download and install the JRE version supporting the Windows x86. The website is http://www.oracle.com/technetwork/java/javase/downloads/.

10.22 What Chip Do I Choose When Burning the CA chip Hi3798C V200?

Problem Description

Hi3798C V200 supports CA, but Hi3798CV200_CA is not provided.

Solution

Hi3798C V200 is the first chip that is compatible with the CA/non-CA unified boot. Hi3798C V200 can burn both the non-CA board and CA board.