Mass Production Burning User Guide

Issue 06

Date 2019-06-24

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About This Document

Overview

This document describes the mass production burning solution for Hi35*xx*, including description of burning images creation, burning methods, and precautions.

NOTE

Unless otherwise specified, Hi35*xx* is equivalent to Hi3559A V100, Hi3559C V100, Hi3516C V500, Hi3516D V300, Hi3516A V300, Hi3516C V300, Hi3519A V100, Hi3556A V100, Hi3559 V200, Hi3556 V200, Hi3516E V100, Hi3516E V200, Hi3516E V300, Hi3516D V200, and Hi3518E V300.

Product Version

The following table lists the product version related to this document:

Product Name	Product Version
Hi3516C	V300
Hi3516E	V100
Hi3559A	V100
Hi3559C	V100
Hi3516C	V500
Hi3516D	V300
Hi3516A	V300
HI3519A	V100
Hi3556A	V100
Hi3559	V200
Hi3556	V200
Hi3516E	V200
Hi3516E	V300
Hi3518E	V300

Product Name	Product Version
Hi3516D	V200

Intended Audience

This document is intended for:

- Technical support engineers
- Software development engineers.

Symbol Conventions

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

Symbol	Description
DANGER	Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
WARNING	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
CAUTION	Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.
NOTICE	Indicates a potentially hazardous situation which, if not avoided, could result in equipment damage, data loss, performance deterioration, or unanticipated results. NOTICE is used to address practices not related to personal injury.
NOTE	Calls attention to important information, best practices and tips. NOTE is used to address information not related to personal injury, equipment damage, and environment deterioration.

Change History

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

Date	Issue	Description
2019-06-20	06	The description of the driver installation method in the original section 2.2.3 forms section 2.2.3 and the rest part of the original section 2.2.3 forms section 2.2.5. Section 2.2.4 is added.

Date	Issue	Description
2019-04-15	05	The description of Hi3516D V200 is added.
2018-12-26	04	The descriptions of Hi3516E V200, Hi3516E V300, and Hi3518E V300 are added.
2018-11-13	03	Section 2.2.3 is modified.
2018-05-24	02	In section 2.2.3, the description of parameter settings in **BurnConfig.ini** is added.
2017-11-25	01	The description of Hi3516E V100 is added.
2016-10-25	00B02	Section 2.2.3 is modified.
2016-08-04	00B01	This issue is the first draft release.

Contents

Figures

1 Overview

1.1 Overview

This document describes how to burn board images using HiPro-usb. This solution uses the USB communication to implement the burning at a lower cost and a higher speed. It applies to the board solutions with the eMMC, SPI NOR flash, SPI NAND flash, parallel NAND flash or UFS as the boot medium.

NOTE

- Only Hi3559A V100, Hi3519A V100, Hi3556A V100, and Hi3559C V100 support the use of a parallel NAND flash as the boot medium.
- Only Hi3559A V100 and Hi3559C V100 support the use of UFS as the boot medium.

1.2 Preparing for the Mass Production Burning

Prepare the following files and tools for the mass production burning:

- Prepare the source files to be burnt. The following lists the source files.
  - Boot image
  - Kernel image
  - File system image
- Prepare HiTool.
- Prepare HiPro-usb.
- Prepare dual-port USB data cable and USB hub.
- For online USB driver installation, prepare the program **zadig_2.3.exe**. Download the **zadig.exe** file from **http://zadig.akeo.ie**. Download the .exe file based on your operating system.
- For offline USB driver installation, prepare the corresponding program. For details, see section 1.6 in the *HiBurn User Guide*.

2 Using HiPro

2.1 Introduction to HiPro

HiPro is a mass production burning tool provided by the software development kit (SDK) for Hi35*xx*. HiPro-usb burns images to the board using a USB flash drive. It can burn images to a bare chip, and burn the MAC address and ID to a board. It can burn images to a maximum of eight boards at a time.

NOTICE

The following requirements must be met if the board is burnt over the USB port:

- The USB port of the PC is connected to the USB 2.0 port of the board.
- The board system must be reset once (power-on reset or system soft reset).

The USB burning process can be started only when all of the preceding requirements are met.

2.2 Using HiPro-usb

2.2.1 Creating .zip Image Package

Use HiBurn tool in HiTool to make HiPro-usb images. The process is as follows:

Step 1 Start HiTool, and click **HiBurn**.

- For the SPI NOR, SPI NAND, or parallel NAND flash memory, select **Burn By Partition**, as shown in **Figure 2-1**.
- For the eMMC or UFS component, select **Burn eMMC**, as shown in **Figure 2-2**.

Configure the partitions to be burnt or import a partition information file in .xml format.

Step 2 Click **Create HiPro image**.

Figure 2-1 Creating a HiPro image for the SPI NOR flash board

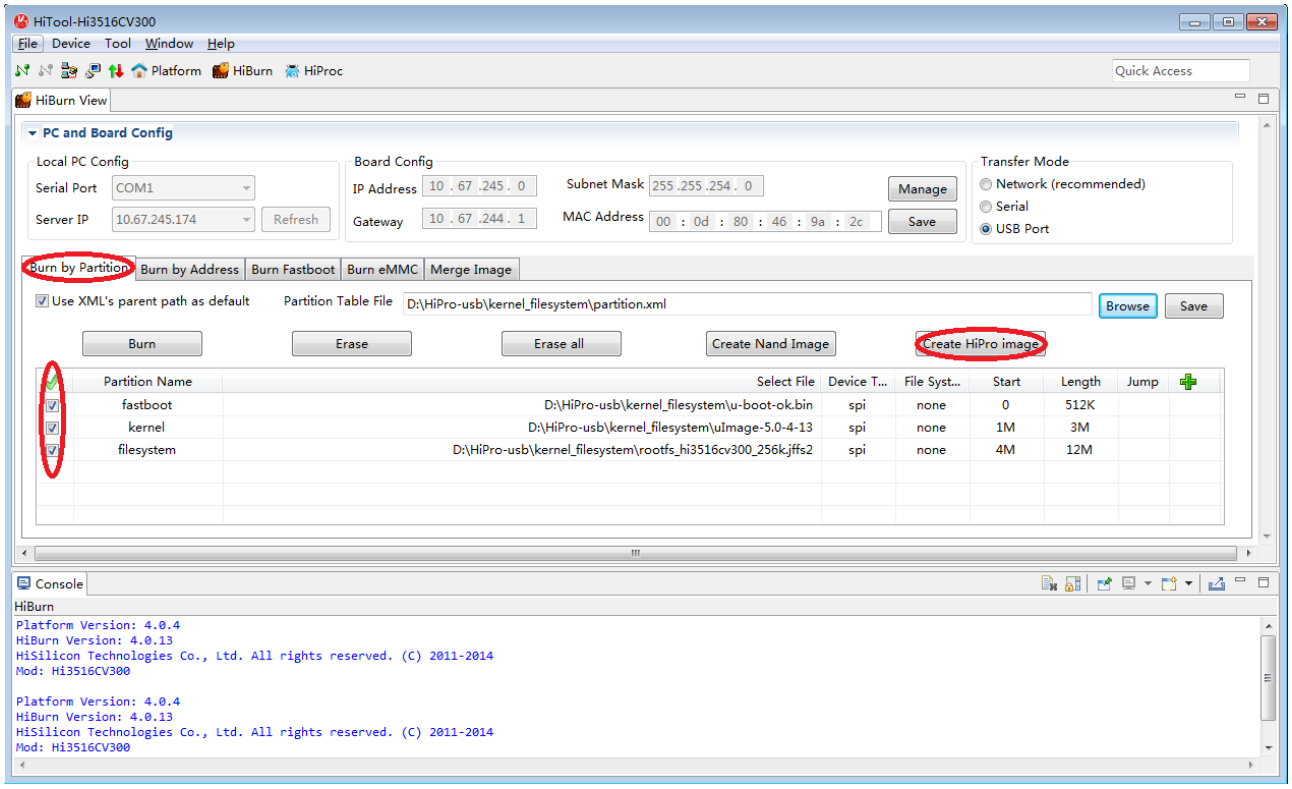
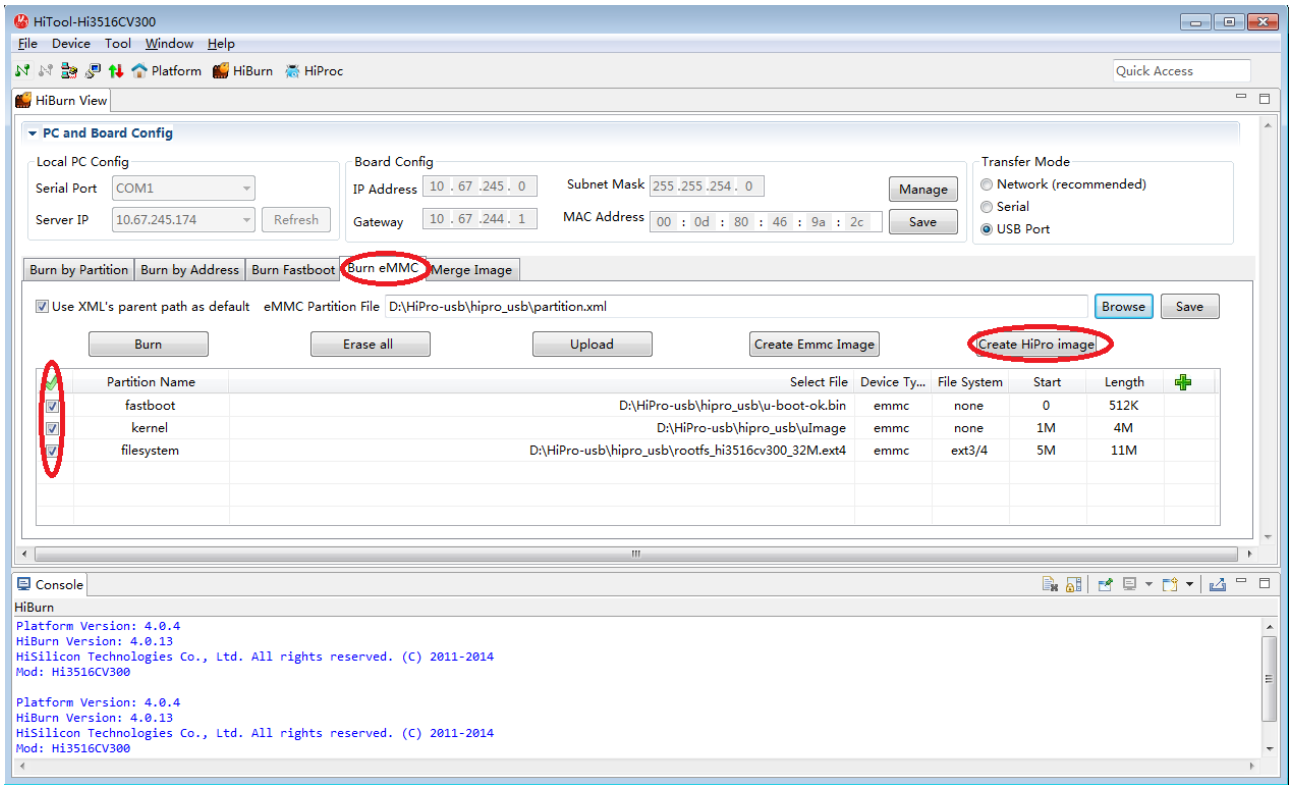
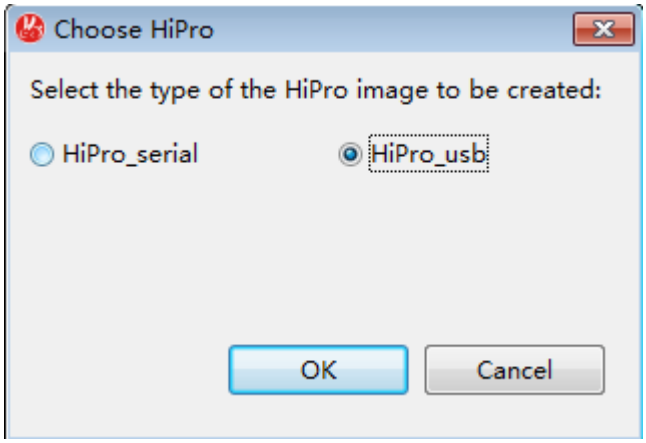


Figure 2-2 Creating a HiPro image for the eMMC board



Step 3 Save HiPro-usb image in the displayed dialog box, as shown in **Figure 2-3**

Figure 2-3 Selecting the type of HiPro image to be created

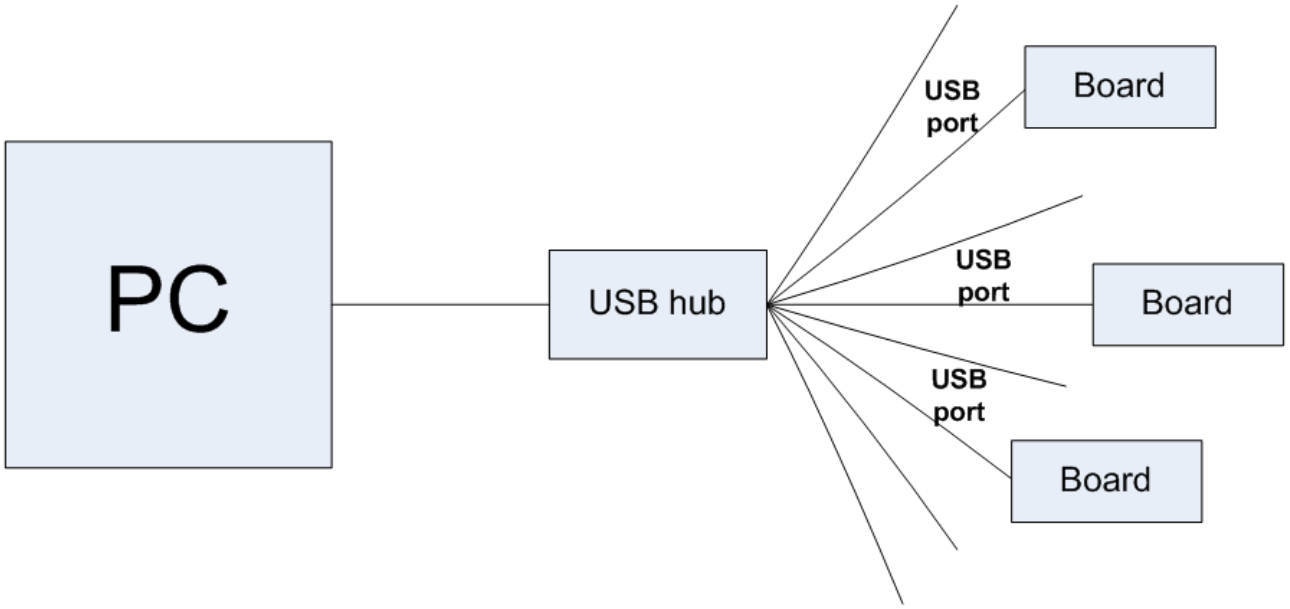


----End

2.2.2 Setting Up the Burning Network Environment and Selecting Materials

The PC connects to multiple USB cables using a USB Hub, and each USB cable connects to the USB port of a board to be mass-produced. Download the image to the board over a USB port, and burn the image to the flash memory on the board. **Figure 2-4** shows the networking environment.

Figure 2-4 Networking diagram



The PC is connected to multiple USB cables through the USB hub, and then connected to the board. Therefore, burning to multiple boards at a time is supported.

NOTICE

To build a stable burning network, you are advised to use the materials listed as follows:

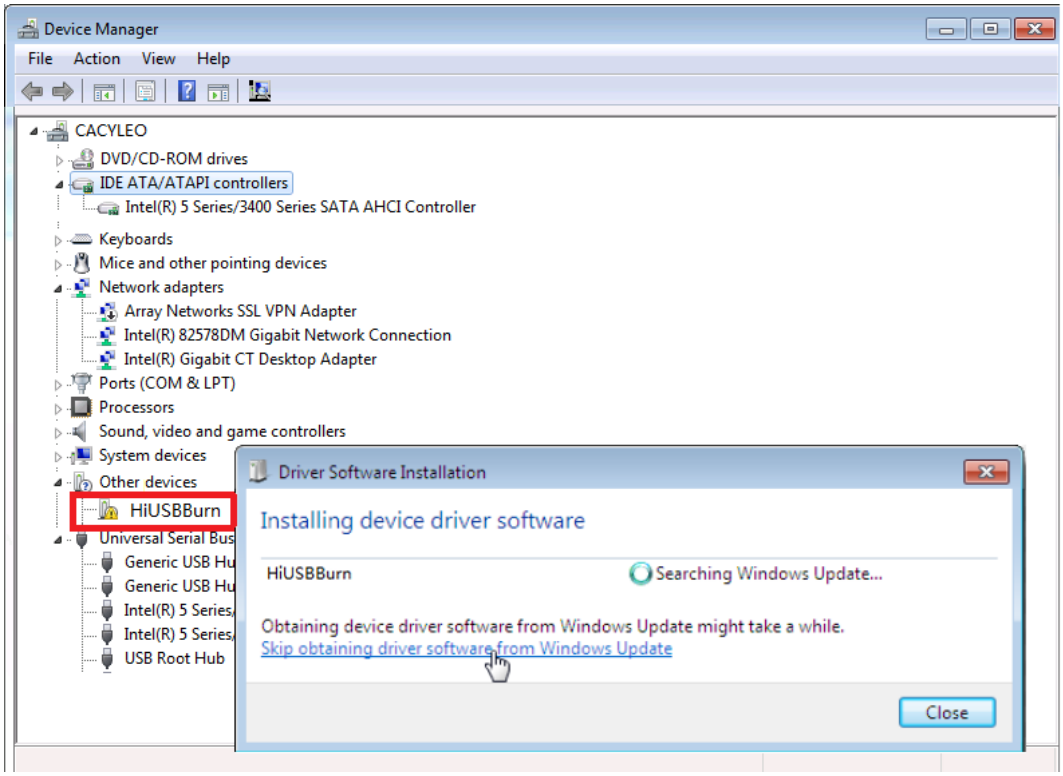
- USB hub with power supply
- Recommended model: SSK

2.2.3 Installing the USB Driver (Online)

The following uses the driver installation on Windows 7 as an example:

Step 1 Connect a board with burnt U-Boot to the PC over the USB port. (You can burn U-Boot over the serial port by using the HiBurn tool.) Run the **usb device** command under U-Boot on the board over the serial port terminal to enable the board to enter the upgrade mode. HiUSBBurn is displayed in **Device Manager** on the PC, as shown in **Figure 2-5**.

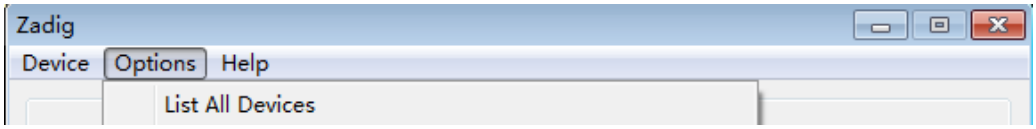
Figure 2-5 Device Manager



The system automatically searches for the driver. Go to the next step if no driver can be found.

Step 2 Open the **zadig_2.3.exe** file, choose **Options** > **List All Devices**, and select **List All Devices**, as shown in **Figure 2-6**.

Figure 2-6 Selecting List All Devices

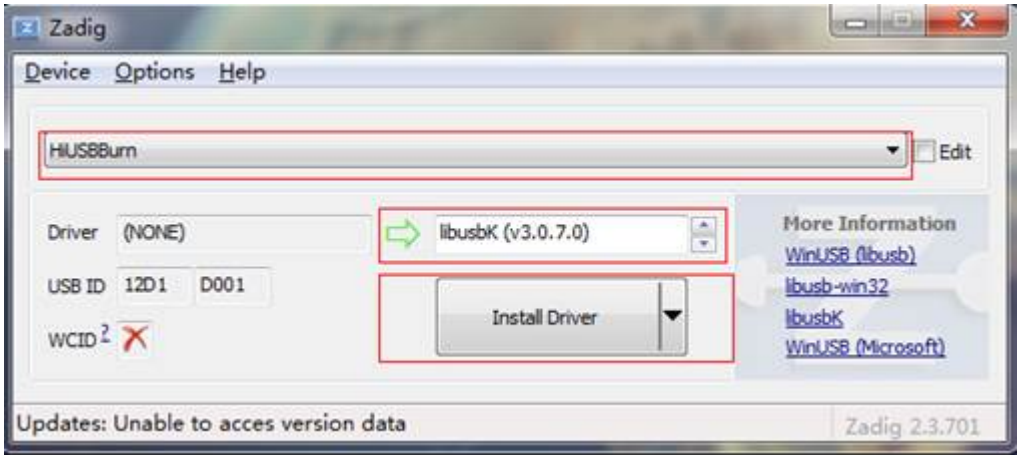


Step 3 Select **HiUSBBurn** and **libusbK (v3.0.7.0)** and click **Install Driver**, as shown in **Figure 2-7**.

NOTICE

The board needs to enter the USB mode when it is powered on. For details about the method of entering the USB mode, see the *Hi35xx Vxxx SDK Installation and Usage Description*.

Figure 2-7 Installing libusbK



Step 4 Click **Install** in the dialog box that is displayed, as shown in **Figure 2-8**. Then, libusbK is installed successfully, as shown in **Figure 2-9**.

Figure 2-8 Installation

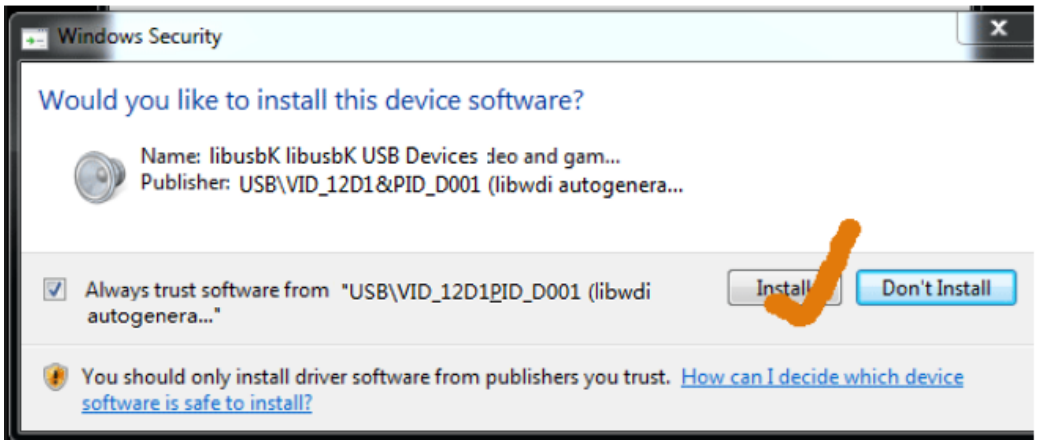
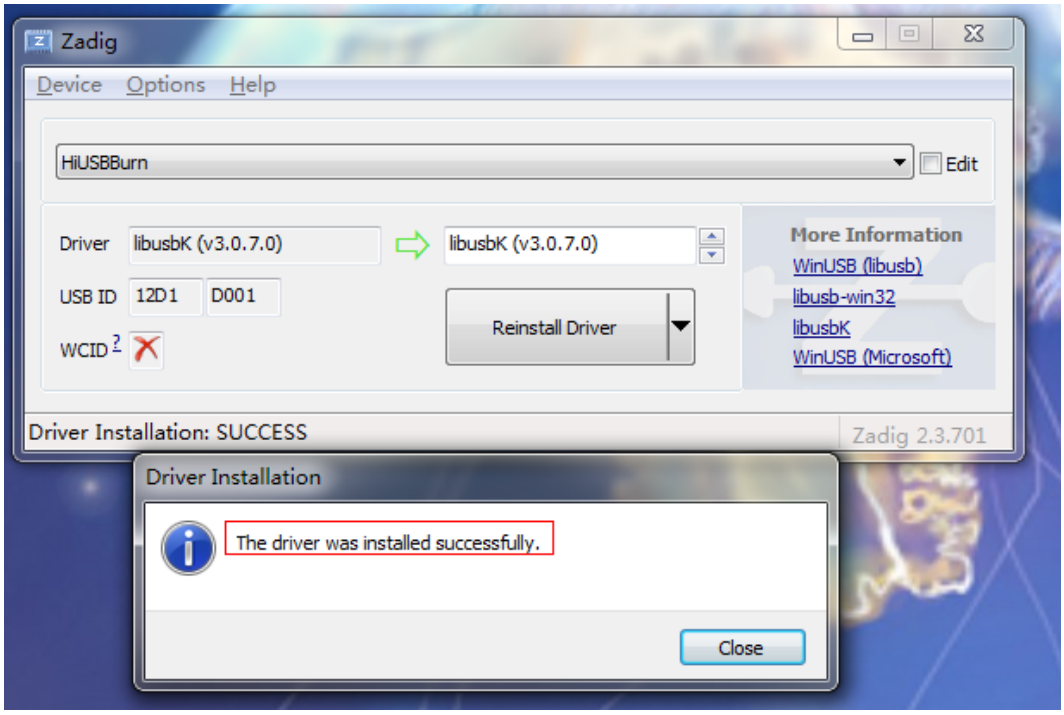
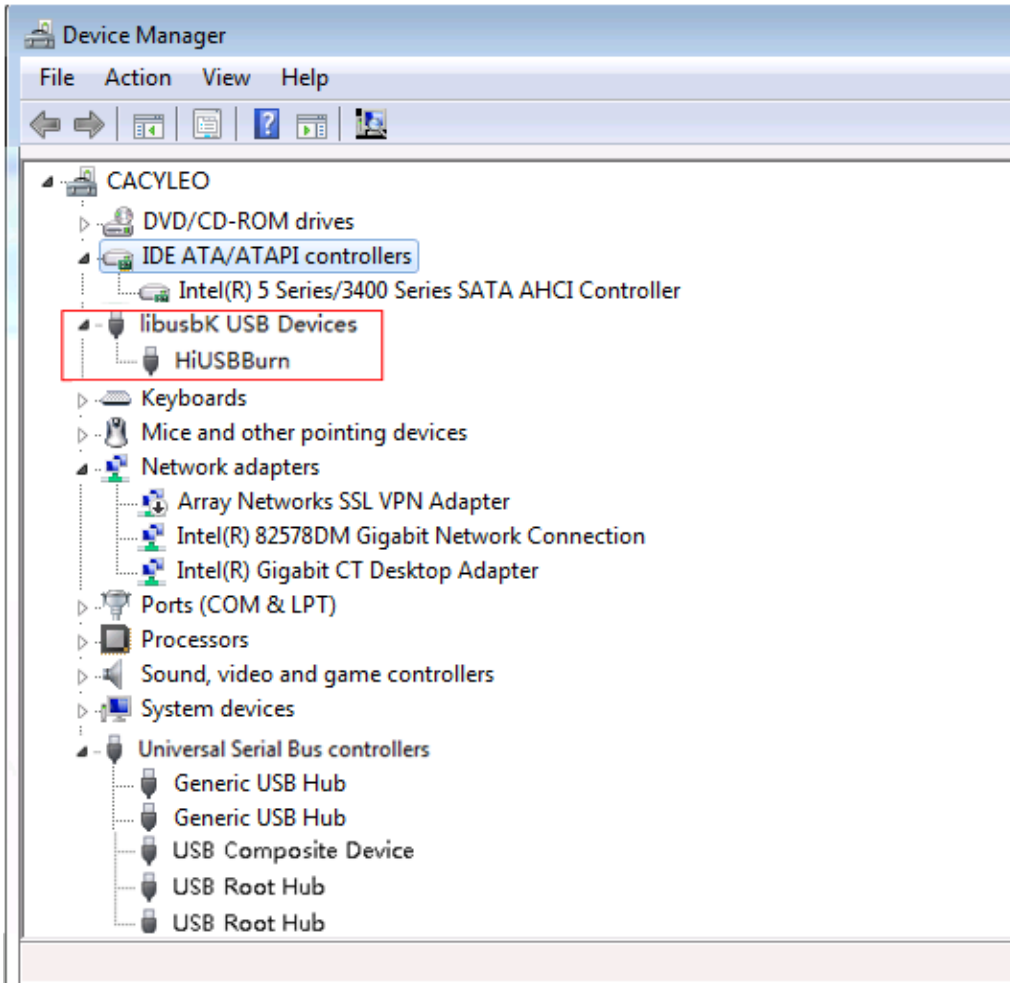


Figure 2-9 Installation succeeded



Step 5 After the LibusbK driver is installed, open **Device Manager**, and check whether the driver is installed correctly. **Figure 2-10** shows the status after the driver is installed correctly.

Figure 2-10 Device status on Device Manager after correct installation



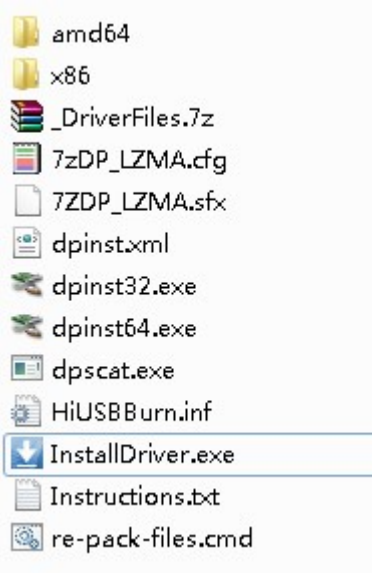
----End

2.2.4 Installing the USB Driver (Offline)

The following uses the driver installation on Windows 7 as an example:

Step 1 Decompress the offline installation package. The following figure shows the decompressed program. Click to execute **InstallDriver.exe**.

Figure 2-11 Contents of the offline installation package



Step 2 Click **Next**.

Step 3 Click **Complete**. After the installation is complete, when the board is connected to the PC over a USB port to enter the USB upgrade mode, you can view the USB device in **Device Manager**, as shown in **Figure 2-10** in section **2.2.3**.

----End

2.2.5 Burning the Board by Using HiPro-usb

Perform the following steps:

Step 1 Configure the tool parameters. There is a configuration file **BurnConfig.ini** in the directory for storing the tool. You can modify the configuration options in this file as required before using HiProInfo. For example, if you want to disable a function, comment out the corresponding configuration by using a semicolon (;).

- **BoardType**: board type

  Currently, the following board types are supported:

  - Hi3516C V300 or Hi3516E V100: BoardType = 6
  - Hi3559A V100 or Hi3559C V100: BoardType = 7
  - HI3519A V100 or Hi3556A V100: BoardType = 8
  - HI3516C V500, Hi3516D V300, Hi3519 V200, Hi3556 V200, or Hi3516A V300: BoardType = 9
  - Hi3516E V200, Hi3516E V300, Hi3516D V200, or Hi3518E V300: BoardType=10

- **MAC**: whether to burn the MAC address

  The value **0** indicates that burning is not required, and the value **1** indicates that burning is required.

- **ID**: whether to burn the ID

  The value **0** indicates that burning is not required, and the value **1** indicates that burning is required.

- **MacLength**: length of the MAC address
- **IDLength**: ID length
- **MacBurnFlashType**: flash component type

  1: NAND flash

  2: SPI flash

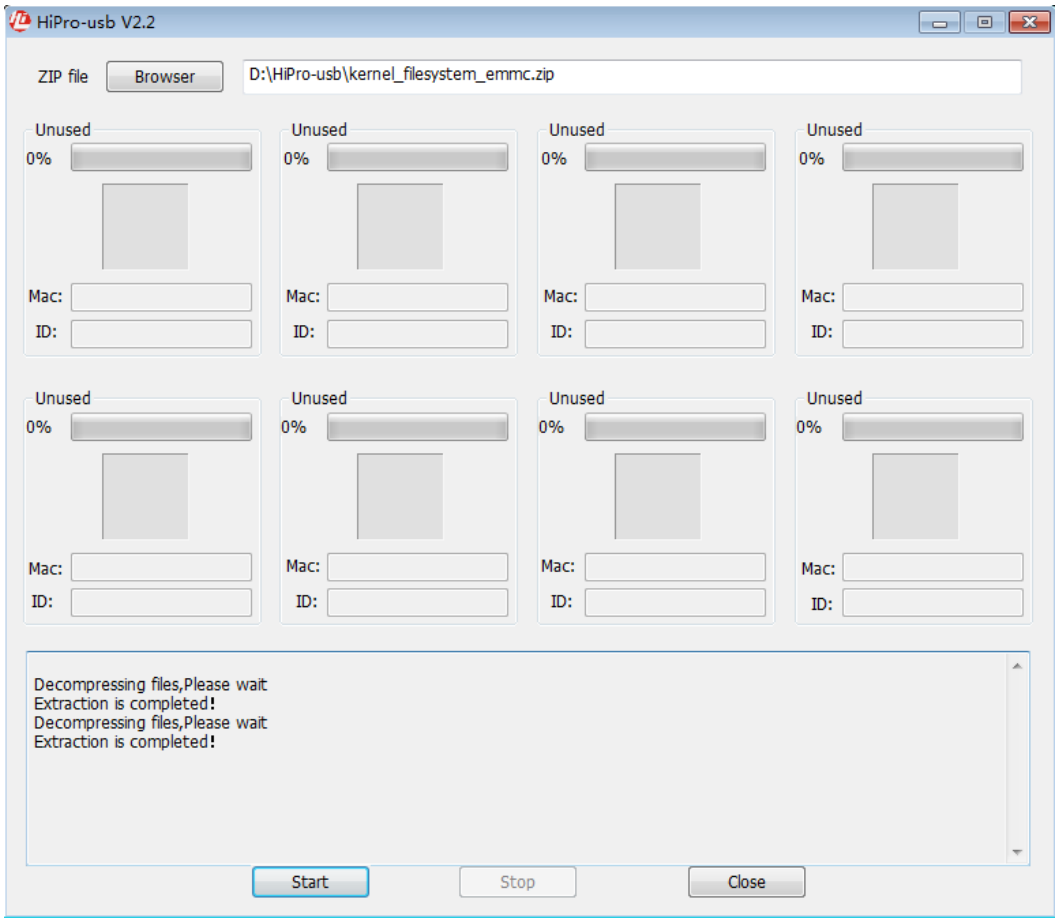
  3: eMMC
- **MacBurnAddress**: MAC burning address

NOTICE

- Except **BoardType**, other parameters need to be set only when the MAC address and ID are burnt. By default, the MAC and ID do not need to be burnt.
- Chips such as Hi3516C V300/Hi3516E V100, Hi3559A V100/Hi3559C V100, HI3519A V100/Hi3556A V100, and HI3516C V500/Hi3516D V300/Hi3519 V200/Hi3556 V200/ Hi3516A V300 do not support burning on Window 10.

Step 2 Run HiPro-usb on the PC and select the .zip image to be burnt.

Figure 2-12 Selecting an image



NOTICE

When the image is burnt for the first time, ensure that the directory where the image is located does not have a folder with the same name as the image. To avoid decompressing the image multiple times, the tool checks whether a folder with the same name as the image exists in the path where the image is located. If yes, image decompressing is skipped.

Step 3 After the decompression is complete, click **Start**. The HiPro-usb tool automatically detects the board that is powered on. If the MAC address and ID input is configured in the configuration file, the tool waits for the user to enter the MAC address and ID, as shown in **Figure 2-13**. If the MAC address and ID input is not configured in the configuration file, the tool skips the input process and enters the burning process directly, burn the files in the image one by one, as shown in **Figure 2-14**.

Figure 2-13 Waiting for user to input the MAC and ID

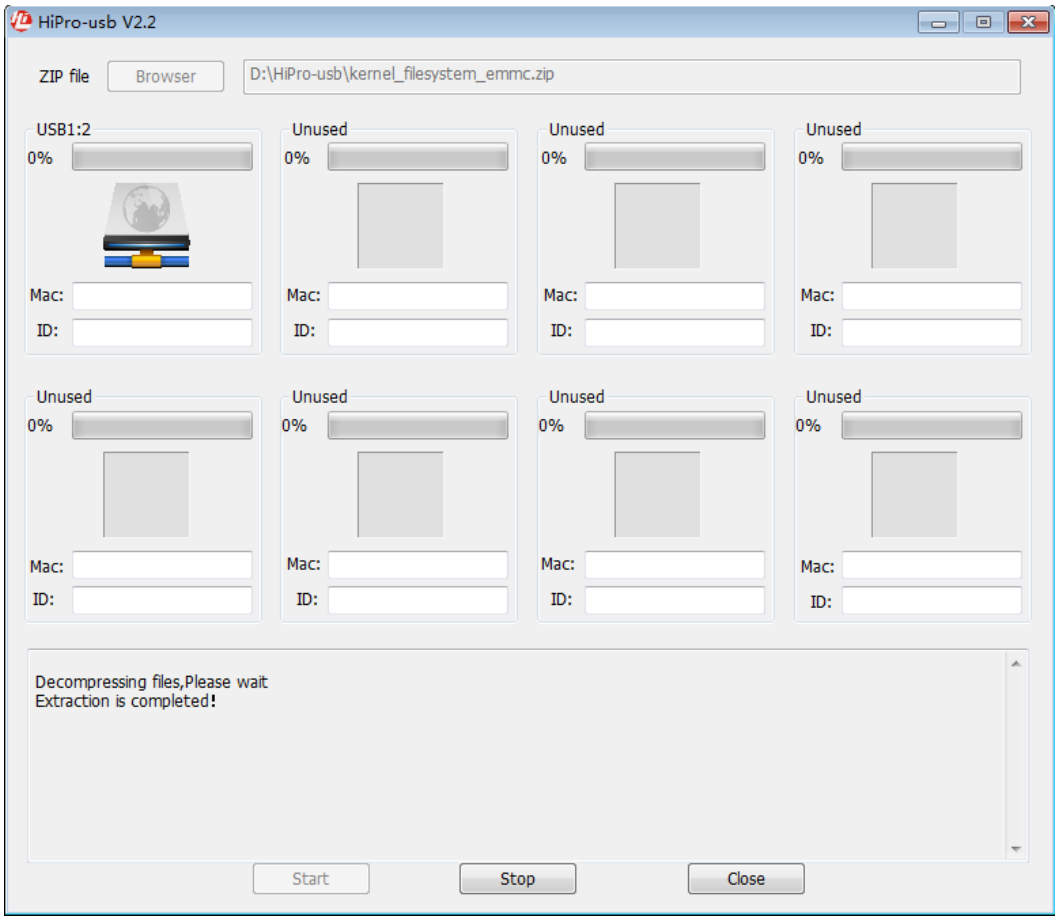
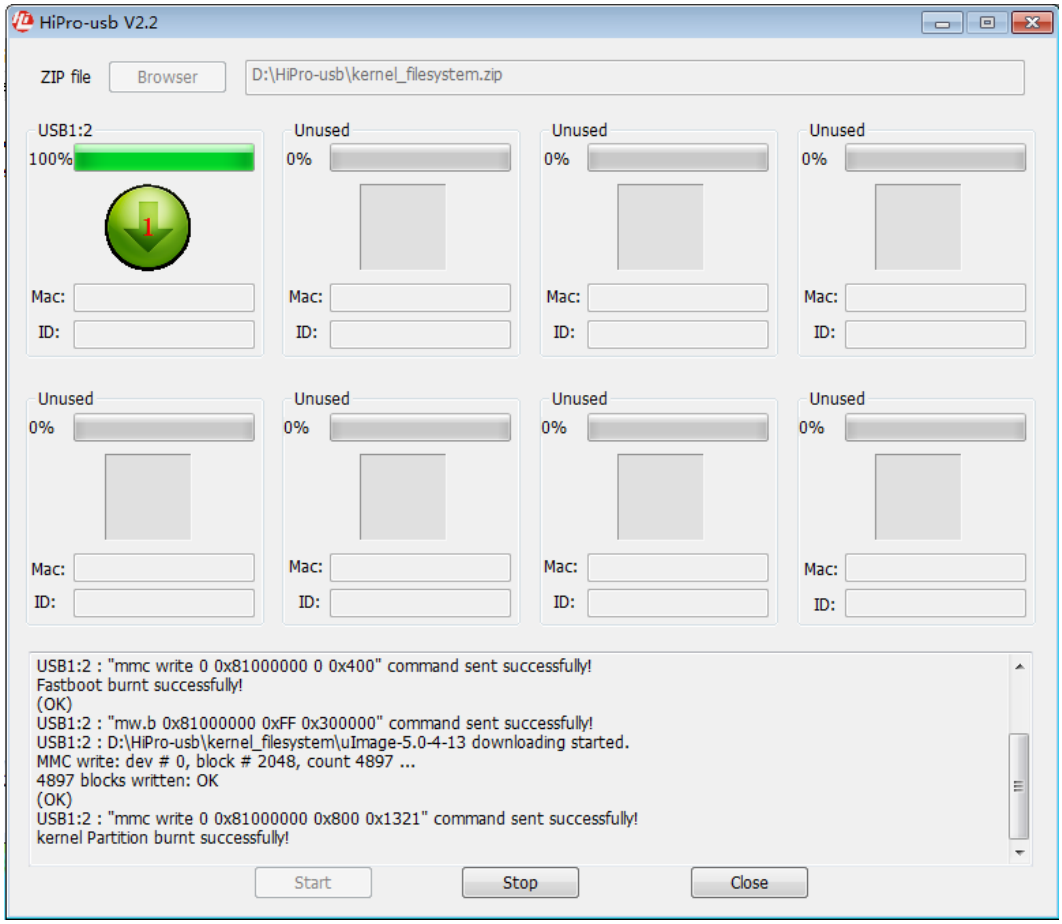
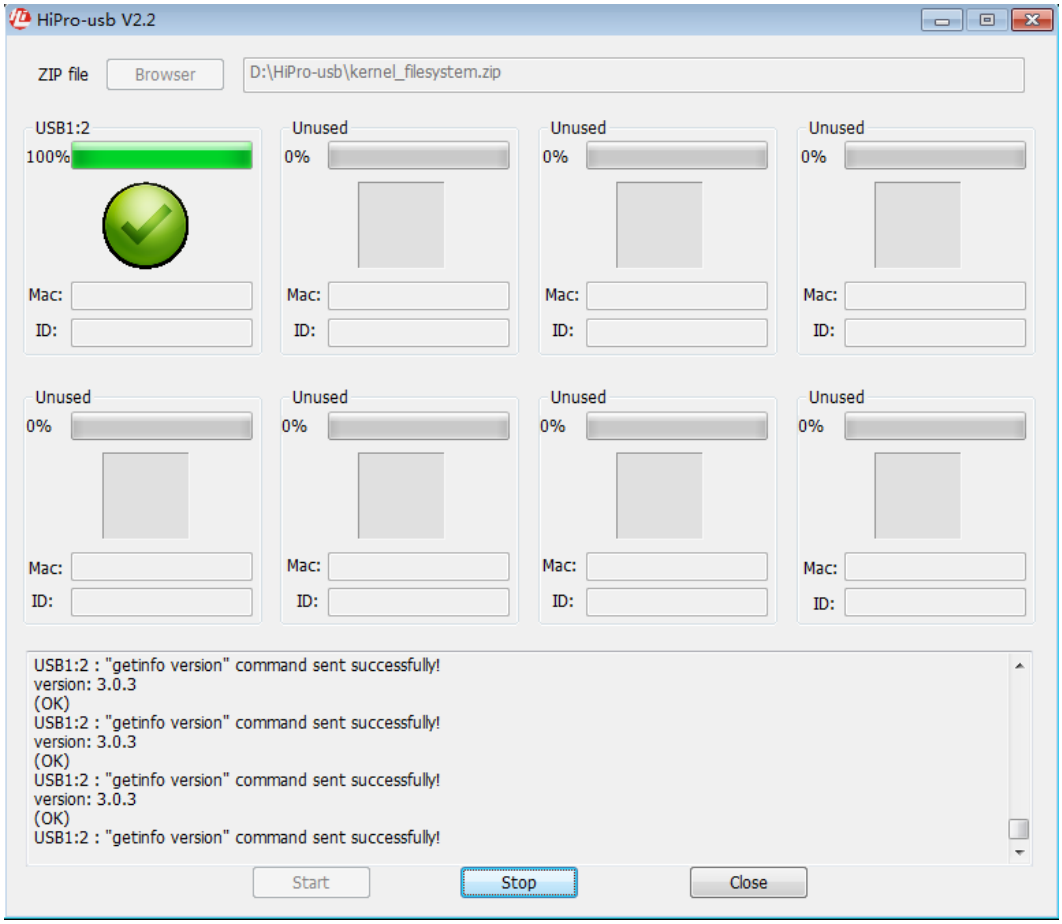


Figure 2-14 Burning the image



Step 4 Complete the burning.

Figure 2-15 Completion of burning



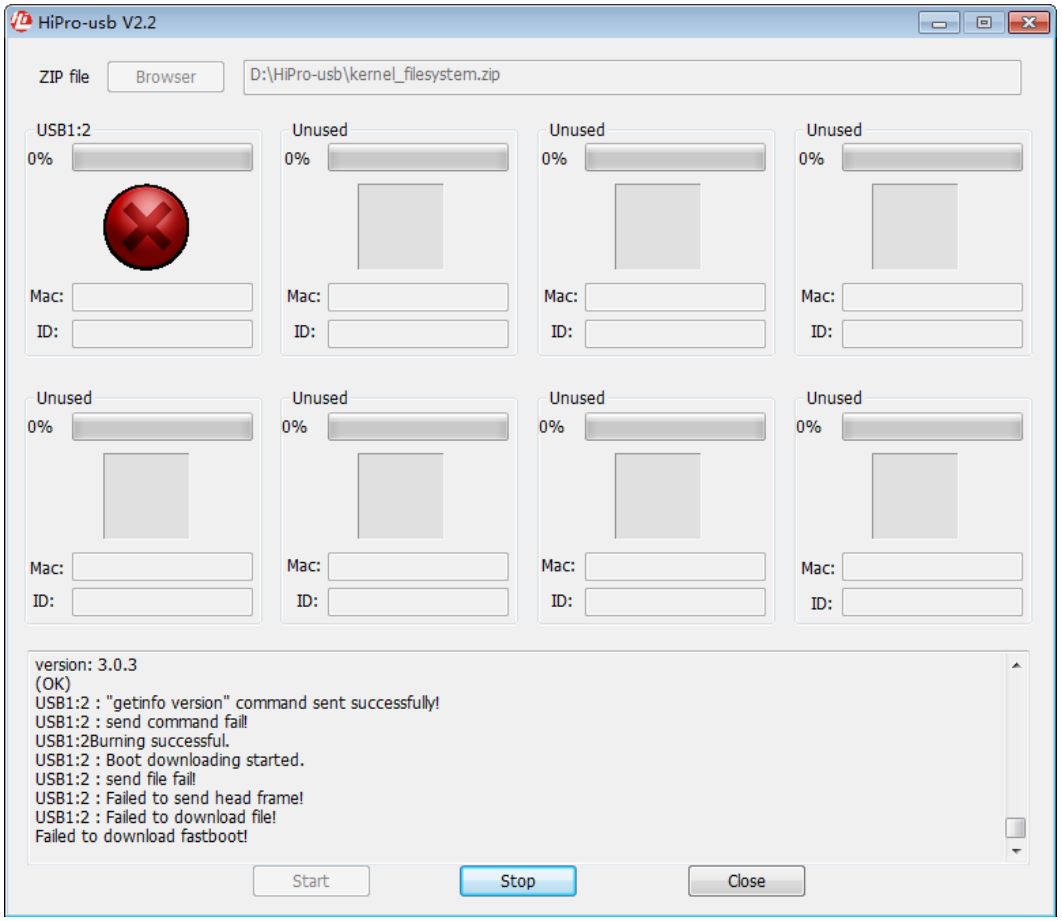
----End

2.3 HiPro FAQs

2.3.1 What Are the Causes for Burning Failures?

If the burning fails, HiPro-usb displays the information shown in **Figure 2-16**.

Figure 2-16 Burning failure of HiPro-usb



- If the system displays "Failed to send start frame" and the burning progress is 0%, the possible cause is that the board is not powered on or the USB device is not connected properly.
- If the system displays "Failed to send head frame" or the burning progress is not 0%, the possible cause is that images do not match the board.

NOTICE

If you use HiPro-usb tool to burn images to the board, you need to restart the board to continue image burning when burning fails.

2.3.2 How Do I Correspond USB Cables with USB Numbers on HiPro-usb?

After HiPro-usb starts, paths for all USB devices are automatically identified in the background. A maximum of eight USB devices can be connected to the board. The USB port numbers are displayed on HiPro-usb page from left to right and from top to bottom.

The displayed USB number is in the format of bus number: hub number: USB number on the hub. The operator connects the PC to the board to be burnt. HiPro-usb automatically identifies

and displays the number of the connected USB devices. You are advised to mark the USB cable (the number of the USB port on the hub may be different from the number identified in the background, and the latter takes priority) so that the operator can obtain the burning status of each board easily by viewing the mapping between the mark on the USB cable and the USB port number displayed on HiPro-usb page.

