Freescale Semiconductor
User's Guide

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USB Bootloader GUI
User's Guide

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Contents

1 Overview

The MC9S08JS16 (JS16) supports the USB bootloader used to upgrade the firmware via the USB interface. Freescale provides a complete solution for the JS16 USB bootloader.

This document describes how to install the USB bootloader GUI to your computer and how to use the GUI to upgrade and download the firmware.

NOTE

This user's guide is based on the JS16. It can also apply to JS8 with the difference noted in the context.

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2 Install the Bootloader GUI

The USB bootloader GUI is used to communicate with the boot code in ROM to implement the firmware update and download process.

NOTE

The bootloader GUI can only be installed on a PC with Windows XP™ (SP2 or later version) operating system. The .NET2.0 or later version must be ready before the installation. If the bootloader GUI installer can not detect the .NET2.0 installed it then connects to the website to download and install it. In this user guide it is assumed the .NET2.0 has been installed.

The following steps installs the bootloader GUI:

1. Double click the setup.exe to start the installation (Figure 1).

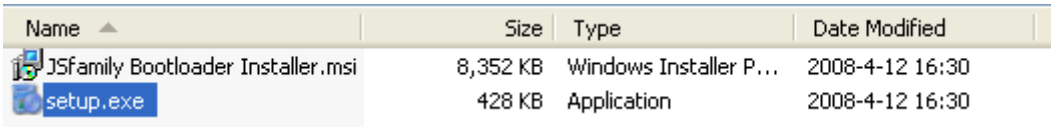

Figure 1. Start the Installation

The installation window in Figure 2 appears.

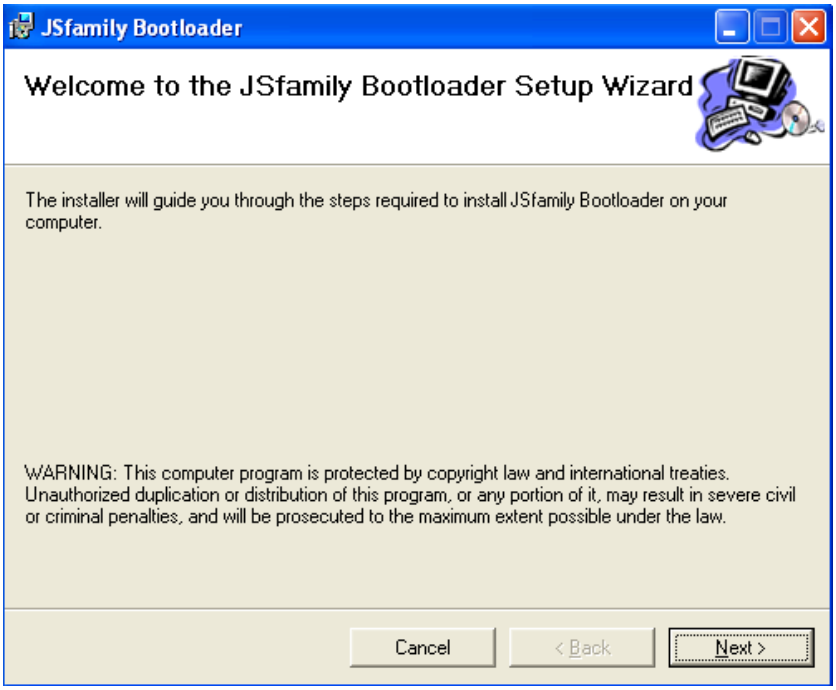

Figure 2. JS Family Bootloader Installation Window

2. Click the Next button in this window (Figure 2). Users can set the destination folder by clicking the Browse button in the window shown in Figure 3.

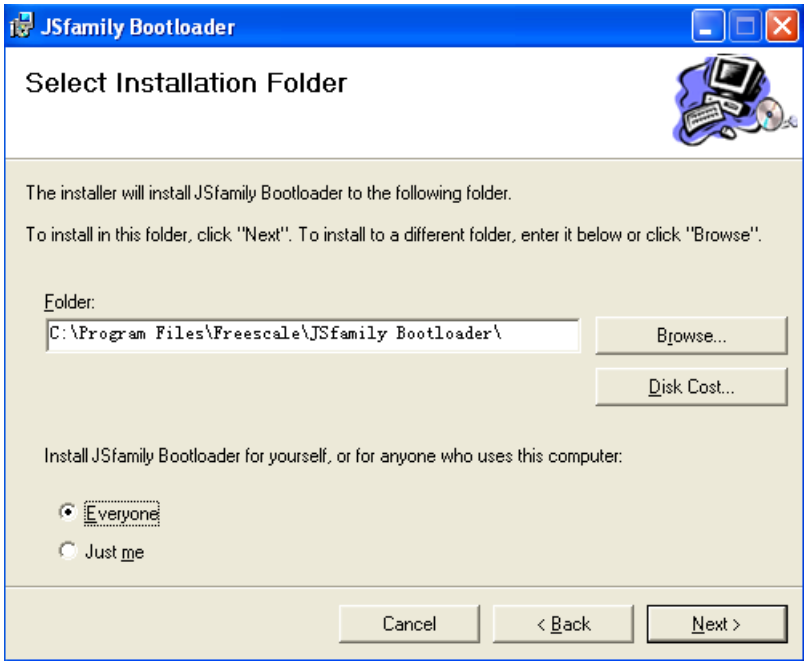

Figure 3. Change the Installation Path

3. Click the Next button in the same window (Figure 3) and the License Agreement page is displayed. To continue with the installation select I Agree.

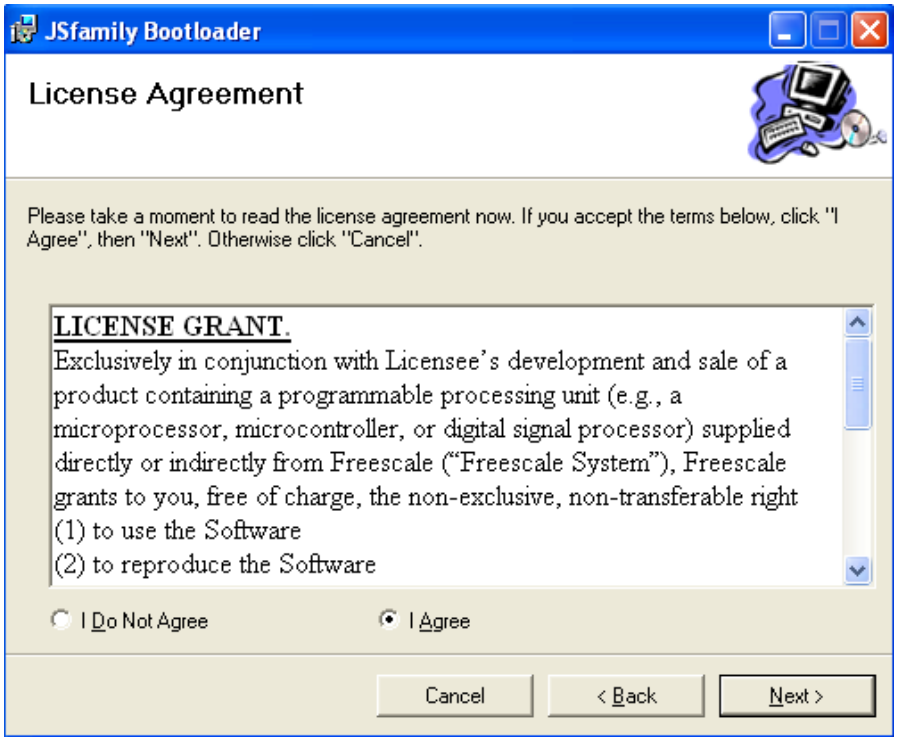

Figure 4. License Agreement

4. Click the Next button in the License Agreement (Figure 4). The installation wizard begins to copy the files to the folder configured in step 2 (Figure 5).

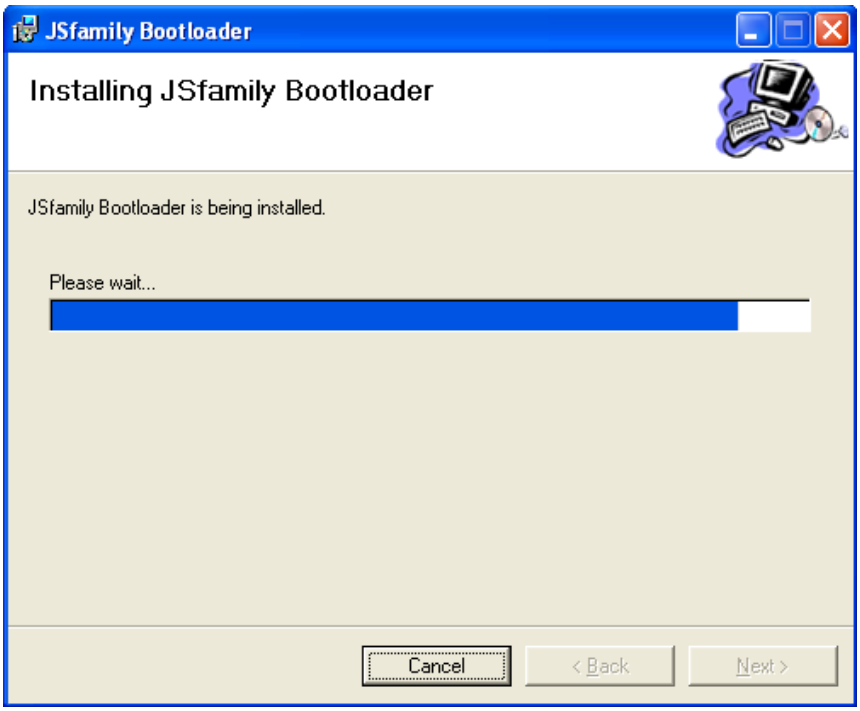

Figure 5. Installing the Bootloader

5. In the rest of the installation process the bootloader's USB driver (WinUSB) will be installed in the system. The dialog in Figure 6 appears after the process is completed.

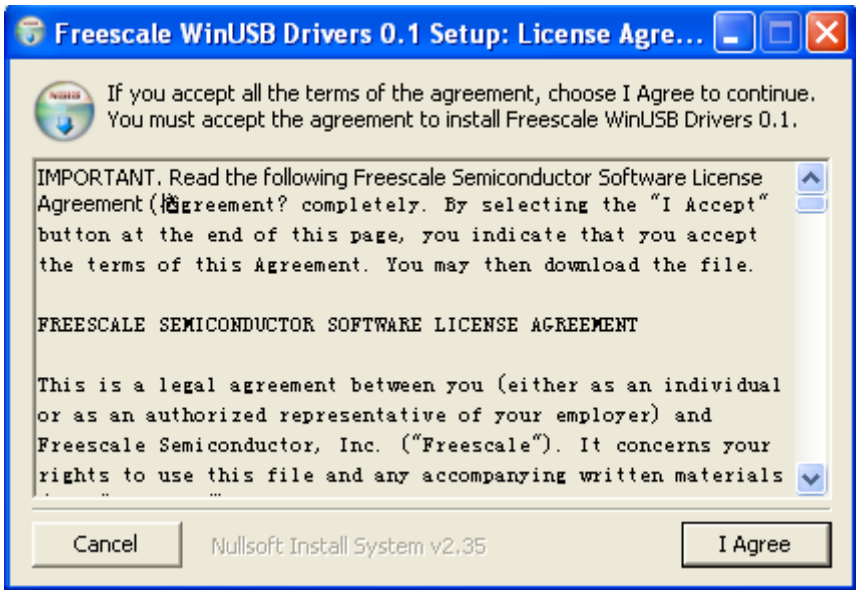

Figure 6. Agreement for installation of USB driver

The user must select I Agree to continue with the installation (Figure 6).

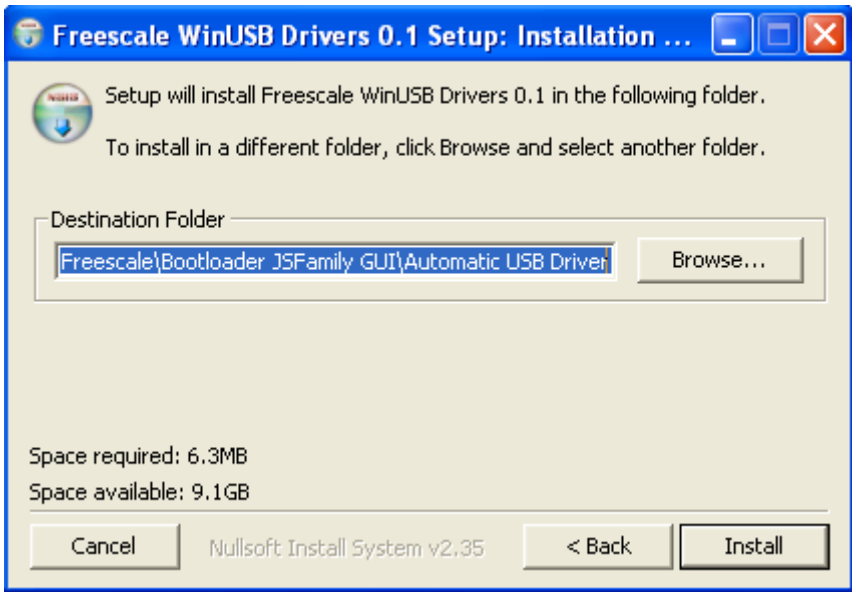

Figure 7. Select the USB Driver Installation Path

6. After the user sets the USB driver installation path (Figure 7), the installation wizard begins to copy the USB driver files to the destination folder (Figure 8).

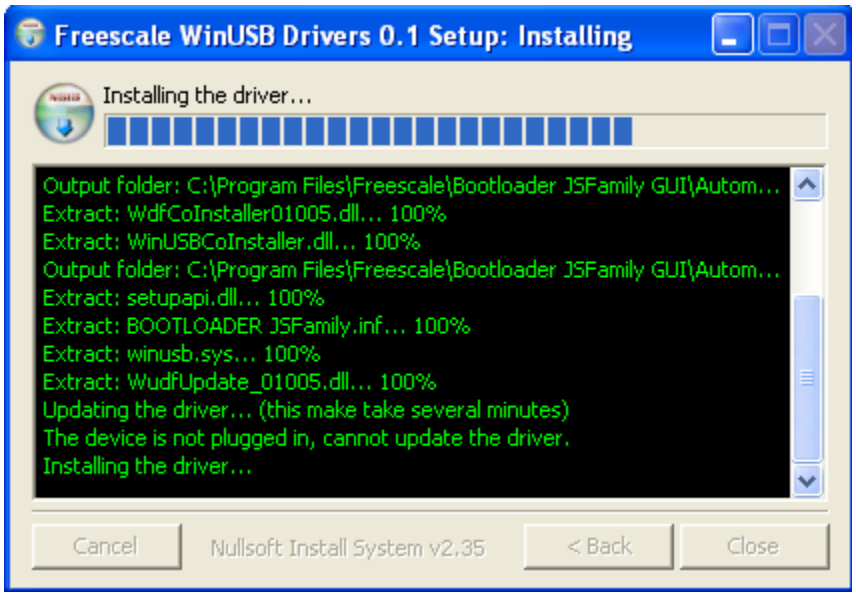

Figure 8. Copying the USB Driver Files

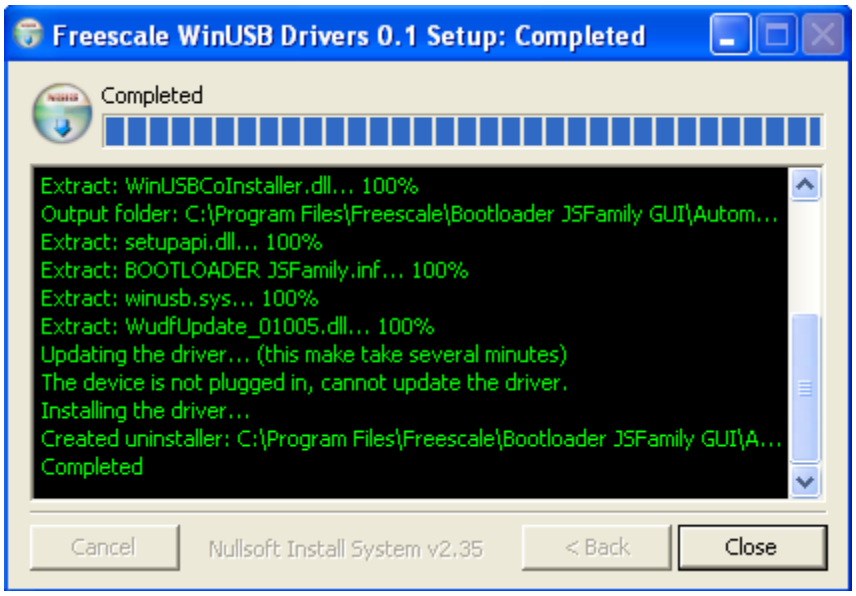

Figure 9. USB Driver Installation Completed

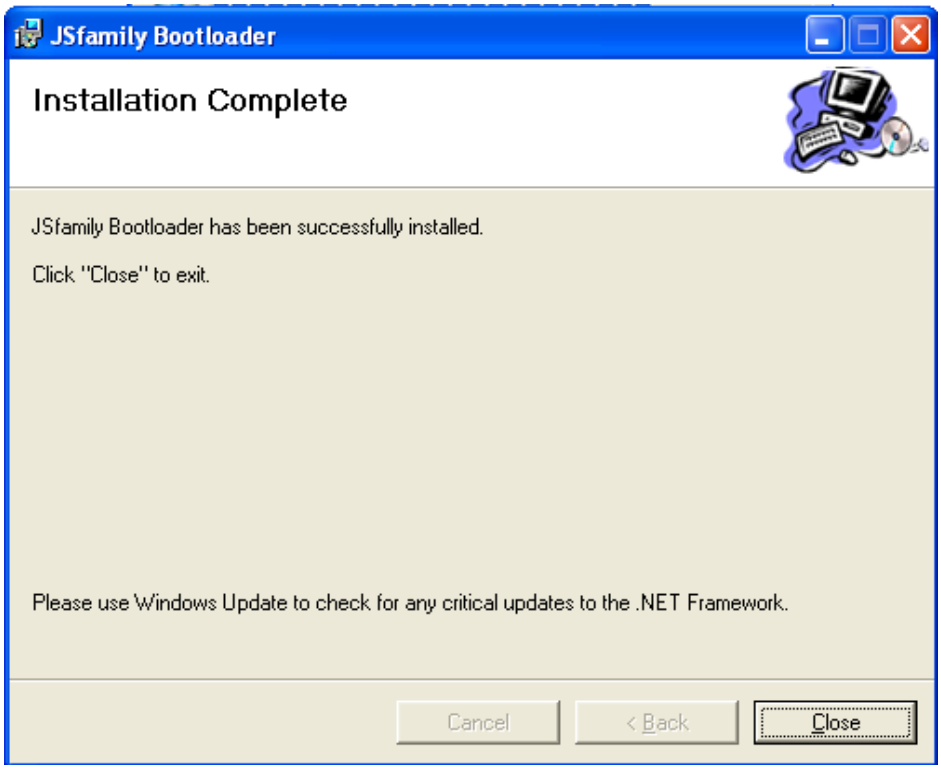

Figure 10. All Installations Completed

7. After the USB driver files are all copied to the destination folder a dialog is displayed as in Figure 9. To close the USB driver installation click the Close button and a dialog is then displayed see Figure 10. This indicates that the installation process has been completed.

3 Install the Driver for the New Bootloader Device

Each time the USB port of a PC is connected with a new USB device the PC needs to install the driver.

The following steps installs the driver:

1. Attach the USB device to the PC

   Connect the mini-USB port on the demo board to the USB port on the PC with a USB cable.
2. Power on the demo board

   Press the PTG0 (BLMS) button and hold it down while the demo board is powered on. This forces the JS16 to enter boot mode.
3. Wait for detection by the PC

   When the JS16 enters boot mode it is detected by the PC. The PC then prompts Found New Hardware message (Figure 11).

Figure 11. Detecting JS Family Bootloader

After this message is displayed the Found New Hardware Wizard window appears (Figure 12).

Figure 12. Install the Bootloader Driver Automatically

4. Install the USB bootloader driver

   Select Install the software automatically and click the Next button (Figure 12). The installation process then begins (Figure 13).

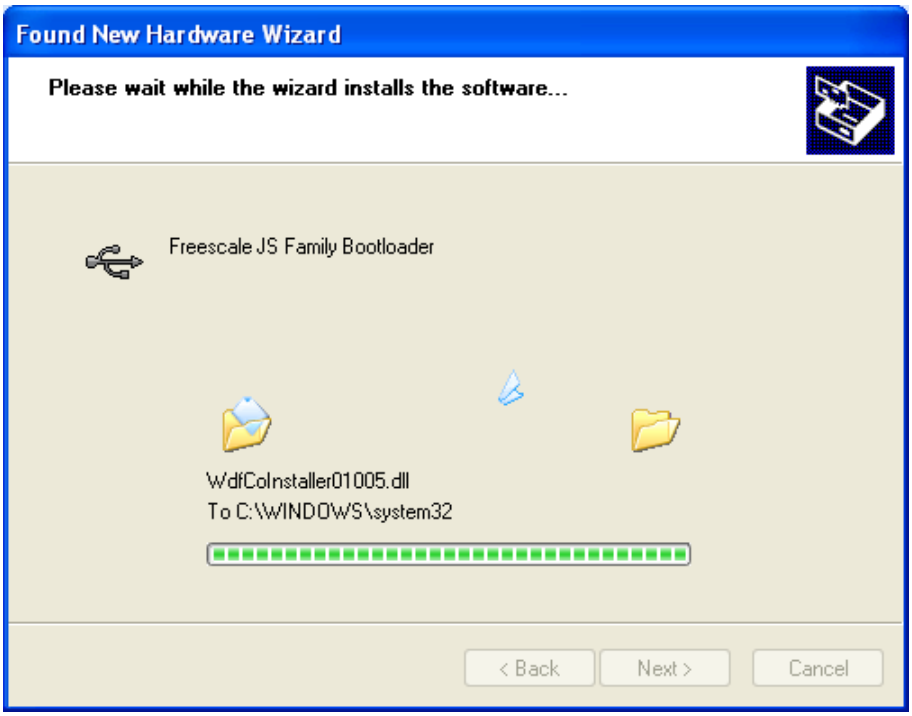

Figure 13. Installing the JS Bootloader

5. Complete the installation

   After the installation is complete click the Finish button to close the wizard (Figure 14). The message in Figure 15 is displayed if the installation is successful.

Figure 14. Complete the USB Driver Installation

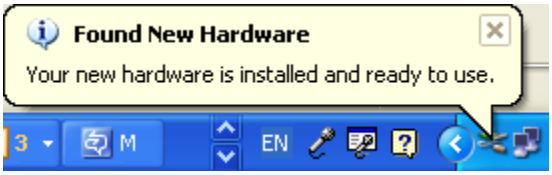

Figure 15. USB Bootloader is ready

If the device has been installed successfully users can find the Freescale JS Family Bootloader in the Microsoft Windows device manager(Figure 16).

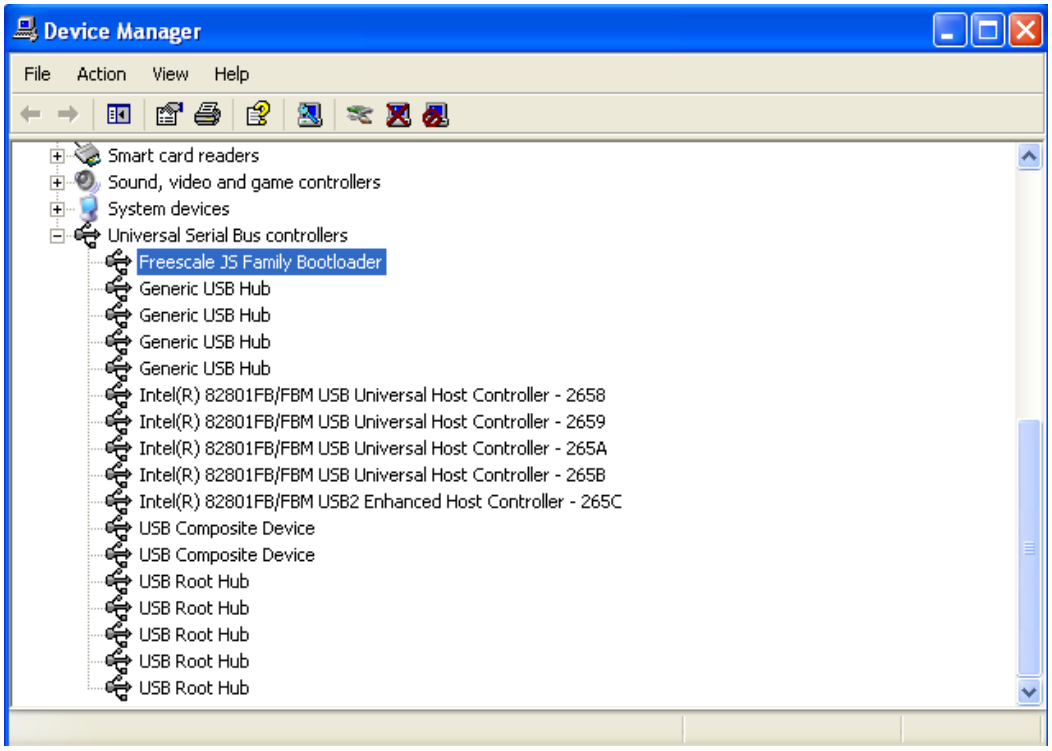

Figure 16. USB Bootloader in Device Manager

4 Download the Firmware Using the Bootloader

4.1 JS16 Bootloader GUI

After the JS16 USB driver has been installed the user can open the bootloader GUI from Start > Programs > Freescale > JS family bootloader > JS family bootloader 1.0. The GUI is then displayed on screen. See Figure 17.

If the JS16 is connected to the PC and is in boot mode the USB symbol in the notification area of the task bar appears green. See Figure 15. This means the JS16 bootloader is working properly otherwise this symbol appears red.

The GUI has the following items:

- s19 file loader

  Click the button on the left side of the screen to select the s19 file to be downloaded later to the JS16 MCU. See Figure 17.

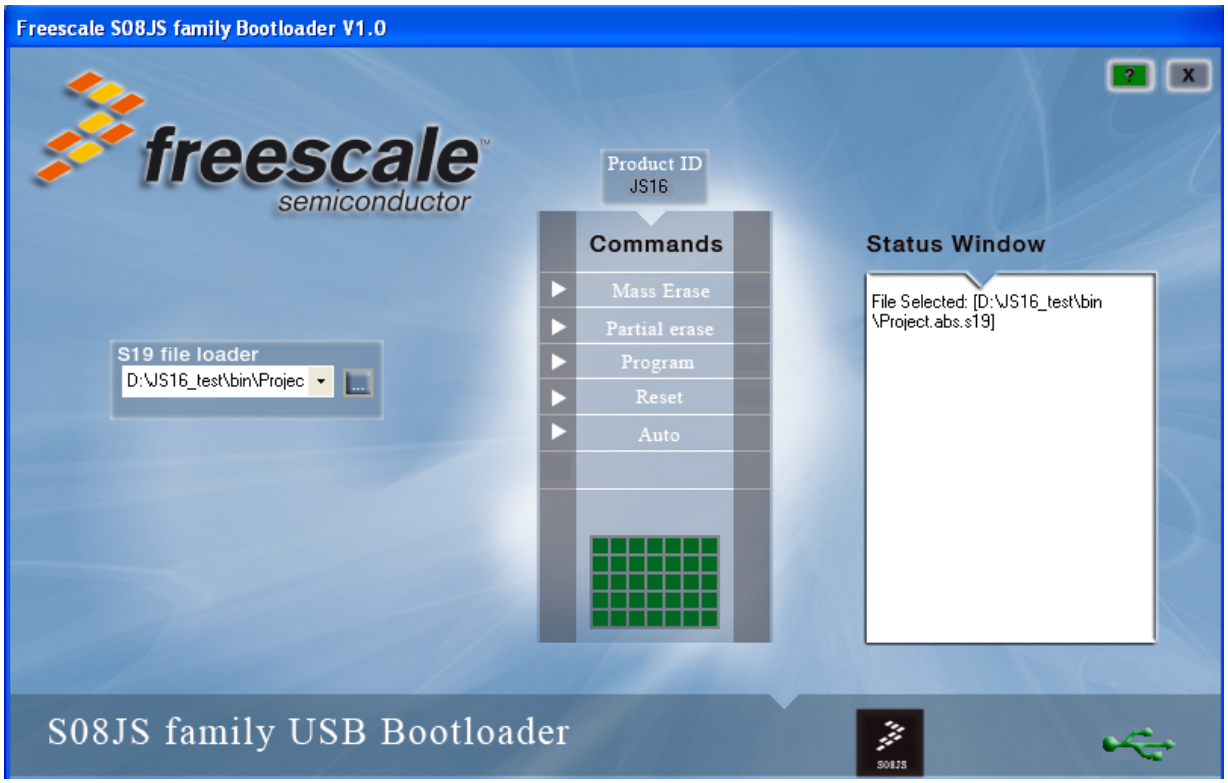

Figure 17. JS16 Bootloader GUI

- Bootloader command list
  - Mass erase — JS16 flash module executes mass erase command. All the content in the flash space is erased.
  - Partial erase — JS16 flash module executes partial erase command. All the content in the flash except that from 0xC000 to 0xC3FF (0xE000 to 0xE3FF for JS8) is erased.
  - Program — Write the s19 file selected to the JS16 flash.
  - Reset — Reset the JS16 MCU.
  - Auto — Execute the Partial Erase, Program, and Reset commands automatically.
- Status window

  Displays the operating status

4.2 Update JS16 Firmware with USB Bootloader

The user can update the firmware step by step, or by using the auto command.

4.2.1 Update the JS16 Firmware Step by Step

Take the following actions to update the JS16 firmware step by step. This process has been verified on the JS16 demo board.

1. Connect the demo board to the PC. Power on the demo board with the button labeled PTG0 pressed at the same time. The JS16 then enters the bootloader mode.
2. Open the bootloader GUI (Start > Programs > Freescale > JS Family Bootloader > JSFamily Bootloader V1.0). The USB icon on the bottom right of the bootloader GUI is green.
3. Select the s19 file

   Click the ... button of the s19 file loader to open the file select dialog. Then select the s19 file. See Figure 18.

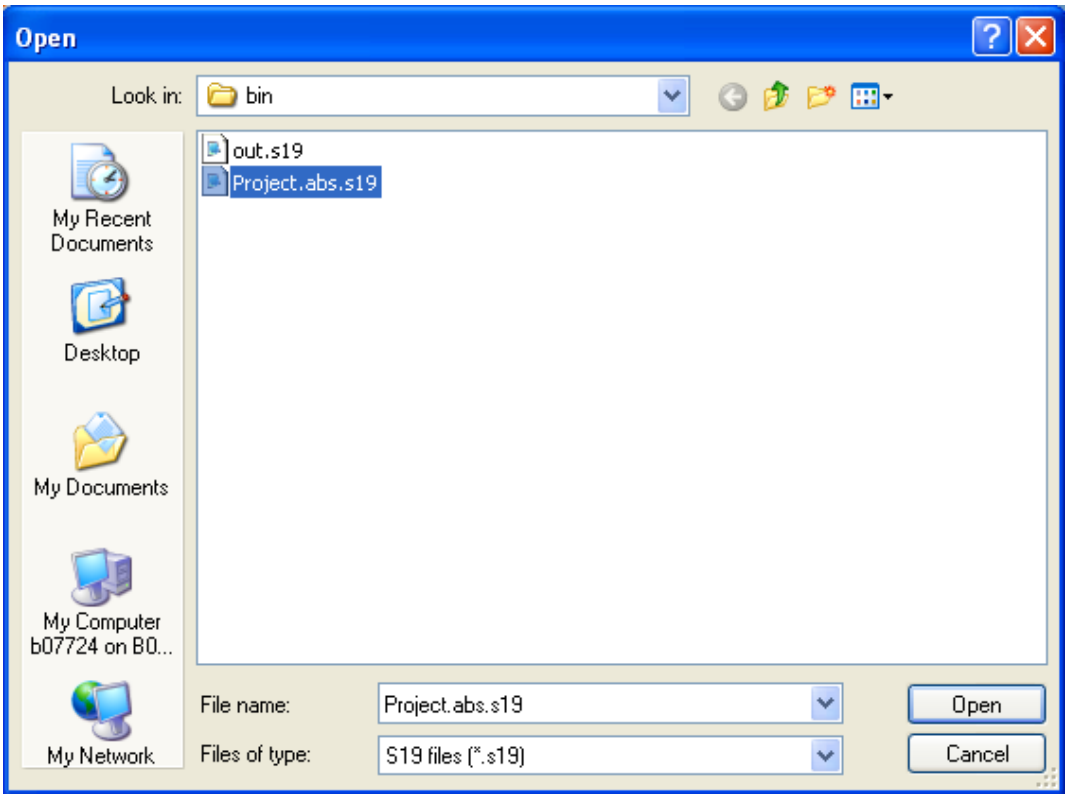

Figure 18. Select s19 file

4. Mass erase the flash

   Click the Mass Erase button to erase all flash memory.
5. Program the flash

   Click Program button to burn the code in the s19 file to the JS16 flash.
6. Reset the MCU

   After the program process is finished click the Reset button to reset the MCU.

4.2.2 Update Automatically

1. Obey the same procedure in steps 1, 2, and 3 in Section 4.2.1, “Update the JS16 Firmware Step by StepClick the Auto button to execute the partial erase, program, and reset commands. The update process is executed automatically (Figure 19).

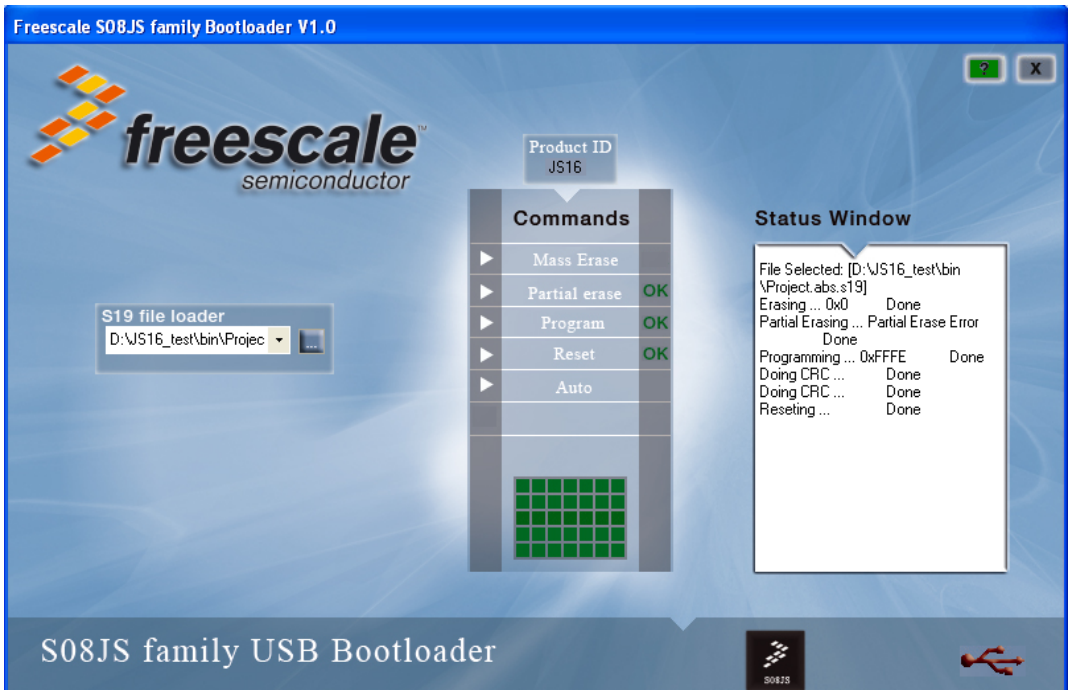

Figure 19. Execute Auto Command

NOTE

The partial erase is enabled only when the value of the flash partial erase semaphore (located at 0xFFBE) is 0x00. When the MC9S08JS16 chip is shipped from Freescale the default value of the flash partial erase semaphore is 0xFF. The user cannot use update automatically for the first update.

The user can clear the value of the flash partial erase semaphore by adding the following line in the code:

```
const Partial_Earse_Semphore @0xFFBE = 0x00;
```

After the flash partial erase semaphore is cleared the user can use the auto command in the GUI bootloader.

NOTE

The partial erase of the USB bootloader can erase only the content from 0xC400–0xFFFF (0xE400-0xFFFF for JS8). If the firmware code is in the area of 0xC000 to 0xC3FF (0xE000 to 0xE3FF for JS8), error occurs in the partial erase process.

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