Intel® Serial IO Driver

User Guide and Release Note
For Intel® Pentium® or Celeron® Processor N & J Series

June 2014

Revision 1.2

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Revision History

Revision Number	Description	Revision Date
1.0	Initial External Release	November 2013
1.0	Added installer support	February 2014
1.1	Fixed Setup.exe cannot install correctly unzip to folder name contain space character. Refer to CDI Sighting Alert#545443.	April 2014
1.2	Add SDA hold time for Intel® Serial IO I2C driver. Add reboot directive in Intel® Serial IO GPIO INF file to meet Microsoft* requirement. Add Mup.xml file.	June 2014

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1 Introduction

1.1 Purpose and Scope of Document

This document provides installation instructions and general usage of the driver as well as release information, such as release kit summary, important notes, resolved issues and known issues. This document is intended to help OEM and ODM customers setup their platform as they prepare for validation and debug.

This Intel® Serial IO Drivers support the following operating system and platform:

Operating System:

- Windows* 8.1 Operating System (64-bit version)

Hardware Requirements:

- Intel® Pentium® or Intel® Celeron® Processor N- & J- Series

1.2 Acronyms and Terminology

Term	Description
ACPI	Advanced Configuration and Power Interface
BIOS	Basic Input/Output System
BKC	Best Known Configuration
DMA	Direct Memory Addressing
GPIO	General Purpose IO
I2C	Inter-Integrated Circuit, generically referred to as "two-wire interface"
LPSS	Low Power Sub System (old name for Intel® Serial IO, no longer used)
LTR	Latency Tolerance Reporting
MMIO	Memory Mapped I/O
PIO	Programmed I/O

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2 *Release Kit Summary*

2.1 Release Kit Details

Kit Name:

Intel® Serial IO GPIO and Intel® Serial IO I2C Drivers (with Installer) production version for Bay Trail-M/D Platform

Intel® Serial IO Driver for I2C Host Controller

- **Version**: 603.9600.1948.29470

Intel® Serial IO Driver for GPIO Host Controller

- **Version**: 603.9600.1948.30590

2.2 Kit Contents

The contents of this release kit include:

- Intel® Serial IO I2C Driver Unpacked Drivers folder
  - o Driver INF files
  - o Driver CAT file
  - o Driver SYS files

- Intel® Serial IO GPIO Driver Unpacked Drivers folder
  - o Driver INF files
  - o Driver CAT file
  - o Driver SYS files

- Setup.exe

- Intel Software License Agreement

- Readme file

- Intel® Serial IO Bring Up Guide release notes

Note: Drivers will not be installed for controllers that are not enabled by BIOS.

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3   *Driver Installation*

There are three different methods to install the Intel® Serial IO Driver:
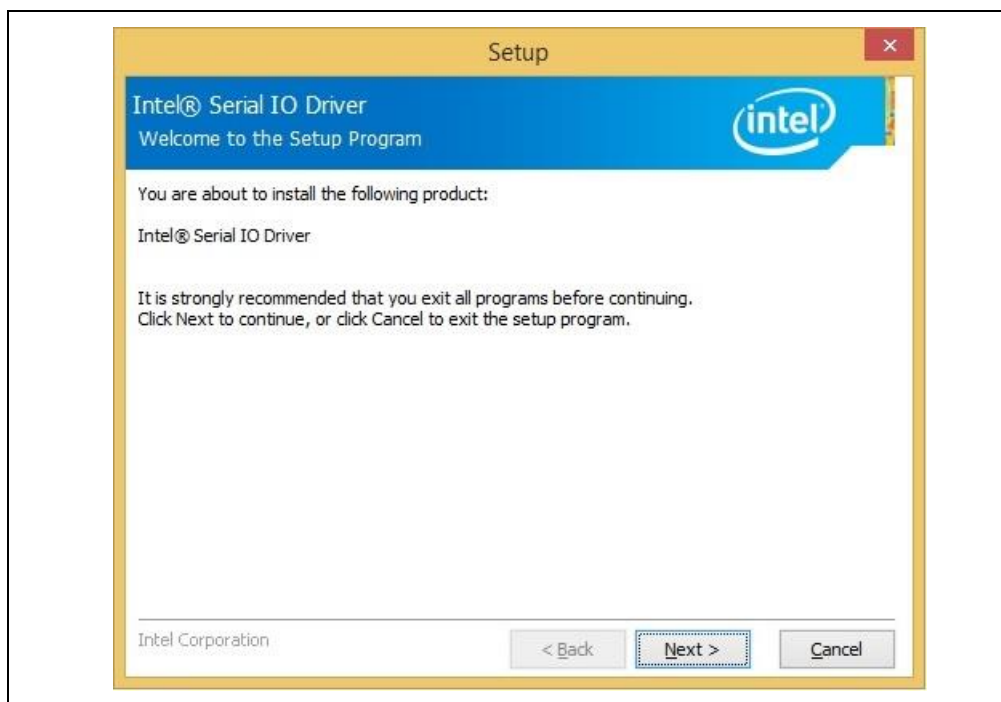1. Driver Installation via Installer
2. Silent Driver Installation via Installer
3. Manual driver installation via INF

3.1   Driver Installation via Installer

Follow the steps listed below for driver installation via installer:

1. Copy and unzip the Intel® Serial IO Driver onto the system under test.

2. Locate the "Setup.exe" file.

3. Right click on the executable and select 'Run as administrator' option from the menu to start the installer and then click on 'Yes' button in User Account Control pop-up window.

4. You should see welcome screen with component details as shown in Figure 1. Click 'Next >' button to continue the installation

Figure 1. Welcome Screen

5. Next, you should see license agreement screen as shown in Figure 2. Please review the license agreement and if you accept the license terms then click on 'Yes' button to continue the installation.

Figure 2. License Agreement

6. Click Next to Confirm Installation as shown in Figure 3. Then, installer will perform various operations and show progress in Setup Progress screen in Figure 4.
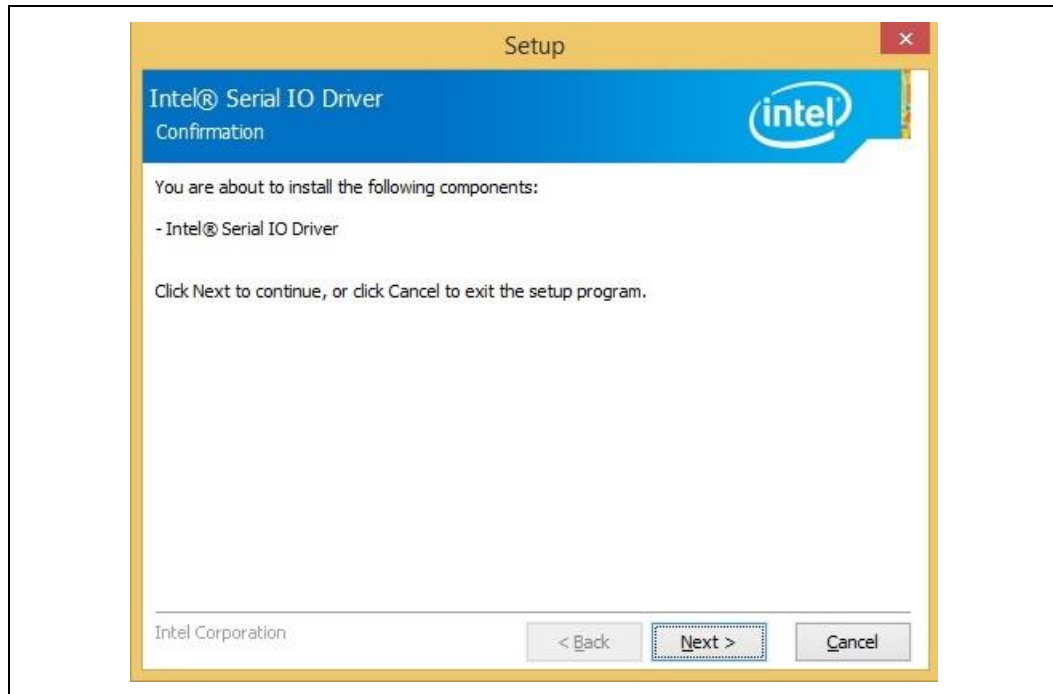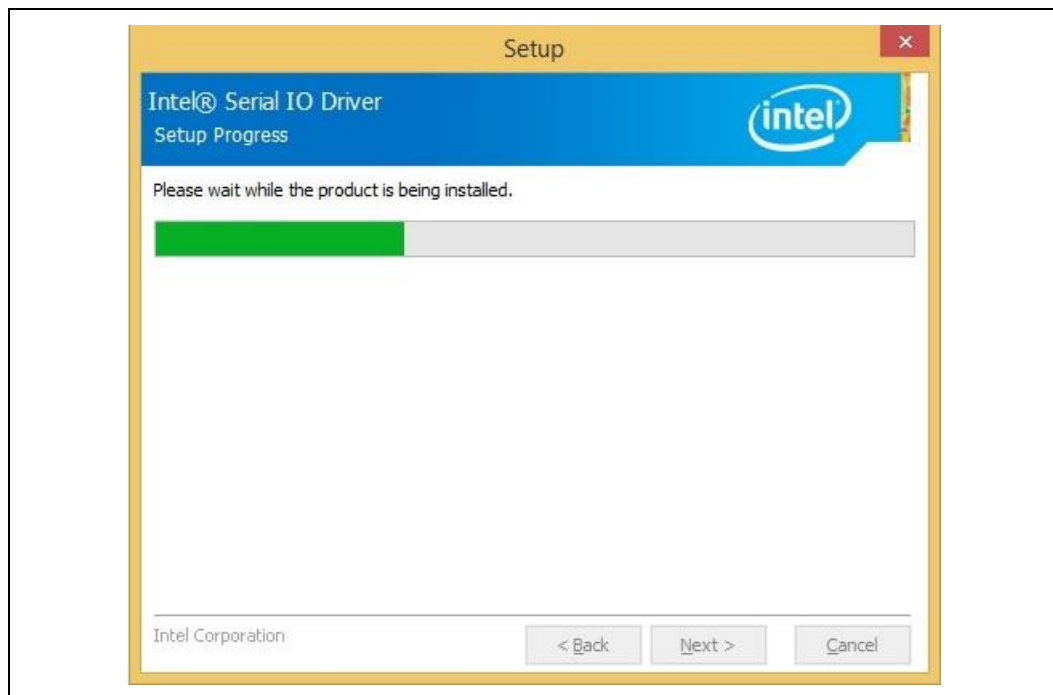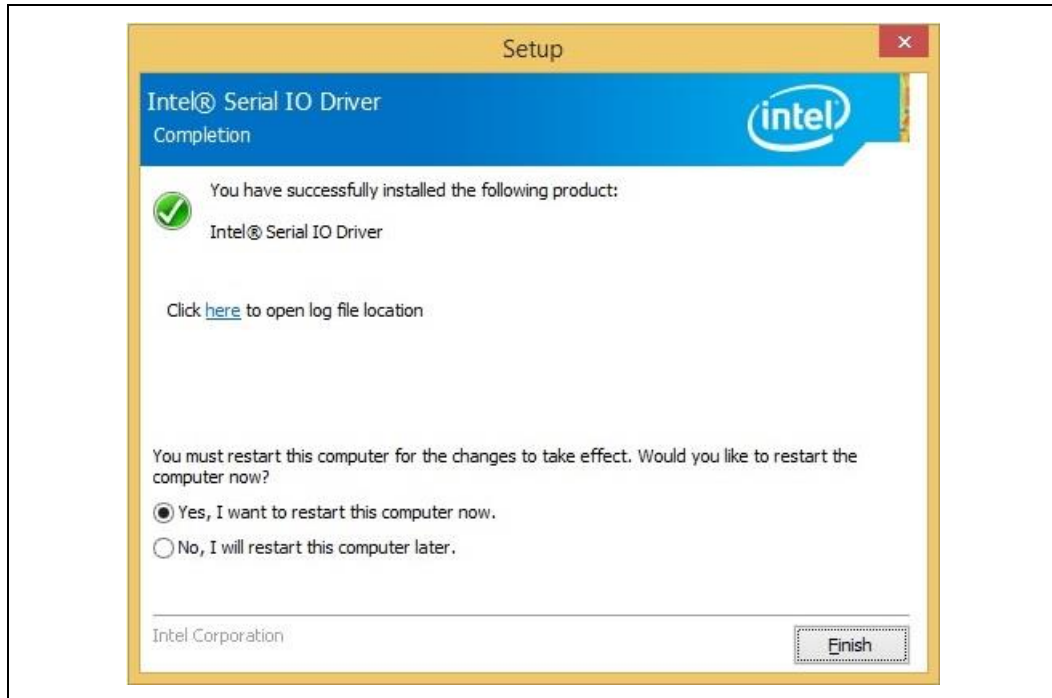
Figure 3. Confirmation

Figure 4. Setup Progress

7. After successful installation, you should see setup completion screen as shown in Figure 5. Click on 'Finish' button to restart the system.

Figure 5. Setup Completion
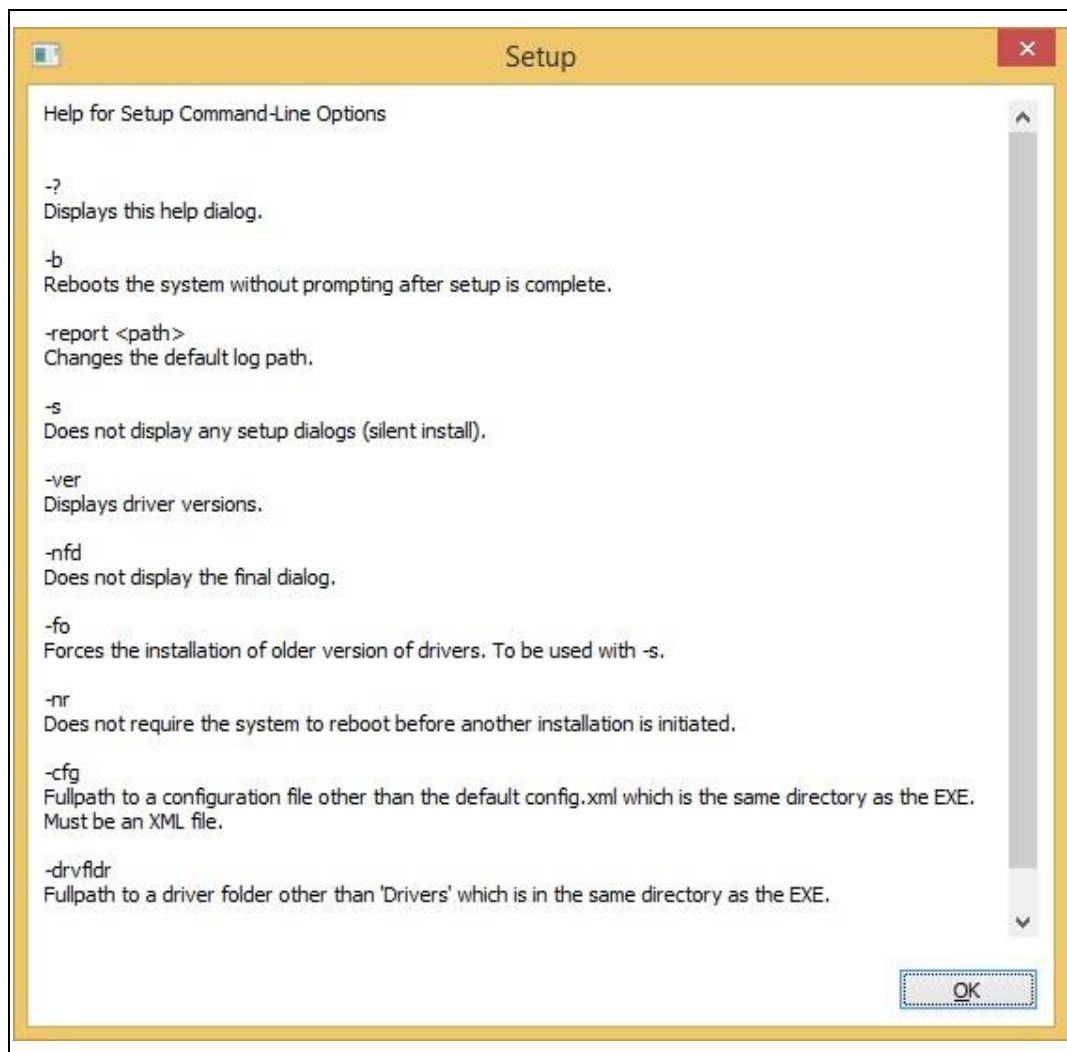

3.2   Silent Driver Installation via Installer

Follow the steps listed below for silent driver installation via installer:

1. Copy and unzip the Intel® Serial IO Driver onto the system under test.

2. Open a Command Prompt (cmd.exe) with administrator rights (i.e. Run as administrator). Click on 'Yes' button in User Account Control pop-up window.

3. Change the directory to where you unzipped the driver in Step 1 and then change to the "Setup.exe" directory.

4. To see all available options for the Installer, run command "Setup.exe -?" You should see a window pop-up similar to Figure 6.

Note: Only English language is supported in the setup dialogs.

Figure 6. Installer Help Information

Setup

Help for Setup Command-Line Options

-?
Displays this help dialog.

-b
Reboots the system without prompting after setup is complete.

-report <path>
Changes the default log path.

-s
Does not display any setup dialogs (silent install).

-ver
Displays driver versions.

-nfd
Does not display the final dialog.

-fo
Forces the installation of older version of drivers. To be used with -s.

-nr
Does not require the system to reboot before another installation is initiated.

-cfg
Fullpath to a configuration file other than the default config.xml which is the same directory as the EXE. Must be an XML file.

-drvfldr
Fullpath to a driver folder other than 'Drivers' which is in the same directory as the EXE.

OK

Note: The "-report <path>" option allows users to change where the installation log file is saved. Otherwise, Intel driver installation log files are stored in the general location of 'C:\Users\"User name"\Intel\Logs' where "User name" is your Window login name.

5. Run command "Setup.exe –b –s" to start the silent installation. This process should take about 1 min to complete. When silent installation is complete, the system will automatically reboot.

For the installation, a full listing of return values can be found in the following table. The 'ResultCode' value can be found at the end of the installation log file.

| ResultCode	Description
0	Success
1602	User exited
1603	Install failure
1641	Reboot initiated
3010	Reboot required

3.3 Manual driver installation via INF

Follow the steps listed below for driver installation via INF file:

1. Copy and unzip the Intel® Serial IO Driver onto system under test.

2. Locate the INF files.

    a. iaioi2ce.inf   (I2C Host Controller)

    b. iaiogpioe.inf   (GPIO Host Controller)

3. Right click on the INF file and select 'Install' option from the menu to start the installation and then click on 'Yes' button in pop-up window.

3.4 Checking the Driver Version

To check the Intel® Serial IO Driver version:

1. Open Device Manager.

2. Expand the System devices tree.

3. Right click the "I2C Controller" or "GPIO Controller" device.

4. Select the "Driver" tab and the Driver Version will be listed. Refer to Figure 7.

Figure 7. Intel® Serial IO I2C and GPIO Controller Driver Version
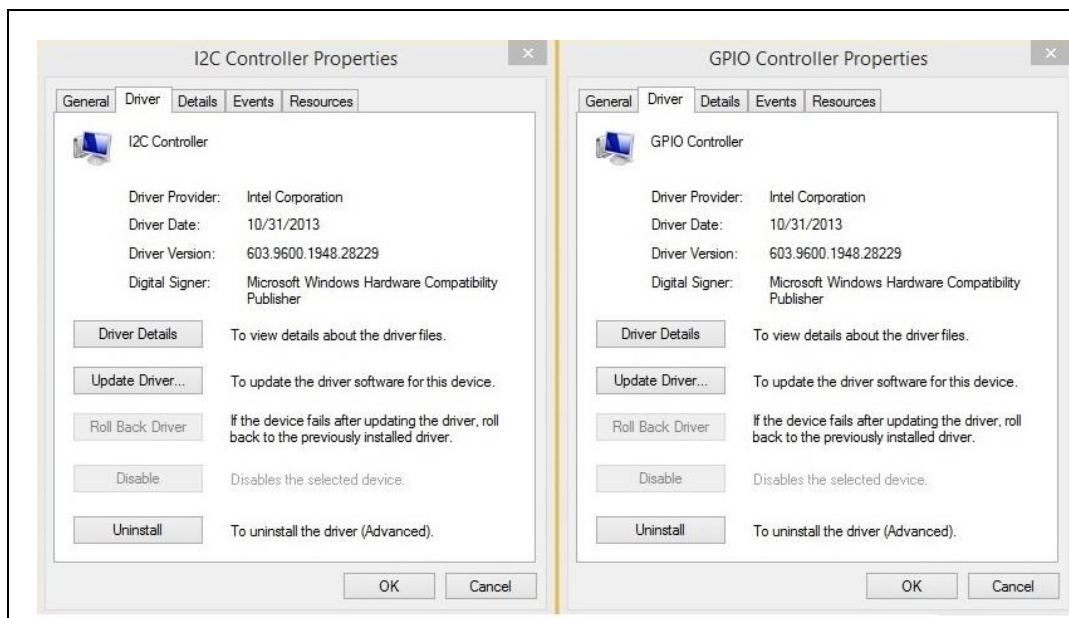
3.5   Uninstalling the Driver via Device Manager

Follow the steps listed below to uninstall the driver via the Window Device Manager:

1. Open Window Device Manager.

2. Expand the System devices tree.

3. Right click on either "GPIO Controller" or "I2C Controller"

4. Select "Uninstall". Refer to Figure 8.

Figure 8. Device Manager – Uninstall driver

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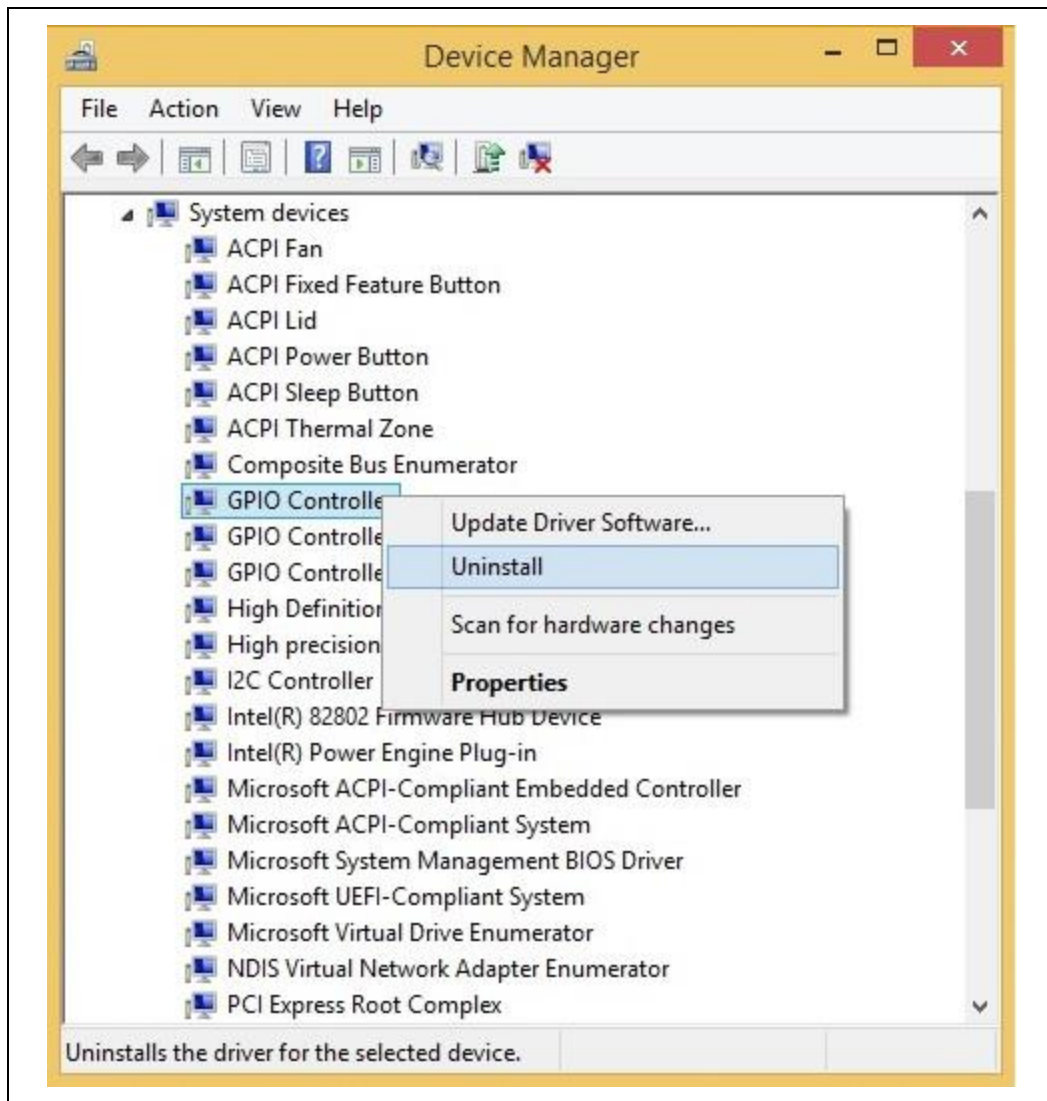
4 *Changing I2C SDA Hold Time*

The I2C SDA hold time is loaded from BIOS ACPI DSDT table. If the _SHT method is not implemented in BIOS ACPI DSDT table, the I2C driver will look at the windows registry. If no registry value is found. A default SDA value will be loaded by the I2C driver.

4.1 ACPI DSDT

Example code for ACPI DSDT table:

```
Device (I2C1)
{
        Name (_ADR, Zero)        // _ADR: Address
        Name (_HID, "80860F41")  // _HID: Hardware ID
        Name (_CID, "80860F41")  // _CID: Compatible ID
        Name (_DDN, "Intel(R) I2C Controller #6 - 80860F46")
        Name (_UID, 0x06)        // _UID: Unique ID
        Name (_SHT, 0x32)        // Replace the SDA_HOLD value
    . . .
```

4.2 Window Registry

Example code:

```
[i2c_Service_addReg]
// 0x32 is SDA_HOLD value of the first I2C controller
HKR,,"BUS_FS_SDA_1",0x00010001, 0x32
. . .
```

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