

# Intel<sup>®</sup> Serial IO Driver

## User Guide and Release Note

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*For Intel<sup>®</sup> Pentium<sup>®</sup> or Celeron<sup>®</sup> Processor N & J Series*

*June 2015*

*Revision 1.0*

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## ***Revision History***

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<b>Revision Number</b>	<b>Description</b>	<b>Revision Date</b>
0.5	Initial Release	October 2014
0.8	Beta Release	March 2015
1.0	PV Release	June 2015

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# 1 Introduction

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## 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\* 10 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



## 2 Release Kit Summary

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### 2.1 Release Kit Details

**Kit Name:**

Intel® Serial IO Drivers Production Version for Bay Trail-M/D Platform Windows 10

**Version:**

99.16.55518

**Driver:**

Intel® Serial IO Driver for I2C Host Controller

- **Version:** 604.9916.1001.53001

Intel® Serial IO Driver for GPIO Host Controller

- **Version:** 604.9916.1001.55518

### 2.2 Kit Contents

The contents of this release kit include:

- Intel® Serial IO Unpacked Driver folder – Win10
  - Driver INF files
  - Driver CAT file
  - Driver SYS files
- SetupSerialIO.exe
- Intel Software License Agreement
- Readme file
- Intel(R) Serial IO BringUpGuide ReleaseNotes

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



## 3 Driver Installation

There are three different methods to install the Intel® Serial IO Driver:

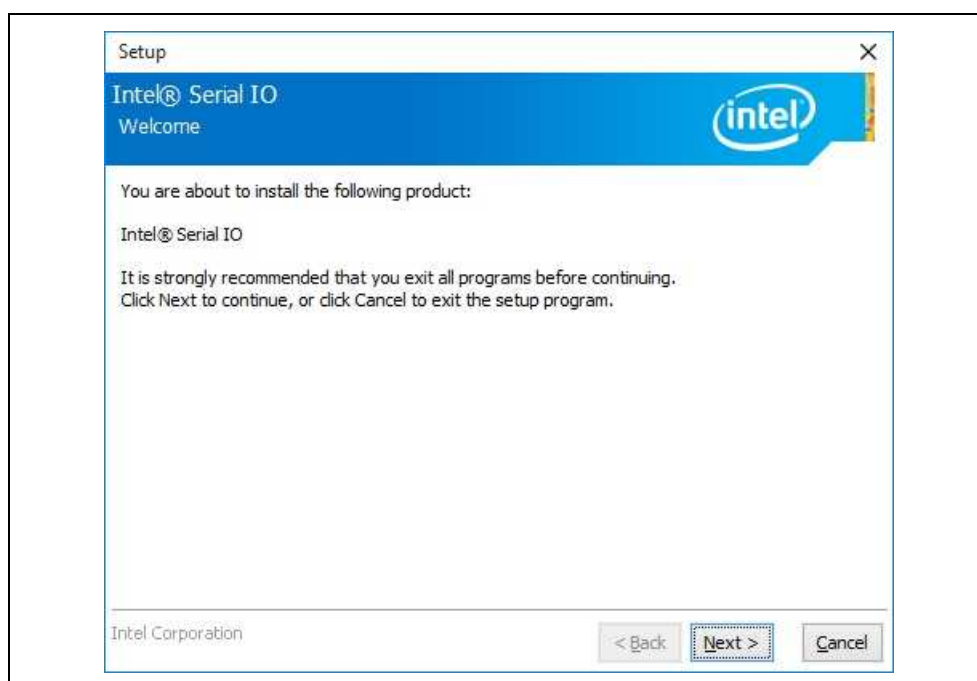
1. Driver Installation via Installer
2. Silent Driver Installation via Installer
3. Manual driver installation via INF

### 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 "SetupSerialIO.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

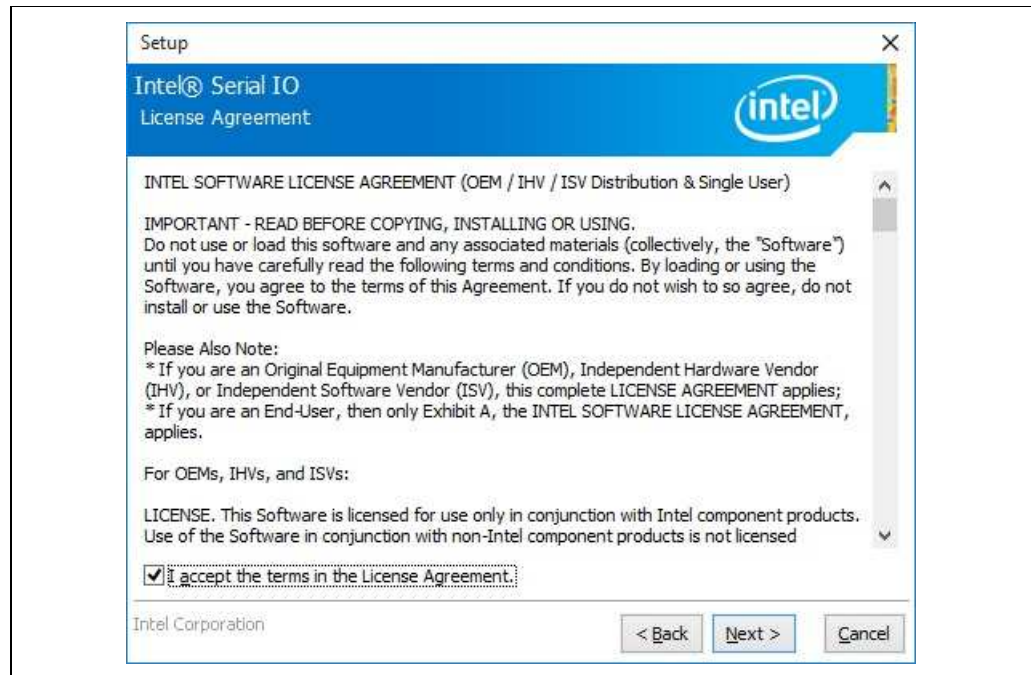
**Figure 1. Welcome Screen**





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**

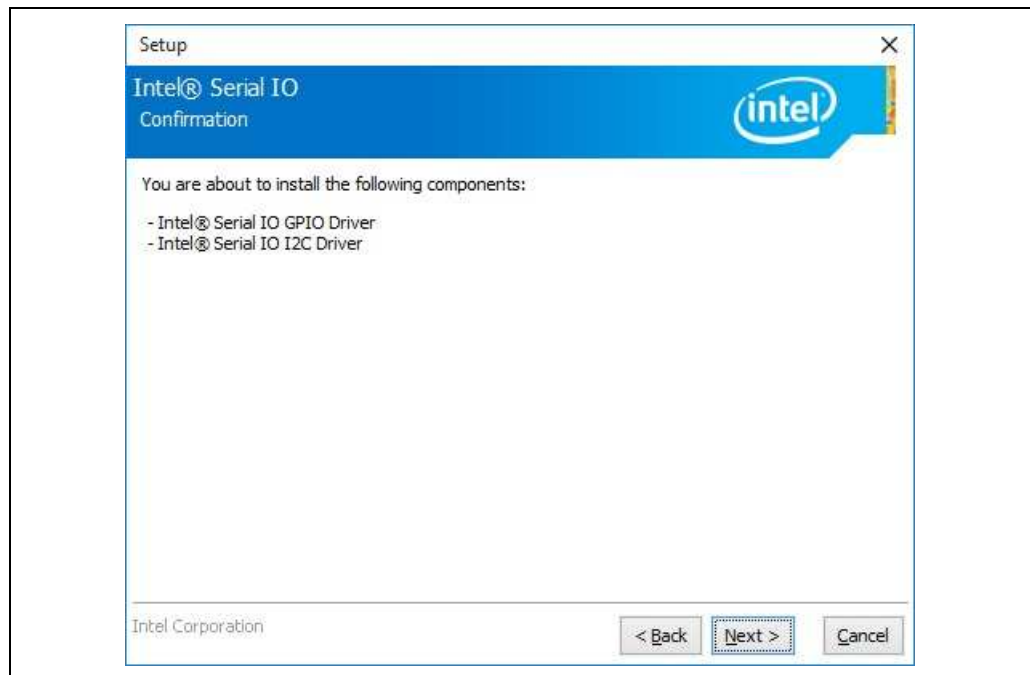




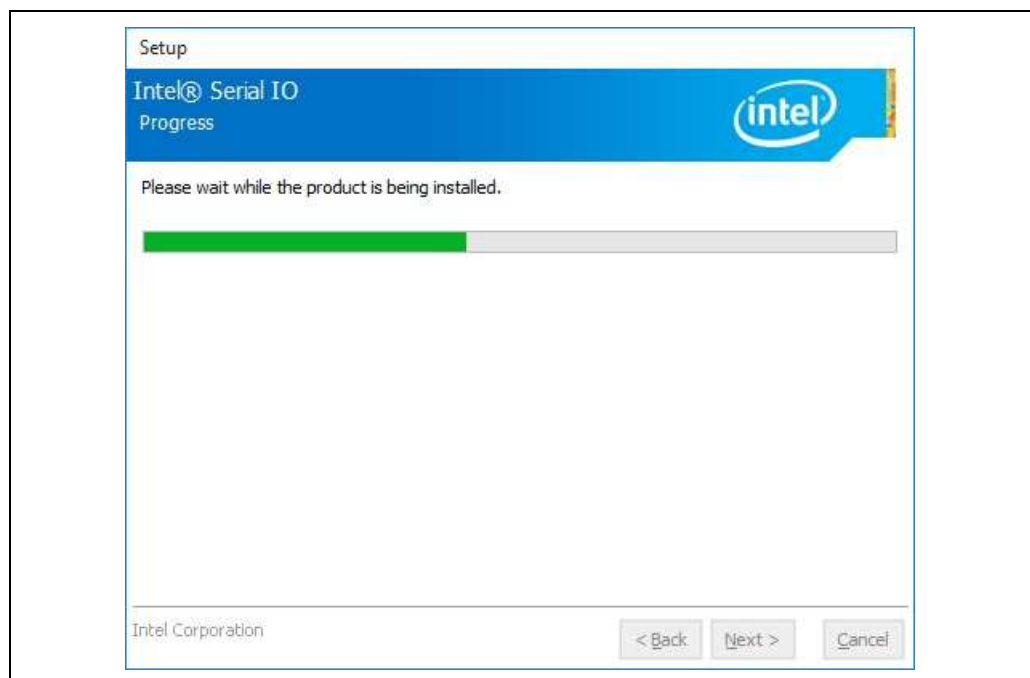


6. Click Next to Confirm Installation as shown in Figure 3. Then, installer will perform various operations and show progress in Setup Progress screen in Figure 4.

**Figure 3. Confirmation**



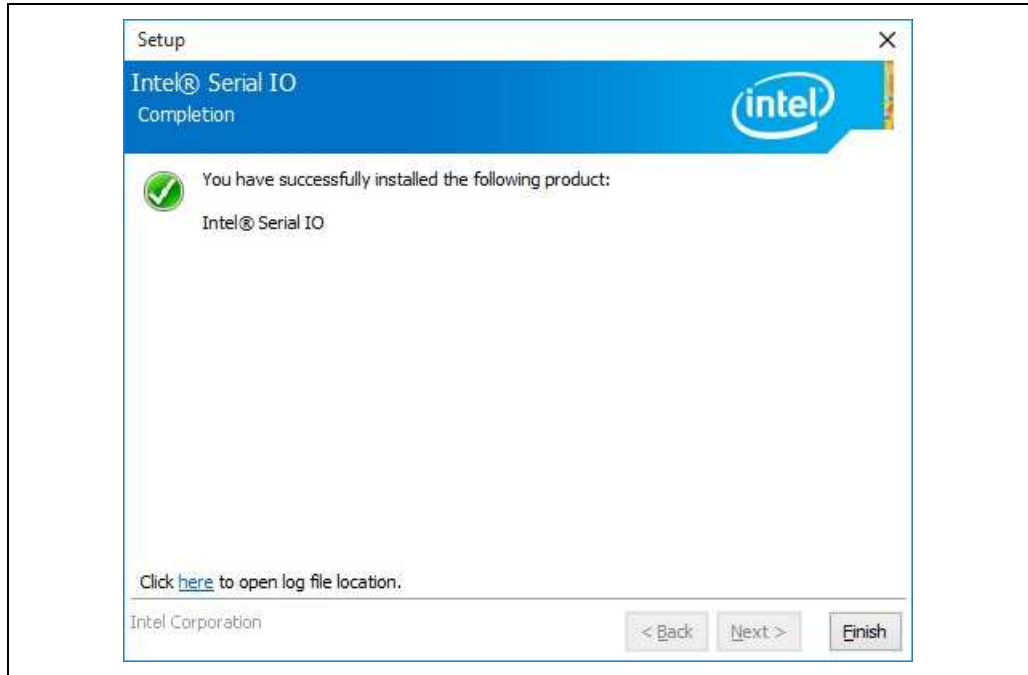
**Figure 4. Setup Progress**





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

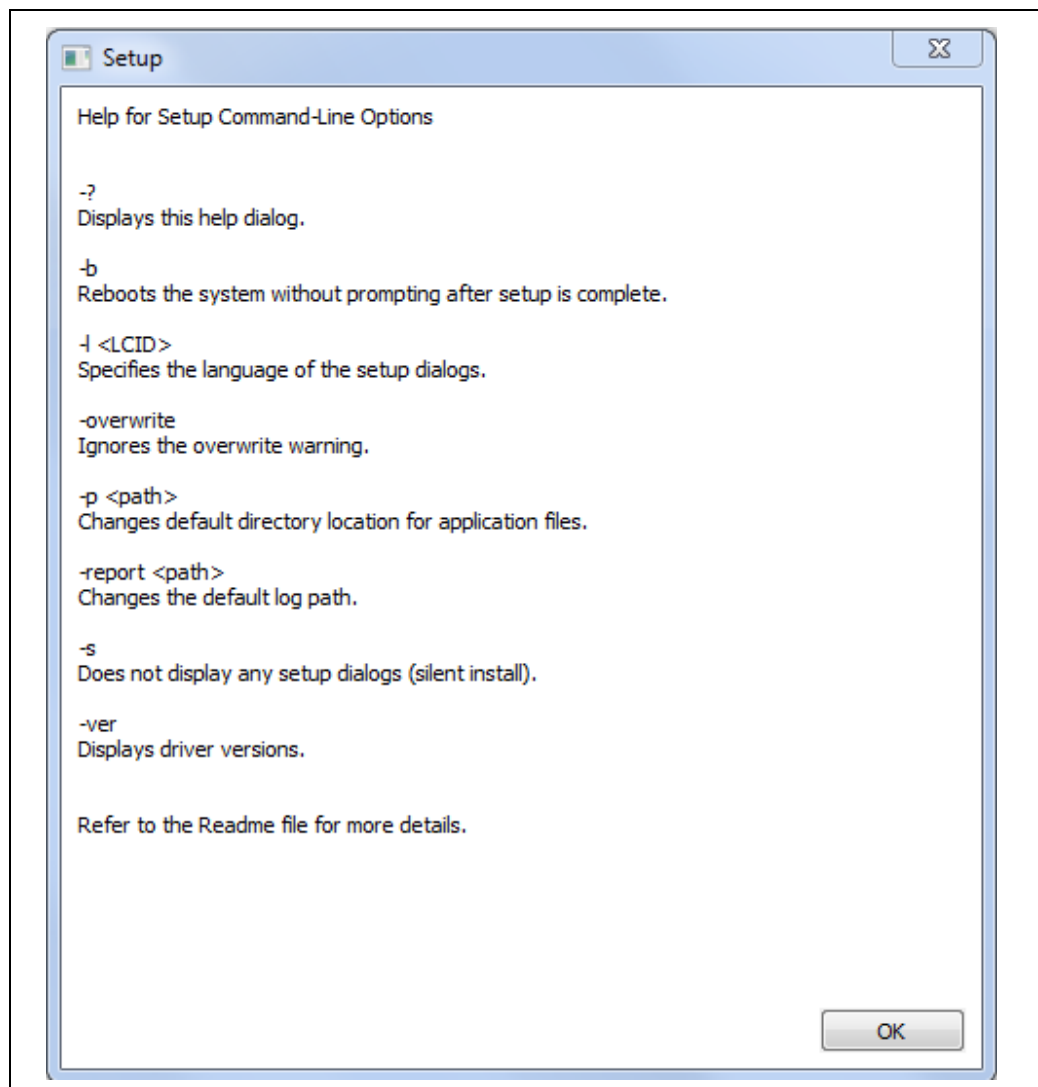
**Figure 5. Setup Completion**



## **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 (ie. 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 "SetupSerialIO.exe" directory.
4. To see all available options for the Installer, run command "SetupSerialIO.exe -?" You should see a window pop-up similar to Figure 6. For the "-l <LCID>" option which specifies the language of the setup dialogs, the LCID list is shown in below table. Click OK to continue.

**Figure 6. Installer Help Information**

**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.



LCID	Language
0401	Arabic
0804	Chinese (Simplified)
0404	Chinese (Traditional)
0405	Czech
0406	Danish
0407	German
0408	Greek
0409	English (USA)
040A	Spanish
040B	Finnish
040C	French
040D	Hebrew
040E	Hungarian
0410	Italian

LCID	Language
0411	Japanese
0412	Korean
0413	Dutch
0414	Norwegian
0415	Polish
0416	Portuguese (Brazil)
0816	Portuguese (Standard)
0419	Russian
041B	Slovak
0424	Slovenian
041D	Swedish
041E	Thai
041F	Turkish

5. Run command "SetupSerialIO.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.

Other silent installation examples are:

- > SetupSerialIO.exe -s -overwrite -report C:\Temp
- > SetupSerialIO.exe -s -l 0404



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.

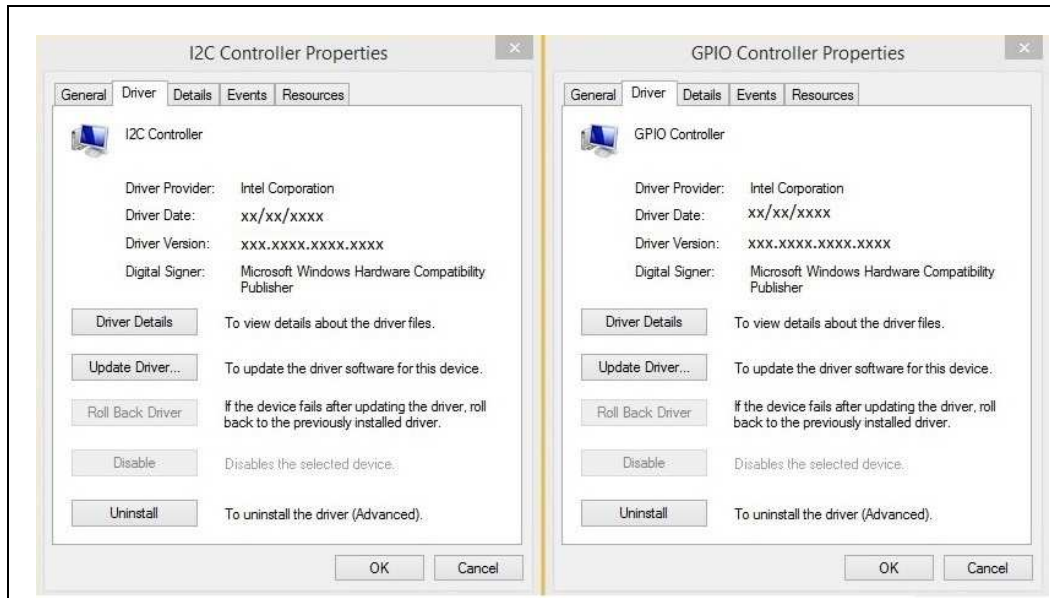
### 3.4 Checking the Driver Version

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 Control Panel

Follow the steps listed below to uninstall the driver via the Control Panel:

1. Open the Control Panel window.
2. If the Control Panel window is shown in 'Category' view, then select "Uninstall a program" as shown in Figure 8. Otherwise if the Control Panel window is shown in 'icon' view, then select "Programs and Features".

Figure 8. Control Panel – Uninstall a program



3. On the next window, select the "Intel® Serial IO Driver" (see Figure 9) from the list of programs. Then click the "Uninstall" button.



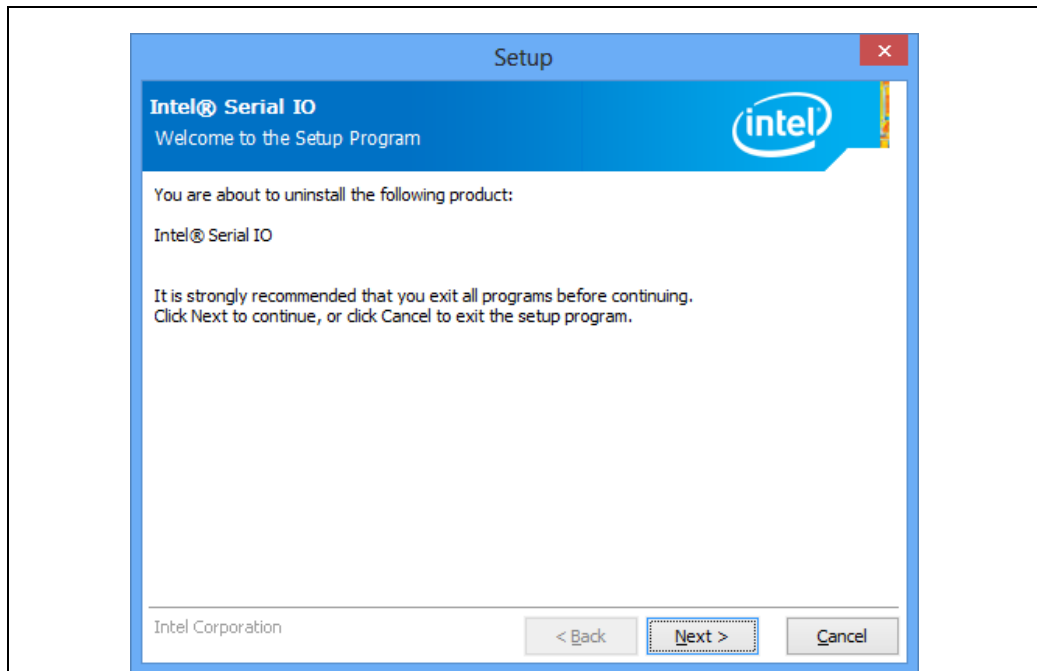
Figure 9. Control Panel – Programs List





4. You should see the Welcome to Uninstallation Program pop-up window with component details as shown in Figure 10. Click 'Next >' button to continue.

**Figure 10. Welcome to the Uninstallation Program**







5. Next, installer will perform various operations and show progress in Uninstallation Progress screen. When the uninstall process is completed, you should see screen as shown in Figure 11. Click on 'Finish' button to restart the system.

**Figure 11. Uninstall Setup Completion**

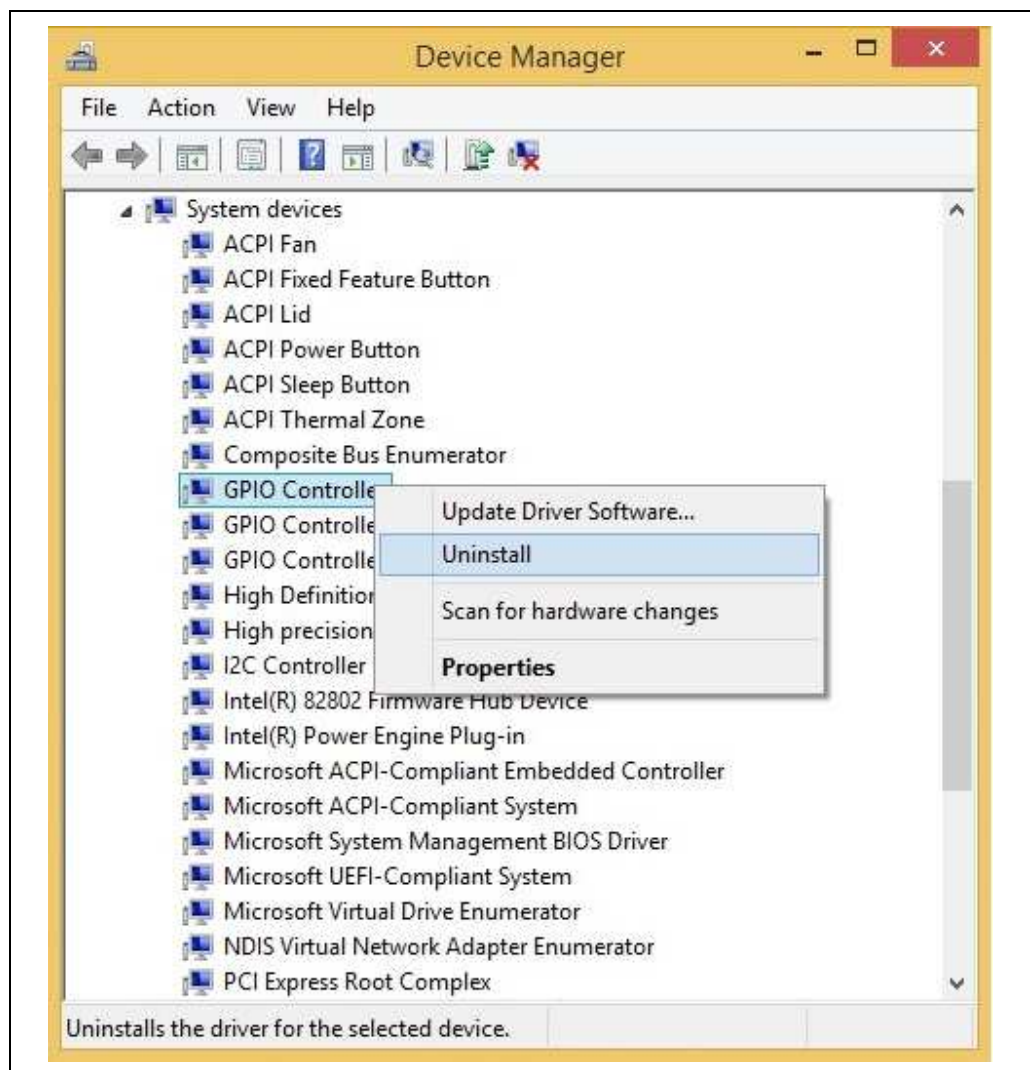


## 3.6 Uninstalling the Driver via Device Manager

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

6. Open Window Device Manager.
7. Expand the System devices tree.
8. Right click on either "GPIO Controller" or "I2C Controller"
9. Select "Uninstall". Refer to Figure 12.

**Figure 12. Device Manager – Uninstall driver**





## 4 Changing I2C SDA Hold Time

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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
...
```