Intel® Serial IO Driver

User Guide and Release Note

May 2019

Revision 1.0

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Revision History

Document Number	Revision Number	Description	Revision Date
N/A	0.8	First Release	April 2019
N/A	1.0	PV Release	May 2019

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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.

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

Operating System:

- Windows* 10 Operating System (64-bit Client version) 19H1/RS5

Hardware Requirement:

- Intel® 300 Series Chipset Family On- Package Platform Controller Hub (PCH)
- Intel® 300 Series and Intel® C240 Series Chipset Family Platform Controller Hub
- Comet Lake PCH.

1.2   Acronyms and Terminology

Term	Description
ACPI	Advanced Configuration and Power Interface
AOAC	Always On Always Connected
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
SPI	Serial Peripheral Interfaces Bus. A synchronous serial data link standard that operates in full duplex mode.

Term	Description
UART	Universal asynchronous receiver/transmitter

1.3   Reference Documents

Document	Location
Cannon Lake Platform Controller Hub (CNL PCH-LP) External Design Specification (ED) – Volumes 1 and 2 of 2	CDI/IBL: Vol1: 566439 Vol2: 565870
Cannon Lake Platform Controller Hub (CNL PCH-H) External Design Specification (ED) – Volumes 1 and 2 of 2	CDI/IBL: Vol1: 571182 Vol2: 572235
Cannon Lake Runtime D3 (RTD3) Hardware and Software Recommendations – Design Guide – Rev. 0.7	CDI/IBL: TBD
Cannon Lake Platform Design Guide (PDG)	CDI/IBL: PCH-LP: 566468 PCH-H: 571264
Cannon Lake Platform Controller Hub (PCH), H and LP BIOS Specification	CDI/IBL: 570374

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2   *Release Kit Summary*

2.1   Release Kit Details

Kit Name: Intel(R) Serial IO Driver

Version:

- Serial IO Driver – 30.100.1915.1

    o ialpss2_gpio2_CNL
    o ialpss2_i2c_CNL
    o ialpss2_spi_CNL
    o ialpss2_uart2_CNL

2.2   Kit Contents

The contents of this release kit include:

- Intel® Serial IO Unpacked Driver folder – Win10

    o Driver INF files
    o Driver CAT files
    o Driver SYS files

- SetupSerialIO.exe

- Intel Software License Agreement

- Readme file

- WiXLicenseNote

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

3 Driver Installation

Note: A supported Operating System must be installed prior to the installation of the Intel®
Serial IO Driver.

There are 3 different methods to install the Intel® Serial Driver for this release:
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 Platform 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.

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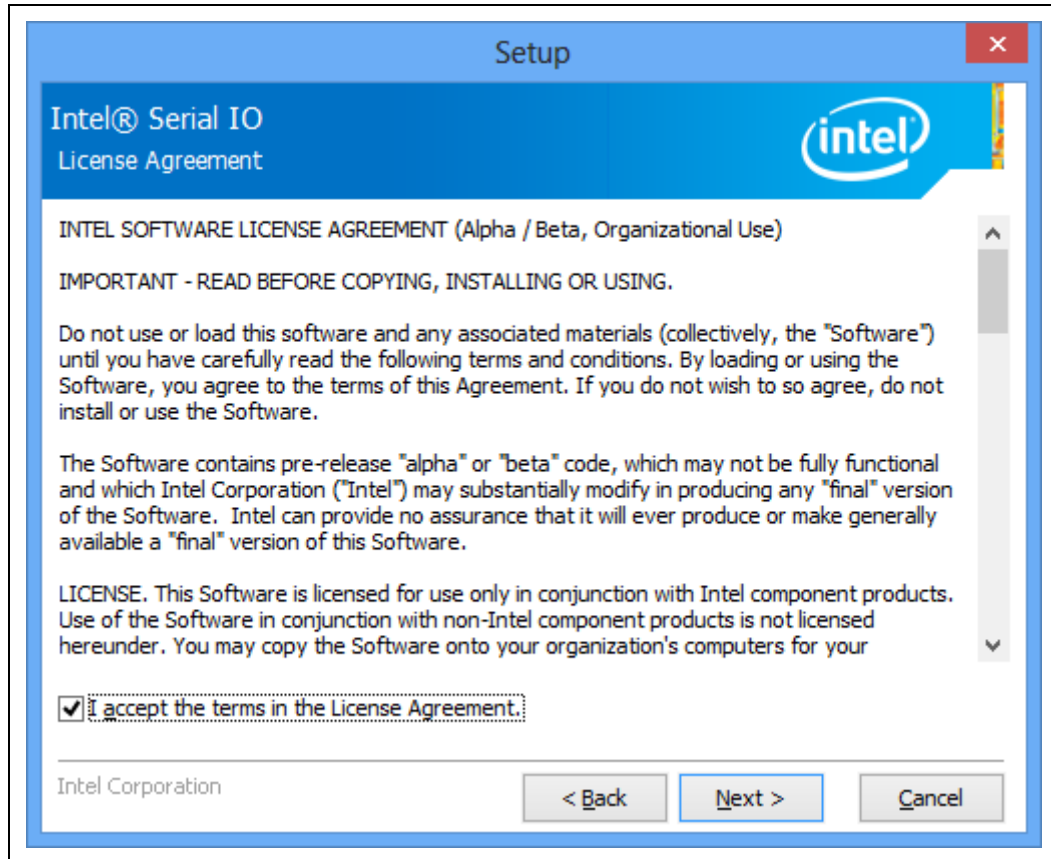
Figure 1. Welcome Screen

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 check the check-box on "I accept the terms in the license Agreement" and click on the "Next >" button to continue the installation.
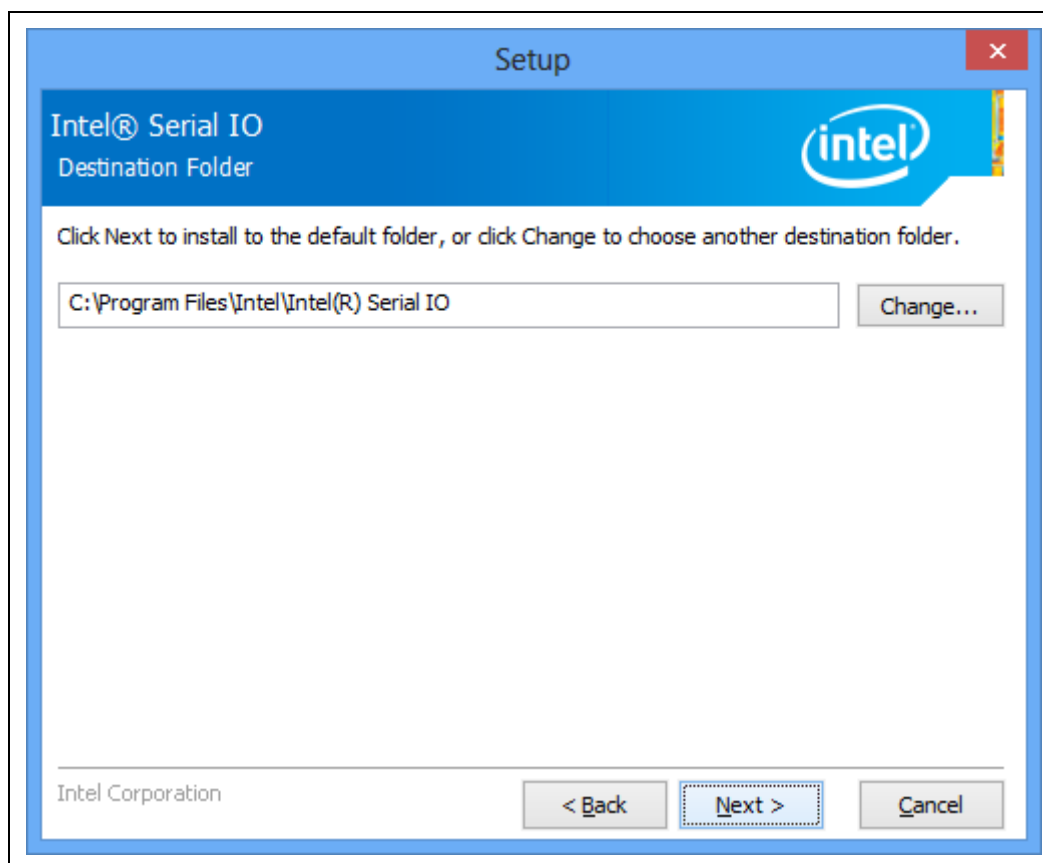
Figure 2. License Agreement

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6. Next, you can select the folder location where the driver will be installed. By default, the driver will be installed in c:\program Files\Intel\Intel(R) Serial IO. Click on "Next >" button to continue installation.
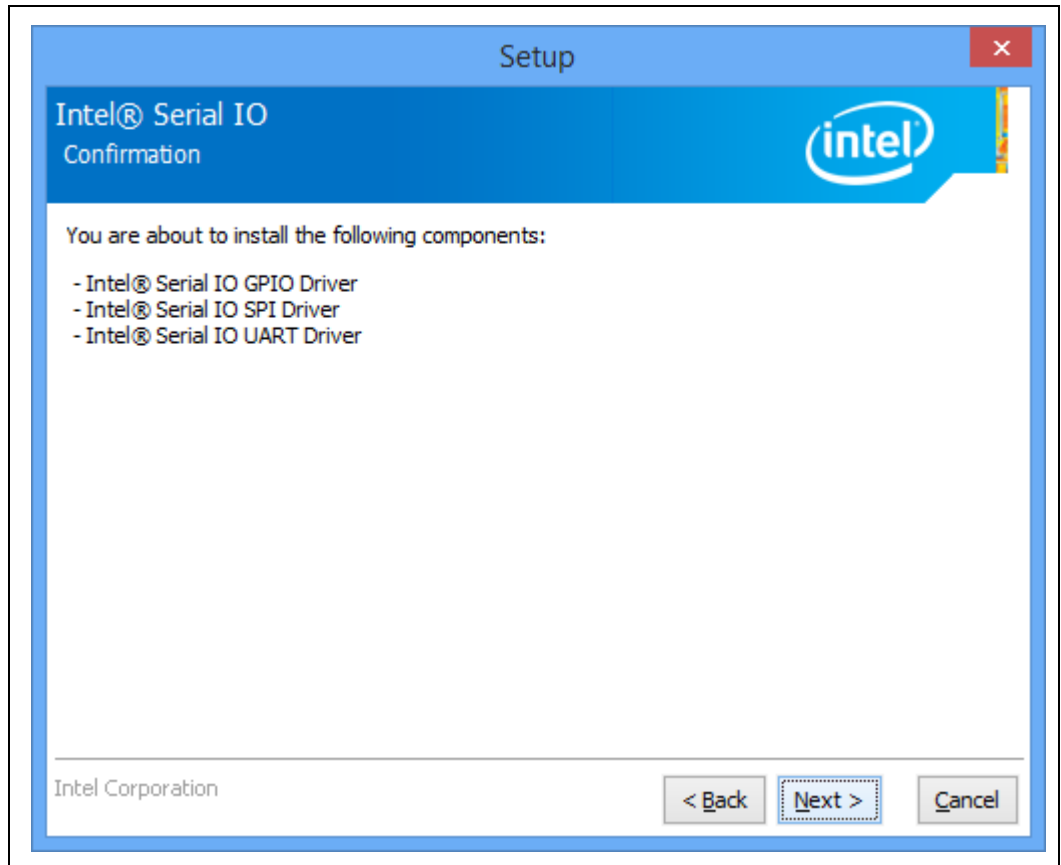
Figure 3. Driver installs destination folder location

7. Next, a list of driver components that will be installed by the installer is displayed. Click on 'Next >' button to continue.
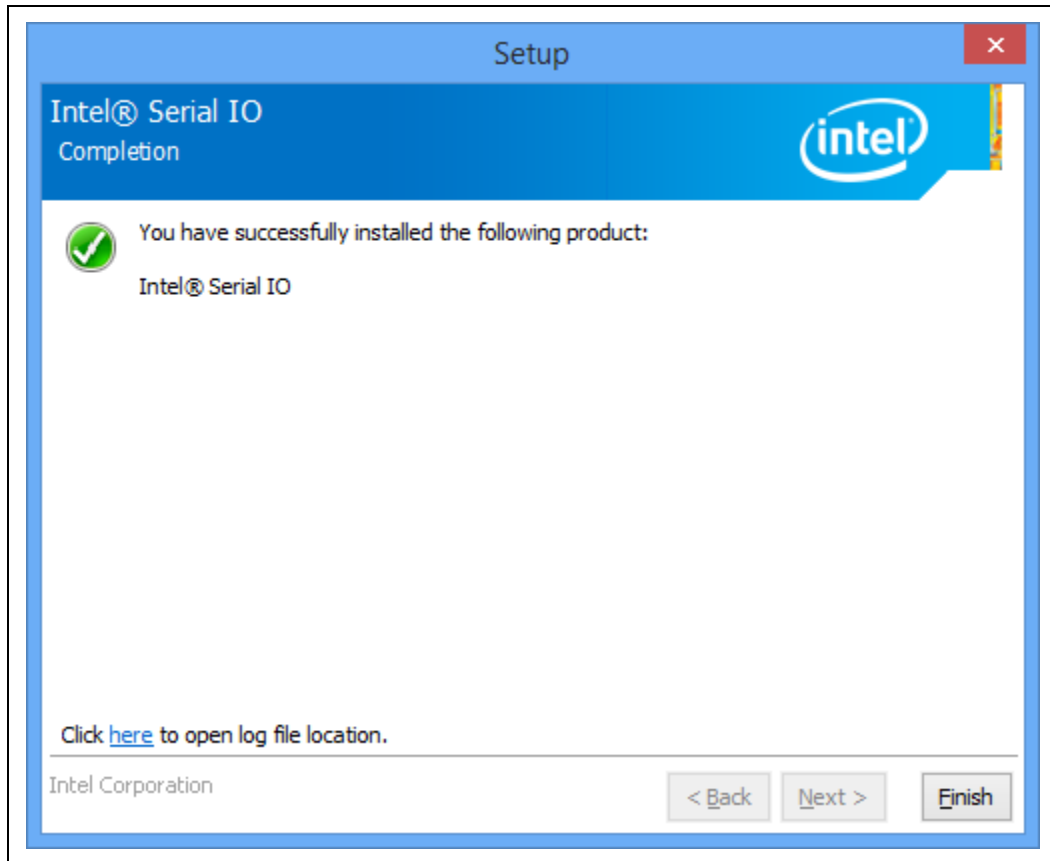
Figure 4. Driver components

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

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

Figure 5. Setup Completion

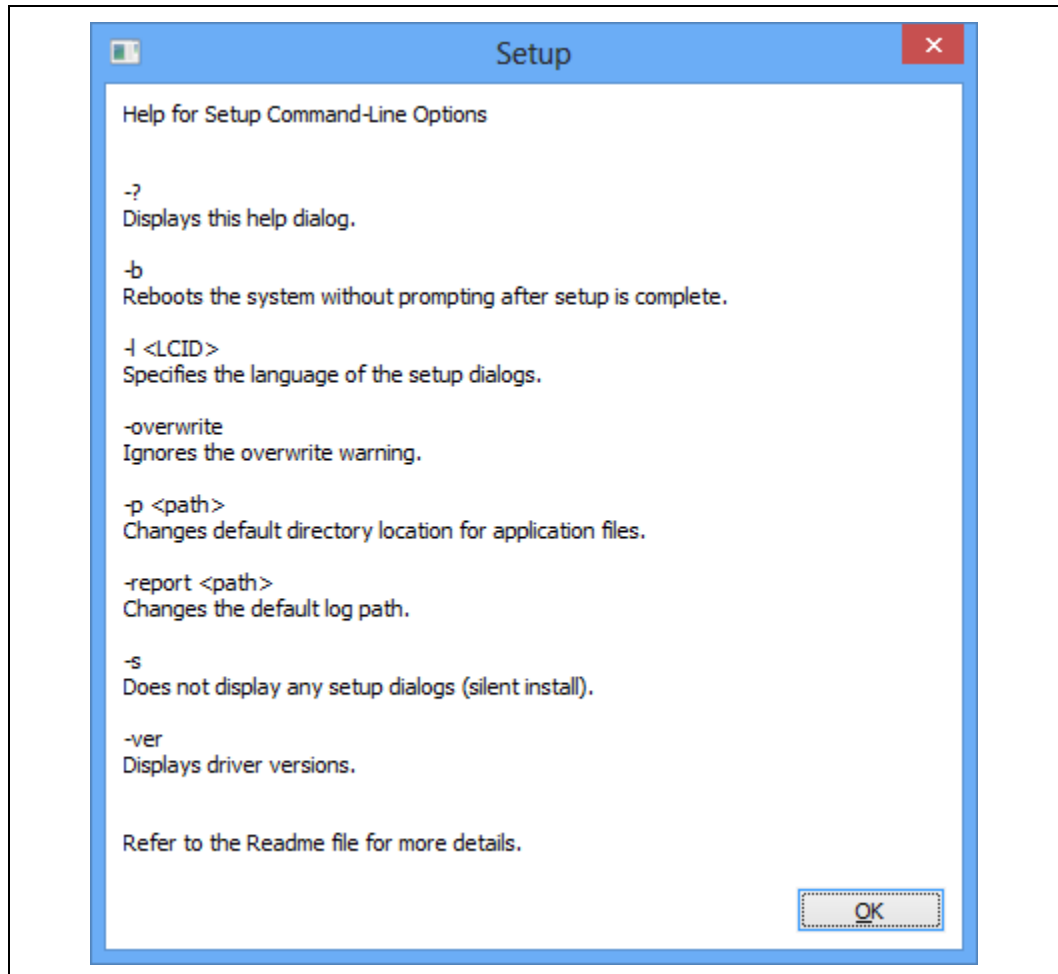## 3.2 Silent Driver Installation via Installer

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

1. Copy and unzip the Intel® Serial IO Driver onto the Platform 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 "Driver_Installer" 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'.

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LCID	Language	LCID	Language
0401	Arabic	0411	Japanese
0804	Chinese (Simplified)	0412	Korean
0404	Chinese (Traditional)	0413	Dutch
0405	Czech	0414	Norwegian
0406	Danish	0415	Polish
0407	German	0416	Portuguese (Brazil)
0408	Greek	0816	Portuguese (Standard)
0409	English (USA)	0419	Russian
040A	Spanish	041B	Slovak
040B	Finnish	0424	Slovenian
040C	French	041D	Swedish
040D	Hebrew	041E	Thai
040E	Hungarian	041F	Turkish
0410	Italian		

5. Run command "SetupSerialIO.exe –b –s" to start the silent installation. (Where as x represents the particular version number.) This process should take about 1 min to complete. When silent installation is complete, the system will automatically reboot.

6. After the system has booted, you can refer to section 0 to check the driver version.

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 'Result Code' value can be found at the end of the installation log file.

Result Code	Description
0	Success
3010	Reboot required
1602	User exited
1641	Reboot initiated
1603	Install failure

3.3   Manual Installation via INF File

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

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

2. Locate the INF files. See Figure 7.

   a. iaLPSS2_GPIO2_CNL.inf

   b. iaLPSS2_I2C_CNL.inf

   c. iaLPSS2_SPI_CNL.inf

   d. iaLPSS2_UART2_CNL.inf

Figure 7. Serial IO Driver - INF files

iaLPSS2_GPIO2_CNL.inf	4/23/2017 2:47 PM	Setup Information
iaLPSS2_I2C_CNL.inf	4/23/2017 2:47 PM	Setup Information
iaLPSS2_SPI_CNL.inf	4/23/2017 2:47 PM	Setup Information
iaLPSS2_UART2_CNL.inf	4/23/2017 2:47 PM	Setup Information

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.

4. After the installation of all the drivers, reboot the system

3.4 Checking the Driver Version

To check the Intel® Serial IO Driver version, follow the below instructions:

1. Open Device Manager.

2. Double click on the device you want.

3. Select the "Driver" tab and the Driver Version will be listed.

Figure 8. Intel® Serial IO GPIO Driver Version
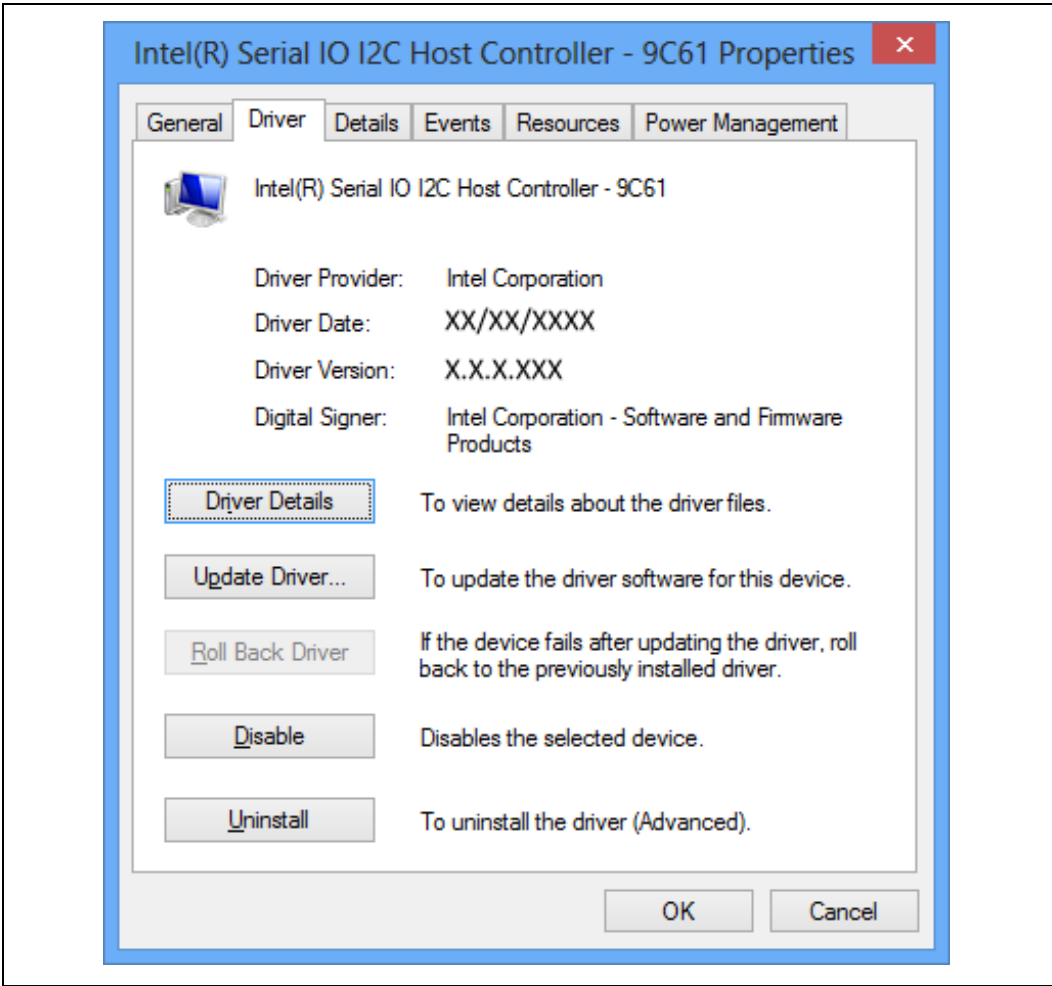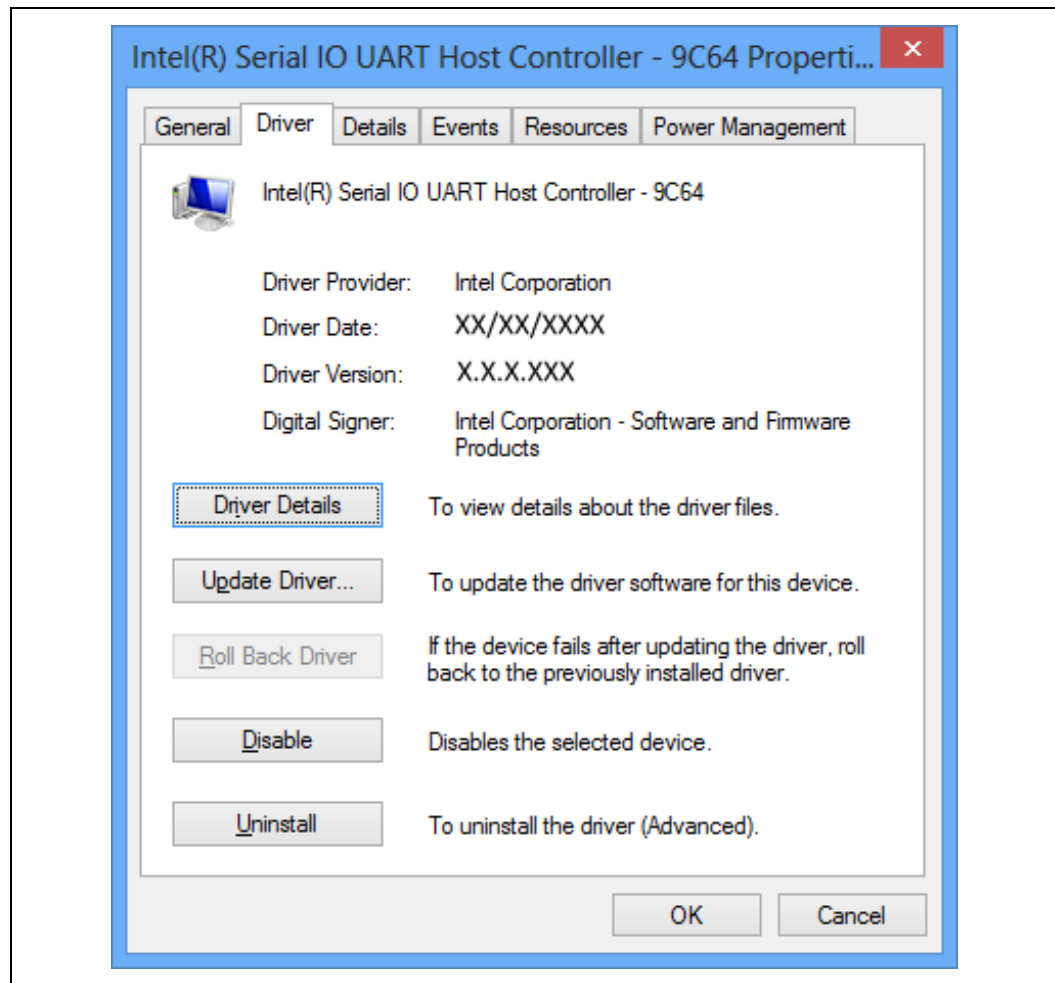
Figure 9. Intel® Serial IO I2C Driver Version

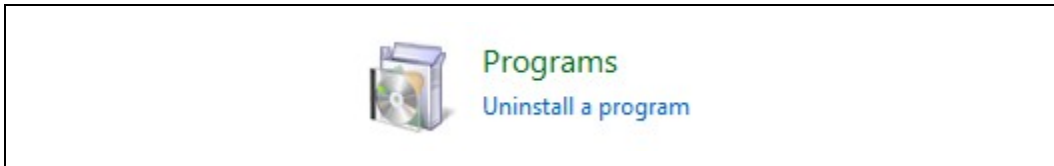**Figure 10. Intel® Serial IO UART Driver Version**

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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 11. Otherwise if the Control Panel window is shown in 'icon' view, then select "Programs and Features".

Figure 11. Control Panel — Uninstall a program

3. On the next window, select the "Intel® Serial IO Driver" (see Figure 12) from the list of programs. Then click the "Uninstall" button.
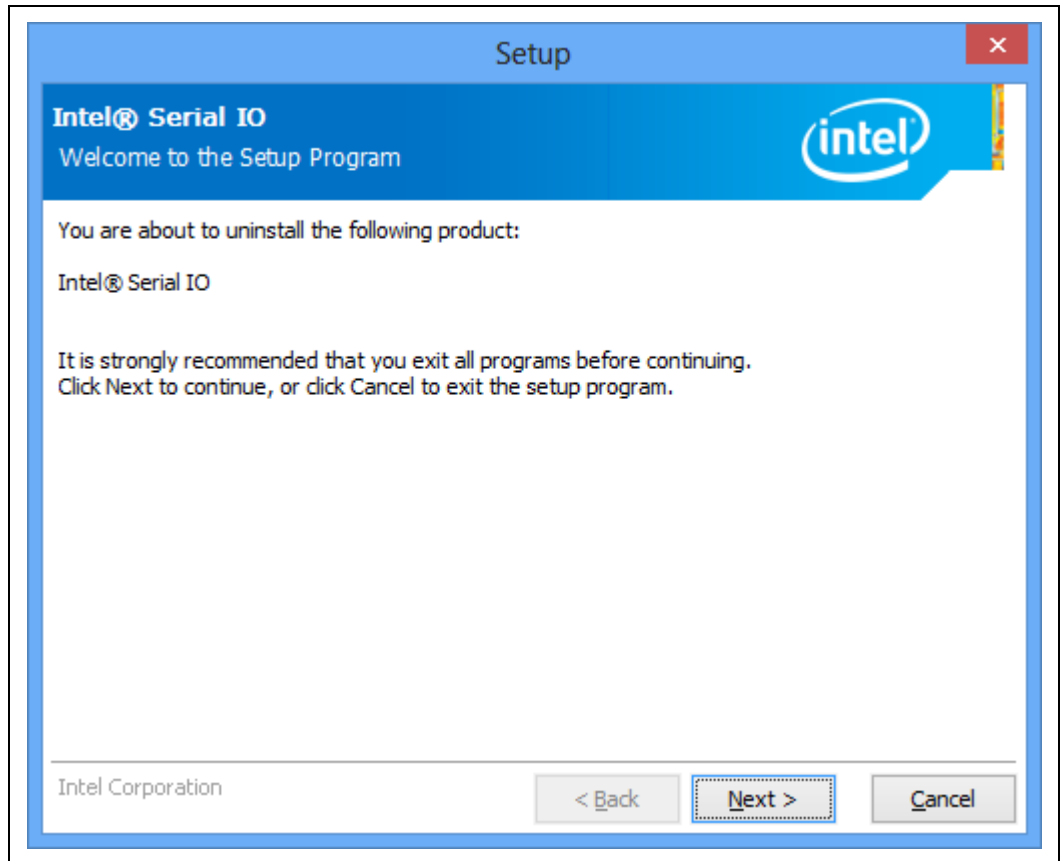
Figure 12. Control Panel — Programs List

4. You should see the Welcome to Uninstallation Program pop-up window with component details as shown in Figure 13. Click 'Next >' button to continue.
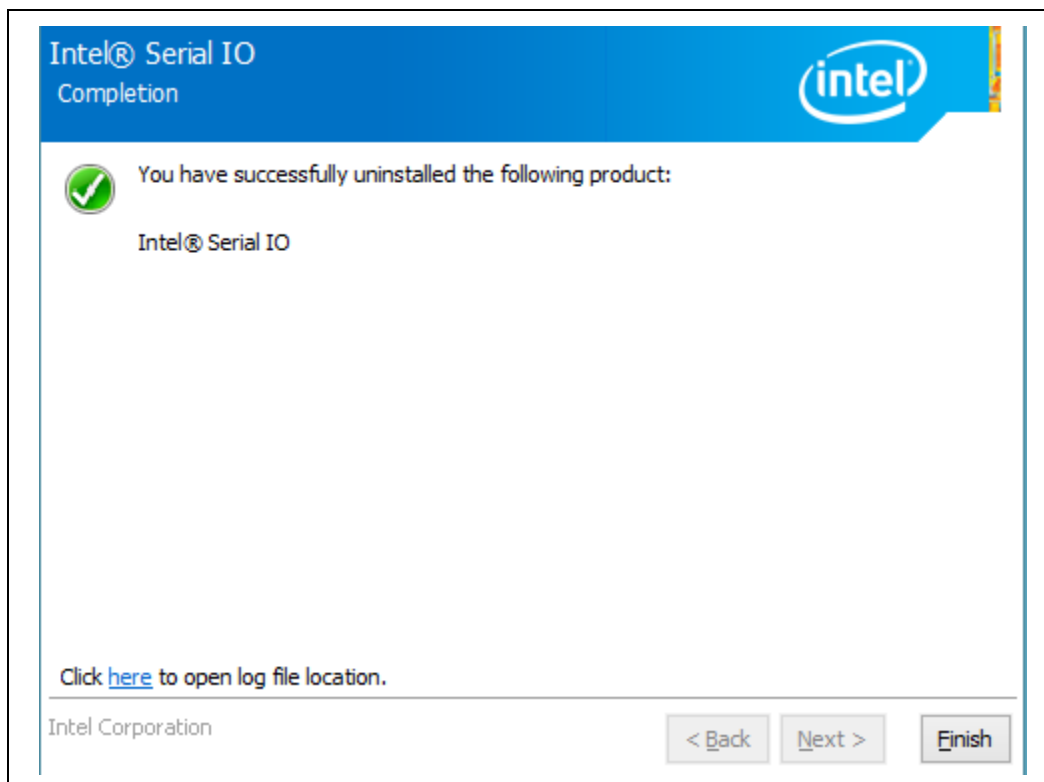
Figure 13. Welcome to the Uninstallation Program

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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 14. Click on 'Finish' button to restart the system.

Figure 14. Uninstall Setup Completion

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4   *Closed Issues*

Issue #	Description	Resolution
640003	UART: fixed a BOSD 0x7E issue during the HLK - System - PNP and System - Sleep tests.	Resolved in release 30.100.1915.1

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5   *Known Issues*

Issue #	Description
N/A	

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