

Intel[®] Serial IO Driver

User Guide and Release Note

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N/A	1.3	HF3 Release	May 2020

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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): 20H1/19H1

Hardware Requirement:

• Intel[®] 495 Series Chipset Family On-Package Platform Controller Hub.

1.2 Acronyms and Terminology

Term	Description			
АСРІ	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			
ММІО	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.			
UART	Universal asynchronous receiver/transmitter			



1.3 Reference Documents

Document	Location
Intel [®] 495 Series Chipset Family On-Package Platform Controller Hub (PCH) External Design Specification (EDS) – Volumes 1 and 2 of 2	CDI/IBL: 572631
IceLake Runtime D3 (RTD3) Hardware and Software Recommendations – Design Guide	CDI/IBL: 567655
IceLake UY Platform Design Guide (PDG)	CDI/IBL: 572907
Intel [®] 495 Series Chipset Family On-Package Platform Controller Hub (PCH) BIOS Specification	CDI/IBL: 574625

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2 Release Kit Summary

2.1 Release Kit Details

Kit Name: Intel(R) Serial IO Driver

Version:

- Serial IO Driver 30.100.2010.1
 - ialpss2_gpio2_icl
 - ialpss2_i2c_ icl
 - ialpss2_spi_ icl
 - ialpss2_uart2_ icl

2.2 Kit Contents

The contents of this release kit include:

- Intel[®] Serial IO Unpacked Driver folder Win10
 - o Driver INF files
 - $\circ \quad \text{Driver CAT files}$
 - Driver SYS files
- Intel Software License Agreement
- Readme file
- WiXLicenseNote

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



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.



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

	Setup	×
Intel® Serial IO Welcome to the Setup Program		(intel)
You are about to install the following product:		
Intel® Serial IO		
It is strongly recommended that you exit all pr Click Next to continue, or click Cancel to exit t		
Intel Corporation	< <u>B</u> ack <u>N</u> ext	



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

Setup	×				
Intel® Serial IO License Agreement					
INTEL SOFTWARE LICENSE AGREEMENT (Alpha / Beta, Organizational Use)	^				
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.					
Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software.	1				
The Software contains pre-release "alpha" or "beta" code, which may not be fully functional and which Intel Corporation ("Intel") may substantially modify in producing any "final" version of the Software. Intel can provide no assurance that it will ever produce or make generally available a "final" version of this Software.					
LICENSE. This Software is licensed for use only in conjunction with Intel component products Use of the Software in conjunction with non-Intel component products is not licensed hereunder. You may copy the Software onto your organization's computers for your	V				
✓ I accept the terms in the License Agreement.					
Intel Corporation < Back Next > Cano	el				



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

	Setup	×
Intel® Serial IO Destination Folder		(intel)
Click Next to install to the default fo	lder, or click Change to choos	e another destination folder.
C:\Program Files\Intel\Intel(R) Seri	ial IO	Change
Intel Corporation	< Back	Next > Cancel



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

	Setup			×
Intel® Serial IO Confirmation			(inte	D
You are about to install the following compo - Intel® Serial IO GPIO Driver - Intel® Serial IO SPI Driver - Intel® Serial IO UART Driver	nents:			
Intel Corporation		< <u>B</u> ack	<u>N</u> ext >	<u>C</u> ancel

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



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

Setup	×
Intel® Serial IO Completion	(intel)
You have successfully installed the following produce Intel® Serial IO	ct:
Click here to open log file location.	
Intel Corporation	< <u>B</u> ack <u>N</u> ext > <u>F</u> inish

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

Help for Setup Command-Line Options -? Displays this help dialog. -b Reboots the system without prompting after setup is complete. -/ <lcid> Specifies the language of the setup dialogs. -overwrite Ignores the overwrite warning. -p <path> Changes default directory location for application files. -report <path> Changes the default log path. -s Does not display any setup dialogs (silent install). -ver Displays driver versions. Refer to the Readme file for more details.</path></path></lcid>			Setup		×
Displays this help dialog. -b Reboots the system without prompting after setup is complete. -l <lcid> Specifies the language of the setup dialogs. -overwrite Ignores the overwrite warning. -p <path> Changes default directory location for application files. -report <path> Changes the default log path. -s Does not display any setup dialogs (silent install). -ver Displays driver versions.</path></path></lcid>	Help for Setup	Command-Line Option	s		
Reboots the system without prompting after setup is complete. -I <lcid> Specifies the language of the setup dialogs. -overwrite Ignores the overwrite warning. -p <path> Changes default directory location for application files. -report <path> Changes the default log path. -s Does not display any setup dialogs (silent install). -ver Displays driver versions.</path></path></lcid>		elp dialog.			
Specifies the language of the setup dialogs. -overwrite Ignores the overwrite warning. -p <path> Changes default directory location for application files. -report <path> Changes the default log path. -s Does not display any setup dialogs (silent install). -ver Displays driver versions.</path></path>	-	stem without promptir	ng after setup is comple	ete.	
Ignores the overwrite warning. -p <path> Changes default directory location for application files. -report <path> Changes the default log path. -s Does not display any setup dialogs (silent install). -ver Displays driver versions.</path></path>		nguage of the setup d	lialogs.		
Changes default directory location for application files. -report <path> Changes the default log path. -s Does not display any setup dialogs (silent install). -ver Displays driver versions.</path>		erwrite warning.			
Changes the default log path. -s Does not display any setup dialogs (silent install). -ver Displays driver versions.		lt directory location fo	r application files.		
Does not display any setup dialogs (silent install). -ver Displays driver versions.					
Displays driver versions.	-	iy any setup dialogs (s	ilent install).		
Refer to the Readme file for more details.		versions.			
	Refer to the Re	eadme file for more de	tails.		
<u></u>				<u></u> K	

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'.



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	1		·

- 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

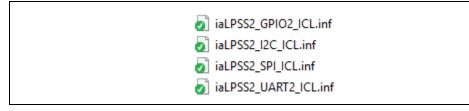


3.3 Manual Installation via INF File

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_ICL.inf
 - b. iaLPSS2_I2C_ICL.inf
 - c. iaLPSS2_SPI_ICL.inf
 - d. iaLPSS2_UART2_ICL.inf

Figure 7. Serial IO Driver - INF files



- 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 $^{\ensuremath{\mathbb{R}}}$ 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

	O GPIO Host Controller Properties
General Driver Details	Events Resources
Intel(R) Serial IC) GPIO Host Controller
Driver Provider:	Intel Corporation
Driver Date:	XX/XX/XXXX
Driver Version:	X.X.X.XXX
Digital Signer:	Intel Corporation - Software and Firmware Products
Driver Details	To view details about the driver files.
Update Driver	To update the driver software for this device.
<u>R</u> oll Back Driver	If the device fails after updating the driver, roll back to the previously installed driver.
<u>D</u> isable	Disables the selected device.
<u>U</u> ninstall	To uninstall the driver (Advanced).
	OK Cancel



Figure 9. Intel [®] Serial IO I2C Driver Version	Figure 9.	Intel®	Serial	ΙΟ	I2C	Driver	Version
---	-----------	--------	---------------	----	-----	--------	---------

Intel(R) Serial IO I20	CHost Controller - 9C61 Properties
General Driver Details	s Events Resources Power Management
Intel(R) Serial I	O I2C Host Controller - 9C61
Driver Provider	r: Intel Corporation
Driver Date:	XX/XX/XXXX
Driver Version:	X.X.X.XXX
Digital Signer:	Intel Corporation - Software and Firmware Products
Driver Details	To view details about the driver files.
U <u>p</u> date Driver	To update the driver software for this device.
Roll Back Driver	If the device fails after updating the driver, roll back to the previously installed driver.
<u>D</u> isable	Disables the selected device.
<u>U</u> ninstall	To uninstall the driver (Advanced).
	OK Cancel



Figure 10. Intel[®] Serial IO UART Driver Version

ntel(R) Serial IO UAR	
General Driver Details	Events Resources Power Management
Intel(R) Serial IC	0 UART Host Controller - 9C64
Driver Provider:	Intel Corporation
Driver Date:	XX/XX/XXXX
Driver Version:	X.X.X.XXX
Digital Signer:	Intel Corporation - Software and Firmware Products
Driver Details	To view details about the driver files.
U <u>p</u> date Driver	To update the driver software for this device.
<u>R</u> oll Back Driver	If the device fails after updating the driver, roll back to the previously installed driver.
<u>D</u> isable	Disables the selected device.
<u>U</u> ninstall	To uninstall the driver (Advanced).
	OK Cancel



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

To uninstall a program, select it f	rom the list and then click Uninstall, Change, or Re	tpair.	
Organize 💌			II • 🔞
Name	Publisher	Installed On Size	Version
M Intel® Serial IO	Intel Corporation	7/24/2013	1.1.165.0



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

	Setup	×
Intel® Serial IO Welcome to the Setup Program		intel
You are about to uninstall the following Intel® Serial IO	product:	
It is strongly recommended that you ex Click Next to continue, or click Cancel to	it all programs before continu o exit the setup program.	uing.



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

Intel® Compl	Serial IO etion		(intel	
	You have successfully uninstalled the following produ	ict:		
	Intel® Serial IO			
Click he	ere to open log file location.			
Intel Co	rporation	< <u>B</u> ack	<u>N</u> ext >	<u>F</u> inish





Issue #	Description	Resolution
N/A	Driver WHQL signed for 20H1/19H1 OS	Resolved in release 30.100.2010.0
2209640364	Updated Serial IO installer.	Resolved in release 30.100.1947.1 (installer version 3.0.2706.1)
N/A	Changed .sys file name.	Resolved in release 30.100.1947.1
N/A	UART: Added registry key support for LTR configuration.	Resolved in release 30.100.1932.6
640003	UART: fixed a BOSD 0x7E issue during the HLK - System - PNP and System - Sleep tests.	Resolved in release 30.100.1916.1

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5 Known Issues

Issue #	Description
N/A	

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