DIN Rail Box PC
IRDRW500

Raptor Lake Core™ i5-1335U, up to 4.6GHz

User Manual

Version 1.0
Document Part No. 91711110110P

Contents

Preface

Copyright Notice

Trademark Acknowledgement

Disclaimer

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Warranty

Our warranty guarantees that each of its products will be free from material and workmanship defects for a period of one year from the invoice date. If the customer discovers a defect, we will, at his/her option, repair or replace the defective product at no charge to the customer, provide it is returned during the warranty period of one year, with transportation charges prepaid. The returned product must be properly packaged in its original packaging to obtain warranty service. If the serial number and the product shipping data differ by over 30 days, the in-warranty service will be made according to the shipping date. In the serial numbers the third and fourth two digits give the year of manufacture, and the fifth digit means the month (e. g., with A for October, B for November and C for December).

For example, the serial number 1W16Axxxxxxxx means October of year 2016.

Customer Service

We provide a service guide for any problem by the following steps: First, visit the website of our distributor to find the update information about the product. Second, contact with your distributor, sales representative, or our customer service center for technical support if you need additional assistance.

You may need the following information ready before you call:

- Product serial number
- Software (OS, version, application software, etc.)
- Description of complete problem
- The exact wording of any error messages

In addition, free technical support is available from our engineers every business day. We are always ready to give advice on application requirements or specific information on the installation and operation of any of our products.

Advisory Conventions

Four types of advisories are used throughout the user manual to provide helpful information or to alert you to the potential for hardware damage or personal injury. These are Notes, Important, Cautions, and Warnings. The following is an example of each type of advisory.

Note:
A note is used to emphasize helpful information

Important:
An important note indicates information that is important for you to know.

Caution A Caution alert indicates potential damage to hardware and explains how to avoid the potential problem.
Attention Une alerte d'attention indique un dommage possible à l'équipement et explique comment éviter le problème potentiel.

Warning! An Electrical Shock Warning indicates the potential harm from electrical hazards and how to avoid the potential problem.
Avertissement! Un Avertissement de Choc Électrique indique le potentiel de chocs sur des emplacements électriques et comment éviter ces problèmes.

Alternating Current The Protective Conductor Terminal (Earth Ground) symbol indicates the potential risk of serious electrical shock due to improper grounding.
Mise à le terre ! Le symbole de Mise à Terre indique le risqué potential de choc électrique grave à la terre incorrecte.

Safety Information

Warning! Always completely disconnect the power cord from your chassis whenever you work with the hardware. Do not make connections while the power is on. Sensitive electronic components can be damaged by sudden power surges. Only experienced electronics personnel should open the PC chassis.
Avertissement! Toujours débrancher le cordon d'alimentation du chassis lorsque vous travaillez sur celui-ci. Ne pas brancher de connections lorsque l'alimentation est présente. Des composantes électroniques sensibles peuvent être endommagées par des sauts d'alimentation. Seulement du personnel expérimenté devrait ouvrir ces chassis.

Caution Always ground yourself to remove any static charge before touching the CPU card. Modern electronic devices are very sensitive to static electric charges. As a safety precaution, use a grounding wrist strap at all times. Place all electronic components in a static-dissipative surface or static-shielded bag when they are not in the chassis.
Attention Toujours verifier votre mise à la terre afin d'éliminer toute charge statique avant de toucher la carte CPU. Les équipements électroniques moderns sont très sensibles aux décharges d'électricité statique. Toujours utiliser un bracelet de mise à la terre comme précaution. Placer toutes les composantes électroniques sur une surface conçue pour dissiper les charge, ou dans un sac anti-statique lorsqu'elles ne sont pas dans le chassis.

Safety Precautions

For your safety carefully read all the safety instructions before using the device. Keep this user manual for future reference.

- Replacement of a battery with an incorrect type that can defeat a safeguard
- Disposal of a battery into fire or a hot oven, or mechanically crushing or cutting of a battery, that can result in an explosion
- Leaving a battery in an extremely high temperature surrounding environment that can result in an explosion or the leakage of flammable liquid or gas
- A battery subjected to extremely low air pressure that may result in an explosion or the leakage of flammable liquid or gas
- Caution: Risk of fire or explosion if the battery is replaced by an incorrect type
- Always disconnect this equipment from any AC outlet before cleaning. Do not use liquid or spray detergents for cleaning. Use a damp cloth.
- For pluggable equipment, the power outlet must be installed near the equipment and must be easily accessible.
- Keep this equipment away from humidity.
- Put this equipment on a reliable surface during installation. Dropping it or letting it fall could cause damage.
- The openings on the enclosure are for air convection and to protect the equipment from overheating.

Caution Do not cover the openings!

Attention Ne couvrez pas les ouvertures!

- Before connecting the equipment to the power outlet make sure the voltage of the power source is correct.
- Position the power cord so that people cannot step on it. Do not place anything over the power cord.
- If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient over-voltage.
- Never pour any liquid into an opening. This could cause fire or electrical shock.
- Never open the equipment. For safety reasons, only qualified service personnel should open the equipment.
- All cautions and warnings on the equipment should be noted.

Caution Always ground yourself to remove any static charge before touching the board. Modern electronic devices are very sensitive to static electric charges. As a safety precaution, use a grounding wrist strap at all times. Place all electronic components in a static-dissipative surface or static-shielded bag when they are not in the chassis.

Attention Mettez-vous toujours à la terre pour éliminer toute charge statique avant de toucher la carte. Les appareils électroniques modernes sont très sensibles aux charges électriques statiques. Par mesure de sécurité, utilisez en tout temps un bracelet antistatique. Placez tous les composants électroniques dans une surface antistatique ou dans un sac blindé antistatique lorsqu'ils ne sont pas dans le châssis.

General Guideline

It is recommended to reboot the device when some functions are defect or inactive. If it still can't solve the problems, please contact your dealer or agent.

About This User Manual

This User Manual provides information about using the IRDRW500 DIN Rail Box PC. This User Manual applies to the IRDRW500 DIN Rail Box PC.

The documentation set for the IRDRW500 DIN Rail Box PC provides information for specific user needs, and includes:

- **User Manual** – contains detailed description on how to use the IRDRW500 DIN Rail Box PC, its components and features.

Note:
Some pictures in this guide are samples and can differ from actual product.

Chapter 1: Introduction

1.1 Product Overview

Winmate IRDRW500 is a DIN-rail mounted Box PC, which provides several serial communication ports. With a compact size and small form factor as well as front accessible I/O port. The IRDRW500 is very convenient for wiring and DIN-rail installation in the control cabinet. The wide operation temperature and Industrial serial port design makes this unit a perfect communication even in harsh and critical location.

IRDRW500 integrated with Intel® Processor Raptor Lake Core™ i5-1335U 12M Cache, up to 4.6GHz with low power consumption. The new IRDRW500 supports 262-pin SO-DIMM DDR5 at speeds of 5200 MHz, up to 32GB.

Experience the future of edge AI computing with Winmate's DIN-Rail Box PC, the first of its kind to integrate the Hailo-8~ AI Module. Tailored for machine learning, image recognition, and predictive maintenance applications, this DIN-Rail Box PC ensures real-time AI processing for smart factories, autonomous systems, and IIoT infrastructures.

In peripheral connectivity, IRDRW500 features one M.2 Key-E with PCIe x1+ USB 2.0 for wireless or AI Acceleration Card, one M.2 Key-M, 2280 with PCIe for NVMe SSD, one M.2 Key-B with x1+ USB3.2 Gen1 +USB 2.0 for WWAN, two RS232/422/485 with DB9 connector (Default RS232, select thru BIOS), two RS232/422/485 with 10-Pin terminal block (Default RS232, select thru jumper), two super-speed USB 3.2 Gen2x1 (10Gbps) Type-A connectors, one USB3.2 Gen1x1 (5Gbps) Type-A connectors and one USB2.0 Type-A connectors. Two HDMI 2.0b, Max resolution up to 4096x2160@60Hz video output. Isolated 8-in/8-out DIO with 20-Pin terminal block connector. Additionally, IRDRW500 features Wide Range 9V to 36V DC Power Input with Isolation.

This DIN-Rail Box PC enables rapid data processing and analysis, perfect for machine vision, and industrial IoT (IIoT) applications. With seamless connectivity and low latency, it's the ideal platform for real-time decision-making at the edge.

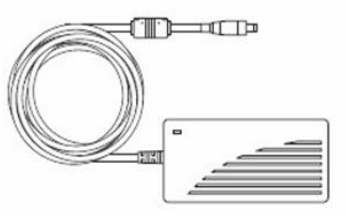
1.2 Product Features

Highlights

- Intel® Raptor Lake Core™ i5-1335U 3.3GHz (up to 4.40 GHz)
- 1 x SO-DIMM DDR5 Memory, up to 32GB
- 4 x 2.5 Giga LAN, 4 x RS232/422/485
- 2 x USB 3.2 Gen 2x1, 1 x USB3.2 Gen1x1, 1 x USB2.0
- Isolated DIO (8-in/8-out)
- Wide Range 9V to 36V DC Power Input with Isolation
- Wide Operating Temperature range from -20°C to +60°C
- DIN-Rail Type Edge Computing

1.3 Accessories

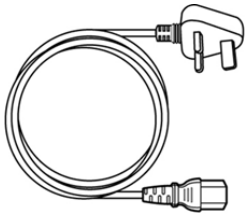
Accessories



AC to DC 12V 120W Power Adapter

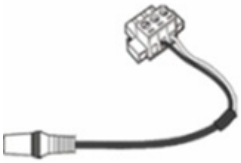
(For testing only)

Part No. 90PO12120008



Power Cord

Varies by the country

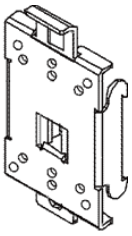


Terminal Block 3 pin to 2.5 Ø Female Adapter Cable

Part No. 94J602G030K0

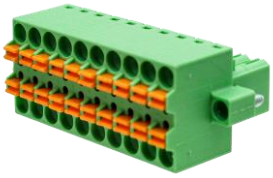
Open Wire Power Cable

Part No. 94EL02X020E0



DIN Rail Mounting Clip

Part No. 90ME01000000



Terminal Block 20- Pin Male Connector for DIDO

Part No. 604530005001

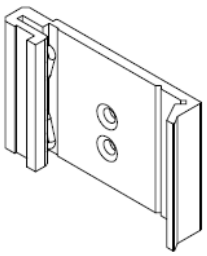
Terminal Block 10-Pin Male Connector for COM

Part No. 604530805000

Terminal Block 3-Pin Male Connector for Power

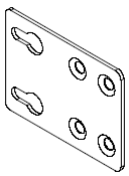
Part No. 604520105001

Optional Accessories



Mini Din Rail Mounting kits

Part No. 821118551400

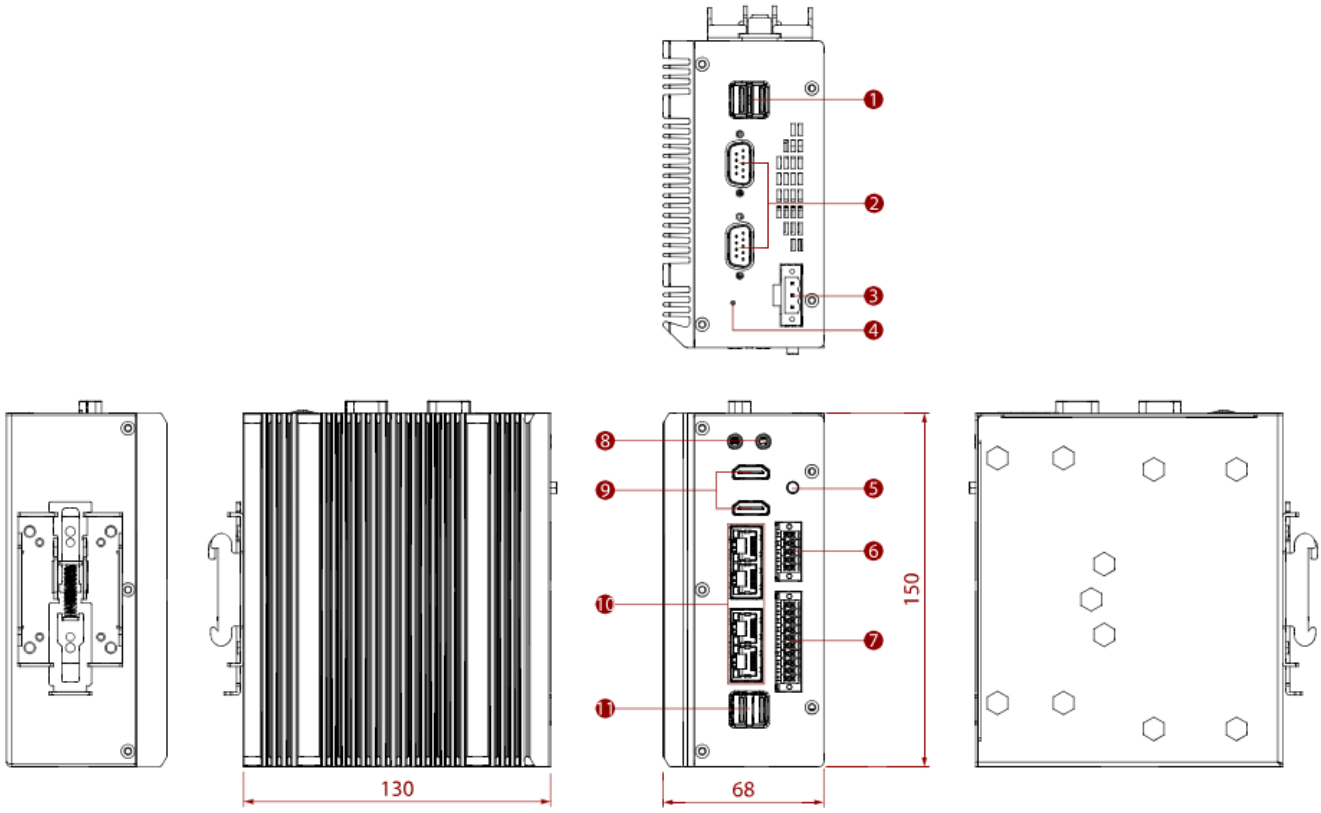


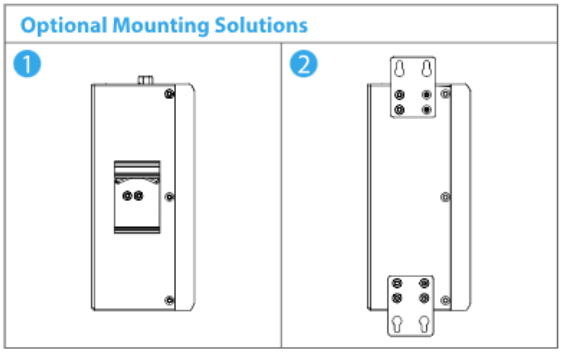
Wall Mounting kits

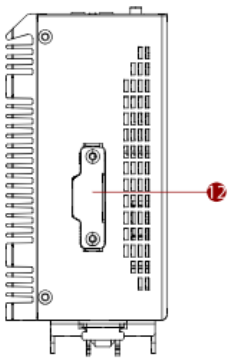
Part No. 821118561706

1.4 Chassis Dimensions and Description of Parts

Unit: mm







1. USB Type-A
2. COM
3. Power Input
4. Reset Button
5. Power Button
6. COM x2
7. Digital I/O
8. Audio
9. HDMI
10. LAN
11. USB Type-A
12. RTC Battery Cover, SIM Card Cover (Optional)

Chapter 2: Hardware Installation

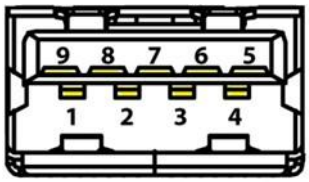
2.1 Connectors Description

This section describes pin assignment and signal names of IRDRW500 interfaces.

2.1.1 USB Type-A Connector

The IRDRW500 provide two USB 3.2 Gen2x1, one USB 3.2 Gen1x1 and one USB2.0 Type-A connectors. Use USB connector to connect external devices such as mouse or keyboard to the box computer.

Pin assignment and signal names of USB connector



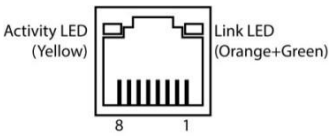
Pin №	Signal Name	Pin №	Signal Name
1	+5V	2	USB_D-
3	USB_D+	4	GND
5	STDA_SSRX-	6	STDA_SSRX+
7	GND	8	STDA_SSTX-
9	STDA_SSTX+		

Pin №	Signal Name	Pin №	Signal Name
1	+5V	2	Data-
3	Data+	4	GND

2.1.2 LAN RJ-45 Connector

The IRDRW500 has four LAN connectors located on the front. Ethernet ports provide a standard RJ45 jack connector with LED indicators on the front side to show its Active/ Link status and Speed status.

Pin assignment and signal names of Ethernet connector



10/100/1000 Mbps- Orange
2.5G Mbps – Green

Pin №	Signal Name	Pin №	Signal Name
1	TX1+	2	TX1-
3	TX2+	4	TX3+
5	TX3-	6	TX2-
7	TX4+	8	TX4-

2.1.3 HDMI Type-A Connector

The IRDRW500 have two HDMI Type-A connector. Use HDMI cable to connect DIN-Rail Box Computer to external monitor.

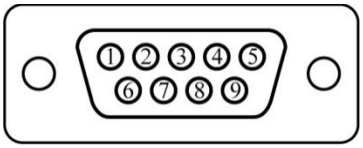
Pin assignment and signal names of HDMI connector

Pin №	Signal Name	Pin №	Signal Name
1	HDMI_DET	2	NV
3	HDMI_D2P	4	GND
5	HDMI_D2M	6	HDMI_D1P
7	GND	8	HDMI_D1M
9	HDMI_D0P	10	GND
11	HDMI_D0M	12	HDMI_CLKP
13	GND	14	HDMI_CLKM
15	HDMI_CEC_OUT	16	GND
17	DDC_CLOCK	18	DDC_DATA
19	+5V	20	GND

2.1.4 Serial Port RS-232/422/485 Connector

The IRDRW500 have two COM ports with 9-pin D-sub connectors that offer RS-232/422/485 serial communication interface ports. Default setting is RS-232, but this can be modified by BIOS.

Pin assignment and signal names of RS-232/422/485 with DB9 connector

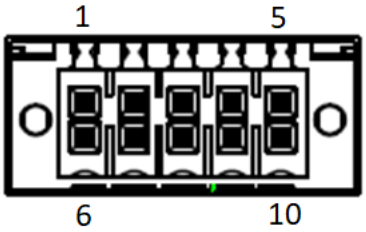


Pin №	RS-232 (Default)	RS422	RS485
1	DCD	Tx-	DATA-
2	RXD	Tx+	DATA+
3	TXD	RX+	NC
4	DTR	RX-	NC
5	GND	GND	GND
6	DSR	NC	NC
7	RTS	NC	NC
8	CTS	NC	NC
9	RI	NC	NC

2.1.5 Isolated RS-232/422/485 Connector

The IRDRW500 have two COM ports with 10-Pin terminal block connectors that offer RS-232/422/485 serial communication interface ports. Default setting is RS-232, but this can be modified by jumpers.

Pin assignment and signal names of RS-232/422/485 with 10-Pin terminal block connector



Pin №	RS-232 (Default)	RS422	RS485
1	CTS	T-	D-
2	RXD	T+	D+
3	TXD	R+	
4	RTS	R-	
5	GND	GND	GND
6	CTS	T-	D-
7	RXD	T+	D+
8	TXD	R+	
9	RTS	R-	
10	GND	GND	GND

2.1.6 DIDO Connector

Pin assignment and signal names of DIDO connector

Pin №	Signal Name	Pin №	Signal Name
1	ISOGND	2	PCOM
3	DI0	4	DO0
5	DI1	6	DO1
7	DI2	8	DO2
9	DI3	10	DO3
11	DI4	12	DO4
13	DI5	14	DO5
15	DI6	16	DO6
17	DI7	18	DO7
19	ISOGND	20	ISOGND

Isolated 8-in/8-out DIO with 20-Pin Terminal Block:

8 x Digital input channels with 2500 VDC isolation protection

- Wet contact: Logic 0: 0 ~ 1 VDC/ Logic 1: 2 ~ 30 VDC
- Dry contact: Logic 0: Shorted to GND/ Logic 1: Open

8 x Digital output channels

- Output voltage: 5 ~ 30 VDC
- Output capability sink: 500 mA ax./channel

2.1.7 Audio Jack

The IRDRW500 has two stereo audio ports with phone jack connectors, one is Line-out, and the other one is Mic-in.

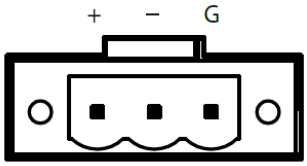
Pin assignment and signal names of audio jack

Pin №	Signal Name	Pin №	Signal Name
1	Line-out	2	Mic-in

2.1.8 DC Power 3pin Terminal Block

The DC power source input of the IRDRW500 is a 3-pin terminal block connector that supports 9-36V DC power input.

Pin assignment and signal names of DC power 3pin terminal block



Voltage

Minimum Voltage 9V
Maximum Voltage 36V

2.2 Configuring COM Settings by Jumpers

Serial Port COM can be configured for RS-232/422/485 by jumpers. Jumpers are located on the motherboard. You need to open the housing in order to access the jumpers.

Caution It is recommended to use factory jumper settings. Opening the housing when it is sealed may damage the device and its parts.
Attention Il est recommandé d'utiliser la configuration d'usine de cavalier. Ouvrir le chassis lorsqu'il est scellé peut endommagé l'appareil et ses pièces.

Note: A pair of needle nose pliers may be helpful when working with jumpers. If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any changes. Generally, you simply need a standard cable to make most connections.

The jumper setting diagram is shown below. When the jumper cap is placed on both pins, the jumper is SHORT. The illustration below shows a 3-pin jumper; pins 1 and 2 are short. If you remove the jumper cap, the jumper is OPEN.

RS232/422/485 Terminal Resistor

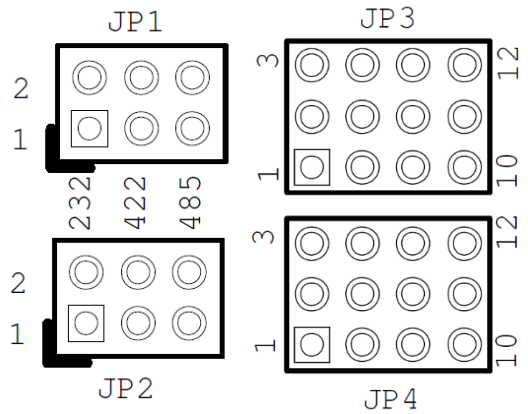
(JP1+JP3 for Terminal block COM COM1, JP2+JP4 for Terminal block COM COM2)

Location	Header Type	Description	Function
JP1 JP2	Header 3*1	Terminal Resistor	1-2: Normal 2-3: Connector

※ Default: 1-2

Location	Header Type	Description	Function
JP3 JP4	Header 3*1	Selection RS422 / RS485	1-2: RS485 2-3: RS422

※ Default: 1-2



Jumper	RS232	RS422	RS485
JP1, JP3	1-2	3-4	5-6
JP2, JP4	1-2 4-5 7-8 10-11	2-3 5-6 8-9 11-12	2-3 5-6 8-9 11-12

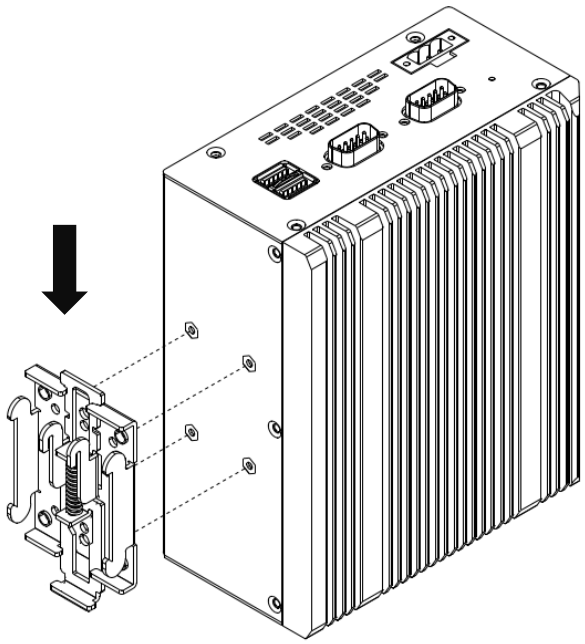
Chapter 3: Initial Setup

3.1 DIN Rail Mounting Setup

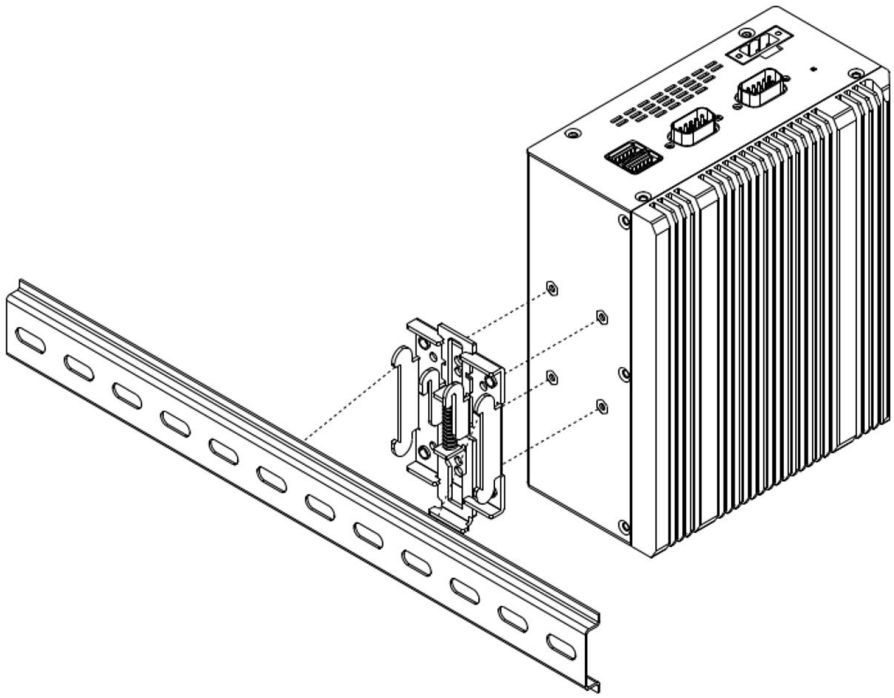
3.1.1 DIN Rail Mounting

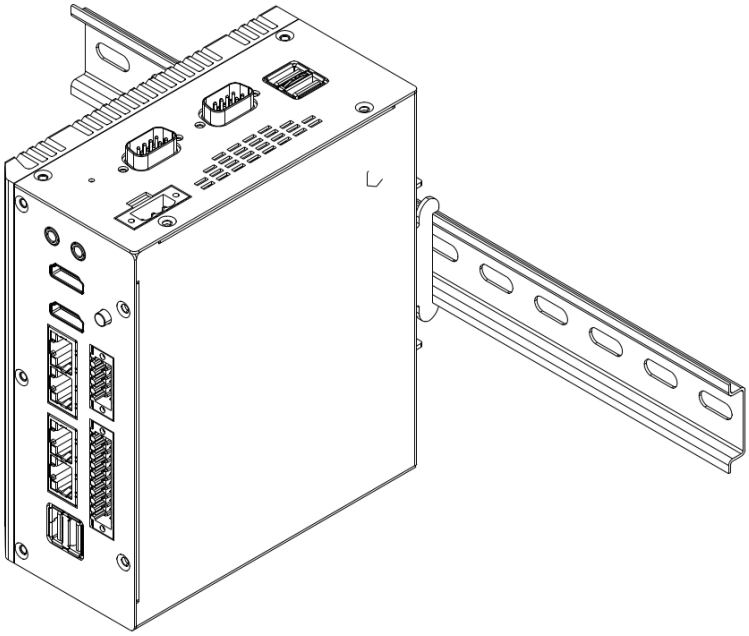
Please follow these steps to mount the IRDRW hook kit on a DIN rail

1. Screw the provided DIN-rail Kit on the rear side of the box as the diagram shown below.
2. Please make sure the stiff metal handle part is located on the top.



3. Press the stiff metal handle downward and insert the hook into the DIN-rail.
4. Release the handle so it can snap into place as shown below.

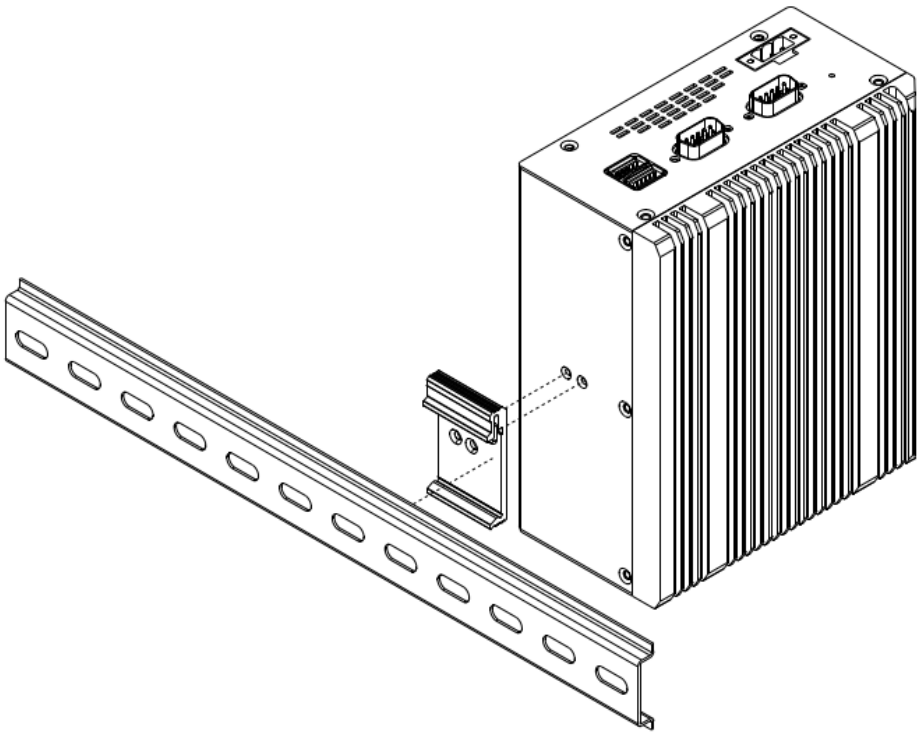


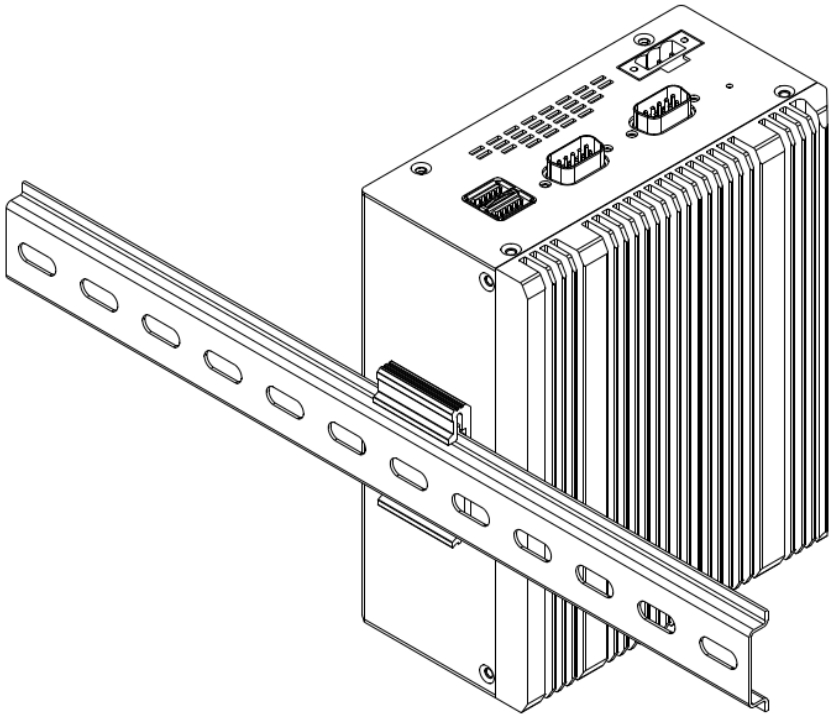


3.1.2 Mini DIN Rail Mounting (Optional)

Please follow these steps to mount the IRDRW hook kit on a mini DIN rail kit

1. Screw the provided mini DIN-rail Kit on the rear side of the box as the diagram shown below.

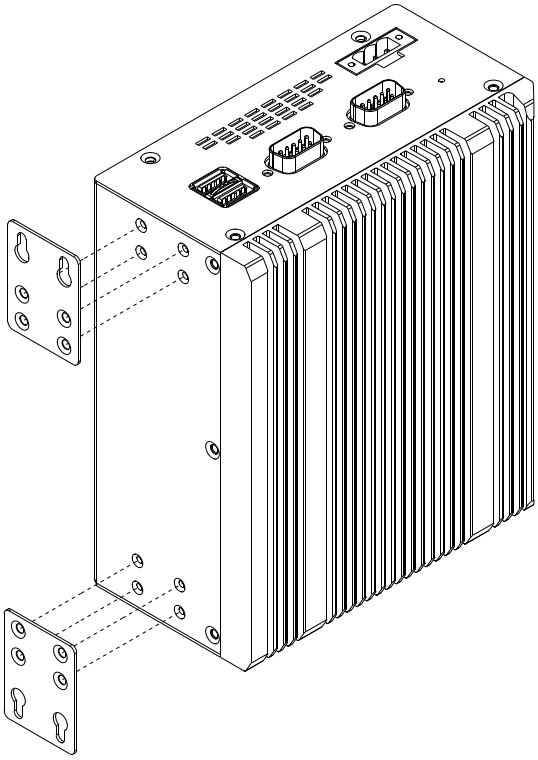


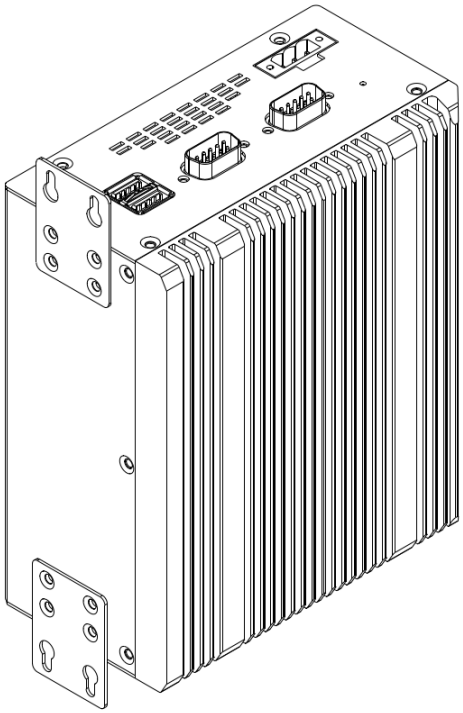


3.1.3 Wall Mounting (Optional)

Please follow these steps to mount the IRDRW hook kit on a wall mounting kit

1. Screw the provided mini DIN-rail Kit on the rear side of the box as the diagram shown below.

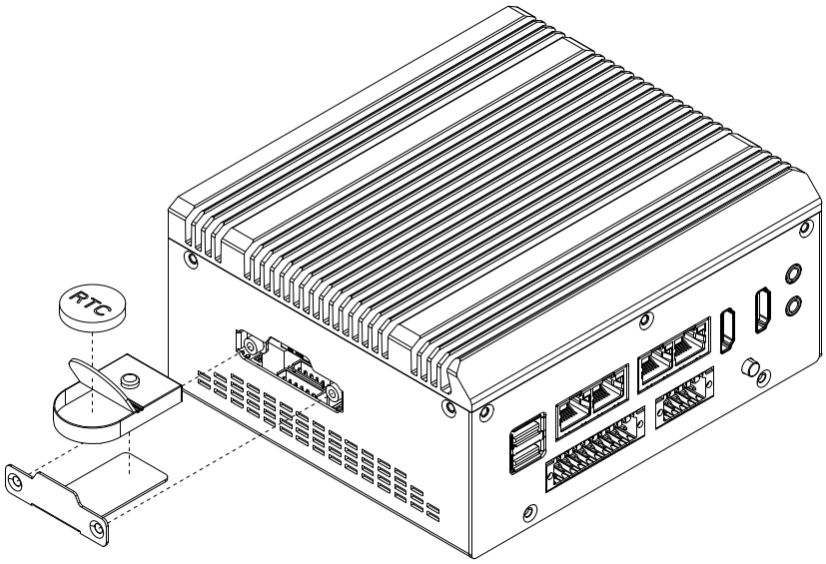




3.2 RTC Battery Replacement

Please follow these steps to replace the RTC battery of DIN rail

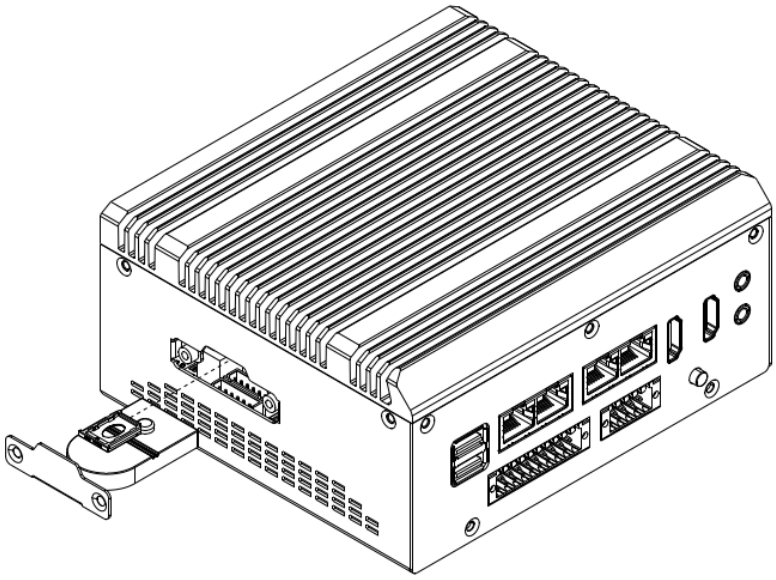
1. Loosen the screws on the RTC battery cover.
2. Take out the RTC battery from the case and replace it.



3.3 SIM Card insertion or removal

Please follow these steps to replace the SIM card of DIN rail

1. Loosen the screws on the SIM card cover.
2. Insert or remove SIM card.



Chapter 4: Insyde BIOS Setup

4.1 BIOS Introduction

4.1.1 BIOS Setup and Boot Procedure

BIOS stand for “Basic Input Output System” and it is the most basic communication between user and the hardware. To enter BIOS Setup, the [**DEL**] key must be pressed after the USB controller has been initialized as soon as the following message appears on the monitor during Power On Self-Test (POST): “**Press DEL to run SETUP**”

Note: BIOS version update may be published after the manual is released. Please visit Winmate Download Center to check the latest version of BIOS. User may need to run BIOS setup utility for the following status:

1. Error message on screen indicate to check BIOS Setup
2. Restoring the Factory default setting
3. Modifying the specific hardware specification
4. Want to optimize the specification

4.1.2 BIOS Setup Keys

The following keys are enabled during POST:

Key	Function
Del	Enters the BIOS setup menu
F7	Display the boot menu. Lists all bootable devices that are connected to the system. With cursor ↑ and cursor ↓ and by pressing <ENTER>, select the device used for the boot
Pause	Pressing the [Pause] key stops the POST. Press any other key to resume the POST.

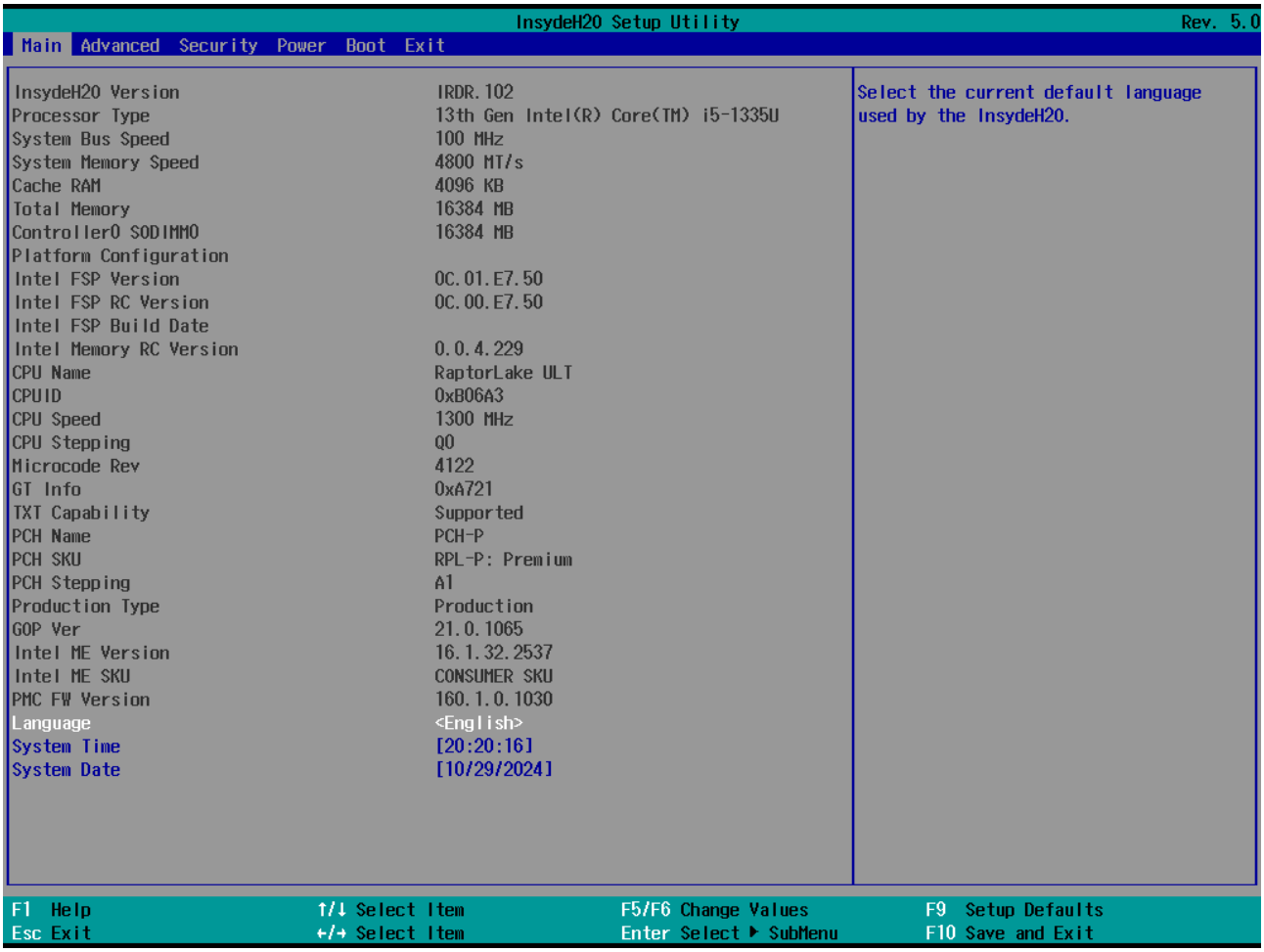
The following keys can be used after entering the BIOS Setup:

Key	Function
F1	General Help
F2	Previous Values
F3	Optimized Defaults
F4	Save & Exit
Esc	Exit
+/-	Change Opt.
Enter	Select or execute command
Cursor ↑	Moves to the previous item
Cursor ↓	Goes to the next item
Cursor ←	Moves to the previous item
Cursor →	Goes to the next item

4.2 BIOS Menu

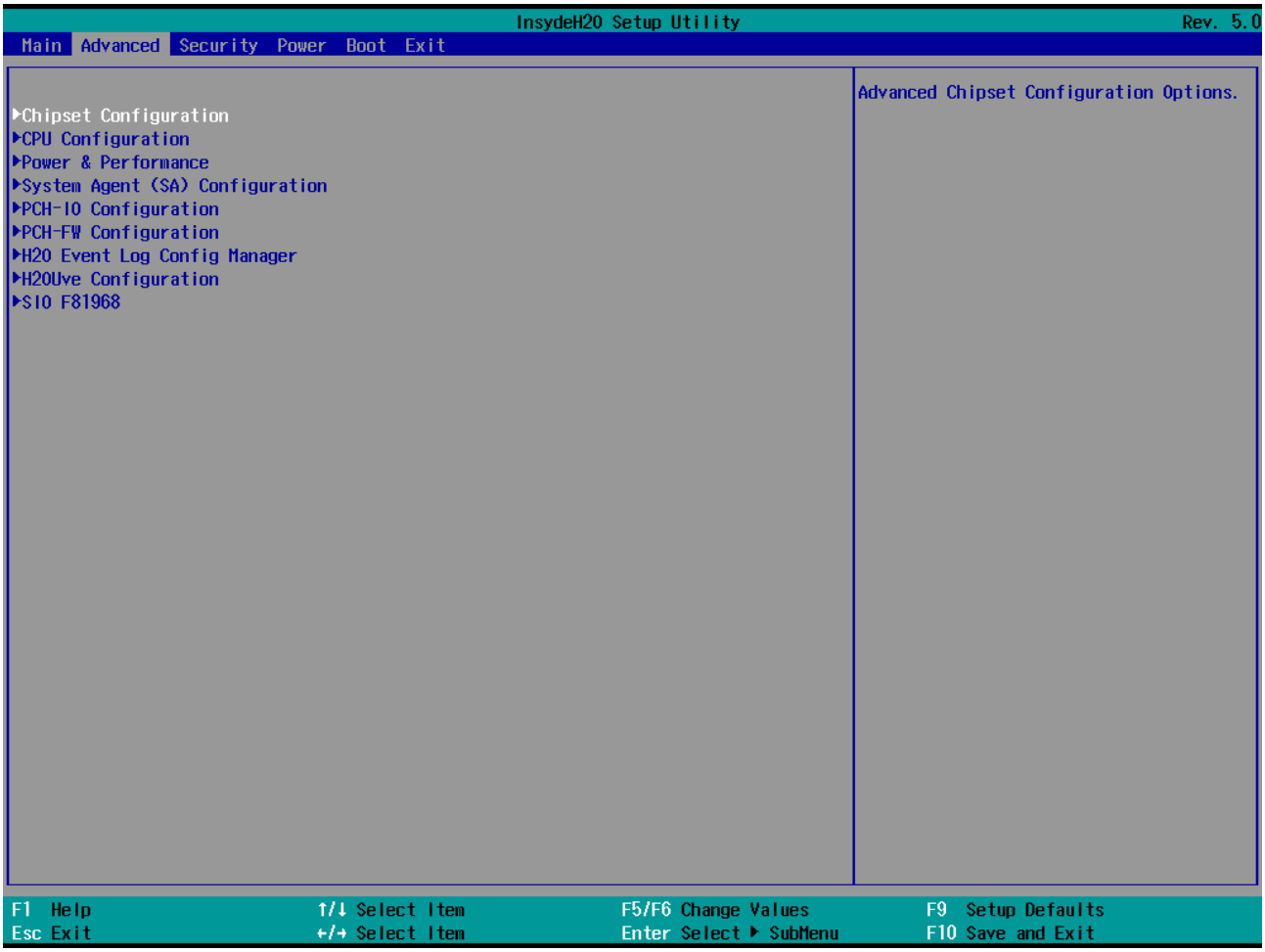
4.2.1 Main

Immediately after the [DEL] key is pressed during startup to show the main BIOS setup menu:



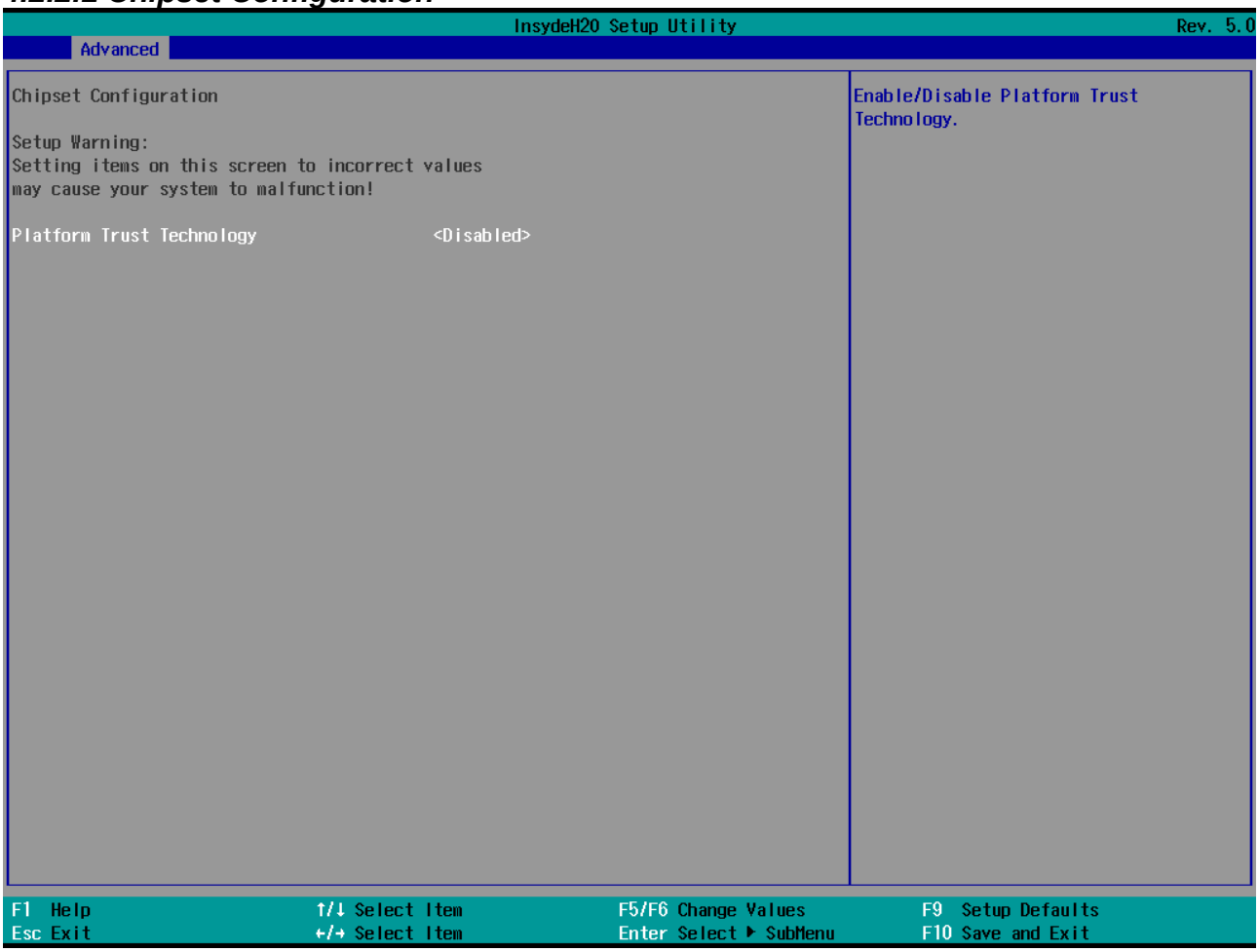
BIOS Setting	Description	Setting Options	Effect
Language	Select the current default language by the Insyde20	Adjustment of the language. Default: English.	Set the default language
System Time	The time is maintained by the battery when the device is turned off.	Adjustment of the time	Set the time in the format [hh:mm:ss]
System Date	This is current date setting. The time is maintained by the battery when the device is turned off	Changes to the date	Set the date in the format [mm/dd/yyyy]

4.2.2 Advanced



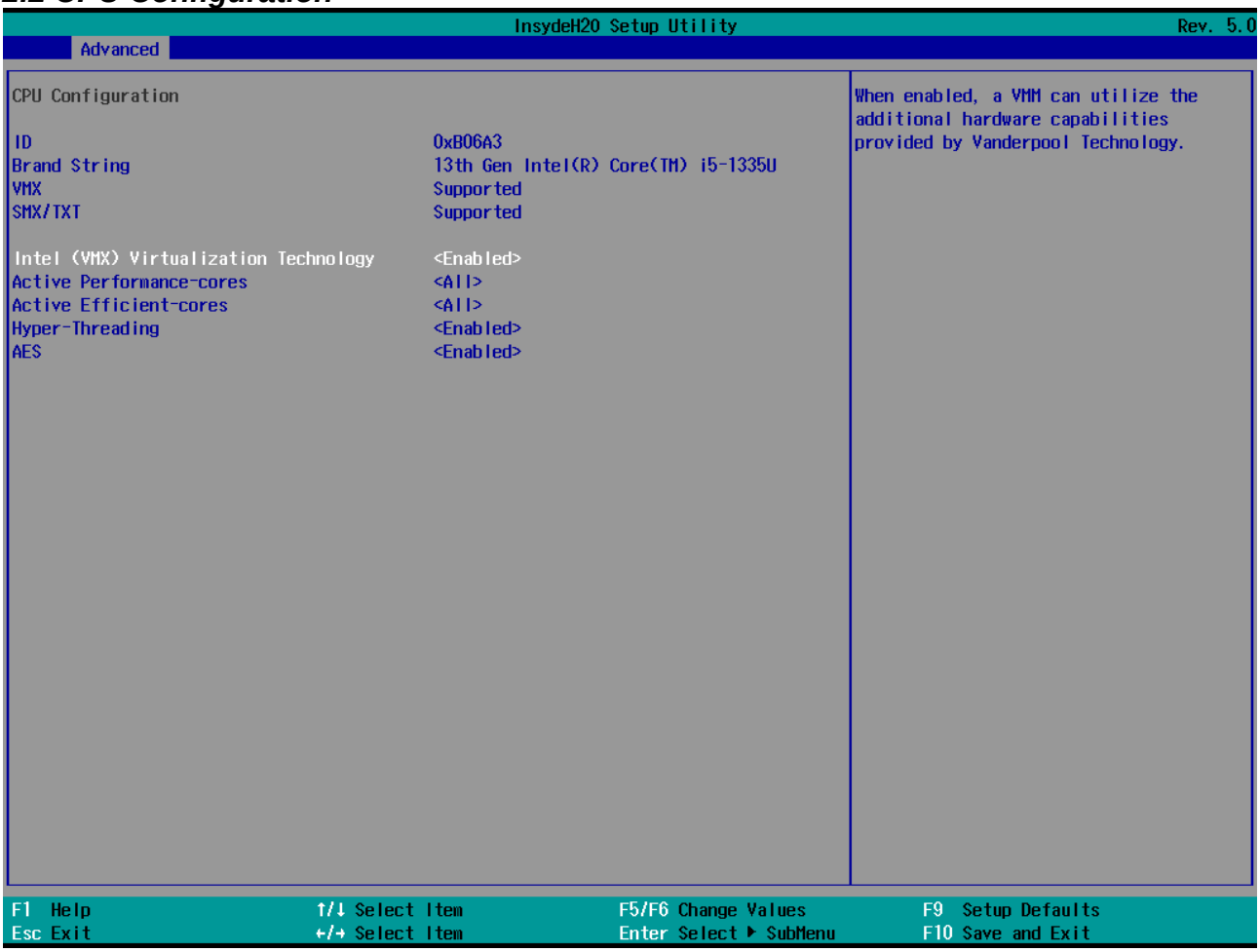
BIOS Setting	Description	Setting Option	Effect
Chipset Configuration	Configures Chipset parameters	Enter	Opens submenu
CPU Configuration	Configures Trusted Computing parameters	Enter	Opens submenu
Power& Performance	Configures Power & Performance parameters	Enter	Opens submenu
System Agent Configuration	Configures System Agent Configuration parameters	Enter	Opens submenu
PCH-OI Configuration	Configures PCH-OI parameters	Enter	Opens submenu
PCH-FM Configuration	Configures PCH-FM parameters	Enter	Opens submenu
H20 Event Log Config Manager	Configures H20 Event Log parameters	Enter	Opens submenu
H20Uve Configuration	Configures H20Uve parameters	Enter	Opens submenu
S10 F81968	Configures S10 F81968 parameters	Enter	Opens submenu

4.2.2.1 Chipset Configuration



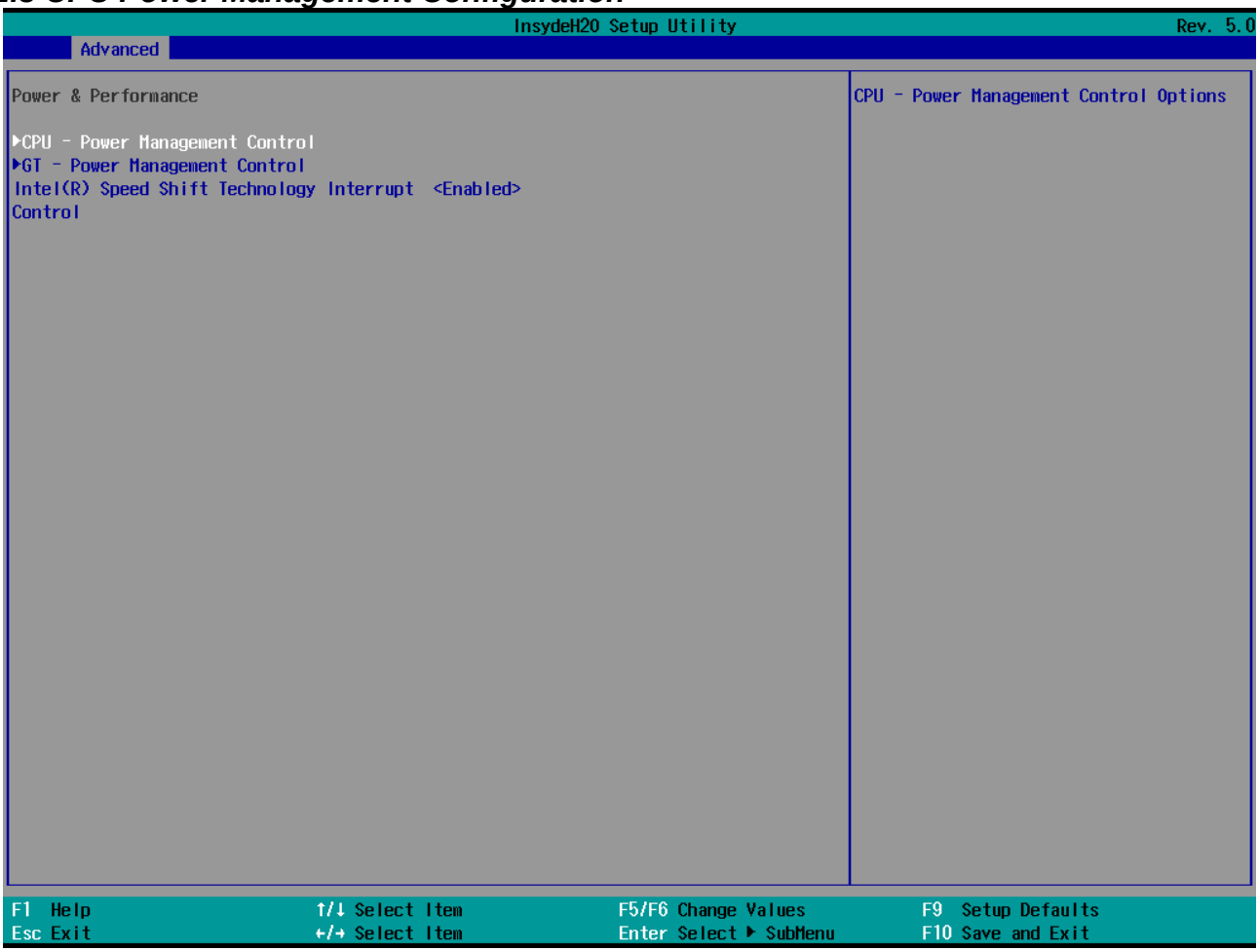
BIOS Setting	Description	Setting Option	Effect
Platform Trust Technology	Enable or disable Platform Trust Technology	Enable/Disable	Enable or disable Platform Trust Technology

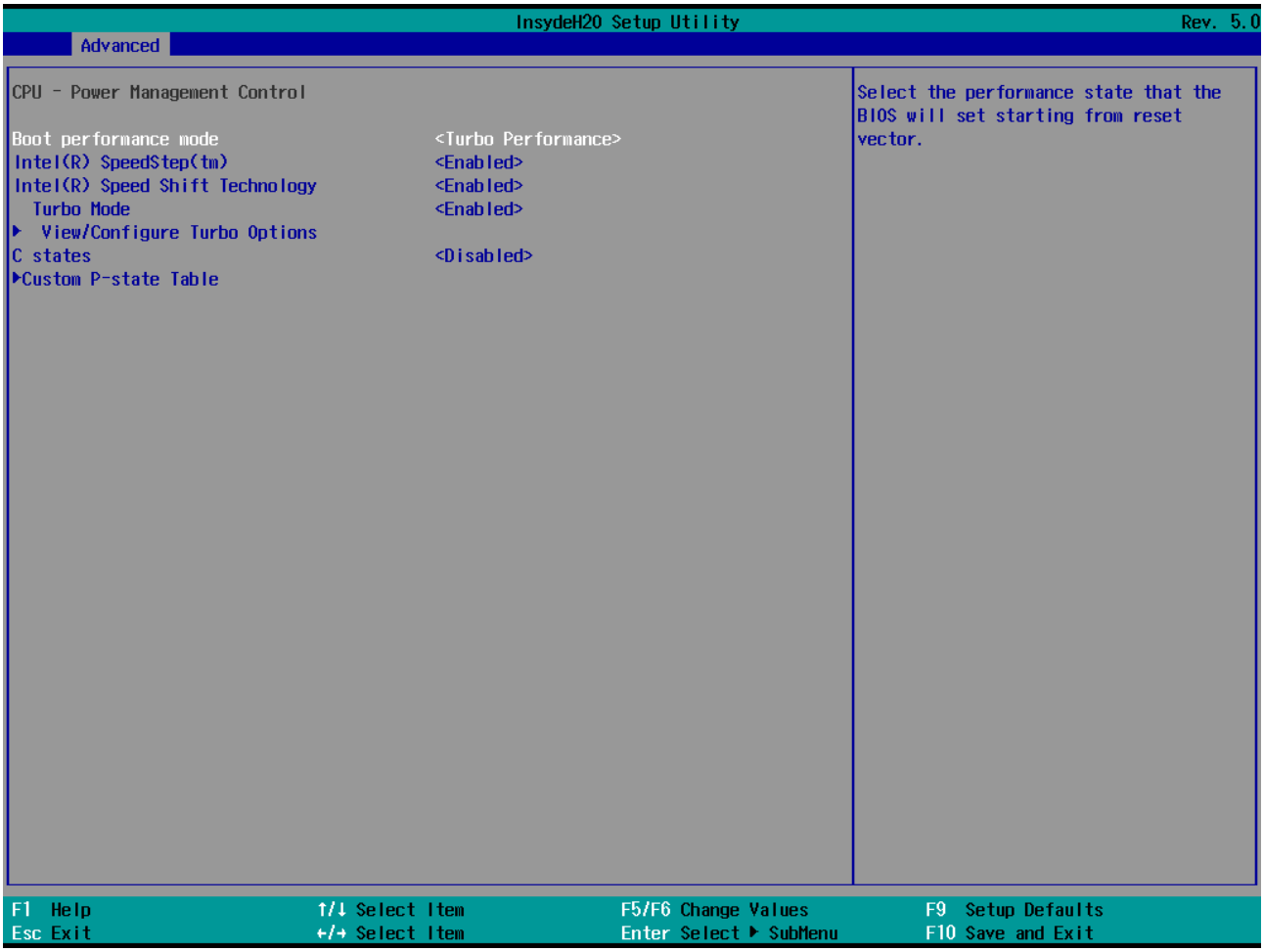
4.2.2.2 CPU Configuration



BIOS Setting	Description	Setting Option	Effect
Intel (VMX) Virtualization Technology	Enable or disable Intel Virtualization Technology.	Enable/Disable	When enabled, a VMM can utilize the additional hardware capabilities provided by Vander pool Technology.
Active Performance-Cores	Number of core to enable in each processor package	All / 1 / 2/ 3	Select number of core to enable in each processor package
Active Efficient-Cores	Number of core to enable in each processor package	All / 1 / 2/ 3	Select number of core to enable in each processor package
Hyper Threading	Intel Hyper-Threading Technology allows a single processor to execute two or more separate threads concurrently.	Enable / Disable	Enable or disable Hyper Threading
AES	Enable or disable AES (Advanced Encyption Standard)	Enable/Disable	Enable or disable AES

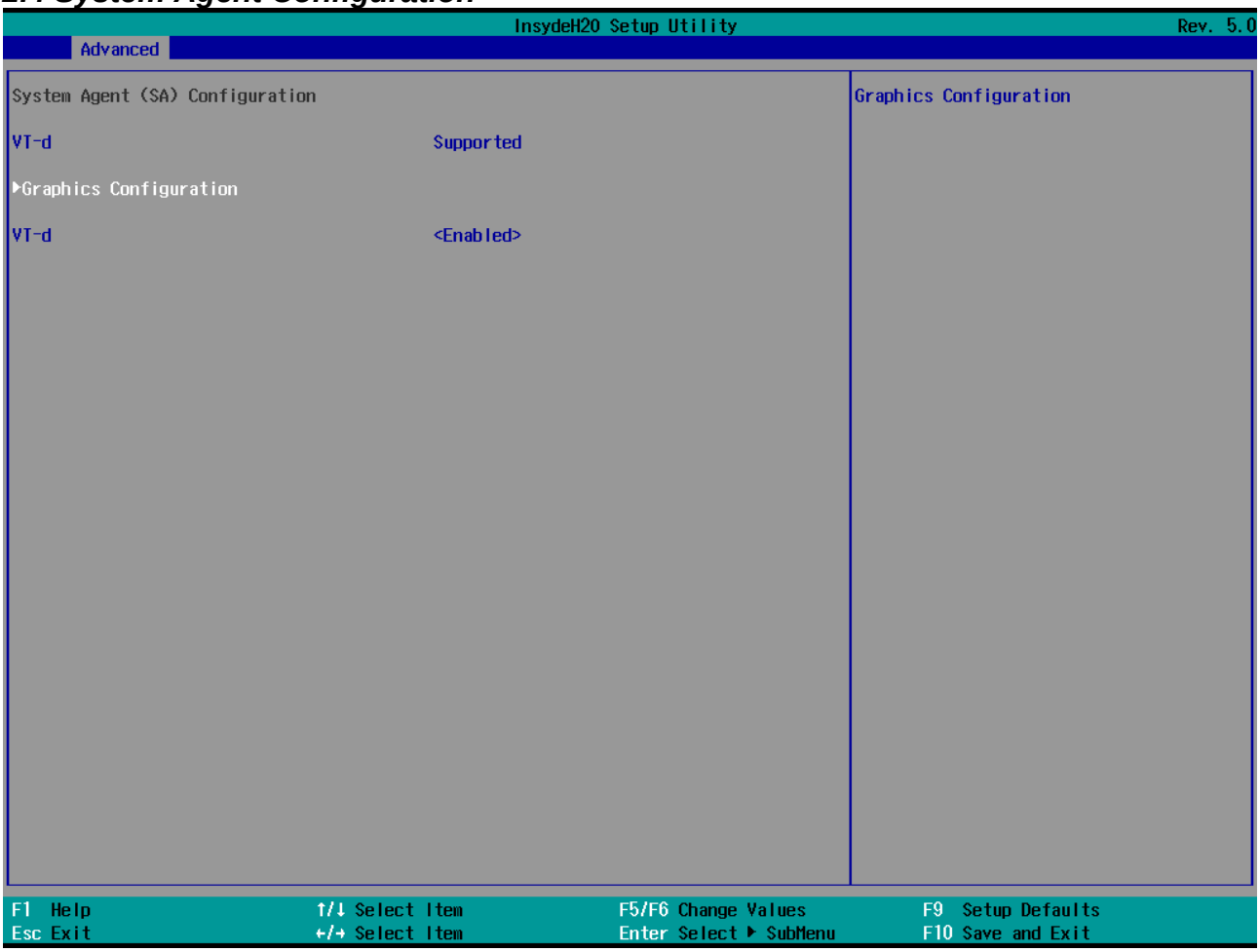
4.2.2.3 CPU Power Management Configuration





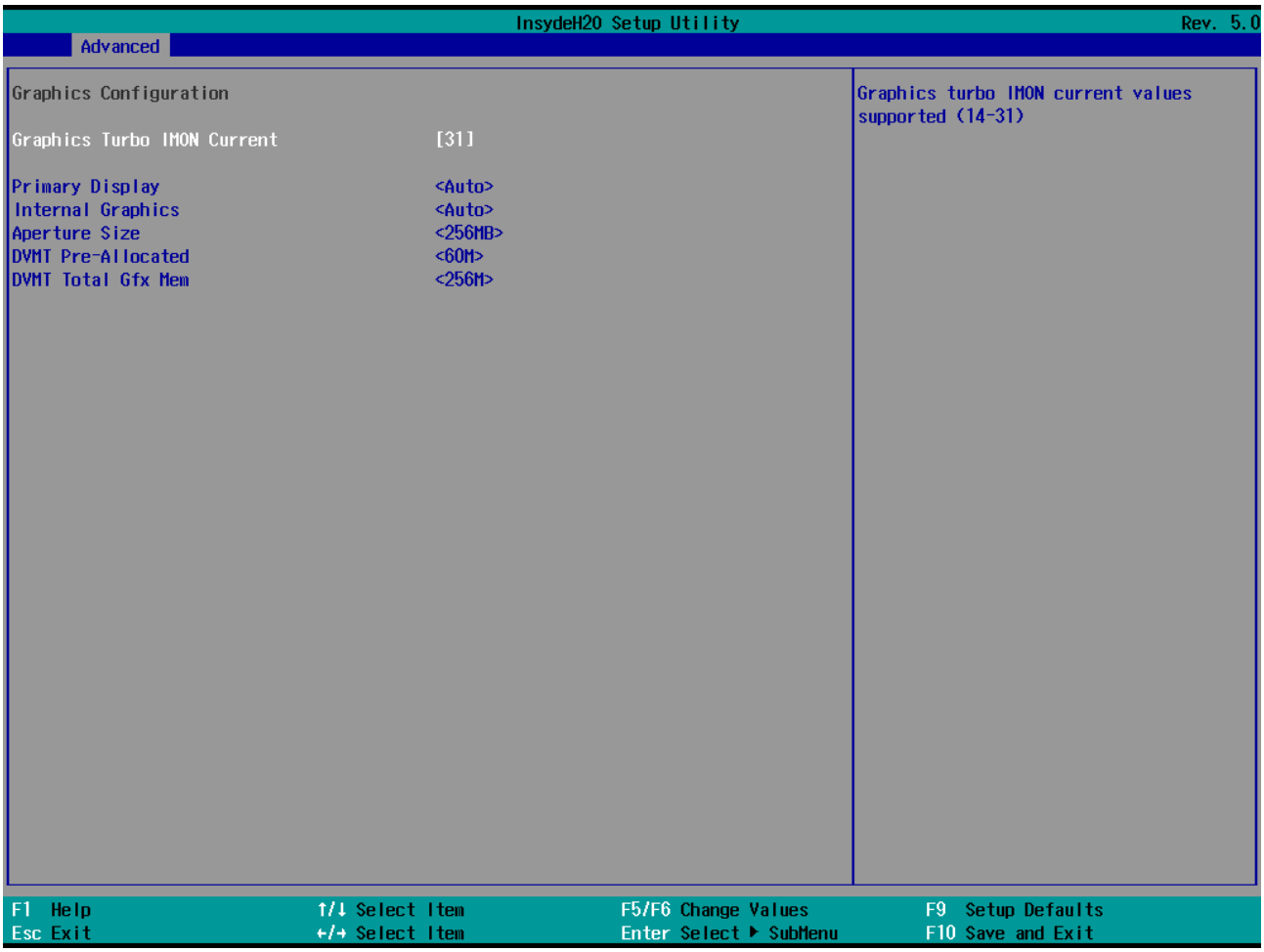
BIOS Setting	Description	Setting Option	Effect
Boot Performance Mode	Configure Boot Performance Mode parameters	-Max non-turbo performance -Max battery -Turbo Performance	Select the performance state that the BIOS will set starting from reset vector
Intel Speed Step (ta)	Configure Intel Speed Step (ta) parameters	Enabled/ Disabled	Allows more than two frequency ranges to be supported
Intel Speed Shift Technology	Configure Intel Speed Shift Technology parameters	Enabled/ Disabled	Enable/ Disable Intel Speed Shift Technology support. Enabling will expose the CPP v2 interface to allow for hardware controlled P-states
-Turbo Mode	Enable or disable Turbo Mode	Enabled/ Disabled	Enable/ Disable processor Turbo Mode (requires EMTTM enabled too). Auto means enabled, unless max turbo ratio is bigger than 16 –SKL AO W/A
C states	Enable or disable C states	Enabled/ Disabled	Enable/ Disable CPU Power Management. Allows COU to go to C states when it is not 100% utilized
Custom P-state Table	Configure Custom P-state Table parameters	Enter	Enters sub-menu
-Number of P-states	Select the number of custom P-states.	[Number]	Set the number of custom P-states. At least 2 states must be present

4.2.2.4 System Agent Configuration

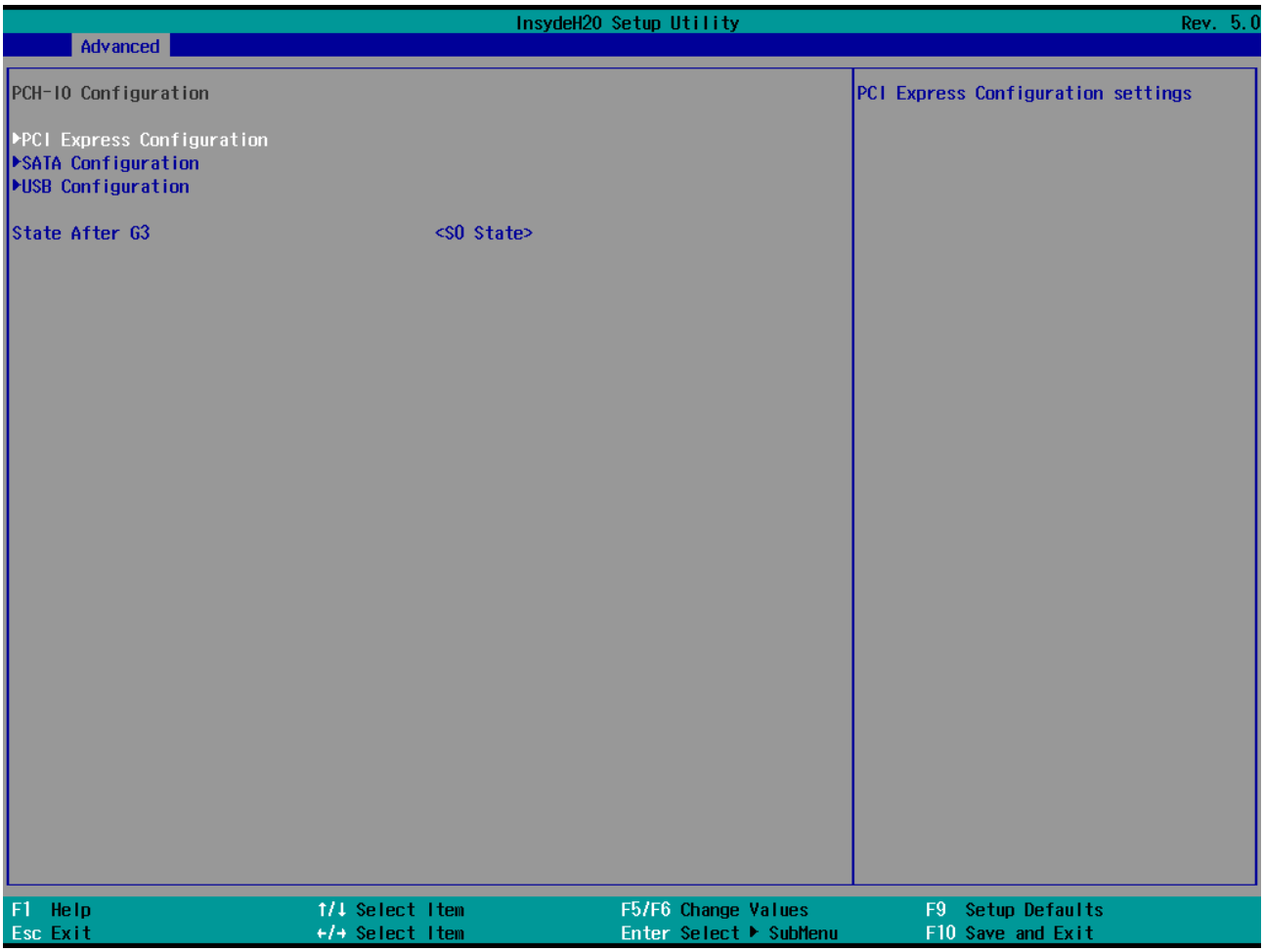


BIOS Setting	Description	Setting Option	Effect
Vt-d	Intel® Virtualization Technology for Directed I/O	Enabled Disabled	Vt-d capability

4.2.2.5 Graphics Configuration

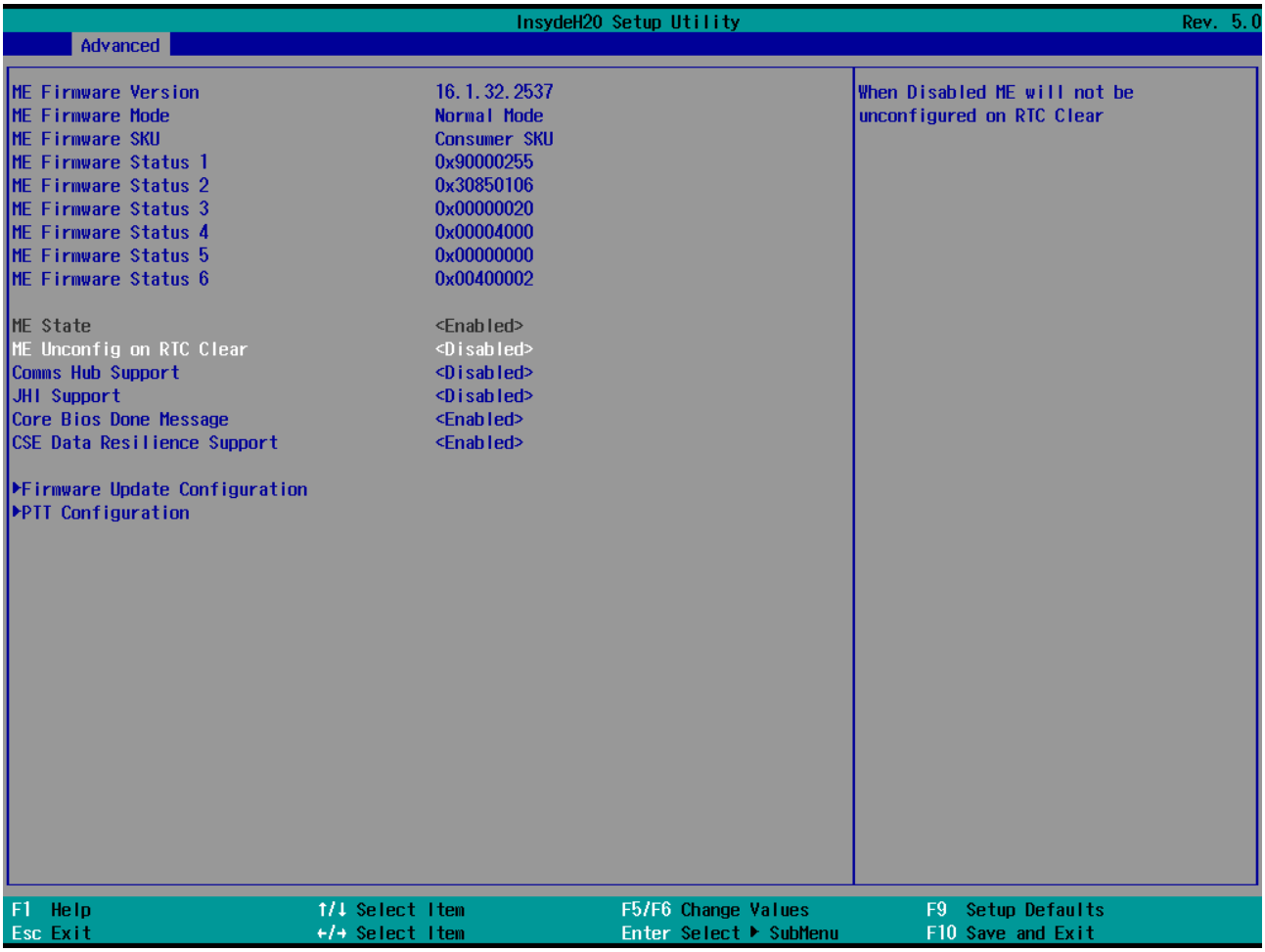


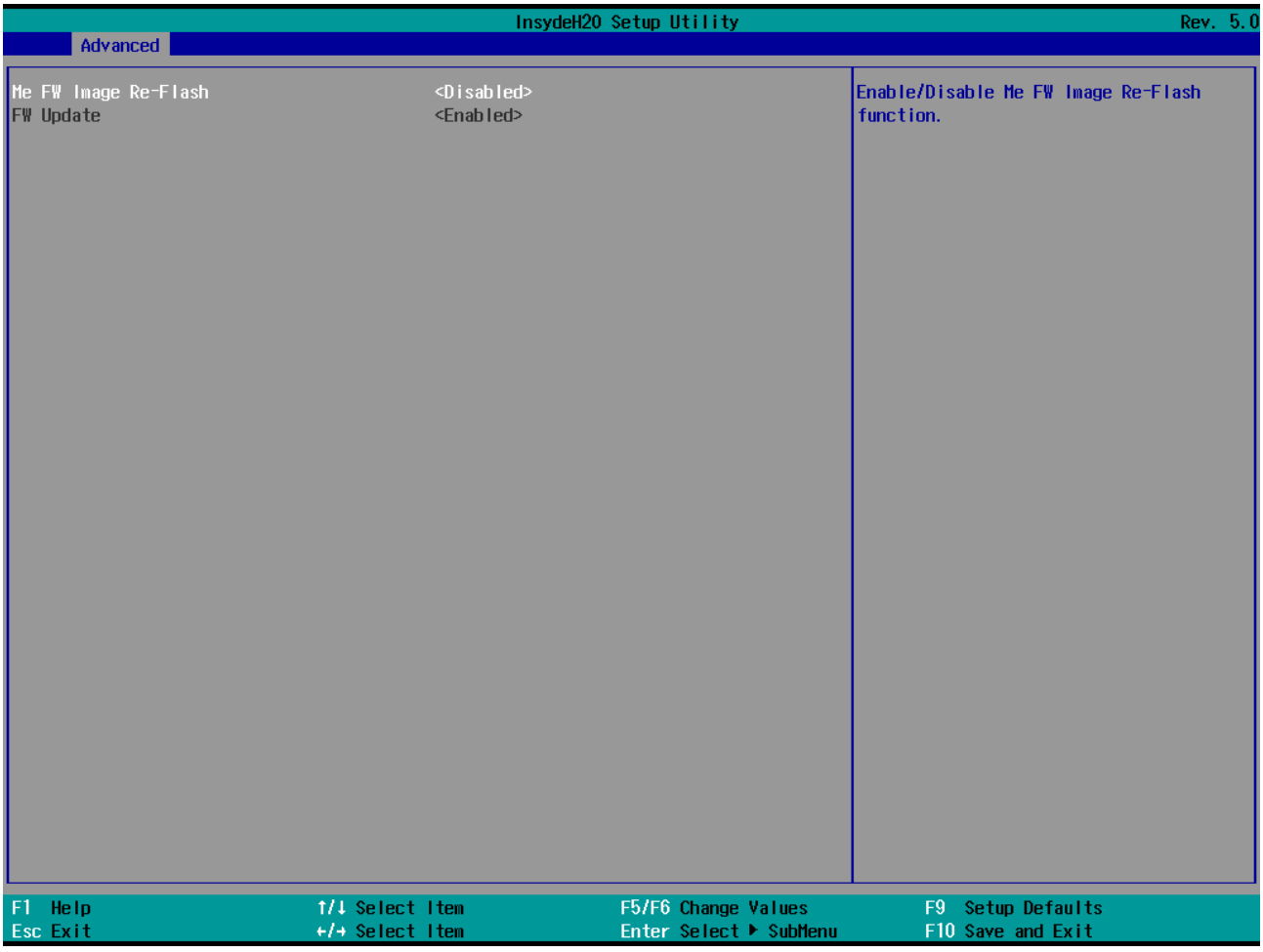
4.2.2.6 PCH-IO Configuration



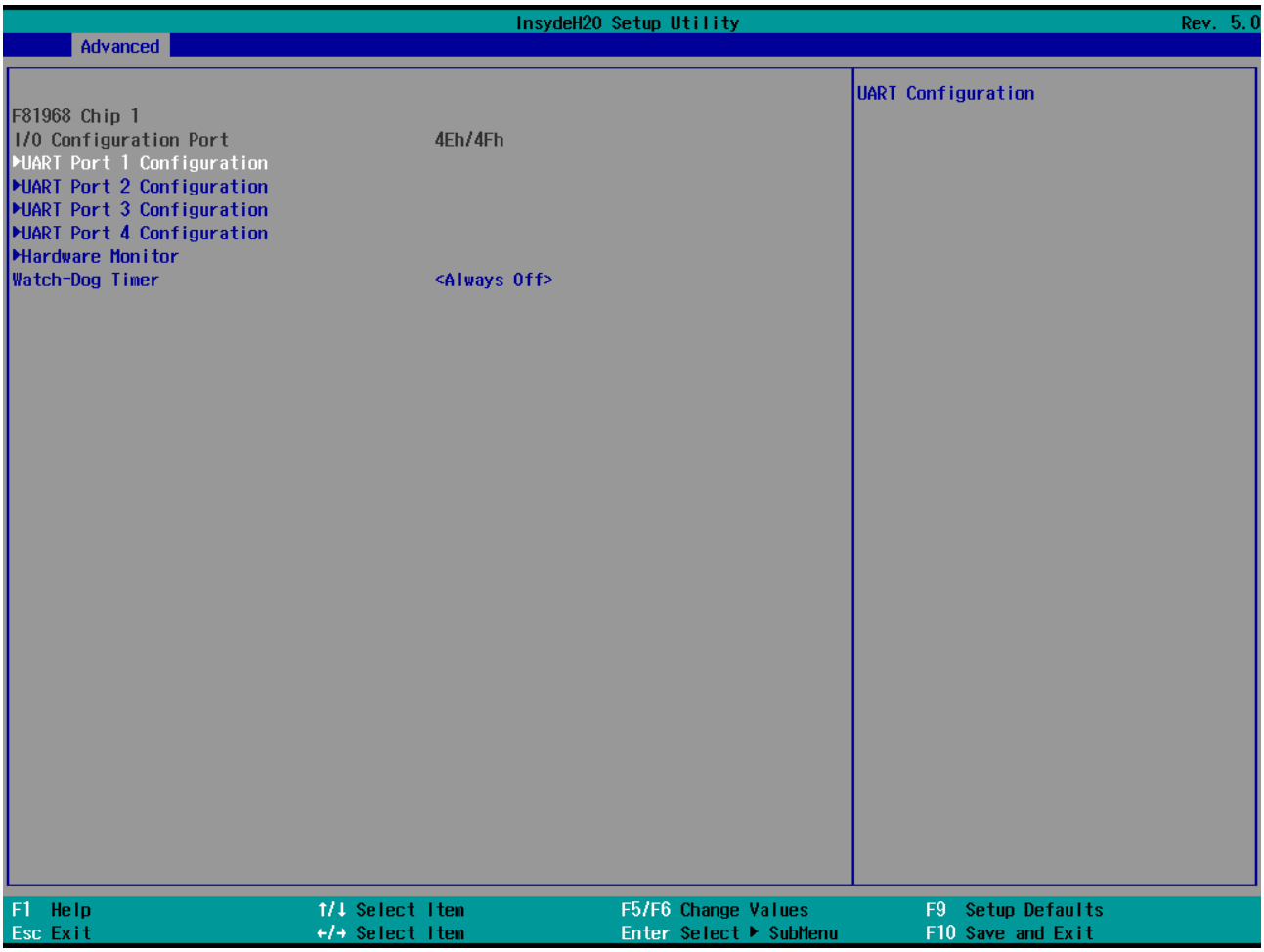
BIOS Setting	Description	Setting Option	Effect
PCI Express Configuration	PCI Express clock gating enable/disable for each root port.	Enter	Opens sub-menu
SATA And RST Configuration	Enable/ Disable SATA device	Enter	Opens sub-menu
USB Configuration	Selectively enable/ disable the corresponding USB port from reporting a Device Connection to the controller.	Enter	Opens sub-menu
State After G3	System power state setting	S0 State S5 State	S0 = auto power on after power failure S5 = keep power off after power failure

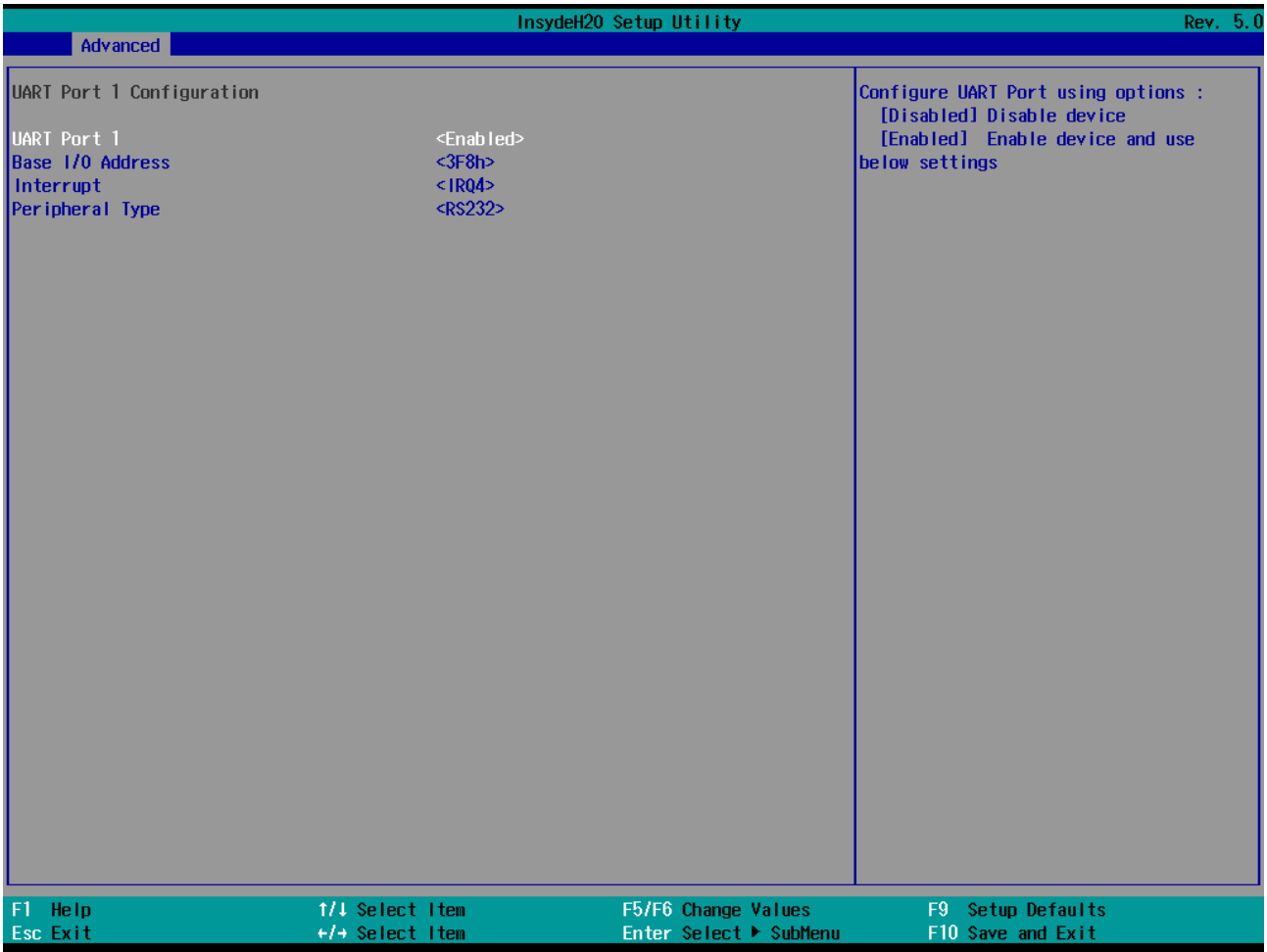
4.2.2.7 *ME Firmware Configuration*

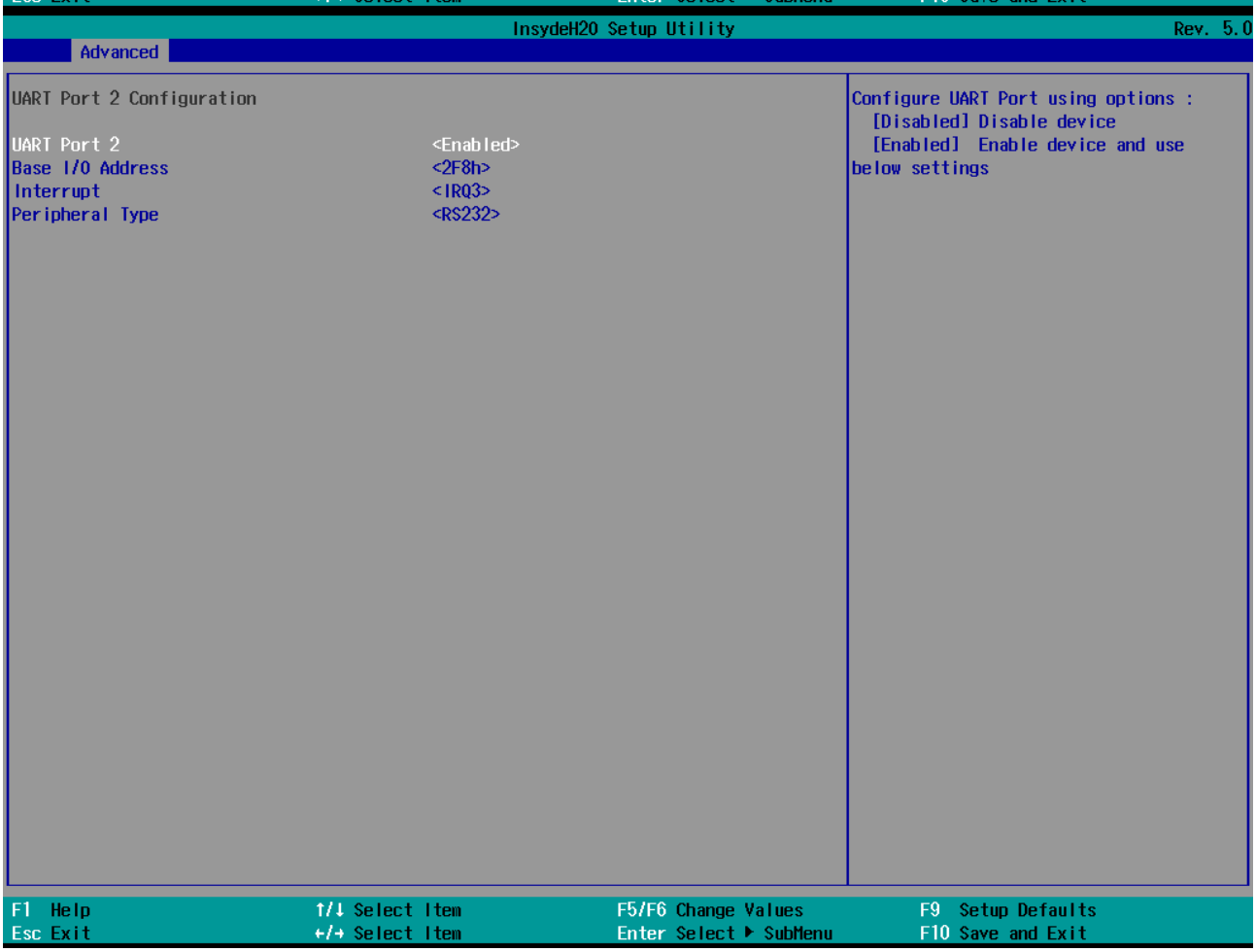




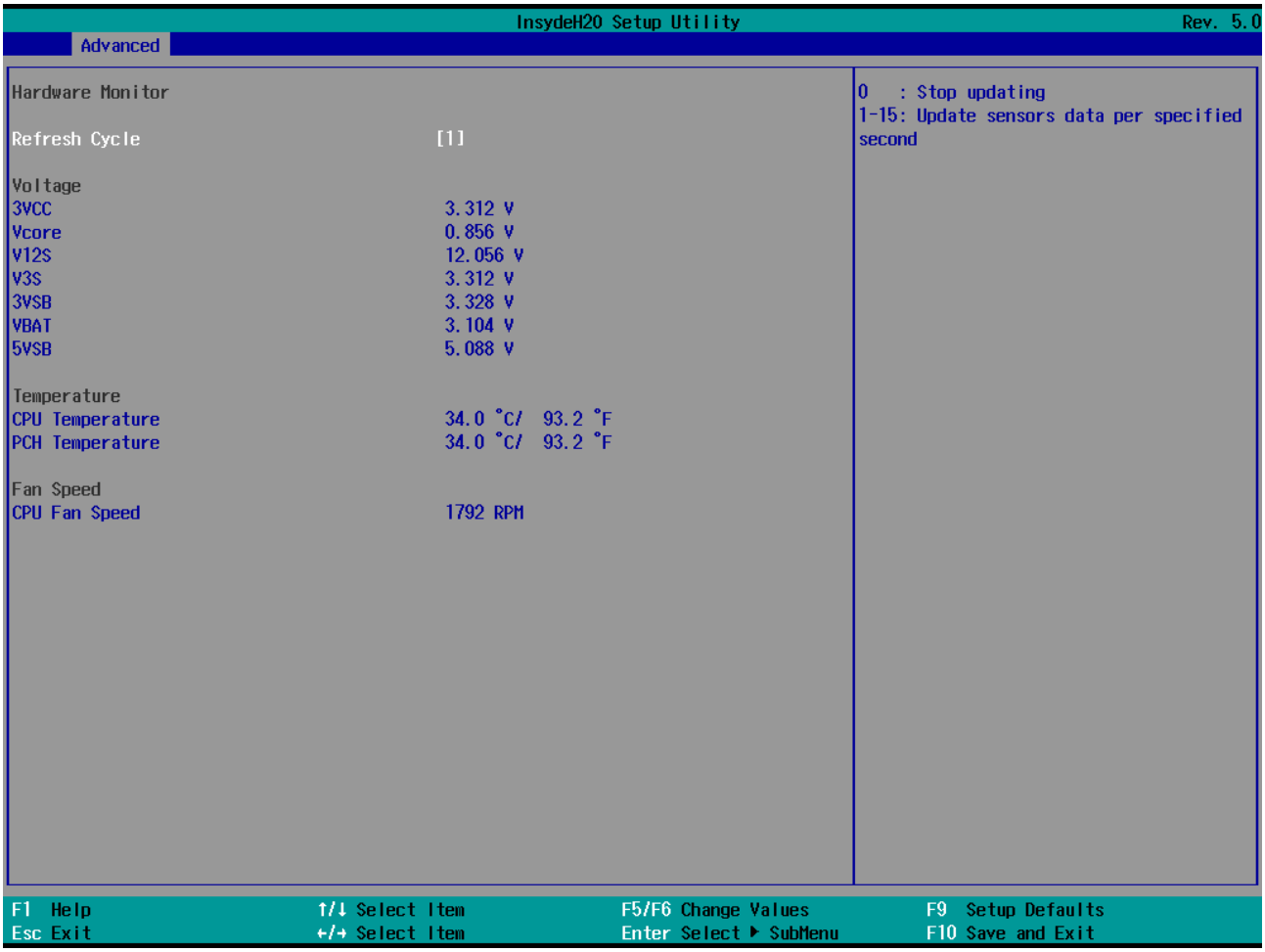
4.2.2.8 Serial Port Mode Settings: RS232, RS485, RS422



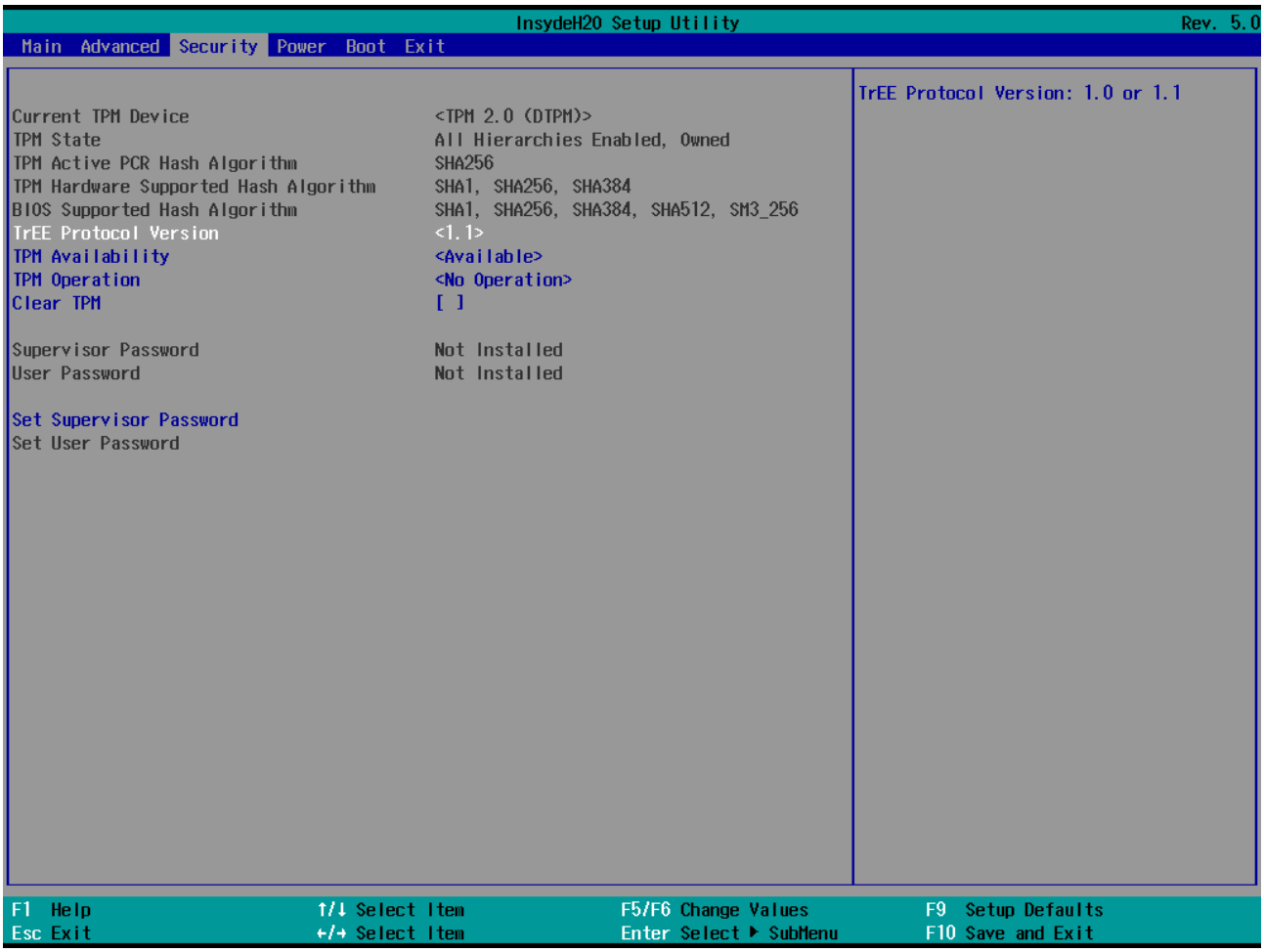

InsydeH20 Setup Utility
Rev. 5.0
Advanced
UART Port 1 Configuration
UART Port 1 <Enabled>
Base I/O Address <3F8h>
Interrupt <IRQ4>
Peripheral Type <RS232>
Configure UART Port using options :
[Disabled] Disable device
[Enabled] Enable device and use
below settings
F1 Help
Esc Exit
↑/↓ Select Item
←/→ Select Item
F5/F6 Change Values
Enter Select ▶ SubMenu
F9 Setup Defaults
F10 Save and Exit


InsydeH20 Setup Utility
Rev. 5.0
Advanced
UART Port 2 Configuration
UART Port 2 <Enabled>
Base I/O Address <2F8h>
Interrupt <IRQ3>
Peripheral Type <RS232>
Configure UART Port using options :
[Disabled] Disable device
[Enabled] Enable device and use
below settings
F1 Help
Esc Exit
↑/↓ Select Item
←/→ Select Item
F5/F6 Change Values
Enter Select ▶ SubMenu
F9 Setup Defaults
F10 Save and Exit

4.2.2.9 Hardware Monitor



4.2.3 Security

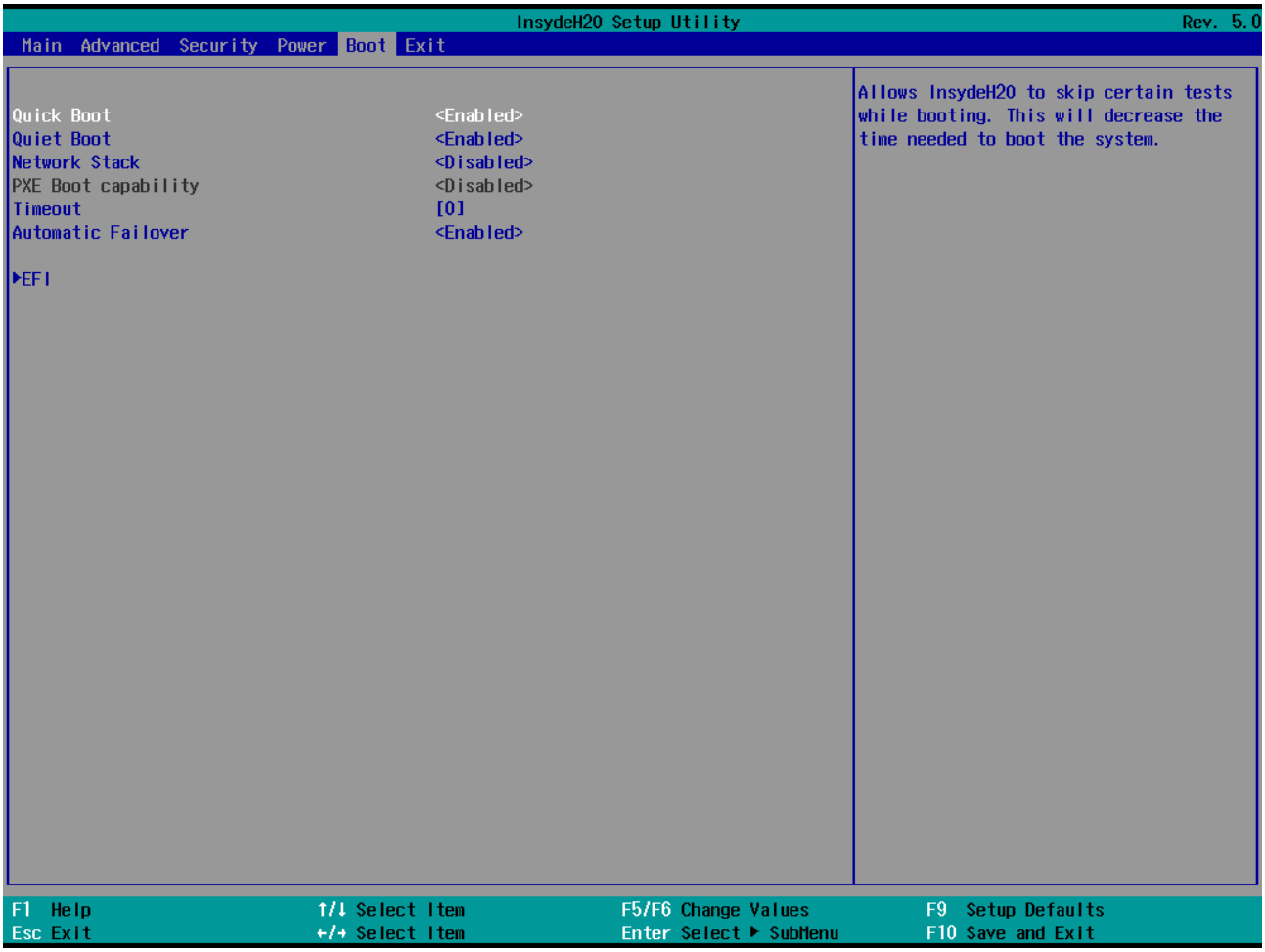


BIOS Setting	Description	Setting Option	Effect
TrEE Protocol Version	Choose TrEE Protocol Version	1.0 1.1	TrEE Protovol Version: 1.0 or 1.1
TPM Availability	TPM Availability configuration	Available Hidden	When hidden don't exposes TPM to 0
TPM Operation	TPM Operation configuration	[ ]	Select one of the supported operation to change TPM2state
Clear TPM	Clear TPM configuration	[ ]	Select to Clear TPM
Set Supervisor Password	Set Supervisor Password	Enter New password	Install or Change the password and the length of password must be greater than one character

4.2.4 Power

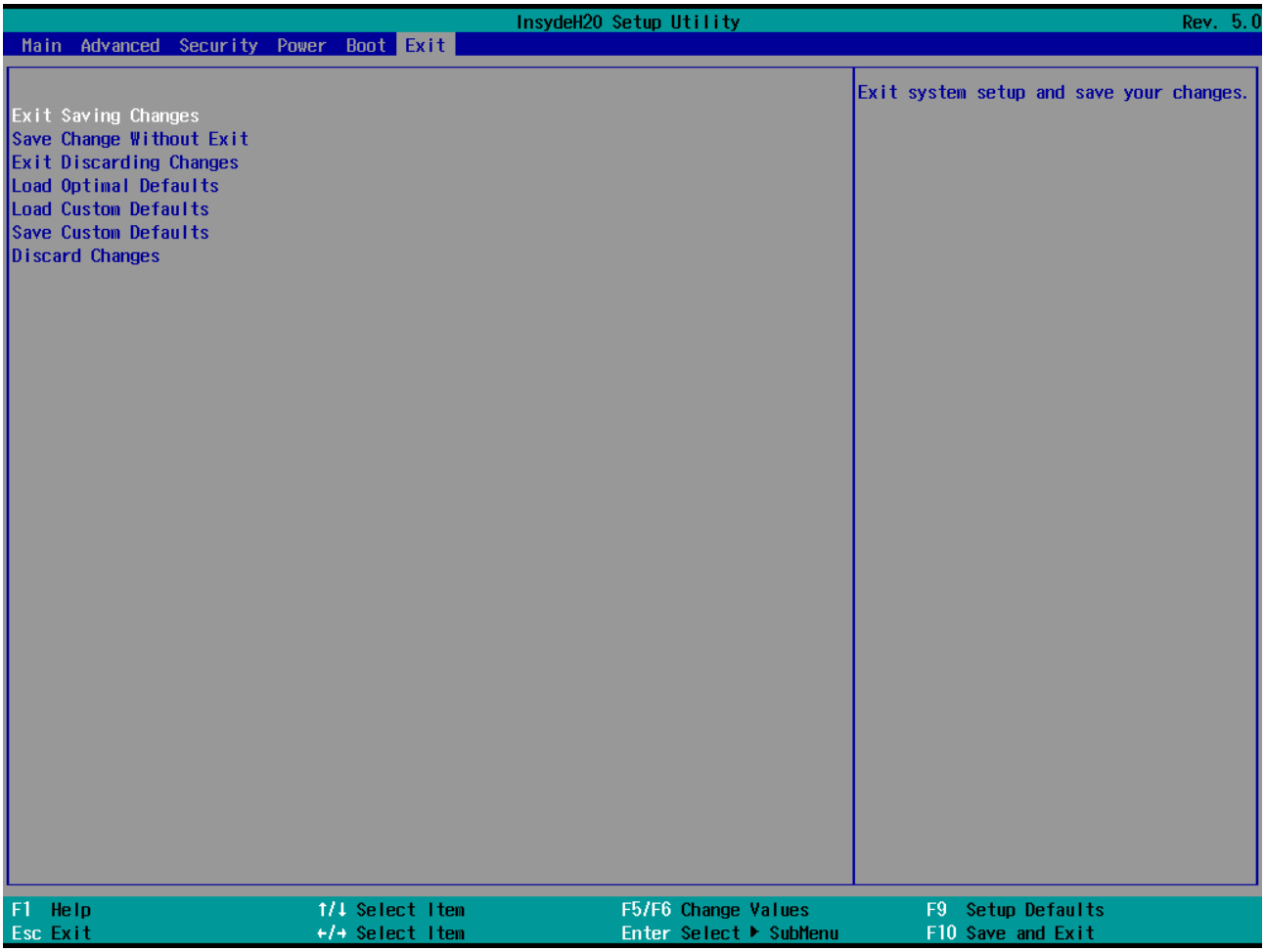
BIOS Setting	Description	Setting Option	Effect
Auto Wake on S5	Auto Wake on S5 configuration	Disabled By Every Day By Every Month	Auto Wake on S5, by Day or Month or fixed time of every day

4.2.5 Boot



BIOS Setting	Description	Setting Option	Effect
Boot Type	Boot Type configuration	UEFI Boot Type	Select boot type to Dual type, Legacy type or UEFI type
Quick Boot	Quick Boot configuration	Enabled Disabled	Allows InsydeH20 to skip certain tests while booting. This will decrease the time needed to boot the system
Quiet Boot	Quiet Boot configuration	Enabled Disabled	Disable or enable booting in text Mode.
Timeout	Timeout	[Value]	Timeout settings
Automatic Failover		Enable	If boot to default device fail, it will directly try to boot next device
		Disable	If boot to default device fail, it will pop warning message then go to firmware UI
Boot Type Order	Boot Type Order	Enter	Opens sub-menu

4.2.6 Exit


InsydeH20 Setup Utility
Rev. 5.0
Main Advanced Security Power Boot Exit
Exit Saving Changes
Save Change Without Exit
Exit Discarding Changes
Load Optimal Defaults
Load Custom Defaults
Save Custom Defaults
Discard Changes
Exit system setup and save your changes.
F1 Help
Esc Exit
↑/↓ Select Item
←/→ Select Item
F5/F6 Change Values
Enter Select ▶ SubMenu
F9 Setup Defaults
F10 Save and Exit

4.3 Using Recovery Wizard to Restore the System

Our system has a dedicate recovery partition stored on the hard drive of the PC to enable quick one-key recovery process. This partition occupies about **11 GB** of the storage space, and comes built-in to each IBDRW100-EL DIN-Rail Box PC.

Important:
Before starting the recovery process, be sure to backup all user data, as all data will be lost after the recovery process.

Follow the procedure below to enable quick one-key recovery procedure:

- Plug-in the AC adapter to Box PC. Make sure the Box PC stays plugged in to power source during the recovery process.
- Turn on the IBDRW100-EL DIN-Rail Box PC, and when the boot screen shows up, press the **F6** to initiate the Recovery Wizard.
- The following screen shows the Recovery Wizard. Click on "**Recovery**" button to continue.

A warning message about data loss will show up. Make sure data is backed up before recovery, and click on "Yes" to continue.

Wait till the recovery process to complete. During the recovery process, a command prompt will show up to indicate the percent of recovery process. After complete the recovery process, the system will be turned off automatically. Please restart your system manually to complete the OS initialize process.

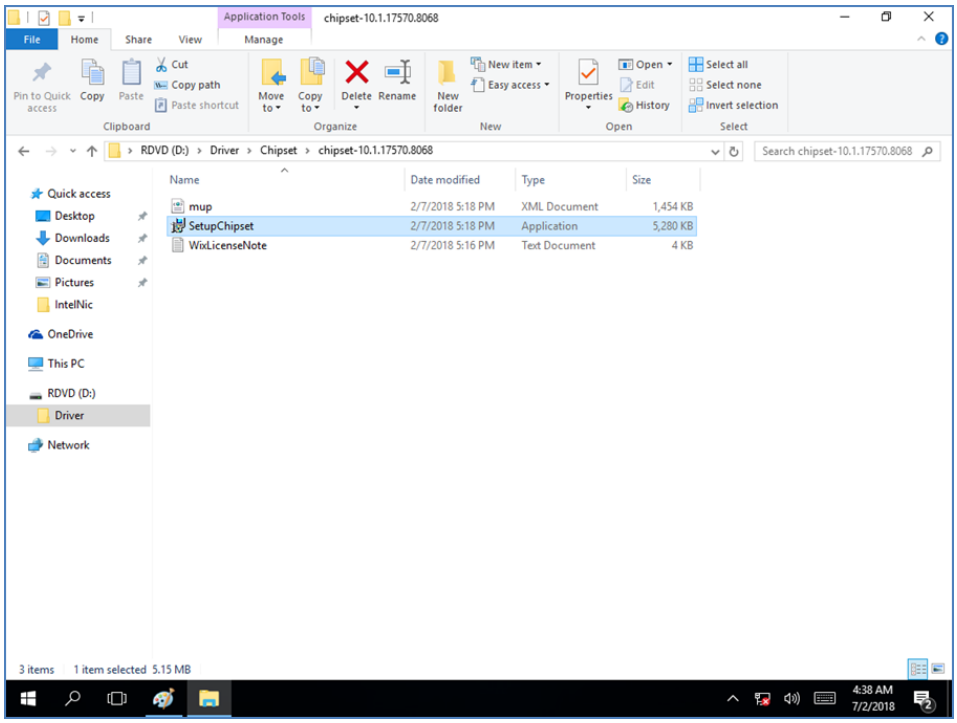
Chapter 5: Driver Installation

Driver installation procedure described in this user manual applies to Windows 10 IoT Enterprise operating system.

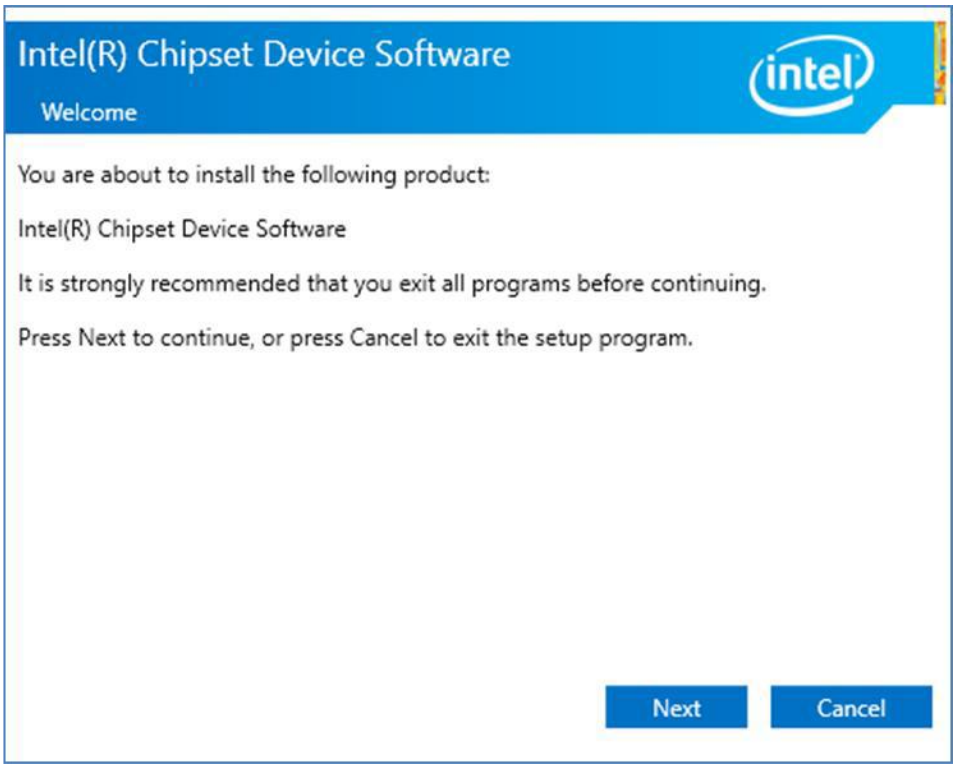
5.1 Chipset Driver Installation

Follow the instructions below to complete the installation. You will quickly complete the installation.

Step 1 Open the Driver (Download from Winmate Download Center) and select **Chipset** driver.

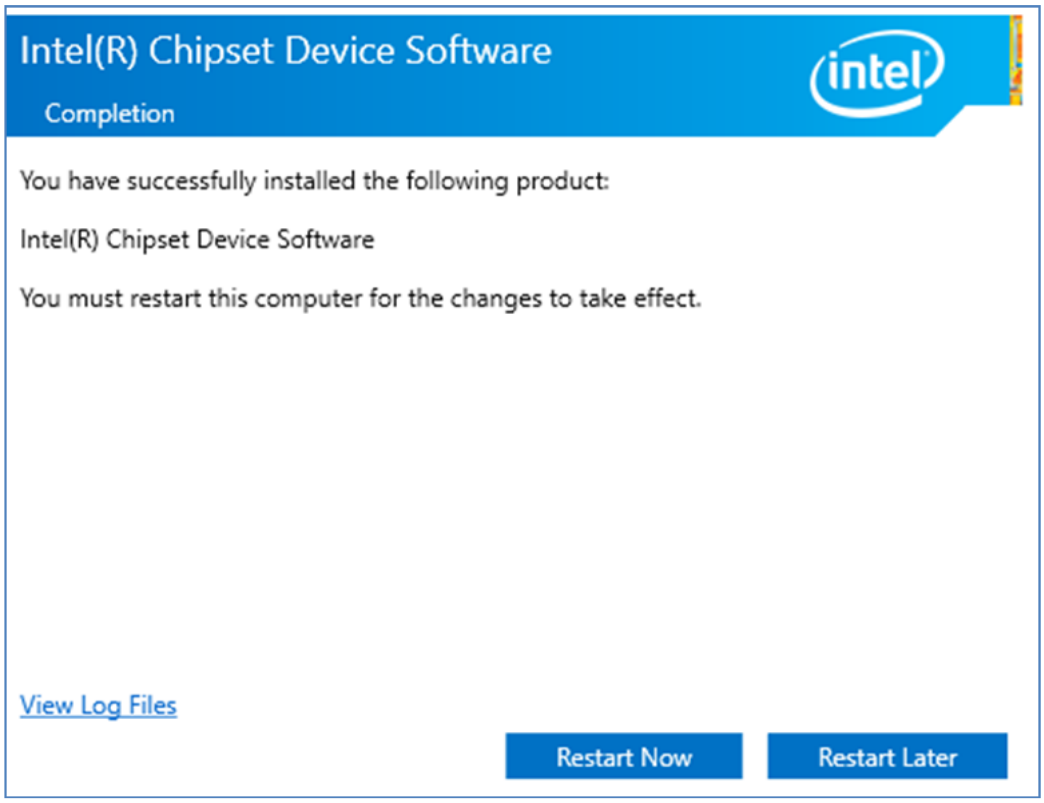


Step 2 Installation window will pop up, select **Next**.



Step 3 Select **Accept** to agree with the terms of license agreement.

Step 4 Check the ReadMe file information, select **Install** to continue.



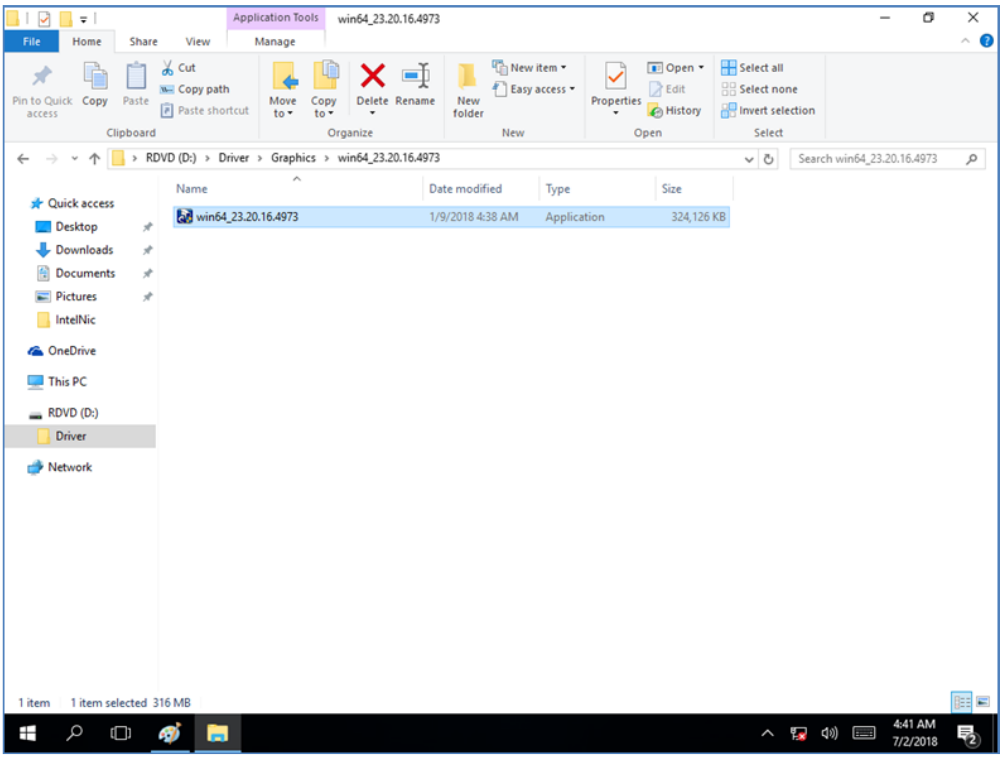
Step 5 Wait for the driver to be installed. When installation completed, select **Restart Now** to restart your computer.

5.2 Graphics Driver Installation

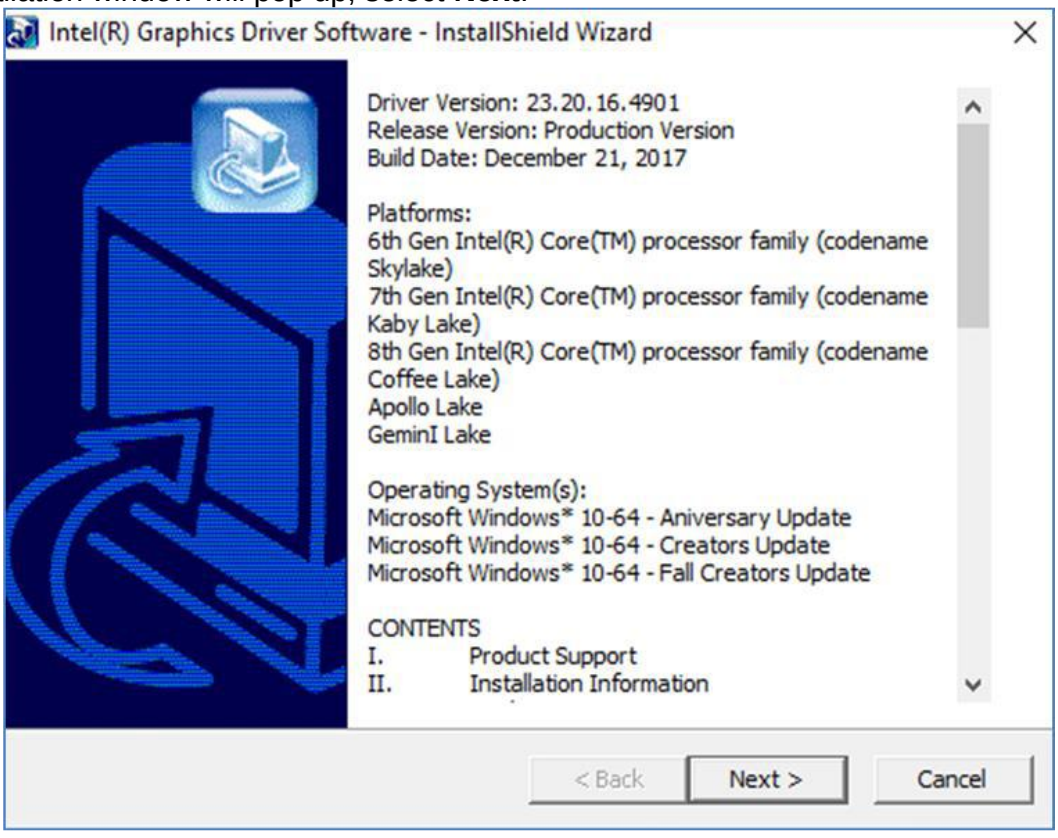
IBDRW100-EL DIN-Rail Box PC is equipped with Intel SoC Integrated Device.

Follow the instructions below to complete the installation. You will quickly complete the installation.

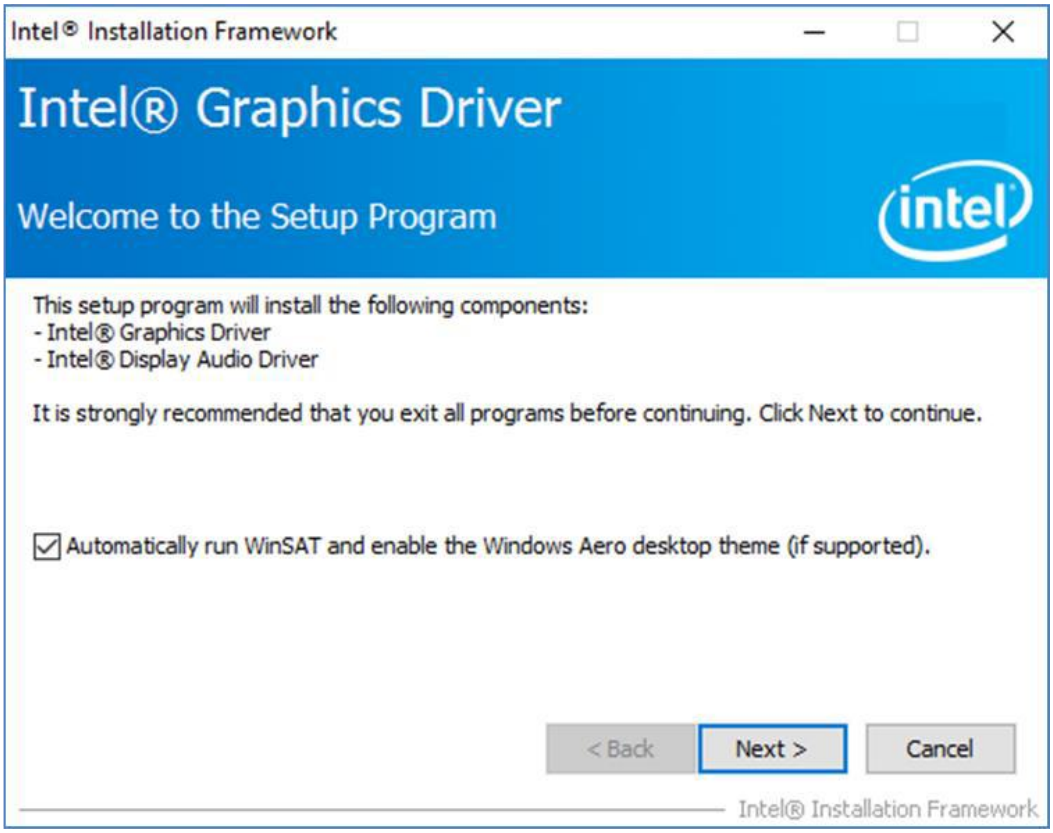
Step 1 Open the Driver (Download from Winmate Download Center) and select **Graphic** driver.

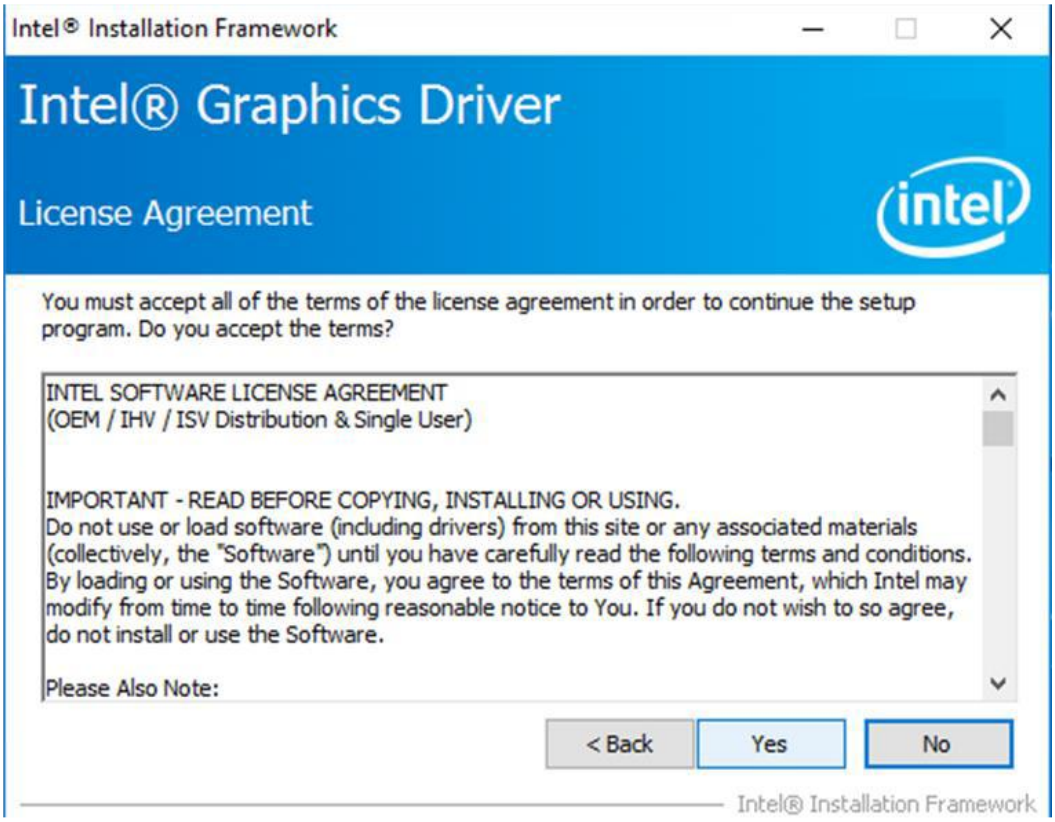


Step 2 Installation window will pop up, select **Next**.

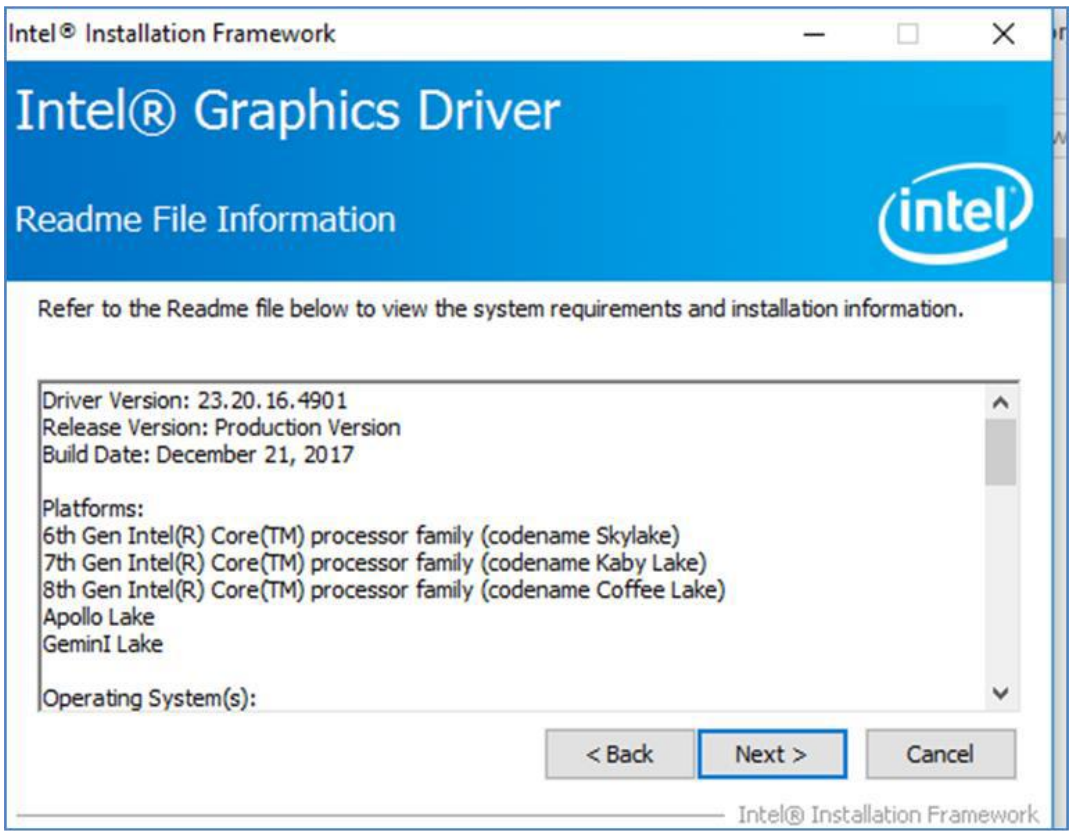


Step 3 Select Accept to agree with the terms of license agreement.

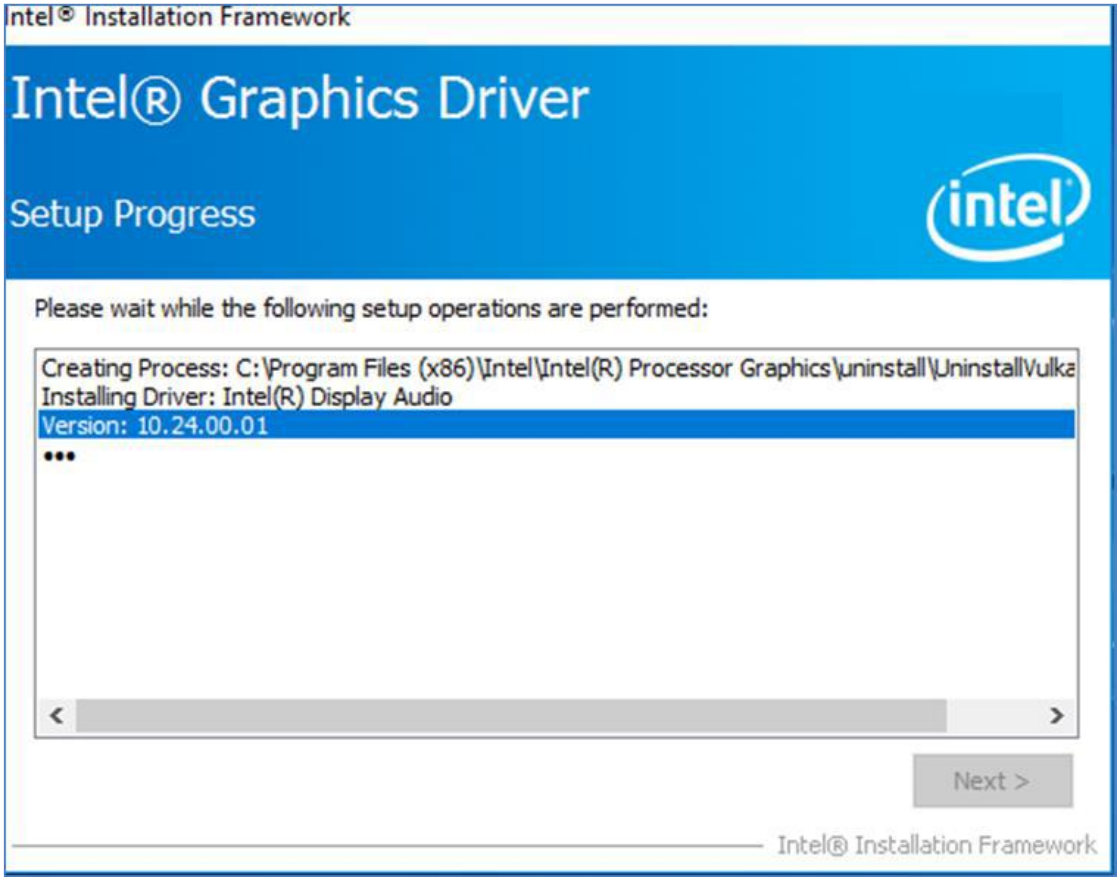




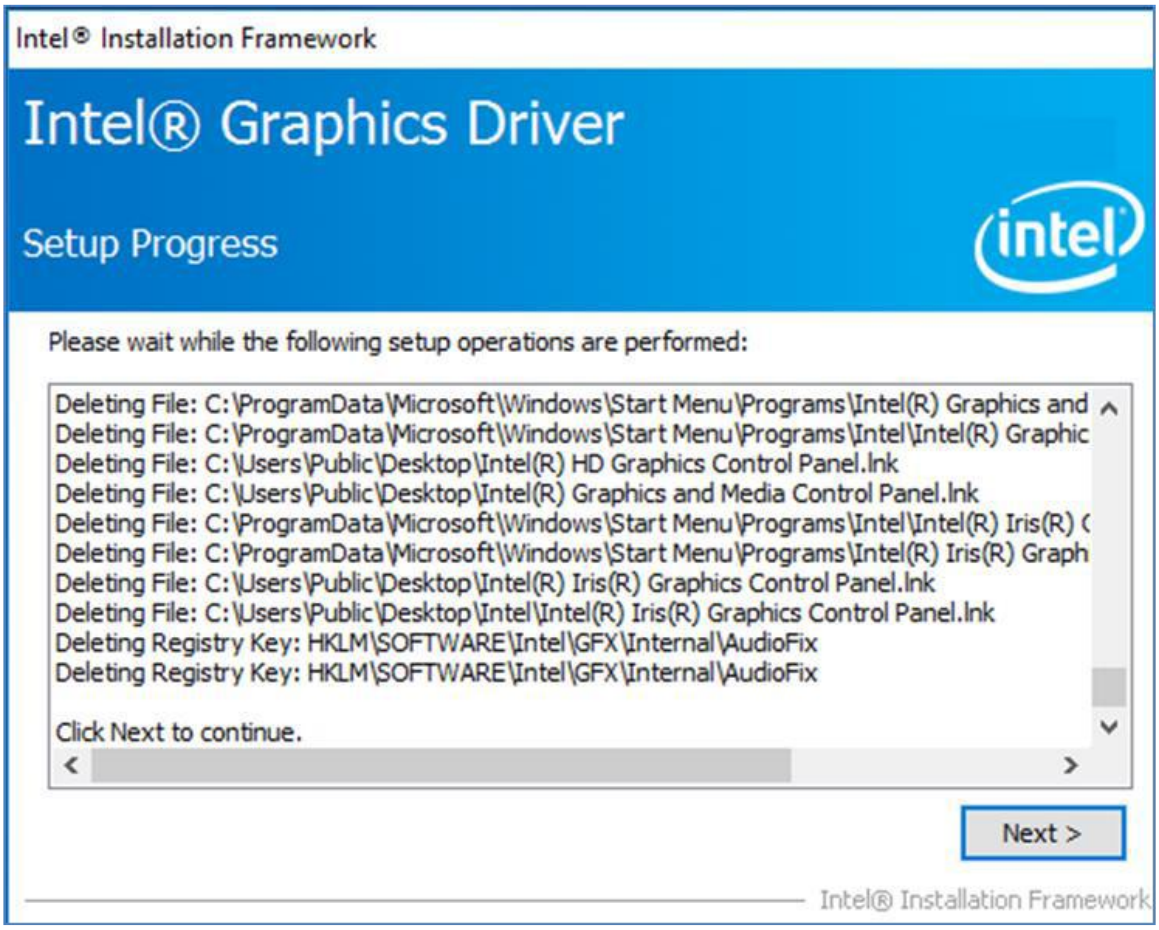
Step 4 Check the ReadMe file information, select **Next** to continue.



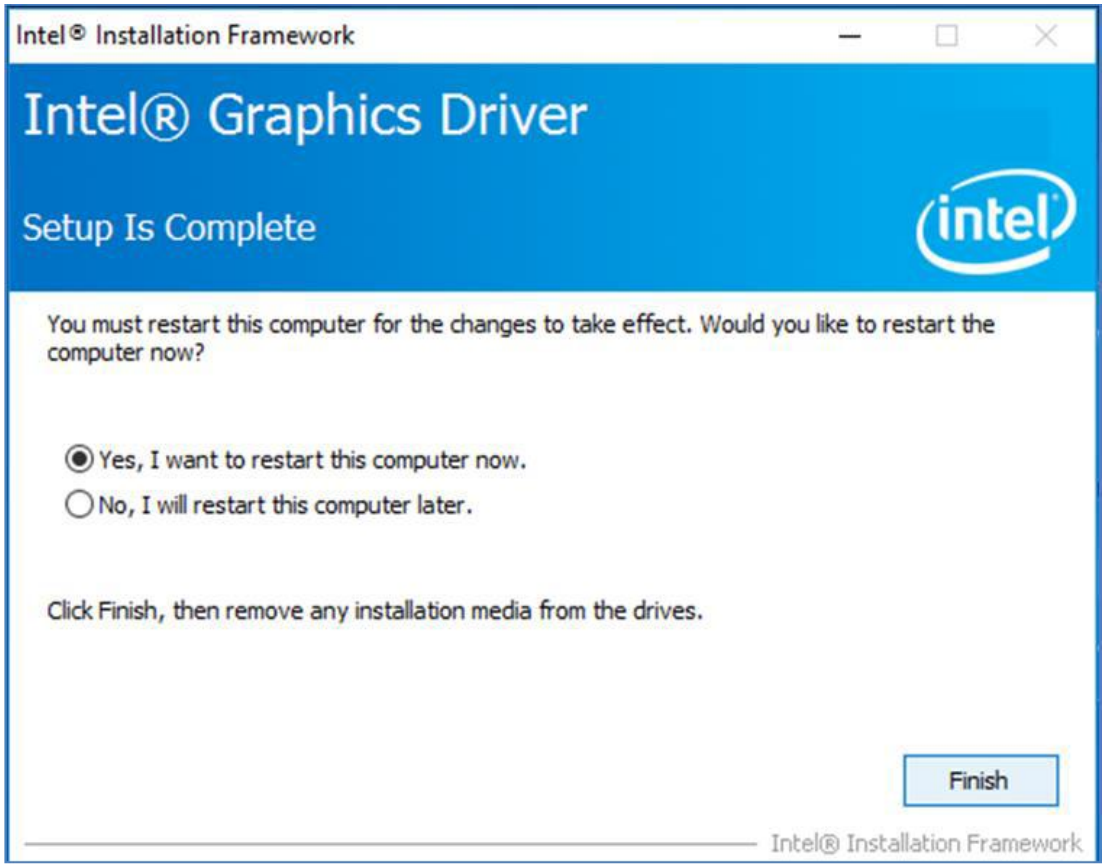
Step 5 Wait for the driver to be installed.



Step 6 Select **Next** to continue.



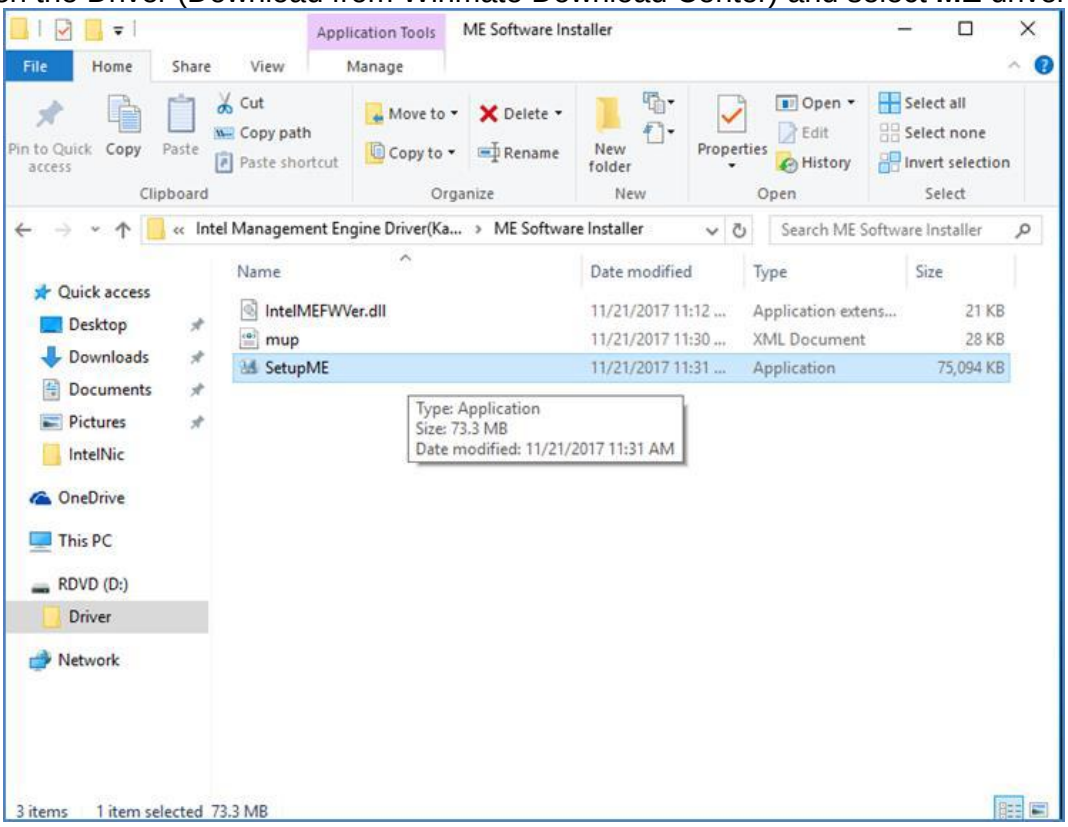
Step 7 After installation is completed, select "**Yes, I want to restart this computer now**", and click **Finish**.



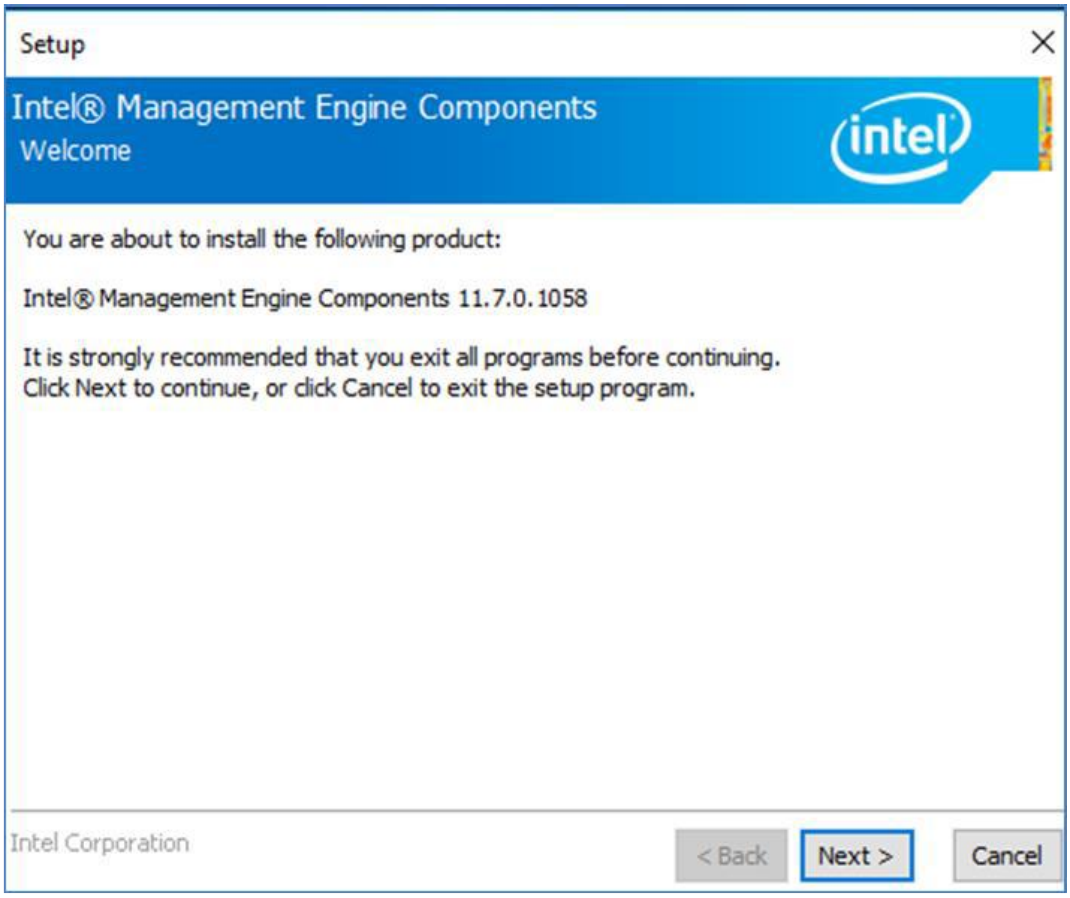
5.3 Management Engine (ME) Installation

Follow the instructions below to complete the Management Engine (ME). Driver installation.

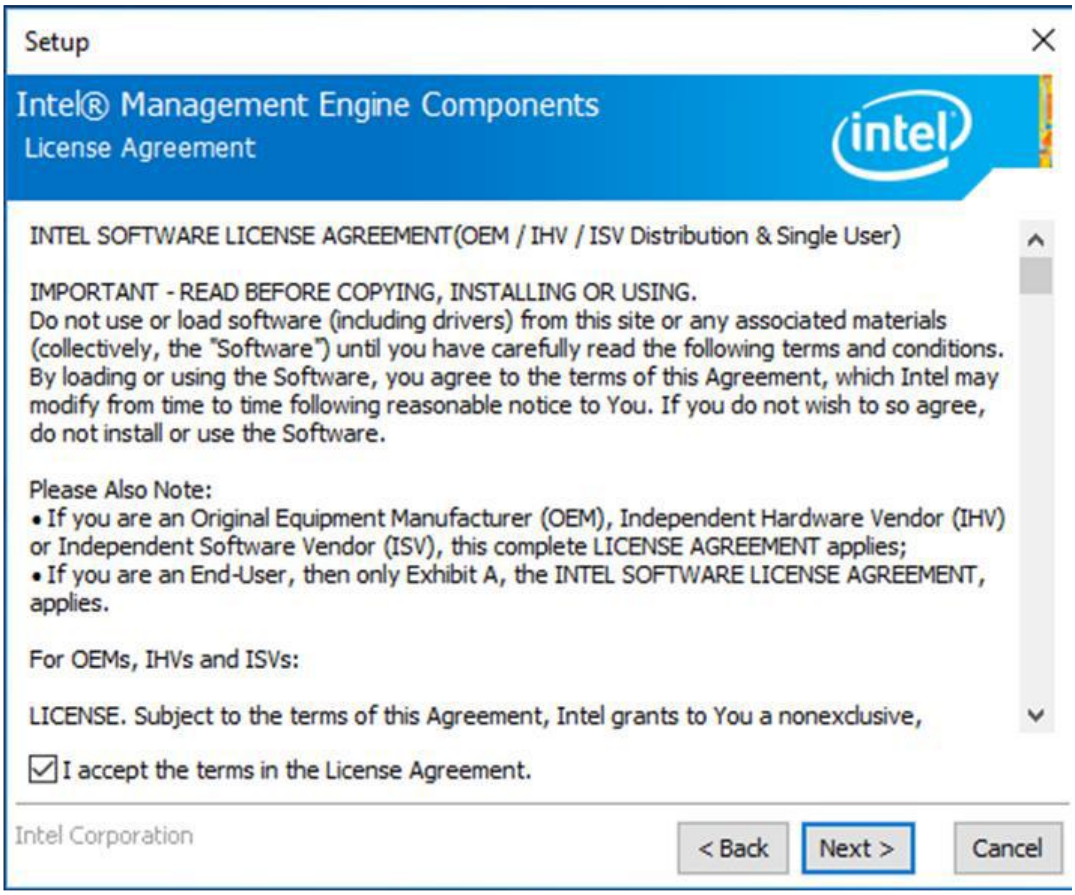
Step 1 Open the Driver (Download from Winmate Download Center) and select **ME** driver.



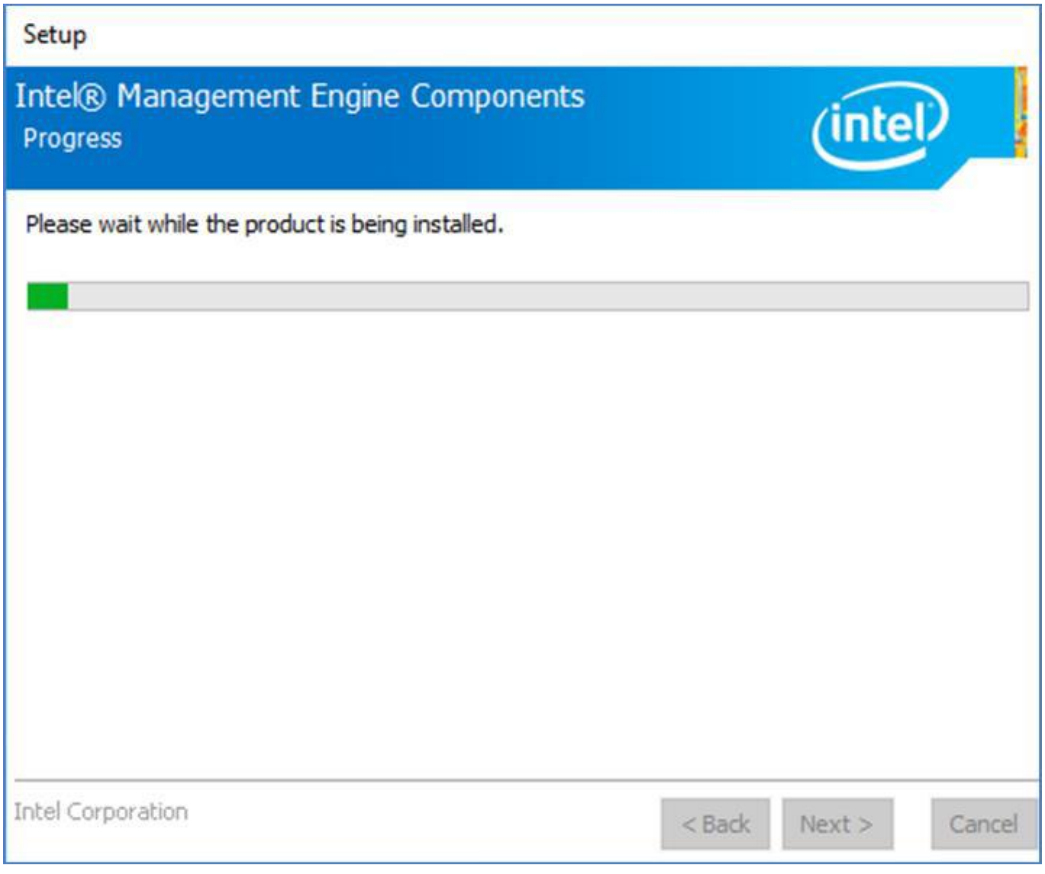
Step 2 Select **Next** to start the installation.



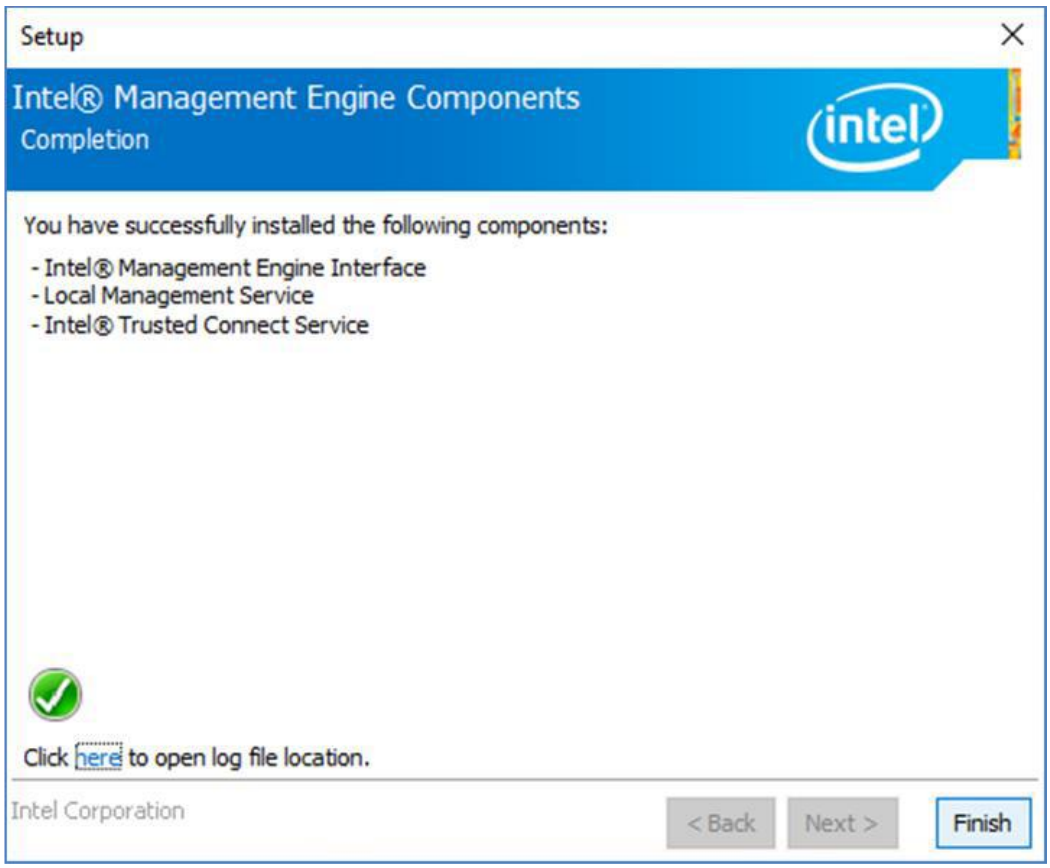
Step 3 Select **Next** to agree with the terms of license agreement.



Step 4 Wait for the driver to be installed.



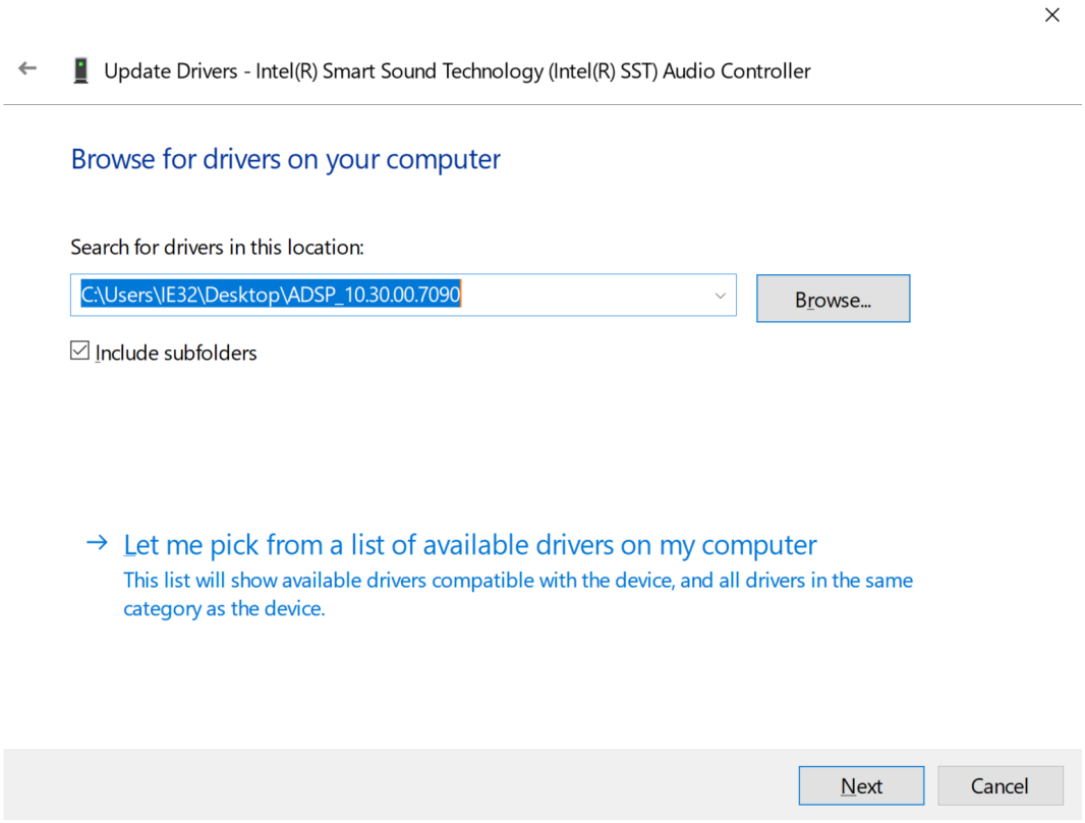
Step 5 When installation completed, select **Finish** complete installation.



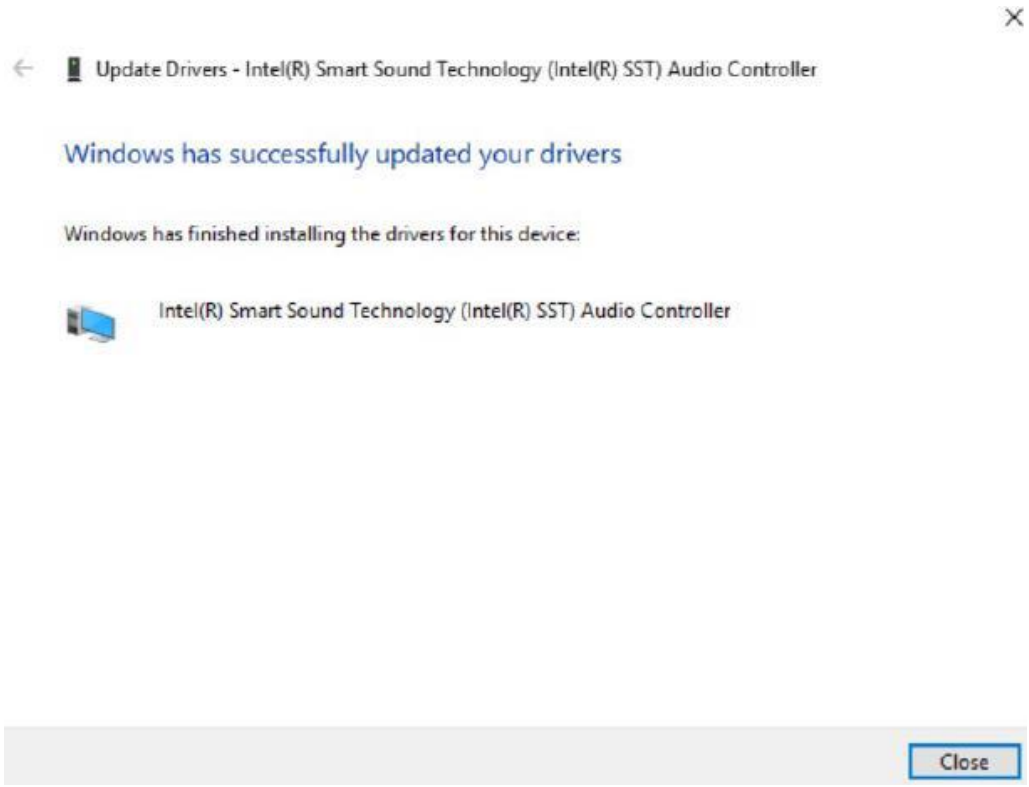
5.4 SST Driver Installation

Follow the instructions below to complete the SST Driver installation.

Step 1 Update Drivers > Browse “My computer” for driver software > Next



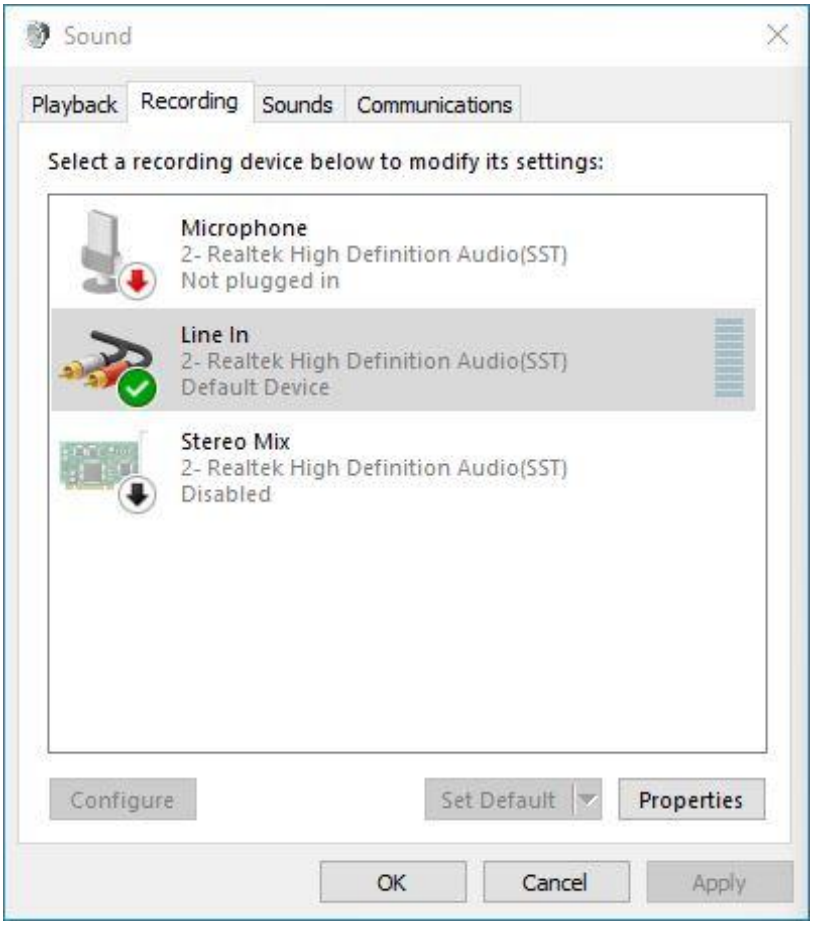
Step 2 Wait for driver installation to complete.



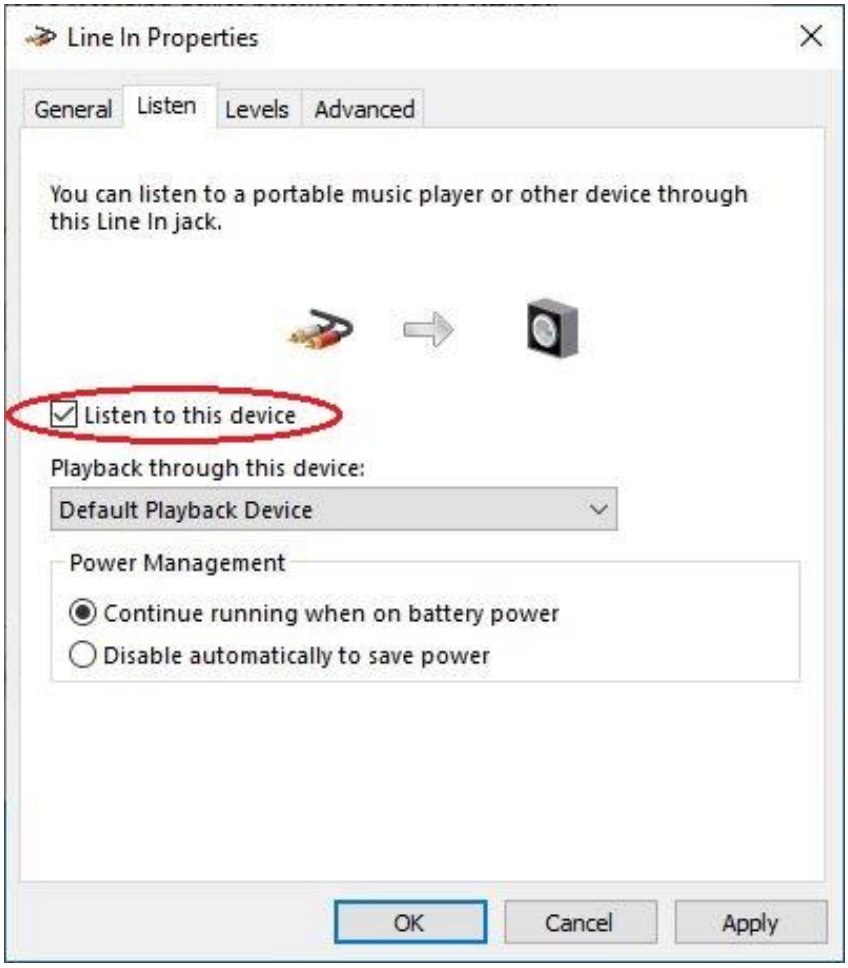
Note:

This product is equipped with SST Driver, when the line-in function of Audio is used, the product will automatically enter D3 sleep mode. To solve this problem, you must enter the line in setting and turn on the sync output. When the sync output setting is turned on, the line-out will output the sound synchronously. Therefore, if you only need to use the line-in function, please turn off the volume of the line-out device. When the line-out volume is turned off, HDMI will also have no audio output. If you will not use the line-in function, please keep the Winmate default setting. When you need to use the line-in function, please follow the steps below to turn on the sync output.

STEP 1:



STEP 2:

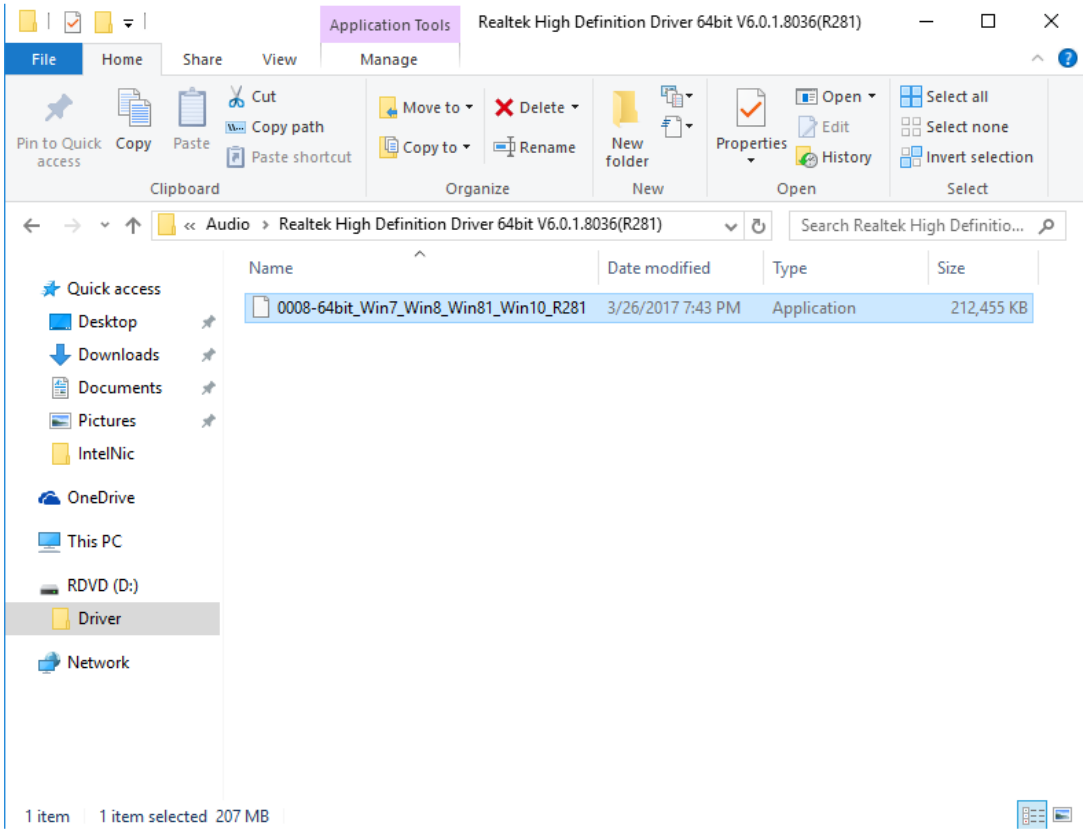

Line In Properties
General
Listen
Levels
Advanced
You can listen to a portable music player or other device through this Line In jack.
Listen to this device
Playback through this device:
Default Playback Device
Power Management
Continue running when on battery power
Disable automatically to save power
OK
Cancel
Apply

5.5 Audio Driver Installation

Follow the instructions below to complete the Audio Driver installation.

Note: Before installing the Audio driver, be sure to install the SST driver first.

Step 1 Open the Driver (Download from Winmate Download Center) and select **Audio** driver.



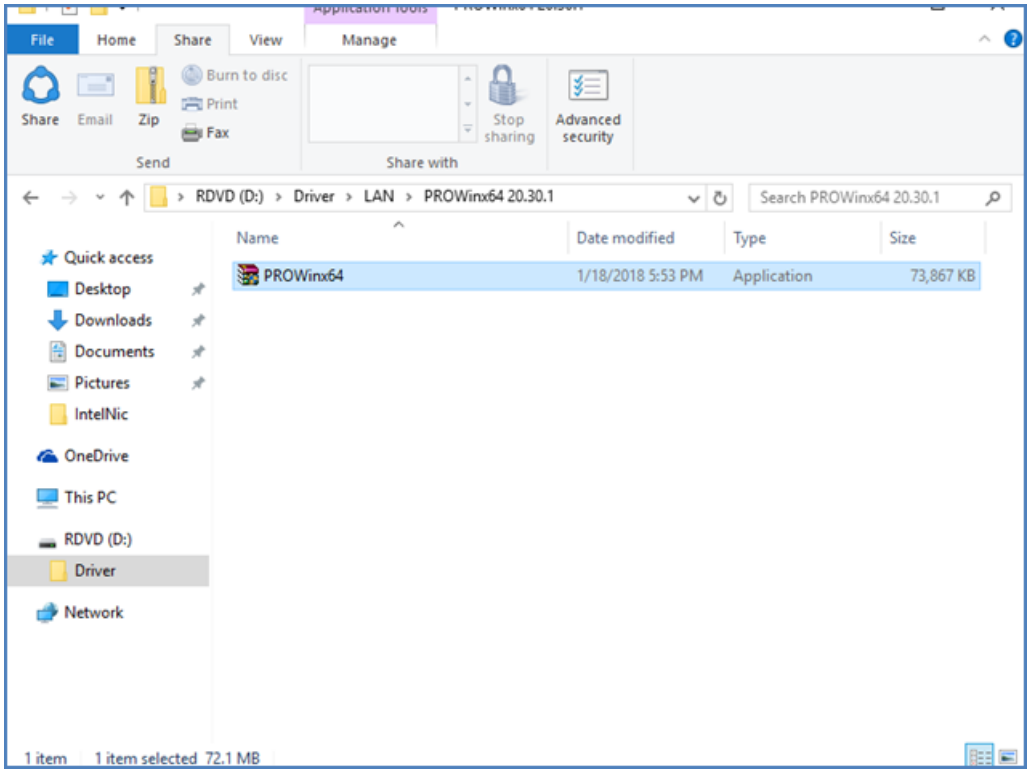
Step 2 Select **Next** to continue.

Step 3 When installation completed, select **Finish** complete installation.

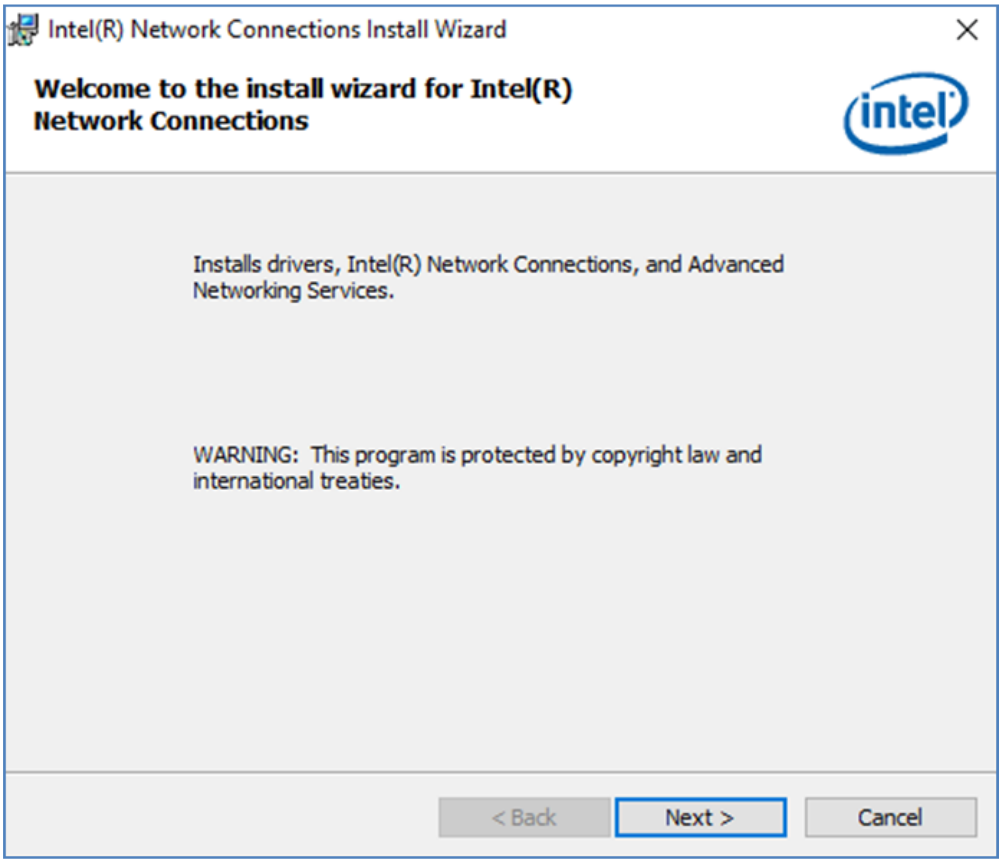
5.6 Ethernet Driver Installation

Follow the instructions below to complete the Ethernet Driver installation.

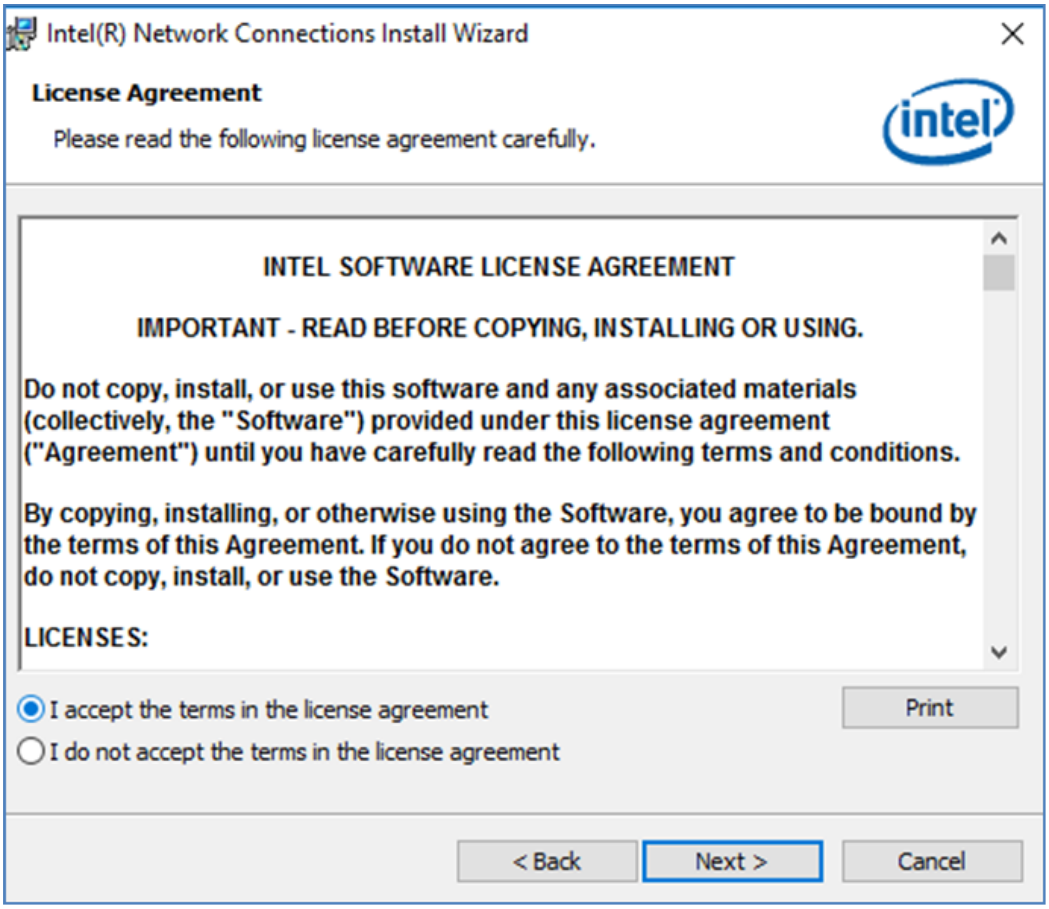
Step 1 Open the Driver (Download from Winmate Download Center) and select **LAN** driver.



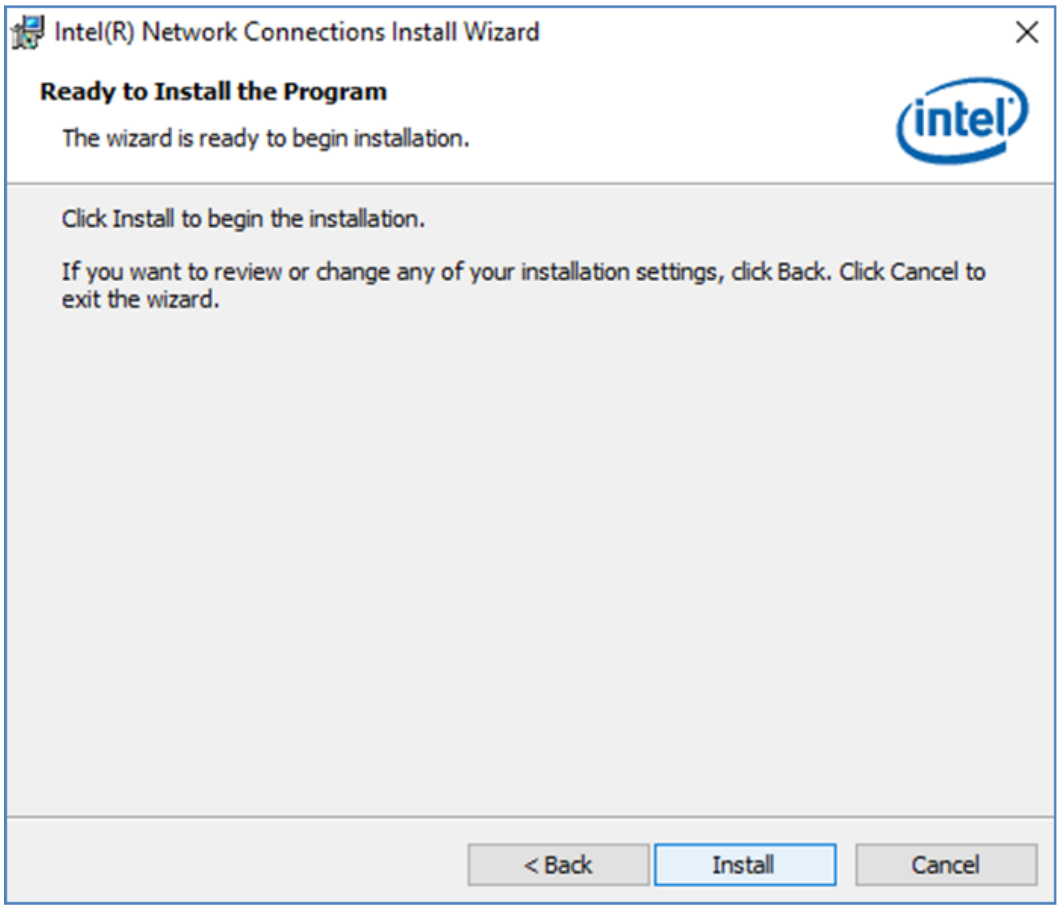
Step 2 When compression is complete, select **Next**.



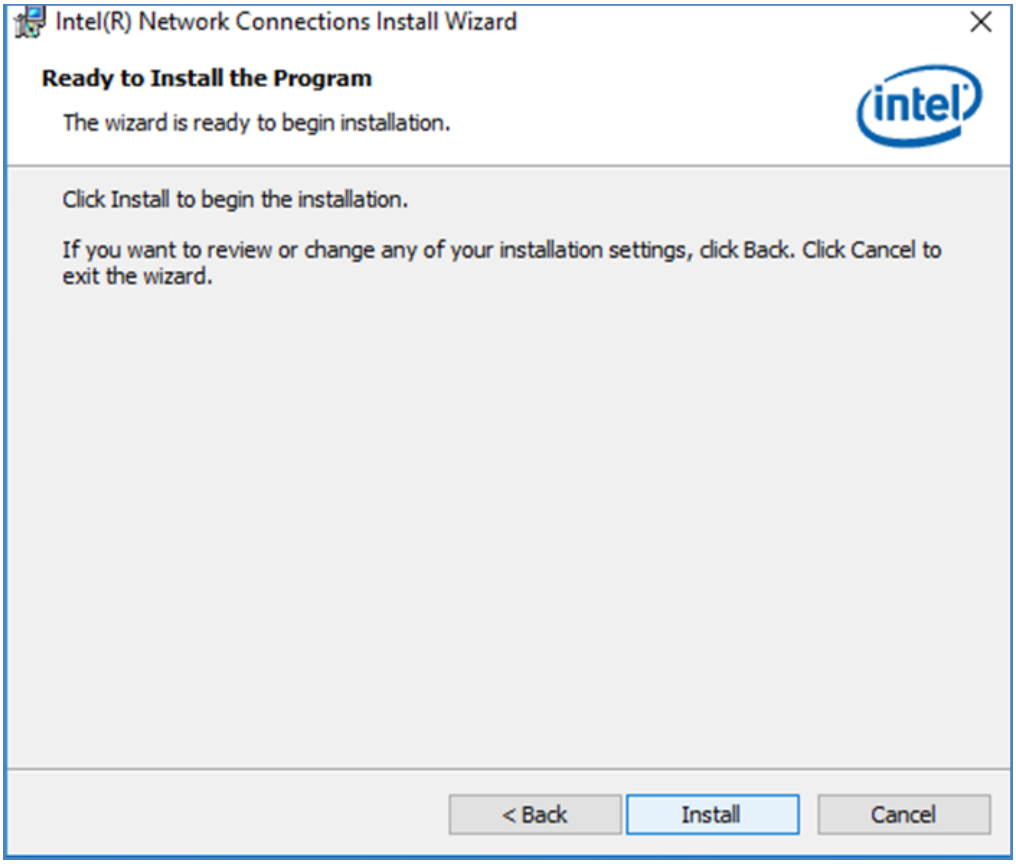
Step 3 Read the license agreement, and then select **Next**.



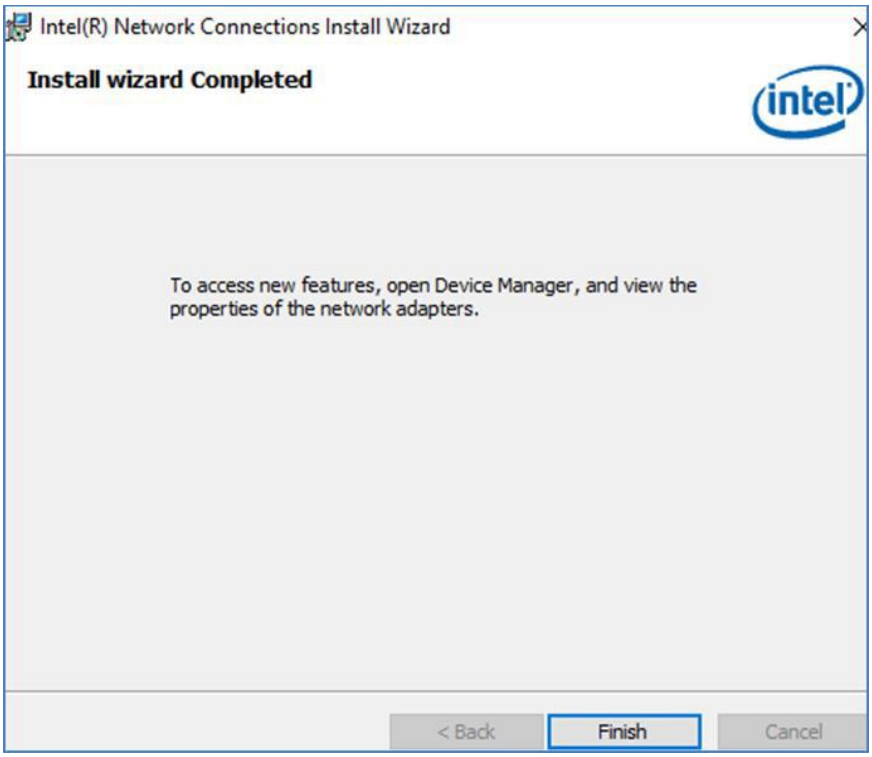
Step 4 System displays the installed packages, select **Next**.



Step 5 Confirm the installation, select **Install** to start the installation.



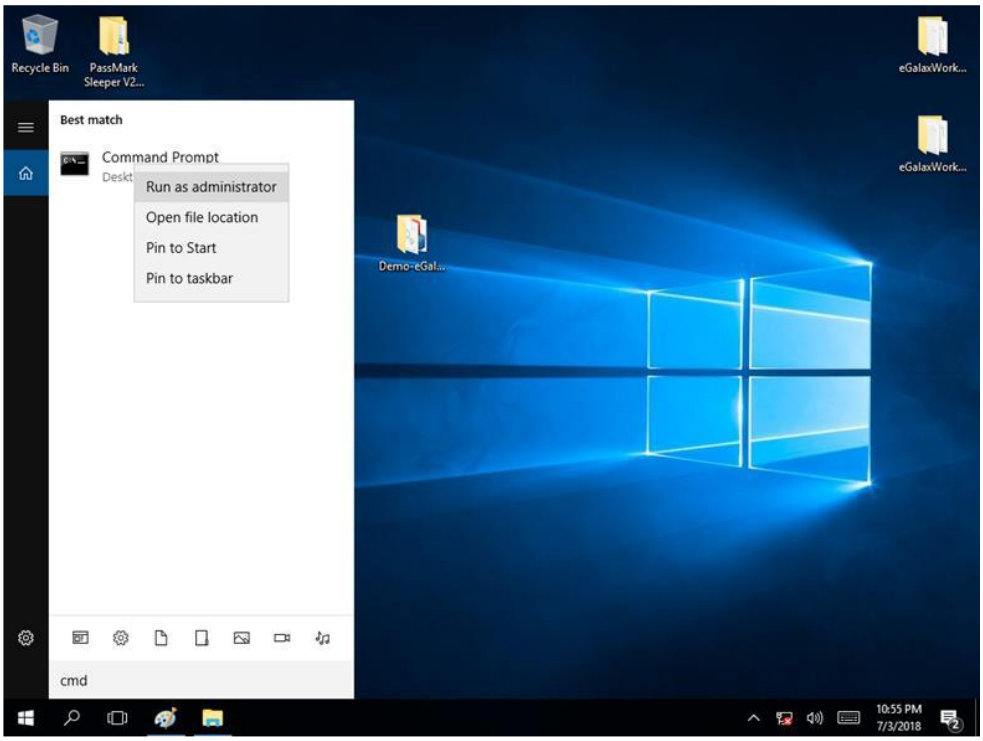
Step 6 When installation is completed, select **Finish** to close the window.



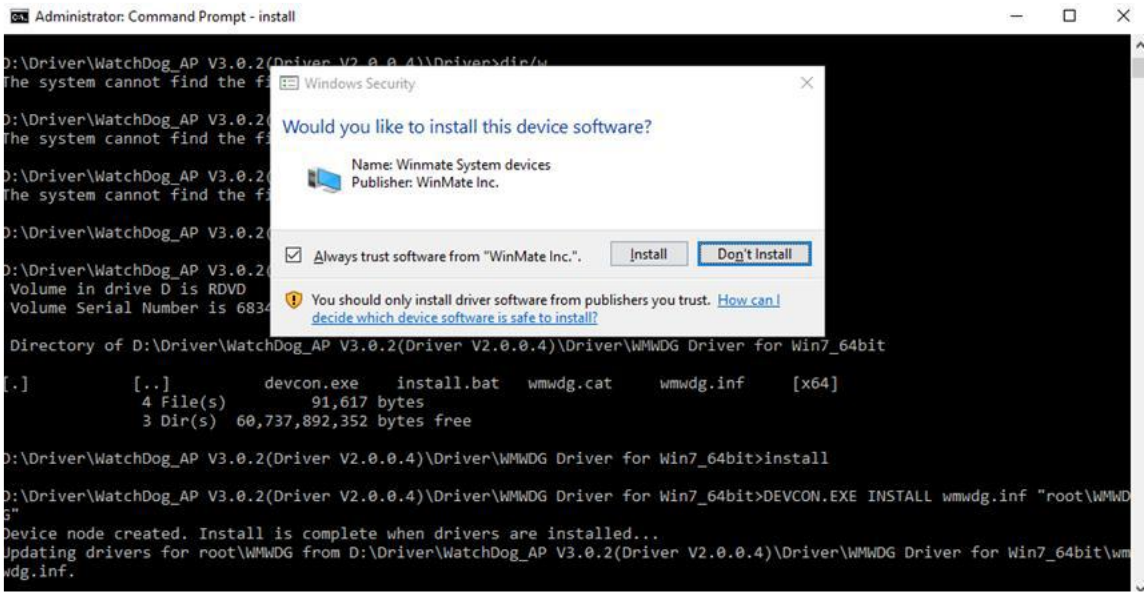
5.7 Watchdog Driver Installation

For more details about Winmate Watchdog, please download Watchdog Guide from Winmate Downloads Center:
Follow instructions below to install **Watchdog**driver.

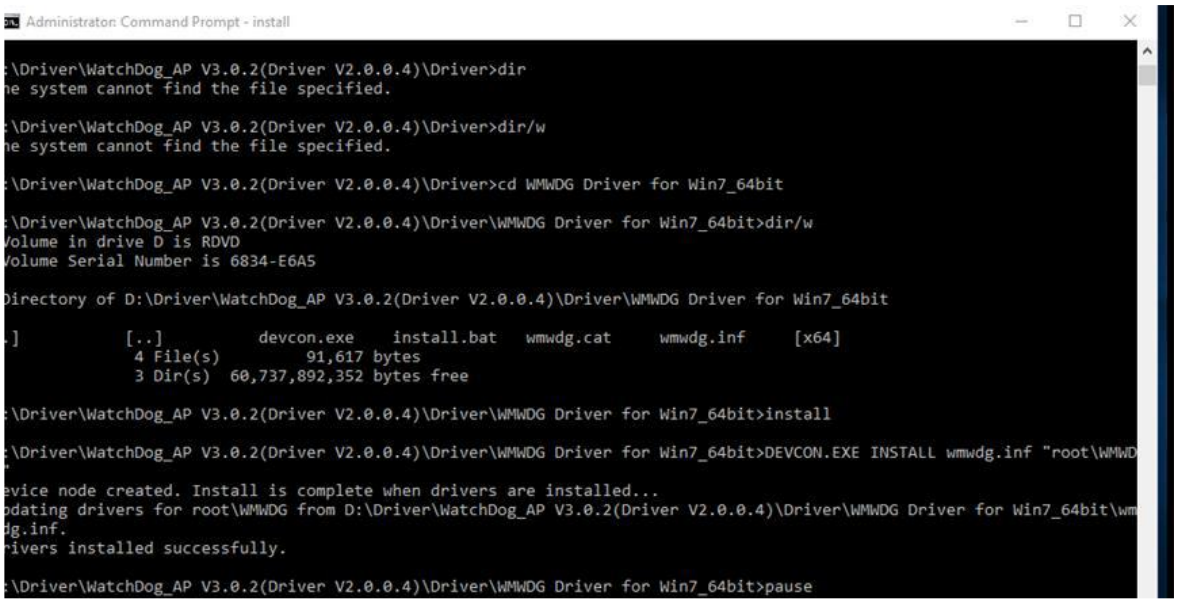
Step 1 Type “cmd” in the run box then the cmd.exe will appear in programs.
Step 2 Right click on the cmd.exe and click on “Run as administrator” to start. Open the Driver (Download from Winmate Download Center) and select Watchdog driver.



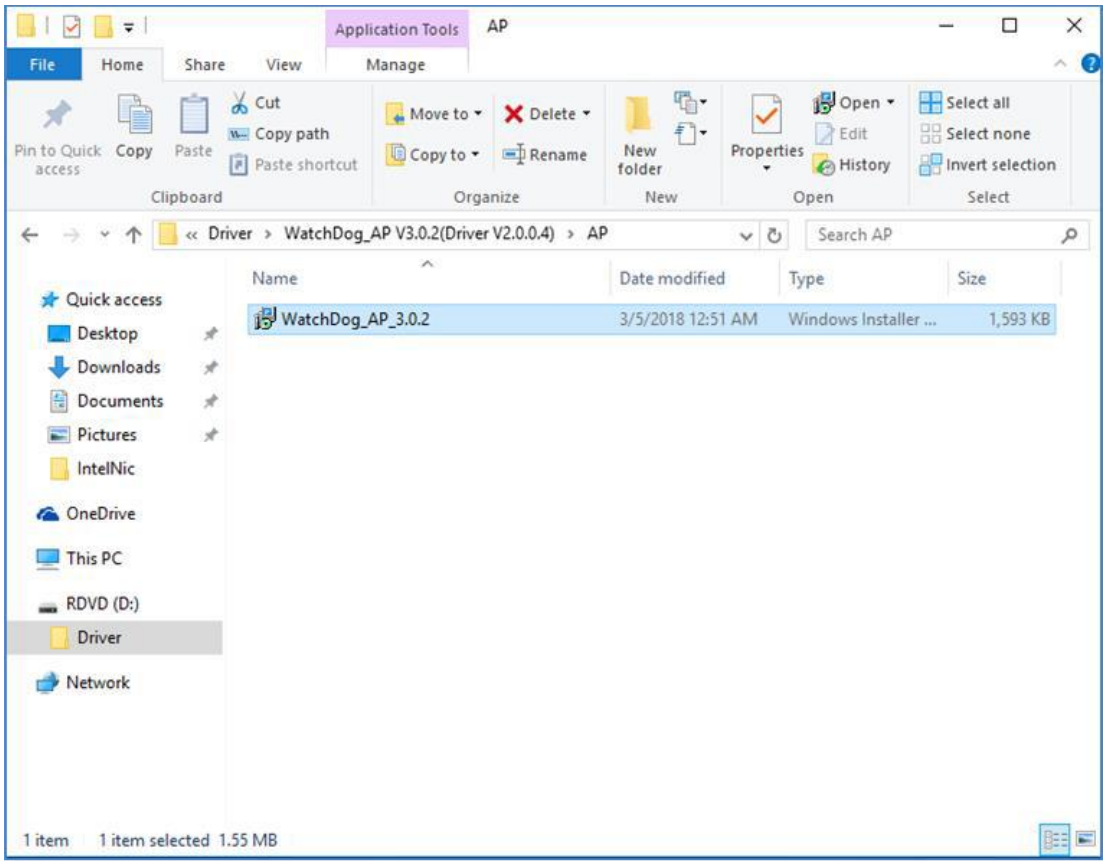
Step 3 When Windows Security dialog appears, select install to continue the Installation.



Step 4 Wait for installation to complete. When installation is complete, press any key to close.

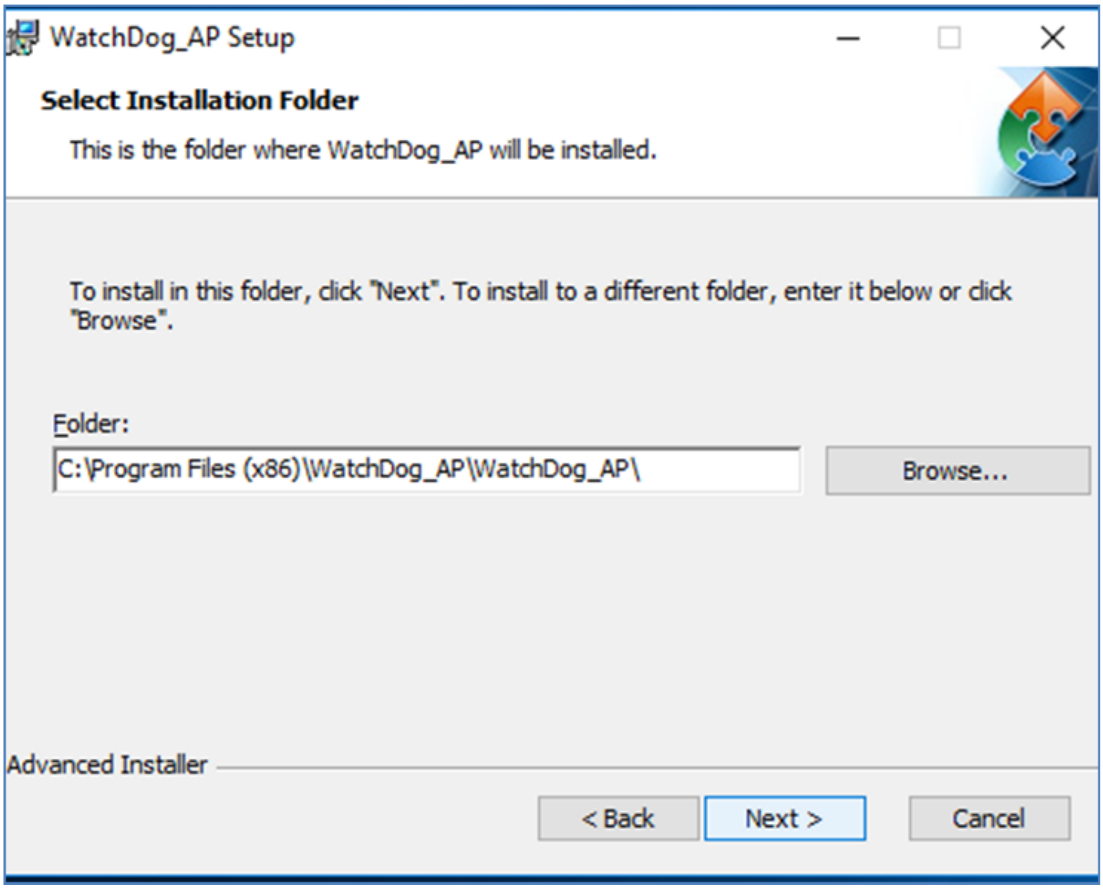


Step 5 Open the Driver (Download from Winmate Download Center) and select **Watchdog AP**.

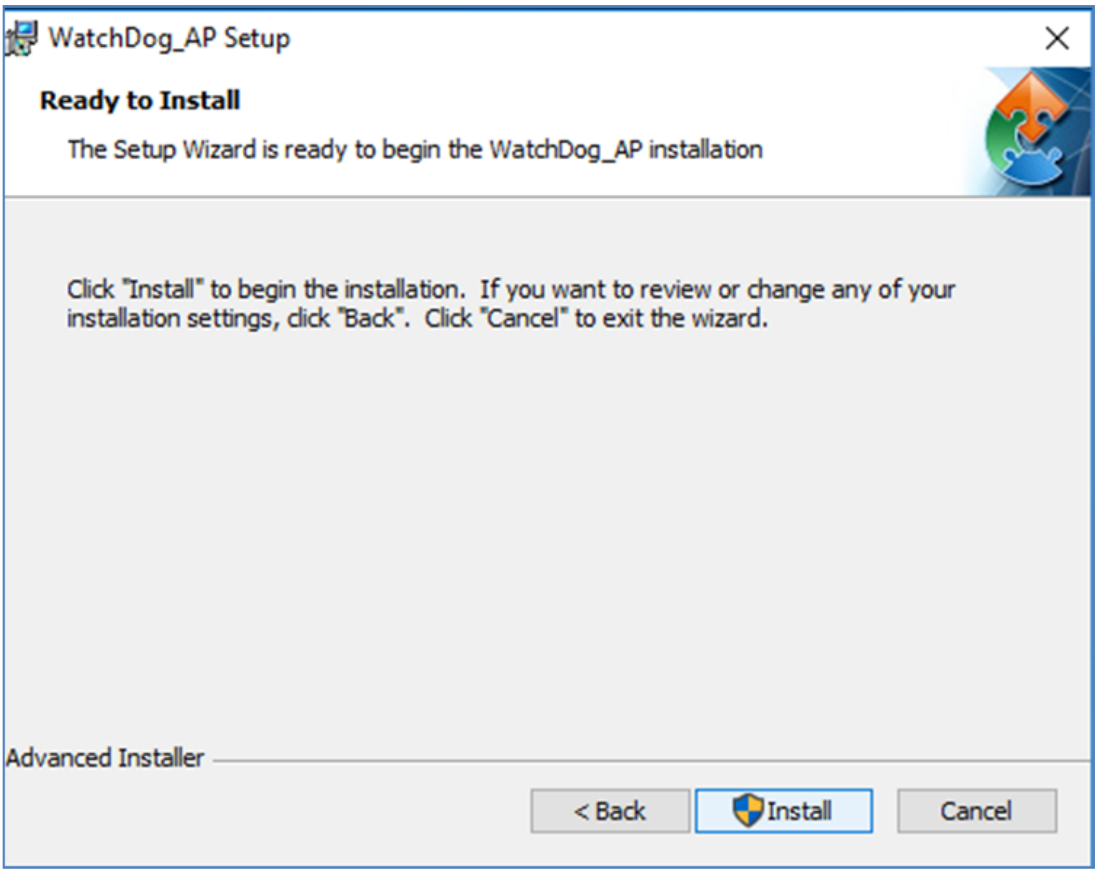


Step 6 Select **Next**.

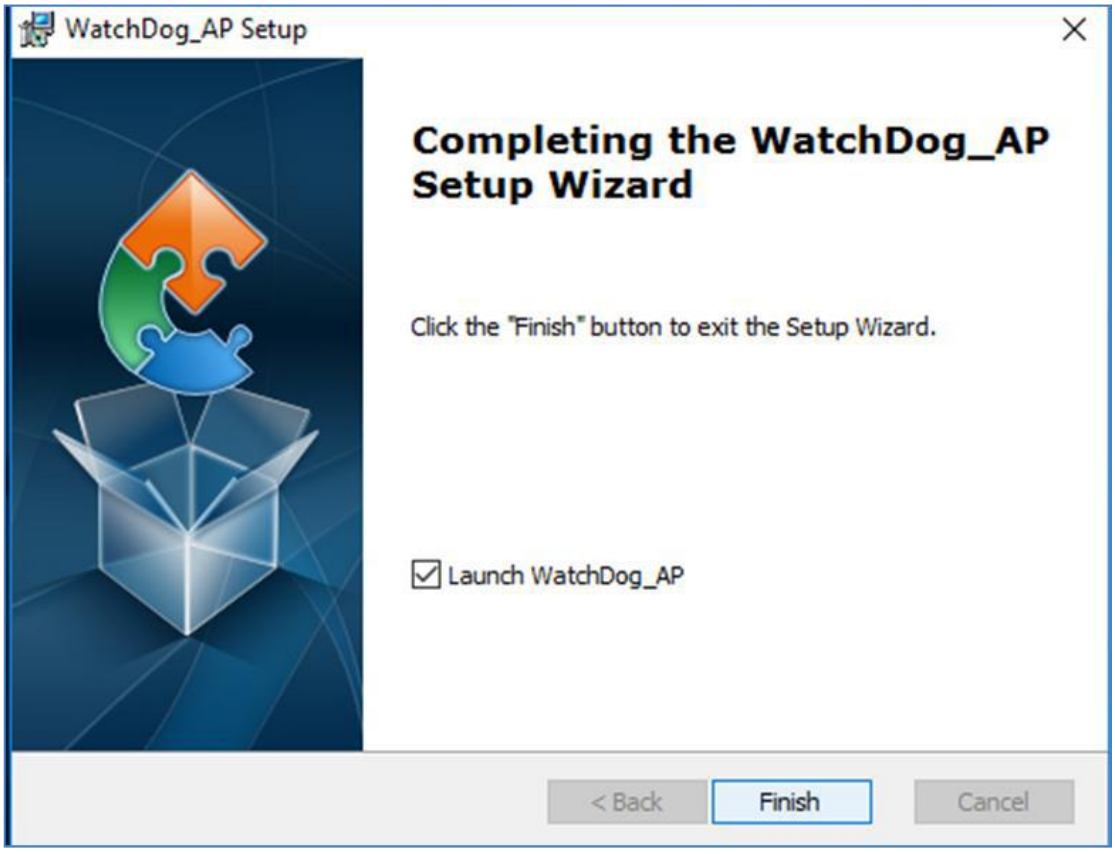
Step 7 The installed storage location is displayed, select **Next** to continue.



Step 8 Select **Next** to start the installation.



Step 9 When installation is completed, select **Finish** to close the window.



5.8 FTDI Driver Installation

Follow instructions below to install **FTDI** driver.

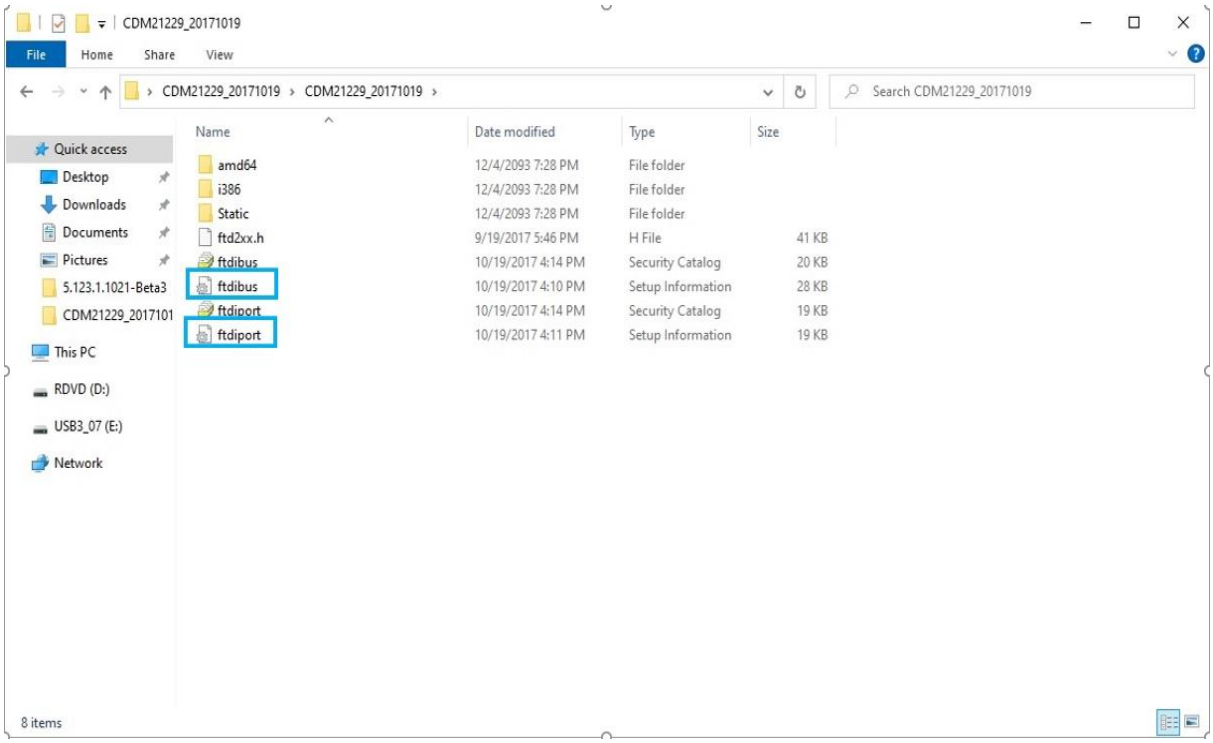
Step 1 Open the Driver (Download from Winmate Download Center) and select **FTDI** driver.

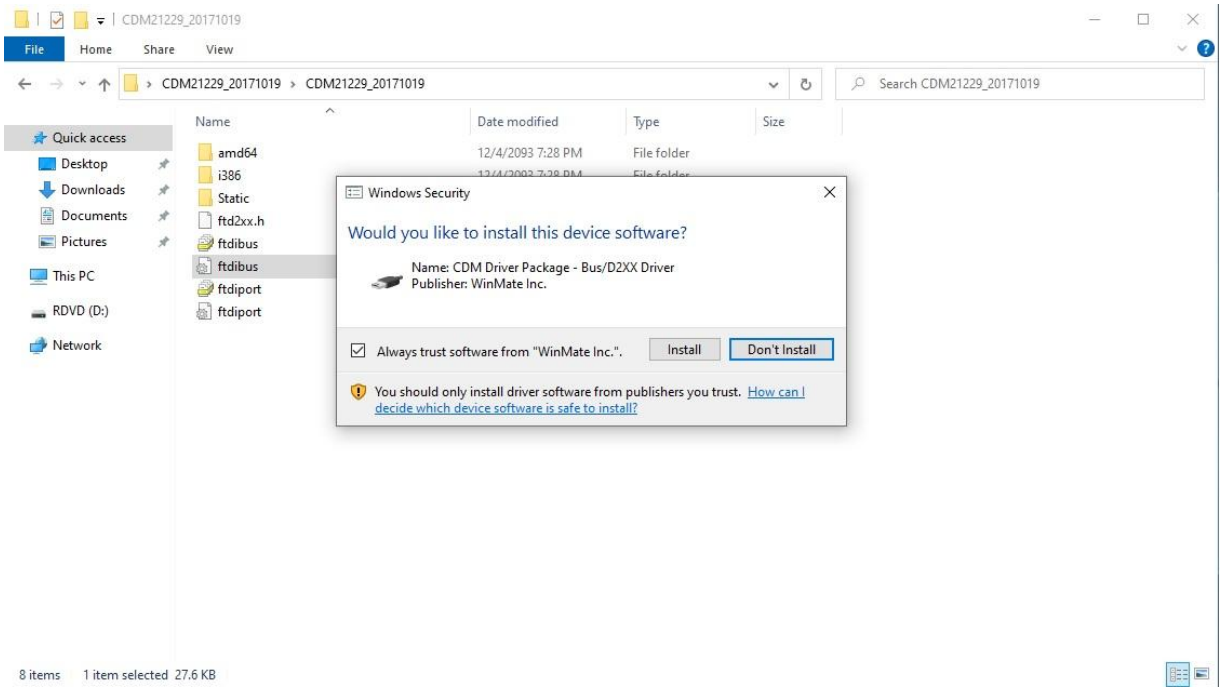
Step 2 Right click on **"ftdibus"**

Step 3 Select **Install**

Step 4 Right click on **"ftdiports"**

Step 5 Select **Install**





5.9 Serial IO Driver Installation

Follow instructions below to install **Serial IO** driver.

Step 1 Open the Driver (Download from Winmate Download Center) and select **Serial IO** driver.

Step 2 Right click on **" iaLPSS2_GPIO2_EHL "**

Step 3 Select **Install**

Step 4 Right click on **" iaLPSS2_I2C_EHL "**

Step 5 Select **Install**

Step 6 Right click on **" iaLPSS2_SPI_EHL "**

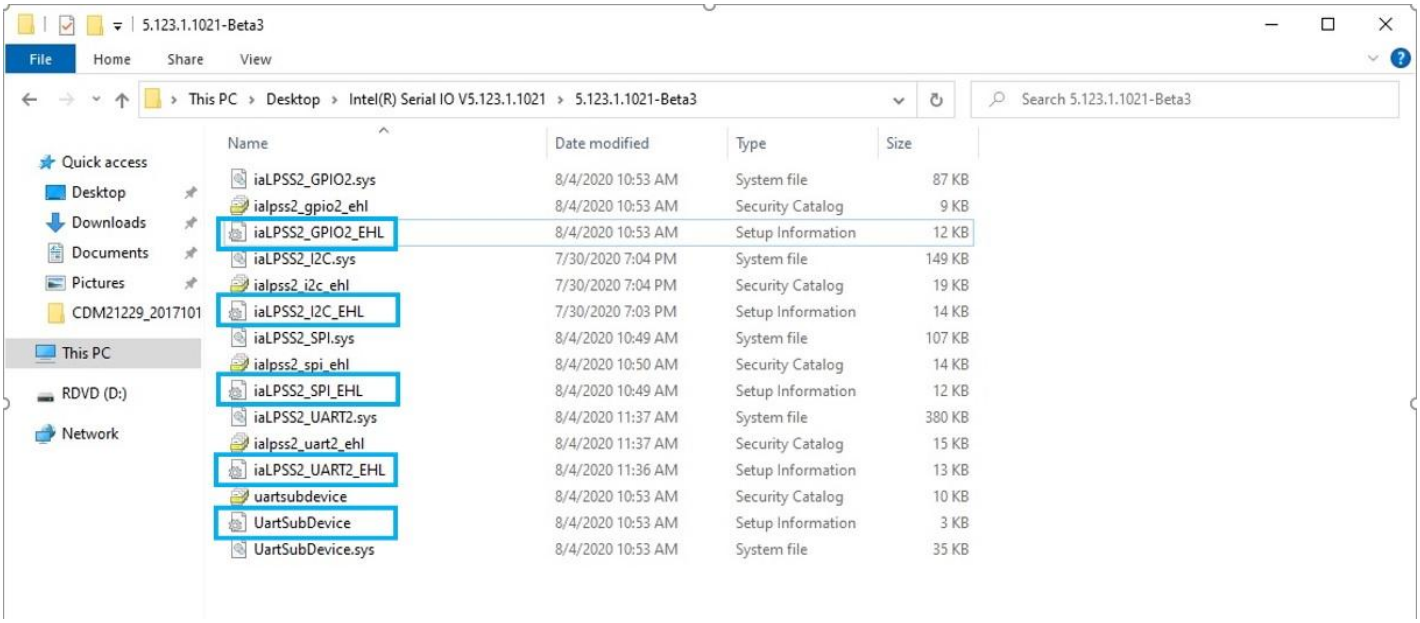
Step 7 Select **Install**

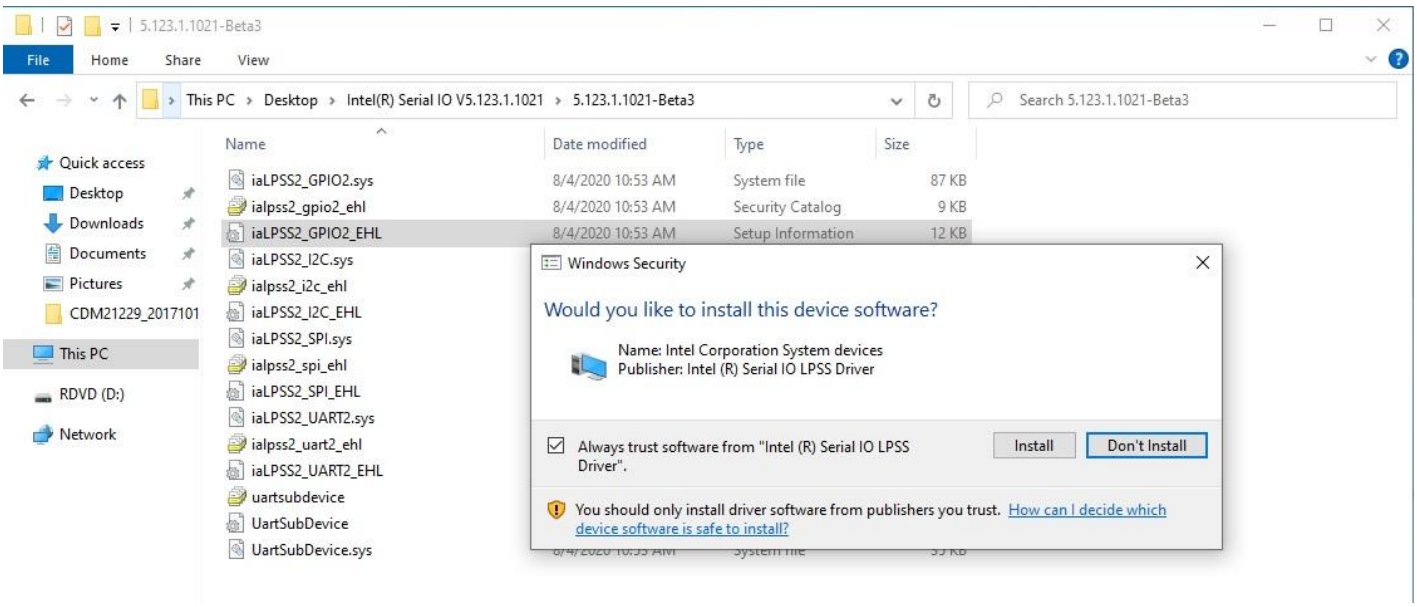
Step 8 Right click on **" iaLPSS2_UART2_EHL "**

Step 9 Select **Install**

Step 10 Right click on **" UartSubDevice "**

Step 11 Select **Install**

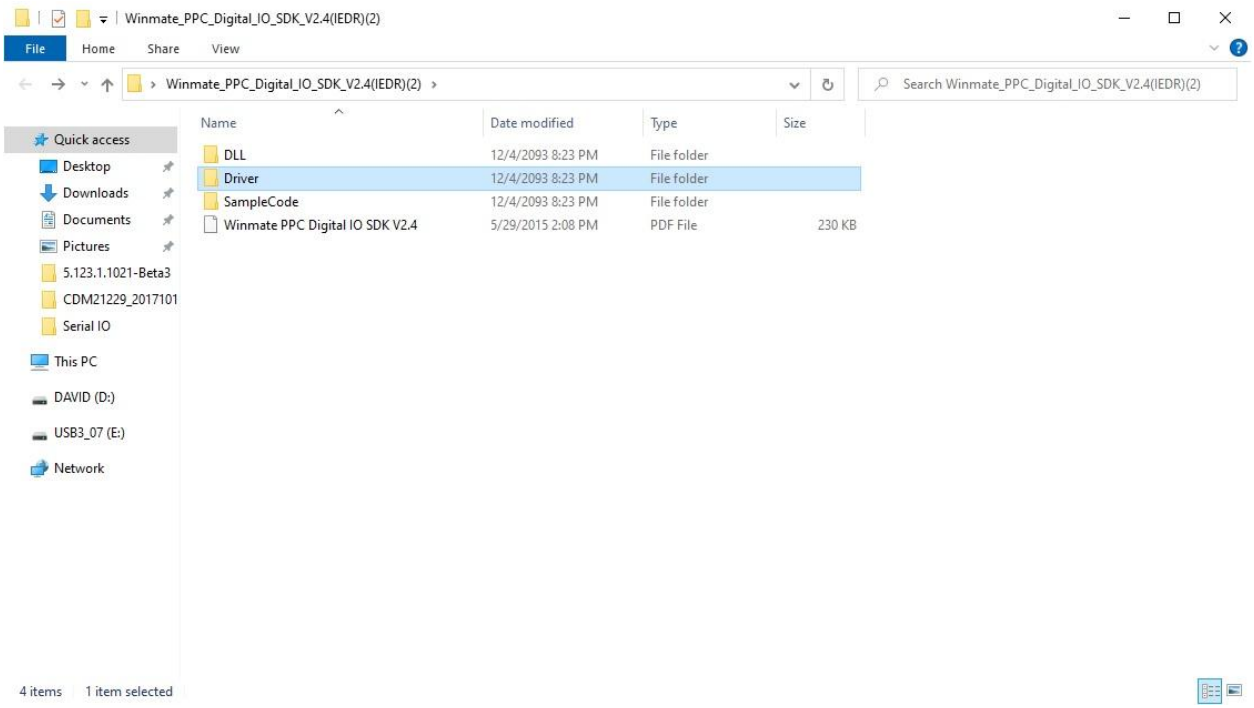




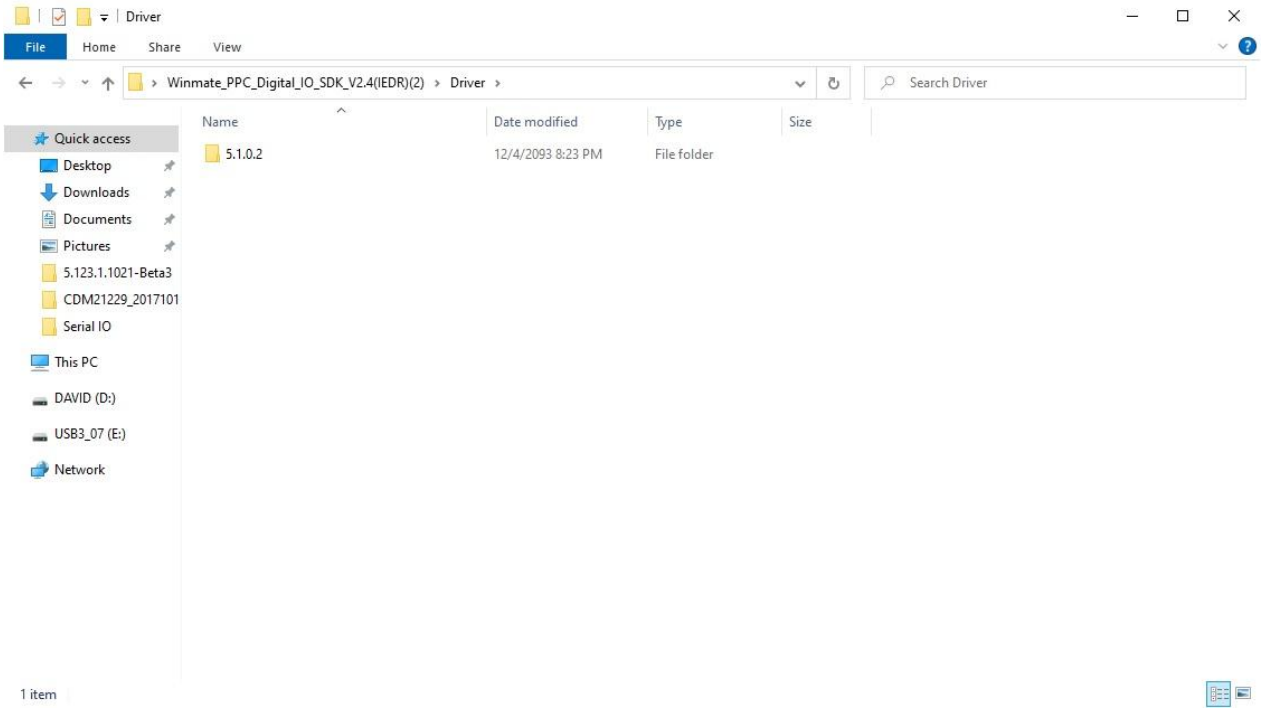
5.10 Digital IO Driver Installation

Follow instructions below to install **Digital IO** driver.

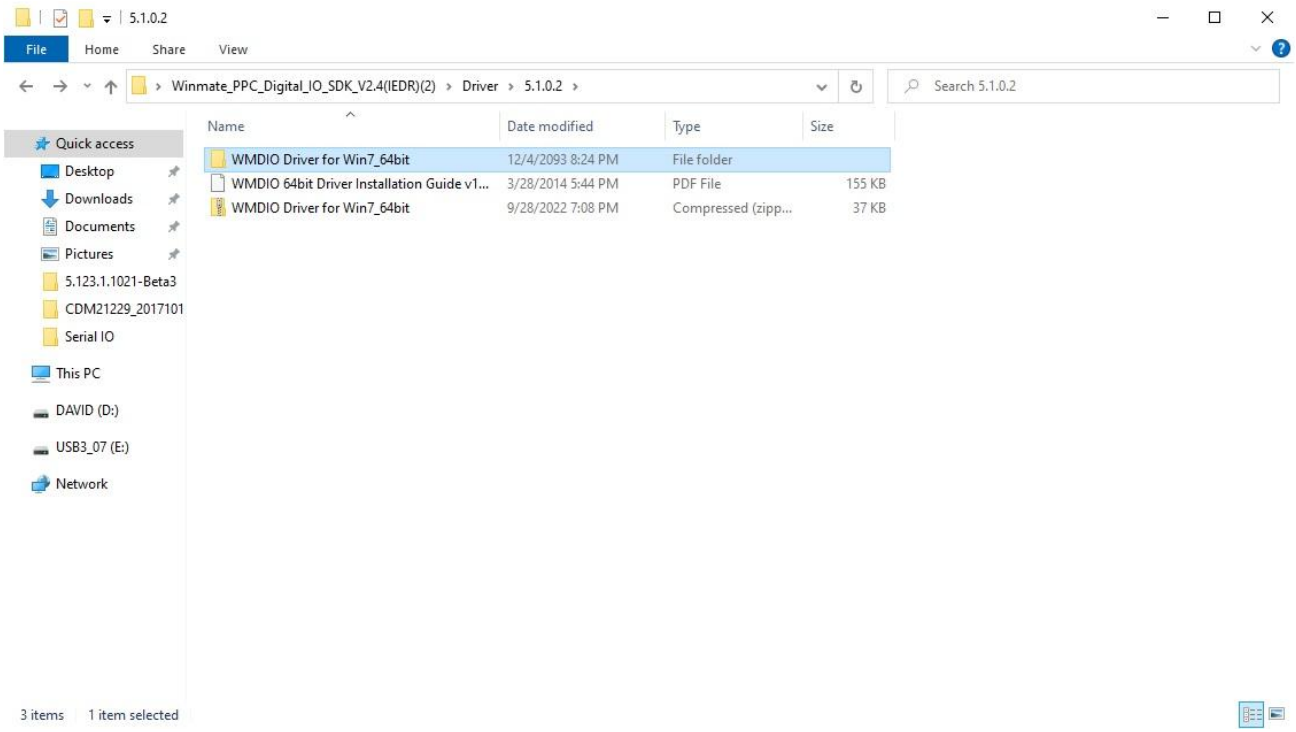
Step 1 Open the Driver (Download from Winmate Download Center) and select **Winmate_PPC_Digital_IO_SDK_V2.4(IEDR)(2)** driver.



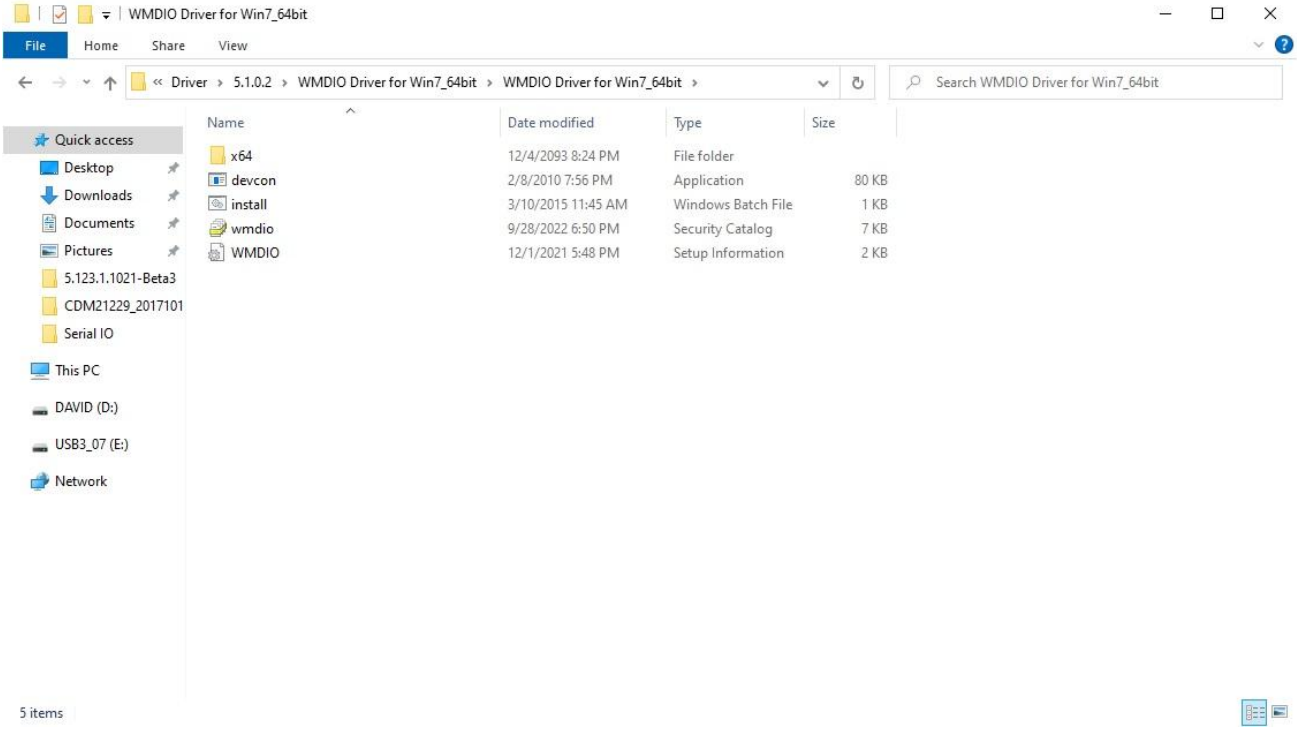
Step 2 Select **5.1.0.2**



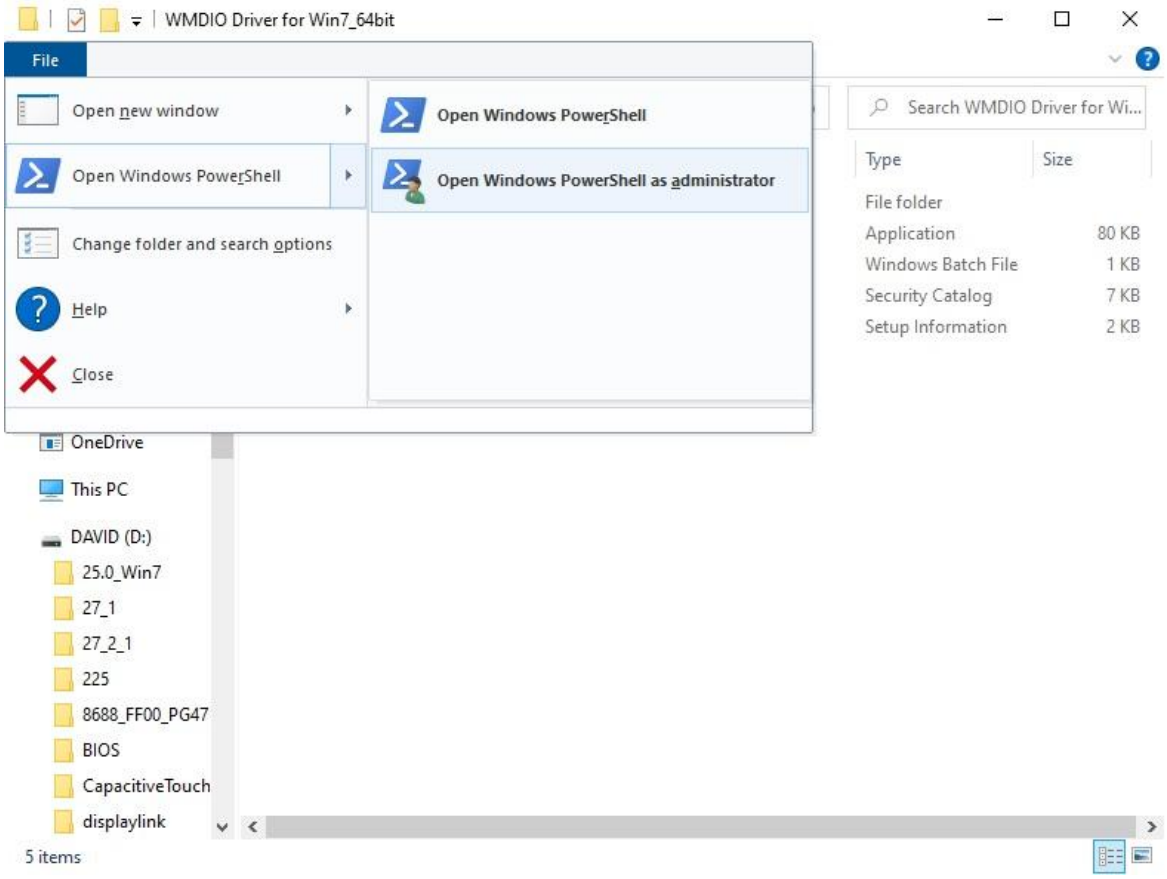
Step 3 select **WMDIO Driver for Win7_64bit**

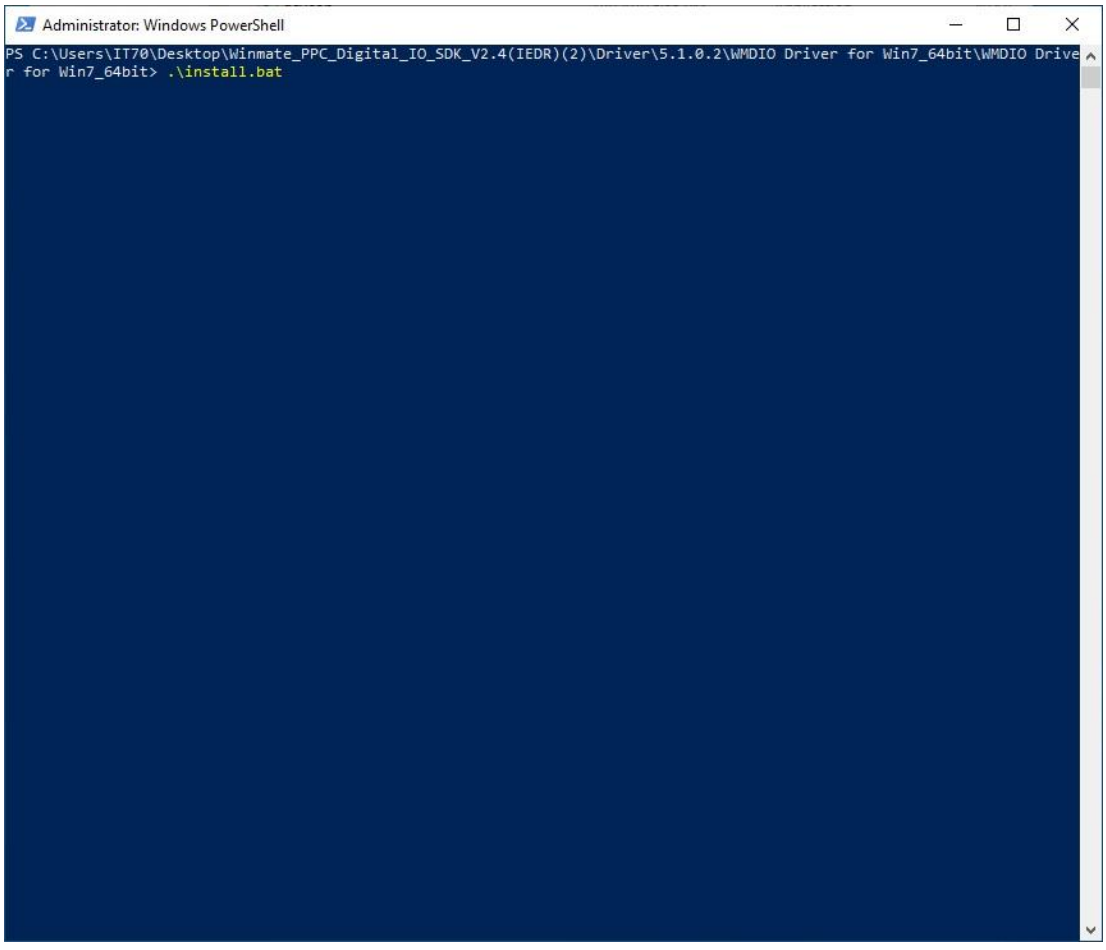


Step 4 chick **File** on the top left

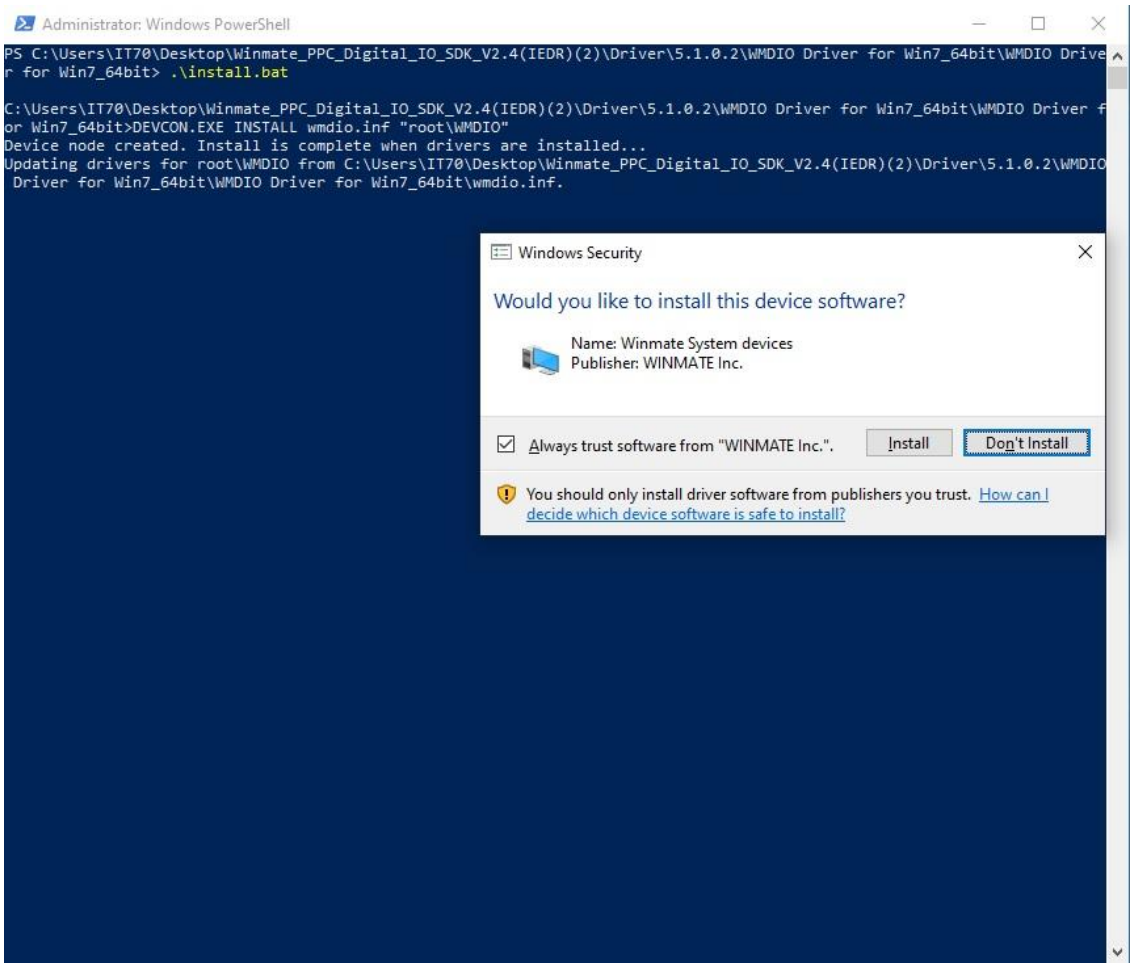


Step 5 Select **Open Windows PowerShell as administrator**

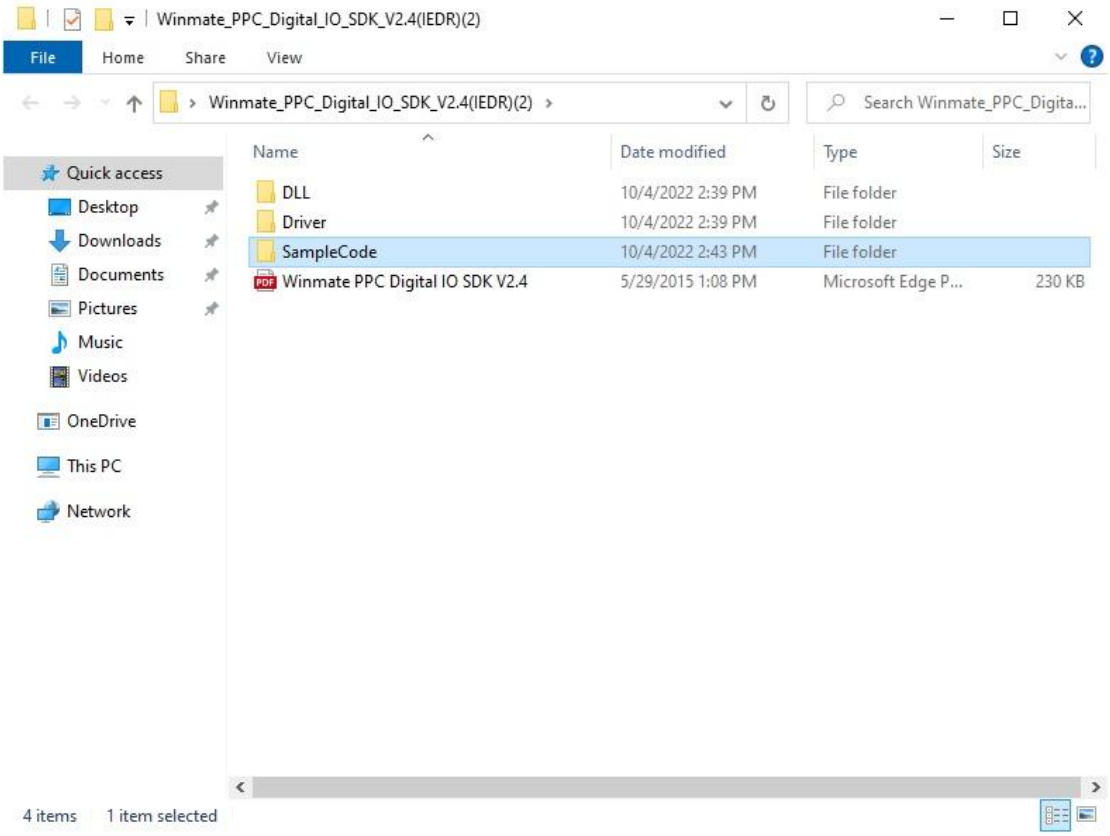




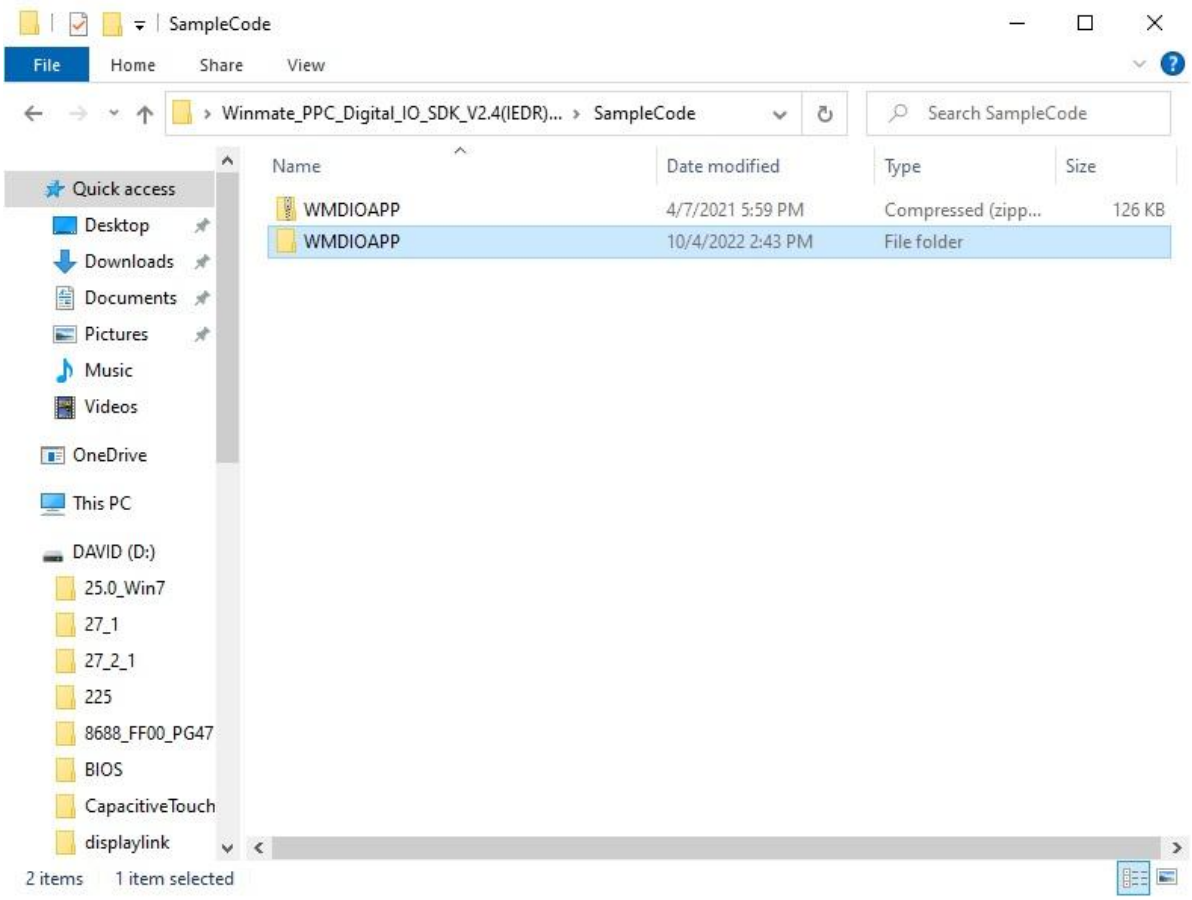
Step 6 Select **Install**

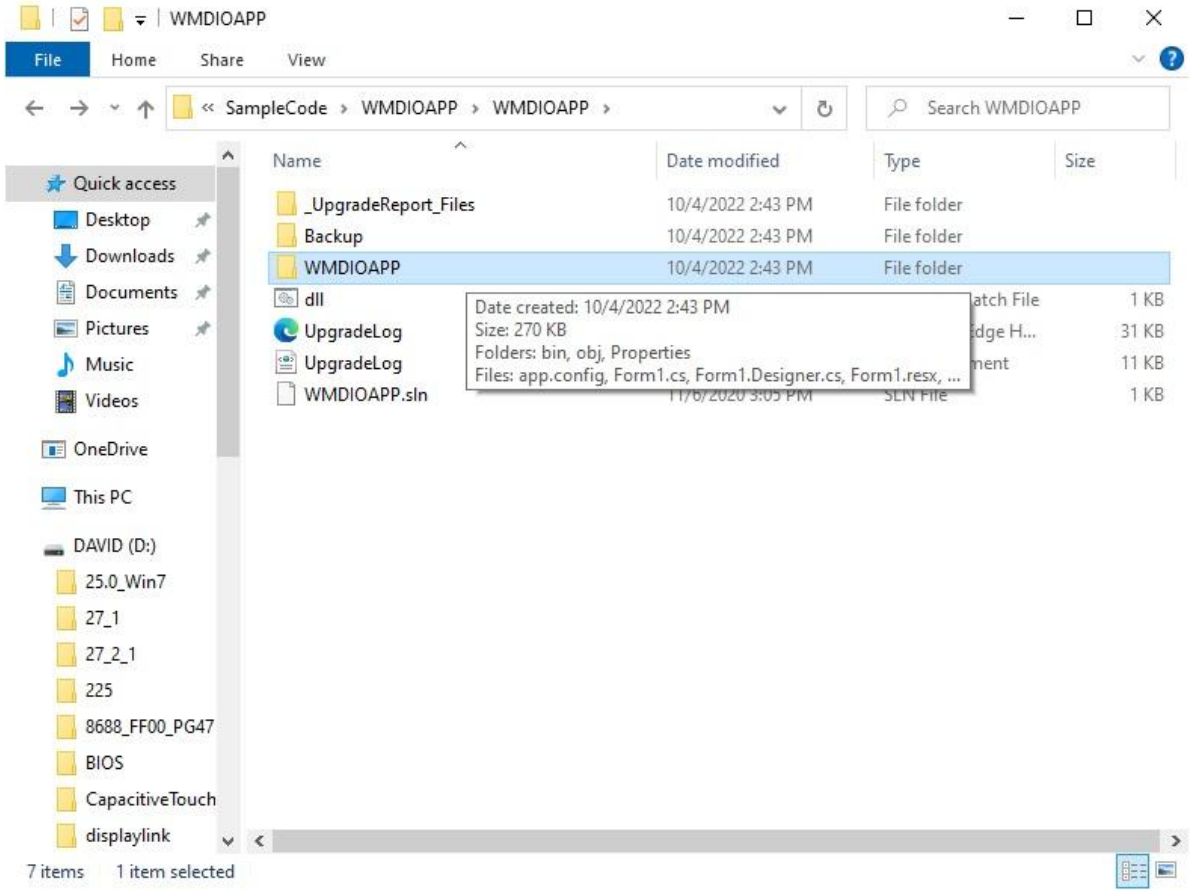


Step 7 Back to **Winmate_PPC_Digital_IO_SDK_V2.4(IEDR)(2)** and select **SampleCode**

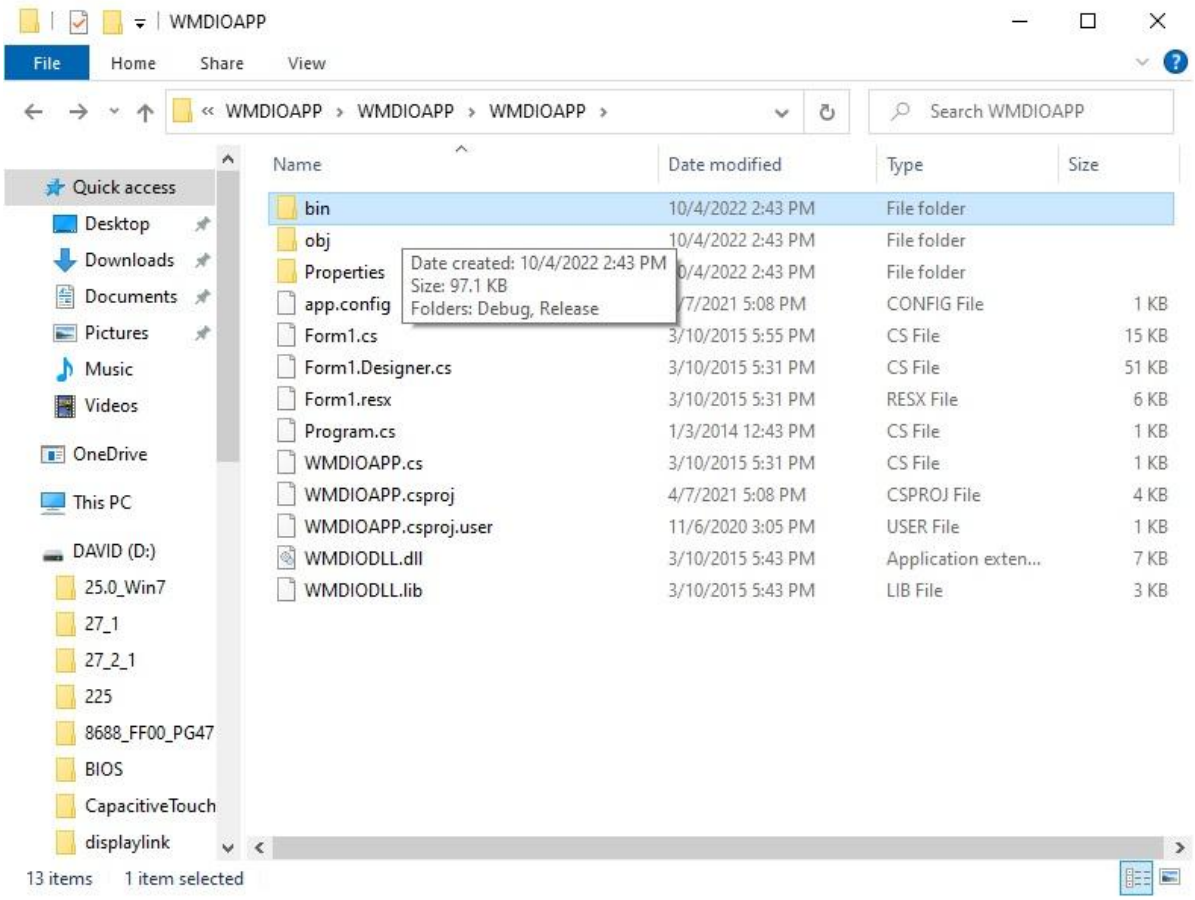


Step 8 Select **WMDIOAPP**

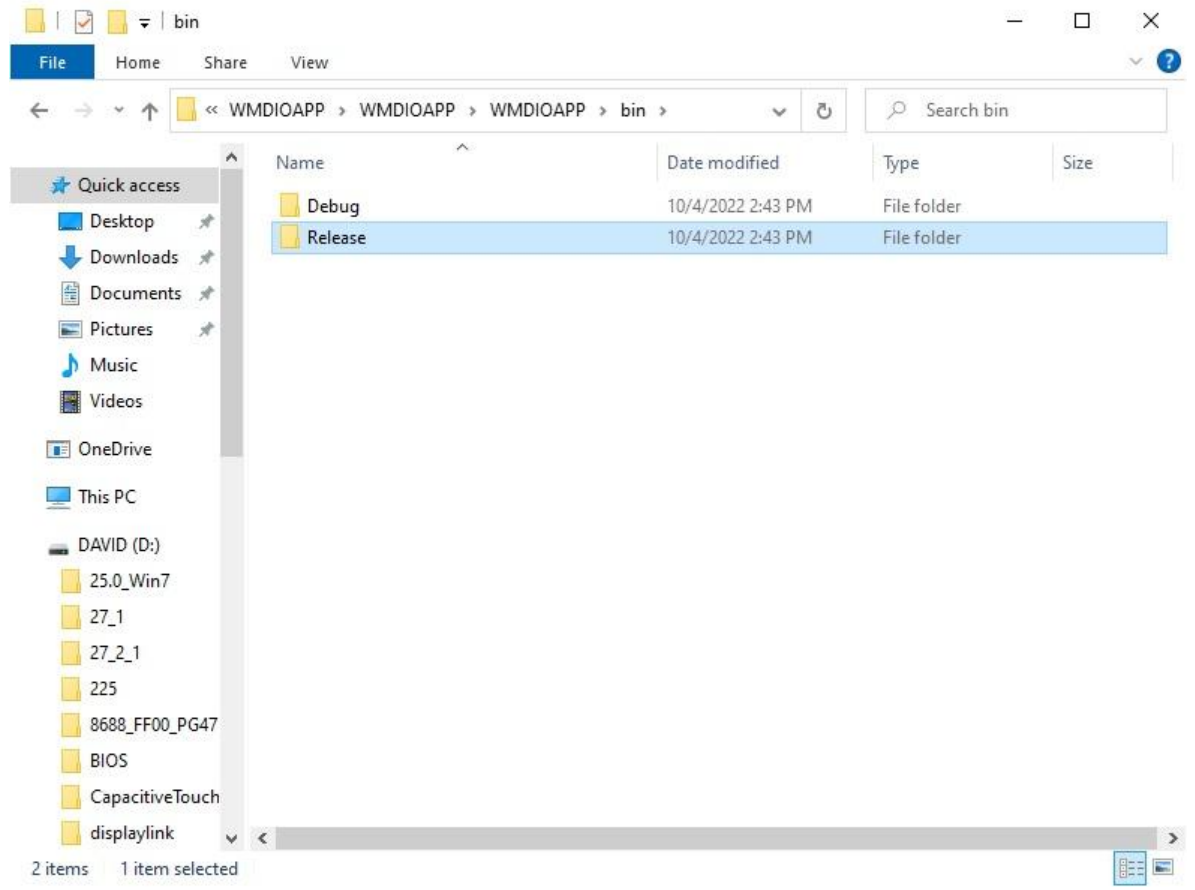




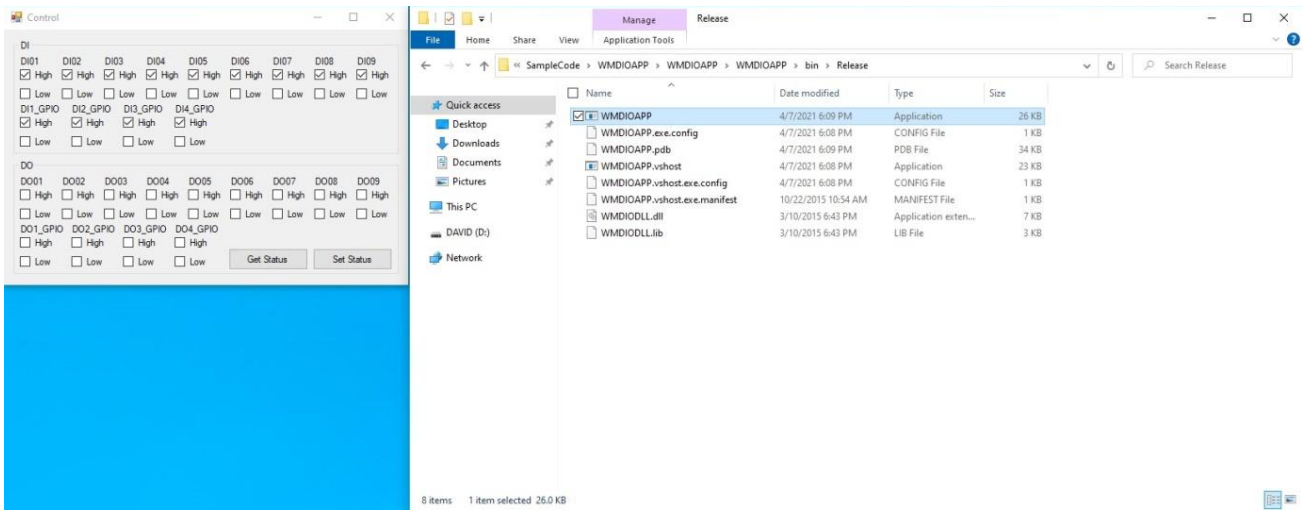
Step 9 Select **bin**



Step 10 Select **Release**



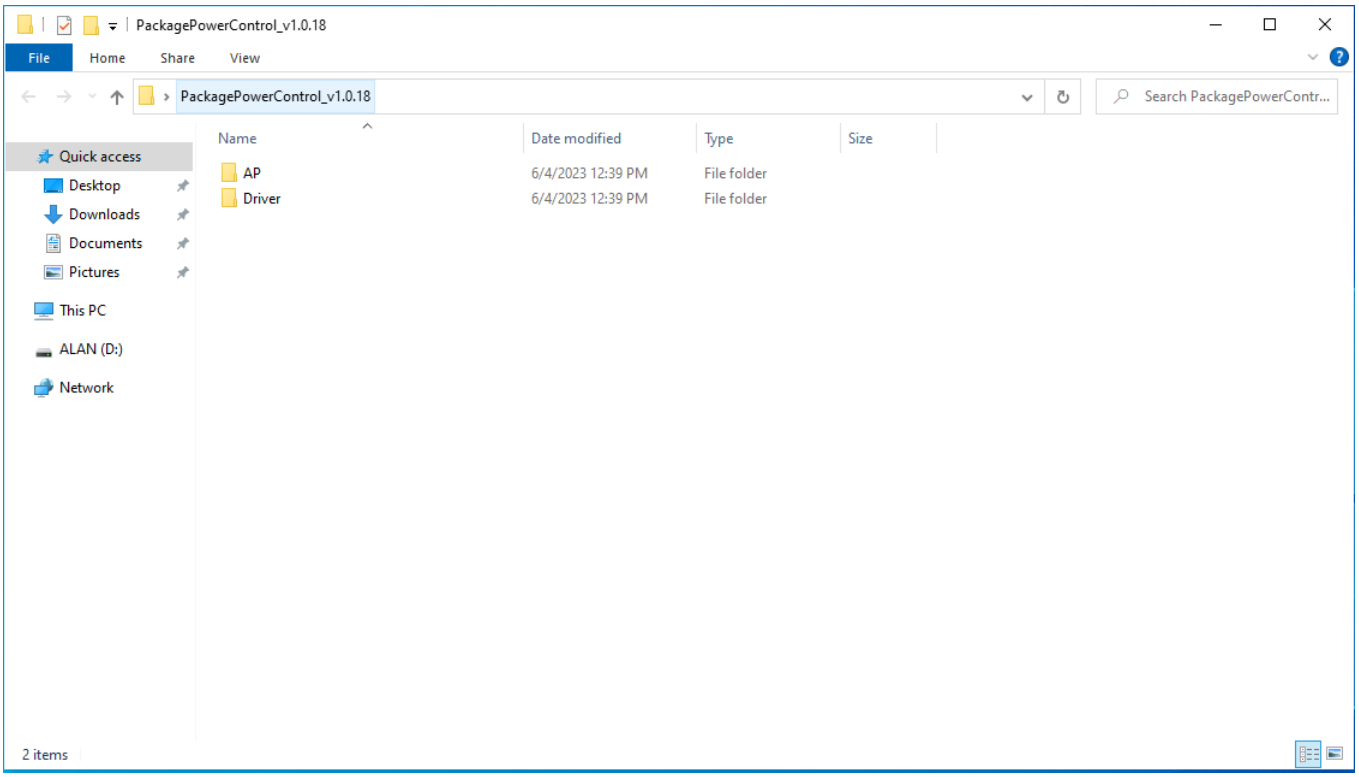
Step 11 Select **WMDIOAPP exe.** Then you will see the DIDO control.

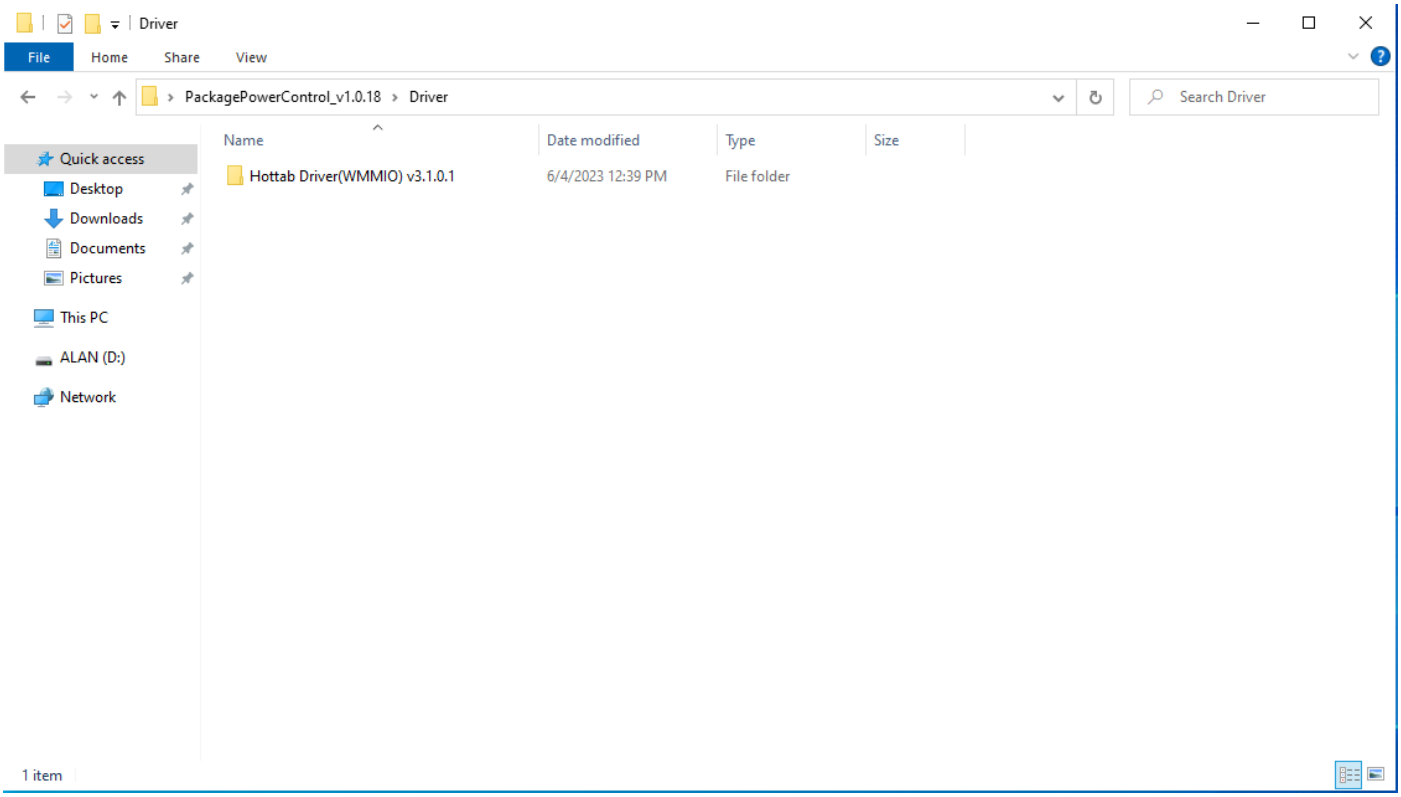


5.11 Thermal Control AP

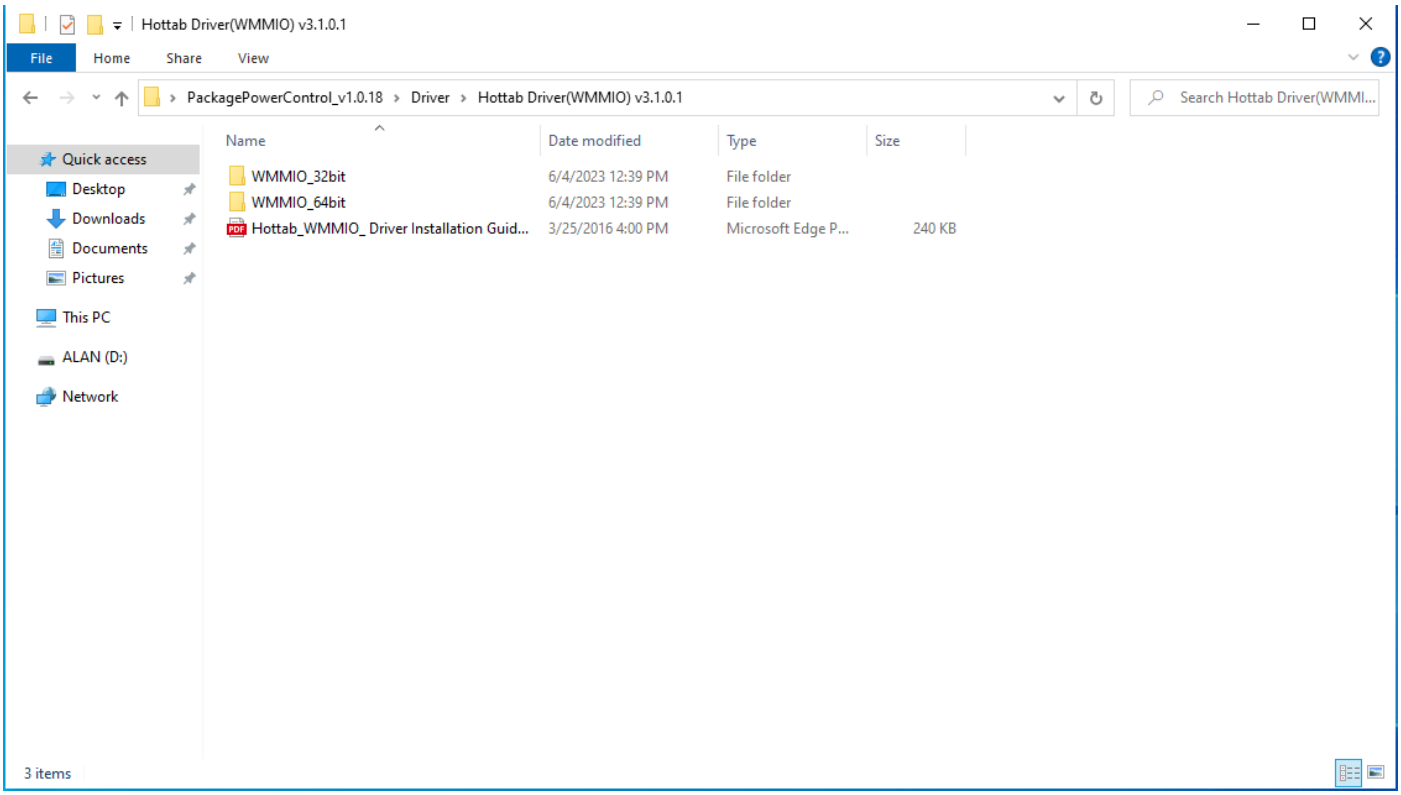
Follow instructions below to install Thermal Control AP.

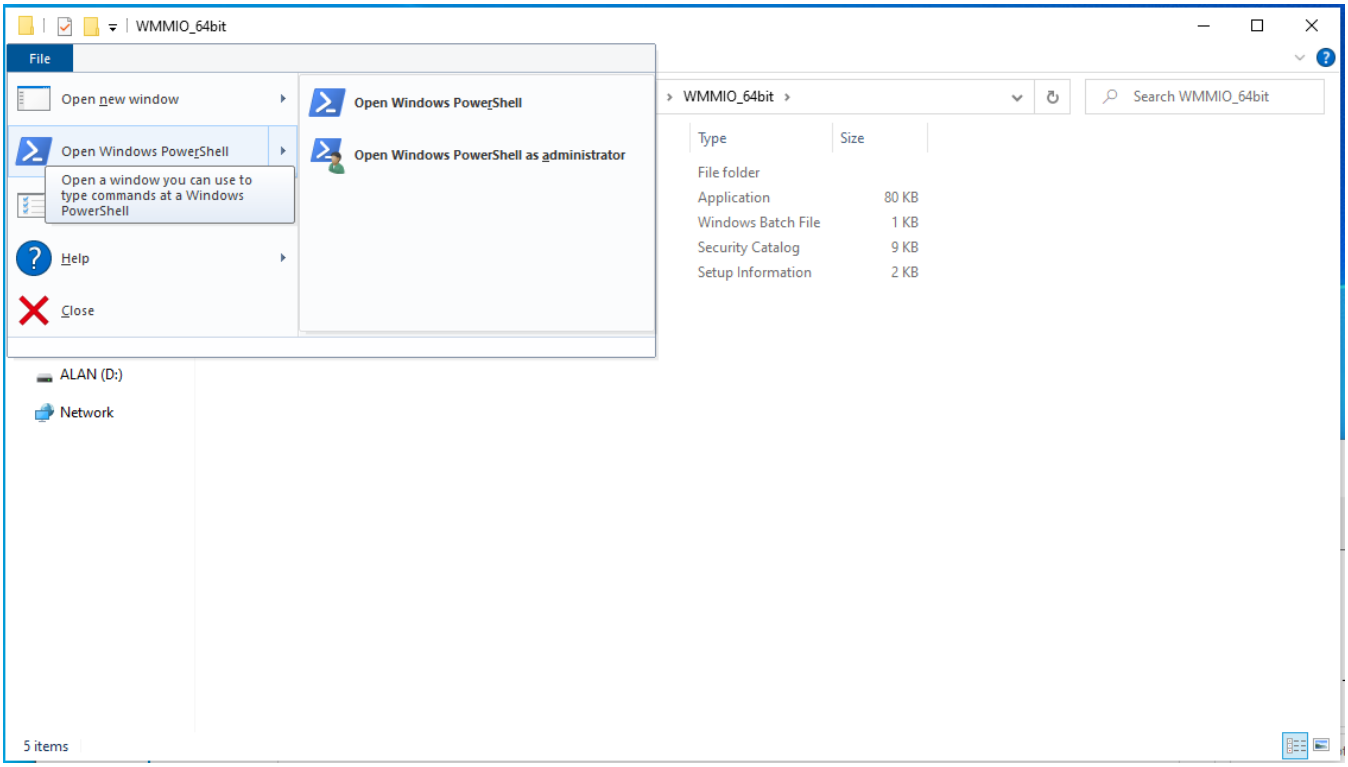
1. Click **Driver**.

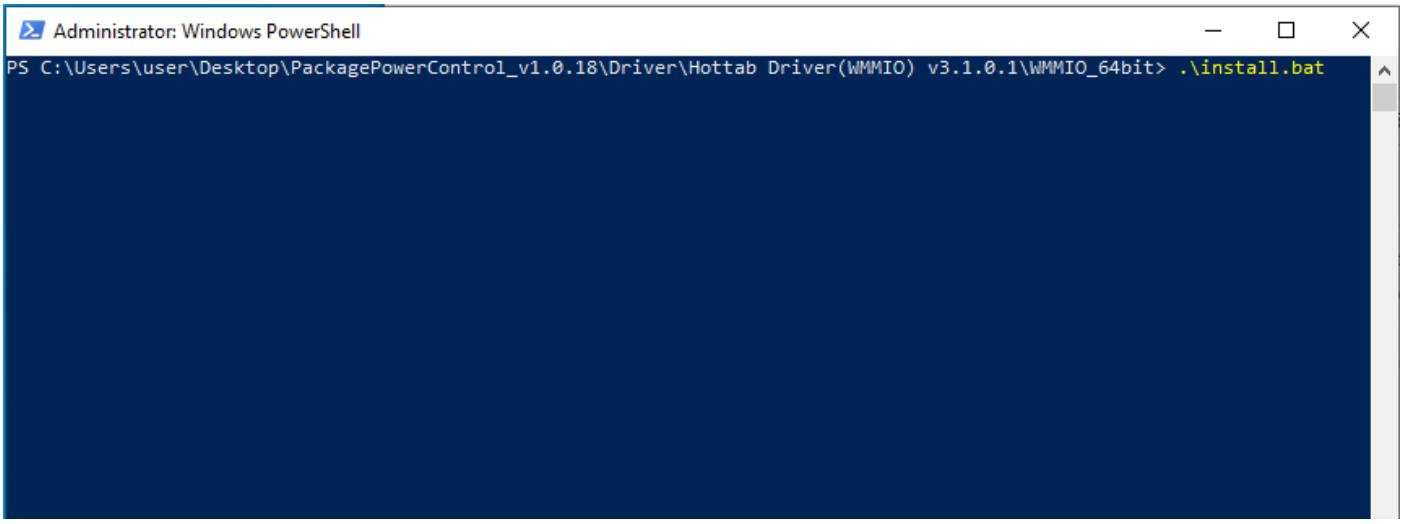


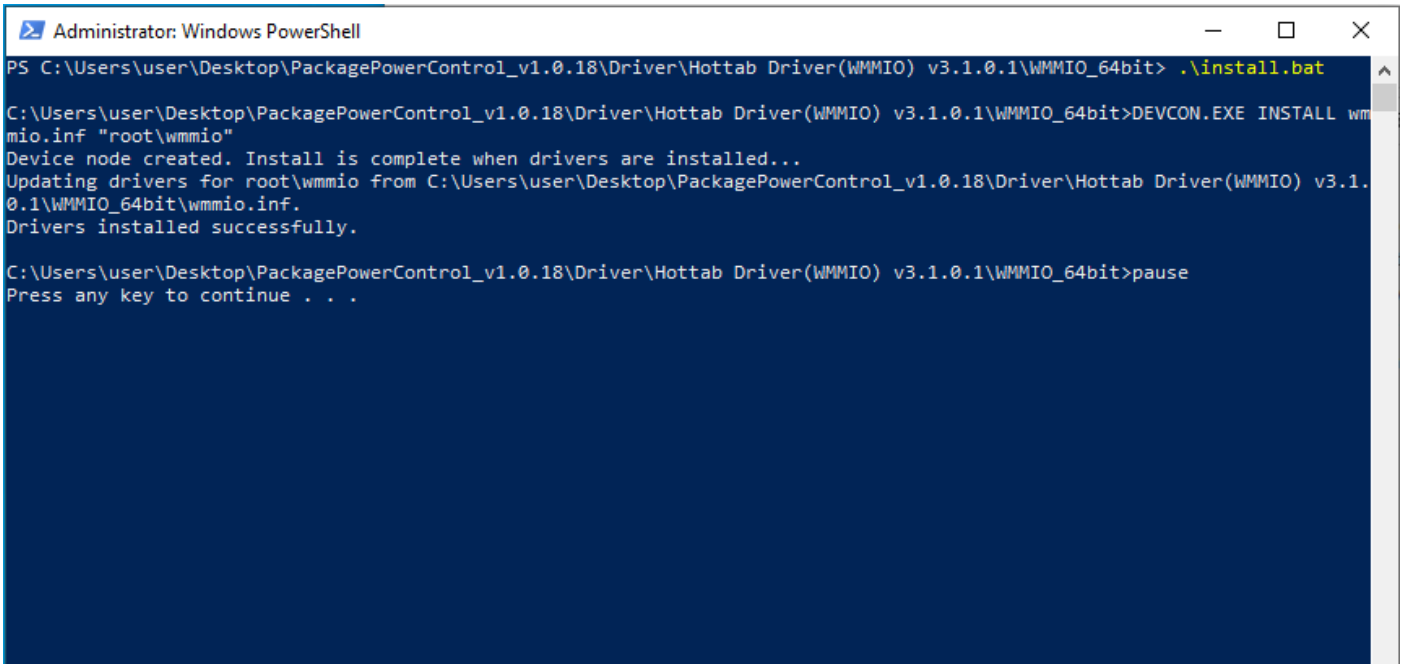


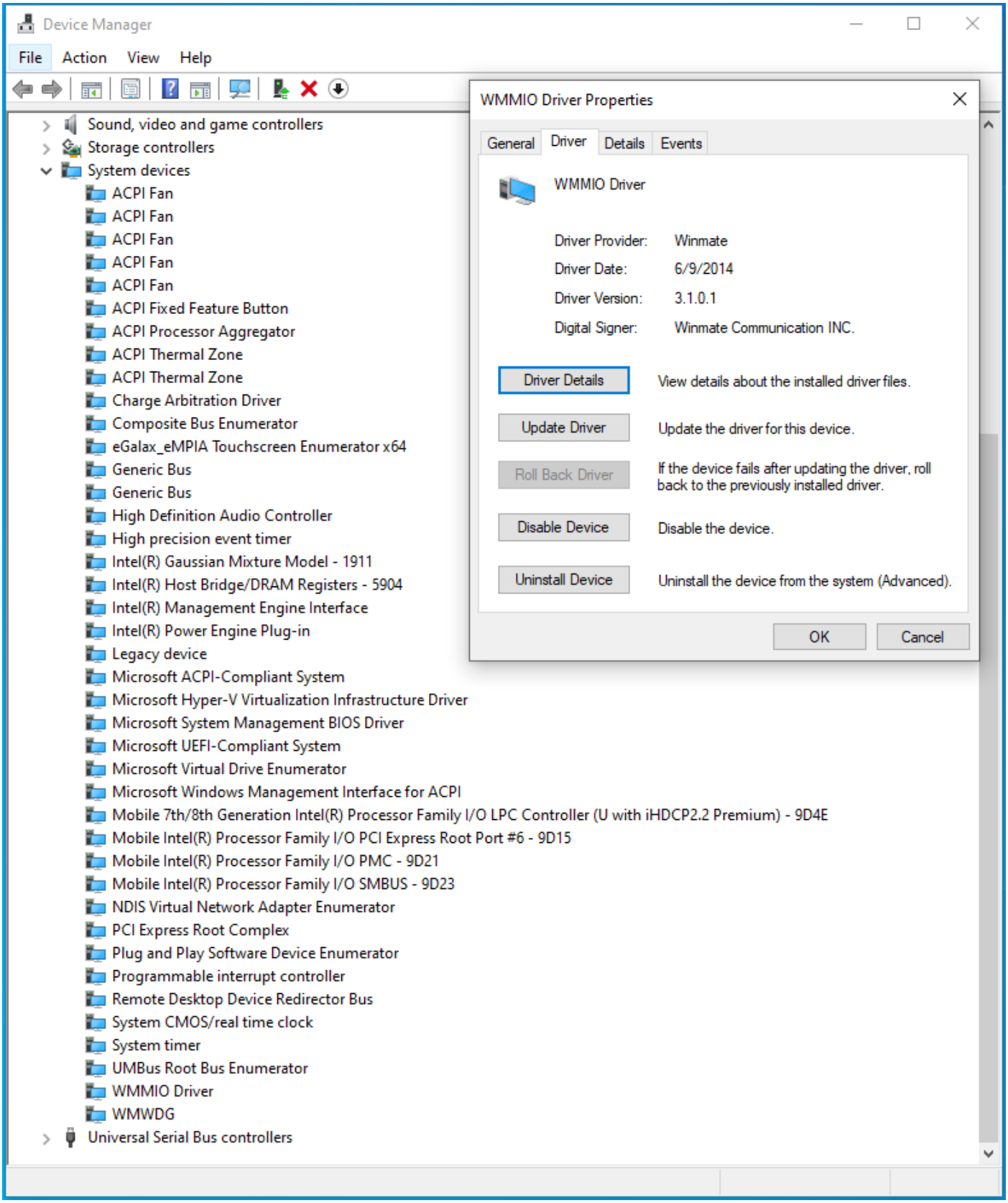
2. Click **WMMIO_64bit**.



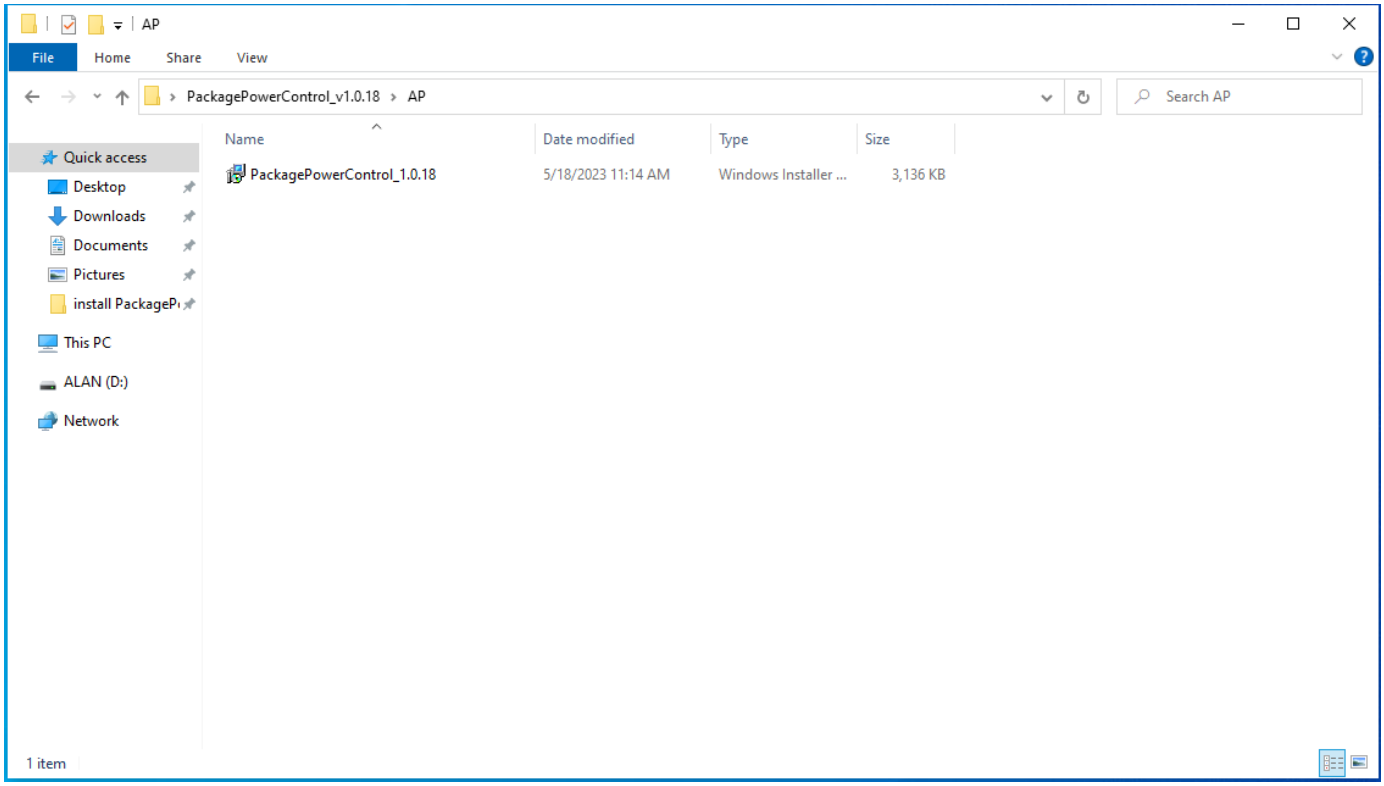

WMMIO_64bit
File
Open new window
Open Windows PowerShell
Open a window you can use to type commands at a Windows PowerShell
Help
Close
Open Windows PowerShell
Open Windows PowerShell as administrator
WMMIO_64bit
Search WMMIO_64bit
Type
Size
File folder
Application 80 KB
Windows Batch File 1 KB
Security Catalog 9 KB
Setup Information 2 KB
ALAN (D:)
Network
5 items

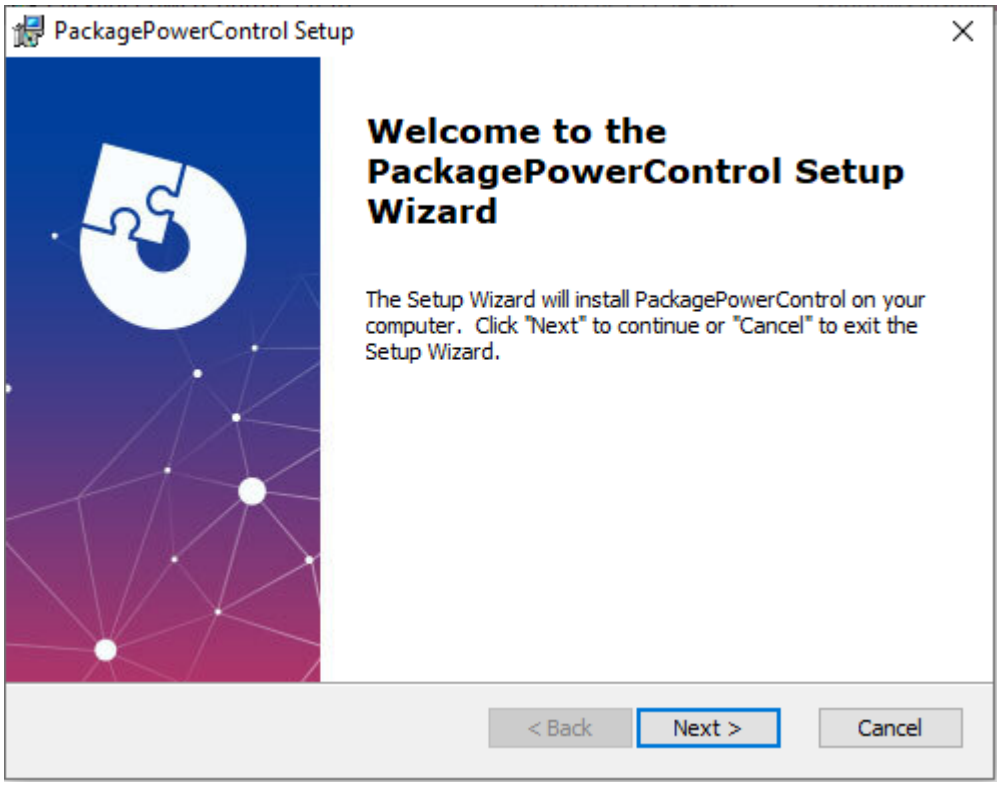

Administrator: Windows PowerShell
PS C:\Users\user\Desktop\PackagePowerControl_v1.0.18\Driver\Hottab Driver(WMMIO) v3.1.0.1\WMMIO_64bit> .\install.bat

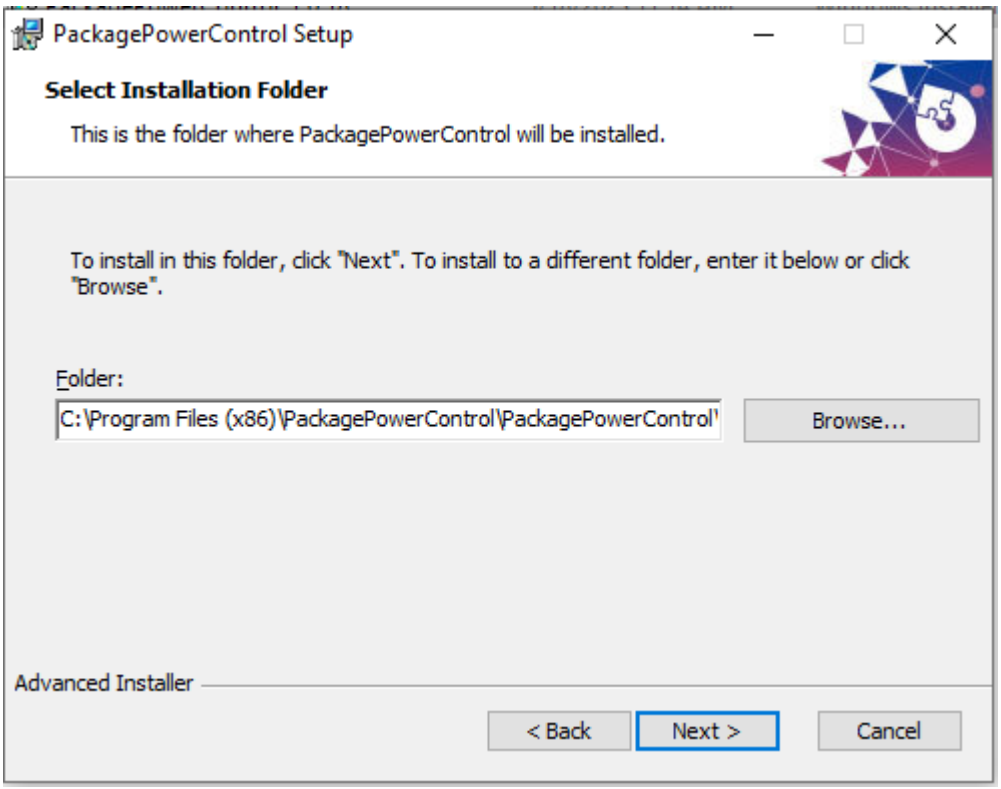

Administrator: Windows PowerShell
PS C:\Users\user\Desktop\PackagePowerControl_v1.0.18\Driver\Hottab Driver(WMMIO) v3.1.0.1\WMMIO_64bit> .\install.bat
C:\Users\user\Desktop\PackagePowerControl_v1.0.18\Driver\Hottab Driver(WMMIO) v3.1.0.1\WMMIO_64bit>DEVCON.EXE INSTALL wmmio.inf "root\wmmio"
Device node created. Install is complete when drivers are installed...
Updating drivers for root\wmmio from C:\Users\user\Desktop\PackagePowerControl_v1.0.18\Driver\Hottab Driver(WMMIO) v3.1.0.1\WMMIO_64bit\wmmio.inf.
Drivers installed successfully.
C:\Users\user\Desktop\PackagePowerControl_v1.0.18\Driver\Hottab Driver(WMMIO) v3.1.0.1\WMMIO_64bit>pause
Press any key to continue . . .

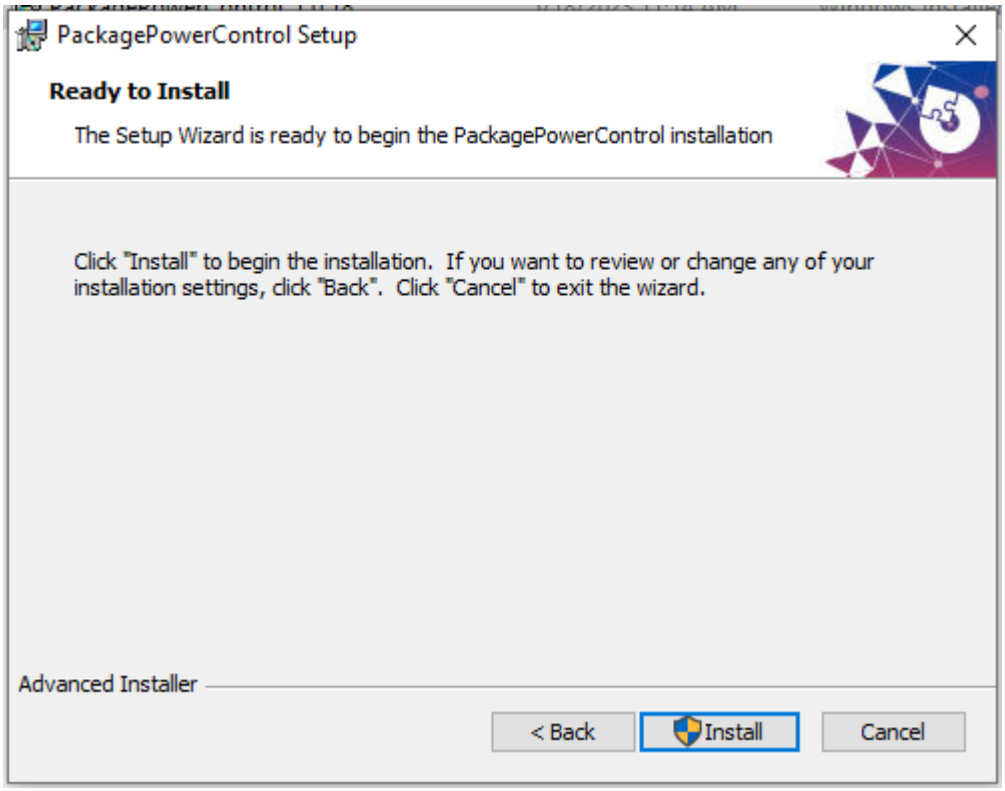

Device Manager
File Action View Help
Sound, video and game controllers
Storage controllers
System devices
ACPI Fan
ACPI Fan
ACPI Fan
ACPI Fan
ACPI Fan
ACPI Fixed Feature Button
ACPI Processor Aggregator
ACPI Thermal Zone
ACPI Thermal Zone
Charge Arbitration Driver
Composite Bus Enumerator
eGalax_eMPIA Touchscreen Enumerator x64
Generic Bus
Generic Bus
High Definition Audio Controller
High precision event timer
Intel(R) Gaussian Mixture Model - 1911
Intel(R) Host Bridge/DRAM Registers - 5904
Intel(R) Management Engine Interface
Intel(R) Power Engine Plug-in
Legacy device
Microsoft ACPI-Compliant System
Microsoft Hyper-V Virtualization Infrastructure Driver
Microsoft System Management BIOS Driver
Microsoft UEFI-Compliant System
Microsoft Virtual Drive Enumerator
Microsoft Windows Management Interface for ACPI
Mobile 7th/8th Generation Intel(R) Processor Family I/O LPC Controller (U with iHDCP2.2 Premium) - 9D4E
Mobile Intel(R) Processor Family I/O PCI Express Root Port #6 - 9D15
Mobile Intel(R) Processor Family I/O PMC - 9D21
Mobile Intel(R) Processor Family I/O SMBUS - 9D23
NDIS Virtual Network Adapter Enumerator
PCI Express Root Complex
Plug and Play Software Device Enumerator
Programmable interrupt controller
Remote Desktop Device Redirector Bus
System CMOS/real time clock
System timer
UMBus Root Bus Enumerator
WMMIO Driver
WMWDG
Universal Serial Bus controllers
WMMIO Driver Properties
General Driver Details Events
WMMIO Driver
Driver Provider: Winmate
Driver Date: 6/9/2014
Driver Version: 3.1.0.1
Digital Signer: Winmate Communication INC.
Driver Details
View details about the installed driver files.
Update Driver
Update the driver for this device.
Roll Back Driver
If the device fails after updating the driver, roll back to the previously installed driver.
Disable Device
Disable the device.
Uninstall Device
Uninstall the device from the system (Advanced).
OK
Cancel

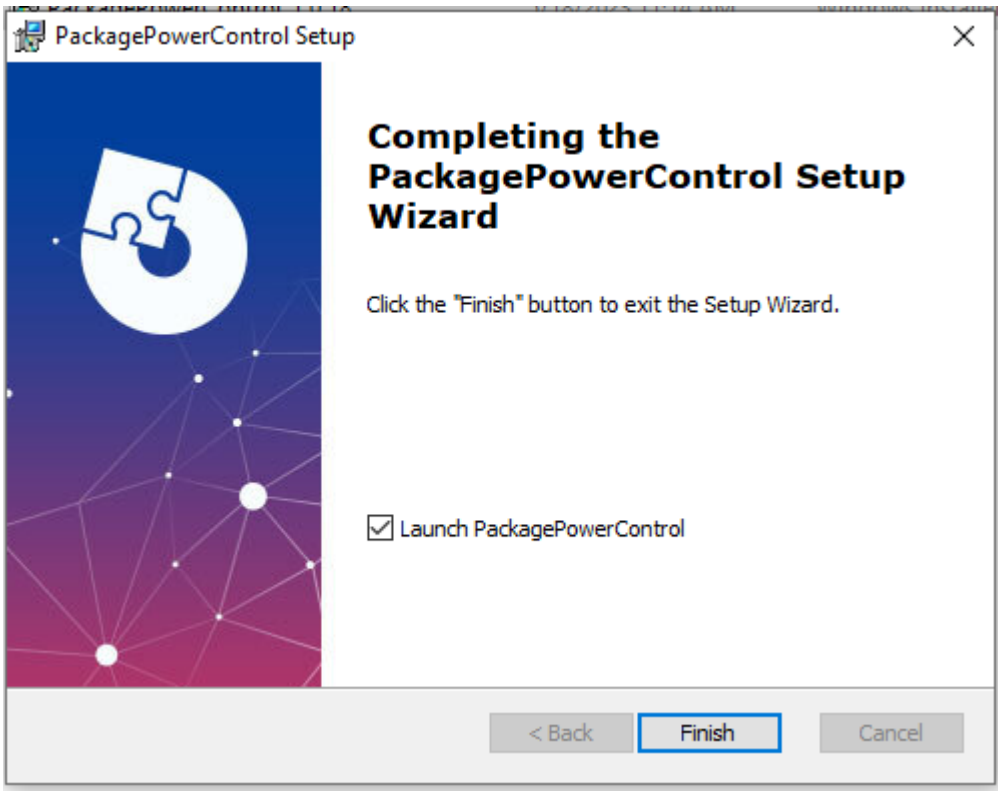
3. Click **AP**.

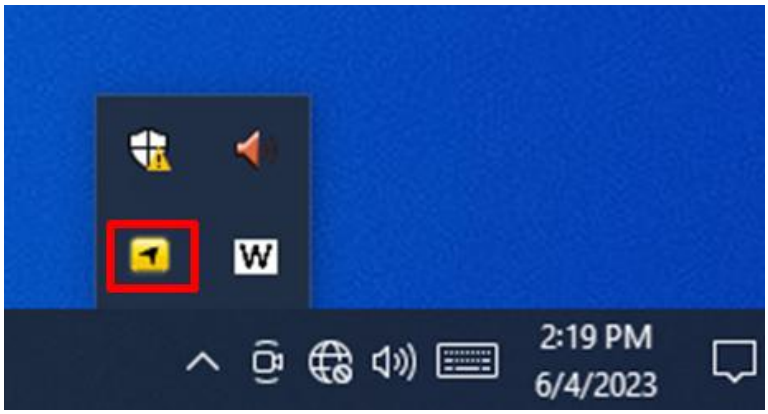

AP
File
Home
Share
View
PackagePowerControl_v1.0.18 › AP
Search AP
Quick access
Desktop
Downloads
Documents
Pictures
install PackageP
This PC
ALAN (D:)
Network
Name
Date modified
Type
Size
PackagePowerControl_1.0.18
5/18/2023 11:14 AM
Windows Installer ...
3,136 KB
1 item


PackagePowerControl Setup
Welcome to the PackagePowerControl Setup Wizard
The Setup Wizard will install PackagePowerControl on your computer. Click "Next" to continue or "Cancel" to exit the Setup Wizard.
< Back
Next >
Cancel


PackagePowerControl Setup
Select Installation Folder
This is the folder where PackagePowerControl will be installed.
To install in this folder, click "Next". To install to a different folder, enter it below or click "Browse".
Folder:
C:\Program Files (x86)\PackagePowerControl\PackagePowerControl\
Browse...
Advanced Installer
< Back
Next >
Cancel


PackagePowerControl Setup
Ready to Install
The Setup Wizard is ready to begin the PackagePowerControl installation
Click "Install" to begin the installation. If you want to review or change any of your installation settings, click "Back". Click "Cancel" to exit the wizard.
Advanced Installer
< Back
Install
Cancel


PackagePowerControl Setup
Completing the PackagePowerControl Setup Wizard
Click the "Finish" button to exit the Setup Wizard.
Launch PackagePowerControl
< Back
Finish
Cancel


2:19 PM
6/4/2023

Appendix

Appendix A: Hardware Specifications

Model Name		IRDRW500
System Specification	CPU	Intel® Raptor Lake Core™ i5-1335U (12M Cache, up to 4.40 GHz)
	System Memory	1 x SO-DIMM socket DDR5-5200 Max. 32GB
	Storage	1 x M.2 2280 M-Key NVMe SSD, Max. 2TB
	BIOS	Insyde BIOS
	Graphics	Intel® Iris® Xe Graphics eligible
	LAN	4 x Intel® 2.5 Gigabit Ethernet Controller
	OS	Windows 11 IoT Enterprise (64 bit) (Optional) Windows 11 Pro 64 bit (Optional) Linux Ubuntu 22.04 (Optional)
Wireless Communications	WLAN/ BT	Support (Optional)
	WWAN	Support (Optional)
IO Ports	Power Input	1 x Isolated 9~36V DC with 3-Pin Terminal Block
	USB Port	2 x USB3.2 Gen2x1 (10Gbps, Type A) 1 x USB3.2 Gen1x1 (5Gbps, Type A) 1 x USB2.0 (Type A)
	Serial Port	2 x RS232/422/485 with DB9 connector (Default RS232, select thru BIOS) 2 x Isolated RS422/485 with 10-Pin Terminal Block (Default RS232, select thru jumper)
	LAN Port	4 x 2.5 Giga LAN RJ45 Connector
	Video	2 x HDMI 2.0b, Max resolution up to 4096x2160@60Hz
	Audio	Mic in Line out
	DIDO	Isolated 8-in/8-out DIO with 20-Pin Terminal Block: 8 x Digital input channels with 2500 VDC isolation protection - Wet contact: Logic 0: 0 ~ 1 VDC/ Logic 1: 2 ~ 30 VDC - Dry contact: Logic 0: Shorted to GND/ Logic 1: Open 8 x Digital output channels - Output voltage: 5 ~ 30 VDC - Output capability sink: 500 mA ax./channel
	SIM Slot	1 x nano SIM slot
	RTC Battery Slot	1 x RTC Battery Slot
	Expansion Port	1 x M.2 2230 E-key Slot for WiFi or Hailo8 AI Accelerator 1 x M.2 2280 M-key Slot for NVMe SSD 1 x M.2 3042/3052 B-key Slot for 4G/5G

Button and Indicator	Button	1 x Power Button 1 x Reset/Clear CMOS Button
	Indicator	1 x LED Indicator for Power
Mechanical Specification	Dimensions	130 x 68 x 150 mm
	Enclosure	Aluminum and Metal Housing
	Gross Weight	1.5 kg
	Mounting	Din-Rail Mount Mini Din-Rail Mount (Optional) Wall Mount (Optional)
Power Management	Power Input	9V to 36V DC (Isolation)
	Power Consumption	100W (max.)
	AC Adapter	12V / 120W
Environment Specification	Operating Temperature	-20°C to 60°C
	Storage Temperature	-40°C to 70°C
	Operating Humidity	10% to 90% RH, Non-Condensing
	Shock	Operating, MIL-STD-810G, Method 516.7, Procedure I
	Vibration	Operating, MIL-STD-810G, Method 514.6, Procedure I
Accessory	Accessory	1 x 100~240V AC to DC Adapter 1 x Power Cord 1 x Open Wire Cable 1 x Terminal Block 3-Pin to 2.5Ø Female Adapter Cable 1 x Terminal Block 20-Pin connector for DIDO 1 x Terminal Block 10-Pin connector for COM 1 x Terminal Block 3-Pin connector for Power 1 x Din Rail Mounting kits
	Optional Accessory	1 x Mini Din-Rail Mounting kits (Optional) 1 x Wall Mounting kits (Optional)

NOTE:

1. Total usable memory will be less dependent upon actual system configuration.
2. Length measurements do not include protrusions. Weight varies with options.
3. Measured at maximum backlight and high CPU load.
4. Accessories and integrated options may vary depending on your configuration
5. All specifications are subject to change without prior notice.
6. The product shown in this datasheet is a standard model. For diagrams that contain customized or optional I/O, please contact the Winmate Sales Team for more information.

Appendix B: Approvals and Certifications

European Union

This equipment is in conformity with the requirement of the following EU legislations and harmonized standards. Product also complies with the Council directions.

Electromagnetic Compatibility Directive (2014/30/EU)

- EN55035: 2017
  - IEC61000-4-2: 2008
  - IEC61000-4-3: 2006+A1: 2007+A2: 2010
  - IEC61000-4-4: 2012
  - IEC61000-4-5: 2014+A1: 2017
  - IEC61000-4-6: 2013/COR1:2015
  - IEC61000-4-8: 2009
  - IEC61000-4-11: 2004+A1: 2017
- EN55032: 2015
- EN61000-3-2:2014
- EN61000-3-3:2013

Low Voltage Directive (2014/35/EU)

- EN 62368-1:2014

Federal Communications Commission on electromagnetic interference

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may cause harmful and (2) this device must accept any interference received, including that may cause undesired operation

Appendix C: Wake on LAN Support Notice

- On Windows 10 and Windows 11, Wake on LAN is not supported in S3 (Modern Standby) state.
- On Windows 11, Wake on LAN is supported in S4 (Hibernate) state.

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