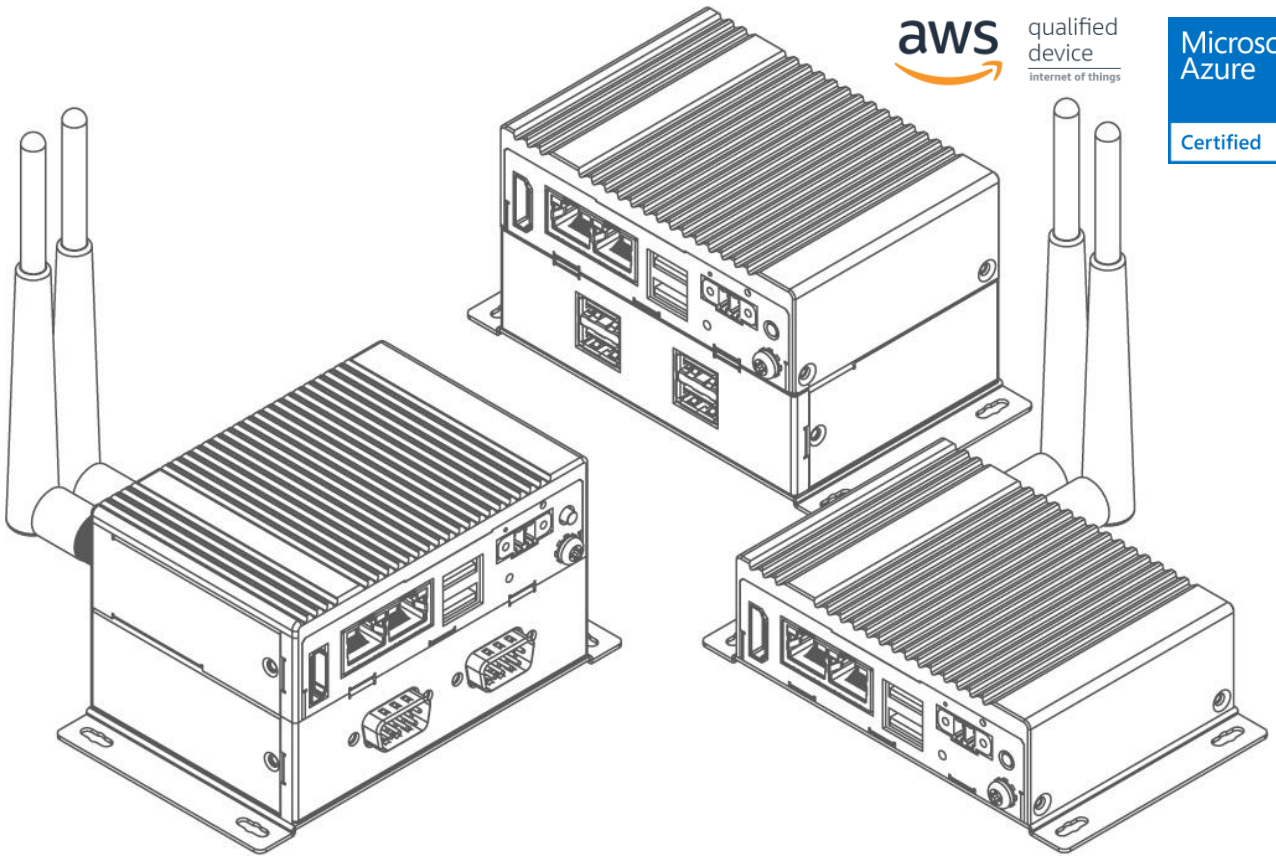
IoT Gateway

Intel® Elkhart Lake Celeron® N6211, 1.2 GHz Processor



EAC Mini EACIEK20

User Manual

Document Version 1.1
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Preface

Copyright Notice

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Trademark Acknowledgement

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Disclaimer

We reserve the right to make changes, without notice, to any product, including circuits and/or software described or contained in this manual in order to improve design and/or performance. We assume no responsibility or liability for the use of the described product(s) conveys no license or title under any patent, copyright, or masks work rights to these products, and make no representations or warranties that these products are free from patent, copyright, or mask work right infringement, unless otherwise specified. Applications that are described in this manual are for illustration purposes only. We make no representation or guarantee that such application will be suitable for the specified use without further testing or modification.

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 1W17Axxxxxxxx means October of year 2017.

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.)
- Detailed description of the problem
- The exact wording of 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.



Warning!
An Electrical Shock Warning indicates the potential harm from electrical hazards and how to avoid the potential problem.



Alternating Current
The Protective Conductor Terminal (Earth Ground) symbol indicates the potential risk of serious electrical shock due to improper grounding.

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.



Warning!
During heavy loading in 50°C environment, the top side of the EAC Mini may be over 70°C. Please do not touch these parts with your bare hands.



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.

Safety Precautions

For your safety carefully read all the safety instructions before using the device. All cautions and warnings on the equipment should be noted. Keep this user manual for future reference.

***Let service personnel to check the equipment in case any of the following problems appear:**

- The power cord or plug is damaged.
- Liquid has penetrated into the equipment.
- The equipment has been exposed to moisture.
- The equipment does not work well or you cannot get it to work according to the user manual.
- The equipment has been dropped and damaged.
- The equipment has obvious signs of breakage.

- Do not leave this equipment in an uncontrolled environment where the storage temperature is below -20°C (-4°F) or above 60°C (140°F). It may damage the equipment.



Caution
Use the recommended mounting apparatus to avoid risk of injury.



Caution
Do not cover the openings!



Warning!
Only use the connection cords that come with the product. When in doubt, please contact the manufacturer.



Warning!
Always ground yourself against electrostatic damage to the device.

Important Information

Federal Communications Commission Radio Frequency Interface Statement



This device complies with part 15 FCC rules.
Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a class "B" digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at him own expense.

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
- EN 55032: 2015
- EN61000-3-2:2014
- EN61000-3-3:2013

Low Voltage Directive (2014/35/EU)

- EN 62368-1:2014

About This User Manual

The documentation set for the Winmate® EAC Mini EACIEK20 IoT Gateway provides information for specific user needs, and includes:

- **EAC Mini EACIEK20 Quick Start Guide** - describes how to get the box computer up and running.
- **EAC Mini EACIEK20 User Manual** – contains detailed description on how to use the display, its components and features.



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

Chapter 1: Introduction

This chapter provides the EAC Mini EACIEK20 IoT Gateway product overview, describes its features and hardware specifications.

1.1 Overview

Congratulations on purchasing Winmate® EAC Mini EACIEK20 IoT Gateway

The EAC Mini EACIEK20 is a compact industrial IoT Gateway with low power consuming Intel® Elkhart Lake processor. The EAC Mini provides great expansion including one M.2 2242 Key B slot for SSD or Wi-Fi / Bluetooth. Expansion module offers great options from additional USB ports to WWAN, CANBus, 16Channel Digital I/O, etc. Wireless connectivity and all necessary input and output ports allow the EAC Mini to send data from manufacturing facilities directly to cloud server.

Abundant I/O ports and expansion module with more than thirty different combinations make EAC Mini is suitable for smart factory and machine automation applications.

1.2 Product Features

Winmate® EAC Mini IoT Gateway offers the following features:

- Intel® Celeron® N6211 (1.5M Cache, up to 3.0GHz)
- Intel® Celeron® N6210 (1.5M Cache, up to 2.6GHz) (Optional)
- Fanless cooling system
- Compact size 100 x 70 x 31 mm (w/o mounting bracket)
- Expansion module with 30+ combinations, including 4G/3G/Wi-Fi/ Bluetooth
- Various mounting options: desk, wall, VESA, din-rail
- Suitable for smart factory applications
- Microsoft Azure Certified for IoT
- AWS lot Greengrass Certified
- Expansion Module
  30+ combinations, ex:
  - WWAN Expansion Board (Single SIM Slot)
  - 3-port RS232/422/485 w/ isolation
  - 16-Channel Digital I/O w/ isolation
  - 2-port CANBUS w/ isolation
  - 3 -port USB 2.0
  - 2-port RS232/422/485 w/ isolation
  - 2-port Giga-LAN
  - WWAN Expansion Board (Dual SIM Slot)

1.3 Hardware Specifications

		Model Name
		EACIEK20
System Specification	CPU	Intel® Celeron® N6211 (1.5M Cache, up to 3.0GHz) Intel® Celeron® N6210 (1.5M Cache, up to 2.6GHz) (Optional)
	Graphics Engine	Intel® UHD Graphics
	BIOS	Insyde UEFI
	Watchdog Timer	Programmable 256 levels, timer interval 1 to 255 sec.
	Memory	1 x 3200MT/s 4GB LPDDR4 1 x 3200MT/s 8GB LPDDR4 (Optional)
Storage	eMMC	eMMC: Onboard 32 GB eMMC: Onboard 64 GB (Optional) eMMC: Onboard 128 GB (Optional)
	M.2 SATA	M.2 SSD 128GB (Optional) M.2 SSD 256GB (Optional) M.2 SSD 512GB (Optional)
Expansion	M.2	1 x M.2 2242 Key B slot for SSD or WiFi
	USB Wafer	2 x USB Wafer
External I/O	USB	2 x USB3.2 Gen2x1 (TypeA)
	Ethernet	2 x Giga LAN RJ45 Connector
	HDMI	1 x HDMI 2.0
Power Management	Power Supply	9V to 36V DC, 2-Pin Terminal Block
	Grounding Protection	Chassis Grounding
Buttons and LED Indicators	LED Indicator	1 x Power
	Button	1 x Power Button 1 x Reset Button
Mechanical Specification	Dimensions	100 (W) x 70 (H) x 31(D) mm (One layer) 100 (W) x 70 (H) x 61(D) mm (Double layer)
	Weight	0.4 kg (One layer), 0.5 kg (double layer)
	Mounting	Desk Mounting (Default), Wall Mounting (Default), VESA Mounting (Optional), DIN-Rail Mounting (Optional)
Environment	Cooling	Fanless
	Enclosure	Metal
	Operating Temp.	0~55° C
	Storage Temp.	-15~70° C
	Operating Humidity	10~90% RH
	Shock	Operating, IEC 60068-2-27

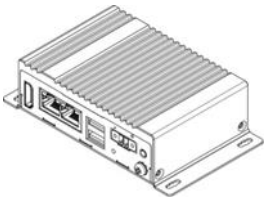
Operating System	Vibration	Operating, IEC 60068-2-64
	IP Rating	IP30
	OS	Windows 11 IoT Enterprise (64 bit) (Optional) Windows 10 IoT Enterprise (64 bit) Optional) Linux Ubuntu 22.04 (Optional)
Certificate	EMC & Safety	CE, FCC
	IoT	Microsoft Azure Certified for IoT AWS lot Greengrass Certified

1.4 Package Contents

Carefully remove the box and unpack EAC Mini EACIEK20 IoT Gateway. Please check if all the items listed below are inside your package. If any of these items are missing or damaged contact us immediately.

Carefully remove the box and unpack your device. Please check if all the items listed below are inside your package. If any of these items are missing or damaged contact us immediately.

Standard factory shipment list:



EAC Mini IoT Gateway

Varies by product specifications



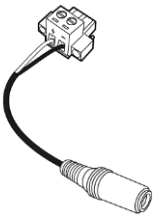
Quick Start Guide (Hardcopy)

P/N: 91521110111M



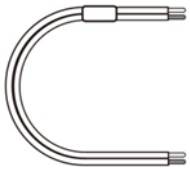
2 pin Terminal Block for Power

P/N: 604540605D02



Terminal Block 2 pin to 2.5Ø Female Adapter Cable

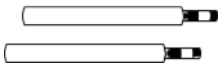
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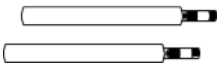
Open Wire Cable

P/N: 94EL02X020E

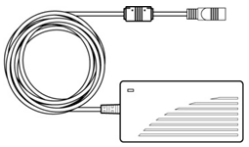
Optional Accessories:



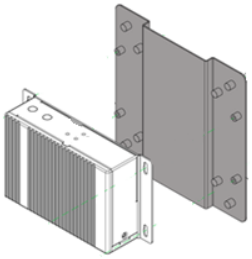
- **WLAN External Antenna**
  P/N: 397SM000000S



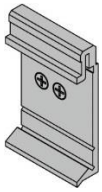
- **WWAN External Antenna**
  P/N: 397SM000000Q



- **AC Adapter 12V/ 36W**
  P/N: 922D036W12V6



- **VESA Mounting Kit**
  P/N:98K000A0009A

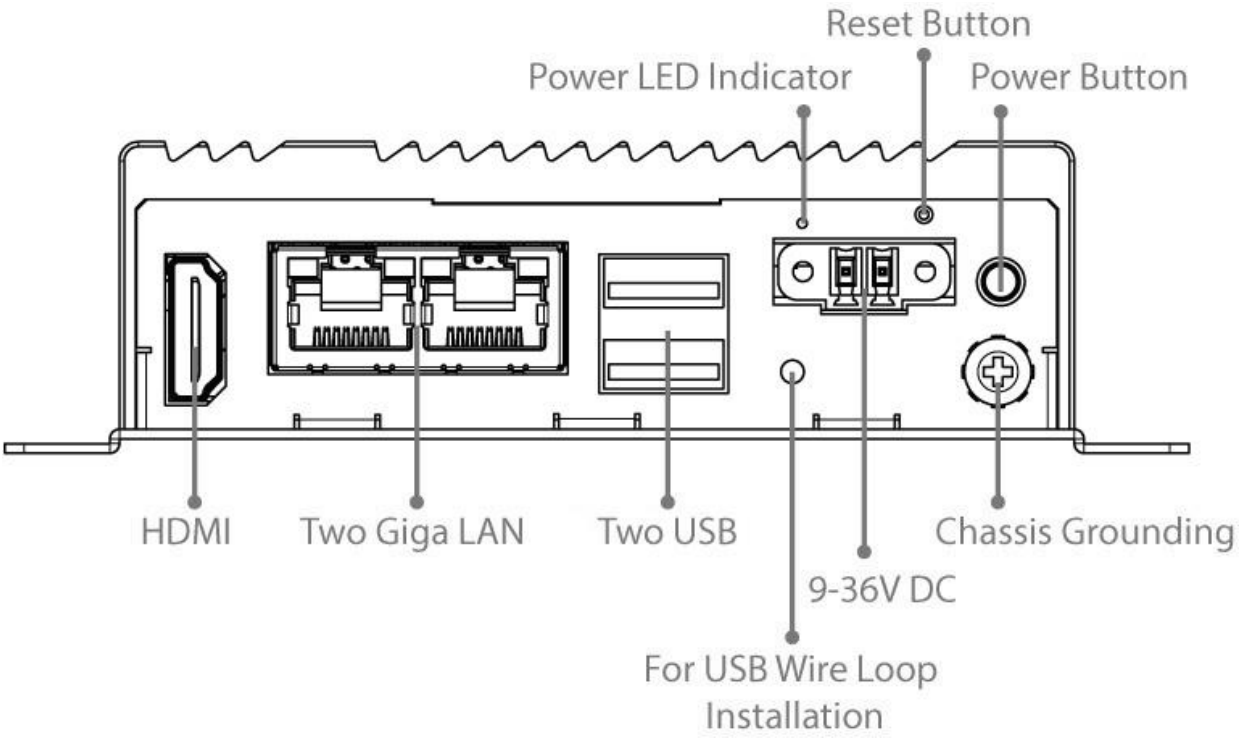


- **DIN Rail Mounting Kit**
  P/N: 98K000A00099

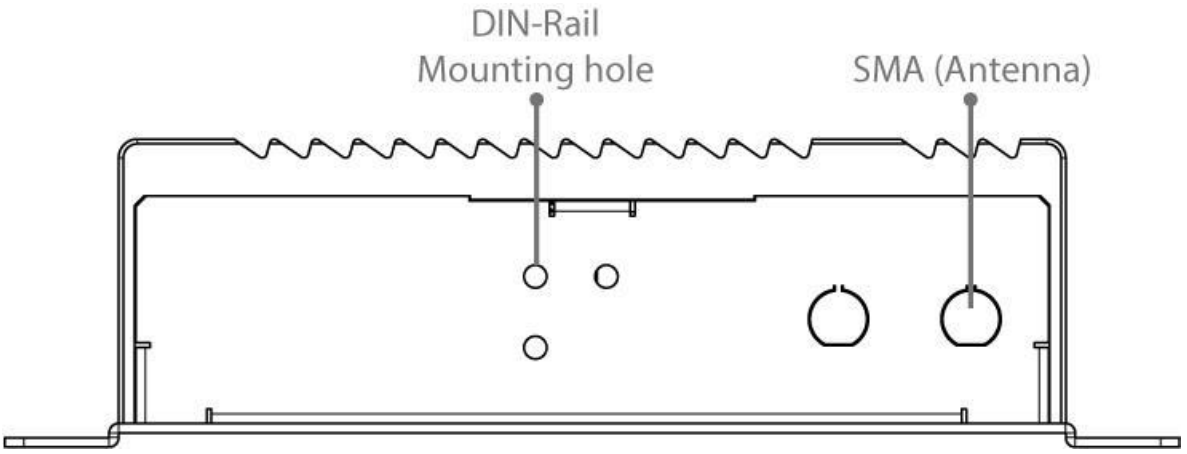
1.5 Description of Parts

This section includes front and rear side I/O ports location of the EAC Mini EACIEK20 IoT Gateway.

Front Side



Rear Side



1.6 LED Indicators

The EAC Mini IoT Gateway provides one HDD and one Power LED indicators located on the front for status monitoring.

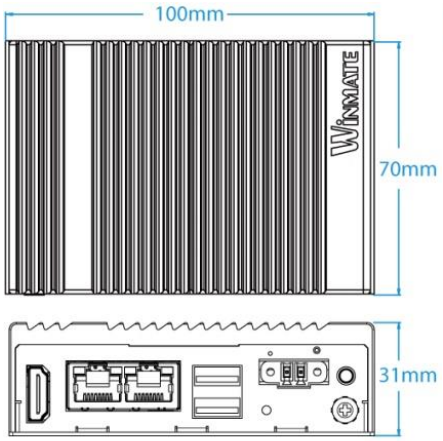
LED Type	Status	Description
Power	On	Power is on
	Off	Power is off

1.7 Mechanical Dimensions

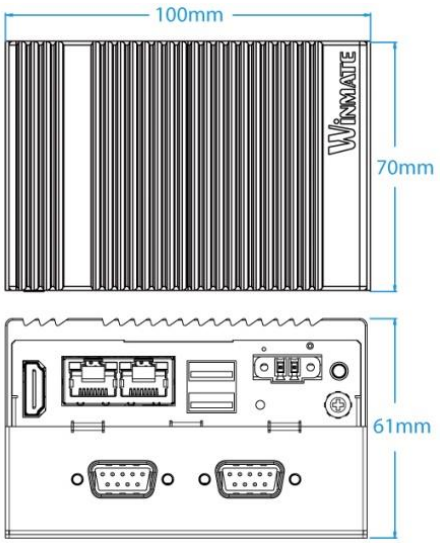
All dimensions are shown in mm (millimeters).

Unit without mounting bracket

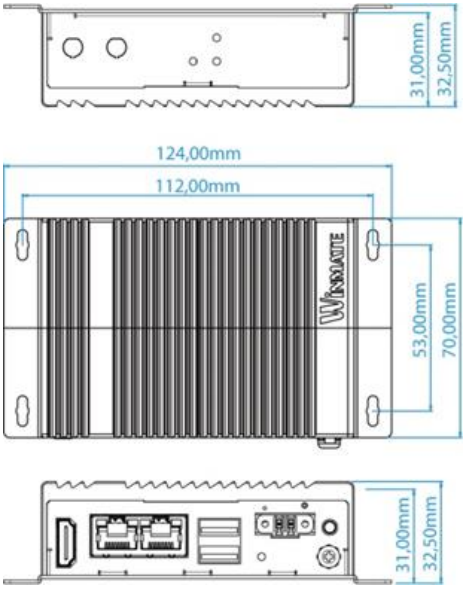
Standard



With Expansion Module



Unit with mounting bracket



Chapter 2: Hardware Installation

This chapter provides information on how to use external I/O and the installation of EAC Mini EACIEK20 IoT Gateway hardware.

2.1 Connectors

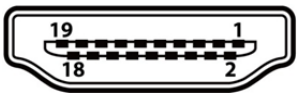
This section describes all the external connectors located on the EAC Mini IoT Gateway.

The following sections give you information about EAC Mini standard connectors and pin assignments.

2.1.1 HDMI Connector

Plug HDMI signal cable to the HDMI connector of the EAC Mini EACIEK20, and plug the other end to the monitor.

Pin assignment and signal names of HDMI connector

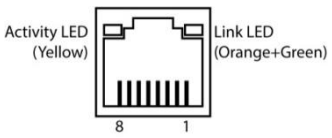


Pin №	Signal Name	Pin №	Signal Name
1	HDMI_RX2+	2	GND
3	HDMI_RX2-	4	HDMI_RX1+
5	GND	6	HDMI_RX1-
7	HDMI_RX0+	8	GND
9	HDMI_RX0-	10	HDMI_RXC+
11	GND	12	HDMI_RXC-
13	HDMI_CON_CEC	14	NC
15	HDMI_CON_SCL	16	HDMI_CON_SDA
17	HDMI_CON_CABLE	18	+5V_HDMI
19	HDMI_CON_HP		

2.1.2 Ethernet Connector

The EAC Mini EACIEK20 has two Ethernet connectors located on the front. Ethernet ports provide a standard RJ45 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

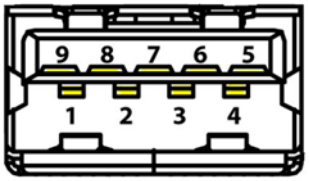


Pin №	Signal Name	Pin №	Signal Name
1	TX1+	2	TX1-
3	TX2+	4	TX3+
5	TX3-	6	TX2-
7	TX4+	8	TX4-

2.1.3 USB Connector

The EAC Mini EACIEK20 provides two USB3.2 Gen2x1 Type-A connectors. Use USB3.2 Gen2x1 Type-A 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+		

2.1.4 Power Connector

DC power source input is a 2 pin terminal block connector. Power Input is 9V to 36V DC in.



2.2 Hardware Installation

This chapter describes how to install optional expansion module in the system.

Caution
Always remove the power cord before installing the hardware.

2.2.1 M.2 2242 Key B SSD Installation

To insert M.2 2242 Key B SSD:

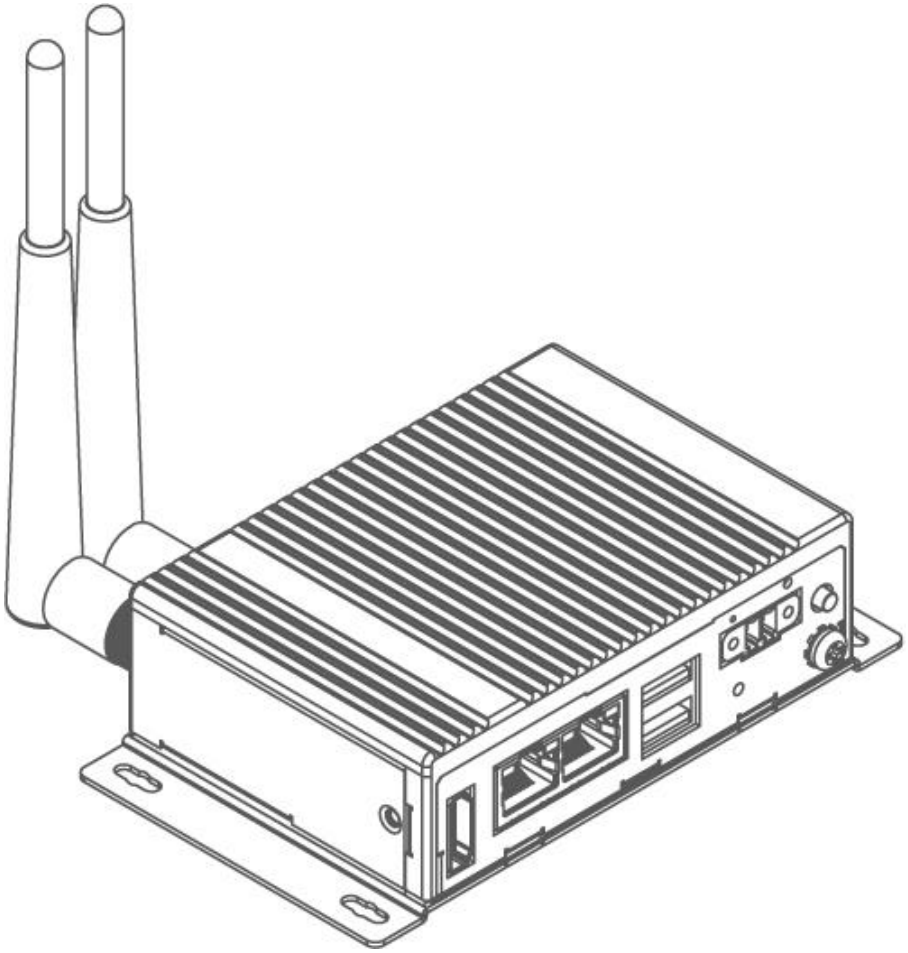
1. Unscrew the three screws on the bottom cover.
2. Plug in M.2 SSD card with into the M.2 slot.
3. Screw one screw on board to fix M.2 SSD.
4. Screw back the bottom cover.

2.2.2 External Antenna Installation

Notice that external antenna is an optional feature of the EAC Mini EACIEK20.

To install external SMA antenna:

1. Remove the rubber cap on the SMA connector before installing the antenna.
2. Align the antenna with the SMA connector located on the rear side of the EAC Mini and fasten it as shown on the picture.
3. Adjust the position of external antenna for better signal.

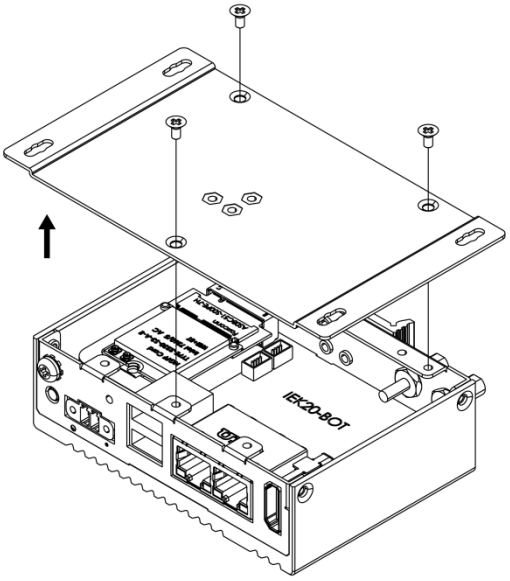


2.2.3 Expansion Module Installation

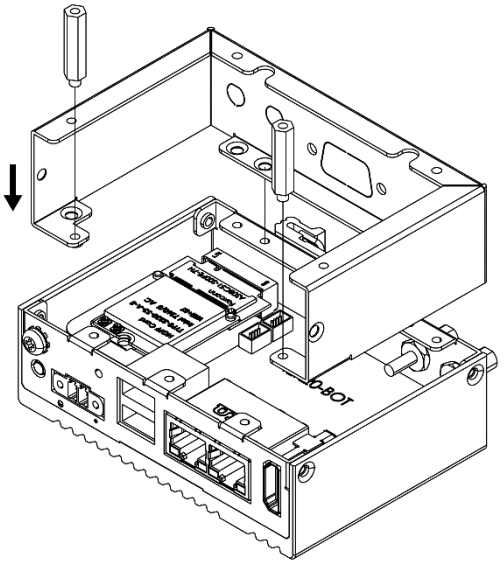
Notice that expansion module is an optional feature of the EAC Mini EACIEK20.

To install expansion module:

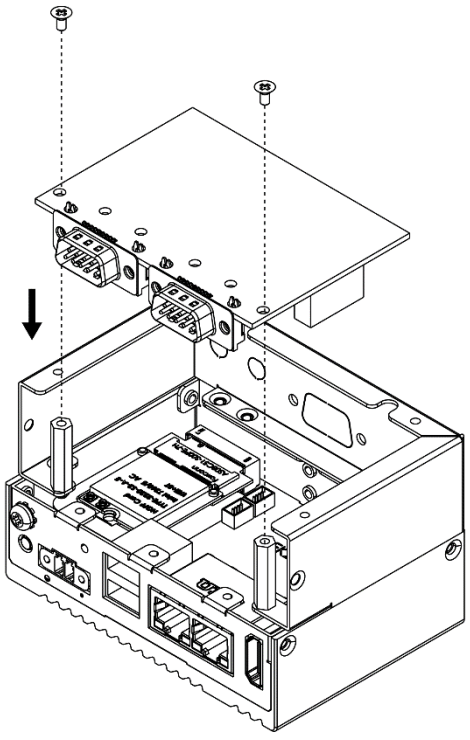
❶ Unscrew the three screws, and remove the bottom cover.



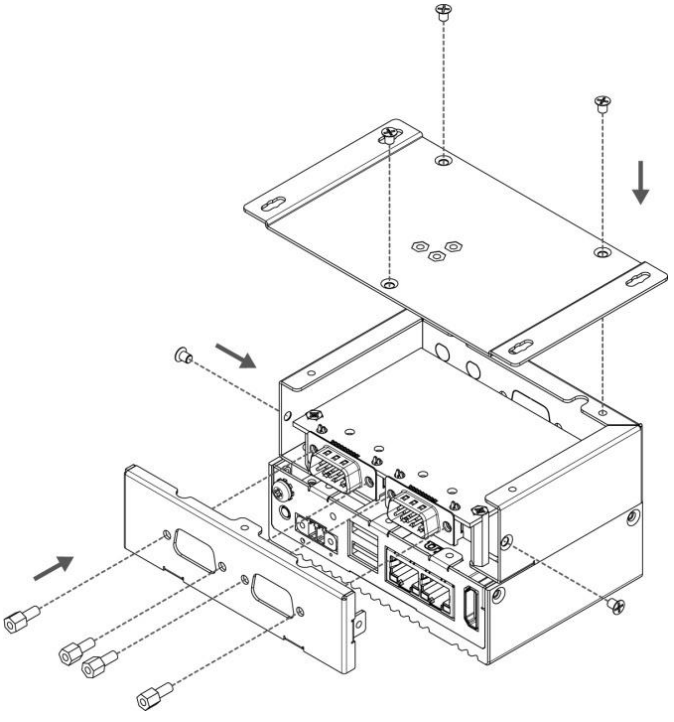
❷ Attach the 2nd layer module bracket and install four copper pillars



❸ Attach the 2nd layer I/O module, and fasten four screws.



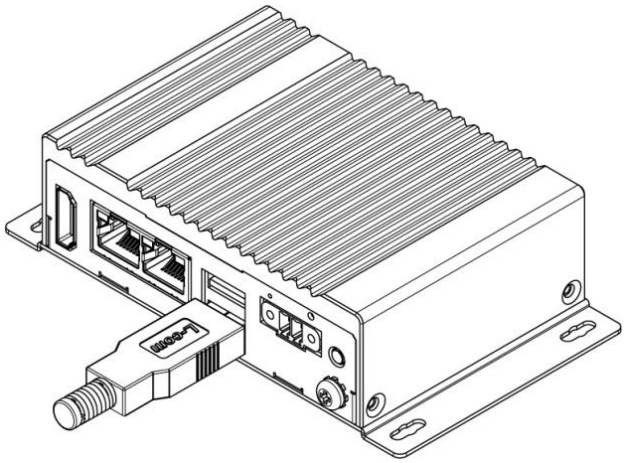
❹ Fasten three screws to screw back the bottom cover fasten two screws on the side of the module bracket and fasten copper pillars/ screws in front to secure I/O module.



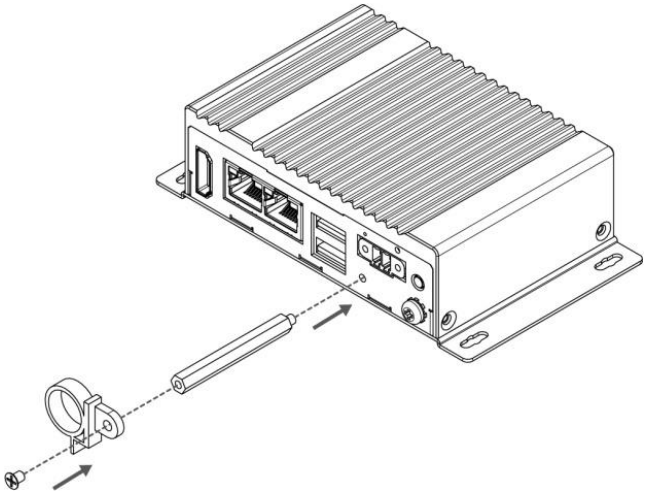
2.2.4 USB Wire Loop Installation

To install USB Wire Loop:

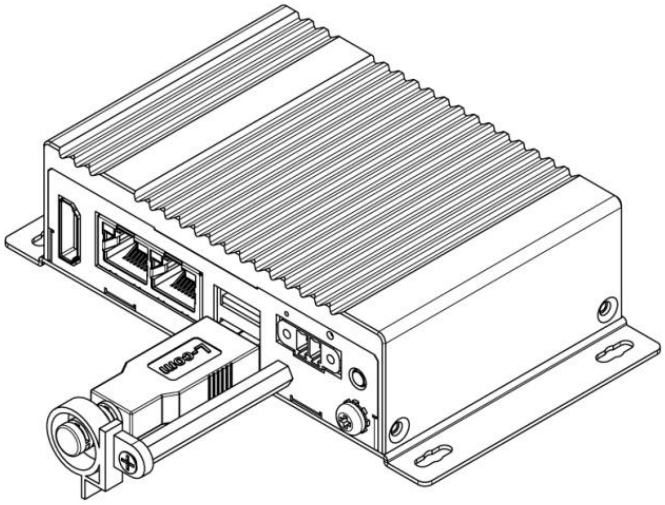
❶ Insert USB to the USB slot.



❷ Install copper pillar, USB wire loop, and fasten one screw to secure the USB to the EAC Mini EACIEK20.



❸ You have finished the USB Wire Loop installation.



2.3 Connecting the Power

The DC power supply connector of the EAC Mini IoT Gateway is on the front panel. The DC power input for the EAC Mini allows a voltage input range from 9 V DC to 36 V DC.

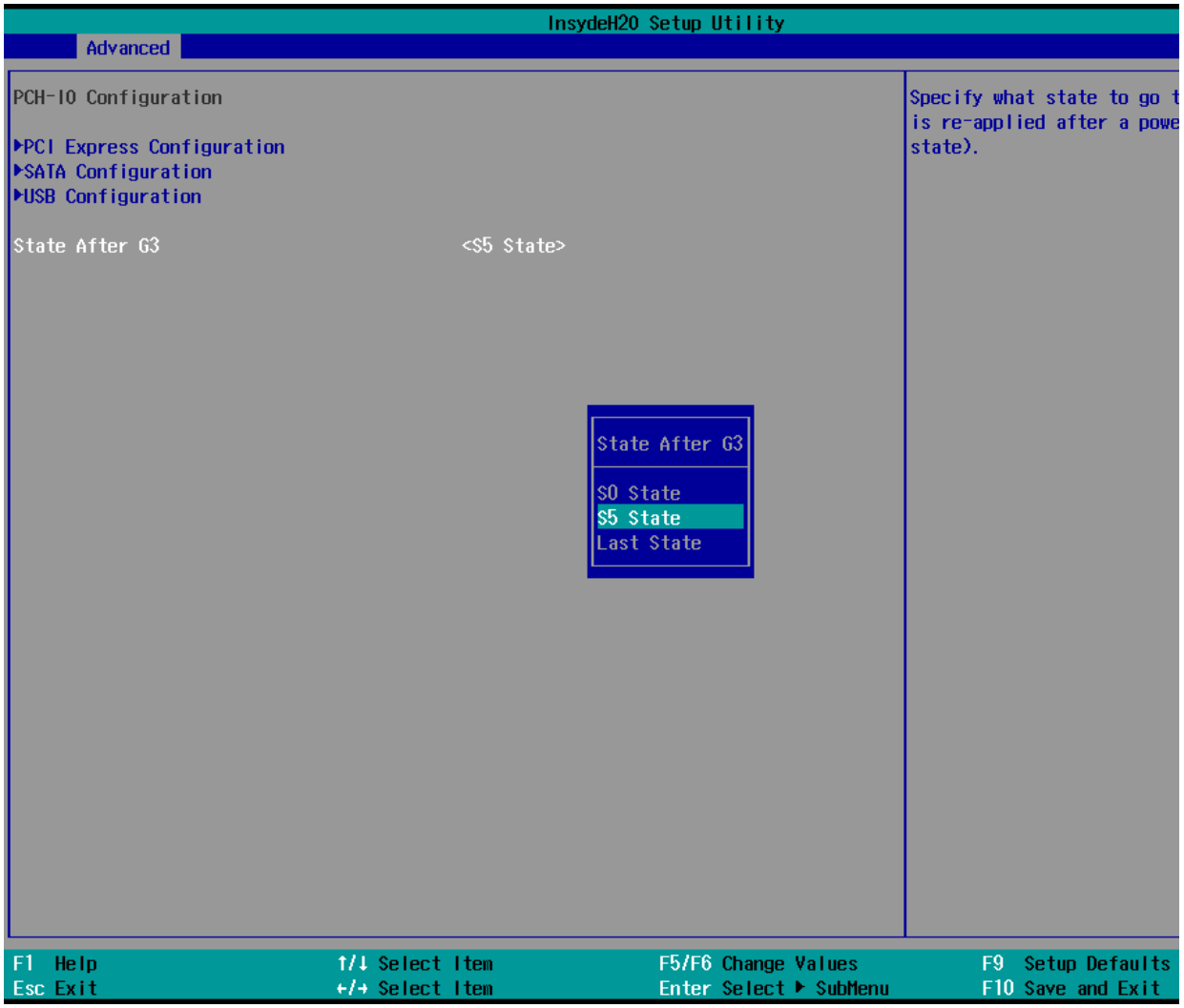
Warning!
Ensure voltage and polarity is compliant with the DC input. Improper input voltage or polarity can cause system damage.

2.3.1 Connecting the Power

Connect EAC Mini to 9-36V DC. The power source can either be from a power adapter or an in-house power source. Front power LED indicator indicates the power status of the device.

Note:
If EAC Mini will start to open and go into Windows when you plug the power, you can follow the BIOS setting.

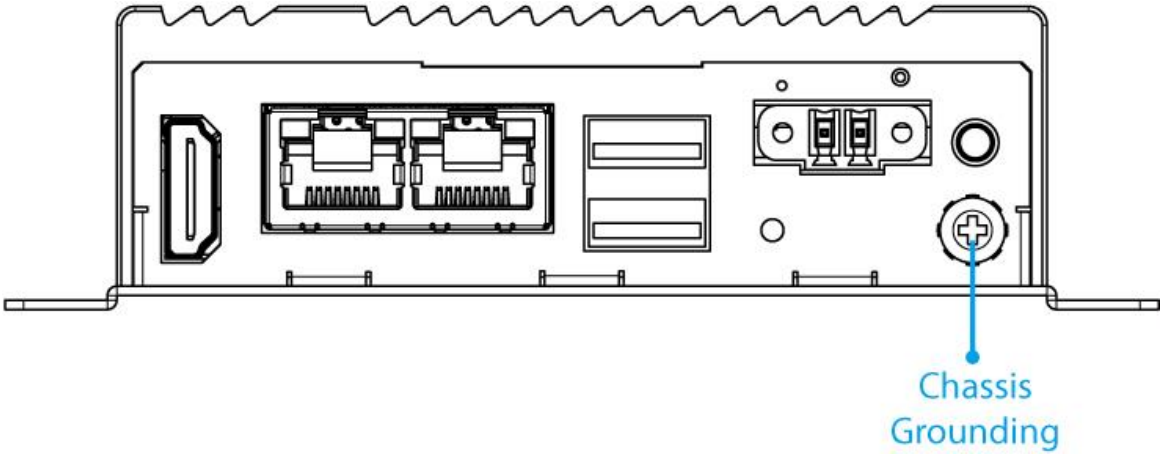
- State After G3: S0 state



To learn more about BIOS setting, please follow Chapter 4 of the IoT Gateway EACIL20 User Manual.

2.3.2 Chassis Grounding

EAC Mini provides EMI protection and a stable grounding base. Use chassis grounding point located on the front.



Chapter 3: Mounting

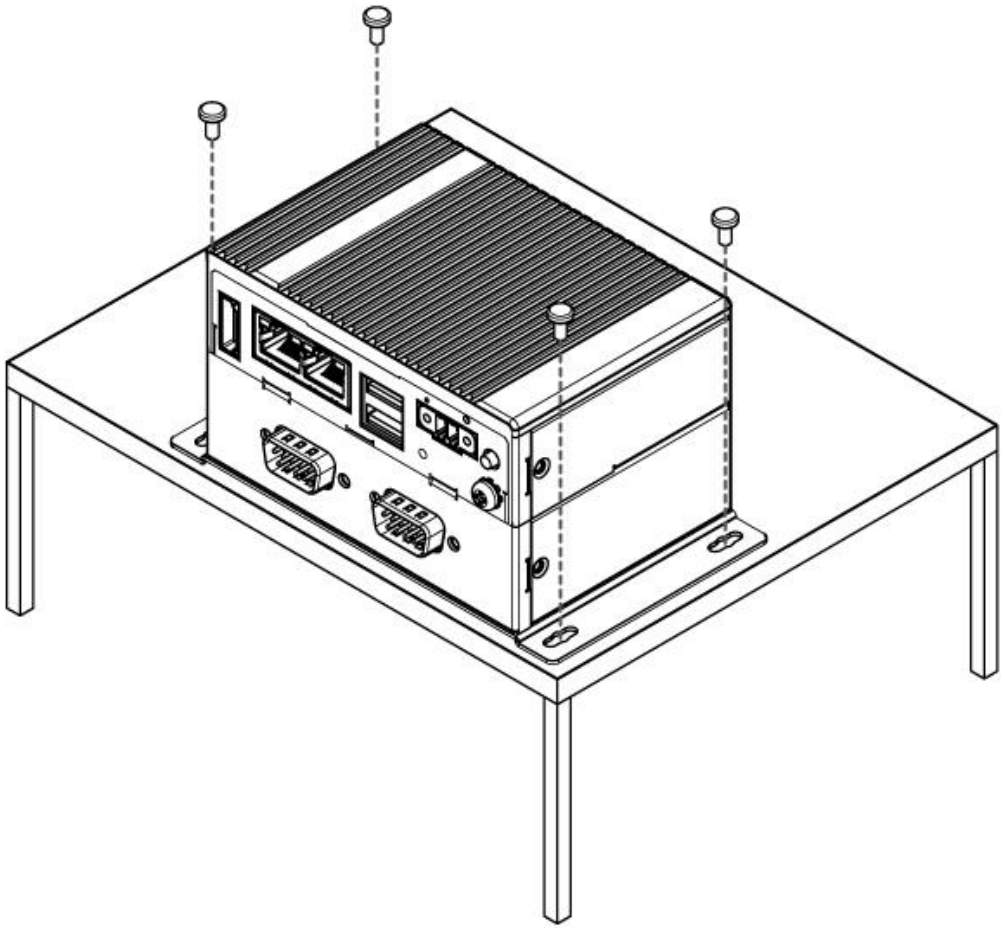
The EAC Mini supports five types of mounting: wall and desk mounting by default, and optional VESA, DIN-rail mounting solutions. You can purchase mounting kit from Winmate as an optional accessory.

3.1 Wall/ Desk Mount

L-shape mounting brackets for wall/ desk mounting are supplied with the EAC Mini. Before mounting the unit to the wall, attach L-shape mounting brackets to the EAC Mini (supplied by Winmate).

Mounting Instruction:

❶ Place the EAC Mini on the fixture (ex. table) and fasten four M3 screws to secure the unit to the fixture.



3.2 DIN-Rail Mount

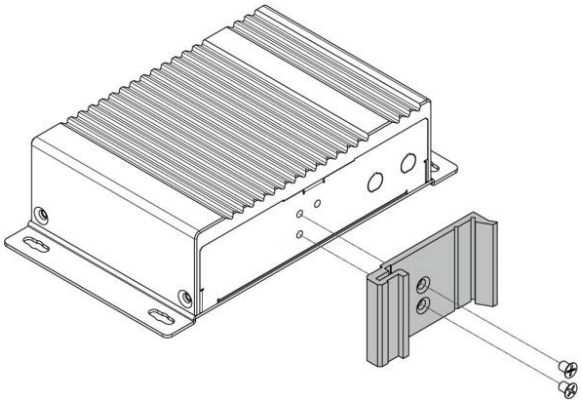
You can purchase DIN-Rail mounting kit from Winmate as an optional accessory.

DIN-Rail Mounting Kit:
Part Number: 821118551400

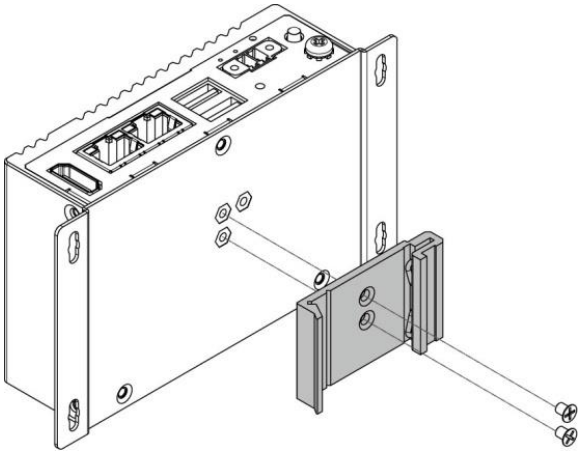
Mounting Instruction:

❶ Fasten screws to secure DIN-rail mounting bracket to the EAC Mini.

Rear Side

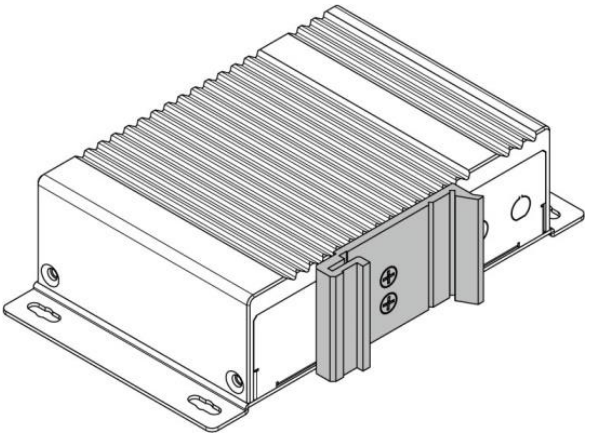


Bottom Side

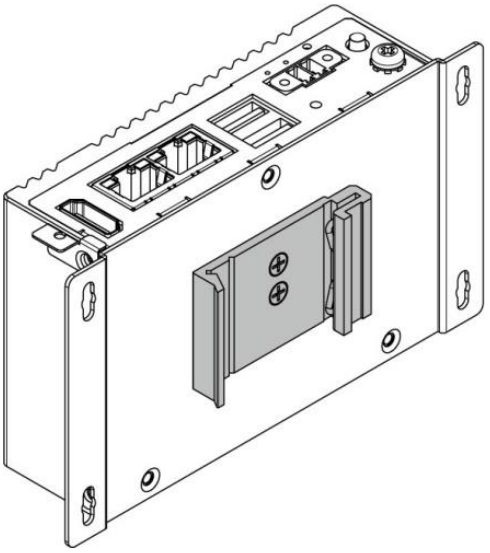


❷ Place the EAC Mini with the DIN-Rail bracket on the DIN-Rail.

Rear Side



Bottom Side



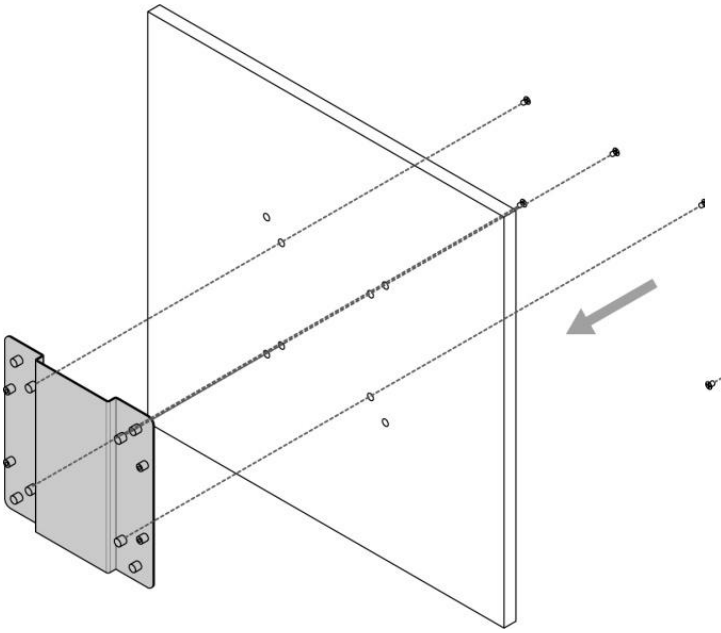
3.3 VESA Mount

You can purchase VESA mounting kit from Winmate as an optional accessory.

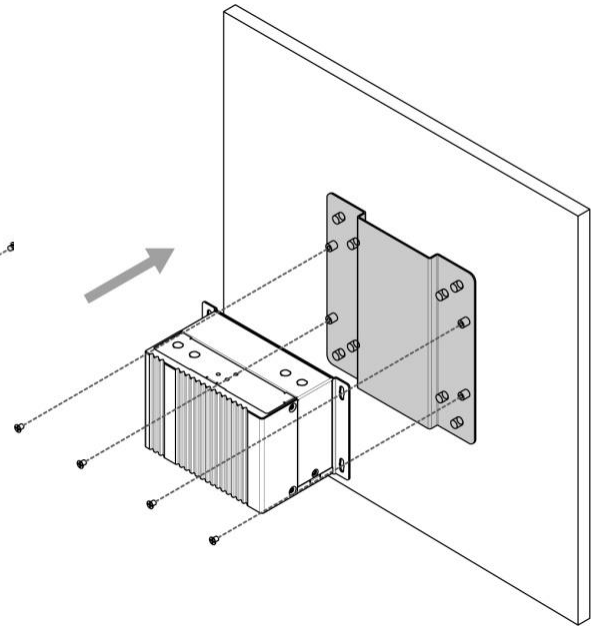
VESA Mounting Kit
Part Number: 821118561001

Mounting Instruction:

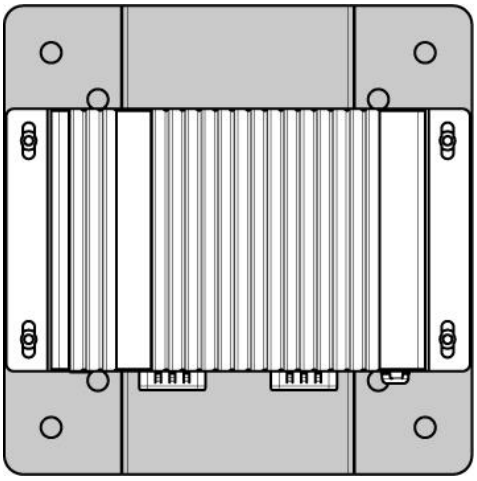
❶ Mark the location of the screw holes on the fixture (ex. wall). Align the VESA mounting bracket with the screw location and screw VESA plate from the rear side of the fixture.



❷ Place the EAC Mini on the VESA mounting bracket and fasten screws to secure and the EAC Mini to the VESA plate.



❸ You have completed VESA mounting installation. Connect other peripherals if needed.



Chapter 4: Insyde UEFI BIOS Setup

BIOS Setup Utility is a program for configuration basic Input / Output system settings of the computer for optimum use. This chapter provides information on how to use BIOS setup, its functions and menu.

4.1 How and When to Use BIOS Setup

To enter the BIOS setup, you need to connect an external USB keyboard, external monitor and press Del key when the prompt appears on the screen during start up. The prompt screen shows only few seconds so need press Del key quickly.

Important:
Updated BIOS version may be published after the manual released. Check the latest version of BIOS on the website.

You may need to run BIOS setup utility for reasons listed below:

1. Error message on screen indicates to check BIOS setup
2. Restoring the factory default settings.
3. Modifying the specific hardware specifications
4. Necessity to optimize specifications

BIOS Navigation Keys

The following keys are enabled during POST:

Key	Function
Del	Enters the BIOS setup menu.
ESC	Pressing the [ESC] 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	Help
Esc	Exit
Cursor ↑/ ↓	Select item
Cursor ←/ →	Select item
F5/F6	Change values
Enter	Select submenu
F9	Setup defaults
F10	Save and Exit

Note:
You can press the F1, F2, F3, F4, –/+, and Esc keys by connecting a USB keyboard to your computer.

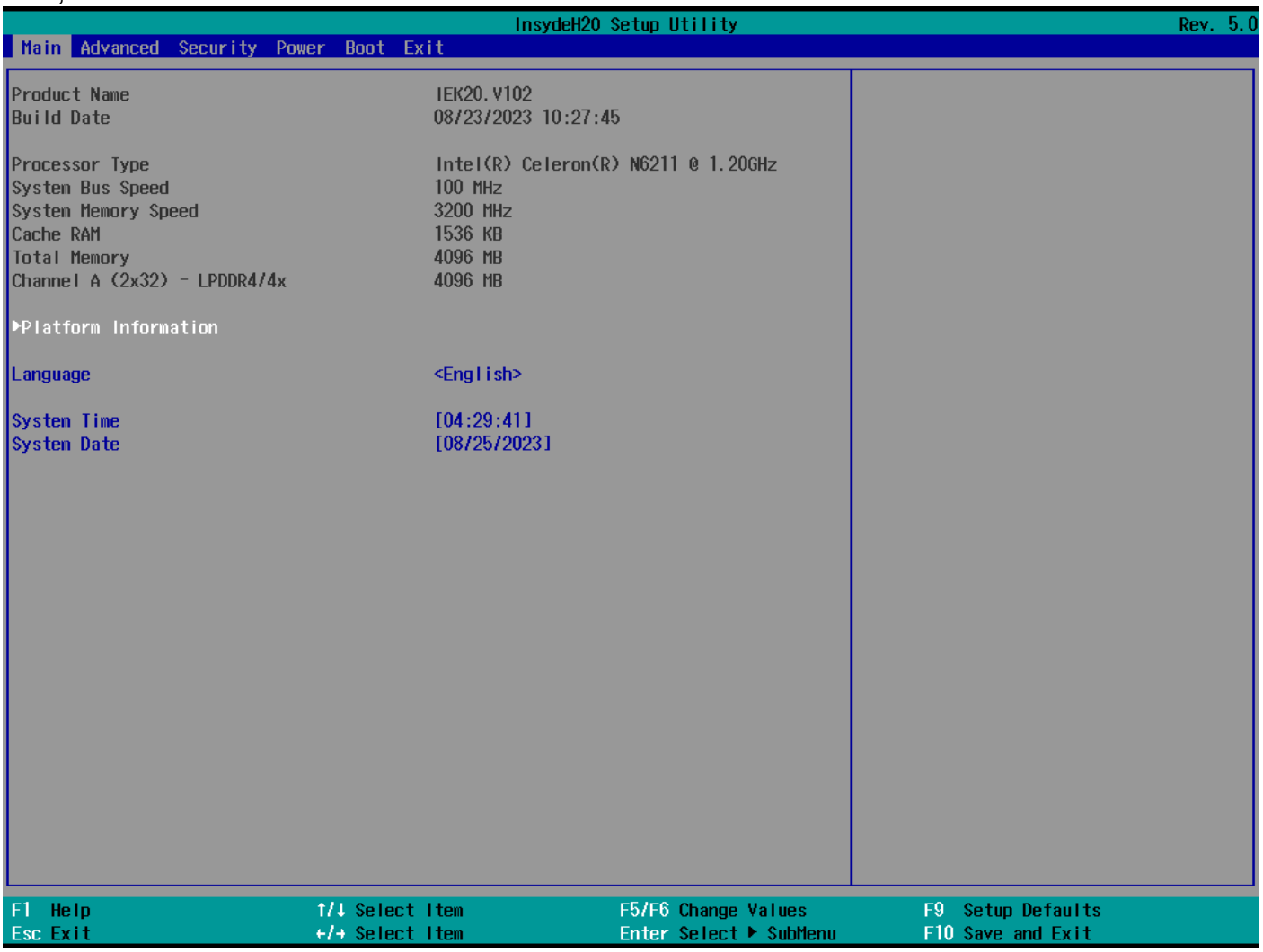
For items marked ► press **<Enter>** for more options.

4.2 BIOS Functions

4.2.1 Main Menu

The Main menu displays the basic information about yoursystem including BIOS version, processor RC version, system language, time, and date.

When you enter BIOS setup, the first menu that appears on the screen is the main menu.It contains the system information including BIOS version, processor RC version, system language, time, and date.

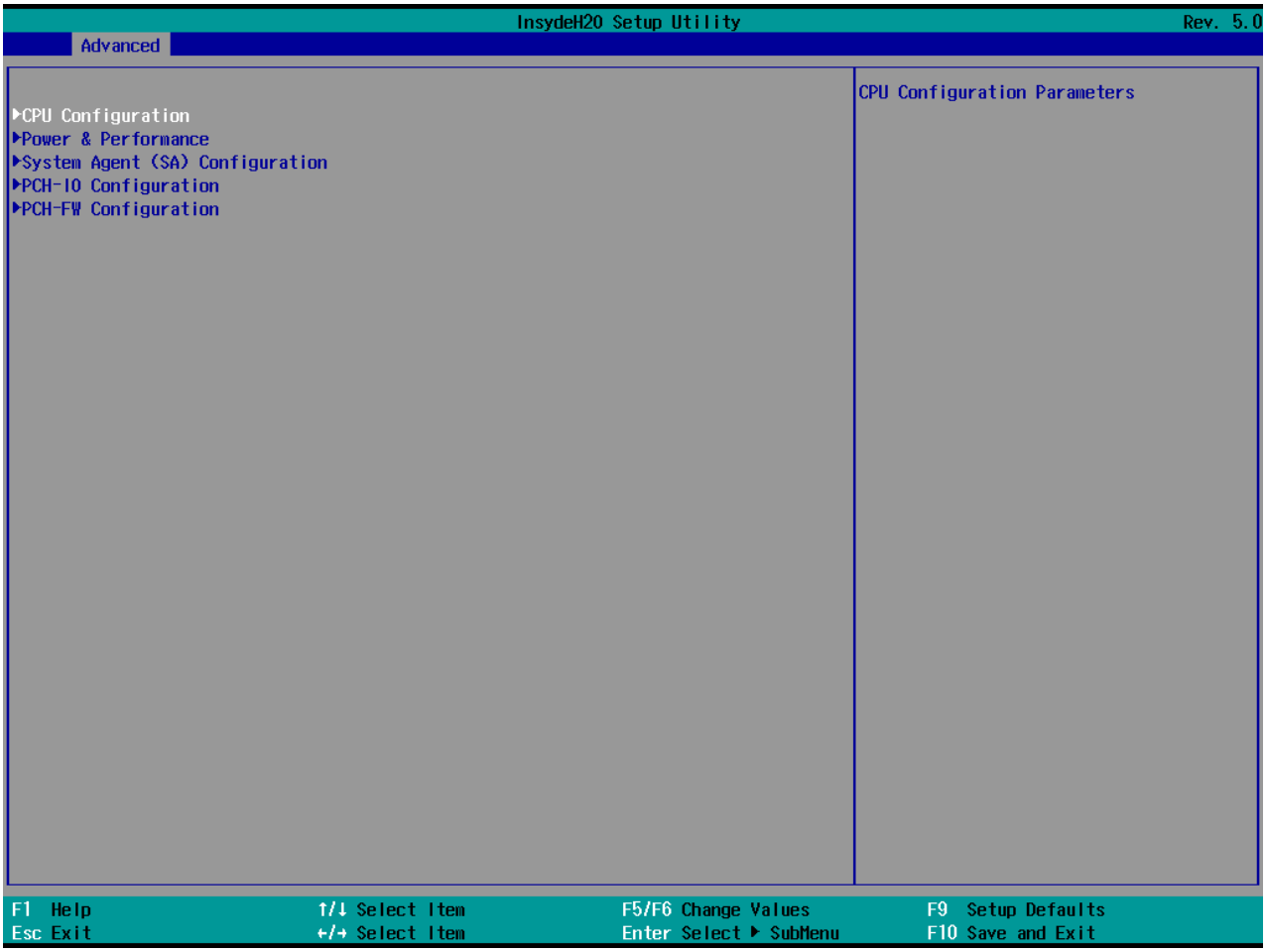


BIOS Setting	Description	Setting Option	Effect
Language	Displays the system language. [English] is set up by default.	Adjustment of the language	Set the language in other language. The language in this device is English.
System Time	This is current time setting. The time is maintained by the battery when the device is turned off.	Time changes.	The time in the format: [hh/mm/ss]
System Date	This is current date setting	Date changes.	Set the date in the format [mm/dd/yyyy]

4.2.2 Advanced Settings

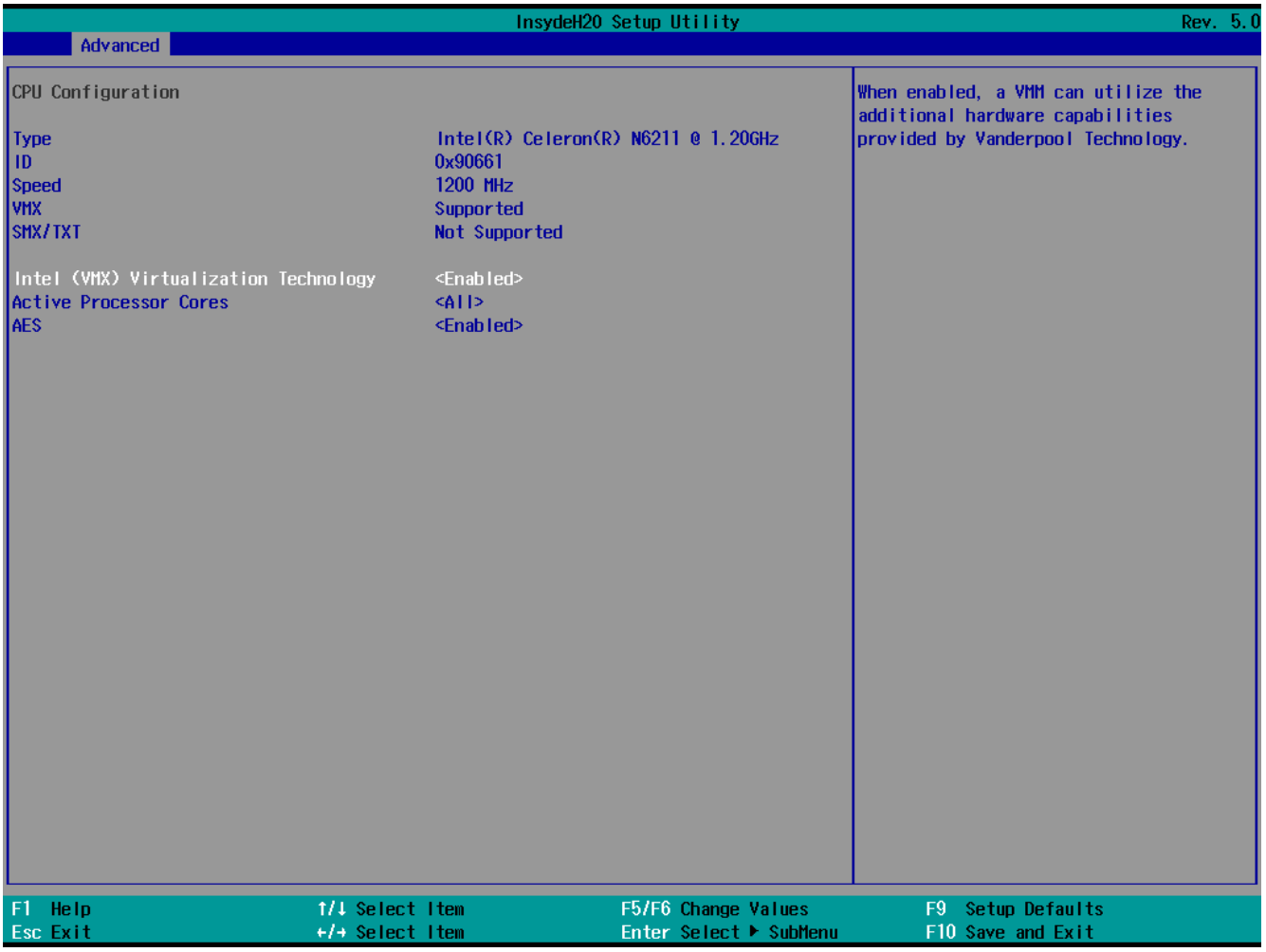
Select the Advanced Tab from the setup menu to enter the advanced BIOS setup screen. You can select any of the items on the left frame of the screen to go to the sub menu for the item, such as CPU Configuration. You can use the <Arrow> keys enter all advanced BIOS setup options. The advanced BIOS setup menu is shown below. The submenus described on the following pages.

Caution
Handle advanced BIOS settings page with caution. Any changes can affect the operation of your computer.



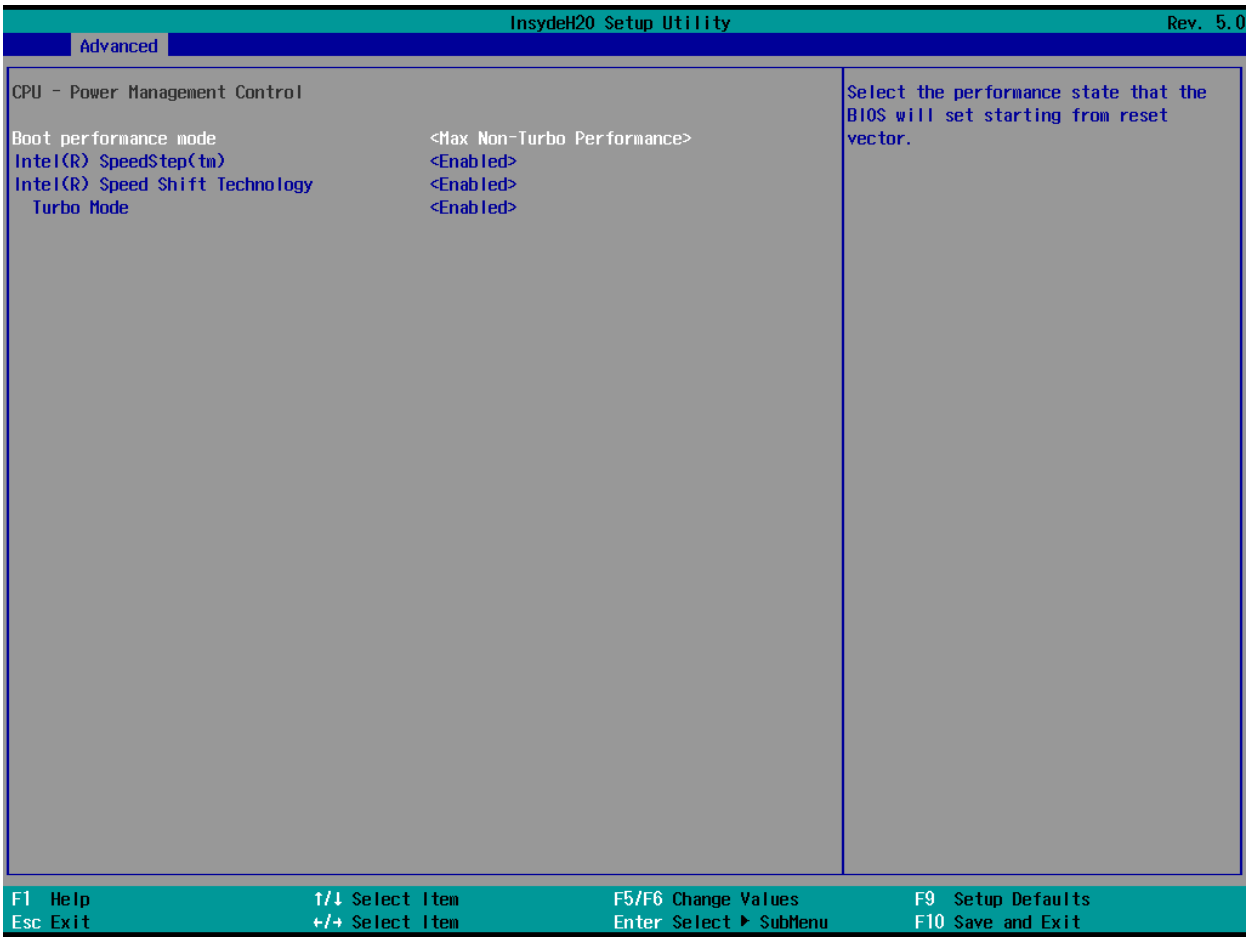
BIOS Setting	Description	Setting Option	Effect
CPU Configuration	Configures Trusted Computing parameters	Enter	Opens submenu
Power& Performance	Configures Power & Performance parameters	Enter	Opens submenu
System Agent Configuration	Configures System Agent Configuration parameters	Enter	Opens submenu
PCH-OI Configuration	Configures PCH-OI parameters	Enter	Opens submenu
PCH-FW Configuration	Configures PCH-FW parameters	Enter	Opens submenu
S10 F81804	Configures S10 F81804 parameters	Enter	Opens

4.2.2.1 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 Processor 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

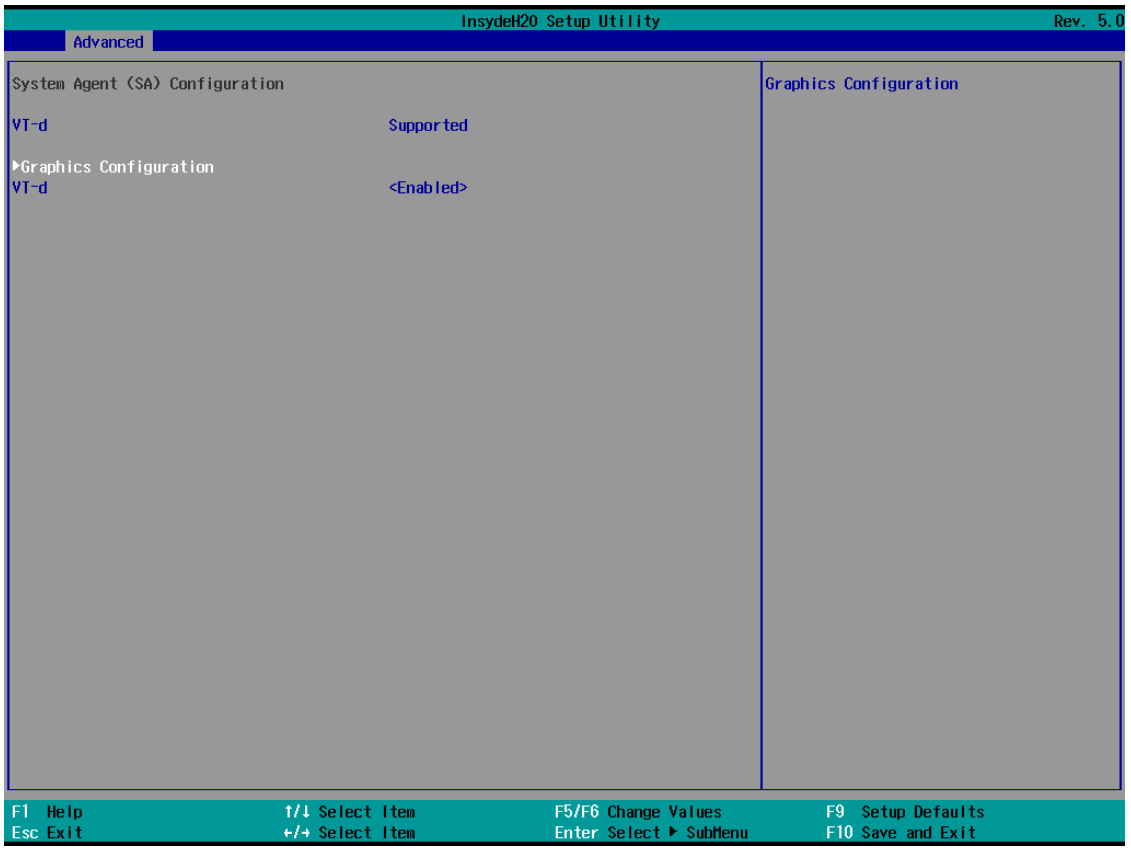
4.2.2.2 CPU Power Management Configuration

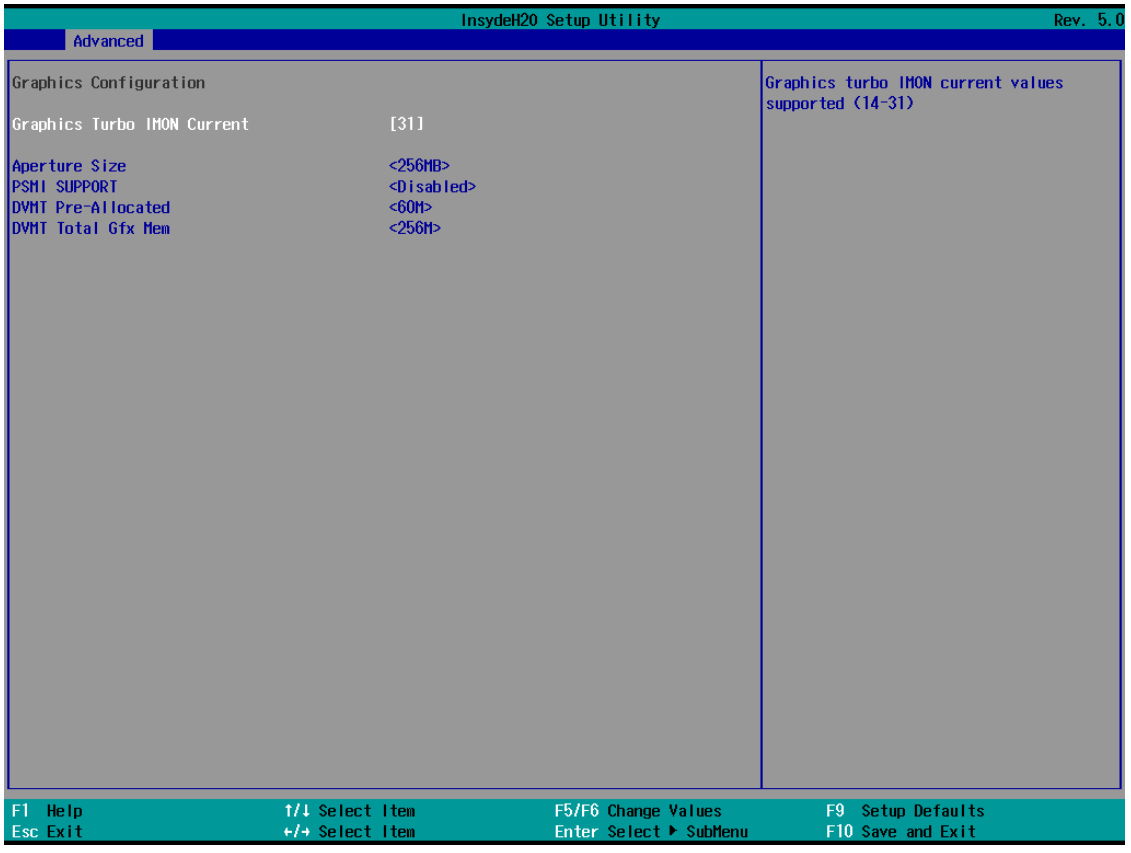


BIOS Setting	Description	Setting Option	Effect
Boot Performance Mode	Configure Boot Performance Mode parameters	-Max non-turbo performance -Max battery -Turbo Performance	Select the performance state that the BIOS will set starting from reset vector
Intel Speed Step (ta)	Configure Intel Speed Step (ta) 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

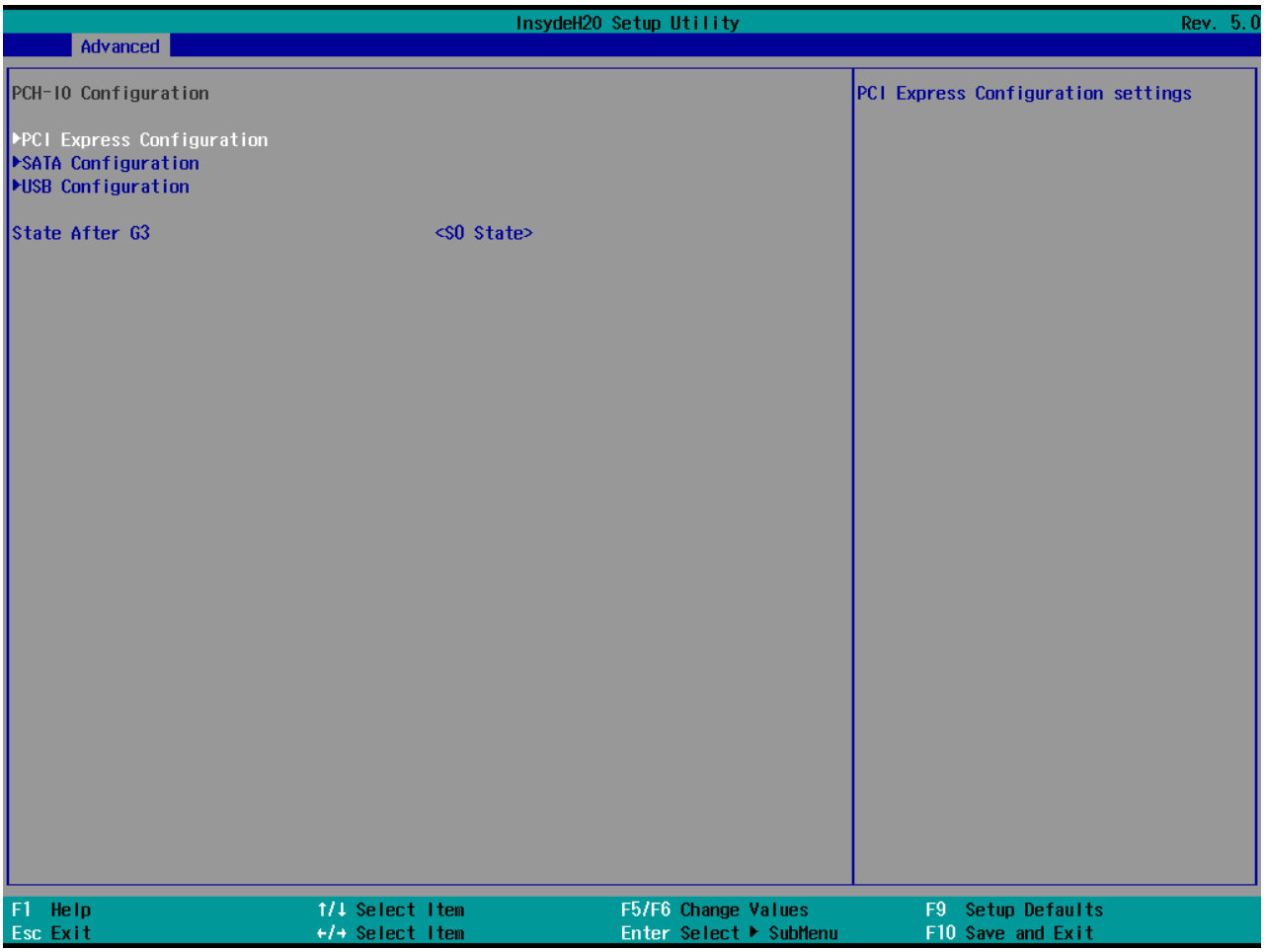
4.2.2.3 System Agent Configuration

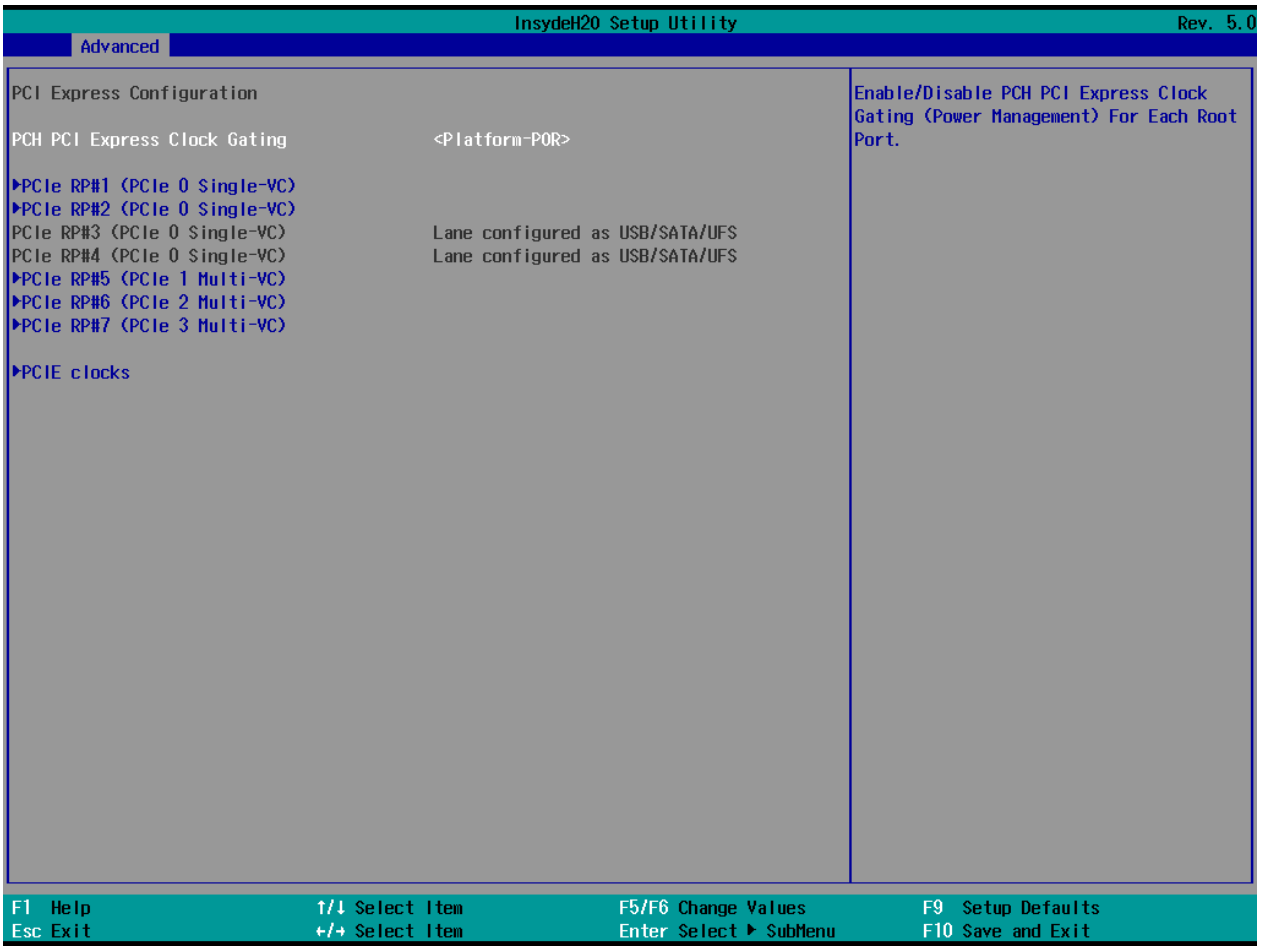




BIOS Setting	Description	Setting Option	Effect
Vt-d	Intel® Virtualization Technology for Directed I/O	Enabled Disabled	Vt-d capability

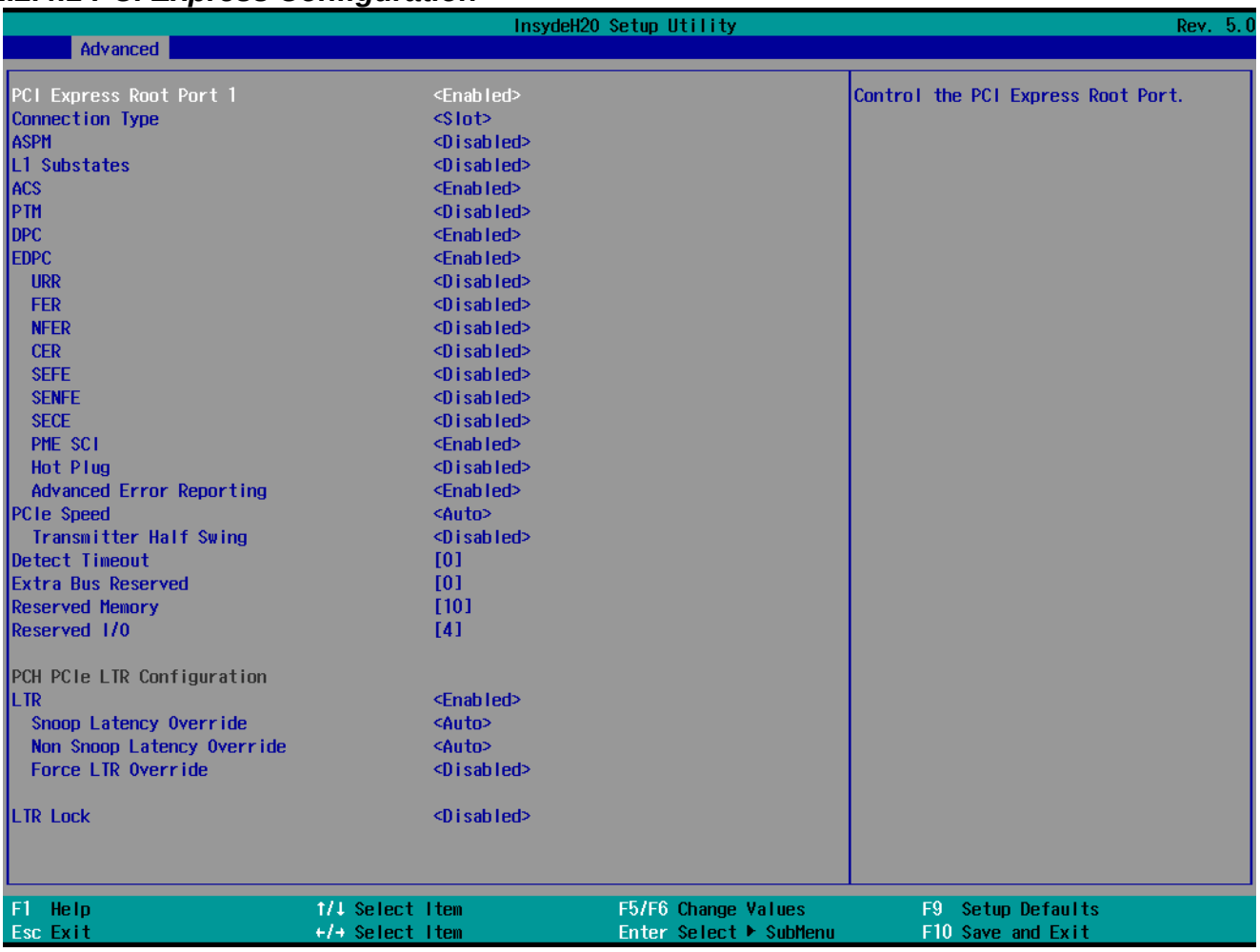
4.2.2.4 PCH-IO Configuration

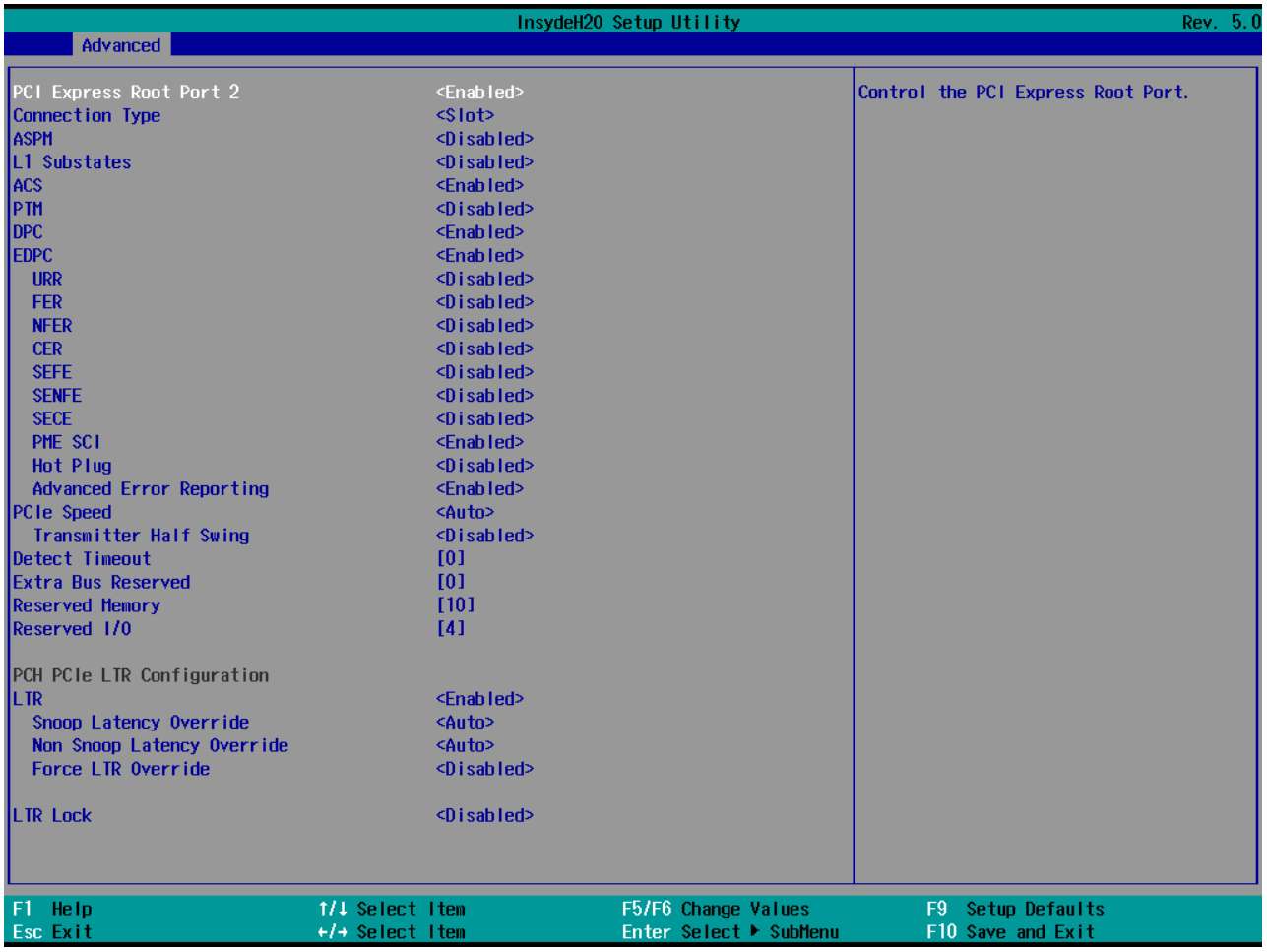


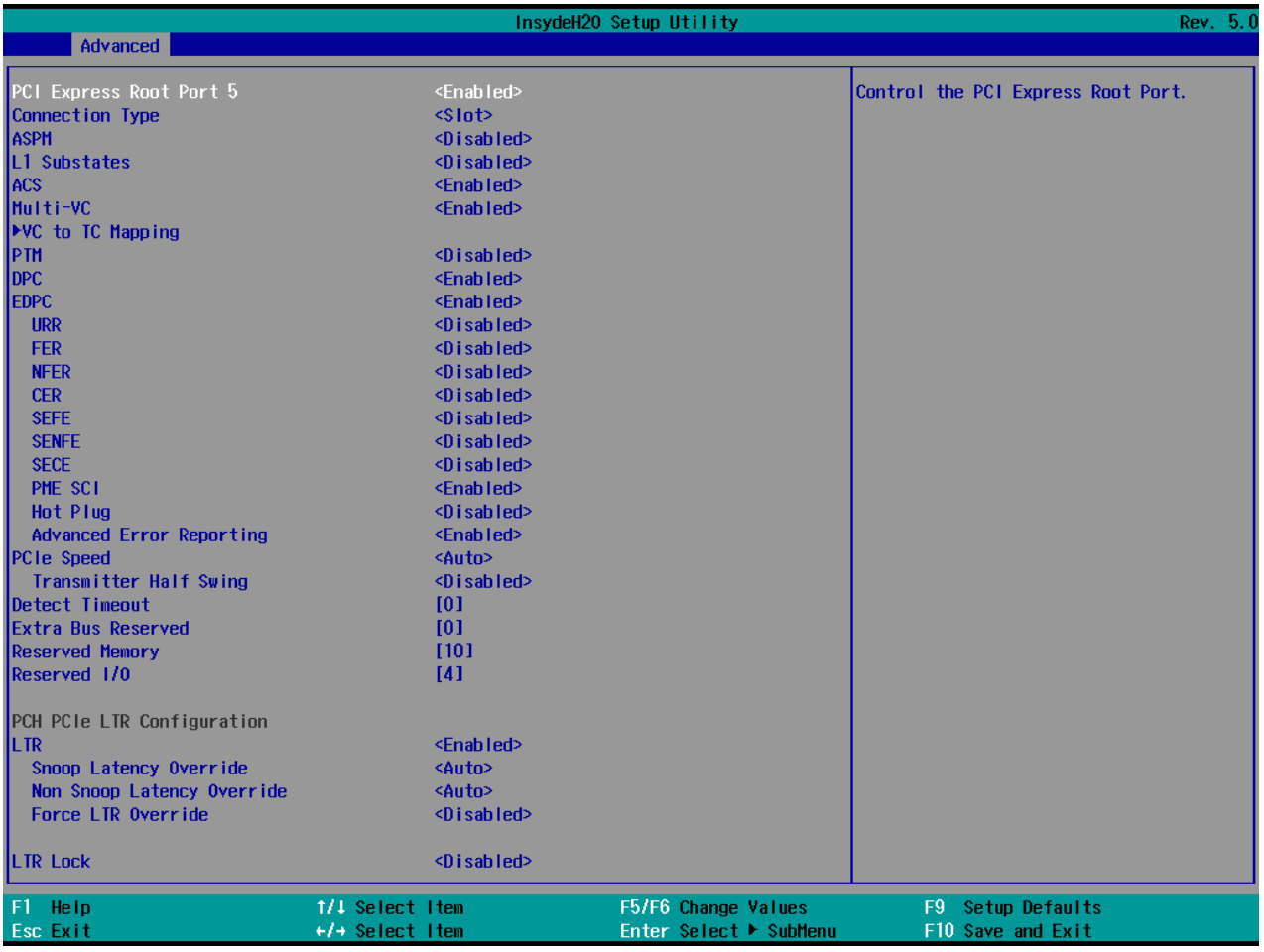


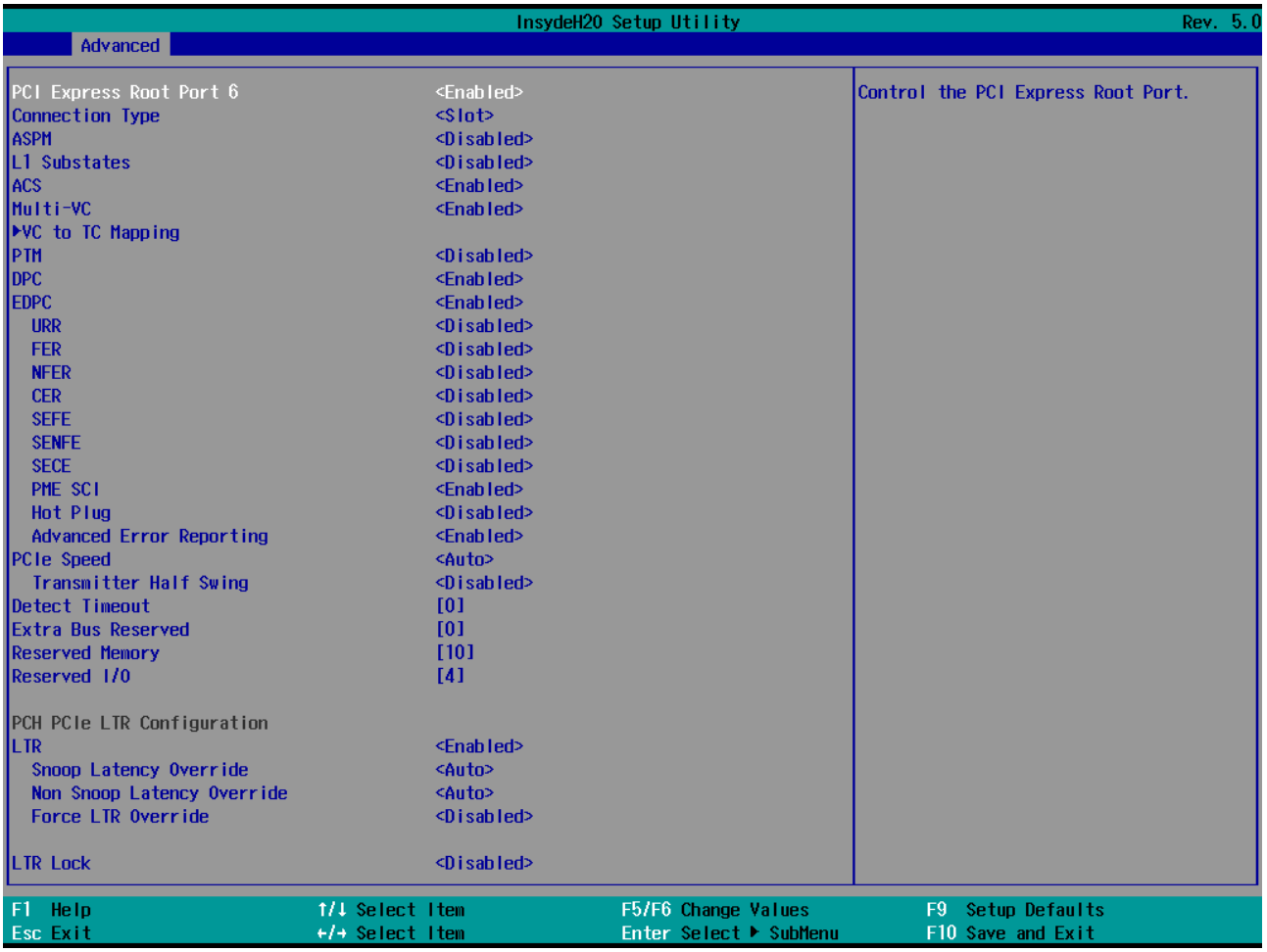
BIOS Setting	Description	Setting Option	Effect
PCI Express Configuration	PCI Express clock gating enable/disable for each root port.	Enter	Opens sub-menu
SATA And RST Configuration	Enable/ Disable SATA device	Enter	Opens sub-menu
USB Configuration	Selectively enable/ disable the corresponding USB port 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

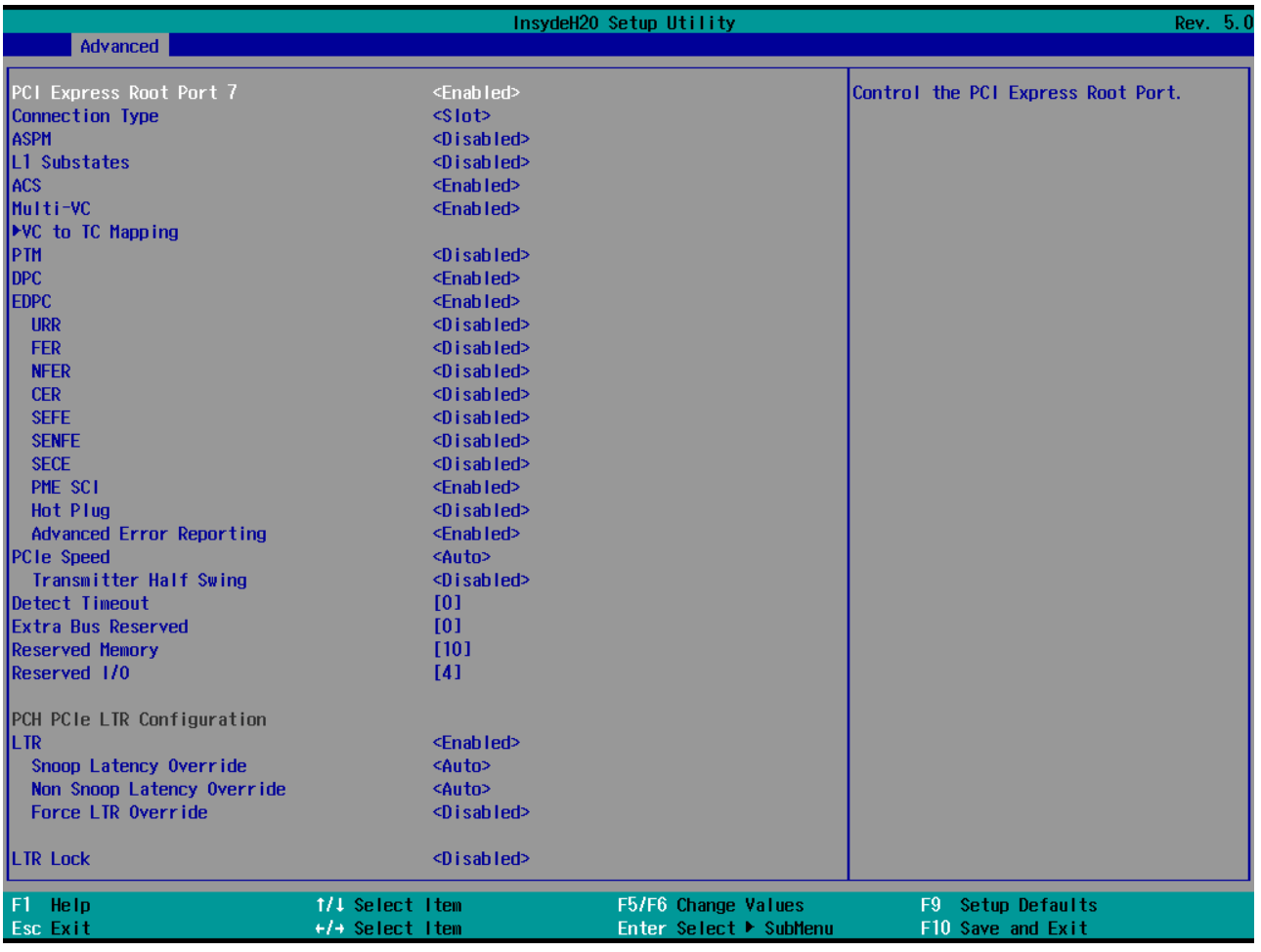
4.2.2.4.1 PCI Express Configuration



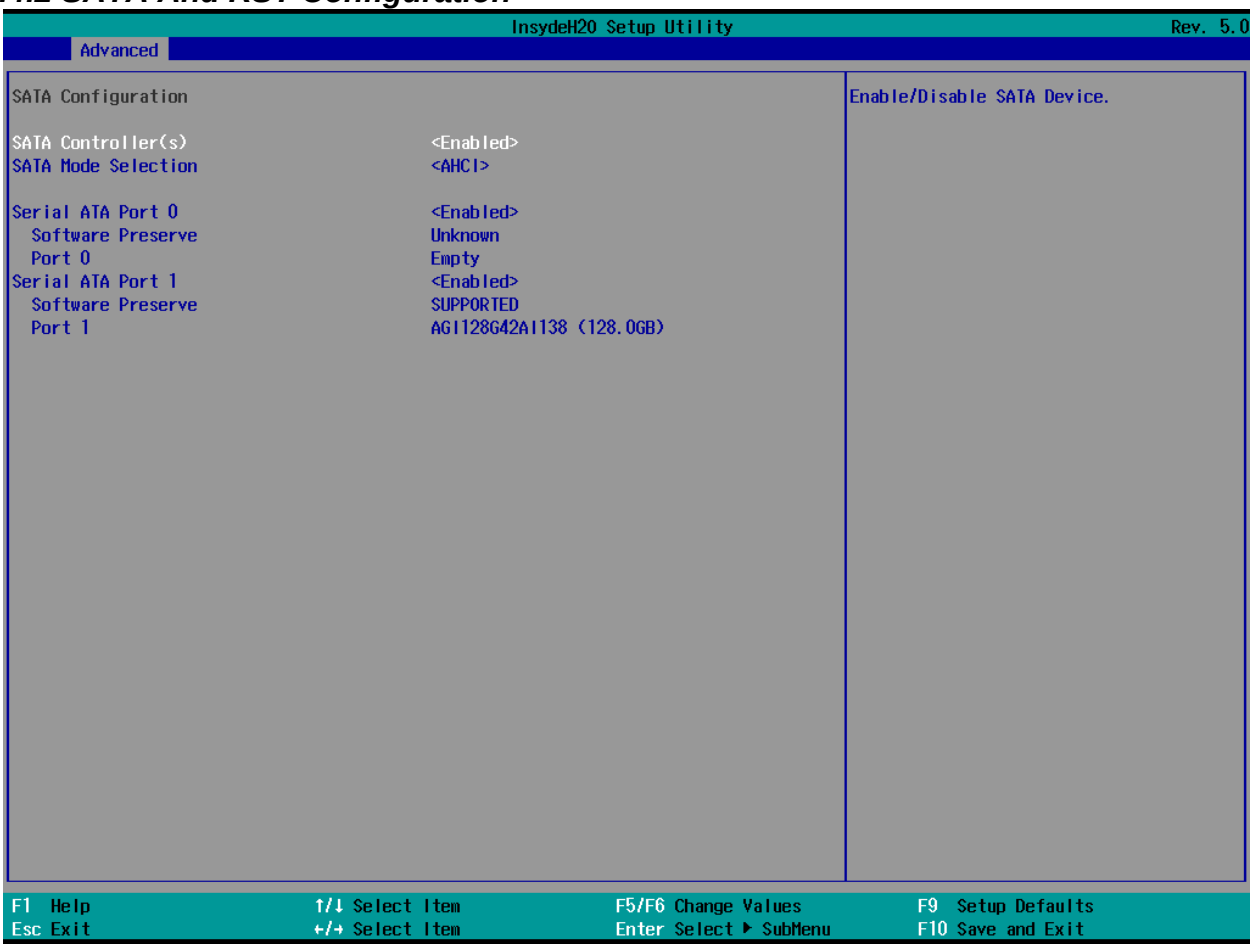

InsydeH20 Setup Utility Rev. 5.0
Advanced
PCI Express Root Port 2 <Enabled>
Connection Type <Slot>
ASPM <Disabled>
L1 Substates <Disabled>
ACS <Enabled>
PTM <Disabled>
DPC <Enabled>
EDPC <Enabled>
URR <Disabled>
FER <Disabled>
NFER <Disabled>
CER <Disabled>
SEFE <Disabled>
SENFE <Disabled>
SECE <Disabled>
PME SCI <Enabled>
Hot Plug <Disabled>
Advanced Error Reporting <Enabled>
PCIe Speed <Auto>
Transmitter Half Swing <Disabled>
Detect Timeout [0]
Extra Bus Reserved [0]
Reserved Memory [10]
Reserved I/O [4]
PCH PCIe LTR Configuration
LTR <Enabled>
Snoop Latency Override <Auto>
Non Snoop Latency Override <Auto>
Force LTR Override <Disabled>
LTR Lock <Disabled>
Control the PCI Express Root Port.
F1 Help ↑/↓ Select Item F5/F6 Change Values F9 Setup Defaults
Esc Exit ←/→ Select Item Enter Select ▶ SubMenu F10 Save and Exit


InsydeH20 Setup Utility Rev. 5.0
Advanced
PCI Express Root Port 5 <Enabled>
Connection Type <Slot>
ASPM <Disabled>
L1 Substates <Disabled>
ACS <Enabled>
Multi-VC <Enabled>
▶VC to TC Mapping
PTM <Disabled>
DPC <Enabled>
EDPC <Enabled>
URR <Disabled>
FER <Disabled>
NFER <Disabled>
CER <Disabled>
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SENFE <Disabled>
SECE <Disabled>
PME SCI <Enabled>
Hot Plug <Disabled>
Advanced Error Reporting <Enabled>
PCIe Speed <Auto>
Transmitter Half Swing <Disabled>
Detect Timeout [0]
Extra Bus Reserved [0]
Reserved Memory [10]
Reserved I/O [4]
PCH PCIe LTR Configuration
LTR <Enabled>
Snoop Latency Override <Auto>
Non Snoop Latency Override <Auto>
Force LTR Override <Disabled>
LTR Lock <Disabled>
Control the PCI Express Root Port.
F1 Help ↑/↓ Select Item F5/F6 Change Values F9 Setup Defaults
Esc Exit ←/→ Select Item Enter Select ▶ SubMenu F10 Save and Exit

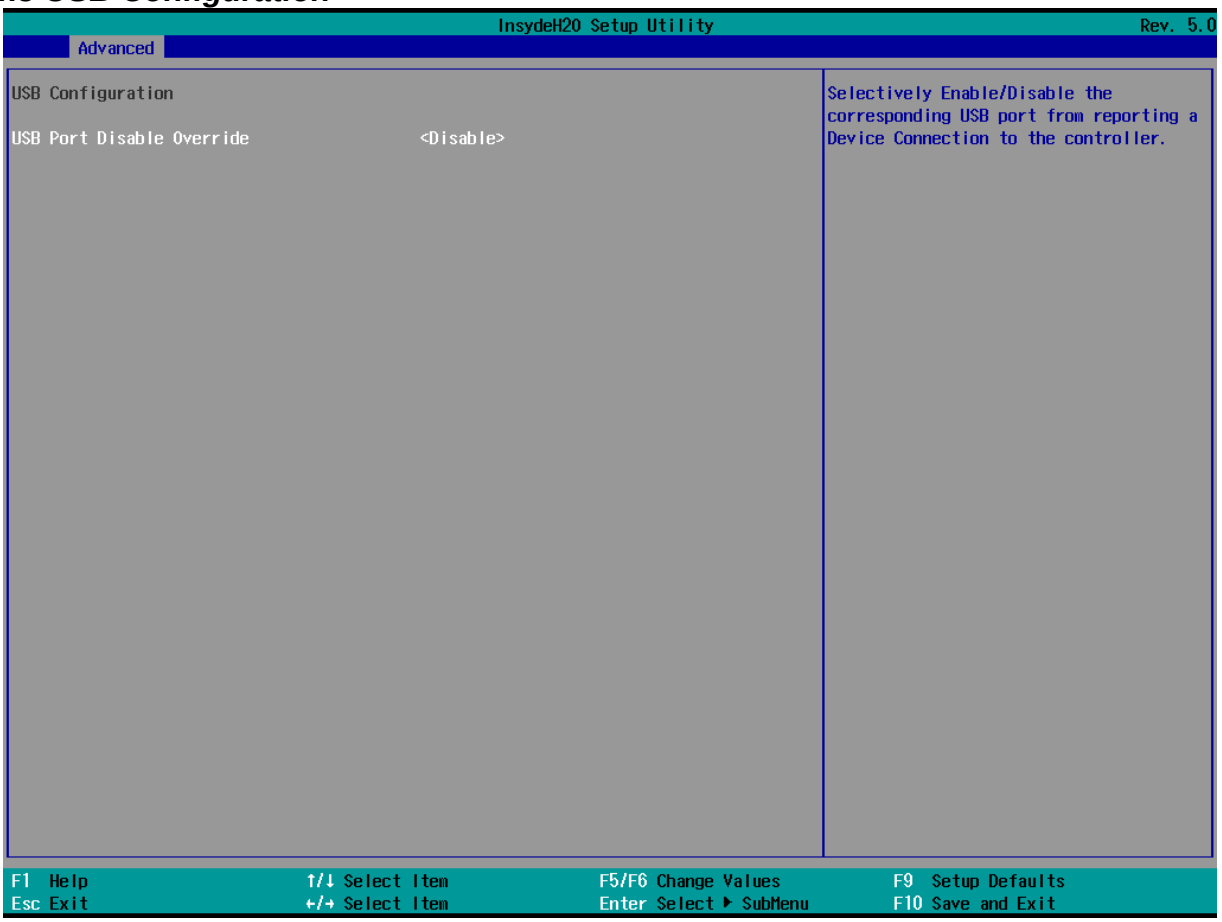

InsydeH20 Setup Utility
Rev. 5.0
Advanced
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ASPM <Disabled>
L1 Substates <Disabled>
ACS <Enabled>
Multi-VC <Enabled>
▶VC to TC Mapping
PTM <Disabled>
DPC <Enabled>
EDPC <Enabled>
URR <Disabled>
FER <Disabled>
NFER <Disabled>
CER <Disabled>
SEFE <Disabled>
SENFE <Disabled>
SECE <Disabled>
PME SCI <Enabled>
Hot Plug <Disabled>
Advanced Error Reporting <Enabled>
PCIe Speed <Auto>
Transmitter Half Swing <Disabled>
Detect Timeout [0]
Extra Bus Reserved [0]
Reserved Memory [10]
Reserved I/O [4]
PCH PCIe LTR Configuration
LTR <Enabled>
Snoop Latency Override <Auto>
Non Snoop Latency Override <Auto>
Force LTR Override <Disabled>
LTR Lock <Disabled>
Control the PCI Express Root Port.
F1 Help ↑/↓ Select Item F5/F6 Change Values F9 Setup Defaults
Esc Exit ←/→ Select Item Enter Select ▶ SubMenu F10 Save and Exit


InsydeH20 Setup Utility
Rev. 5.0
Advanced
PCI Express Root Port 7 <Enabled>
Connection Type <Slot>
ASPM <Disabled>
L1 Substates <Disabled>
ACS <Enabled>
Multi-VC <Enabled>
▶VC to TC Mapping
PTM <Disabled>
DPC <Enabled>
EDPC <Enabled>
URR <Disabled>
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SECE <Disabled>
PME SCI <Enabled>
Hot Plug <Disabled>
Advanced Error Reporting <Enabled>
PCIe Speed <Auto>
Transmitter Half Swing <Disabled>
Detect Timeout [0]
Extra Bus Reserved [0]
Reserved Memory [10]
Reserved I/O [4]
PCH PCIe LTR Configuration
LTR <Enabled>
Snoop Latency Override <Auto>
Non Snoop Latency Override <Auto>
Force LTR Override <Disabled>
LTR Lock <Disabled>
Control the PCI Express Root Port.
F1 Help ↑/↓ Select Item F5/F6 Change Values F9 Setup Defaults
Esc Exit ←/→ Select Item Enter Select ▶ SubMenu F10 Save and Exit

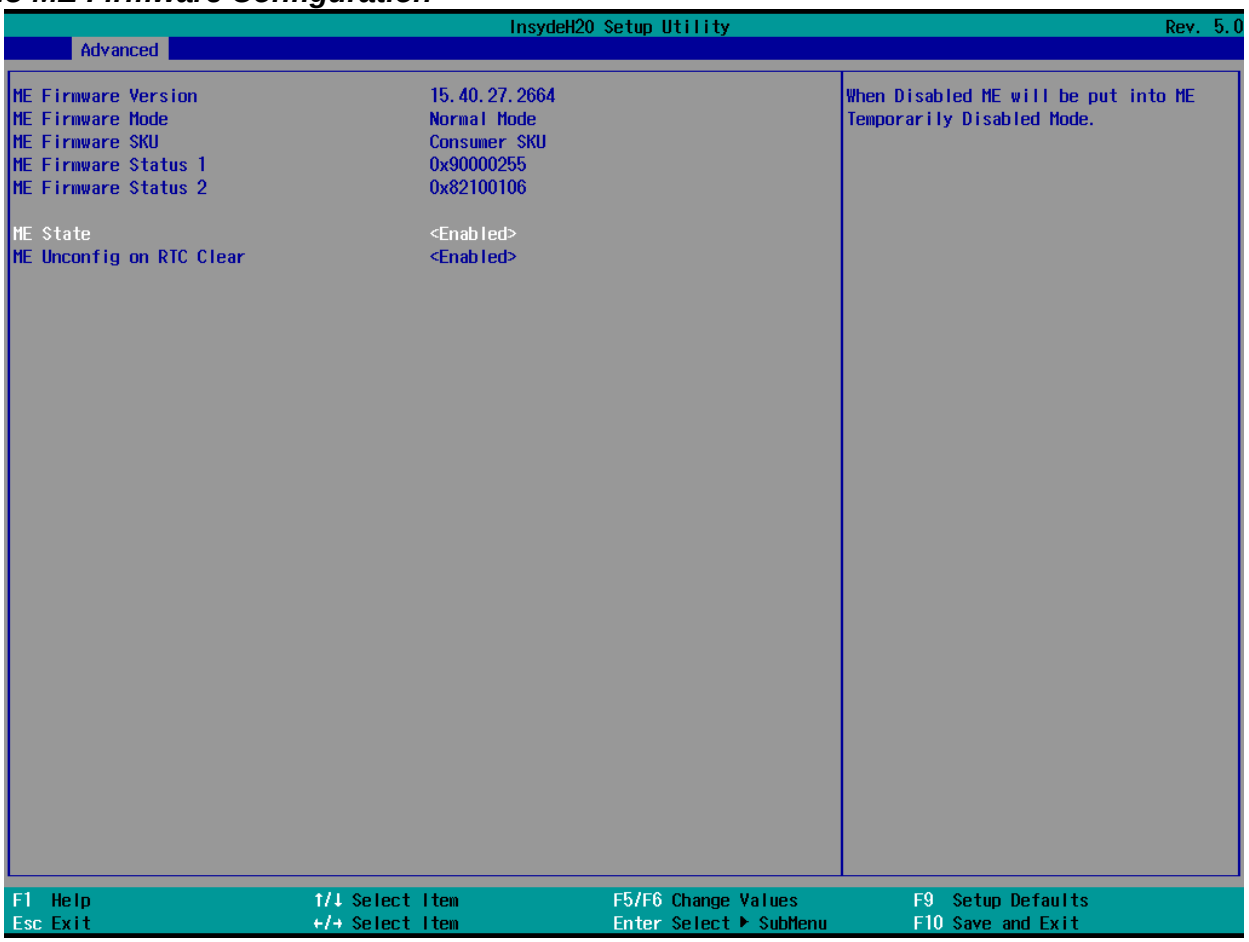
4.2.2.4.2 SATA And RST Configuration



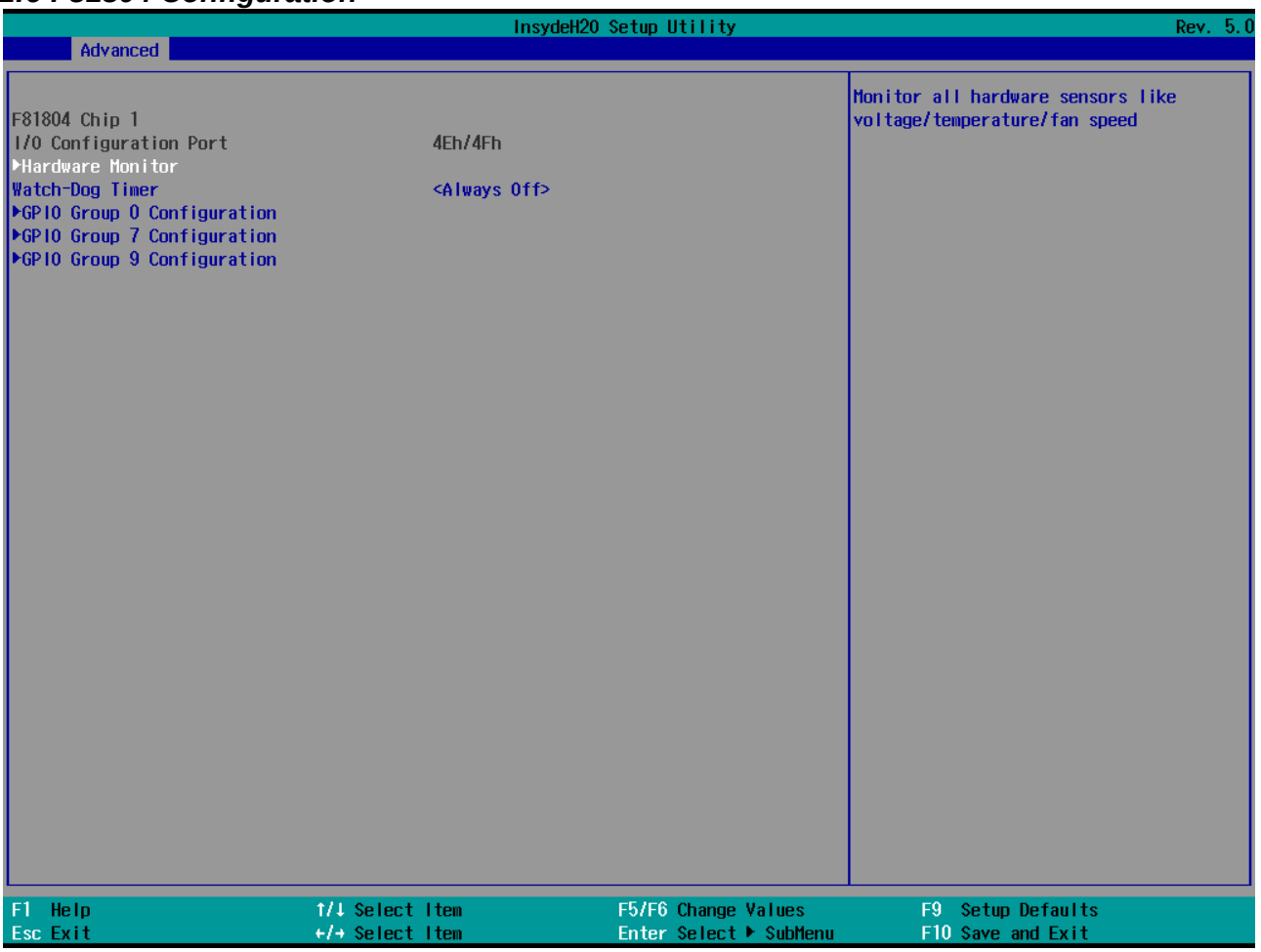
4.2.2.4.3 USB Configuration



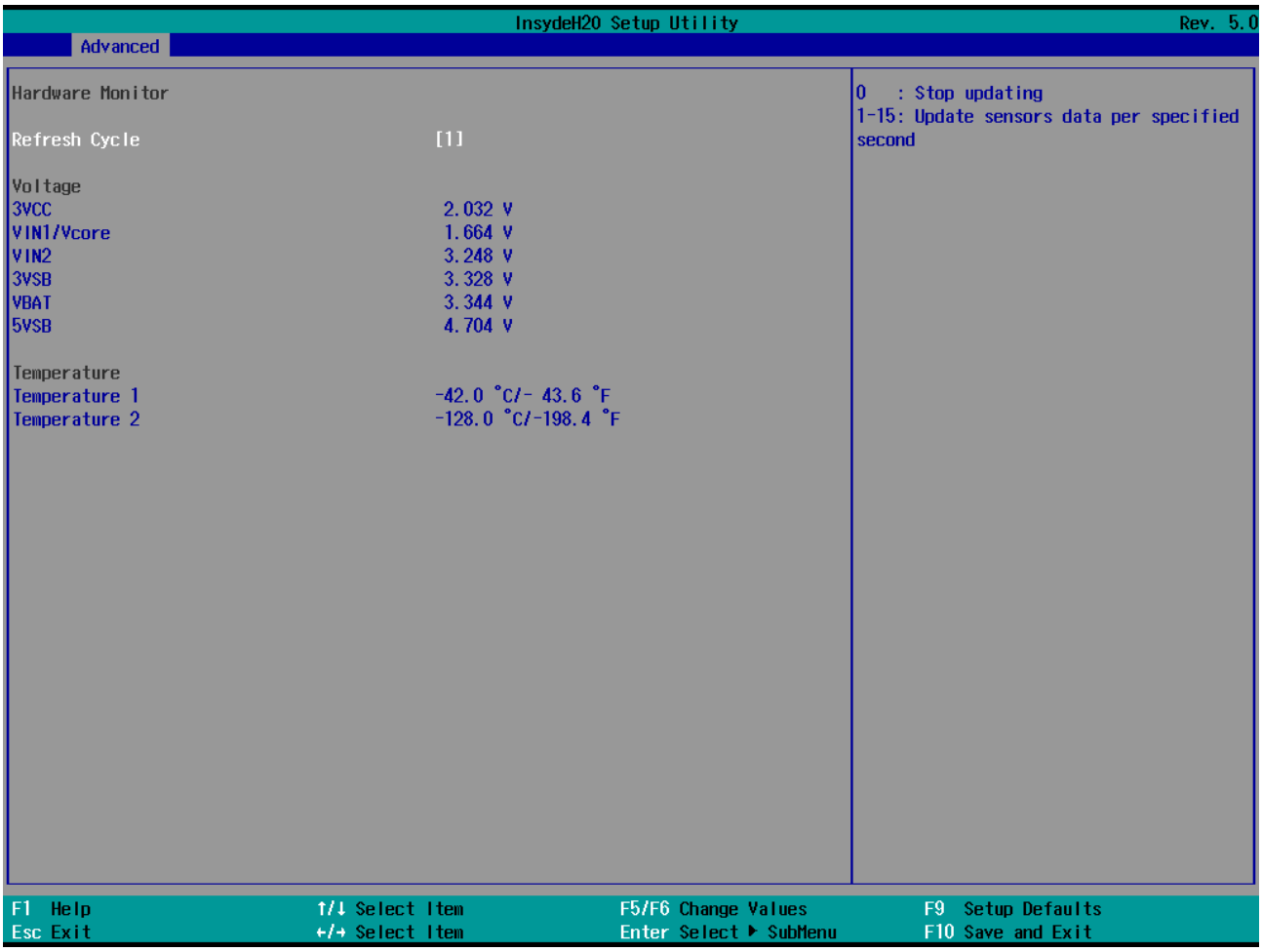
4.2.2.5 ME Firmware Configuration



4.2.2.6 F81804 Configuration

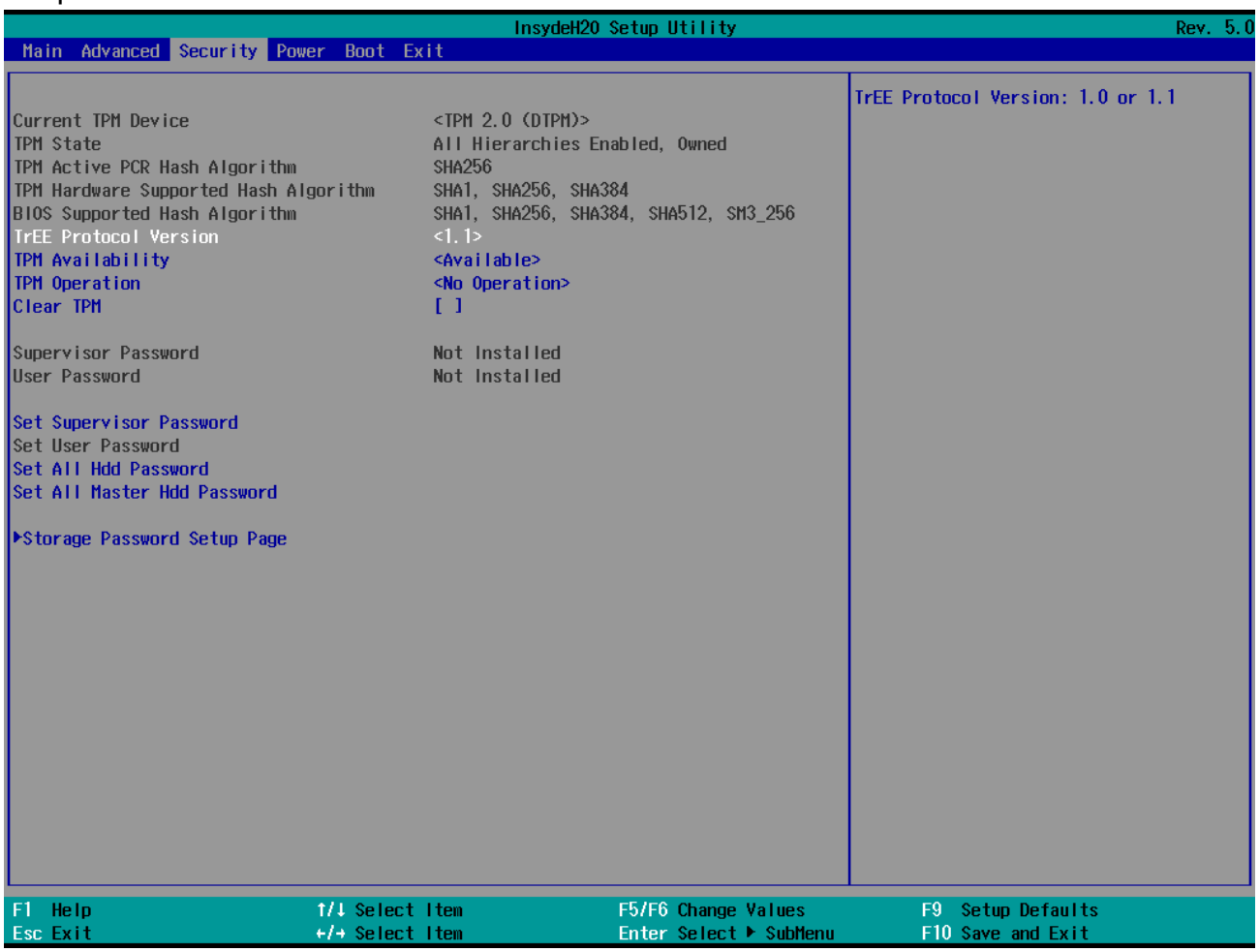


4.2.2.7 Hardware Monitor



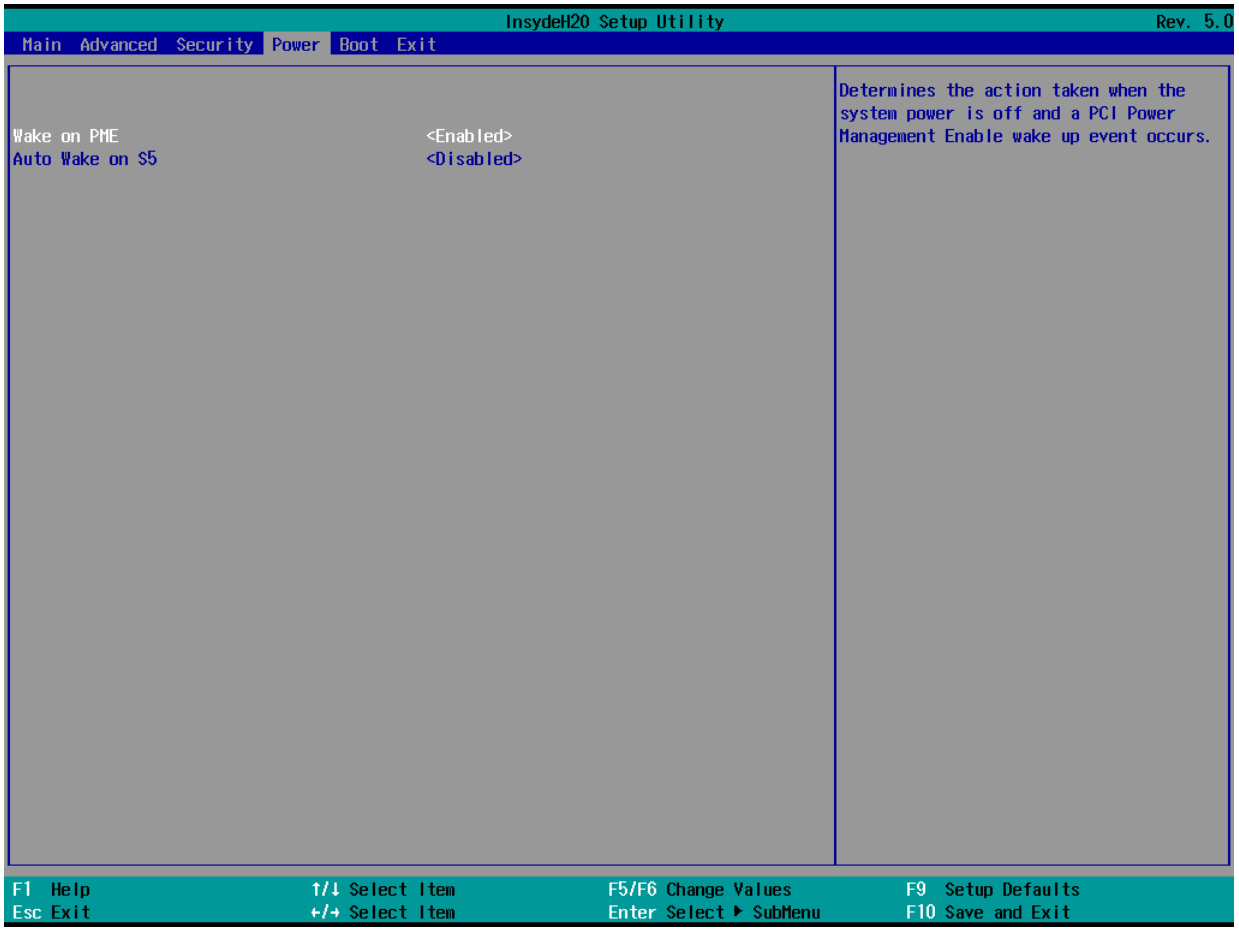
4.2.3 Security Menu

This section allows to configure and improve system, and set up some system features according to your preferences.



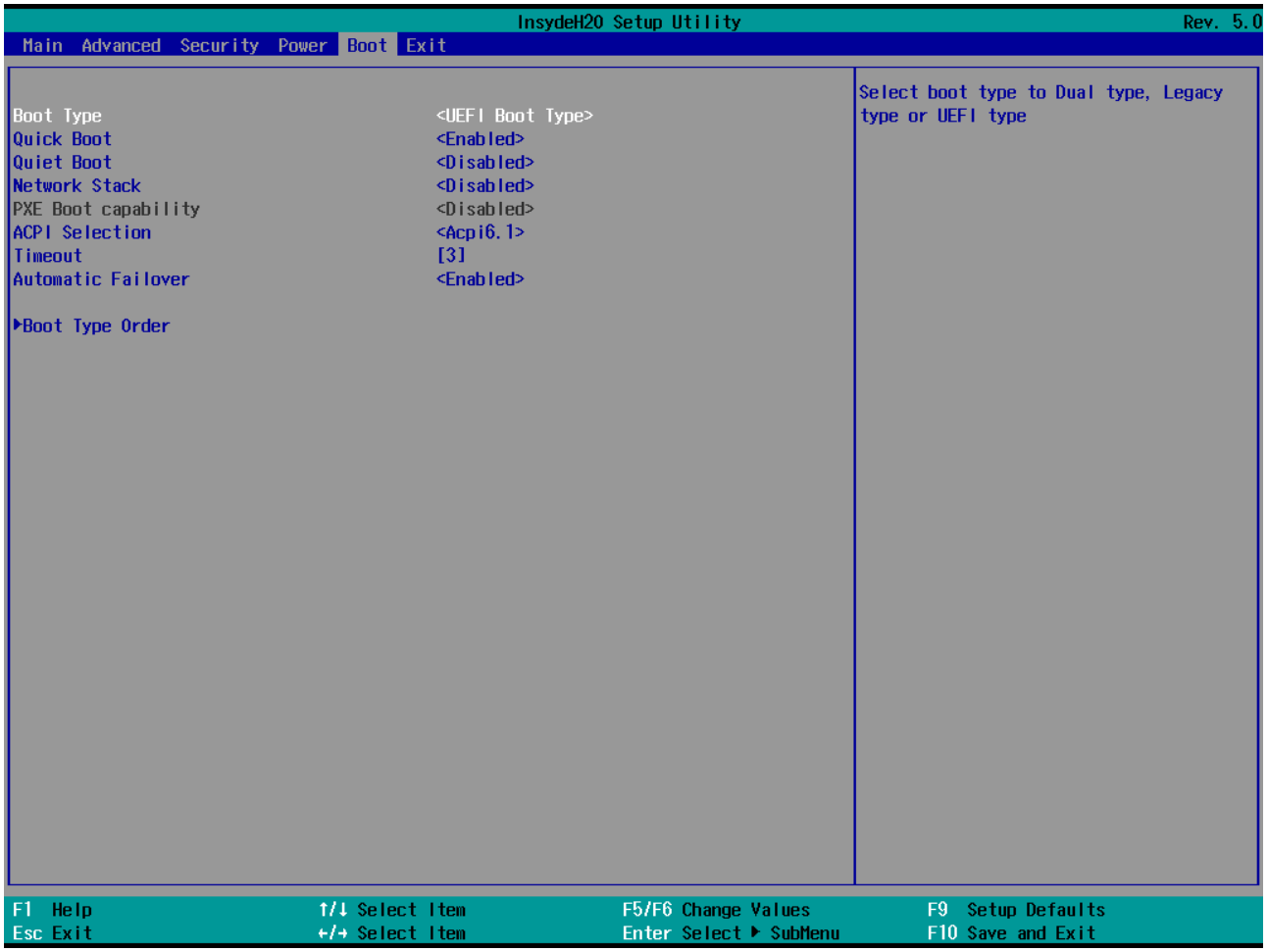
BIOS Setting	Description	Setting Option	Effect
TrEE Protocol Version	Choose TrEE Protocol Version	1.0 1.1	TrEE Protovol Version: 1.0 or 1.1
TPM Availability	TPM Availability configuration	Available Hidden	When hidden don't exposes TPM to 0
TPM Operation	TPM Operation configuration	[ ]	Select one of the 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 Menu



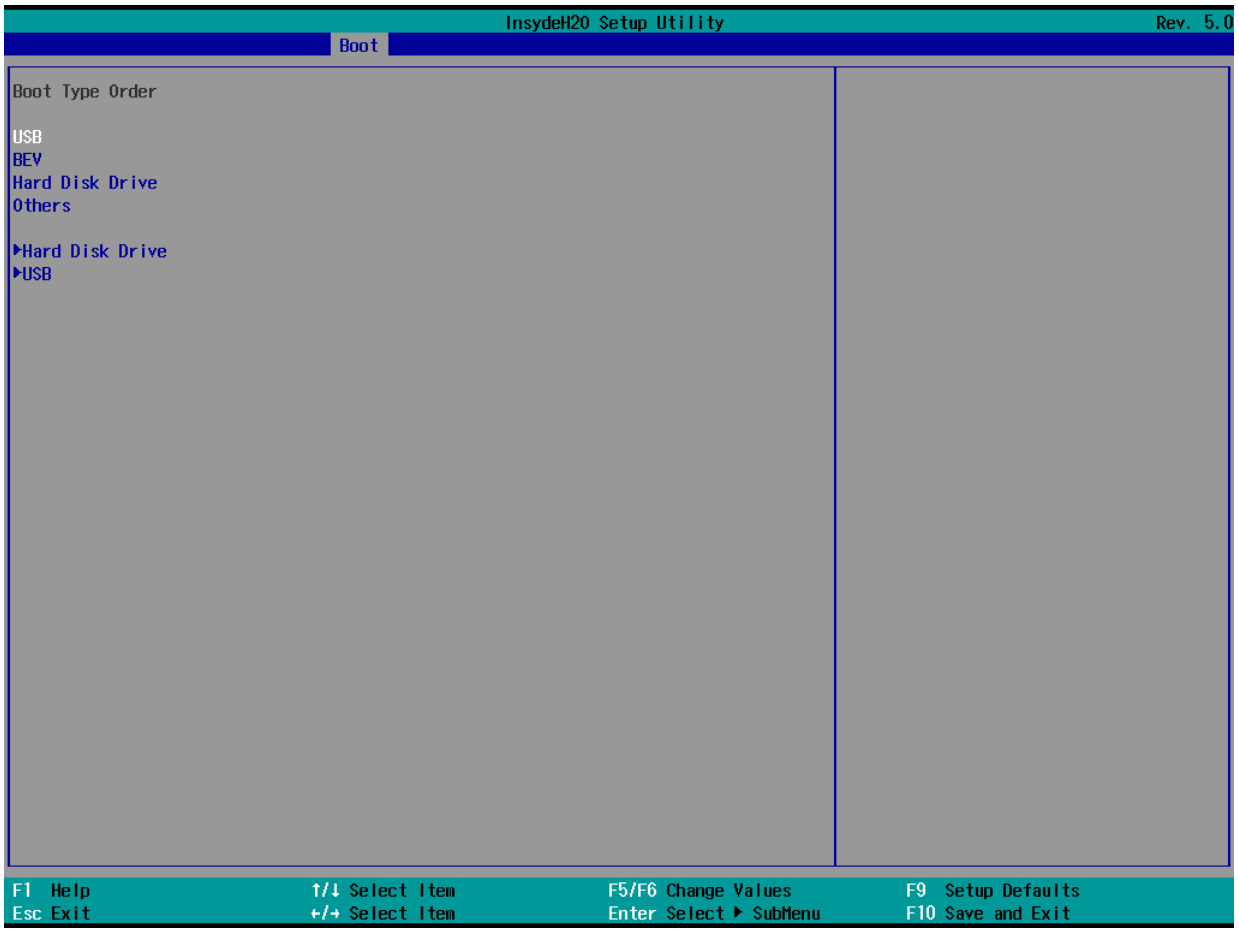
BIOS Setting	Description	Setting Option	Effect
ACPI S3	ACPI S3 configuration	Disabled Enabled	Enable/ Disable ACPI S1/S3 Sleep state
Auto Wake on S5	Auto Wake on S5 configuration	Disabled By Every Day By Every Month	Auto Wake on S5, by Day or Month or fixed time of every day

4.2.5 Boot Menu

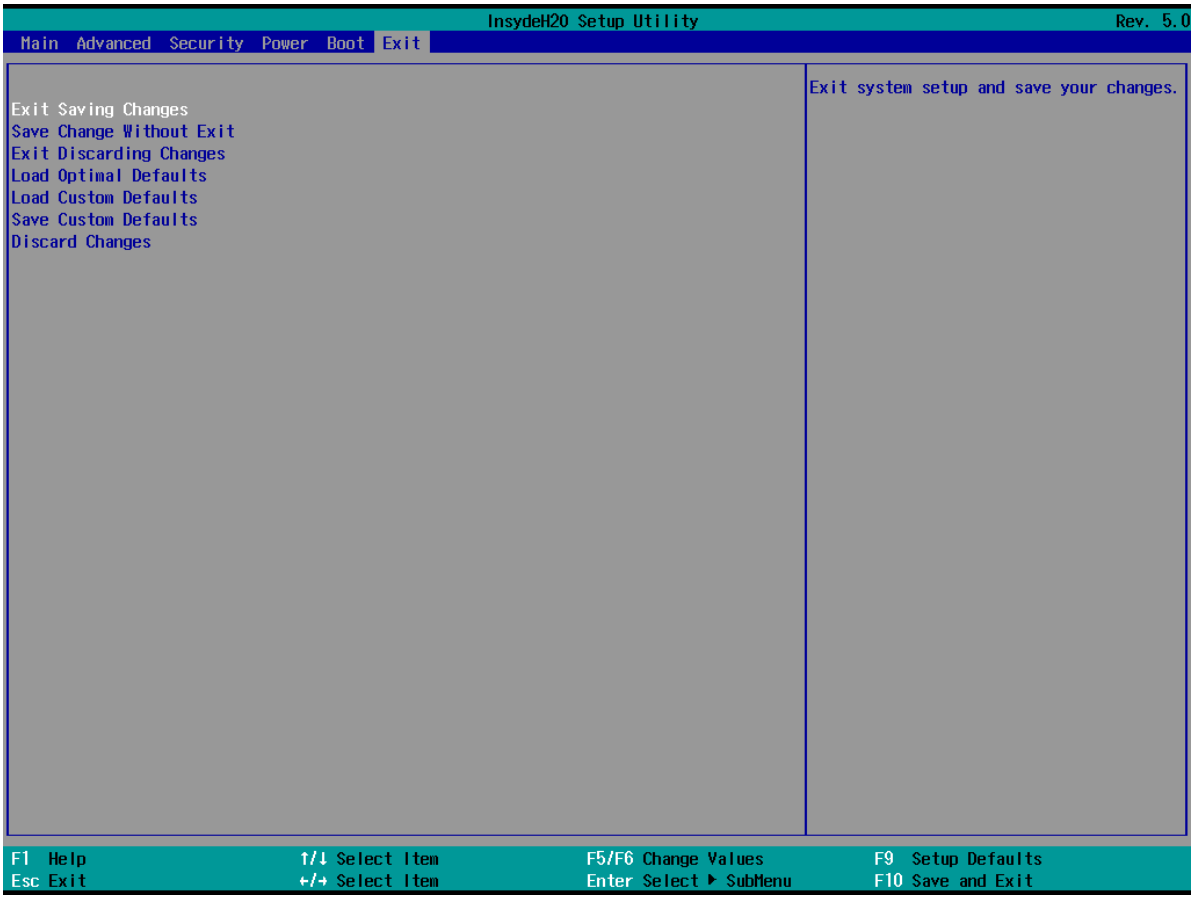


BIOS Setting	Description	Setting Option	Effect
Boot Type	Boot Type configuration	UEFI Boot Type	Select boot type to Dual type, Legacy type or UEFI type
Quick Boot	Quick Boot configuration	Enabled Disabled	Allows InsydeH20 to skip certain tests while booting. This will decrease the time needed to boot 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

4.2.5.1 Boot Type Order



4.2.6 Exit Menu



4.3 Using Recovery Wizard to Restore Computer

Note:
Before starting the recovery process, make sure to backup all user data. The data will be lost after the recovery process.

Important:
Before starting the recovery process, remove the PCI/ PCIe card and CFast card.

To enable quick one-key recovery procedure:

1. Connect the computer to the power source. Make sure the computer stays plugged in to power source during the recovery process.
2. Turn on the computer, and when the boot screen shows up, press **F6** to initiate the Recovery Wizard.
3. The following screen shows the Recovery Wizard. Click **Recovery** button to continue.



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



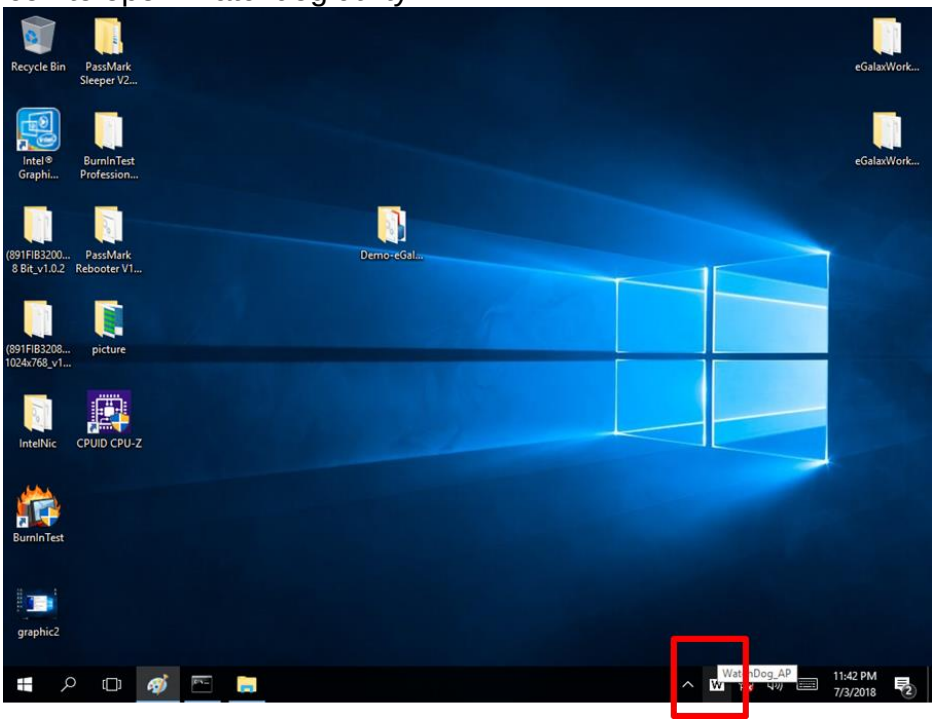
5. Wait the recovery process to complete. During the recovery process, a command prompt will show up to indicate the percent of recovery process complete. After complete the recovery process, please restart your computer manually.

4.4 How to Enable Watchdog

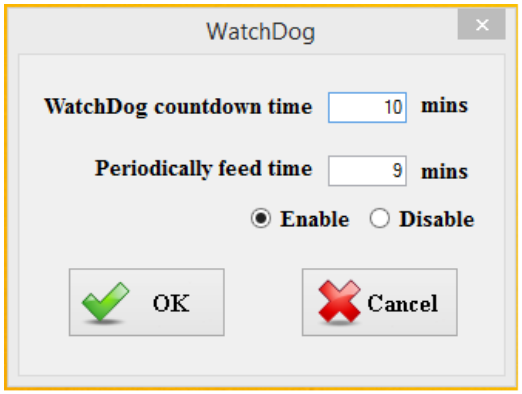
To enable Watchdog, you need to download Winmate Watchdog utility. Find more information on Watchdog in “Watchdog Guide” that you can download from Winmate Download Center.

To enable watchdog in Watchdog AP follow the instructions below:

1. On the right bottom side of the desktop screen, click **triangle button** to show hidden icons.
2. Click W icon to open Watchdog utility.



3. In Watchdog utility window set countdown time and periodically feed time, or disable watchdog.



Example:

Every 10 min watchdog will monitor the system, in case any error occurs the system will restart automatically when the countdown time reaches 0.

Every 9 min watchdog timer will be reset to 10 min.

Setting	Description
Watchdog Countdown Time	The system automaticity restarts when this countdown time reaches zero. *Default: 10 min*
Periodically Feed Time	To set a cycle time to automatically reset watchdog timer. *Default: 9 min*
Enable / Disable	Enable or disable watchdog. *Default: Enable*

Chapter 5: Driver Installation

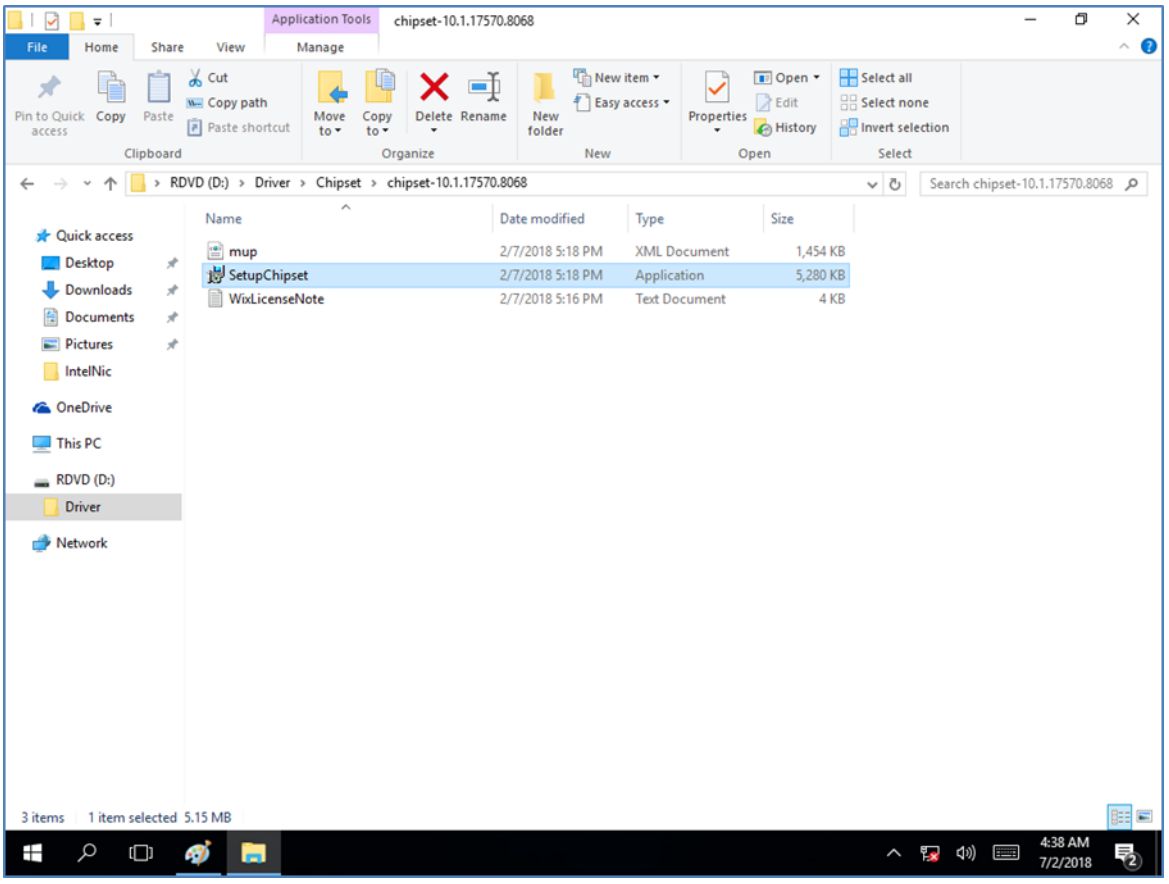
This chapter provides instructions on how to install drivers on the EAC Mini IoT Gateway. You will quickly complete the installation.

5.1 Chipset Driver Installation
5.2 Graphic Driver Installation
5.3 Management Engine (ME)
5.4 Serial IO Driver Installation
5.5 Ethernet Driver Installation
5.6 Watchdog Driver Installation
5.7 Thermal Control AP Installation

5.1 Chipset Driver Installation

Follow instructions below to install Chipset driver.

1. Open the Driver CD (included in the package) and select **Chipset** driver.



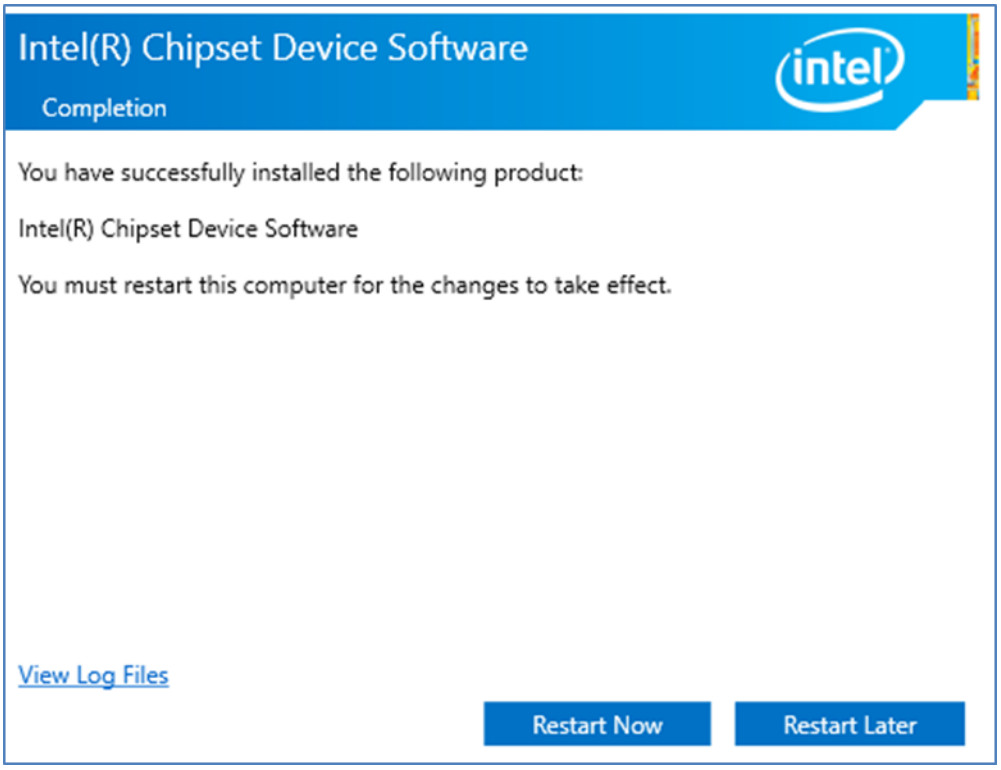
2. Installation window will pop up, select **Next**.



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



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



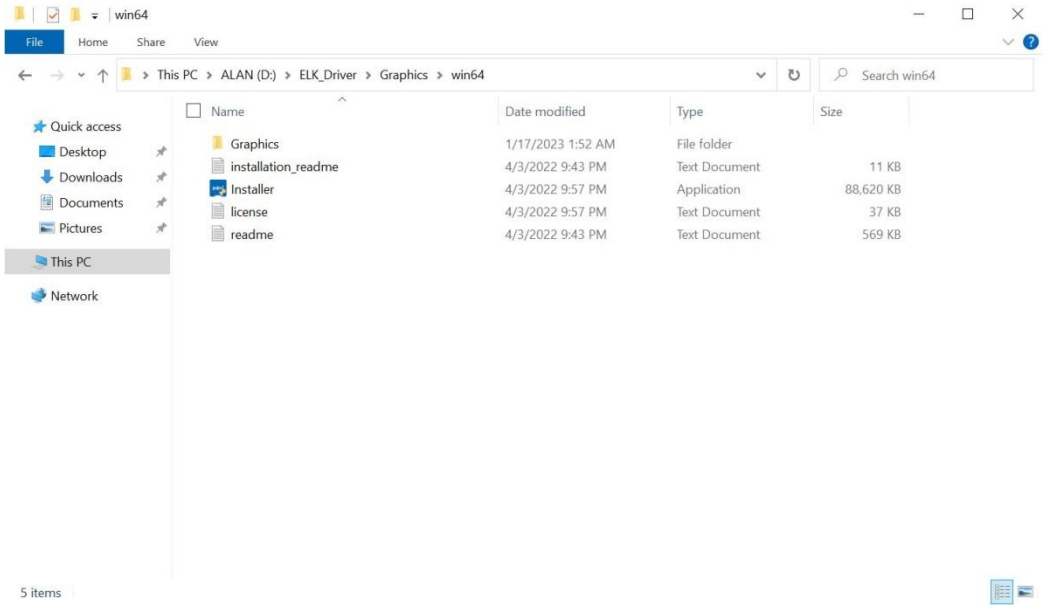
5. Wait for the driver to be installed. When installation completed, select **Restart Now** to restart your computer.



5.2 Graphic Driver Installation

Follow instructions below to install Graphic driver.

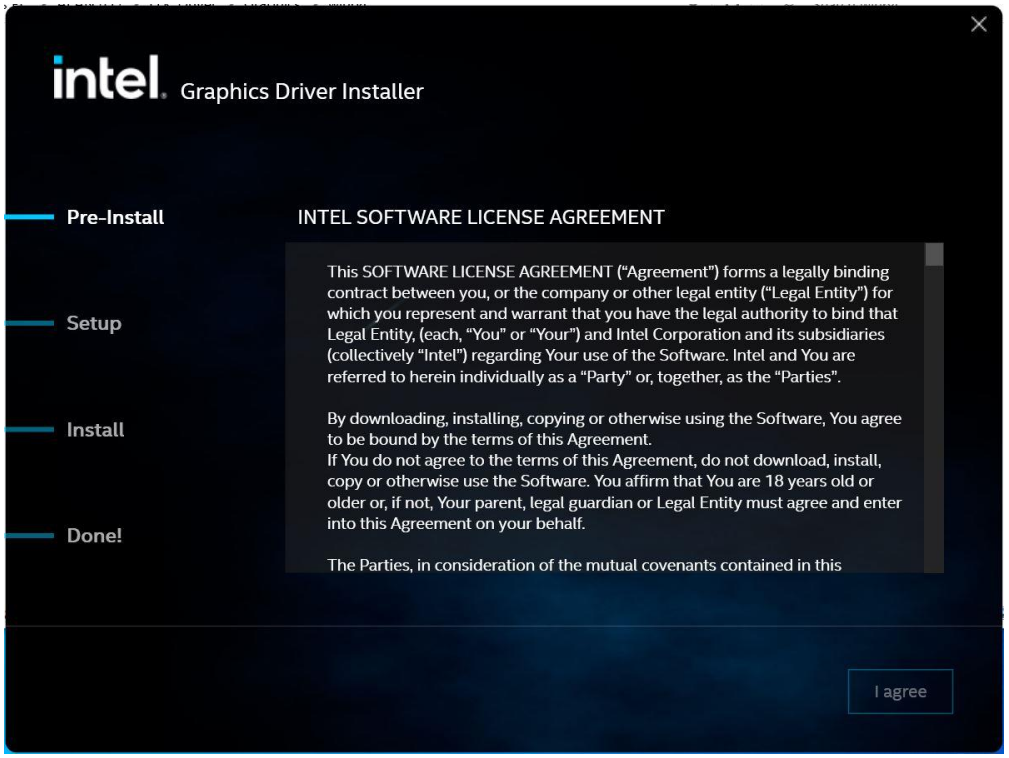
1. Open the Driver (Download from Winmate Download Center) and select **Graphic** driver.



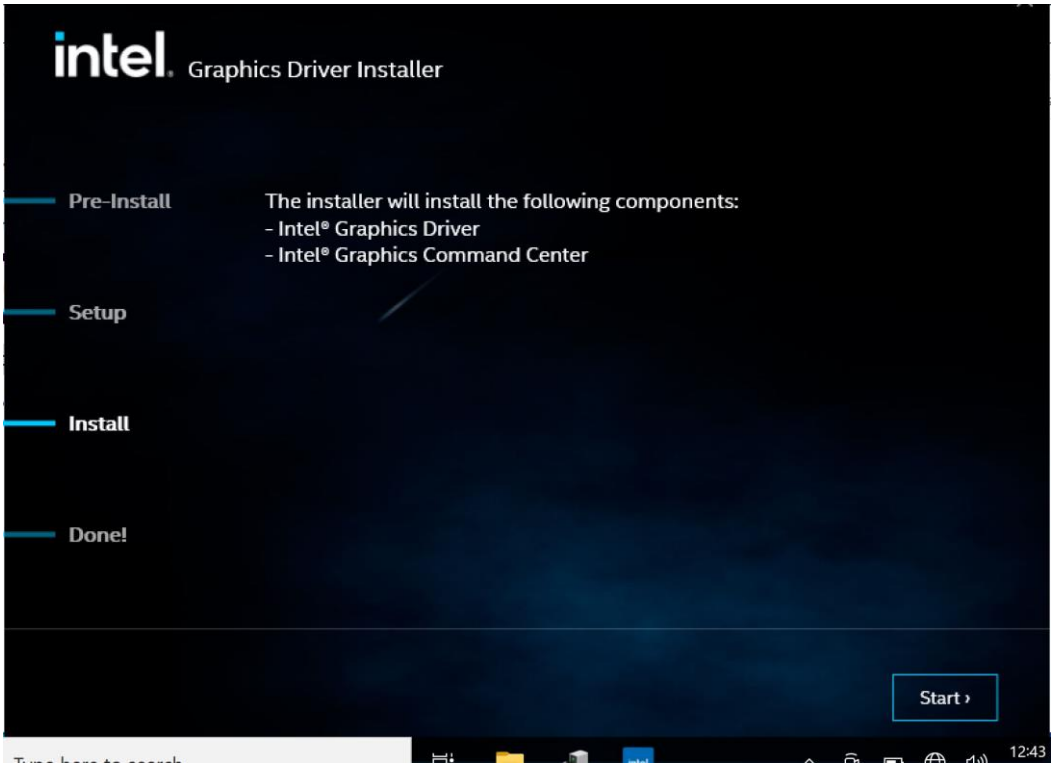
2. Installation window will pop up, select **Begin installation.**



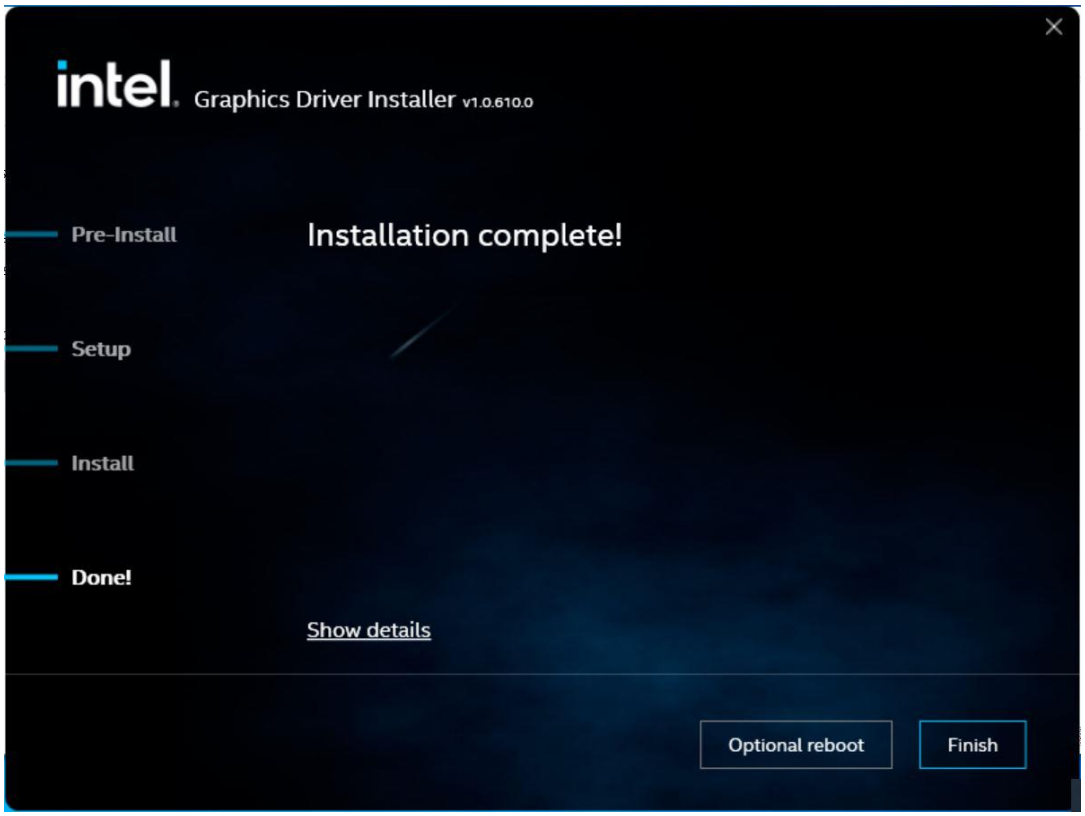
3. Select I agree.



4. Select **Start** to install the Driver.



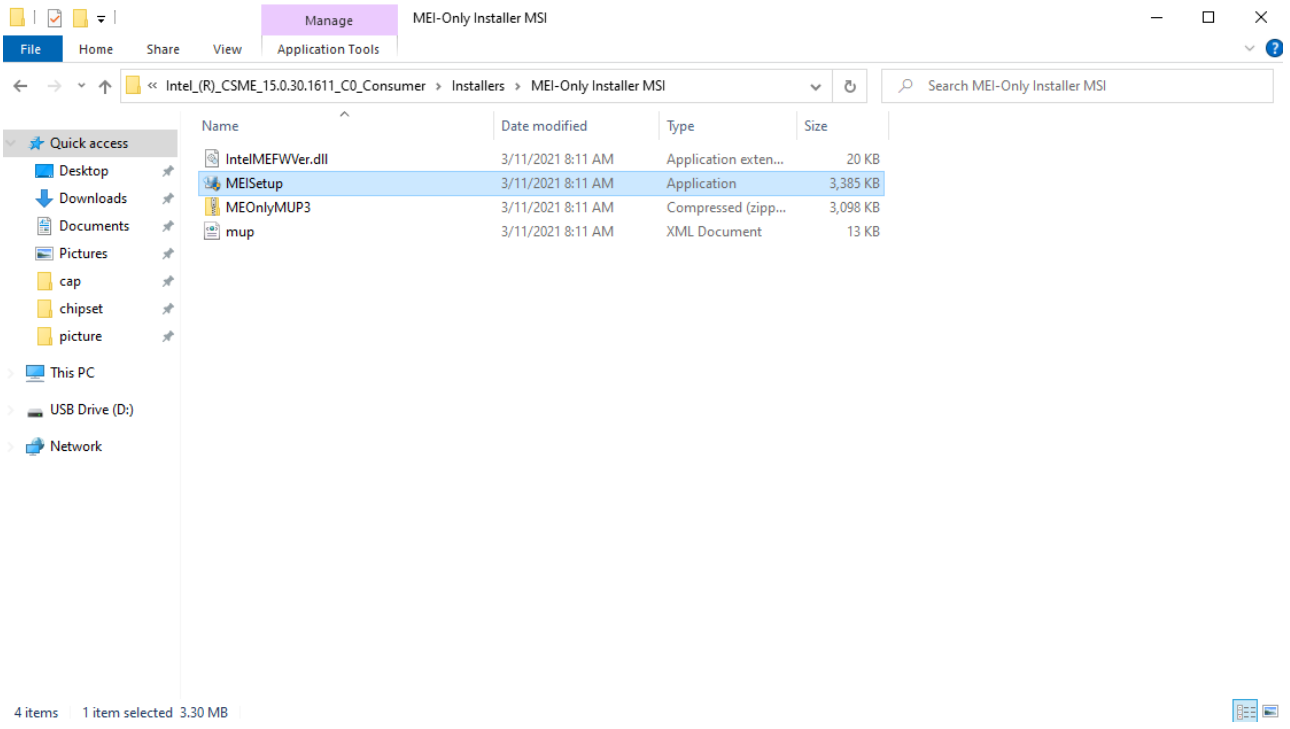
5. After installation is completed, click **Finish**.



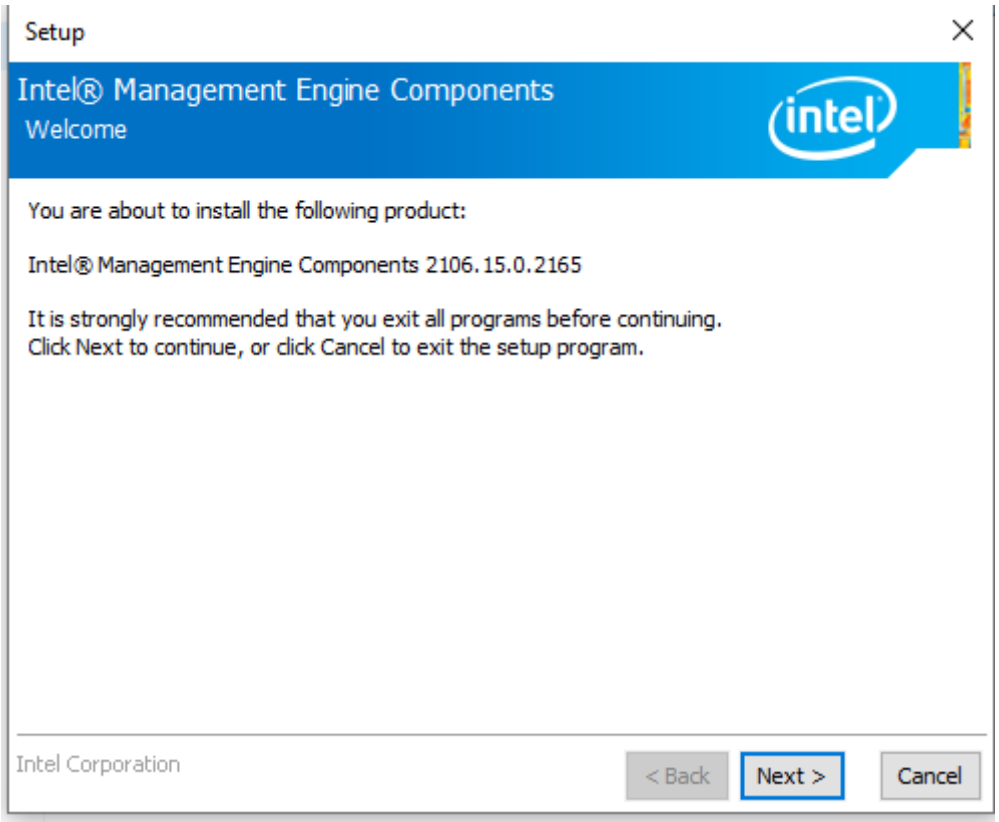
5.3 Management Engine (ME)

Follow instructions below to install Management Engine (ME) .

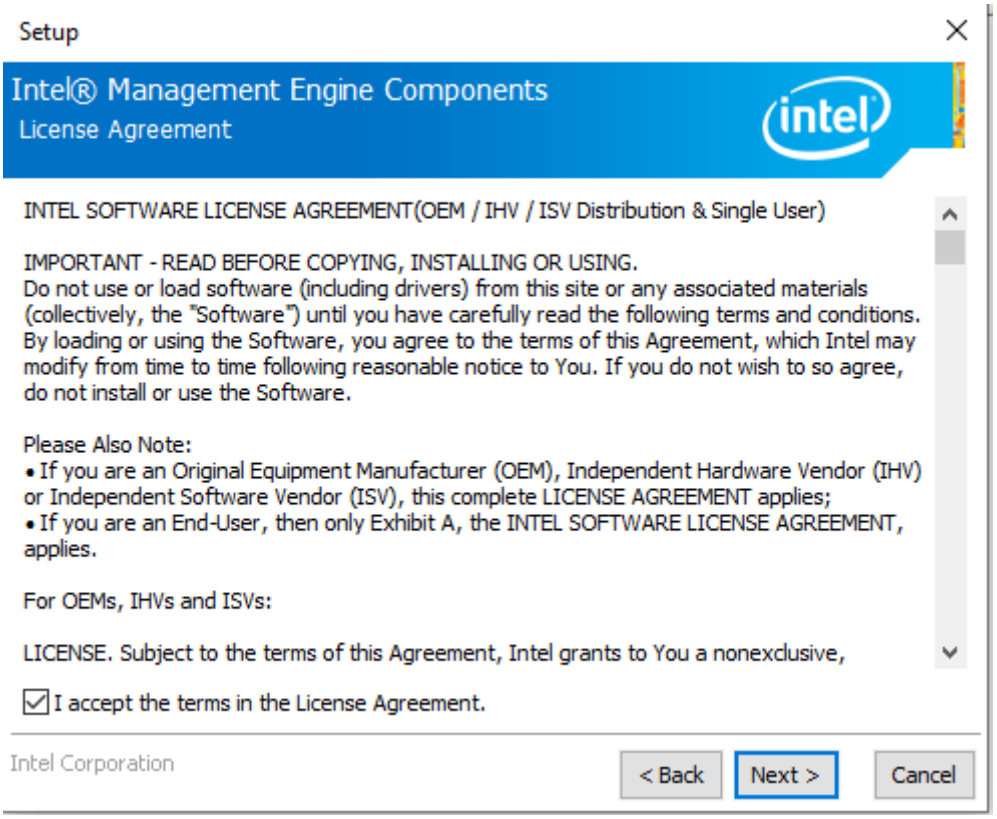
1. Open the Driver CD (included in the package) and select **ME** driver.



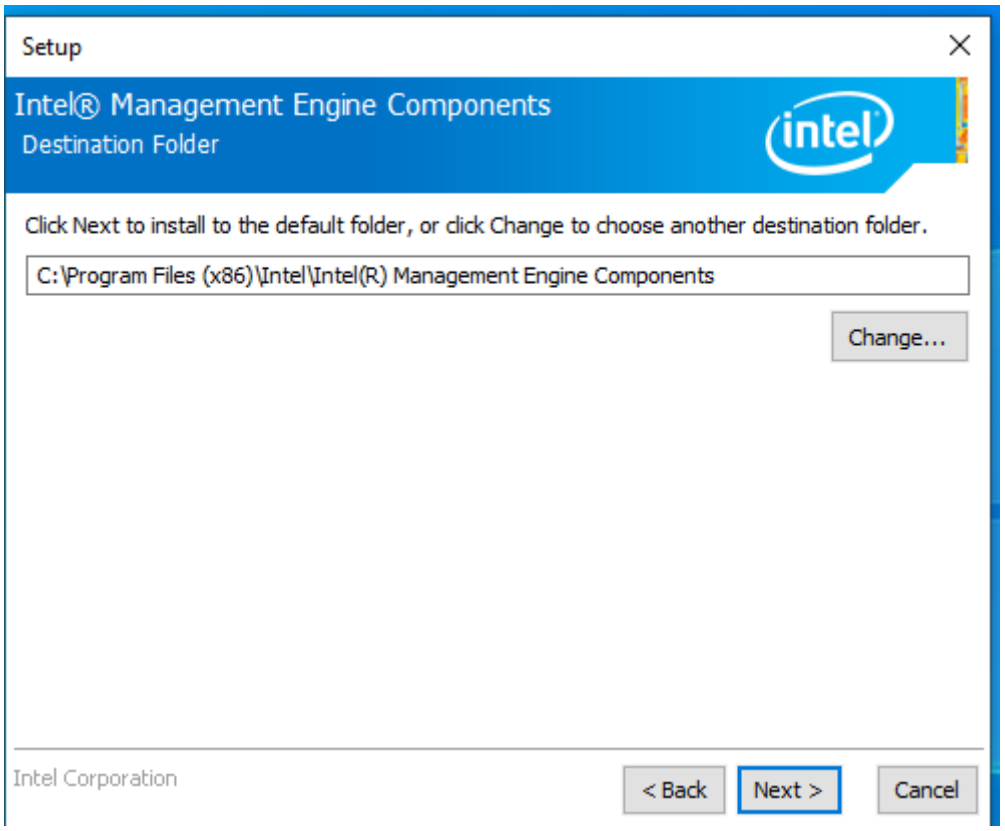
2. Select **Next** to start the installation.



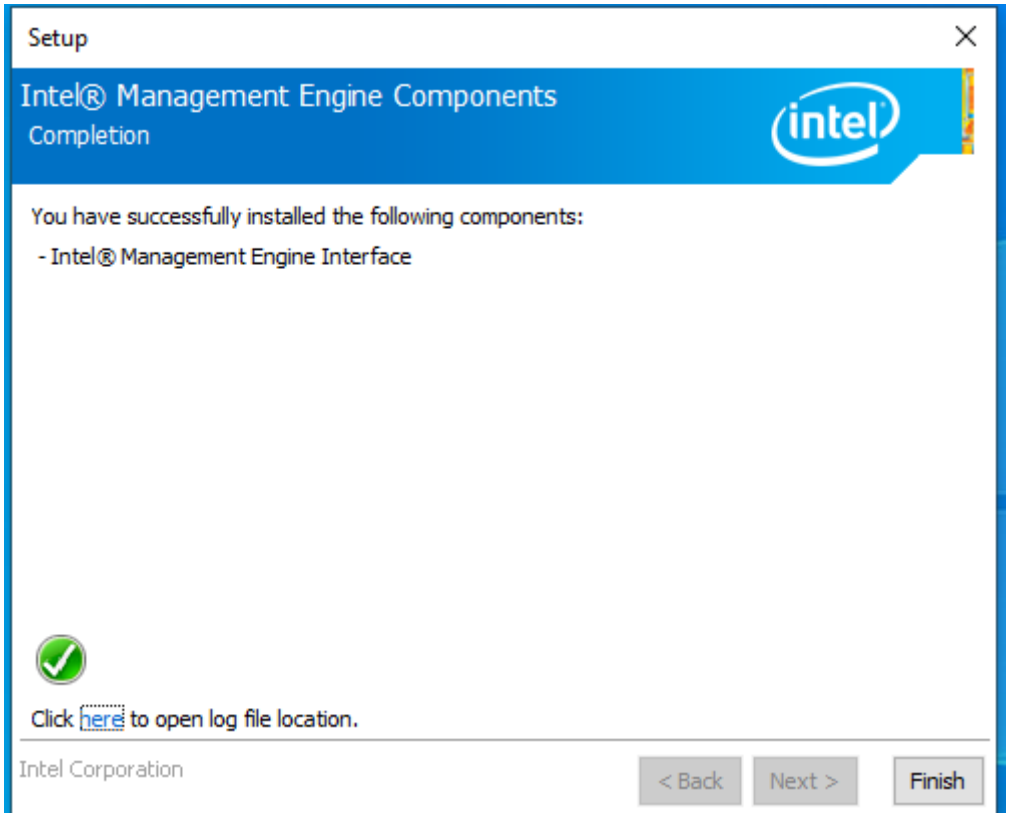
3. Click **Next** to agree to the license terms.



4. Check installation details and click **Next**.



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



5.4 Serial IO Driver Installation

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

Step 1 Open the Driver CD (included in the package) 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 "**

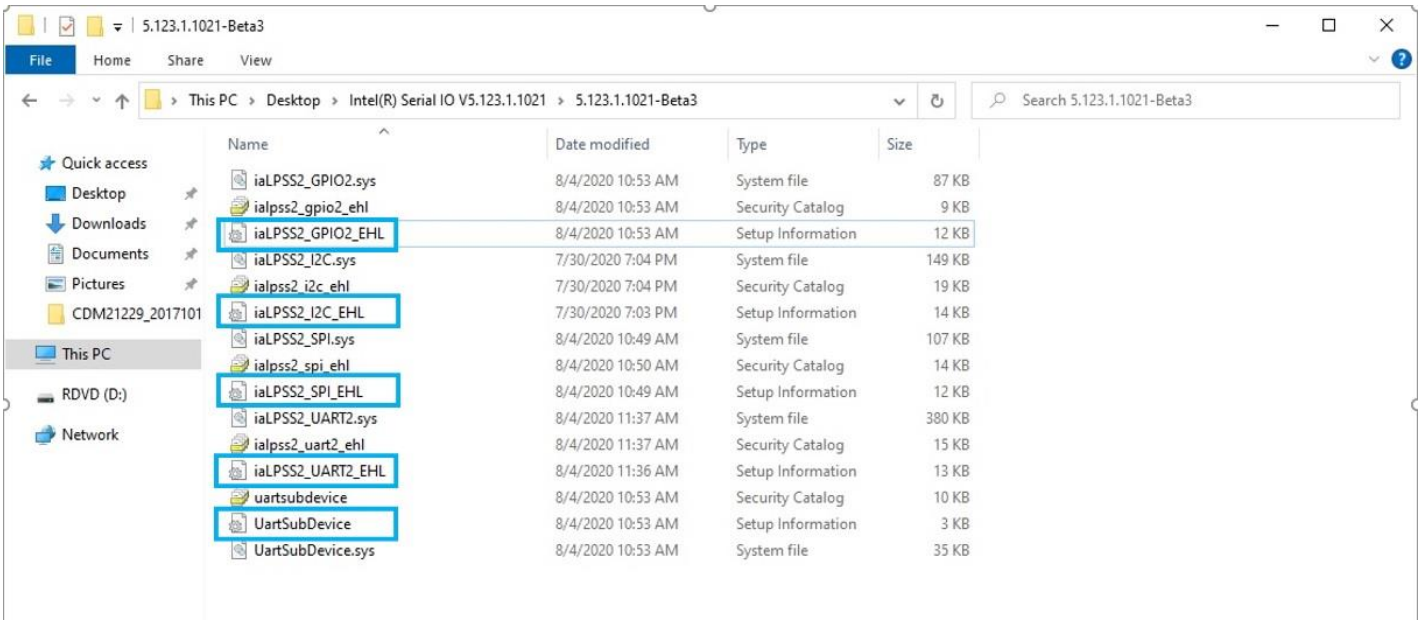
Step 7 Select **Install**

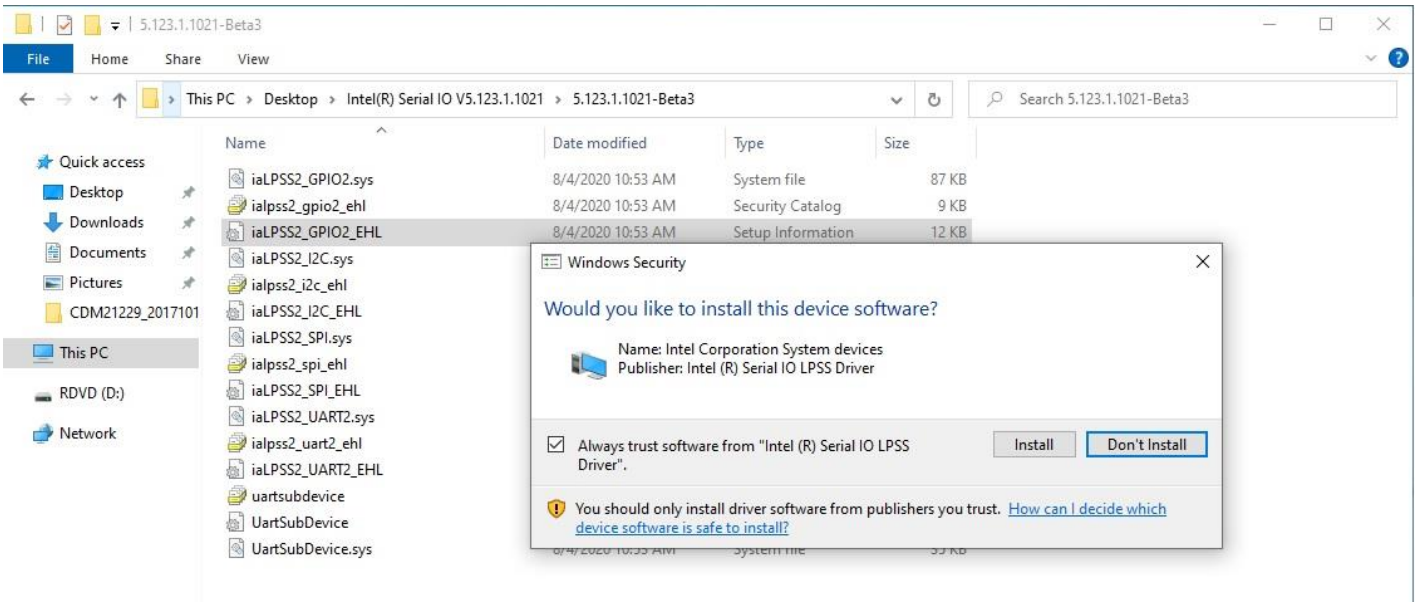
Step 8 Right click on **" iaLPSS2_UART2_EHL "**

Step 9 Select **Install**

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

Step 11 Select **Install**

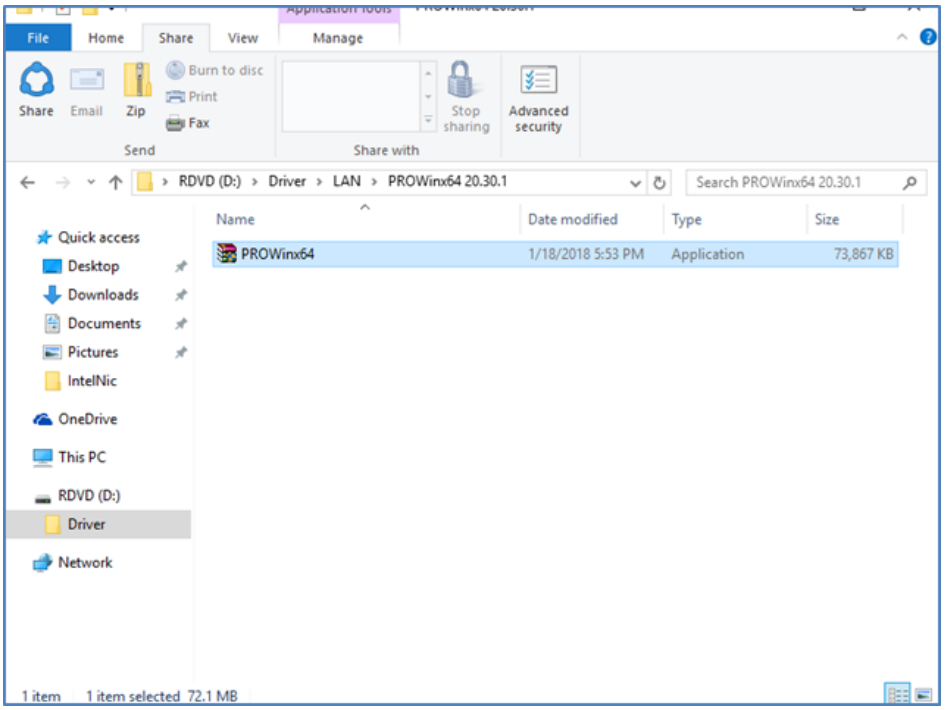




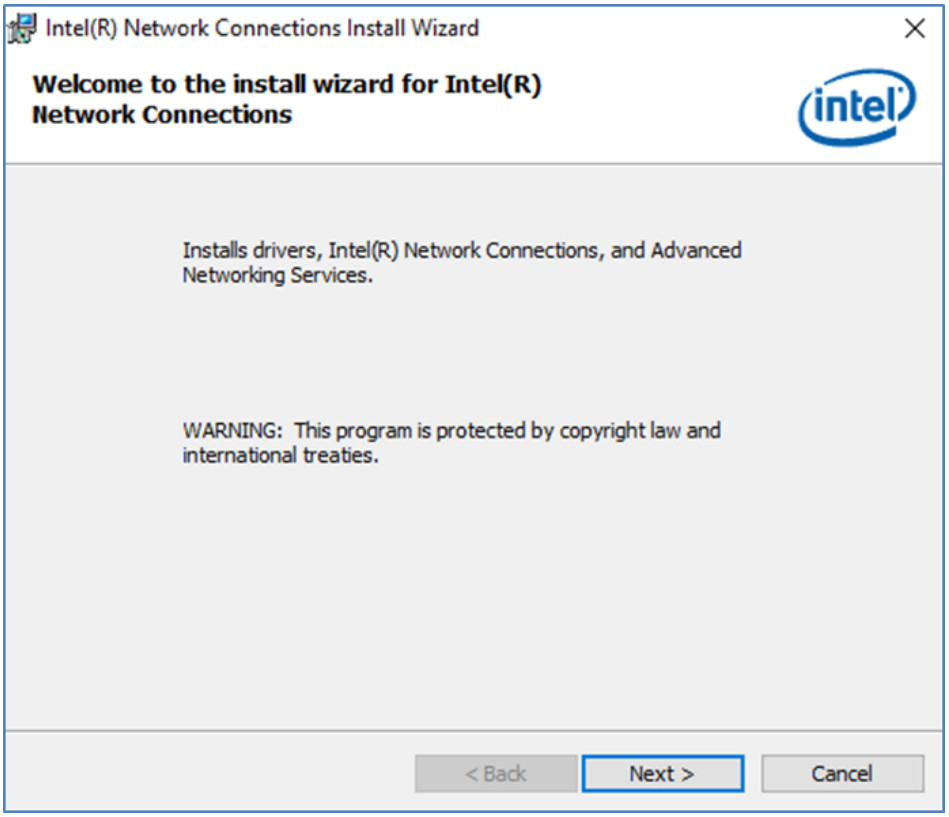
5.5 Ethernet Driver Installation

Follow instructions below to install LAN driver.

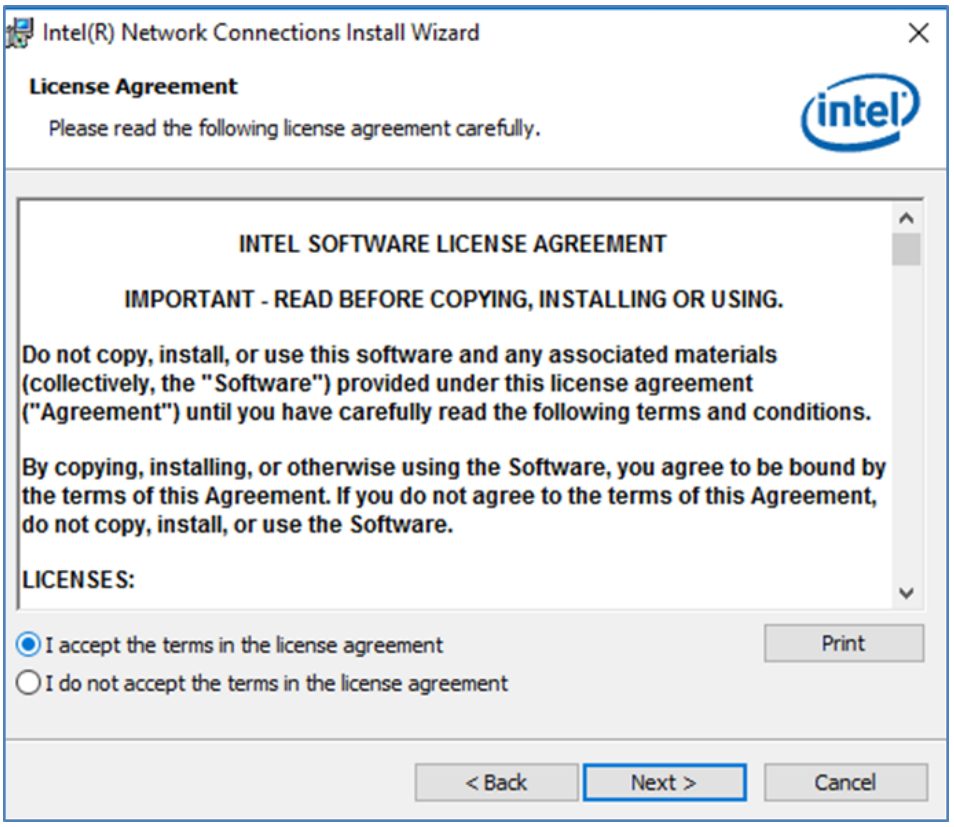
1. Open the Driver CD (included in the package) and select **LAN** driver.



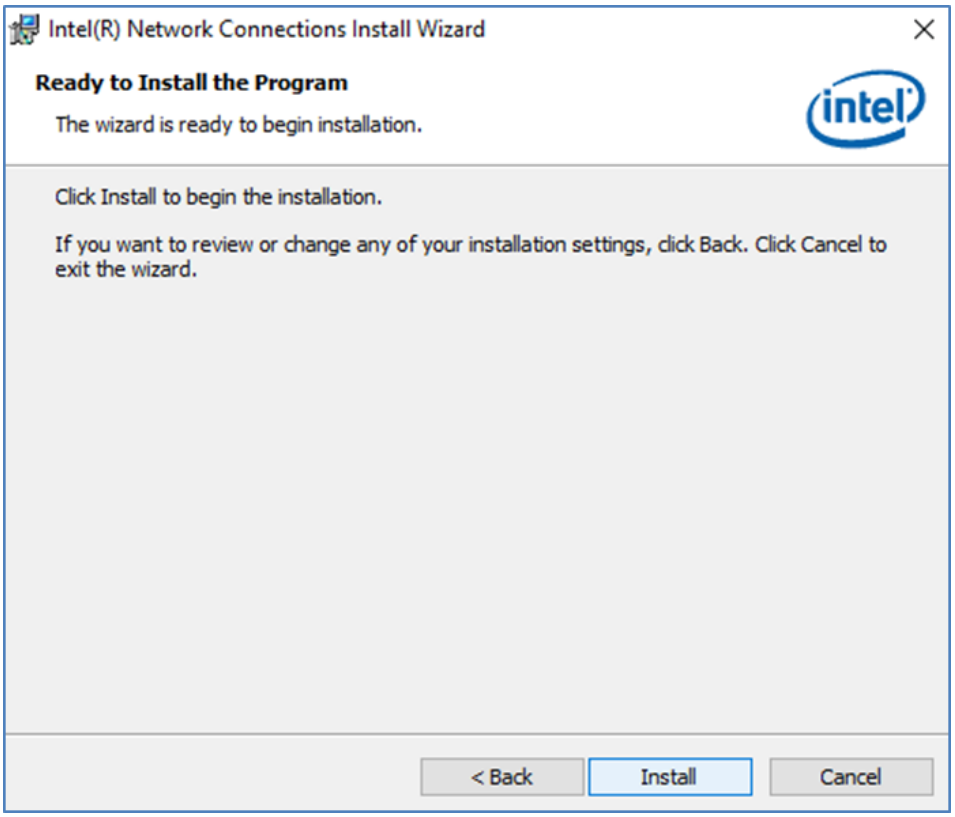
2. When compression is complete, select **Next**.



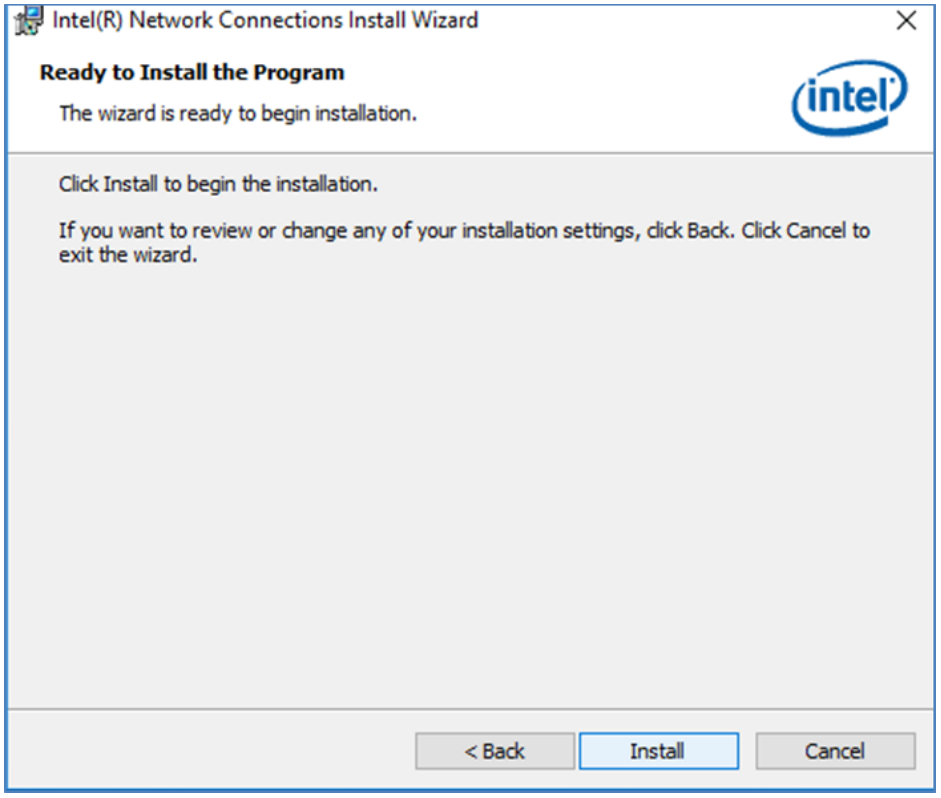
3. Read the license agreement, and then select **Next**.



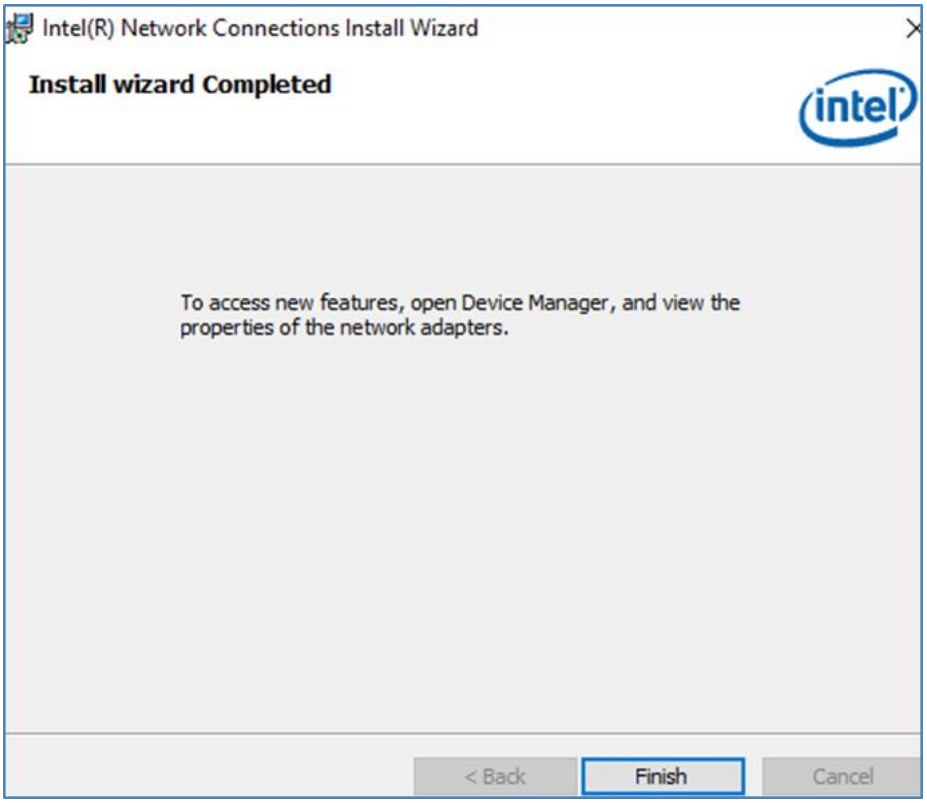
4. System displays the installed packages, select **Next**.



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



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



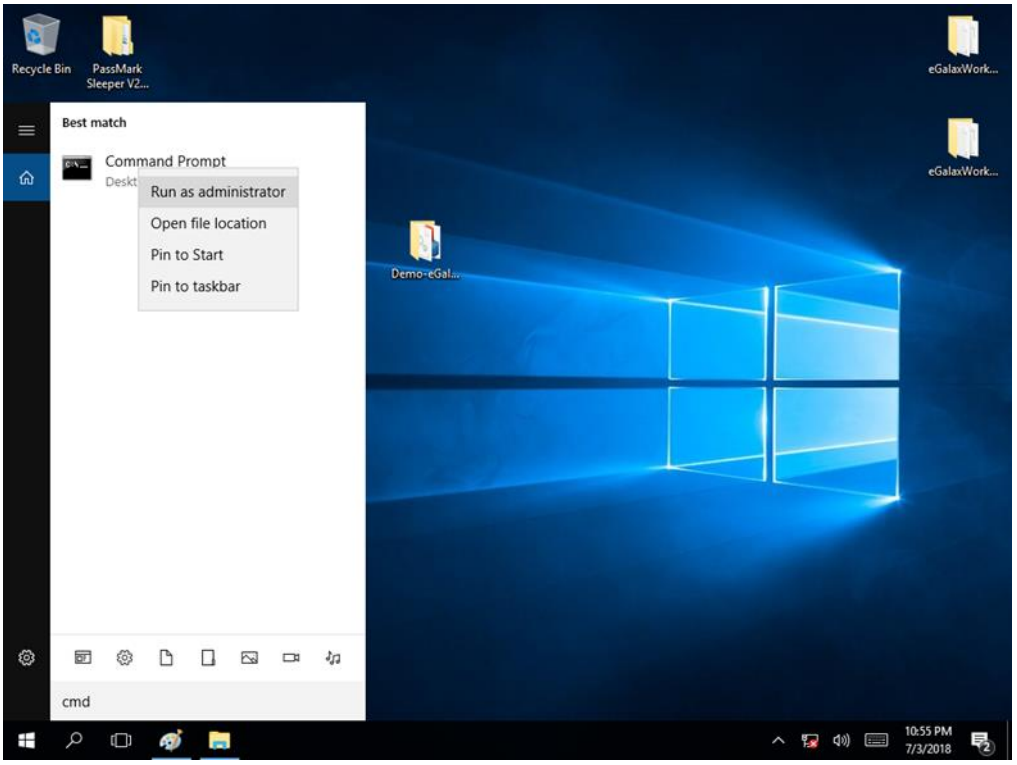
5.6 Watchdog Driver

For more details about Winmate Watchdog, please download Watchdog Guide from Winmate Downloads Center:

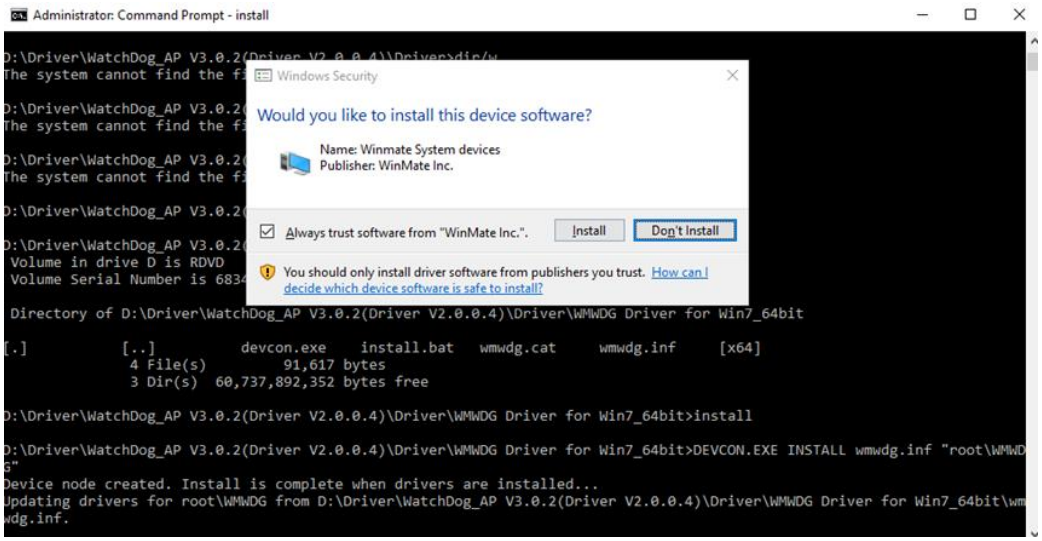
Follow instructions below to install **Watchdog** driver.

1. Type “cmd” in the run box then the cmd.exe will appear in programs.

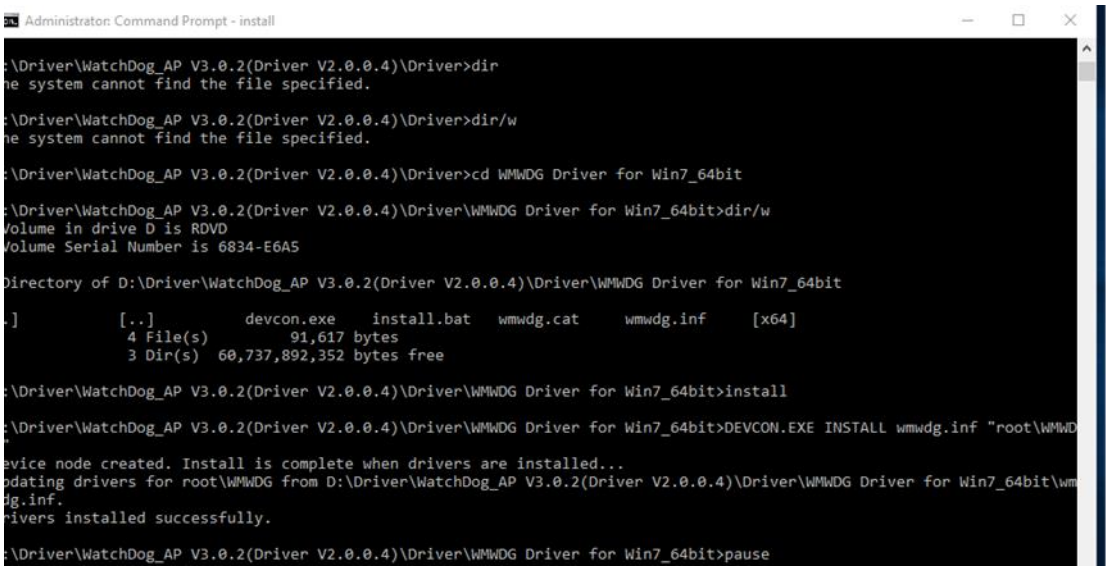
2. Right click on the cmd.exe and click on “Run as administrator” to start Open the Driver CD (included in the package) and select Watchdog driver.



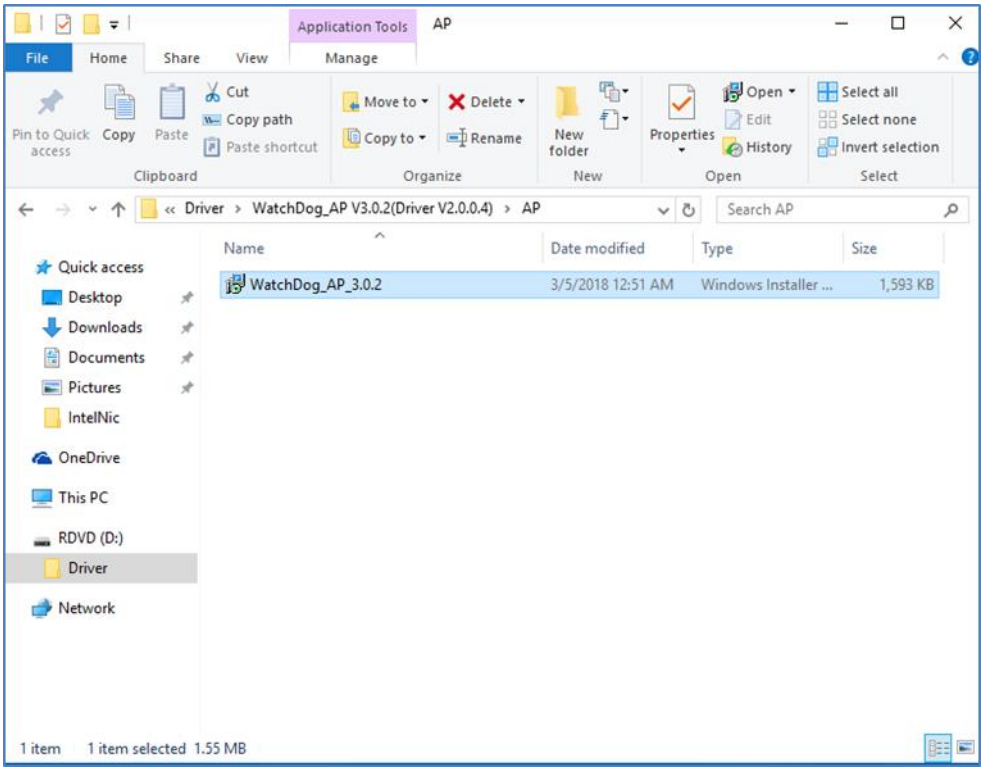
3. When Windows Security dialog appear, select install to continue the Installation.



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



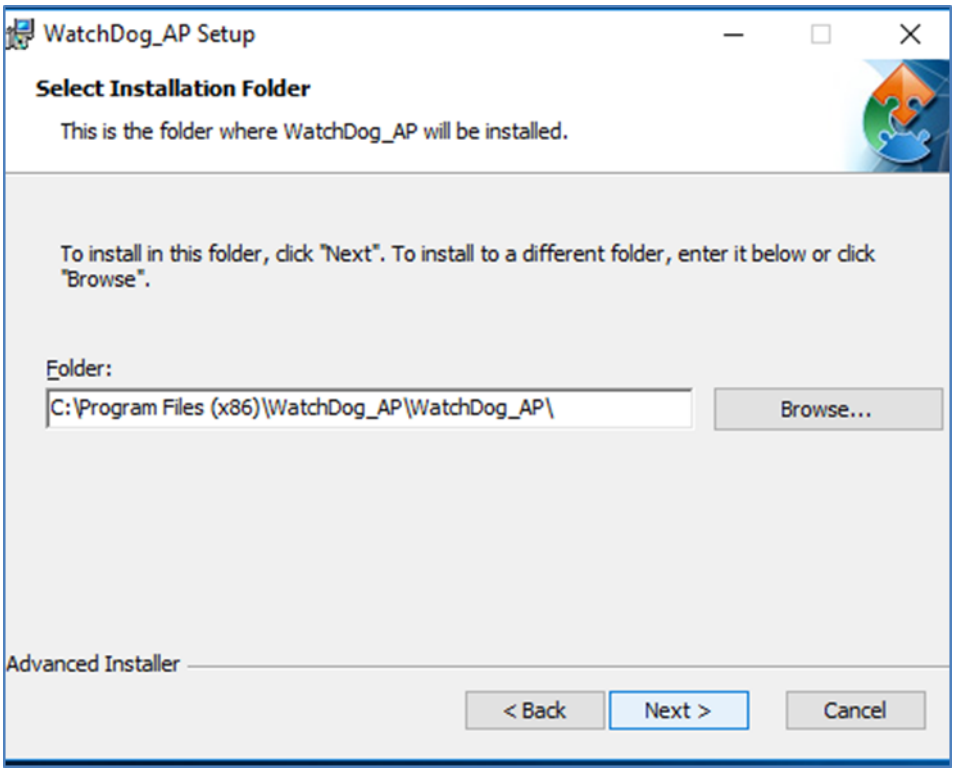
5. Open the Driver CD (included in the package) and select **Watchdog AP**.



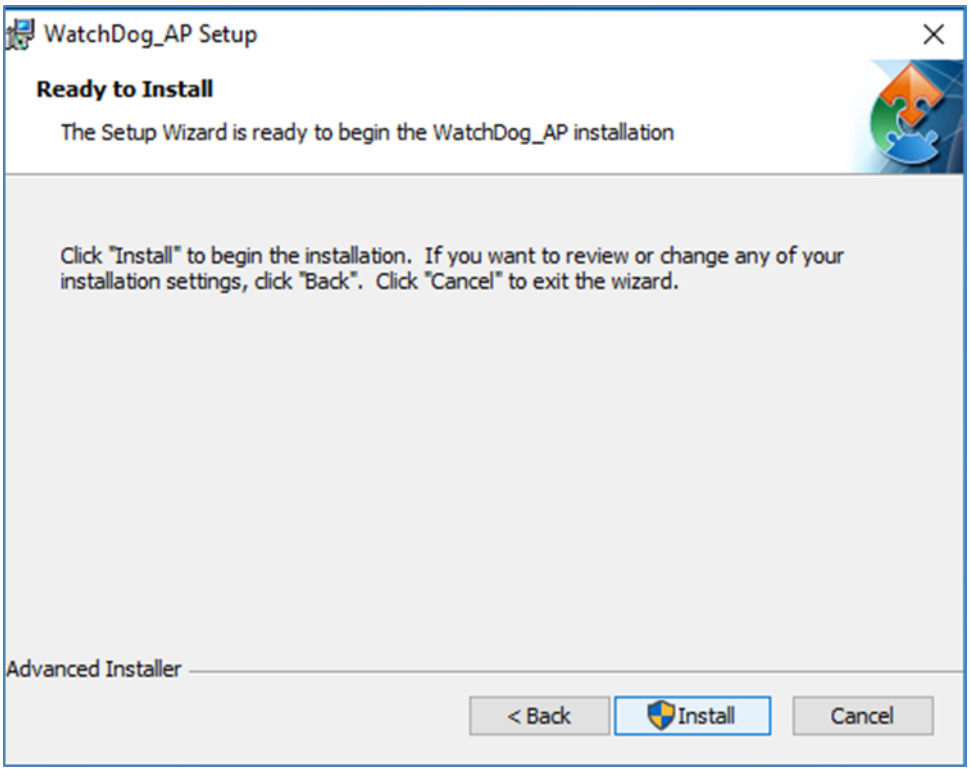
6. Select **Next**.



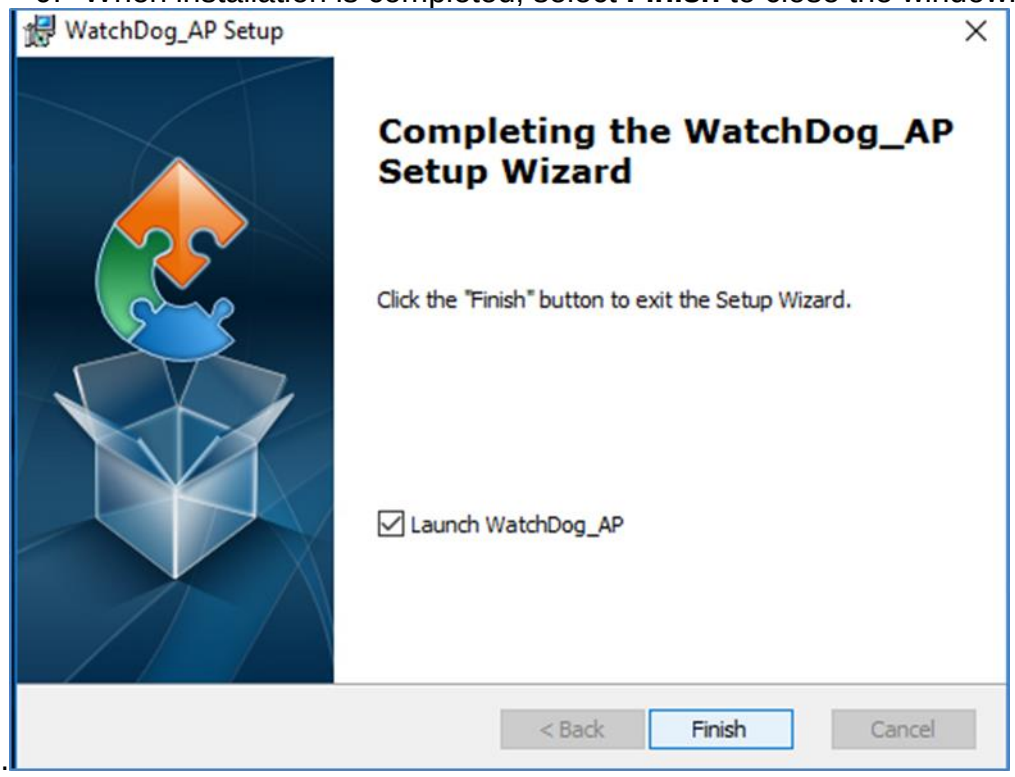
7. The installed storage location is displayed, select **Next** to continue.



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



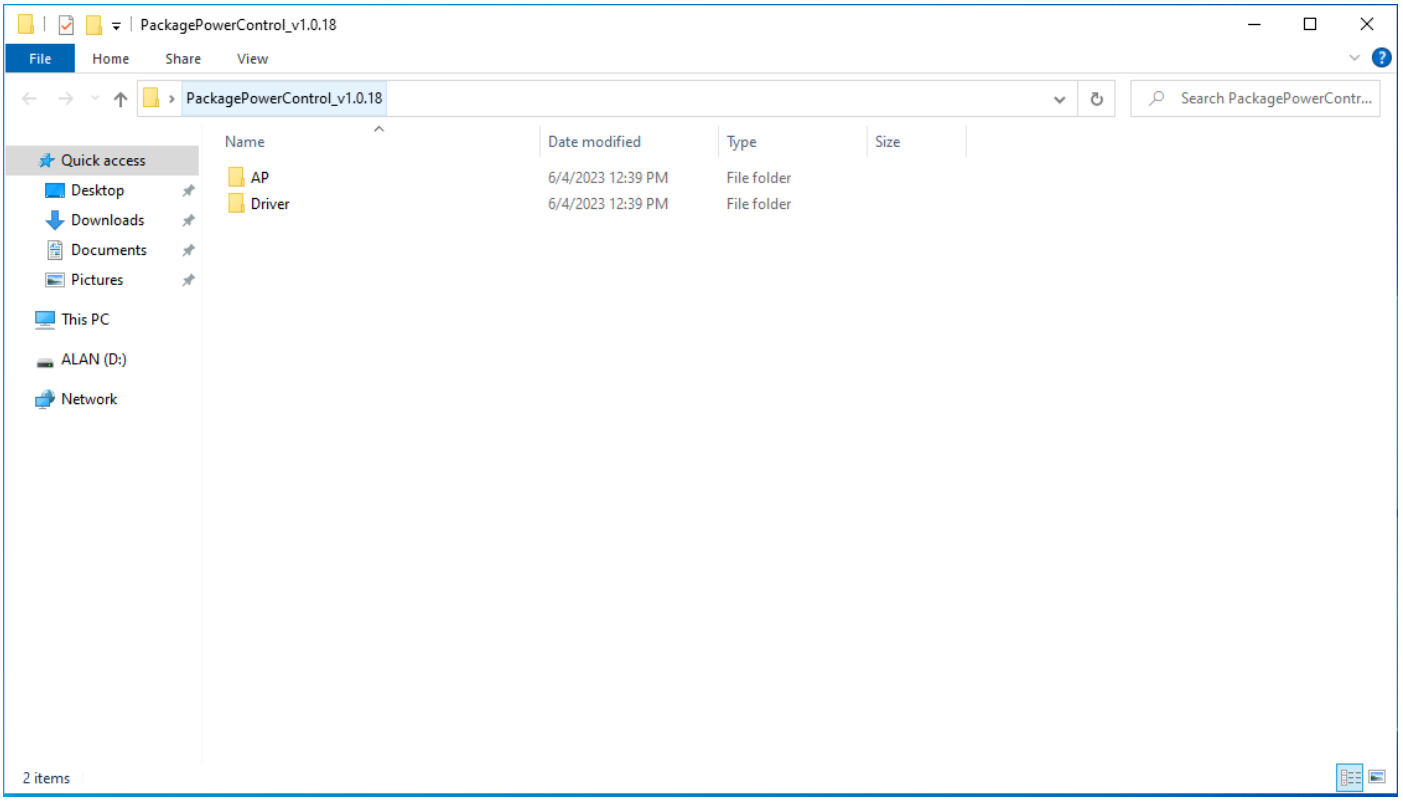
9. When installation is completed, select **Finish** to close the window.

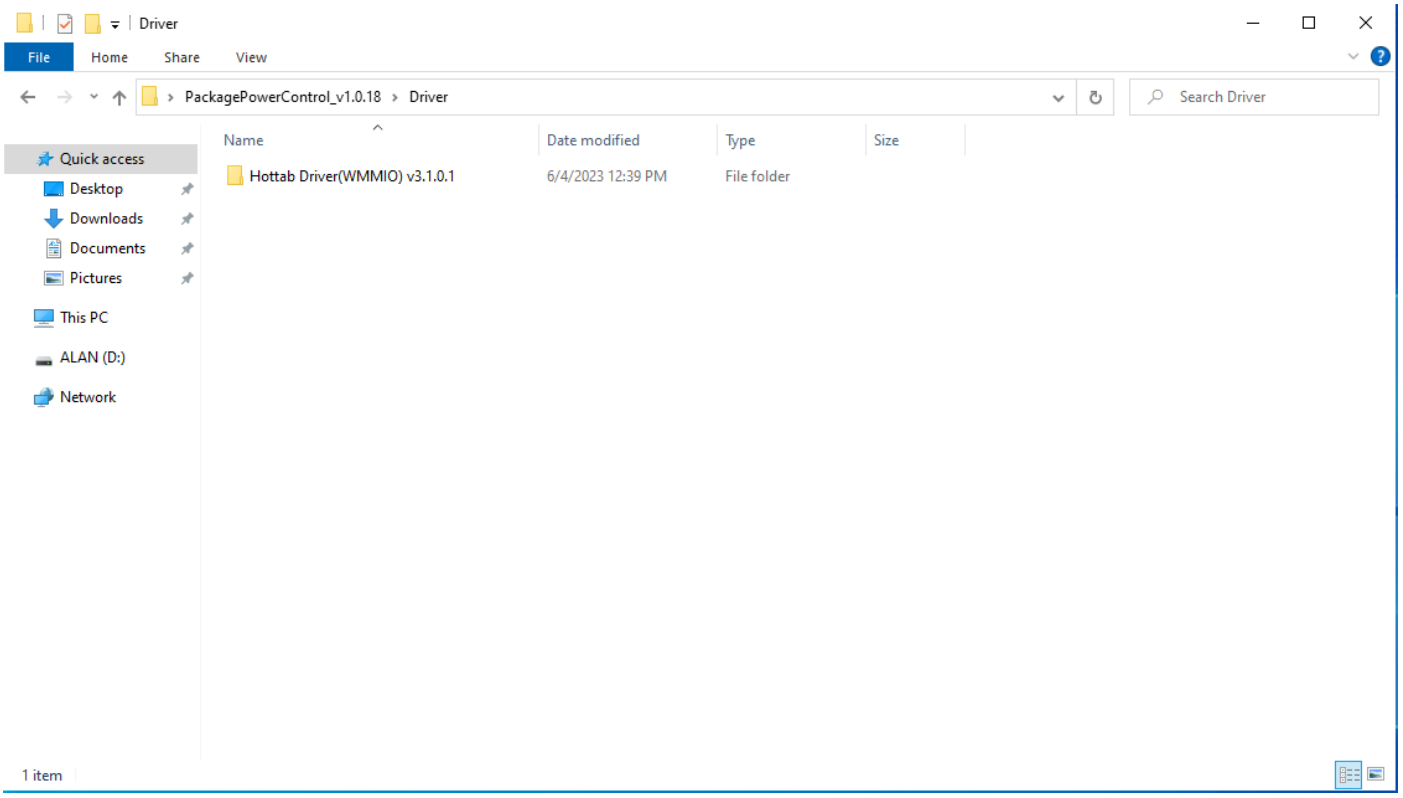


5.7 Thermal Control AP

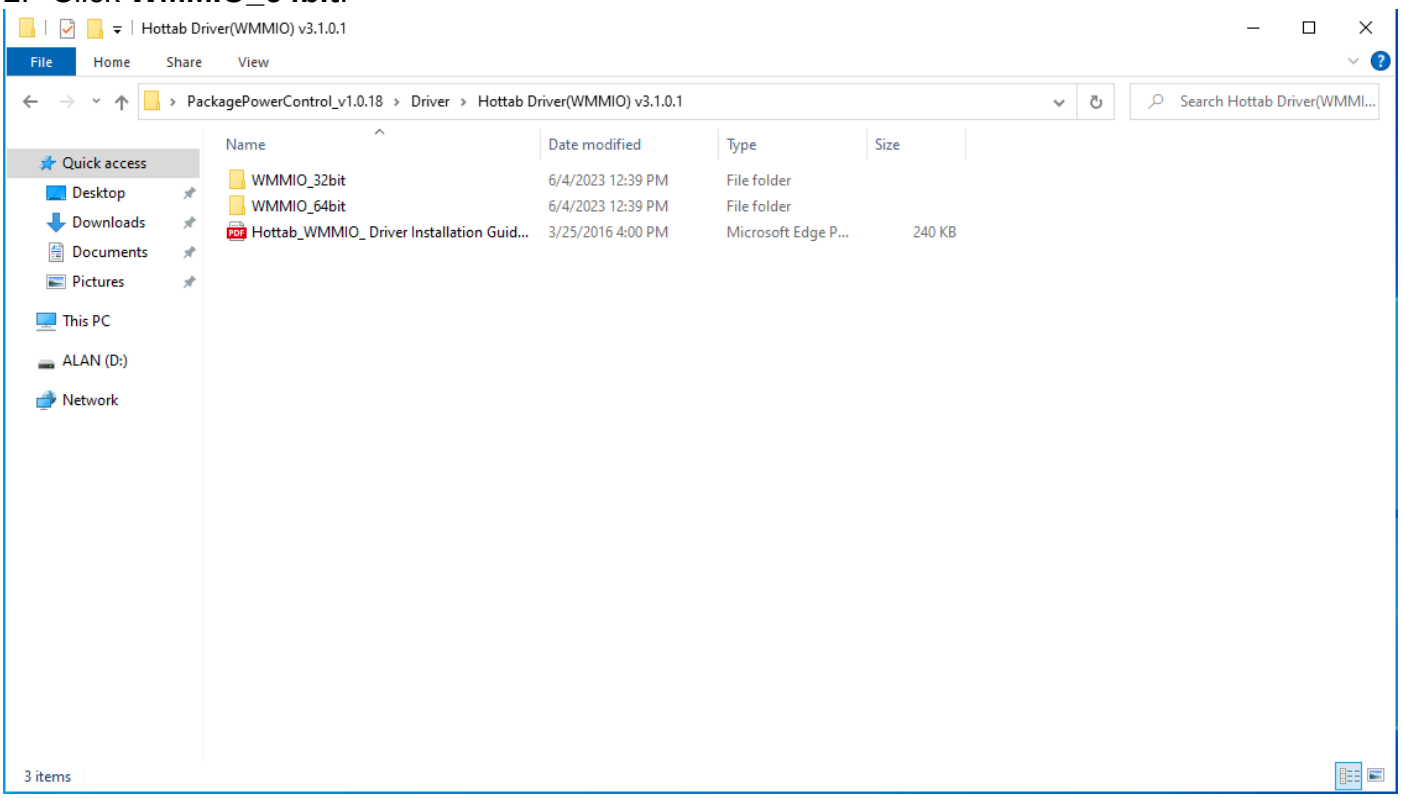
Follow instructions below to install Thermal Control AP.

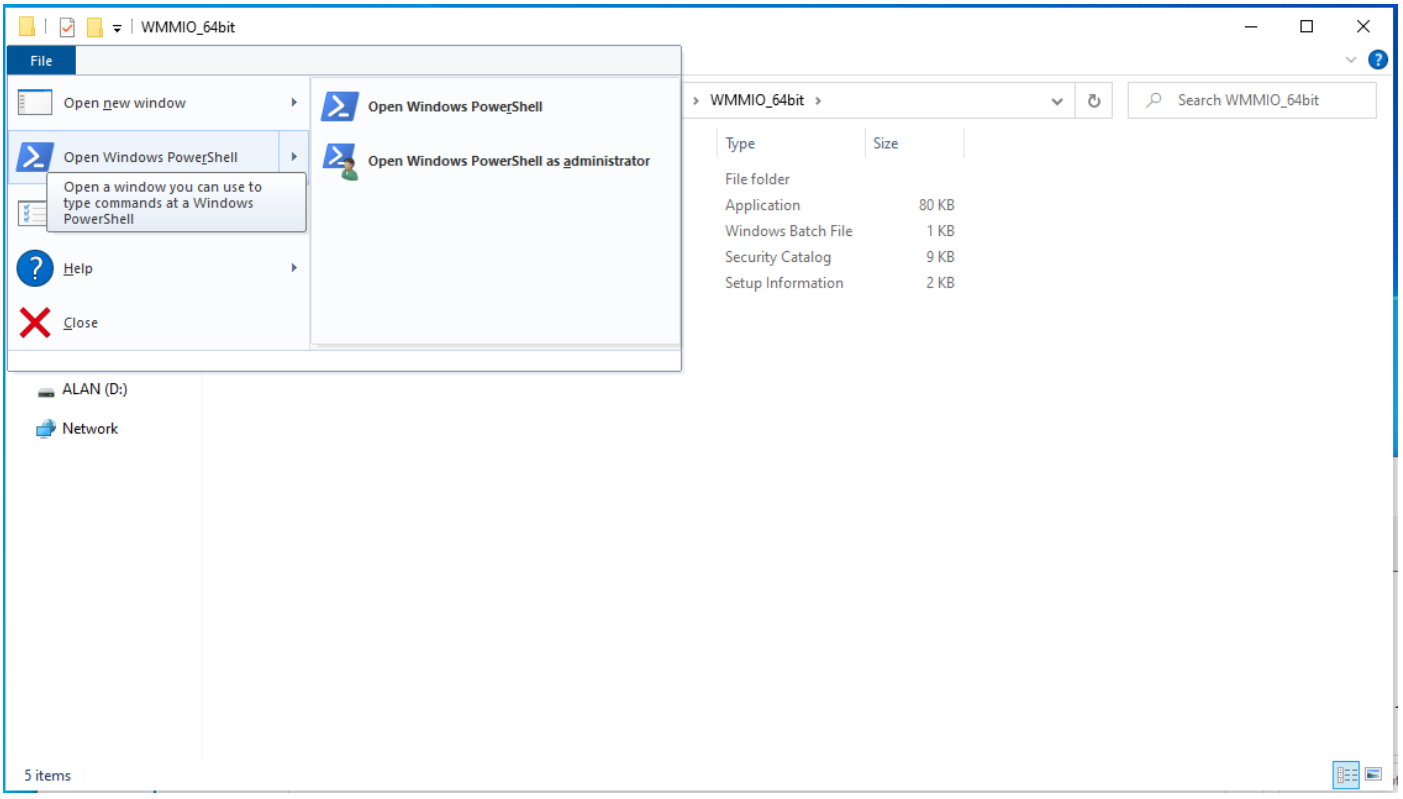
1. Click **Driver**.

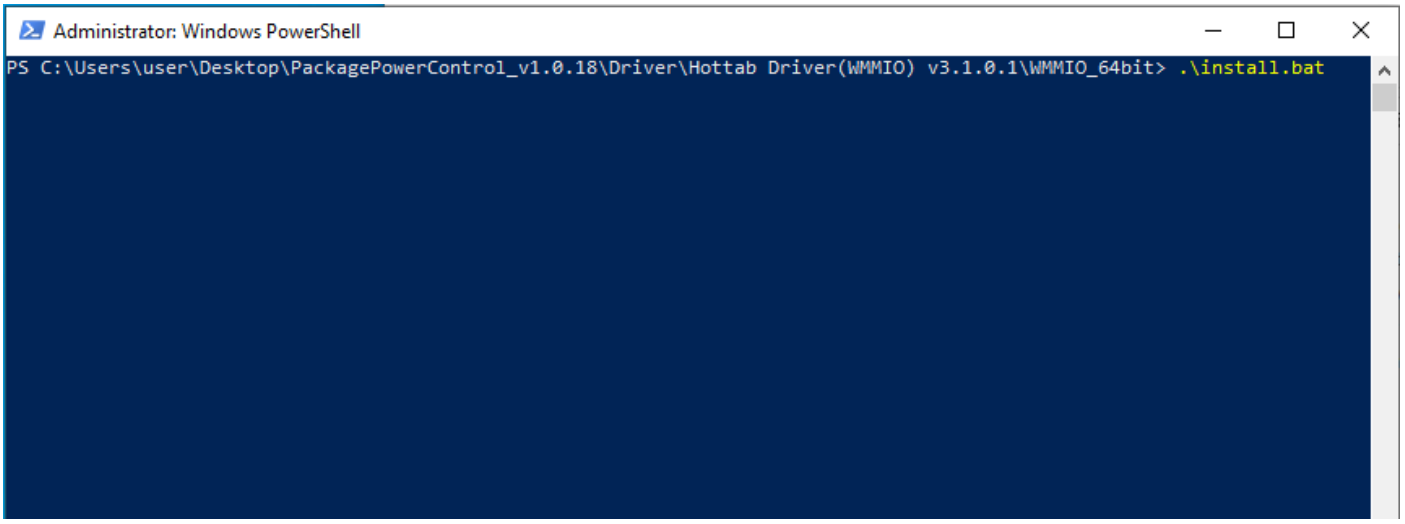


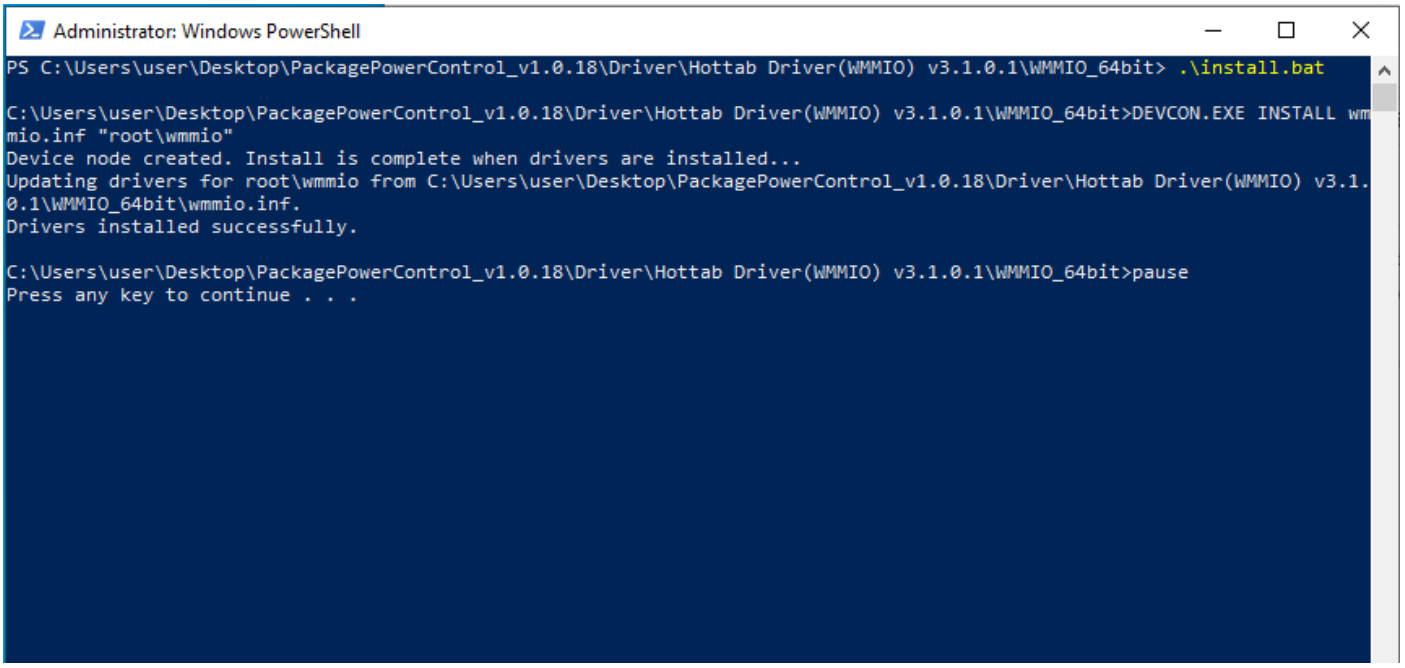


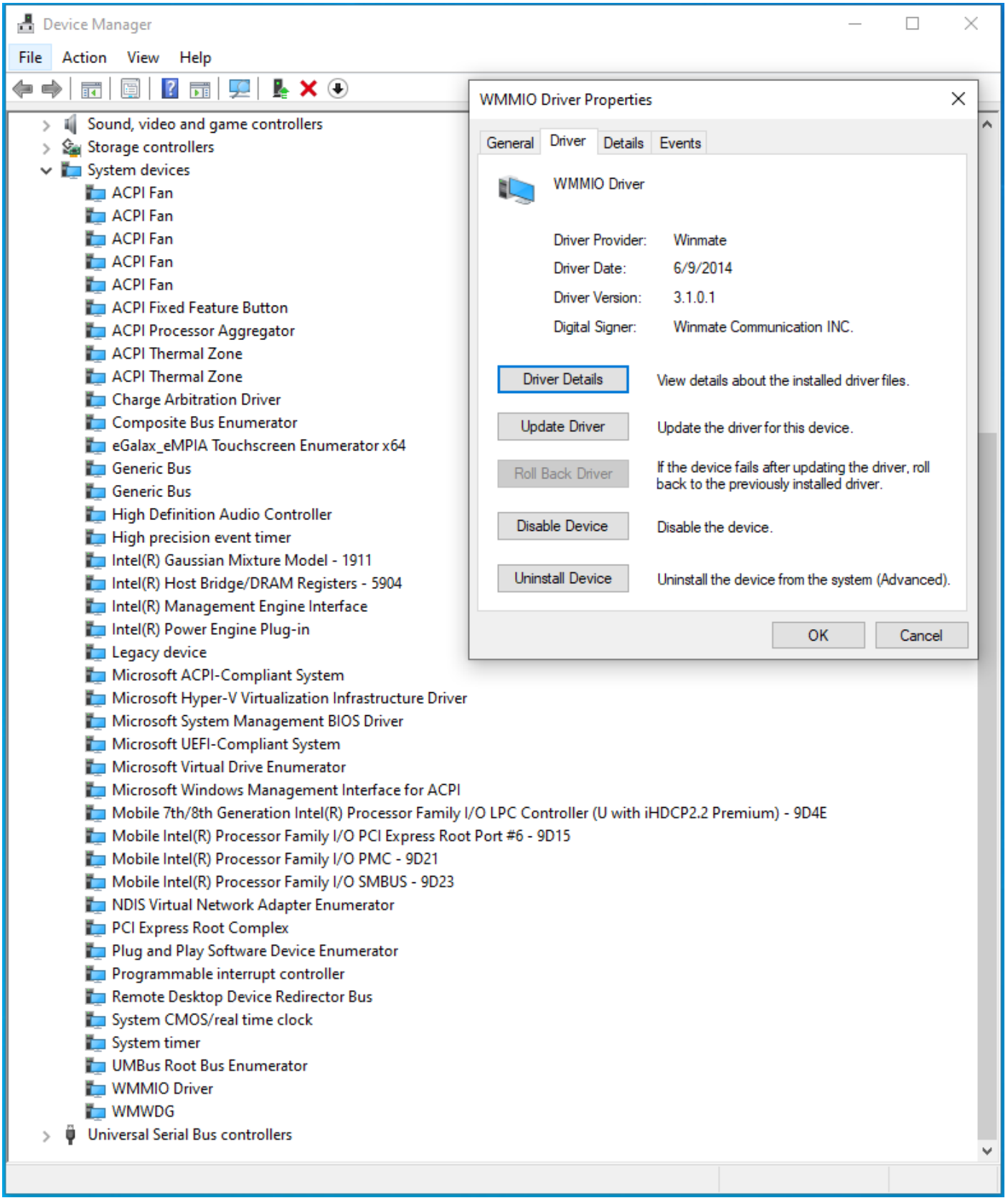
2. Click **WMMIO_64bit**.



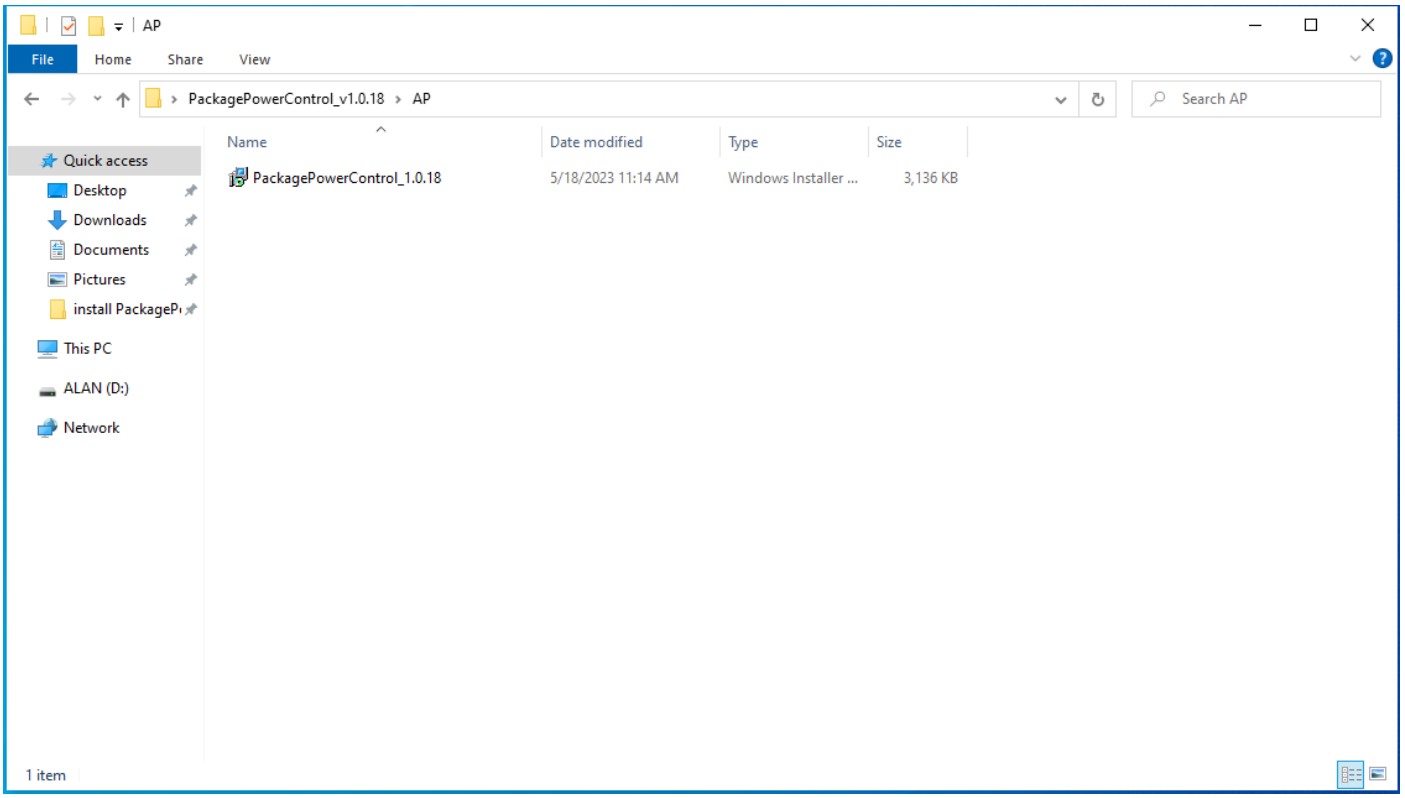


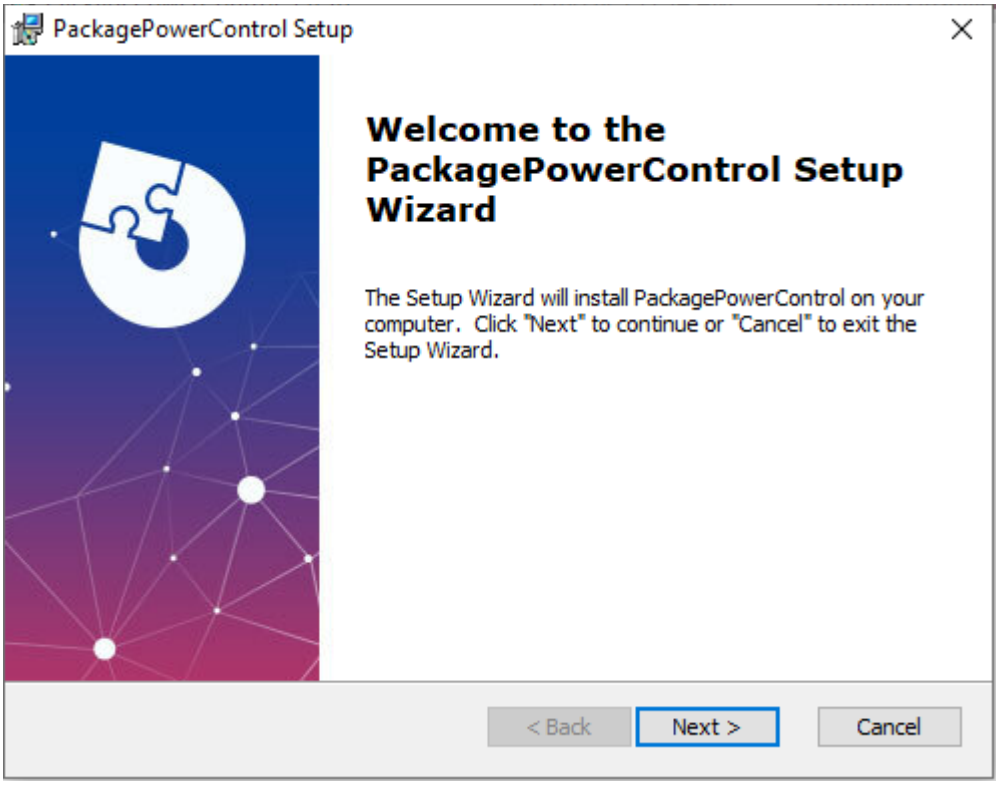

Administrator: Windows PowerShell
PS C:\Users\user\Desktop\PackagePowerControl_v1.0.18\Driver\Hottab Driver(WMMIO) v3.1.0.1\WMMIO_64bit> .\install.bat

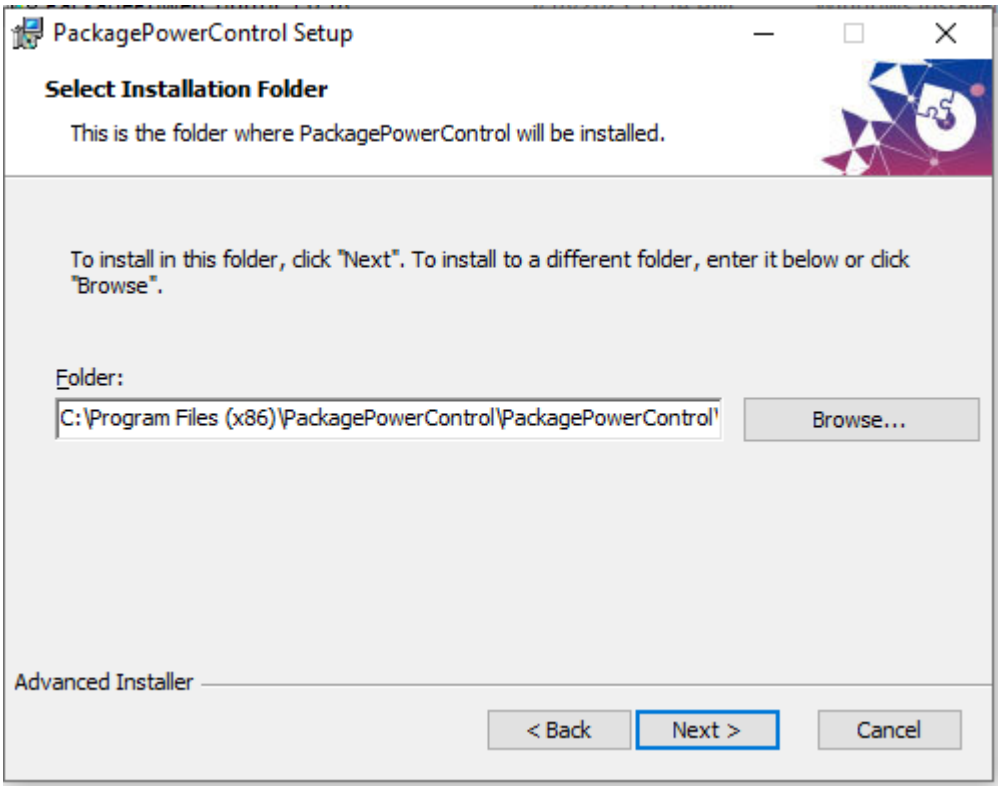

Administrator: Windows PowerShell
PS C:\Users\user\Desktop\PackagePowerControl_v1.0.18\Driver\Hottab Driver(WMMIO) v3.1.0.1\WMMIO_64bit> .\install.bat
C:\Users\user\Desktop\PackagePowerControl_v1.0.18\Driver\Hottab Driver(WMMIO) v3.1.0.1\WMMIO_64bit>DEVCON.EXE INSTALL wmmio.inf "root\wmmio"
Device node 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 . . .

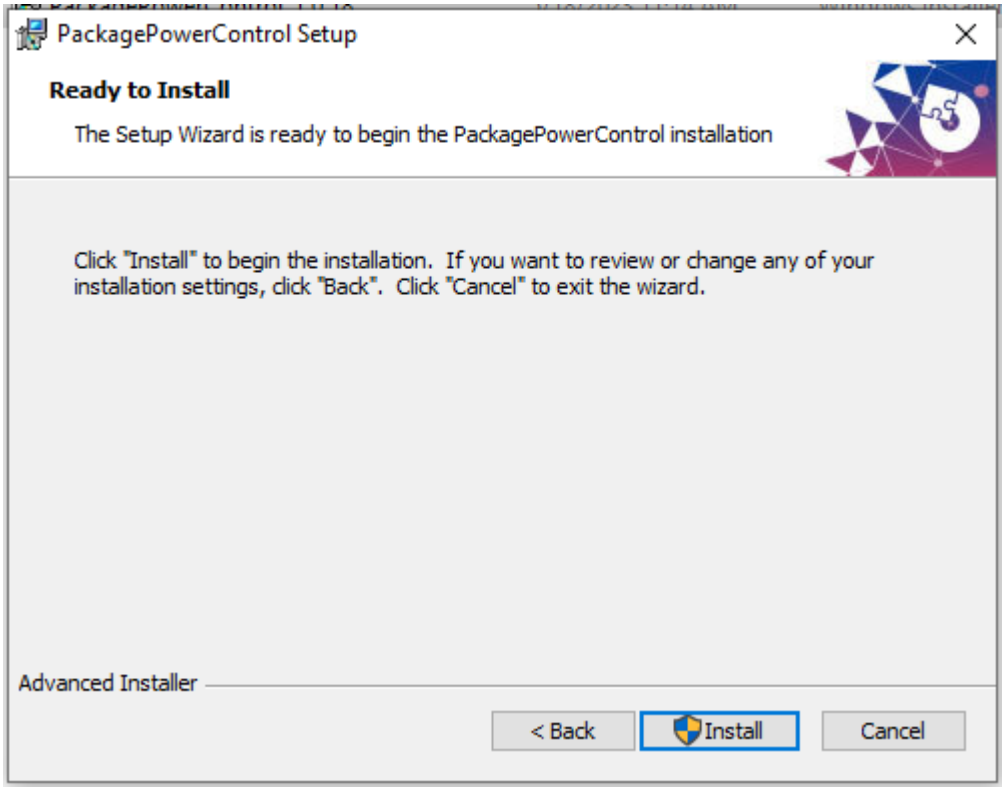

Device Manager
File Action View Help
Sound, video and game controllers
Storage controllers
System devices
ACPI Fan
ACPI Fan
ACPI Fan
ACPI Fan
ACPI Fan
ACPI Fixed Feature Button
ACPI Processor Aggregator
ACPI Thermal Zone
ACPI Thermal Zone
Charge Arbitration Driver
Composite Bus Enumerator
eGalax_eMPIA 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

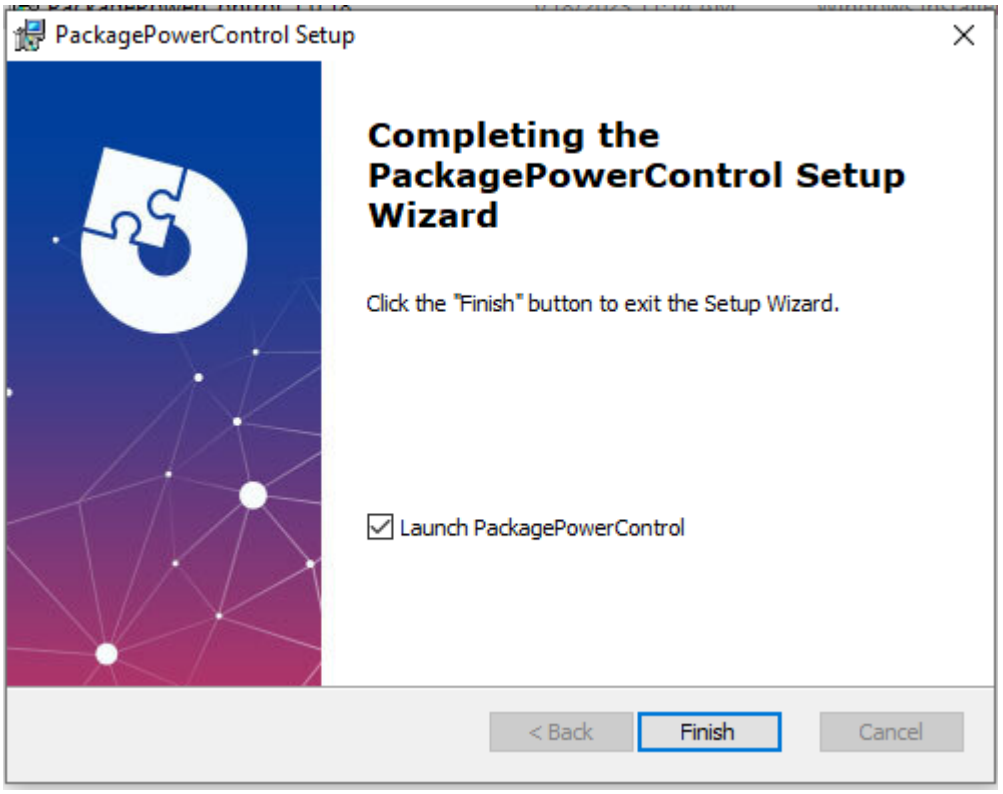
3. Click **AP**.


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

Chapter 6: Technical Support

This chapter includes pathway for technical support and Software Development Kit (SDK). 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. If any problem occurs fill in problem report form enclosed and immediately contact us.

6.1 Software Developer Support

You can download SDK, derivers and other document from Winmate Download Center or Winmate File Share.

Winmate Download Center

http://www.winmate.com/ > Support > Download Center > Embedded Computing > EAC Mini EACIEK20

6.2 Problem Report Form

IoT Gateway

Customer name:	
Company:	
Tel.:	Fax:
E-mail:	Date:

Product Serial Number: _____

Problem Description: Please describe the problem as clearly as possible. Detailed description of the occurred problem will allow us to find the best solution to solve the problem as soon as possible.

Appendix

This chapter provides additional information about EAC Mini EACIEK20 IoT Gateway.

Appendix A: Order Information

EAC Mini EACIEK20 IoT Gateway available in the following configurations:

Model Name	Configuration
EACIEK20-100-A432	Intel N6211, 4G RAM, 32GB eMMC, 2 x USB3.2 Gen2x1, 2 x LAN, 1 x HDMI
EACIEK20-101-A432	Intel N6211, 4G RAM, 32GB eMMC, 2 x USB3.2 Gen2x1, 2 x LAN, 1 x HDMI, Wi-Fi(Client)
EACIEK20-102-A432	Intel N6211, 4G RAM, 32GB eMMC, 2 x USB3.2 Gen2x1, 2 x LAN, 1 x HDMI, 4G (With micro SD card and micro SIM-card slot)
EACIEK20-119-A432	Intel N6211, 4G RAM, 32GB eMMC, 2 x USB3.2 Gen2x1, 2 x LAN, 1 x HDMI, M.2 SSD expansion

Additional ordering options:

Item	Specifications
AC Adapter	AC Adapter 12V/36W (P/N 922D036W12V6)
Mounting	VESA Mounting Kit (P/N 98K000A0009A) DIN-Rail Mounting Kit (P/N98K000A00099)
External Antenna	WLAN External Antenna (P/N 397SM000000S) WWAN External Antenna (P/N 397SM000000Q)
Expansion Module	EACWSLT-222: 4G EACWSLT-231: 3-port RS232/422/485 w/ isolation EACWSLT-232 : 16-Channel Digital I/O w/ isolation EACWSLT-233 : 2-port CANBUS w/ isolation EACWLST-234 : 3-port USB 2.0 EACWLST-235 : 2-port RS232/422/485 w/ isolation EACWLST-236: 2-port Giga LAN EACWLST-237: 4G with Dual SIM

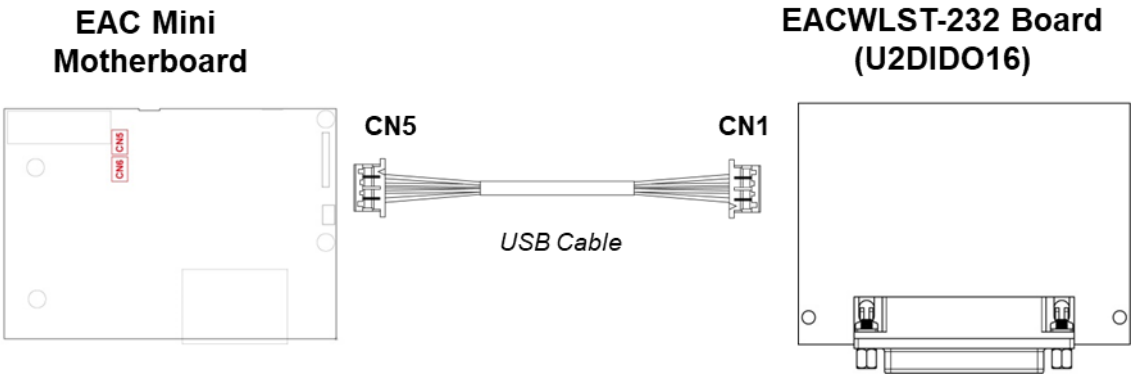
Appendix B: Expansion Module

16-Channel Digital I/O with isolation EACWLST-232

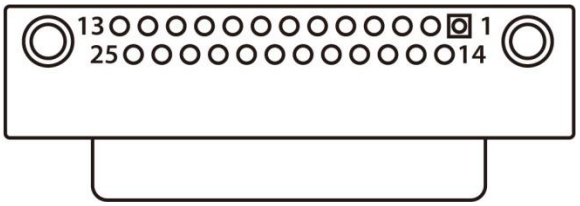
To install EACWLST-232 module:

1. Follow the procedure described in Chapter 2, "Expansion Module Installation" to install EACWLST-232 module.
2. Connect two USB cables. One end to EACWLST-232 board and another end to EAC Mini motherboard.
3. Finish module installation.

USB Cable Connection Diagram:



Pin assignment and signal names of DIDO connector



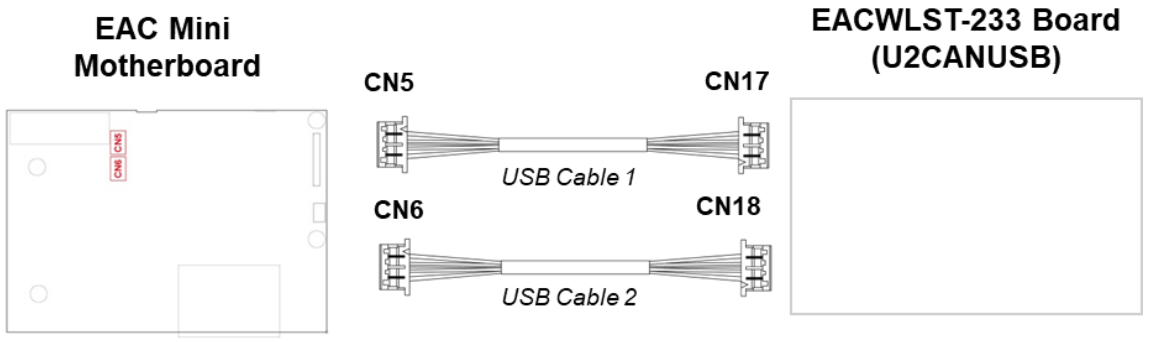
Pin No	Signal Name	Pin No.	Signal Name
1	EXDIN0	14	EXDIN1
2	EXDIN2	15	EXDIN3
3	EXDIN4	16	EXDIN5
4	EXDIN6	17	EXDIN7
5	ISO_ECOM	18	ISO_PCOM
6	ISO_GND	19	EXDOUT0
7	EXDOUT1	20	EXDOUT2
8	EXDOUT3	21	EXDOUT5
9	EXDOUT5	22	EXDOUT6
10	EXDOUT7	23	X
11	X	24	X
12	DI_INOUT3	25	X
13	X		

2- Port CANBus with isolation EACWLST-233

To install EACWLST-233 module:

4. Follow the procedure described in Chapter 2, "Expansion Module Installation" to install EACWLST-233 module.
5. Connect two USB cables. One end to EACWLST-233 board and another end to EAC Mini motherboard.
6. Finish module installation.

USB Cable Connection Diagram:

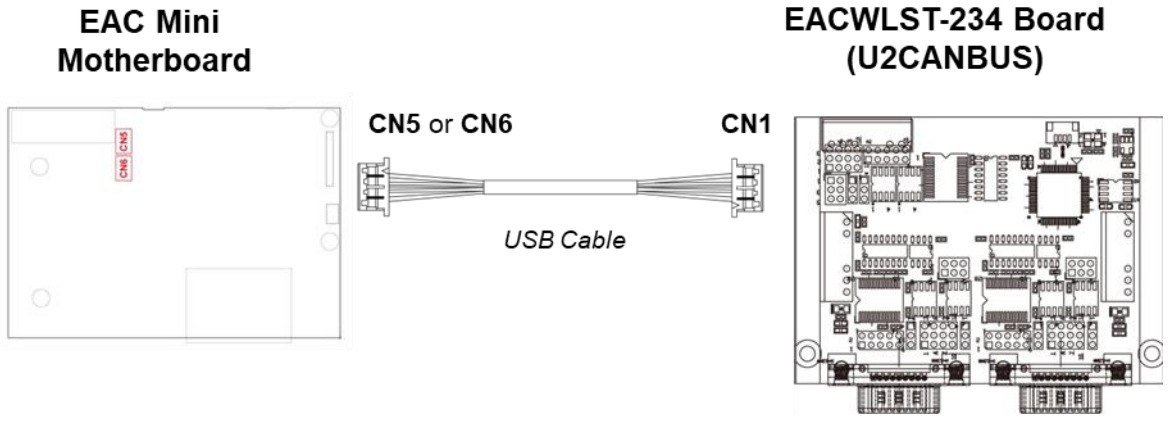


CANBus EACWLST-234

To install EACWSLT-234 module:

1. Follow the procedure described in Chapter 2, "Expansion Module Installation" to install EACWSLT-234 module.
2. Connect two USB cables. One end to EACWSLT-234 board and another end to EAC Mini motherboard.
3. Finish module installation.

USB Cable Connection Diagram:

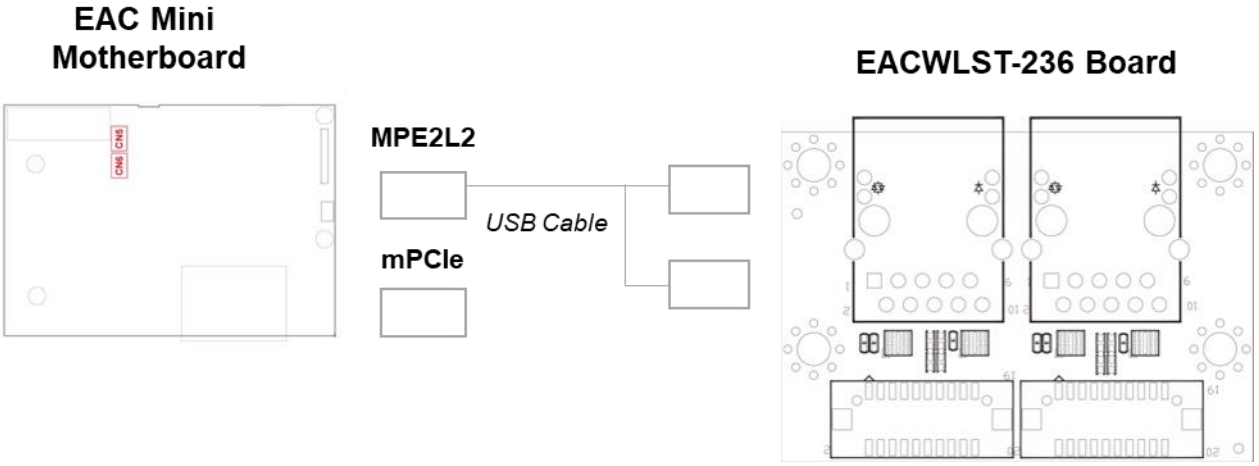


2-port Giga-LAN EACWLST-236

To install EACWSLT-236 module:

1. Follow the procedure described in Chapter 2, "Expansion Module Installation" to install EACWSLT-236 module.
2. Connect two USB cables. One end to EACWSLT-236 board and another end to EAC Mini motherboard.
3. Finish module installation.

USB Cable Connection Diagram:

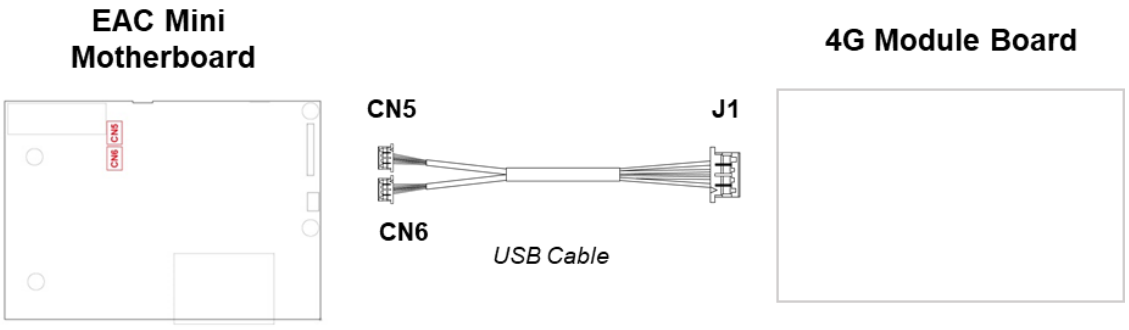


4G Module EACWSLT-222 & EACWSLT-237

To install EACWSLT-222 module:

4. Follow the procedure described in Chapter 2, "Expansion Module Installation" to install EACWSLT-222 module.
5. Connect two USB cables. One end to EACWSLT-222 board and another end to EAC Mini motherboard.
6. Finish module installation.

USB Cable Connection Diagram:

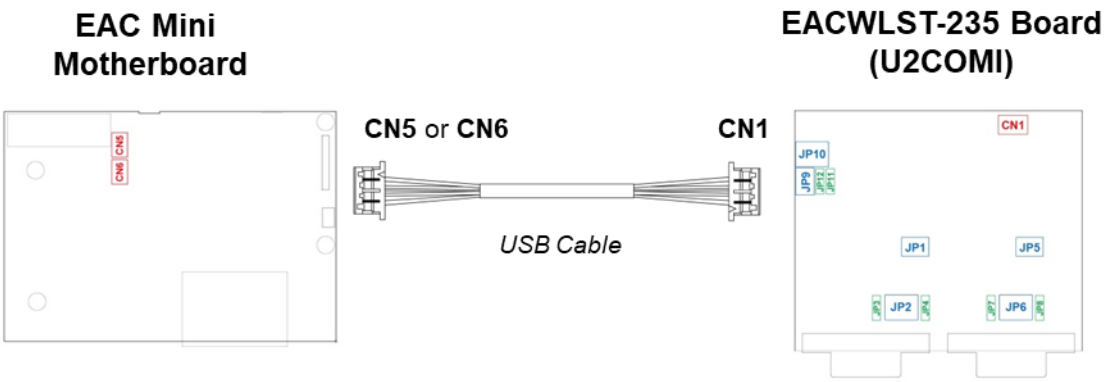


2-Port RS232/422/485 with isolation EACWLST-235 & EACWLST-231

To install EACWLST-235 module:

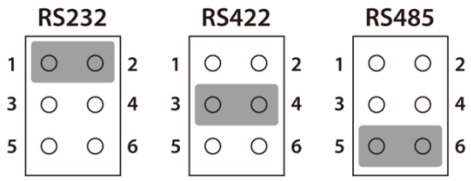
1. Follow the procedure described in Chapter 2, "Expansion Module Installation" to install EACWLST-235 module.
2. Connect one end of the USB cable to the EACWLST-235 board and another end to the EAC Mini motherboard.
3. Adjust jumper settings if needed.
4. Finish module installation.

USB Cable Connection Diagram:

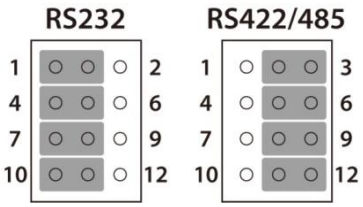


Jumper Settings:

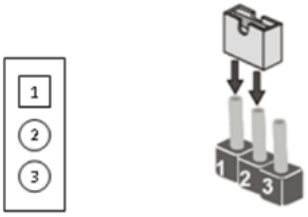
JP1, JP5, JP9: RS232/RS422/RS485 Selector



JP2, JP6, JP10: RS232/RS422/RS485 Selector



JP3/JP4, JP7/JP8, JP11/JP12: RS422/RS485 120-ohm Selector



Jumper	120 ohms
1-2	V
2-3	X

Notice: *Full loading only for three USB ports.*

NOTE

NOTE

NOTE

NOTE

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