

# EPC-APL

Intel® Pentium®/Celeron® Processor Fanless Tiny System

## Quick Reference Guide

3<sup>rd</sup> Ed – 17 November 2022

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## FCC Statement



THIS DEVICE COMPLIES WITH PART 15 FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS:

(1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE.

(2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRE OPERATION.

THIS EQUIPMENT HAS BEEN TESTED AND FOUND TO COMPLY WITH THE LIMITS FOR A CLASS "A" 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 HIS OWN EXPENSE.

## A Message to the Customer

### *Avalue Customer Services*

Each and every Avalue's product is built to the most exacting specifications to ensure reliable performance in the harsh and demanding conditions typical of industrial environments. Whether your new Avalue device is destined for the laboratory or the factory floor, you can be assured that your product will provide the reliability and ease of operation for which the name Avalue has come to be known.

Your satisfaction is our primary concern. Here is a guide to Avalue's customer services. To ensure you get the full benefit of our services, please follow the instructions below carefully.

### *Technical Support*

We want you to get the maximum performance from your products. So if you run into technical difficulties, we are here to help. For the most frequently asked questions, you can easily find answers in your product documentation. These answers are normally a lot more detailed than the ones we can give over the phone. So please consult the user's manual first.

To receive the latest version of the user's manual; please visit our Web site at:

<http://www.avalue.com.tw/>

# Content

<b>1. Getting Started</b> .....	<b>4</b>
1.1 Safety Precautions .....	4
1.2 Packing List .....	4
1.3 System Specifications .....	5
1.4 System Overview.....	7
1.4.1 Front View.....	7
1.4.2 Rear View .....	7
1.5 System Dimensions.....	9
1.5.1 Front & Top View .....	9
<b>2. Hardware Configuration</b> .....	<b>10</b>
2.1 EPC-APL connector mapping.....	11
2.1.1 Serial Port connector (COM) .....	11
2.1.2 VGA connector (VGA) .....	11
2.2 Installing Hard Disk & Memory (EPC-APL).....	12
2.3 Installing MPCIE devices (EPC-APL) .....	13
2.4 Installing Din Rail Mounting (EPC-APL) .....	15
2.5 Installing Stand (EPC-APL) .....	16
2.6 Installing Mounting Brackets (EPC-APL) .....	14

# 1. Getting Started

## 1.1 Safety Precautions

### 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.

### 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.

## 1.2 Packing List

- 1 x EPC-APL Intel® Pentium®/Celeron® Processor Fanless Tiny System
- 1 x Driver/Utility DVD-ROM
- Other major components include the followings:
  - EPC-APL Stand
  - Screw Kit
  - Adapter



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If any of the above items is damaged or missing, contact your retailer.

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## 1.3 System Specifications

System	
SBC	<ul style="list-style-type: none"> <li>ECM-APL2</li> </ul>
CPU	<ul style="list-style-type: none"> <li>Intel® Pentium® Processor N4200 (2M Cache, up to 2.5 GHz)</li> <li>Intel® Celeron® Processor N3350 (2M Cache, up to 2.4 GHz)</li> </ul>
BIOS	<ul style="list-style-type: none"> <li>AMI BIOS, 128Mbit SPI Flash ROM</li> </ul>
System Chipset	<ul style="list-style-type: none"> <li>Apollo SoC integrated</li> </ul>
System Memory	<ul style="list-style-type: none"> <li>1 x 204-pin SODIMM Socket Up to 8GB DDR3L 1866MHz SDRAM</li> </ul>
Watchdog Timer	<ul style="list-style-type: none"> <li>H/W Reset, 1sec. ~ 65535sec and 1sec. or 1min./step</li> </ul>
H/W Status Monitor	<ul style="list-style-type: none"> <li>Monitoring CPU Temperature, Voltage with Auto Throttling Control</li> </ul>
Expansion	
Expansion	<ul style="list-style-type: none"> <li>1 x Full Size Mini PCIe (mSATA)</li> <li>1 x Half Size Mini PCIe</li> </ul>
Storage	
Combination	<ul style="list-style-type: none"> <li>1 x 2.5" Drive Bay</li> <li>1 x mSATA</li> </ul>
Front I/O	
Button	<ul style="list-style-type: none"> <li>1 x Power On/Off Button w/LED</li> </ul>
LED	<ul style="list-style-type: none"> <li>1 x LED for Storage Access</li> </ul>
Rear I/O	
Serial Port	<ul style="list-style-type: none"> <li>1 x RS-232/422/485(Jumper)</li> </ul>
USB Port	<ul style="list-style-type: none"> <li>4 x USB 3.0</li> </ul>
LAN Port	<ul style="list-style-type: none"> <li>2 x RJ45</li> </ul>
Display Port	<ul style="list-style-type: none"> <li>1 x VGA, 2 x HDMI</li> </ul>
DC Input	<ul style="list-style-type: none"> <li>1 x DC Jack (Lockable DC Jack)</li> </ul>
LED	<ul style="list-style-type: none"> <li>2 x LED for Power On/Off &amp; Storage Access</li> </ul>
Others	<ul style="list-style-type: none"> <li>2 x Antenna Mounting with Dust Cover</li> </ul>
Internal I/O	
SATA	<ul style="list-style-type: none"> <li>The same to ECM-APL2</li> </ul>
Display	
Chipset	<ul style="list-style-type: none"> <li>Processor Graphics</li> <li>Intel® HD Graphics 500 for N3350</li> <li>Intel® HD Graphics 505 for N4200</li> </ul>
Resolution	<ul style="list-style-type: none"> <li>1 x VGA Mode: 1920 x 1200 @ 60Hz</li> <li>2 x HDMI Mode: 3840x2160@30Hz (HDMI 1.4b)</li> </ul>
Ethernet	

## EPC-APL

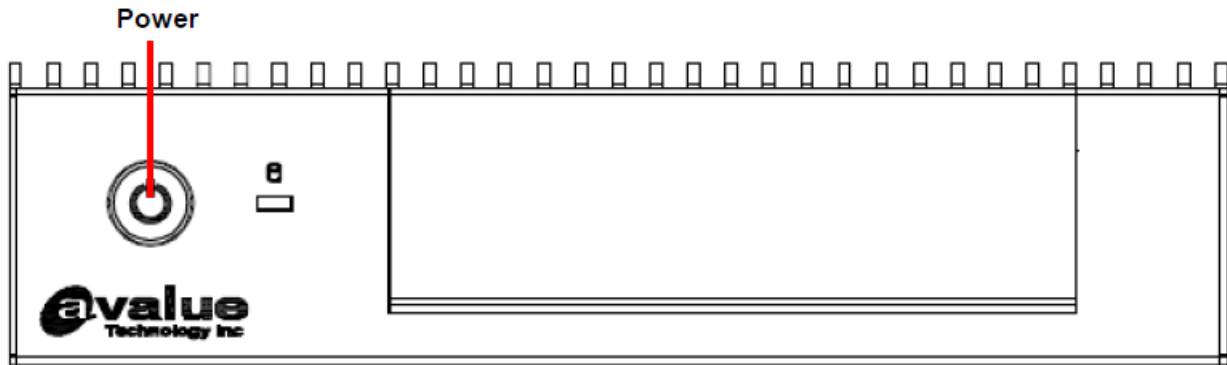
<b>Chipset</b>	<ul style="list-style-type: none"> <li>2 x Intel® I211AT</li> </ul>
<b>Ethernet Interface</b>	<ul style="list-style-type: none"> <li>10/100/1000 Base-Tx Gigabit Ethernet Compatible</li> </ul>
<b>Lan Port</b>	<ul style="list-style-type: none"> <li>2 x RJ45 w/LED</li> </ul>
<b>Audio</b>	
<b>Chipset</b>	<ul style="list-style-type: none"> <li>Realtek ALC888S</li> </ul>
<b>Audio Interface</b>	<ul style="list-style-type: none"> <li>Mic-In, Line-In and Line-Out (Factory Option with onboard Pin header)</li> </ul>
<b>Mechanical &amp; Environmental</b>	
<b>Power Connector</b>	<ul style="list-style-type: none"> <li>Lockable DC Jack</li> </ul>
<b>Power Requirement</b>	<ul style="list-style-type: none"> <li>Power Input: Typical 12/24 Vdc ( +12 ~ 26V )</li> </ul>
<b>Power Type</b>	<ul style="list-style-type: none"> <li>AT/ATX (ATX is the default)</li> </ul>
<b>ACPI</b>	<ul style="list-style-type: none"> <li>Single power ATX Support S0, S3, S4, S5</li> <li>ACPI 5.0 Compliant</li> </ul>
<b>Dimension</b>	<ul style="list-style-type: none"> <li>177 x 123 x 43.5 mm</li> </ul>
<b>Weight</b>	<ul style="list-style-type: none"> <li>2.65lbs(1.2KG)</li> </ul>
<b>Color</b>	<ul style="list-style-type: none"> <li>Black &amp; Blue</li> </ul>
<b>Mounting Kit</b>	<ul style="list-style-type: none"> <li>Stand (Default)</li> <li>VESA Mount kit (Factory Option)</li> <li>Din Rail kit (Factory Option)</li> </ul>
<b>Reliability</b>	
<b>Vibration Test</b>	<ul style="list-style-type: none"> <li>With SSD: 1.5Grms, IEC 60068-2-64, Random, 5 ~ 500Hz, 30min/axis</li> </ul>
<b>Mechanical Shock Test</b>	<ul style="list-style-type: none"> <li>With SDD : 50G, IEC 60068-2-27, Half Sine, 11ms, 3 Axis, 6 Faces</li> </ul>
<b>Mechanical Bump Test</b>	<ul style="list-style-type: none"> <li>With SDD : 10G, IEC 60068-2-29, Half Sine, 11ms, Z axis</li> </ul>
<b>Drop Test</b>	<ul style="list-style-type: none"> <li>ISTA 2A, IEC-60068-2-32 Test : Ed</li> </ul>
<b>Operating Temperature</b>	<ul style="list-style-type: none"> <li>With extended temperature peripherals: -10°C ~ 50°C (14°F ~ 122°F) with 1m/air flow</li> </ul>
<b>Operating Humidity</b>	<ul style="list-style-type: none"> <li>0% ~ 90% relative humidity, non-condensing</li> </ul>
<b>Storage Temperature</b>	<ul style="list-style-type: none"> <li>-40 ~ 75°C (-40 ~ 167°F)</li> </ul>
<b>Certification</b>	<ul style="list-style-type: none"> <li>CE, FCC Class B</li> </ul>
<b>OS Supported</b>	<ul style="list-style-type: none"> <li>Win 10, Linux</li> </ul>



**Note:** Specifications are subject to change without notice.

## 1.4 System Overview

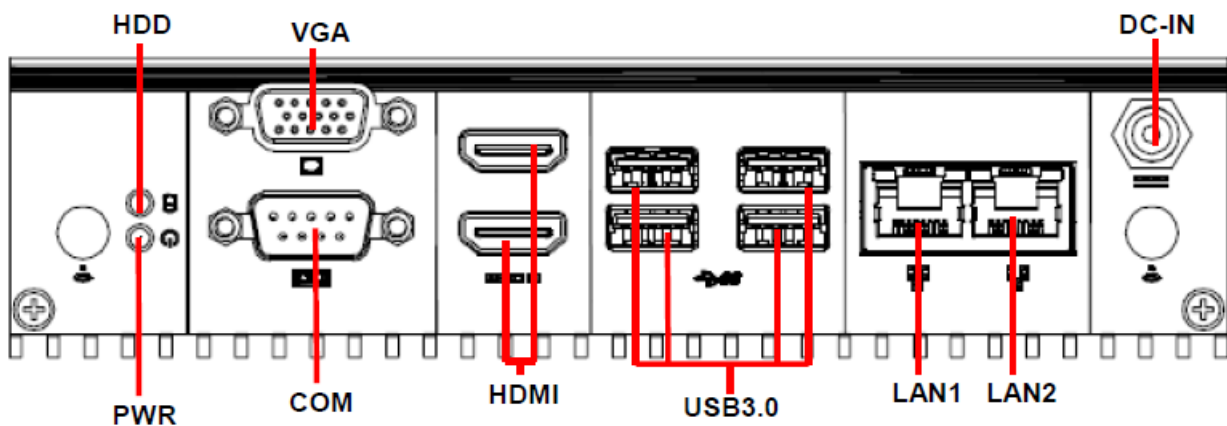
### 1.4.1 Front View



### Connectors

Label	Function	Note
Power	Power on button	

### 1.4.2 Rear View



### Connectors

Label	Function	Note
COM	Serial port connector	D-sub 9-pin, male <b>Note</b> : Support RS422/485 by BIOS setting (Factory option)
HDD	HDD indicator	
PWR	System power indicator	

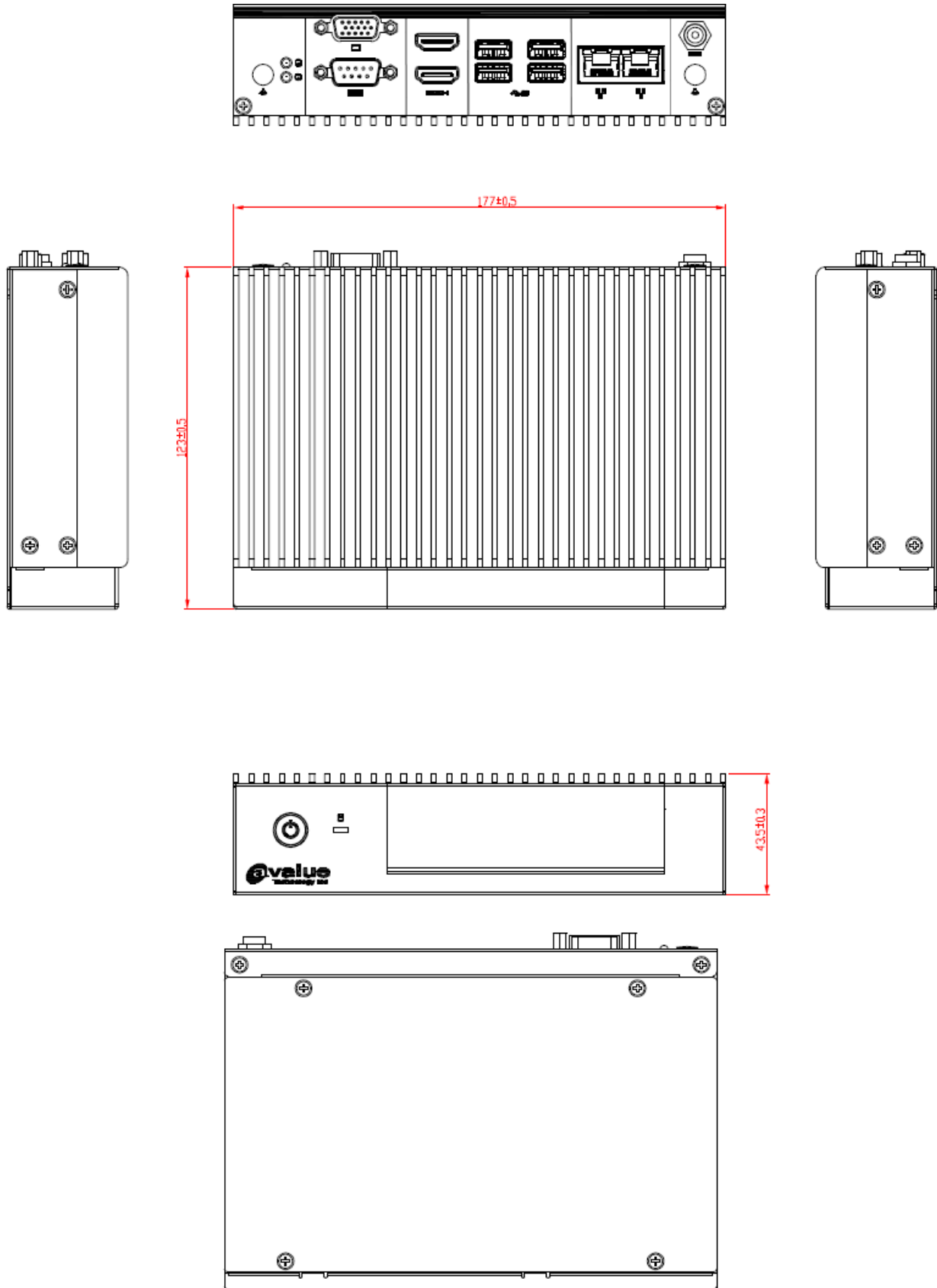
## EPC-APL

<b>LAN</b>	RJ-45 Ethernet x 2
<b>USB3.0</b>	USB 3.0 connector x 4
<b>HDMI</b>	HDMI connector x 2
<b>DC-IN</b>	DC Power-in connector
<b>VGA</b>	VGA connector



## 1.5 System Dimensions

### 1.5.1 Front & Top View



(Unit: mm)

# 2. Hardware Configuration

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For advanced information, please refer to:

- 1- ECM-APL2 User's Manual

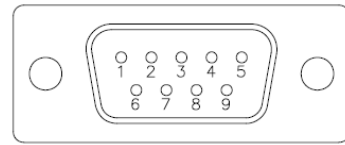
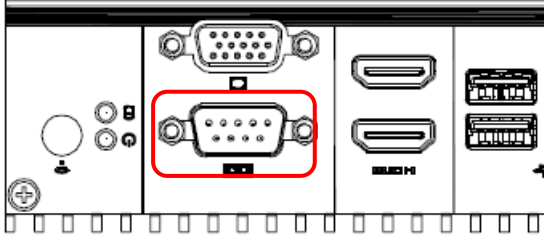


**Note:** If you need more information, please visit our website:

<http://www.avalue.com.tw>

## 2.1 EPC-APL connector mapping

### 2.1.1 Serial Port connector (COM)



#### RS-485

Signal	PIN	PIN	Signal
485_Tx-	1	6	NC
485_Tx+	2	7	NC
NC	3	8	NC
NC	4	9	NC
GND	5		

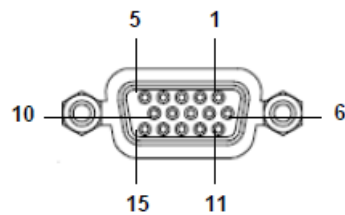
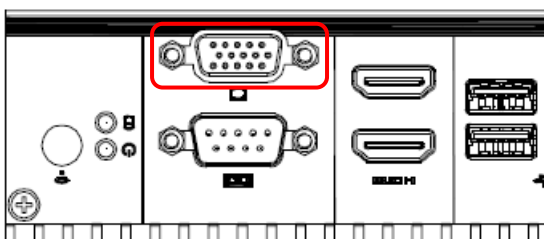
#### RS-232

Signal	PIN	PIN	Signal
DCD#	1	6	DSR#
RXD	2	7	RTS#
TXD	3	8	CTS#
DTR#	4	9	RI#
GND	5		

#### RS-422

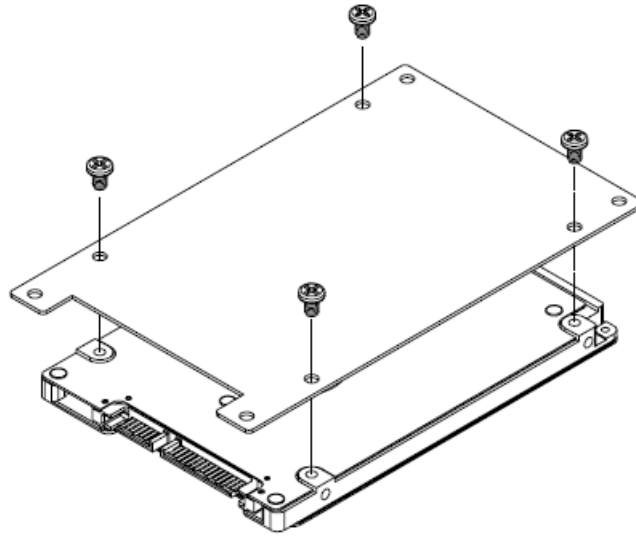
Signal	PIN	PIN	Signal
422_Tx-	1	6	NC
422_Tx+	2	7	NC
422_Rx+	3	8	NC
422_Rx-	4	9	NC
GND	5		

### 2.1.2 VGA connector (VGA)

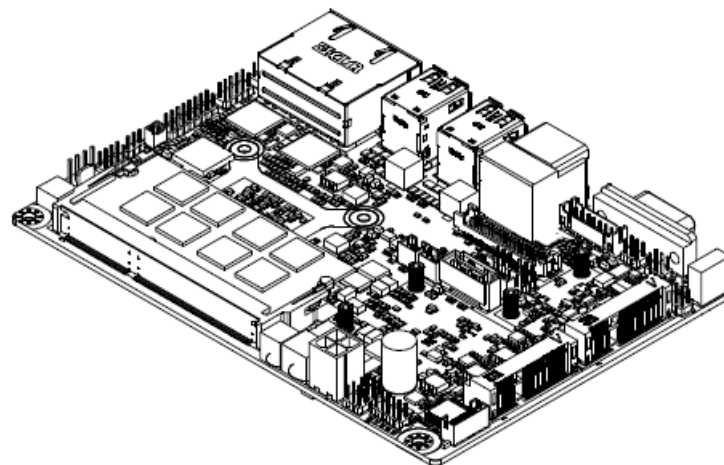
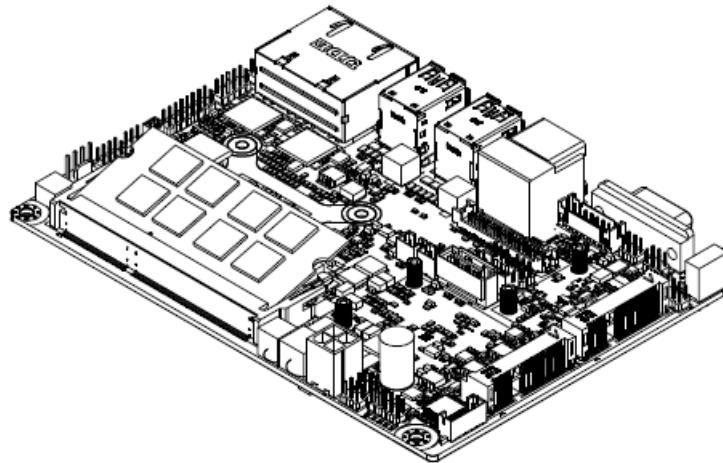


PIN	Signal	PIN	Signal	PIN	Signal
1	RED	6	GND	11	NC
2	GREEN	7	GND	12	DDCDAT
3	BLUE	8	GND	13	HSYNC
4	NC	9	+5V	14	VSYSNS
5	GND	10	GND	15	DDCCLK

## 2.2 Installing Hard Disk & Memory (EPC-APL)

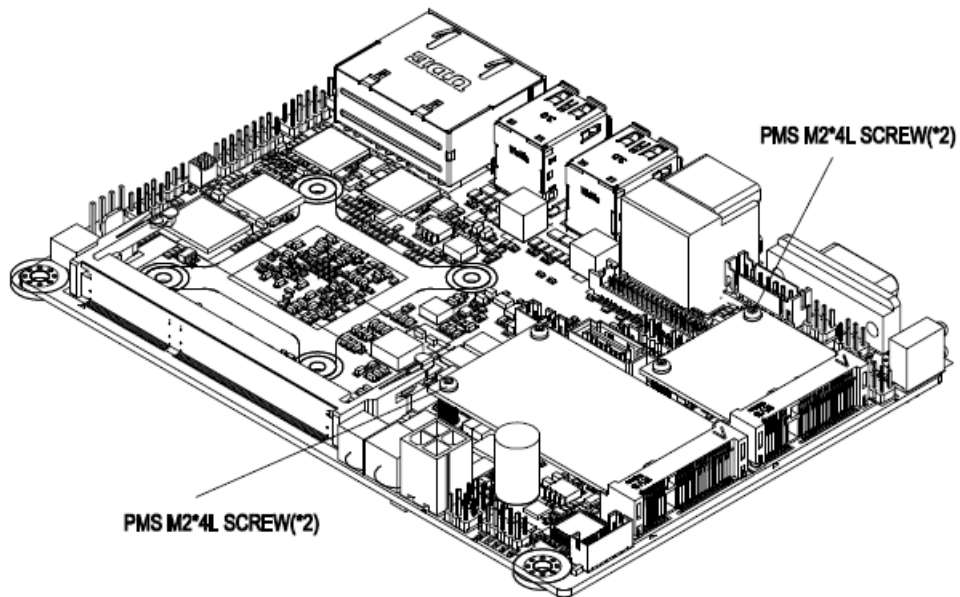


**Step1.** Fix HDD using the 4 screws in the Accessory Kit.



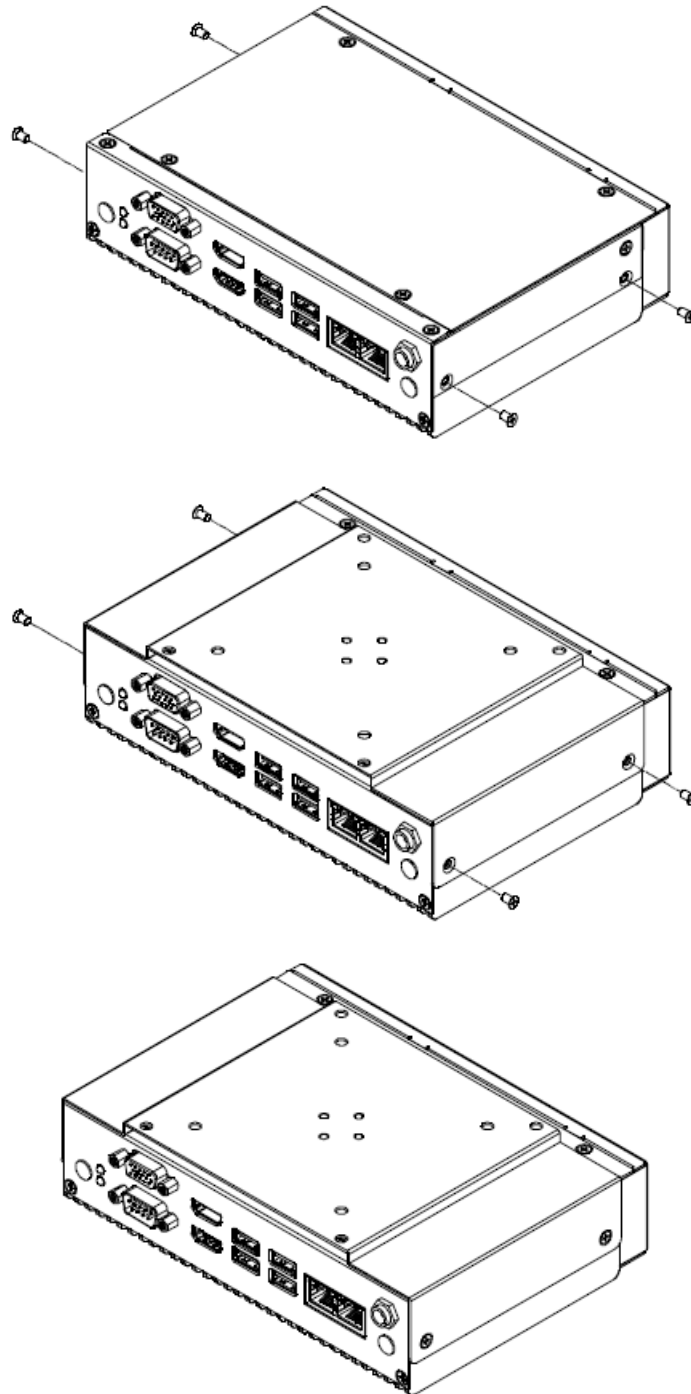
**Step2.** Properly install the memory module and press until properly seated.

## 2.3 Installing MPCIE devices (EPC-APL)



**Step1.** Insert MPCIE cards into designated locations and fasten with the screw to complete MPCIE installation.

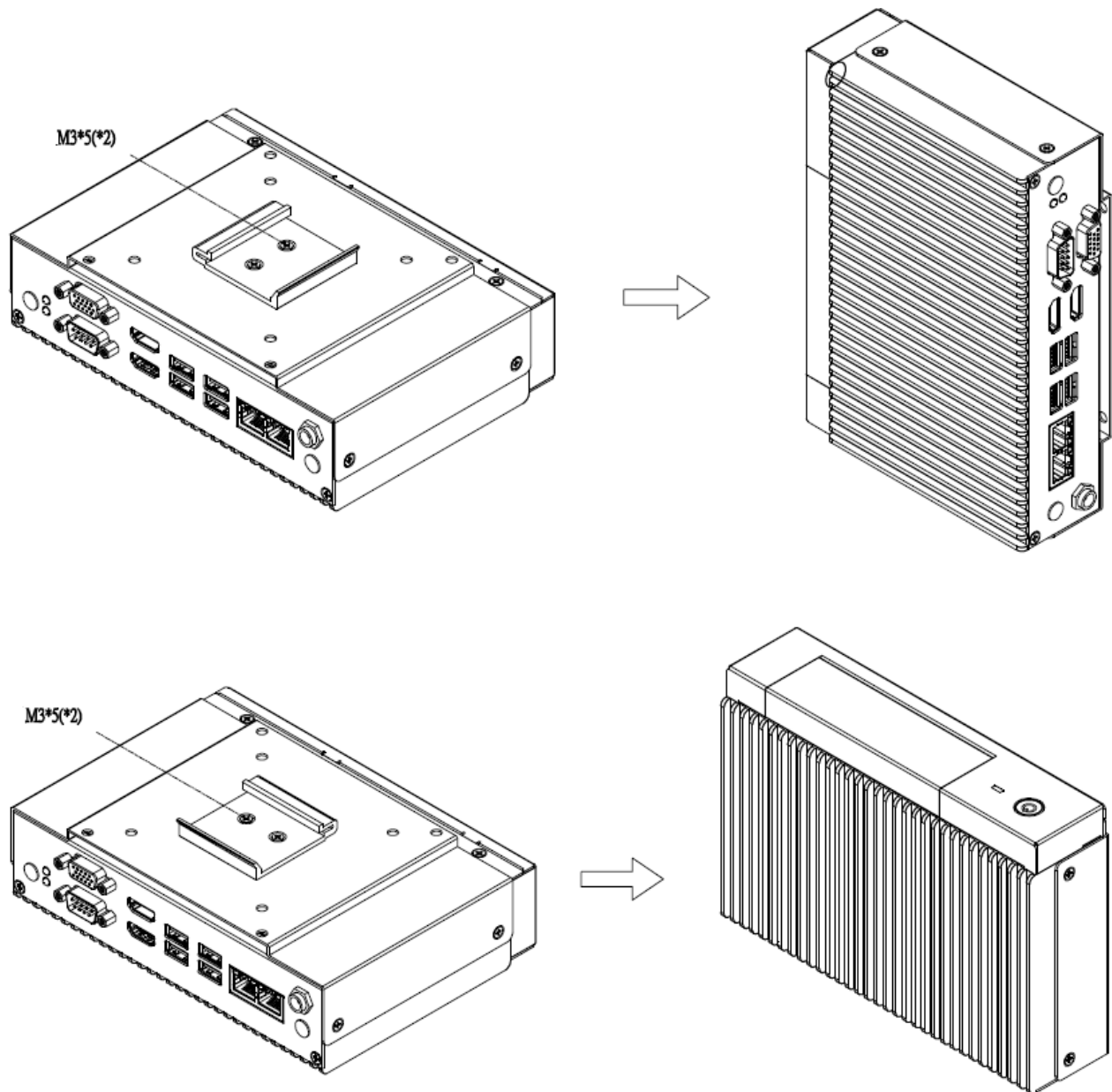
## 2.4 Installing Mounting Brackets (EPC-APL)



**Step1.** Remove 4 screws from the side.

**Step2.** Insert and fasten screw on each side of the system to secure Mounting brackets.

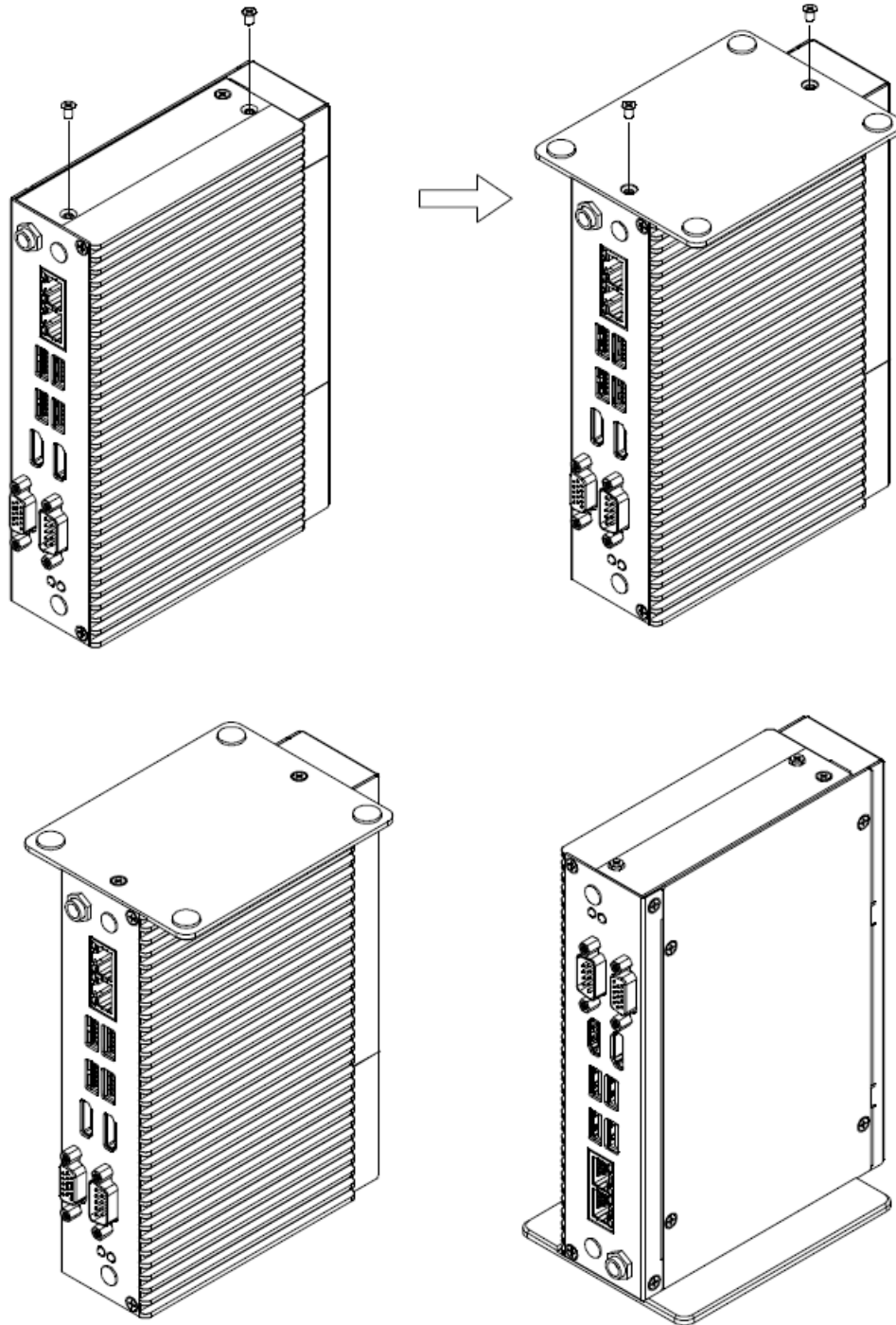
## 2.5 Installing Din Rail Mounting (EPC-APL)



**Step1.** Position brackets on both sides, matching the holes on the system.

**Step2.** Insert and fasten screws on each side of the system to secure Mounting bracket.

## 2.6 Installing Stand (EPC-APL)



**Step1.** Remove 2 screws from the side.

**Step2.** Fasten 2 screws on the side of the system to secure Stand.

