

# EPC-SKLU

Intel® Core® SoC Processor Fanless Box PC

## Quick Reference Guide

6<sup>th</sup> Ed – 17 January 2023

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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/>

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# 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.  
Risk of Explosion if Battery is replaced by an Incorrect Type. Dispose of Used Batteries According to the Instructions.

### Français:

### Attention!



Débranchez le câble d'alimentation de votre châssis chaque fois que vous travaillez avec le matériel. Ne faites pas de connexion lorsque le système est allumé. Les composants électroniques sensibles peuvent être endommagés par les surtensions soudaines. Seule les personnels expérimentés de l'électronique peuvent ouvrir le châssis du PC.

### Précaution!



Il faut toujours mettre à la masse pour éliminer l'électricité statique avant de toucher la carte CPU. Les appareils électroniques modernes sont très sensibles aux électricité statique. Pour des raisons de sécurité, utilisez un bracelet électrostatique. Placez tous les composants électroniques sur une surface antistatique ou dans un sac antistatique quand ils ne sont pas dans le châssis.  
Risque d'explosion si la batterie est remplacée par un type incorrect. Jetez les piles usagées selon les instructions

## 1.2 Packing List

- 1 x EPC-SKLU Intel® Core® SoC Processor Fanless Box PC
- Other major components include the followings:
  - Screw kit/Adapter/EPC-SKLU Stand



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

## 1.3 System Specifications

System	
CPU	<ul style="list-style-type: none"> <li>Intel® Core™ i7-6600U Processor (4M Cache, up to 3.40 GHz)</li> <li>Intel® Core™ i5-6300U Processor (3M Cache, up to 3.00 GHz)</li> <li>Intel® Core™ i3-6100U Processor (3M Cache, 2.30 GHz)</li> <li>Intel® Celeron® Processor 3955U (2M Cache, 2.00 GHz)</li> </ul>
BIOS	<ul style="list-style-type: none"> <li>AMI uEFI BIOS, 128 Mbit SPI Flash ROM</li> <li>iAMT supported</li> </ul>
I/O Chipset	<ul style="list-style-type: none"> <li>EC ITE IT8528E</li> </ul>
System Memory	<ul style="list-style-type: none"> <li>1 x 260-Pin DDR4 2133MTs SO-DIMM (support non-ECC only)</li> </ul>
Watchdog Timer	<ul style="list-style-type: none"> <li>H/W Reset, 1sec. ~ 65535sec.</li> </ul>
H/W Status Monitor	<ul style="list-style-type: none"> <li>Monitoring CPU Temperature, Voltage with Auto Throttling Control</li> </ul>
Expansion	<ul style="list-style-type: none"> <li>1 x Full Size Mini PCIe (mSATA)</li> <li>1 x M.2 (2242,B-KEY)</li> </ul>
Storage	
Combination	<ul style="list-style-type: none"> <li>1 x 2.5" Drive Bay (7mm)</li> <li>1 x M.2 (2242,B-KEY)</li> <li>1 x mSATA</li> </ul>
Front I/O	
Power Switch	<ul style="list-style-type: none"> <li>1 x Power Switch w/ LED indicator</li> </ul>
Rear I/O	
Serial Port	<ul style="list-style-type: none"> <li>1 x RS-232</li> <li>1 x RS-232/422/485 (Cable &amp; BIOS)</li> </ul>
USB Port	<ul style="list-style-type: none"> <li>4 x USB 3.0, 2 x USB 2.0</li> </ul>
Others	<ul style="list-style-type: none"> <li>2 x Knockouts for Antenna Mounting</li> </ul>
Display	
Chipset	<ul style="list-style-type: none"> <li>Processor Graphics</li> <li>Intel® HD Graphics 520 for i7-6600U, i5-6300U, i3-6100U</li> <li>Intel® HD Graphics 510 for Celeron 3955</li> </ul>
Resolution	<ul style="list-style-type: none"> <li>2 x HDMI: Max. Resolution 4096x2160 @ 24Hz</li> </ul>
Multiple Display	<ul style="list-style-type: none"> <li>Dual display</li> </ul>
Ethernet	
Chipset	<ul style="list-style-type: none"> <li>1 x Intel I210AT</li> <li>1 x Intel I219LM</li> </ul>
Ethernet Interface	<ul style="list-style-type: none"> <li>10/100/1000 Base-Tx Gigabit Ethernet Compatible</li> </ul>

## EPC-SKLU

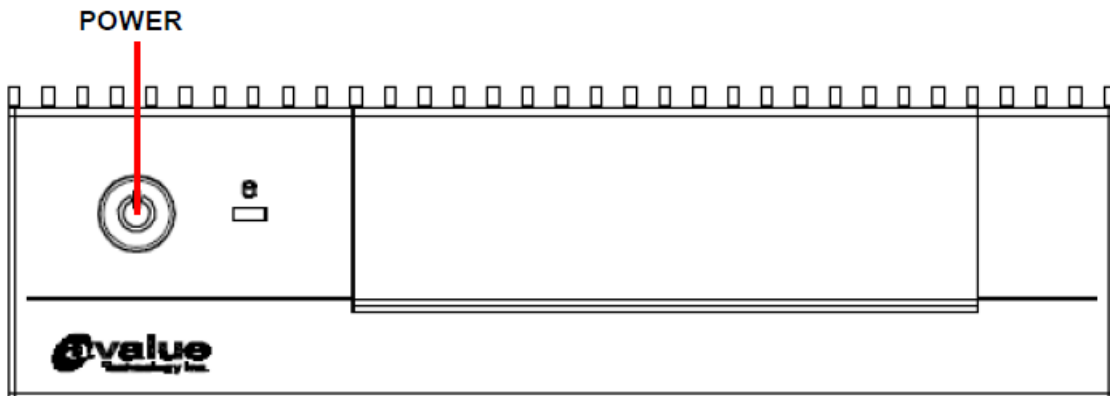
<b>Lan Port</b>	<ul style="list-style-type: none"> <li>• 2 x RJ45 w/LED</li> </ul>
<b>Audio</b>	
<b>Chipset</b>	<ul style="list-style-type: none"> <li>• Realtek ALC888S</li> </ul>
<b>Mechanical &amp; Environmental</b>	
<b>Power Connector</b>	<ul style="list-style-type: none"> <li>• Lockable DC Jack</li> </ul>
<b>Power Requirement</b>	<ul style="list-style-type: none"> <li>• +12V ~ +26V</li> </ul>
<b>Power Type</b>	<ul style="list-style-type: none"> <li>• AT/ATX (ATX is 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 50 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: 5Grms, IEC 60068-2-64, Random, 10 ~ 500Hz, 30min/axis</li> <li>• With HDD : 0.5Grms, IEC 60068-2-64, Random, 10 ~ 500Hz, 1hr/axis</li> </ul>
<b>Mechanical Shock Test</b>	<ul style="list-style-type: none"> <li>• With SSD : 50G, IEC 60068-2-27, Half Sine, 11ms</li> <li>• With HDD : 10G, IEC 60068-2-27, Half Sine, 11ms</li> </ul>
<b>Drop Test</b>	<ul style="list-style-type: none"> <li>• Avalue Standard Test Criteria</li> </ul>
<b>Operating Temperature</b>	<ul style="list-style-type: none"> <li>• With extended temperature peripherals: -10°C ~ 60°C (14°F ~ 140°F) with 0.5m/air flow</li> <li>• With extended temperature peripherals: -10°C ~ 50°C (14°F ~ 122°F) 0.2m/air flow</li> <li>• With 2.5" hard drive: 0°C ~ 40°C (32°F ~ 113°F) with 0.5m/s 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>• -20°C ~ 60°C (-4°F ~ 140°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>• Win10/8.1/7/Linux</li> </ul>



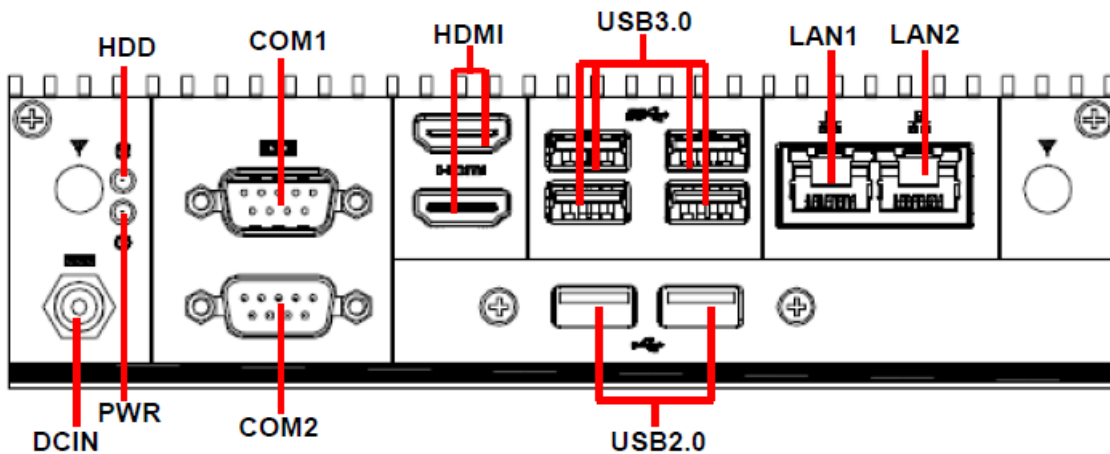
**Note:** Specifications are subject to change without notice.

## 1.4 System Overview

### 1.4.1 Front View



### 1.4.2 Rear View



## Connectors

Label	Function	Note
<b>POWER</b>	Power on button	
<b>COM1/2</b>	Serial port 1/2 connector	D-sub 9-pin, male
<b>HDD</b>	HDD indicator	
<b>PWR</b>	System power indicator	
<b>LAN1/2</b>	RJ-45 Ethernet 1/2	
<b>USB2.0</b>	USB 2.0 connector 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	

## **EPC-SKLU**

**Note:**

UL Certified Cables are required & purchased from the distributors.

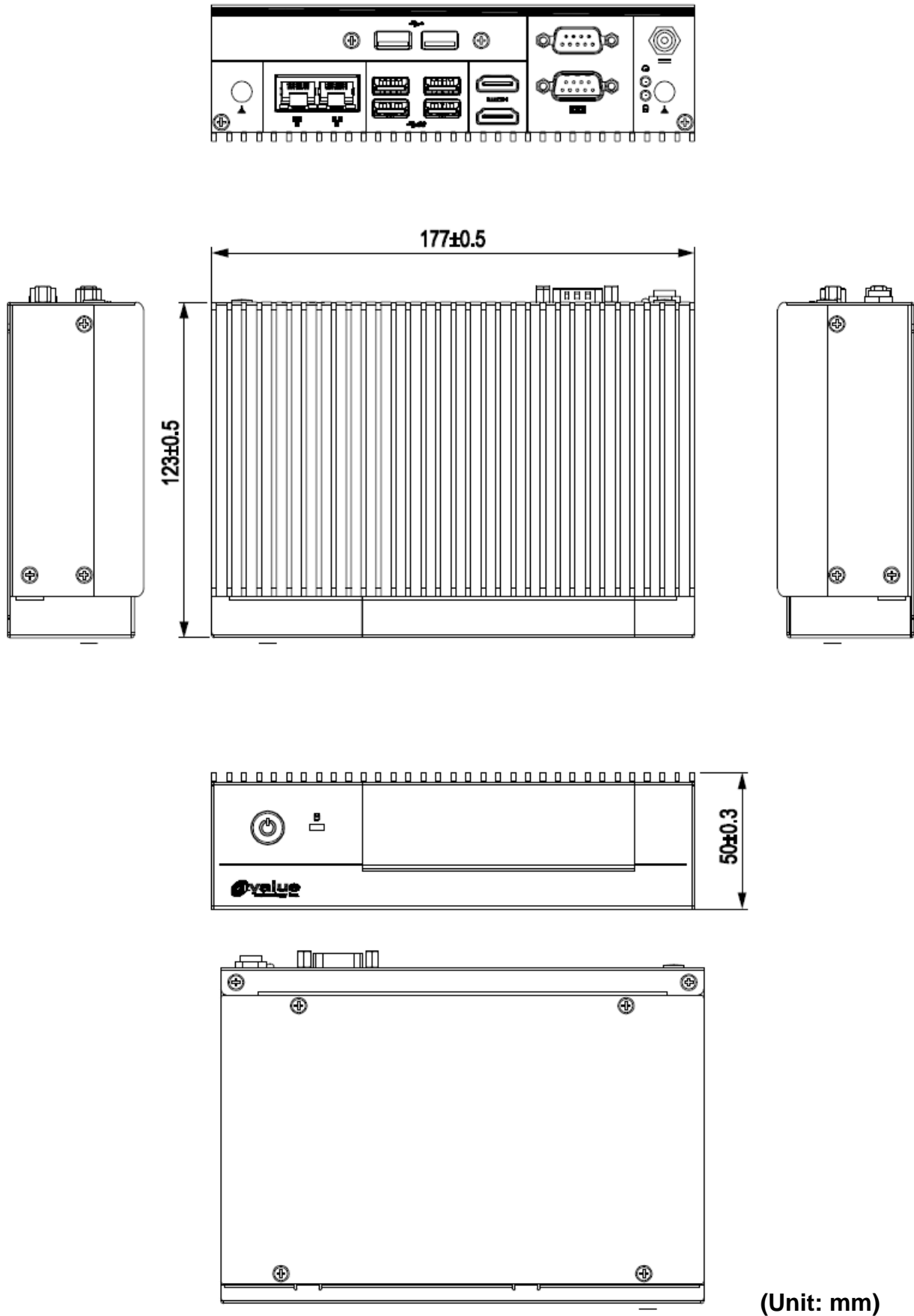
**Français:**

Il est nécessaire que vous achetez des câbles certifiés par UL auprès des distributeurs.



## 1.5 System Dimensions

### 1.5.1 Front & Top View



# 2. Hardware Configuration

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For advanced information, please refer to:

- 1- ECM-SKLU User's Manual

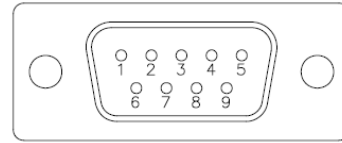
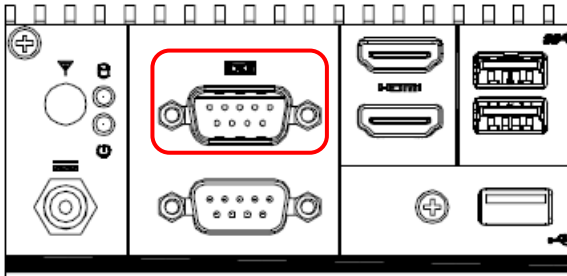


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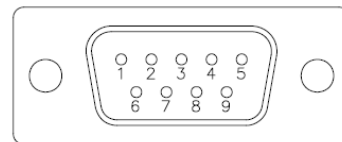
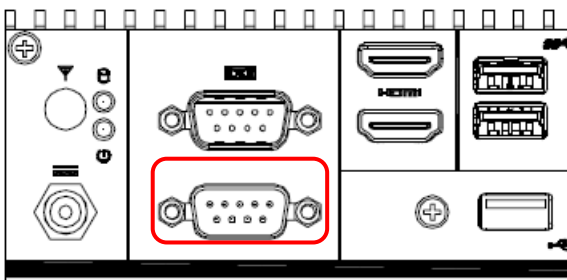
## 2.1 EPC-SKLU connector mapping

### 2.1.1 Serial Port 1 connector (COM1)



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

### 2.1.2 Serial Port 2 connector (COM2)



#### 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		

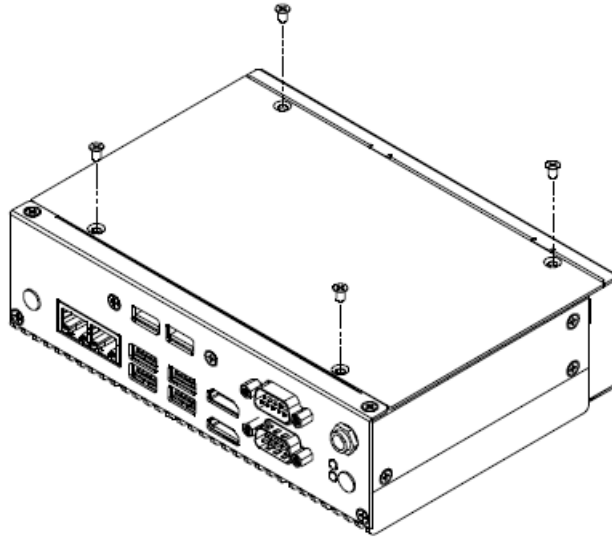
#### RS-232

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

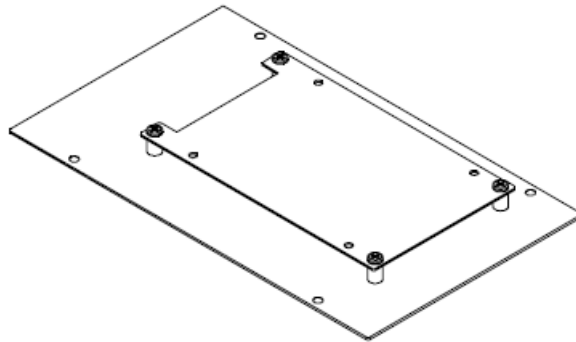
#### RS-422

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		

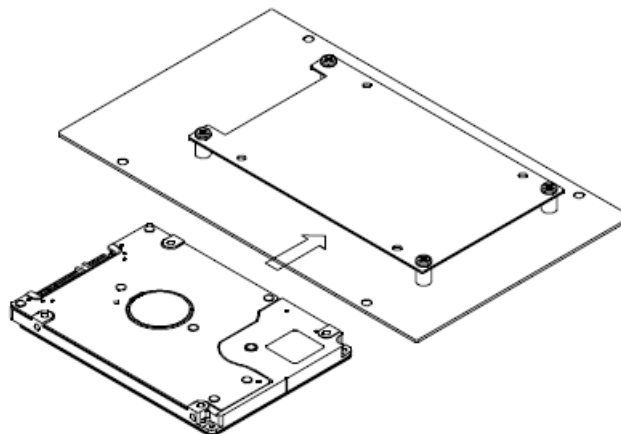
## 2.2 Installing Hard Disk & Memory (EPC-SKLU)



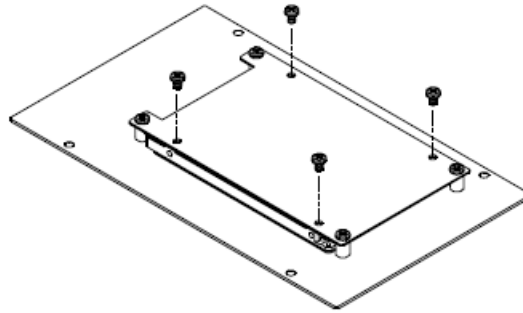
**Step1.** For HDD installation, remove four screws from bottom cover.



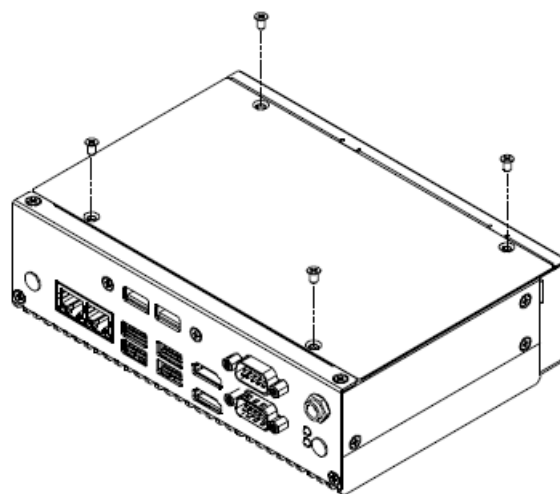
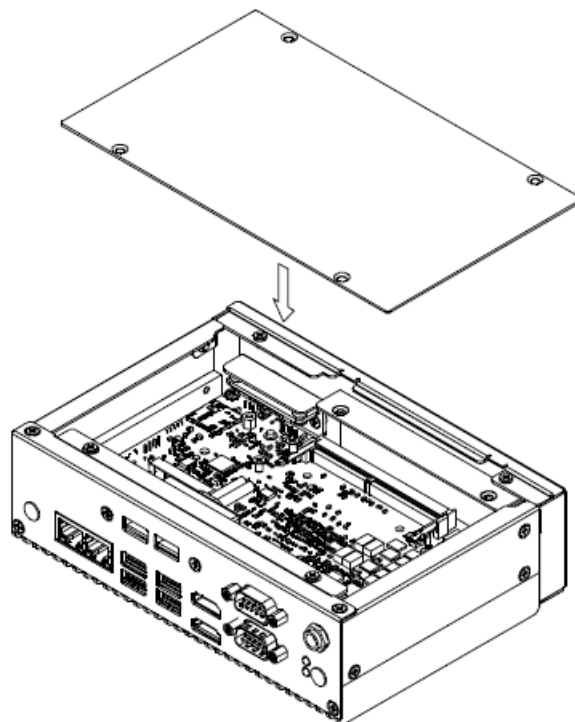
**Step2.** Evert the bottom cover.



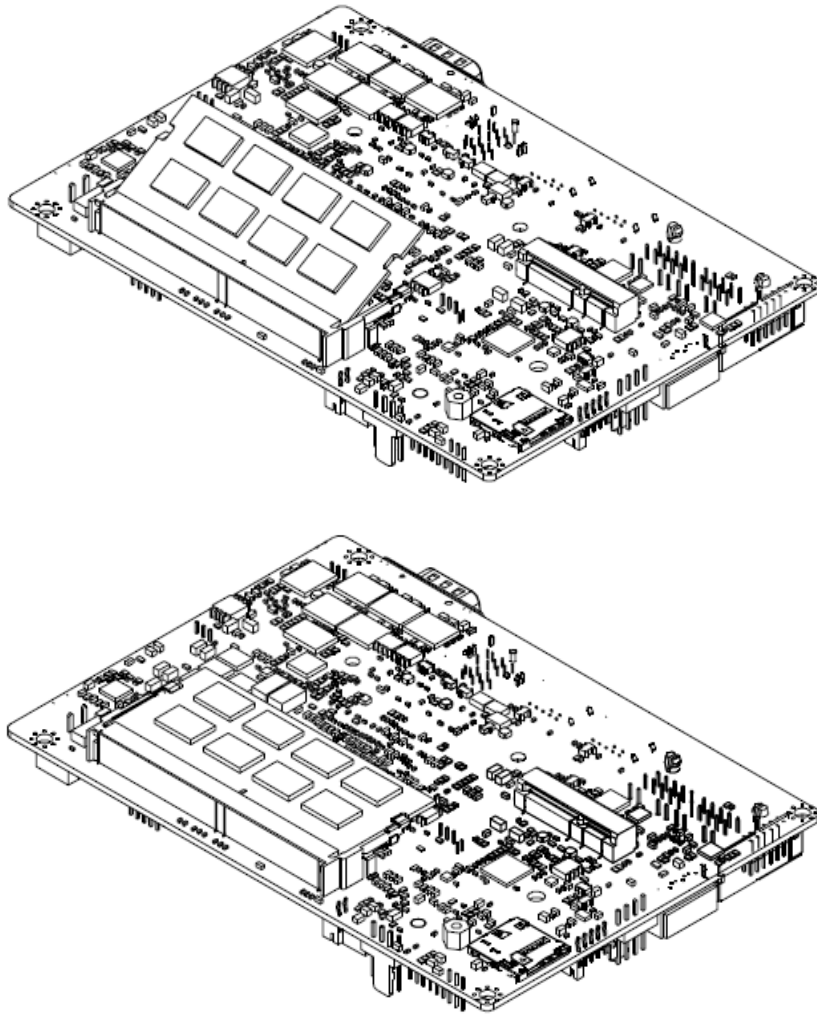
**Step3.** Install HDD/SSD.



**Step4.** Fix HDD/SSD with four M3\*4L screws.

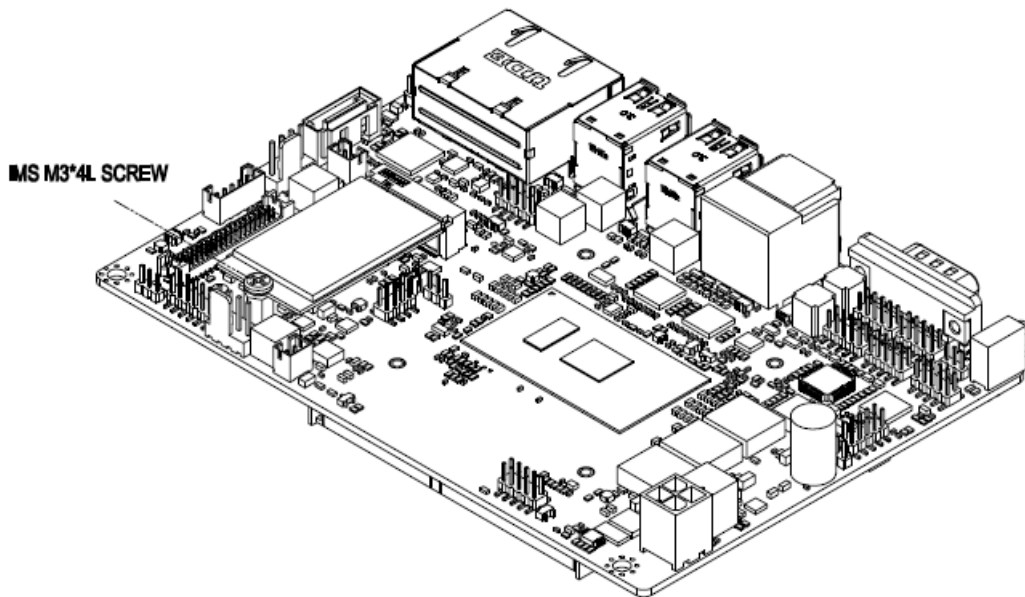


**Step5.** Put the bottom back and fix with four M3\*5L screws.

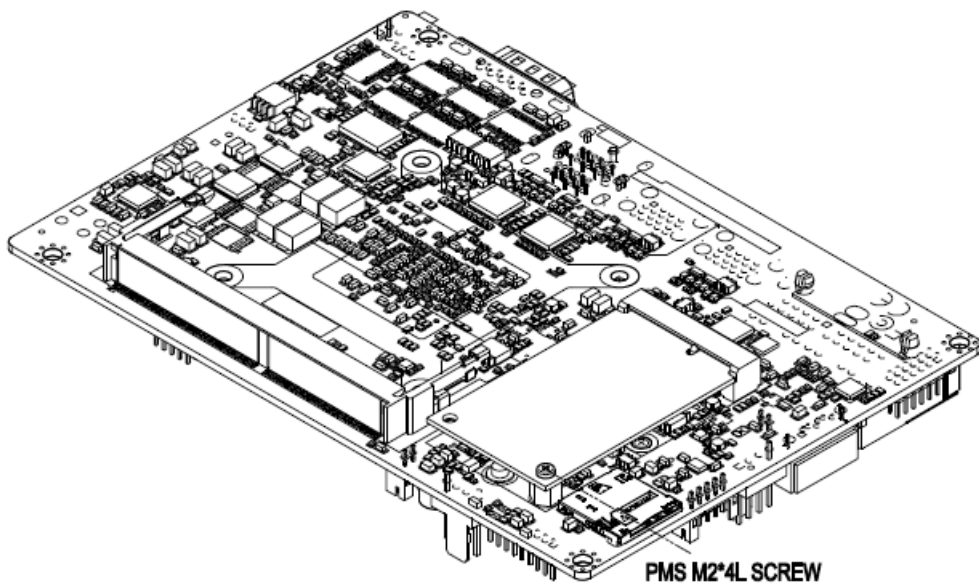


**Step2.** For Memory installation, properly install the memory module and press until properly seated.

## 2.3 Installing M.2 card & MPCIE devices (EPC-SKLU)

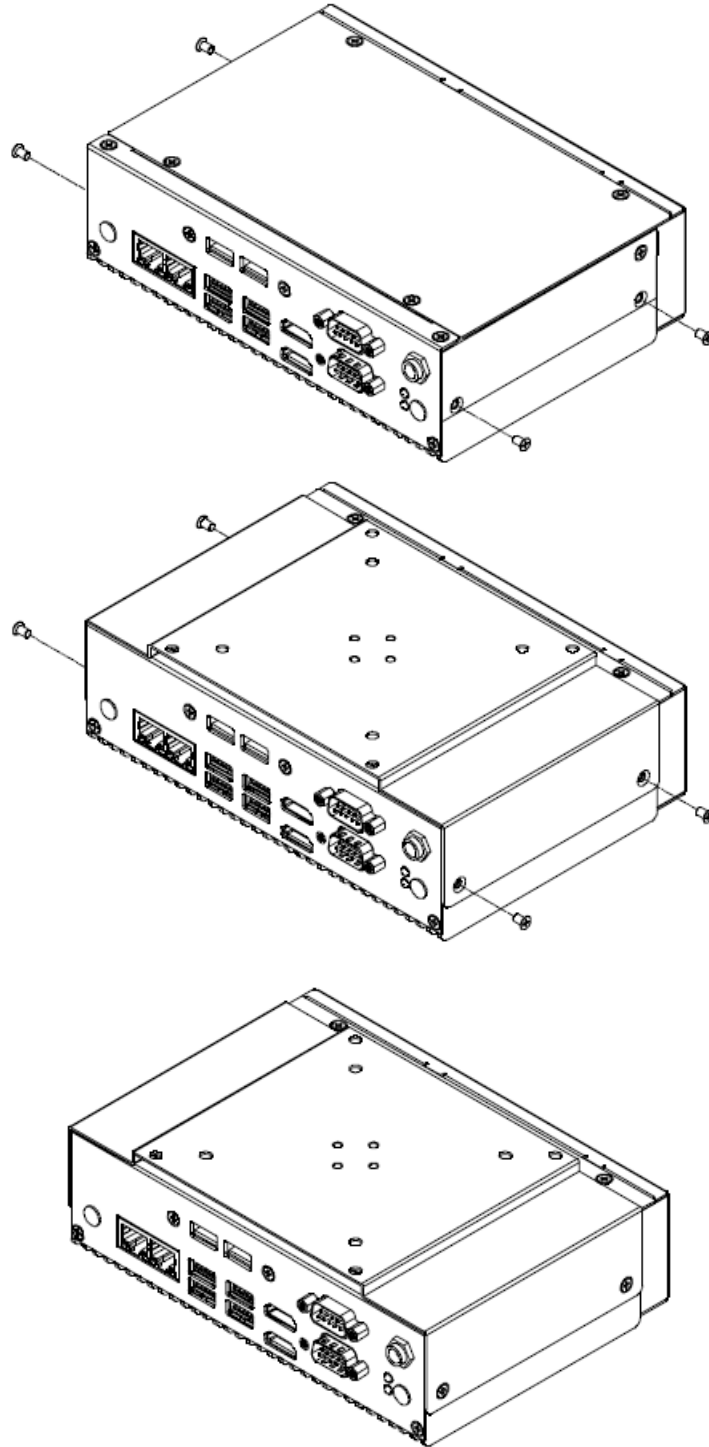


**Step1.** Fix M.2 card using the screw in the Accessory Kit.



**Step2.** Insert MPCIE cards into designated locations and fasten with the screw to complete MPCIE installation.

## 2.4 Installing Mounting Brackets (EPC-SKLU)

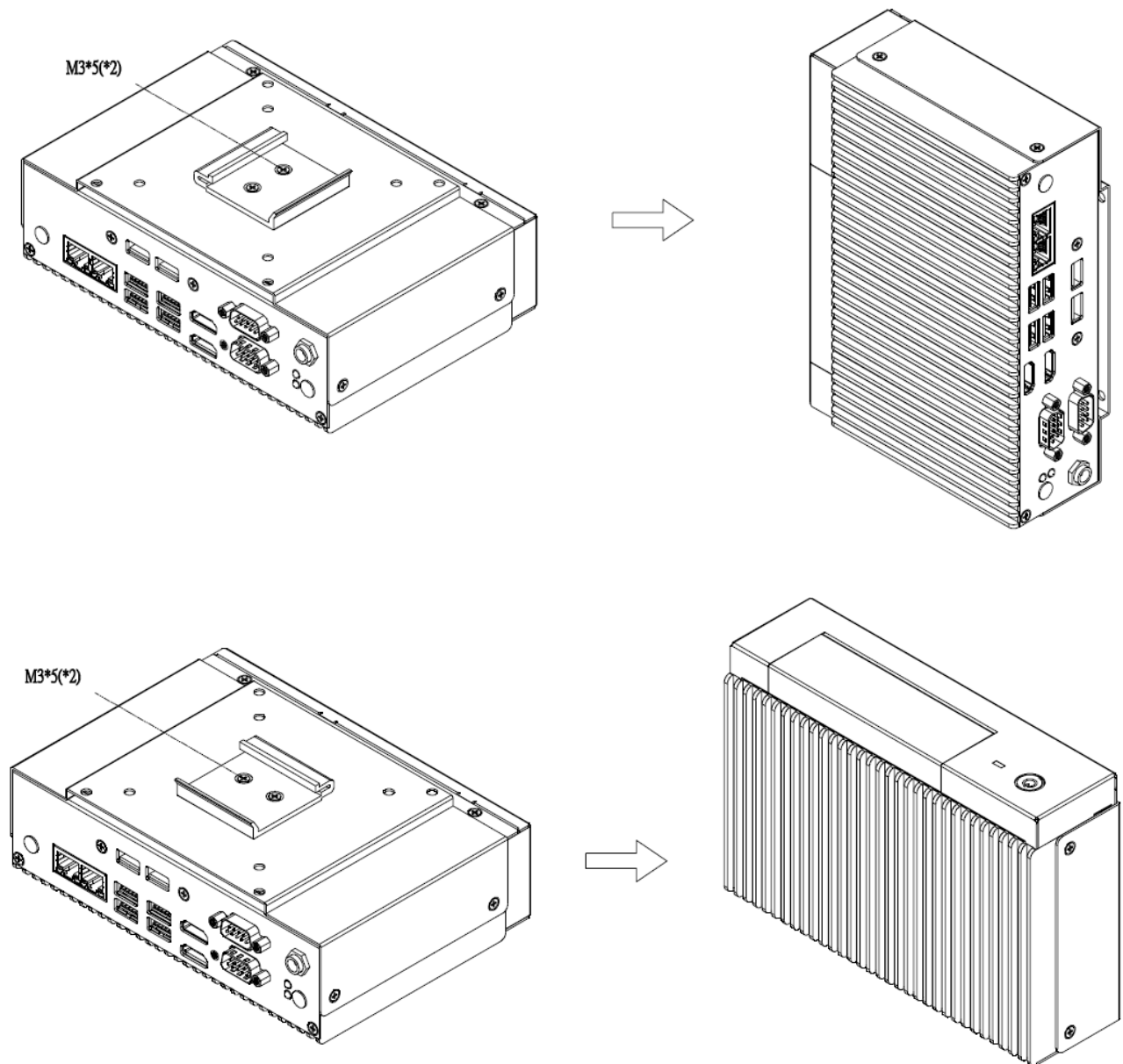


**Step1.** Remove 4 screws from the side.

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



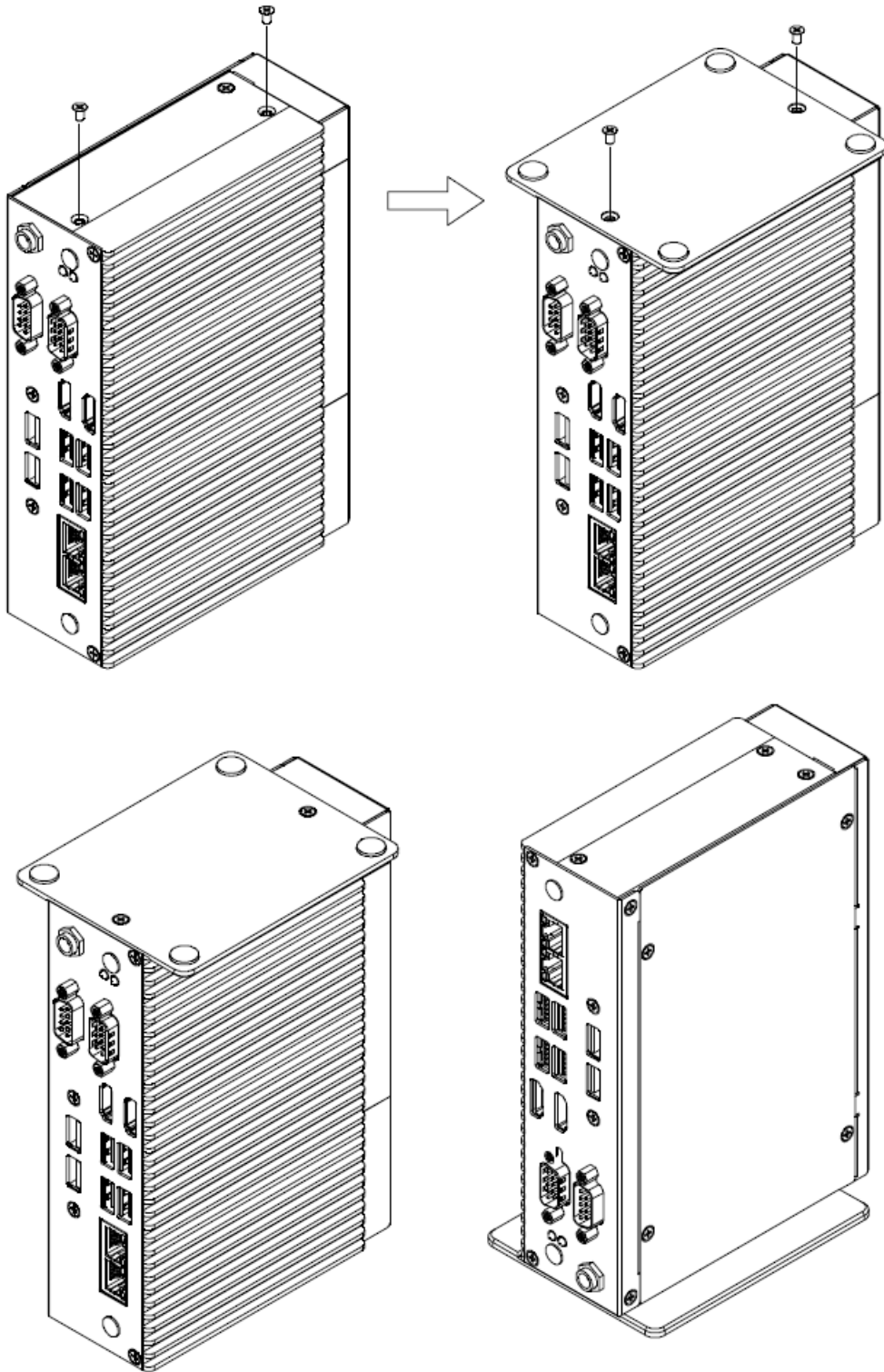
## 2.5 Installing Din Rail Mounting (EPC-SKLU)



**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-SKLU)



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

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

