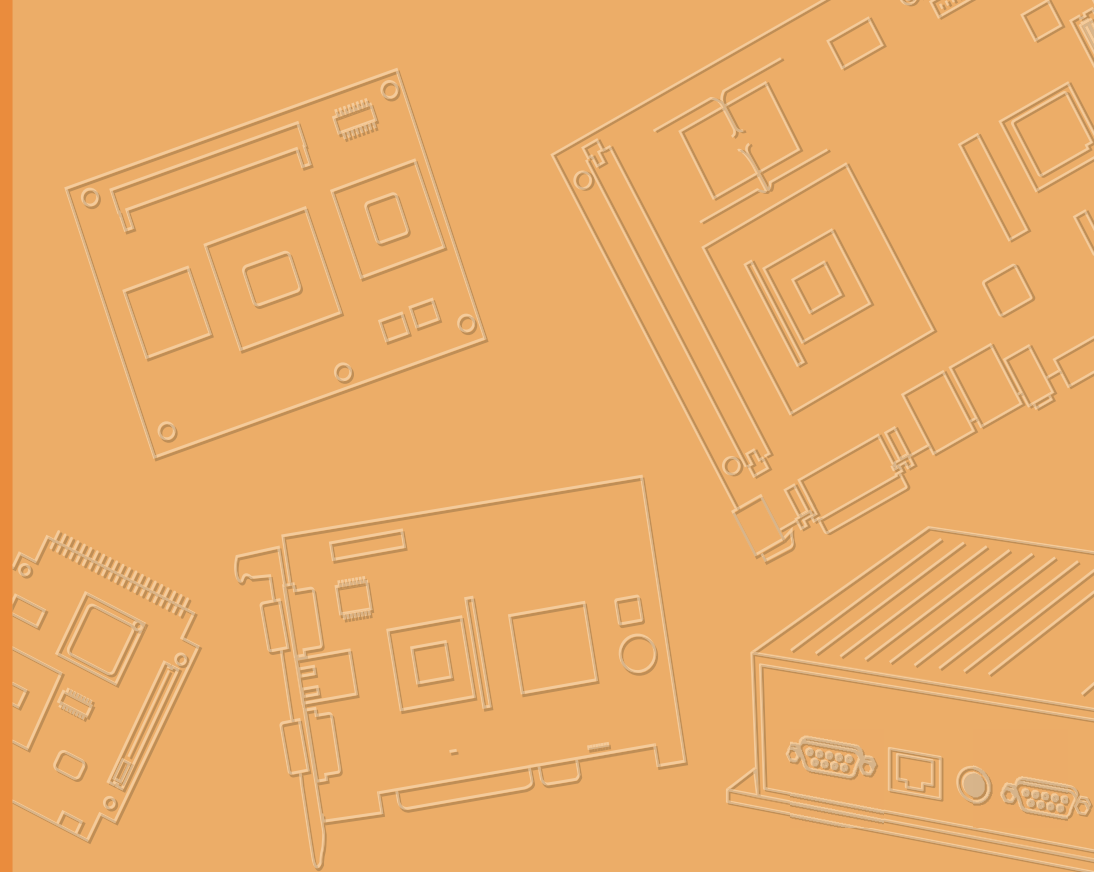


User Manual



UBX-010RC

**Arm-based Edge Computer with
Built-in Google Mobile Service
(GMS)**

ADVANTECH

Enabling an Intelligent Planet

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For more information about this or other Advantech products, visit our website at <http://www.advantech.com/>

For technical support and customer service, visit our support website at <http://support.advantech.com.tw/support/>

Product Warranty (2 years)

Advantech warrants the original purchaser that all of its products will be free from defects in materials and workmanship for two years from the date of purchase.

This warranty does not apply to any products that have been repaired or altered by persons other than repair personnel authorized by Advantech, or products that have been subject to misuse, abuse, accident, or improper installation. Under the terms of this warranty, Advantech assumes no liability as a consequence of such events.

Because of Advantech's high quality-control standards and rigorous testing, most customers never need to use our repair service. If an Advantech product is defective, it will be repaired or replaced free of charge during the warranty period. For out-of-warranty repairs, customers will be billed the cost of replacement materials, service time, and freight. Please consult your dealer for more details.

If you suspect your product is defective, follow the steps outlined below.

1. Collect all the information about the problem encountered. (For example, CPU speed, Advantech products used, other hardware and software used, etc.) Note anything abnormal and list any onscreen messages that are displayed when the problem occurs.
2. Call your dealer and describe the problem. Please have your manual, product, and any relevant information to hand.
3. If your product is diagnosed as defective, obtain a return merchandise authorization (RMA) number from your dealer. This allows us to process your return more quickly.
4. Carefully pack the defective product, a completed Repair and Replacement Order Card, and a proof of purchase date (such as a photocopy of your sales receipt) into a shippable container. Products returned without a proof of purchase date are not eligible for warranty service.
5. Write the RMA number clearly on the outside and ship the package prepaid to your dealer.

Declaration of Conformity

FCC Class B

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 in residential installations. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, users are encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult your dealer or an experienced radio/TV technician for help

Technical Support and Assistance

1. Visit the Advantech website at <http://support.advantech.com> to obtain the latest product information.
2. Contact your distributor, sales representative, or Advantech's customer service center for technical support if you need additional assistance. Please have the following information ready before calling:
 - Product name and serial number
 - Description of your peripheral attachments
 - Description of your software (operating system, version, application software, etc.)
 - Comprehensive description of the problem
 - The exact wording of any error messages

Warnings, Cautions, and Notes

Warning! *Warnings indicate conditions that if not observed, can cause personal injury!*



Caution! *Cautions are included to help prevent hardware damage or data losses.*



Note! *Notes provide additional optional information.*



Packing List

Before installation, check that the items listed below are included with the shipment and in good condition.

- 1 x UBX-010RC unit
- 1 x Power adapter (DC 12V, 60W)
- 1 x UBX-010RC startup manual

Ordering Information

Part Number	Description
UBX-010RC-BS00	UBX-010, RK3576, Android™ 14 GMS, Base Model
UBX-010RC-BS01	UBX-010, RK3576, Android™ 14 NON-GMS, Base Model
UBX-010RC-BE00	UBX-010, RK3576, Android™ 14 GMS, Enhanced I/O Model
UBX-010RC-BE01	UBX-010, RK3576, Android™ 14 NON-GMS, Enhanced I/O Mode
UBX-010RC-US00	UBX-010, RK3576, Android™ 14 GMS, Base Model TW
UBX-010RC-US01	UBX-010, RK3576, Android™ 14 NON-GMS, Base Model TW
UBX-010RC-UE00	UBX-010, RK3576, Android™ 14 GMS, Enhanced I/O Model TW
UBX-010RC-UE01	UBX-010, RK3576, Android™ 14 NON-GMS, Enhanced I/O Mode TW

Safety Instructions

1. Read these safety instructions carefully.
2. Retain this user manual for future reference.
3. Disconnect the equipment from all power outlets before cleaning. Use only a damp cloth for cleaning. Do not use liquid or spray detergents.
4. For pluggable equipment, the power outlet socket must be located near the equipment and easily accessible.
5. Protect the equipment from humidity.
6. Place the equipment on a reliable surface during installation. Dropping or letting the equipment fall may cause damage.
7. The openings on the enclosure are for air convection. Protect the equipment from overheating. Do not cover the openings.
8. Ensure that the voltage of the power source is correct before connecting the equipment to a power outlet.
9. Position the power cord away from high-traffic areas. Do not place anything over the power cord.
10. All cautions and warnings on the equipment should be noted.
11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage from transient overvoltage.
12. Never pour liquid into an opening. This may cause fire or electrical shock.
13. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
14. If any of the following occurs, have the equipment checked by service personnel:
 - The power cord or plug is damaged.
 - Liquid has penetrated the equipment.
 - The equipment has been exposed to moisture.
 - The equipment is malfunctioning, or does not operate according to the user manual.
 - The equipment has been dropped and damaged.
 - The equipment has obvious signs of breakage.
15. Do not leave the equipment in an environment with a storage temperature of below -20 °C (-4 °F) or above 60 °C (140 °F) as this may cause damage. The equipment should be stored in a controlled environment.
16. Any unverified component may cause unexpected damage. To ensure correct installation, always use the components (e.g., screws) provided in the accessory box.
17. CAUTION: The equipment is equipped with a battery-powered real-time clock-circuit. There is a risk of explosion if a battery is incorrectly replaced. Replace only with same or equivalent type as recommended by the manufacturer. Discard all used batteries according to the manufacturer's instructions.
18. Always disconnect the power cord from the chassis before manually handling the hardware. Do not implement connections or configuration changes while the device is powered on. Sudden power surges may damage sensitive electronic components.
19. In accordance with IEC 704-1:1982 specifications, the sound pressure level at the operator's position does not exceed 70 dB (A).
20. The equipment should only be installed in a restricted access area.
21. DISCLAIMER: These instructions are provided according to IEC 704-1 specifications. Advantech disclaims all responsibility for the accuracy of any statements contained herein.

22. This model is intended to be supplied by an UL-certified power supply (Adapter: FSP/ FSP060-DAAN2) suitable for use at TMA 60 °C (140 °F) min., and the output is rated 24 VDC, 2.5A min., ES1. If you need further assistance, contact Advantech for additional information.

Instructions de Sécurité

1. Lire attentivement ces instructions de sécurité.
2. Conserver ce manuel de l'utilisateur pour référence ultérieure.
3. Débrancher cet appareil de toute prise secteur avant le nettoyage. Utiliser un chiffon humide. Ne pas utiliser de détergents liquides ou en aérosol pour le nettoyage.
4. Pour les équipements électriques, la prise de courant doit être située à proximité de l'équipement et facilement accessible.
5. Garder cet équipement à l'abri de l'humidité.
6. Placer cet équipement sur une surface fiable lors de l'installation. Toute chute peut l'endommager.
7. Les ouvertures sur l'enceinte sont destinées à la convection de l'air. Ne pas laisser surchauffer l'équipement. Ne pas couvrir les ouvertures.
8. S'assurer que la tension de la source d'alimentation est correcte avant de connecter l'équipement à la prise secteur et avec une mise à la terre. S'assurer de connecter le cordon d'alimentation à une prise de courant raccordée à la terre.
9. Positionner le cordon d'alimentation de sorte que personne ne puisse marcher dessus. Ne rien placer sur le cordon d'alimentation.
10. Toutes les mises en garde et avertissements sur l'équipement doivent être respectées.
11. Si l'appareil n'est pas utilisé pendant une longue période, le débrancher de la source d'alimentation pour éviter tout dommage dû à une surtension transitoire.
12. Ne jamais verser de liquide dans une ouverture. Cela pourrait provoquer un incendie ou une électrocution.
13. Ne jamais ouvrir l'équipement. Pour des raisons de sécurité, l'équipement ne doit être ouvert que par un personnel qualifié.
14. Si l'une des situations suivantes se produit, faire vérifier l'équipement par un personnel qualifié:
 - Le cordon d'alimentation ou la fiche est endommagé.
 - Un liquide a pénétré dans l'appareil.
 - L'équipement a été exposé à l'humidité.
 - L'équipement ne fonctionne pas bien ou vous ne pouvez pas le faire fonctionner conformément au manuel de l'utilisateur.
 - L'équipement est tombé et a été endommagé.
15. Ne laissez pas cet équipement dans un environnement où la température de stockage peut être inférieure à -40 °C (-40 °F) ou supérieure à 60 °C (140 °F). Cela pourrait endommager l'équipement. L'équipement doit être dans un environnement contrôlé.
16. Tout composant non vérifié peut causer des dommages inattendus. Pour garantir une installation correcte, veuillez toujours utiliser les composants (ex. Vis) fournis avec la boîte d'accessoires.
17. **ATTENTION:** L'ordinateur est équipé d'un circuit d'horloge temps réel alimenté par batterie. Il y a un risque d'explosion si la batterie est remplacée de manière incorrecte. Remplacez uniquement avec le même type ou un type équivalent recommandé par le fabricant. Jetez les piles usagées conformément aux instructions du fabricant.

18. Débranchez toujours complètement le cordon d'alimentation de votre châssis lorsque vous utilisez du matériel. Ne faites pas de connexion quand l'appareil est sous tension. Les composants électroniques sensibles peuvent être endommagés par des surtensions soudaines.
19. Niveau de pression acoustique au poste de l'opérateur selon la norme CEI 704-1: 1982 n'est pas supérieur à 70 dB (A).
20. L'équipement ne doit être installé que dans une zone d'accès restreint.
21. **AVERTISSEMENT:** Cet ensemble d'instructions est donné conformément à la norme CEI 704-1. Advantech décline toute responsabilité quant à l'exactitude des déclarations contenues dans ce.
22. Ce modèle est destiné à être alimenté par une alimentation certifiée UL (adaptateur: FSP / FSP060-DAAN2), adaptée à une utilisation à 60 degrés Celsius. et la sortie est nominale 24Vcc, 2,5A min., ES1, si vous avez besoin d'une assistance supplémentaire, veuillez contacter Advantech pour plus.

Contents

Chapter 1	General Information	1
1.1	Introduction	2
1.2	General Specifications	2
1.2.1	General	2
1.3	System Dimensions	3
1.3.1	Weight.....	3
1.4	Power Requirements.....	4
1.4.1	System Power.....	4
1.4.2	RTC Battery	4
1.5	Environmental Specifications.....	4
1.5.1	Temperature	4
1.5.2	Relative Humidity	4
1.5.3	Vibration Tolerance.....	4
1.5.4	Shock Tolerance.....	4
1.5.5	Safety Certification.....	4
1.5.6	EMC Certification	4
Chapter 2	Hardware Installation	5
2.1	Introduction	6
2.2	UBX-010RC I/O Connectors	6
	Figure 2.1 Front View	6
2.3	Hardware Installation	7
2.3.1	Wi-Fi Module Installation.....	7
2.3.2	COM Port Setting (Enhanced I/O model).....	12
	Table 2.1: COM setting RS422/RS232/RS485 Select: Jumper (JRS1)	12

Chapter 1

General Information

This chapter provides basic information regarding the UBX-010RC.

- Introduction
- Specifications
- Dimensions

1.1 Introduction

The Advantech UBX-010RC is an ultra-compact ARM64 based Mini PC that is used for edge computing in smart city, especially for retail applications. With Google Mobile Service (GMS) integration, UBX-010RC ensures that Android devices have access to Google's ecosystem and services, including the Google Play Store, and are equipped with advanced security features. Furthermore, it provides AI inference ability on the edge side thanks to an inte 6 TOPS NPU Integrated. And same as other UBX series products, X-type thermal isolation top cover makes it user friendly for installation and system touch.

1.2 General Specifications

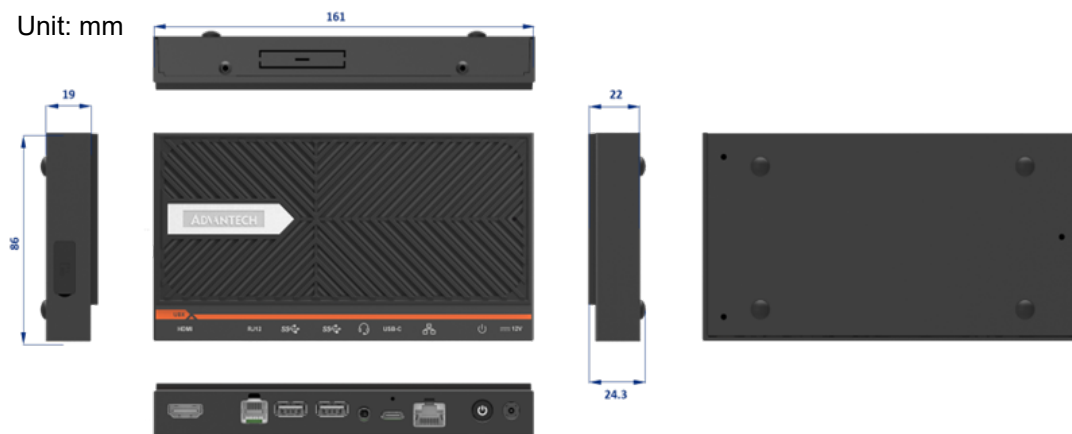
1.2.1 General

- **CPU:** Rockchip RK3576
- **Video:**
 - 1 x USB-C (compliant with DP 1.4), supports up to 2560 x 1600 @60Hz;
 - 1 x HDMI 2.1, supports 4096 x 2160 @60Hz
- **Memory:** LPDDR4 4 GB onboard (8G optional)
- **Storage:** Onboard eMMC 5.1, 64 GB
- **USB:** 2 x USB 3.1
 - 1 x USB (Type-C), 5V/3A, PD2.0, USB 3.1 Gen1 data transfer)
 - 3 x USB 2.0 (enhanced I/O model only)
- **Audio:** 1 x Audio-Out + MIC-In, combo audio jack
- **Serial:** 2 x UART for RS-232/422/485 (enhanced I/O model only)
- **LAN:** 1 x RJ-45 (1 x 10/100/1000 Mbps)
- **Expansion:** 1 x Micro SD card slot for additional storage
- **Cash Draw:** 1 x RJ-12 (12V)
- **Wi-Fi/BT:** Onboard supported (optional antenna kit)

1.3 System Dimensions

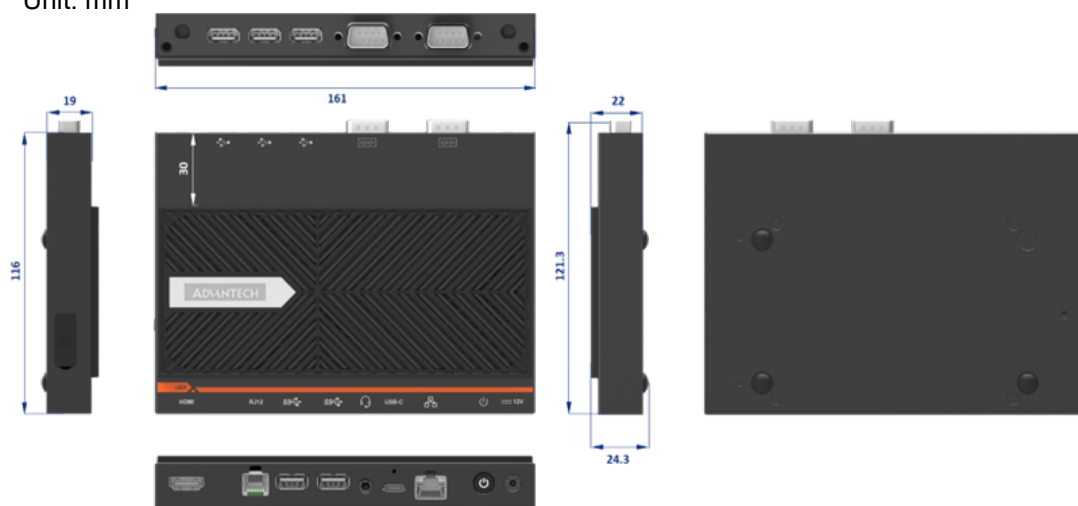
Base Model

Unit: mm



Enhanced I/O Model

Unit: mm



1.3.1 Weight

- **Base Model:** NW: 0.46 kg, GW: 1.12 kg
- **Enhanced I/O Model:** NW: 0.59 kg, GW: 1.25 kg

1.4 Power Requirements

1.4.1 System Power

- Power Input: DC in 12V

1.4.2 RTC Battery

- Lithium: 3V/200 mAh

1.5 Environmental Specifications

1.5.1 Temperature

- Operating Temperature: 0 ~ 40°C
- Storage Temperature: -40 ~ 60°C

1.5.2 Relative Humidity

- 95% @40°C (104°F) (non-condensing)

1.5.3 Vibration Tolerance

- Reference IEC60068-2-6:2007, random, 5 ~ 500 Hz, 1 hr/axis, (x, y, z) 3 axes

1.5.4 Shock Tolerance

- Reference IEC60068-2-27:2008, half sine, 11 ms pulse duration

1.5.5 Safety Certification

- UL, CB, CCC, BSMI, ErP

1.5.6 EMC Certification

- CE, FCC, CCC, BSMI, RF RED

Chapter 2

Hardware Installation

2.1 Introduction

The following sections introduce I/Os of the UBX-010RC and demonstrate the Wi-Fi module installation.

2.2 UBX-010RC I/O Connectors

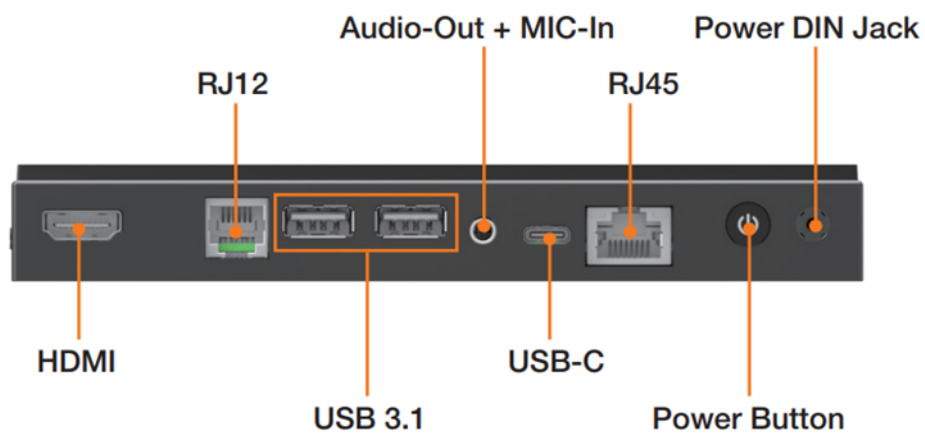
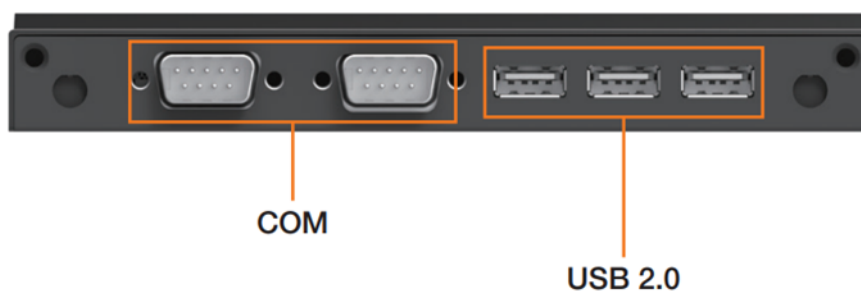


Figure 2.1 Front View



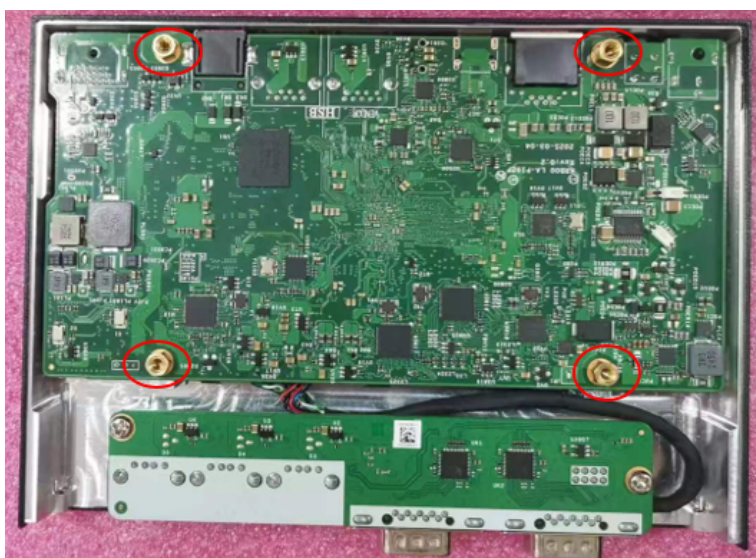
2.3 Hardware Installation

2.3.1 Wi-Fi Module Installation

1. Remove the specified 10 screws.



2. After removing specified 10 screws, please remove the bottom cover and remove specified 4 stands.



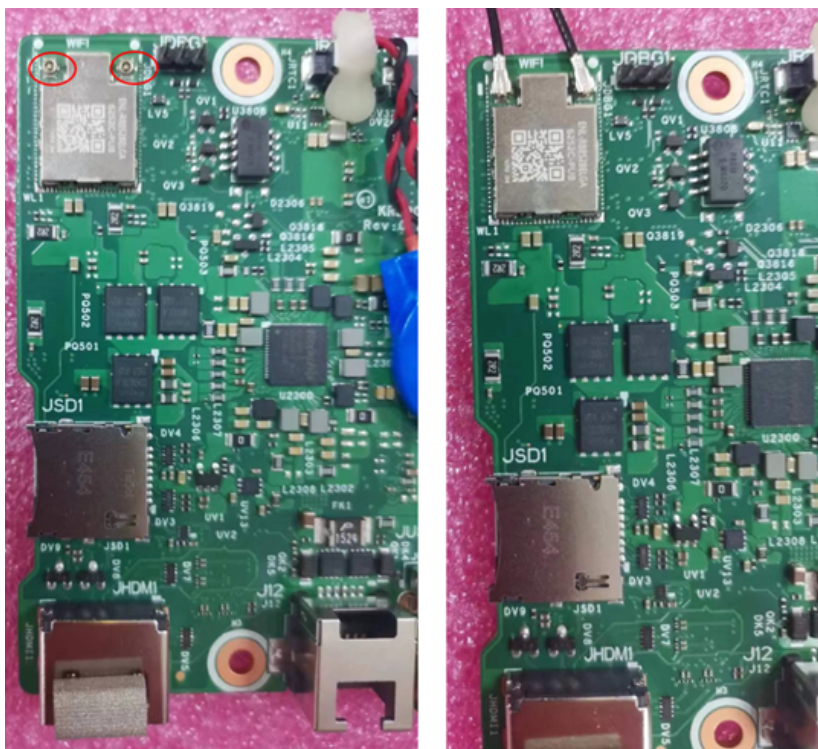
3. Take the mother board out. (Notice: Do not touch the heatsink on box cover).



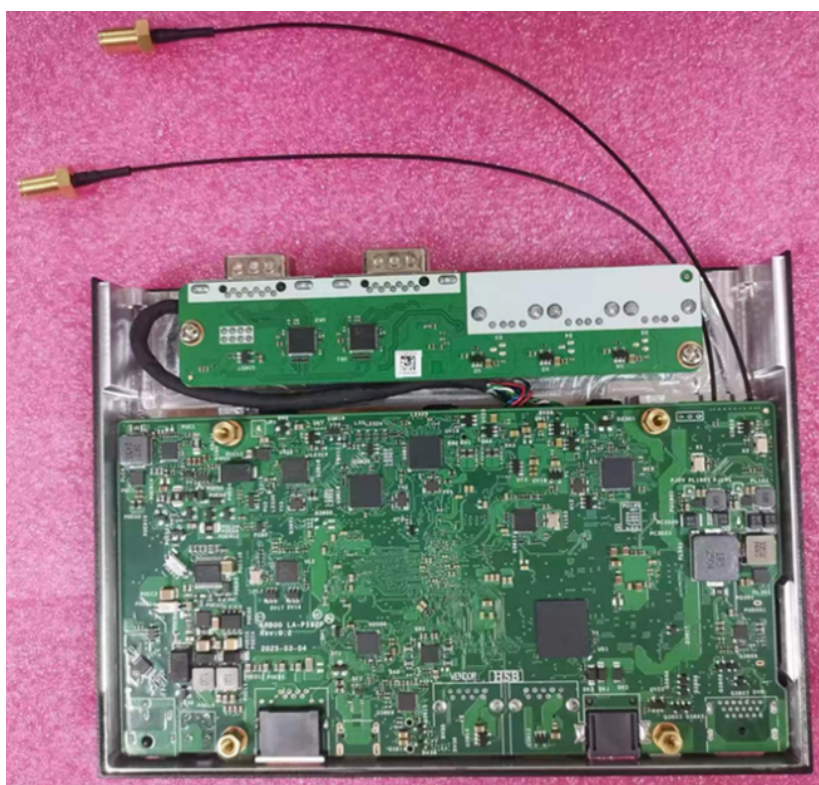
4. Dig two specified steel covers.



5. Connect the Wi-Fi cable.



6. Install the mother back and fasten the screws.



7. Fix the Wi-Fi cable into the hole of bottom cover.



8. Sort the Wi-Fi cable out as the following picture (Notice: Make sure no mechanical interference).



9. Return the bottom cover and fasten the specified 10 screws.



10. Add on two antennas.



2.3.2 COM Port Setting (Enhanced I/O model)

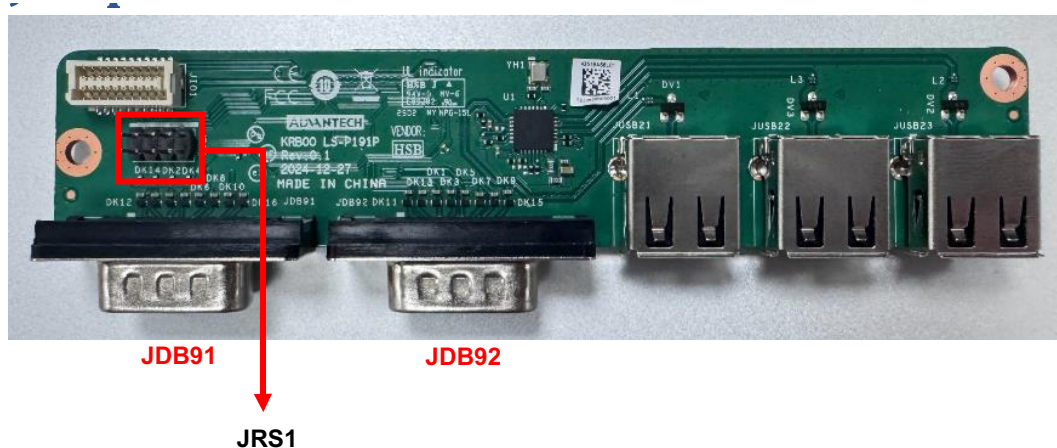
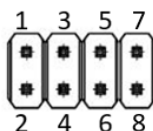


Table 2.1: COM setting RS422/RS232/RS485 Select: Jumper (JRS1)

Setting	Function	OS setting (tty*)
1-2	JDB92 support RS422	ttyS4
3-4		
5-6	JDB91 support RS422	ttyS7
7-8		
1-2(Default)	JDB92 support RS232	ttyS4
5-6(Default)	JDB91 support RS232	ttyS7
3-4	JDB92 support RS485	ttyS4
7-8	JDB91 support RS485	ttyS7





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