RSC-3568J

**3.5" single board computers (SBC)
with Rockchip RK3568J, feature wide temperature support**

User's Manual

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Part No: E2047R68J01R

Document Amendment History

Revision	Date	By	Comment
1st	July 2024	Avalue	Initial Release
2nd	November 2024	Avalue	Update System Specifications

Declaration of Conformity

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 undesired 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.

CE statement

The product(s) described in this manual complies with all application European Union (CE) directives if it has a CE marking. For computer systems to remain CE compliant, only CE-compliant parts may be used. Maintaining CE compliance also requires proper cable and cabling techniques.

Notice

This guide is designed for experienced users to setup the system within the shortest time. For detailed information, please always refer to the electronic user's manual.

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This manual is intended to be used as a practical and informative guide only and is subject

to change without notice. It does not represent a commitment on the part of Avalue. This product might include unintentional technical or typographical errors. Changes are periodically made to the information herein to correct such errors, and these changes are incorporated into new editions of the publication.

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 and Assistance

1. Visit the Avalue website at https://www.avalue.com/ where you can find the latest information about the product.

2. Contact your distributor or our technical support team or sales representative for technical support if you need additional assistance. Please have following information ready before you call:

・Product name and serial number
・Description of your peripheral attachments
・Description of your software (operating system, version, application software, etc.)
・A complete description of the problem
・The exact wording of any error messages

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

Product Warranty (Returns & Warranties policy)

1. Purpose

Avalue establishes the following maintenance specifications and operation procedures for providing the best quality of service and shortened repair time to our customers.

2. Warranty

2.1 Warranty Period

Avalue endeavors to offer customers the most comprehensive post-sales services and protection; besides offering a 2-year warranty for standard Avalue products, an extended warranty service can also be provided based on additional request from the customer. Within the warranty period, customers are entitled to receive comprehensive and prompt repair and warranty.

Standard products manufactured by Avalue are offered a 2-year warranty, from the date of delivery from Avalue. For ODM/OEM products manufactured by Avalue or PCBA with conformal coating, will follow up the define warranty of the agreement, otherwise will be offered 1-year warranty for ODM/OEM products but non-warranty for PCBA with conformal coating. For outsourcing parts kit by Avalue (ex: Motherboard, LCD touch panel, CPU, RAM, HDD) are offered a 6-month warranty, and Mobile/Tablet PC battery are offered a warranty of the half year, from the date of delivery by Avalue. Products before the mass production stage, i.e. engineering samples are not applied in this warranty or service policy. For extended warranty and cross-territory services, product defects resulting from design, production process or material are covered by the pre-set warranty period after the date of delivery from Avalue. For non-Avalue products, the product warranty and repair time shall be based on the service standards provided by the original manufacturer; in principle Avalue will provide these products a warranty service for no more than one year.

2.2 Maintenance services within the warranty period

In the case of Avalue product DOA (Defect-on-Arrival) when the customer finds any defect within 1 month after the delivery, Avalue will replace it with a new product in a soonest way. Except for custom products, once the customer is approved of a Cross-Shipment Agreement, which allows for delivery a new product to the customer before receiving the defective one, Avalue will immediately proceed with new product replacement for the said DOA case. On validation of the confirmed defect, Avalue is entitled to reserve the right whether to provide a new product for replacement. For the returned defective new product, it is necessary to verify that there shall be no bruise, alteration, scratch or marking to the appearance, and that none of the delivered accessories missing; otherwise, the customer will be requested to pay a processing fee. On the other hand, if the new product defect is resulting from incorrect configuration or erroneous use by the user instead of any problem of the hardware itself, the customer will also be requested to pay for relevant handling

fees.

As for other conditions, Avalue will handle defects by way of repair. The customer will be requested to send the defective product to an Avalue authorized service center, and Avalue will return the repaired product back to the customer as soon as possible.

2.3 Ruling of an out-of-warranty defect

The following situations are not included in the warranty:

- The warranty period has expired.
- Product has been altered or its label of the serial number has been torn off.
- Product functionality issues resulting from improper use by the user, unauthorized dismantle or alteration, unfit operation environment, improper maintenance, accident or other causes. Avalue reserves the right for the ruling of the aforementioned situations.
- Product damage resulting from lightning, flood, earthquake or other calamities.
- The warranty rules of non-Avalue products and accessories shall be in accordance with standards set up by the original manufacturer. These products and accessories include RAM, HDD, FDD, CD-ROM, CPU, FAN, etc.
- Product upgrade request or test request submitted by the customer after expiration of the warranty.
- PCBA with conformal coating.
- Avalue semi-product and outsourced products without Avalue serial number.
- Products before the mass production stage, i.e. engineering samples.

3. Procedure for sending for repair

3.1 Attain a RMA number

A customer's rejected product returned for repair shall have a RMA (Return Merchandise Authorization) number. Without a RMA number, Avalue will not provide any repair service for the rejected product, and the product will be returned to the customer at customer's cost. Avalue will not issue any notice for the return of the product.

Each returned product for repair shall have a RMA number, which is simply the authorization of the return for repair; it is not a guarantee that the returned goods can be repaired or replaced. For applying for a RMA number, the customer may enter the eRMA webpage of Avalue https://www.avalue.com/en/member and log-in with an account number and a password authorized by Avalue. The system will then automatically issue a RMA number.

When applying for the RMA number, it is essential to fill in basic information of the customer and the product, together with detailed description of the problem encountered. If possible, avoid using ambiguous words such as "does not work" or "problematic". Without a substantial description of the problem, it is hard to start the repair and will cause prolonged repair time. Lacking detailed statement of fault steps also makes the problem

hard to be identified, sometimes resulting in second-time repairs.

In case the customer can't define the cause of problem, please contact Avalue application engineers. Sometimes when the problem can be resolved even before the customer sends back the product.

On the other hand, if the customer only returns the key parts to Avalue for repair, it is necessary that the serial number of the entire unit is given in the "Problem Description" field, so that warranty period can be ruled accordingly; or Avalue will handle the case as an Out-of- warranty case.

3.2 Return of faulty product for repair

It is recommended that the customer not to return the accessories (manual, connection cables, etc.) with the products for repair, devices such as CPU, DRAM, CF memory card, etc., shall also be removed from the faulty goods before return for repair. If these devices are relevant to described repair problems and necessary to be returned with the goods; please clearly indicate the items included in the eRMA application form. Avalue shall not be responsible for any item that is not itemized. Moreover, make sure the problem(s) are detailed in the "Problem Description" field.

In the list of delivery, the customer may fill-in a value which is lower than the actual value, to prevent customs levying a higher tax over the excessive value of the return goods. The customer shall be held responsible for extra fees caused by this. We strongly recommend that "Invoice for customs purpose only with no commercial value" be indicated on the delivery note. Also for the purpose of expedited handling, please printout the RMA number and put it in the carton, also indicate the number outside of the carton, with the recipient addressing to Avalue RMA Department.

When returning the defective product, please use an anti-static bag or ESD material to pack it properly. In case of improper packing resulting in damages in the transportation process, Avalue reserves the right to reject the un-repaired faulty good at the customer's costs. Furthermore, it is suggested that the faulty goods shall be sent via a door-to-door courier service. The customer shall be held responsible for any customs clearance fee or extra expenses if Air-Cargo is used for the delivery.

In case of a DOA situation of a new product, Avalue will be responsible for the product and the freight. If the faulty goods are within the warranty period, the sender will take responsibility for the freight. For an out-of-warranty case, the customer shall be responsible for the freight of both trips.

3.3 Maintenance Charge

Avalue will charge a moderate repair fee for the following conditions:

- The warranty period has expired.
- Product has been altered or its label of the serial number has been torn off.

- Product functionality issues resulting from improper use by the user, unauthorized dismantle or alteration, unfit operation environment, improper maintenance, accident or other causes. Avalue reserves the right for the ruling of the aforementioned situations.
- Product damage resulting from lightning, flood, earthquake or other calamities.
- The warranty rules for non-Avalue products and accessories shall be in accordance with standards set up by the original supplier. These products and accessories include RAM, HDD, FDD, CD-ROM, CPU, FAN, etc.
- Product upgrade request or test request submitted by the customer after expiry of the warranty.
- PCBA with conformal coating.
- Avalue semi-product and outsourced products without Avalue serial number
- Products before the mass production stage, i.e. engineering samples.
- In case the products received are examined as NPF (No Problem Found) within the warranty period, the customer shall be responsible for the freight of both trips.
- Please contact your local distributor to examine in advance to prevent unnecessary freight cost.

For system failure of out-of-warranty products, Avalue will provide a quotation prior to repair service. When the customer applies for the cost, please refer to the Quotation number. In case the customer does not return the DOA product that has already been replaced by a new one, or the customer does not sign back the quotation of the out-of-warranty maintenance, Avalue reserves the right of whether or not to provide the repair service. In case the customer does not reply in 3 months, Avalue shall directly scrap or return the product back to customer at customer's cost without further notice to the customer.

3.4 Maintenance service of phased-out products

For servicing phased-out products, Avalue provides an extended period, starting the date of phase-out, as a guaranteed maintenance period of such products, for continuance of the maintenance service to meet customer's requirements. In case of unexpected factors causing Avalue to be unable to repair/replace a warranted but phased-out product, Avalue will, depending on the availability, upgrade the product (free of charge with continued warranty period as of the original product), or, give partial refund (based on the length of the remaining warranty period) to solve this kind of problem.

3.5 Maintenance Report

On completion of repair of a defective product, a Maintenance Report indicating the maintenance result and part(s) replaced (if any) will be sent to the customer together with the product. If the customer demands an additional maintenance analysis report, a service

fee of various level will be charged depending on the warranty status. In case the analysis result shows that the defect attributes to Avalue's faulty design or process, the analysis fee will be exempted.

4. Service Products

Avalue provides service products to manage with different customer needs. Should you have any need, please consult to Avalue Sales Department.

Defect Analysis Report (DAR)

Avalue provides DAR (Defect Analysis Report) services aiming to elevating customer satisfaction. A DAR includes defect cause identification/verification/suggestion and improvement precautions, with instructions on correct usage for the avoidance of any reoccurrence.

Upgrade Service

Avalue is capable to provide system upgrade service for customization requirements. This upgrade service is applicable for main parts, such as CPU, memory, HDD, SSD, storage devices; also replacements motherboards of systems. Please contact Avalue sales for details to evaluate the possibility of system upgrade service and obtain information of lead time and price.

Safety Instructions

Safety Precautions
Before installing and using this device, please note the following precautions.
1. Read these safety instructions carefully.
2. Keep this User's Manual for future reference.
3. Disconnected this equipment from any AC outlet before cleaning.
4. For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.
5. Keep this equipment away from humidity.
6. Put this equipment on a reliable surface during installation. Dropping it or letting it fall may cause damage.
7. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
8. Use a power cord that has been approved for using with the product and that it matches the voltage and current marked on the product's electrical range label. The voltage and current rating of the cord must be greater than the voltage and current rating marked on the product.
9. Position the power cord so that people cannot step on it. 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 by transient overvoltage.

12. Never pour any 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. If one of the following situations arises, get the equipment checked by service personnel:

- 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 work according to the user's manual.
- The equipment has been dropped and damaged.
- The equipment has obvious signs of breakage.

14. CAUTION: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer.

15. Equipment intended only for use in a RESTRICTED ACCESS AREA.

Explanation of Graphical Symbols

	Warning	A WARNING statement provides important information about a potentially hazardous situation which, if not avoided, could result in death or serious injury.
	Caution	A CAUTION statement provides important information about a potentially hazardous situation which, if not avoided, may result in minor or moderate injury to the user or patient or in damage to the equipment or other property.
	Note	A NOTE provides additional information intended to avoid inconveniences during operation.
DC		Direct current.
AC		Alternating current
		Stand-by, Power on
FCC		FCC Certification
CE		CE Certification
		Follow the national requirements for disposal of equipment.
3		Stacking layer limit
		This side up

		Fragile Packaging
		Beware of water damage, moisture-proof
		Carton recyclable
		Handle with care
		Follow operating instructions of consult instructions for use.

Disposing of your old product

WARNING:

There is danger of explosion if the battery is mishandled or incorretly replaced. Replace only with the same type of battery. Do not disassemble it or attempt to recharge it outside the system. Do not crush, puncture, dispose of in fire, short the external contacts, or expose to water or ther liquids. Dispose of the battery in accordance with local regulations and instructions from your service provider.

CAUTION:

- Lithium Battery Caution: Danger of explosion if battery is incorrectly replaced. Replace only with same or equivalent type. Dispose batteries according to manufacturer's instructions.
- Disposal of a BATTERY into fire or a hot oven, or mechanically crushing or cutting of a BATTERY, that can result in an EXPLOSION
- Leaving a BATTERY in an extremely high temperature surrounding environment that can result in an EXPLOSION or the leakage of flammable liquid or gas.
- A BATTERY subjected to extremely low air pressure that may result in an EXPLOSION or the leakage of flammable liquid or gas.

Mise en garde!

AVERTISSEMENT : Il existe un risque d'explosion si la batterie est mal manipulée ou remplacée de manière incorrecte. Remplacez uniquement par le même type de batterie. Ne le démontez pas et ne tentez pas de le recharger en dehors du système. Ne pas écraser, percer, jeter au feu, court-circuiter les contacts externes ou exposer à l'eau ou à d'autres liquides. Jetez la batterie conformément aux réglementations locales et aux instructions de votre fournisseur de services.

MISE EN GARDE:

- Pile au lithium Attention : Danger d'explosion si la pile n'est pas remplacée correctement. Remplacer uniquement par un type identique ou équivalent. Jetez les piles conformément aux instructions du fabricant.
- L'élimination d'une BATTERIE dans le feu ou dans un four chaud, ou l'écrasement ou le découpage mécanique d'une BATTERIE, pouvant entraîner une EXPLOSION
- Laisser une BATTERIE dans un environnement à température extrêmement élevée pouvant entraîner une EXPLOSION ou une fuite de liquide ou de gaz inflammable.
- UNE BATTERIE soumise à une pression d'air extrêmement basse pouvant entraîner une EXPLOSION ou une fuite de liquide ou de gaz inflammable.

Content

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

Before installation, please ensure all the items listed in the following table are included in the package.

Item	Description	Q'ty
1	RSC-3568J	1

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

1.3 Manual Objectives

This manual describes in details Avalue Technology RSC-3568J Single Board.

We have tried to include as much information as possible but we have not duplicated information that is provided in the standard IBM Technical References, unless it proved to be necessary to aid in the understanding of this board.

We strongly recommend that you study this manual carefully before attempting to set up RSC-3568J or change the standard configurations. Whilst all the necessary information is available in this manual we would recommend that unless you are confident, you contact your supplier for guidance.

Please be aware that it is possible to create configurations within the CMOS RAM that make booting impossible. If this should happen, clear the CMOS settings, (see the description of the Jumper Settings for details).

If you have any suggestions or find any errors regarding this manual and want to inform us of these, please contact our Customer Service department with the relevant details.

1.4 System Specifications

System	
CPU	Rockchip RK3568J Quad-core Cortex-A55 up to 2.0GHz
CPU Cooler (Type)	By mechanical design
Memory	4GB LPDDR4
Storage	64GB eMMC M.2 3042 B-Key type for SSD Micro SD slot
Power Supply	DC in
Operating System	Android 13 / Debian 11
Expansion Slot	
M.2	1 x M.2 Key E (2230, PCIe / USB 2.0, support Wi-Fi/BT Module) 1 x M.2 Key B (3042, SATA / USB 2.0, support SSD/LTE Module) BOM option By SATA / USB 2.0
Edge I/O	
HDMI Port	1 x HDMI
USB Port	1 x USB 3.0 1 x USB 3.0 for OTG
Lan Port	2 x RJ45
COM port	1 x DB9 with RS232/422/485
Reset button	1 x Reset
DC in Power jack	1 x Lockable DC Jack
Onboard I/O	
USB	**JUSB2** : 2 x USB 2.0 : 2x5P, pitch 2.0 pin header ; 180D
Touch Key Button	**JTB1**: 2x6P, pitch 2.0 pin wafer; 180D Touch button control (power/vol/brightness…)
DC-IN (wafer)	**JDCIN2** : 2x2P, pitch 2.0 pin wafer ; 180D Power-in 12V~24Vdc
MIPI DSI	**JLVDS1** : DF13-40DP
eDP	**JEDP1** : DF13-30pin
LVDS	**JLVDS1** : DF13-40DP Co-layout MIPI signal, BOM option, use the same connector LT9211 on SBC obviates the need for MIPI LCD connector
Audio	**JSPK**1 : 1x4P, pitch 2.0 pin header ; 180D (2W*2/ 4ohm) **JAMIC1** : 2x3P, pitch 2.0 pin header ; 180D (Headphone out stereo / MIC in mono)
COM	**JDBG1**:1x3P, pitch 2.0 pin header ; 180D (Tx/Rx/GND) – 2wires

	JRS2 : 2x5P, pitch 2.0 pin header ; 180D, 2 sets for (Tx/Rx/Rts/Cts/GND) – 4wires without power
	JRS3 (232/422/485) : 2x5P, pitch 2.0 pin header ; 180D (Tx/Rx/Rts/Cts/GND) – 4wires without power
	JRS4 :2x4P, pitch 2.0 pin header ; 180D (for RS232/422/485 Setting)
GPIO	**JDIO** : 2x10P, pitch 1.0 pin wafer ; 180D (GPIO 16bit)
RTC Battery	**JRTC**: 1x2P, pitch 1.25 pin wafer ; 180D
SIM Card socket	**JSIM1** : Nano SIM Card socket for LTE module
SD Slots	**JSD1** : Micro SD slot
Other	**JLVBT** (Backlight control) : 1x5P, pitch 2.0 pin header ; 180D **JSENSE** (I2C) : 2x5P, pitch 2.0 pin header ; 180D **J9505** (CAN) : 1x3p, pitch 2.0 pin header ; 180D **J9506** (CAN) : 1x3p, pitch 2.0 pin header ; 180D
Display	
Graphic Chipset	Mali-G52 GPU
Spec. & Resolution	○ MIPI: 2048x 1536 @60Hz (MIPI LCD spec. 768 x 1024@60Hz) ○ LVDS: 1280x 800 @60Hz 　(LVDS LCD spec. 800x480, 1280x800, 1024x768) ○ eDP: 2560x1600 @ 60Hz 　(eDP LCD spec. 1920x 1080@60Hz) ○ HDMI: 4096 x 2160 @60Hz
Multiple Display	Support MIPI DSI/eDP/LVDS/HDMI display interface
Audio	
Audio Codec	Rockchip RK809
Ethernet	
LAN Chipset	RTL 8211FDI x2
Ethernet Interface	2 x 10/100/1000 Base-Tx GbE compatible
LAN Port	2 x RJ45
Mechanical & Environmental	
Power Requirement	12V~24V wide voltage DC input
Power Mode	AT / ATX (by jumper)
Operating Temp.	-40°C ~ 85°C (air flow0.7)
Operating Humidity	40°C @ 95% Relative Humidity, Non-condensing
Size (L x W)	146mm x 101mm
Weight	0.1kg
Vibration Test	IEC 60068-2-64, 1.5 ~ 3.0 Grm, random, 5 ~ 500Hz, 30mins/axis
Drop Test	ISTA 2A, IEC-60068-2-32 Test:Ed
Others	○ Support 4 LVDS wide-temperature LCD panels.

InnoLux G070ACE-L01 7" 800x400 -30°C~85°C, 500nits

InnoLux G070ACE-LH1 7" 800x480 -30°C~85°C, 1000nits

InnoLux G101ICE-LH1 10" 1280x800 -20°C~65°C, 500nits

InnoLux G150XNE-L01 15.0" 1024x768 -30°C~80°C, 450nits

○ Support MIPI LCD panel.

KD KD101N89-40NI-B042 10.1" 800X1280, -20°C~60°C, 350 nits

○ Support eDP LCD panel

InnoLux 15.6" G156HCE-E01 1920*1080 -20°C~70°C ,450nits

○ Support M.2 Wi-Fi Module

ENL-R8852BE(RTL8852BE) -40°C~85°C

•Support M.2 LTE Module

Quetel EM060K -25°C ~ 75°C

Note: Specifications are subject to change without notice.

User condition suggestion:

User should consider overall power consumption including CPU and devices add-on, to choose suitable power adapter.

1.5 Architecture Overview—Block Diagram

The following block diagram shows the architecture and main components of RSC-3568J.

RK3568 Block Diagram
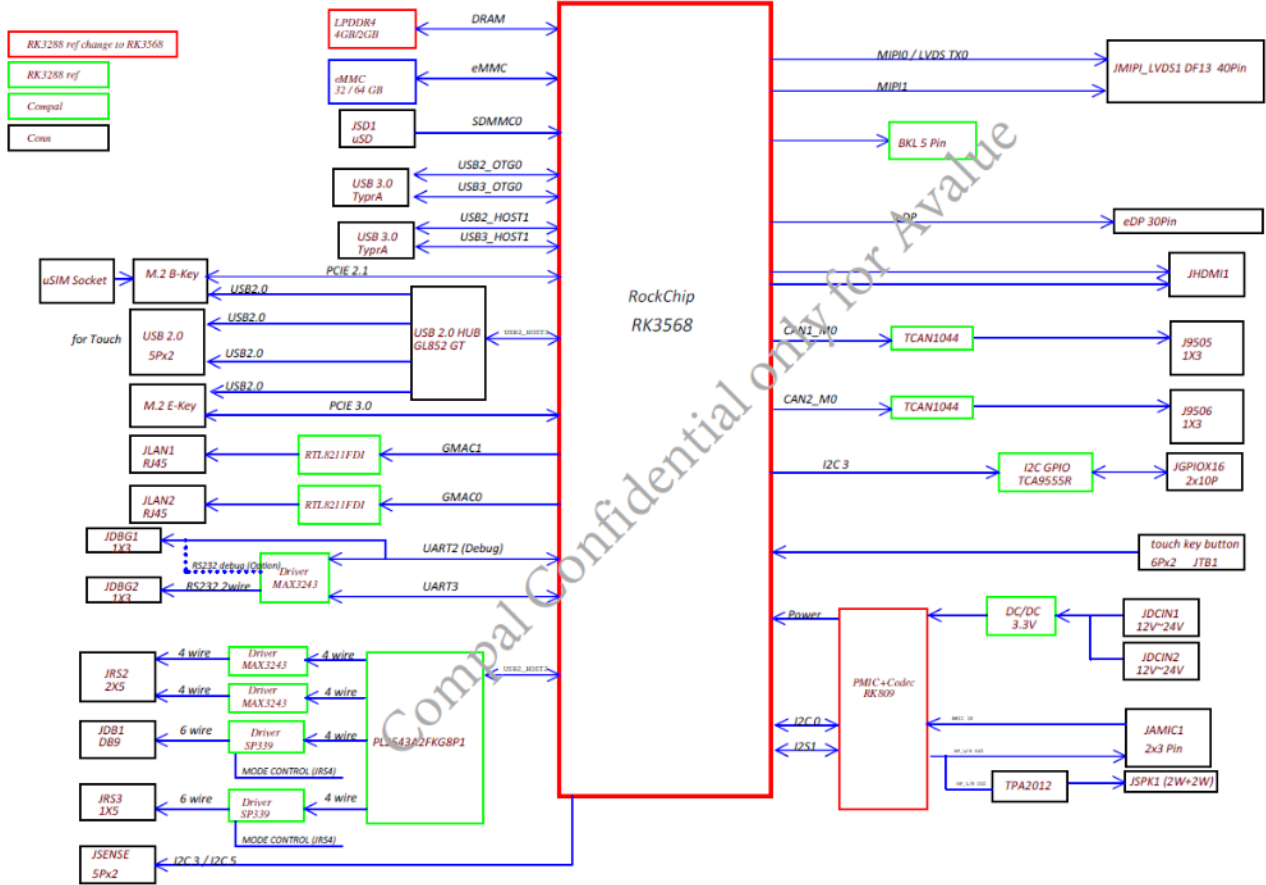
2. Hardware Configuration

2.1 Product Overview
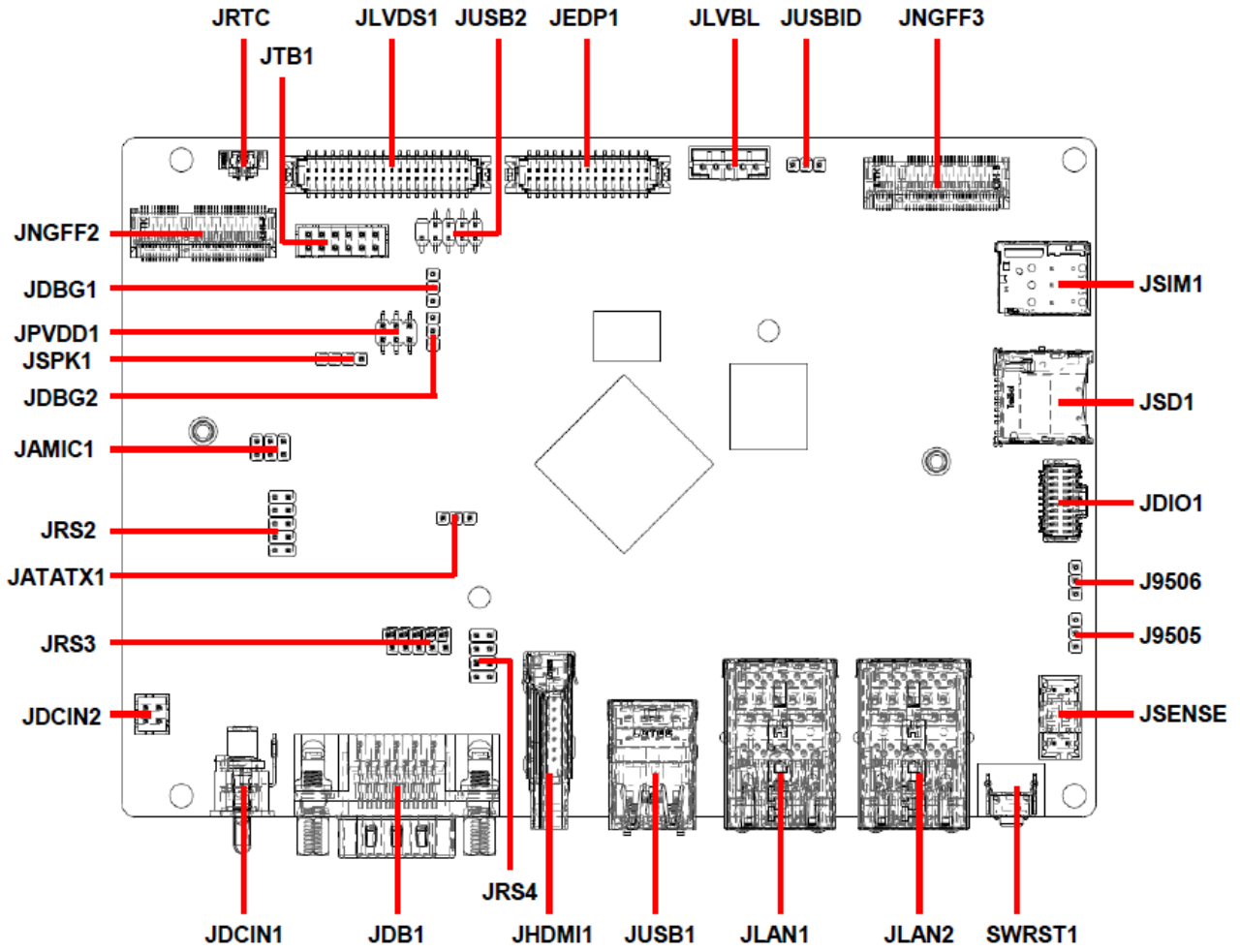
2.2 Jumper and Connector List

You can configure your board to match the needs of your application by setting jumpers. A jumper is the simplest kind of electric switch.

It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To "close" a jumper you connect the pins with the clip. To "open" a jumper you remove the clip. Sometimes a jumper will have three pins, labeled 1, 2, and 3. In this case, you would connect either two pins.
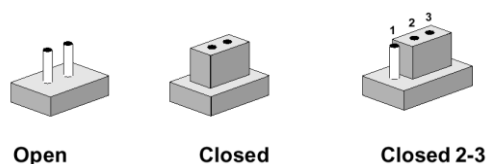
The jumper settings are schematically depicted in this manual as follows:

A pair of needle-nose pliers may be helpful when working with jumpers.

Connectors on the board are linked to external devices such as hard disk drives, a keyboard, or floppy drives. In addition, the board has a number of jumpers that allow you to configure your system to suit your application.

If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any changes.

The following tables list the function of each of the board's jumpers and connectors.

Jumpers

Label	Function	Note
JATATX1	AT/ATX Input power select	3 x 1 header, pitch 2.00mm
JUSBID	JUSBID connector	3 x 1 header, pitch 2.00mm
JPVDD1	JPVDD connector	3 x 2 header, pitch 2.00mm
JRS4	JRS4 connector	4 x 2 header, pitch 2.00mm

Connectors

Label	Function	Note
JLVBL	Backlight control interface	5 x 1 wafer, pitch 2.00mm
JDIO1	General purpose I/O connector	10 x 2 wafer, pitch 1.00mm
JNGFF2	M.2 KEY-E 2230 connector	
JNGFF3	M.2 KEY-B 3042/2242 connector	

JLAN1/2	2 x RJ-45 Ethernet	
JHDMI1	HDMI connector	
JDB1	JDB connector	
JDCIN1	JDCIN1 connector	
JUSB1	2 x USB3.0 connector	
JUSB2	USB2.0 connector	5 x 2 header, pitch 2.00mm
JAMIC1	JAMIC connector	3 x 2 header, pitch 2.00mm
J9505	J9505 connector	3 x 1 header, pitch 2.00mm
J9506	J9506 connector	3 x 1 header, pitch 2.00mm
JRS2	JRS2 connector	5 x 2 header, pitch 2.00mm
JRS3	JRS3 connector	5 x 2 header, pitch 2.00mm
JSENSE	JSENSE connector	5 x 2 header, pitch 2.00mm
JTB1	JTB connector	6 x 2 wafer, pitch 2.00mm
JEDP1	eDP interface connector	DFI3-30pin
JLVDS1	LVDS/MIPI connector	DFI3-40pin
JRTC	Battery connector	2 x 1 wafer, pitch 1.25mm
JDBG1/2	JDBG connector	3 x 1 header, pitch 2.00mm
JSIM1	Nano SIM card slot	
JSD1	Micro SD card slot	
SWRST	SWRST connector	
JSPK1	Speaker connector	4 x 1 header, pitch 2.00mm

2.3 Setting Jumpers & Connectors

2.3.1   AT/ATX Input power select (JATATX1)

AT*

```
 3          1
┌──┬──┬──┐
│ □│ ■│ ■│
└──┴──┴──┘
```

ATX

```
 3          1
┌──┬──┬──┐
│ ■│ ■│ □│
└──┴──┴──┘
```
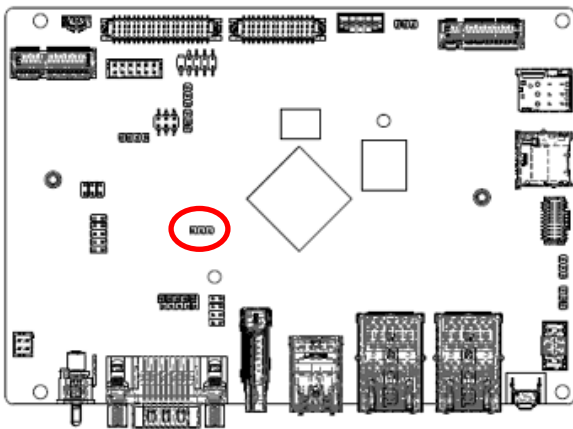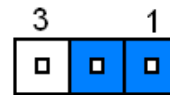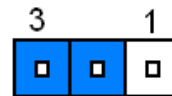
* Default

2.3.2   JUSBID connector (JUSBID)

Client Mode

```
 1          3
┌──┬──┬──┐
│ □│ ■│ ■│
└──┴──┴──┘
```

HOST *

```
 1          3
┌──┬──┬──┐
│ ■│ ■│ □│
└──┴──┴──┘
```
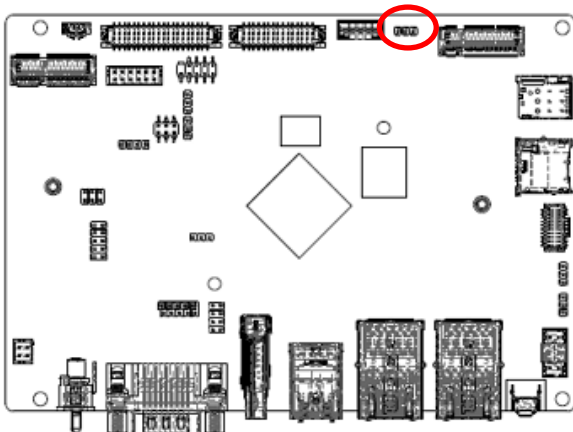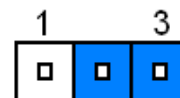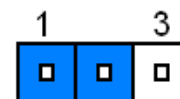
* Default

2.3.3 JPVDD connector (JPVDD1)
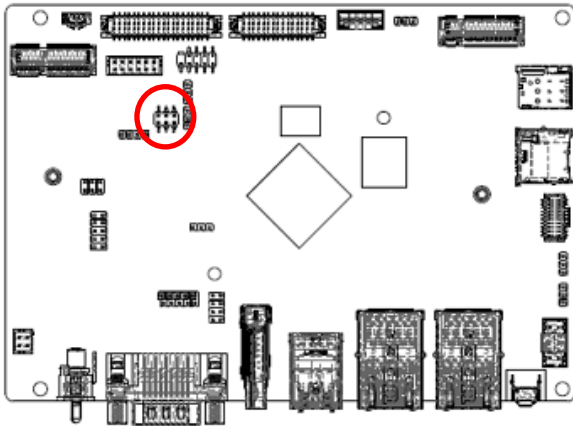
+3VALW*
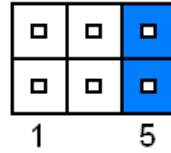
+5VALW
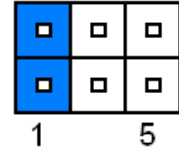
NC
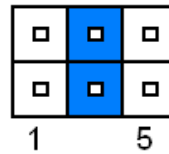
* Default

2.3.4 JRS4 connector (JRS4)
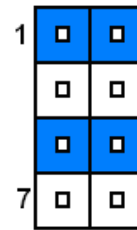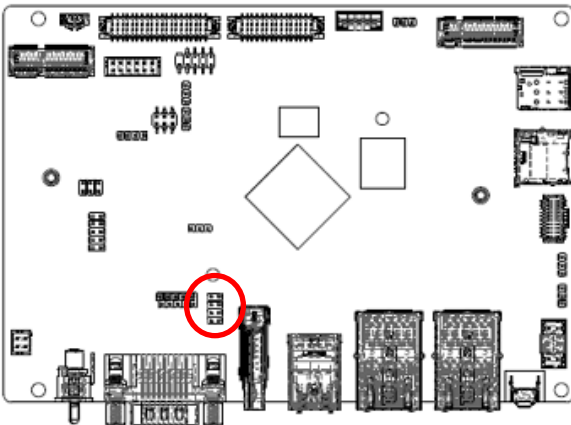
		RS-232	RS-485	RS-422
Mode		01	10	11
COMA	2	(1-2)	(1)	(1-2)
JDB1	4	(3)	(3-4)	(3-4)
COMB	6	(5-6)	(5)	(5-6)
JRS3	8	(7)	(7-8)	(7-8)

2.3.5   Battery connector (JRTC)
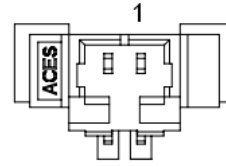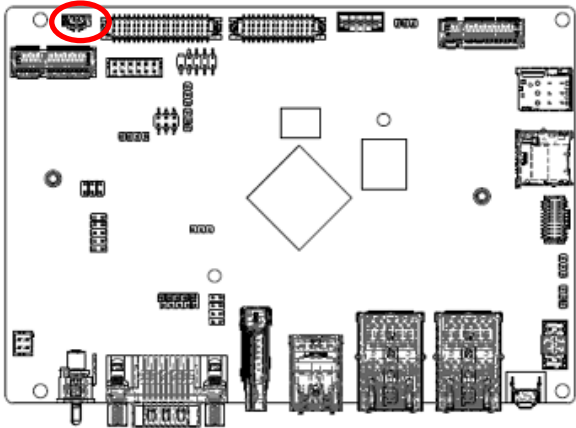
Signal	PIN
+RTCBATT	1
GND	2

* Default

2.3.6   Backlight control interface connector (JLVBL)
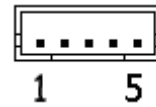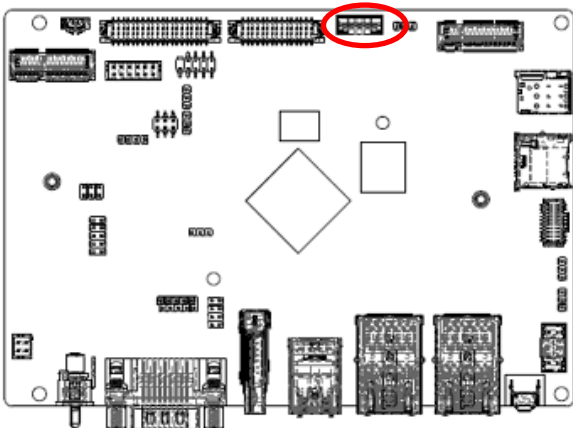
Signal	PIN
+12V_BL	1
+12V_BL	2
EN_BL	3
PWM_BL	4
GND	5

2.3.7 USB2.0 connector (JUSB2)

```
7            1
┌─────────────────┐
│ □  □  □  □ │
│ □  □  □  □  □ │
└─────────────────┘
```
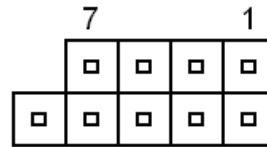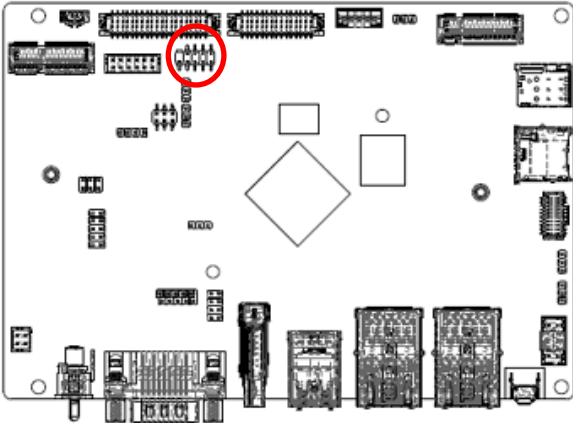
Signal	PIN	PIN	Signal
+USB_5V_TS	1	2	+USB_5V_TS
USB2_HUB3_DM_R	3	4	USB2_HUB4_DM_R
USB2_HUB3_DP_R	5	6	USB2_HUB4_DP_R
GND	7	8	GND
		10	GND

2.3.8 JAMIC connector (JAMIC1)

```
┌───────────┐
│ □  □  □ │
│ □  □  □ │
└───────────┘
  1     5
```
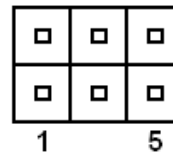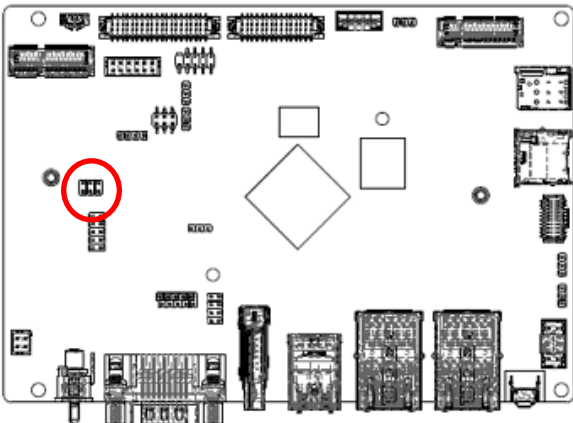
Signal	PIN	PIN	Signal
HP_RIGHT_R	1	2	HEAD_DET#_R
HP_LEFT_R	3	4	MIC1_INP
GND	5	6	MIC_JD#

2.3.9 J9505 connector (J9505)
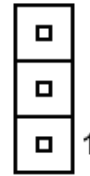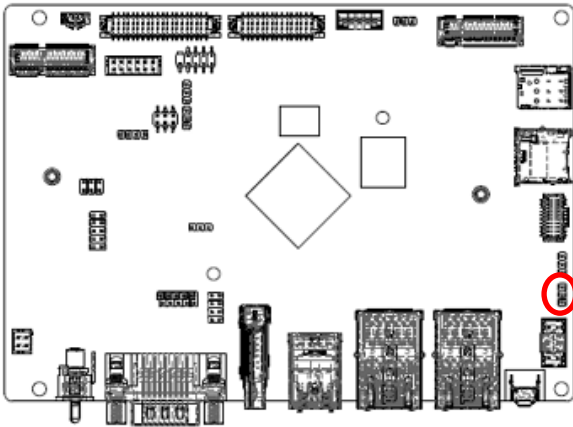
Signal	PIN
CAN1_VSS	3
CAN1_L	2
CAN1_H	1

2.3.10 J9506 connector (J9506)
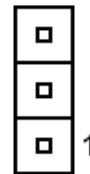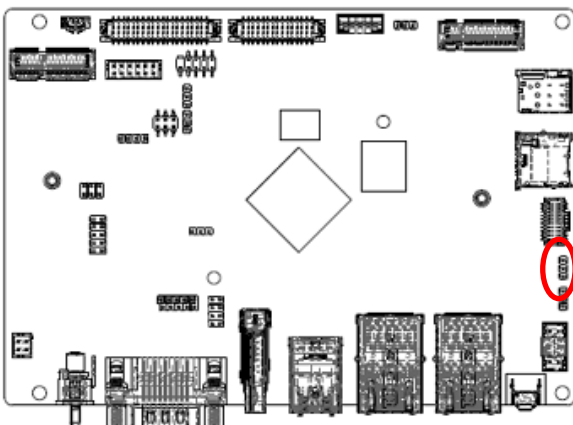
Signal	PIN
CAN_VSS	3
CANL	2
CANH	1

2.3.11 Speaker connector (JSPK1)
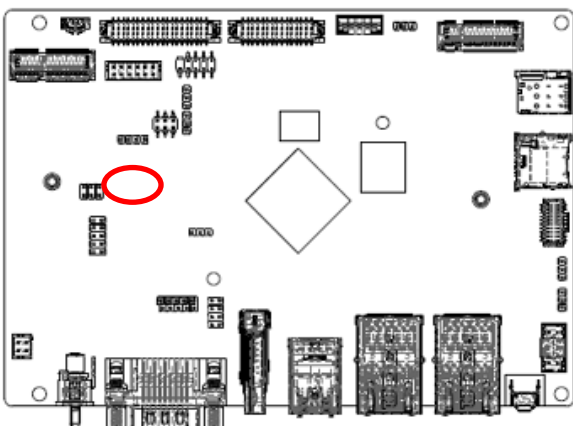
Signal	PIN
SPK_L+	1
SPK_L-	2
SPK_R+	3
SPK_R-	4

2.3.12   General purpose I/O connector (JDIO1)
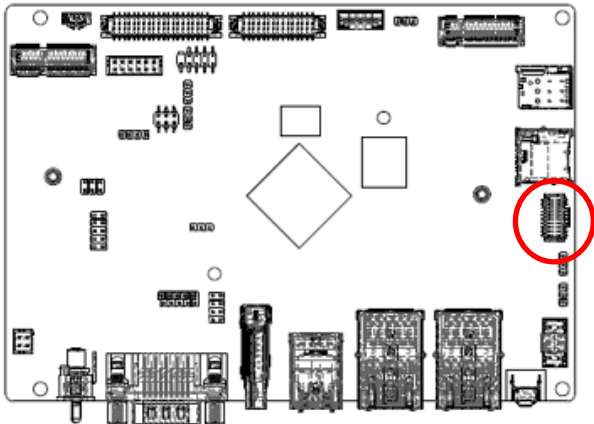
Signal	PIN	PIN	Signal
GND	20	19	+V5S_DIO
I2C_3_LV_SCL	18	17	I2C_3_LV_SDA
DIO_GP27	16	15	DIO_GP17
DIO_GP26	14	13	DIO_GP16
DIO_GP25	12	11	DIO_GP15
DIO_GP24	10	9	DIO_GP14
DIO_GP23	8	7	DIO_GP13
DIO_GP22	6	5	DIO_GP12
DIO_GP21	4	3	DIO_GP11
DIO_GP20	2	1	DIO_GP10
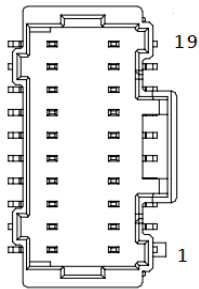
2.3.13   JDBG connector (JDBG1)
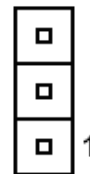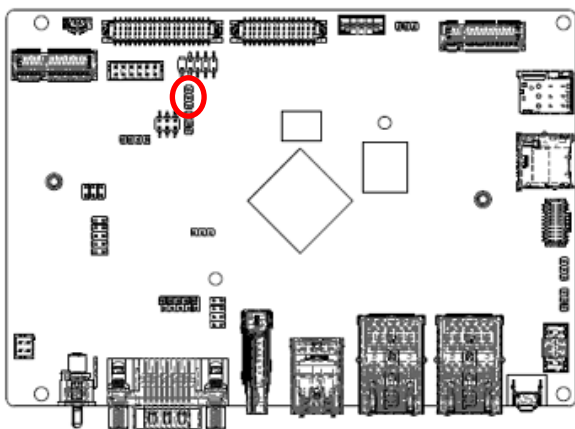
Signal	PIN
GND	3
DEBUG_RX2_CON	2
DEBUG_TX2_CON	1

2.3.14 JDBG connector (JDBG2)
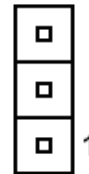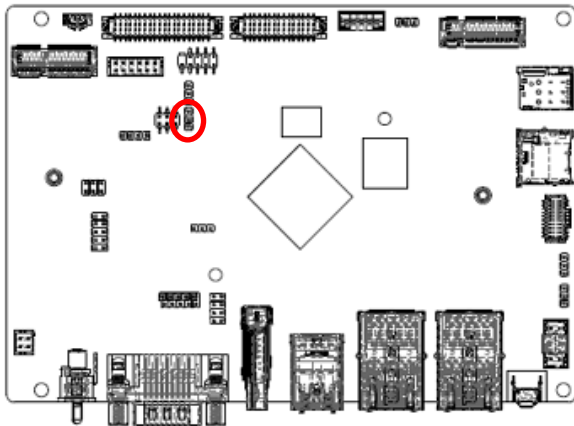
Signal	PIN
GND	3
RS232_RX3	2
RS232_TX3	1

2.3.15 eDP interface connector (JEDP1)
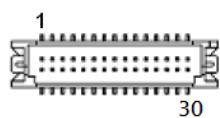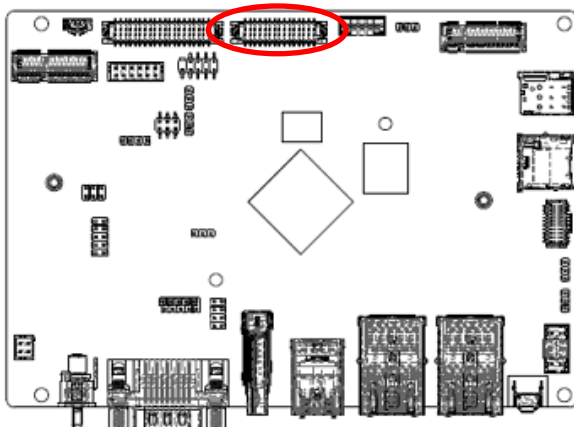
Signal	PIN	PIN	Signal
+12V_BL	2	1	+12V_BL
+12V_BL	4	3	+12V_BL
GND	6	5	GND
GND	8	7	GND
+PANEL_VDD	10	9	EDP_TX_D0P
+PANEL_VDD	12	11	EDP_TX_D0N
GND	14	13	GND
GND	16	15	EDP_TX_D1P
EDP_TX_AUXN	18	17	EDP_TX_D1N
EDP_TX_AUXP	20	19	GND
GND	22	21	EDP_HPD
GND	24	23	LCM_BL_EN_33V
GND	26	25	CPU_eDP_PWM_33V
GND	28	27	GND
GND	30	29	GND

2.3.16   LVDS connector (JLVDS1)
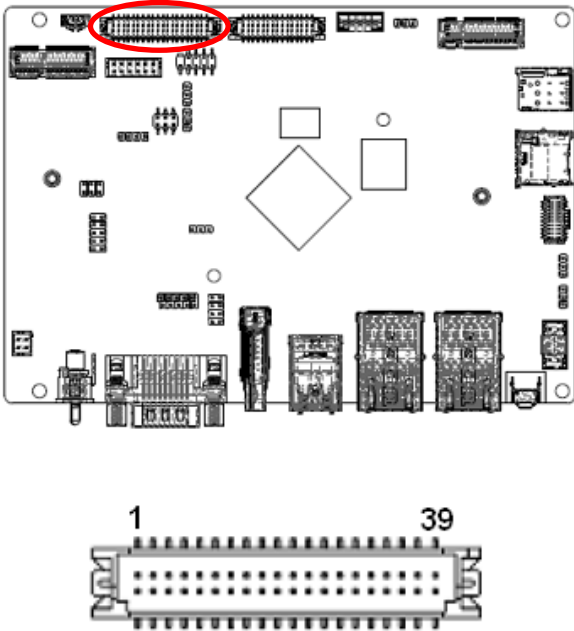
Signal	PIN	PIN	Signal
DSI_RESET#_3V3	2	1	+PANEL_VDD
7_10_BL	4	3	+PANEL_VDD
GND	6	5	GND
+PANEL_LEDK-	8	7	+PANEL_LEDA
+PANEL_LEDK-	10	9	+PANEL_LEDA
GND	12	11	GND
MIPI_DSI_TX1_D0N	14	13	MIPI_DSI_TX0_D0N
MIPI_DSI_TX1_D0P	16	15	MIPI_DSI_TX0_D0P
GND	18	17	GND
MIPI_DSI_TX1_D1N	20	19	MIPI_DSI_TX0_D1N
MIPI_DSI_TX1_D1P	22	21	MIPI_DSI_TX0_D1P
GND	24	23	GND
MIPI_DSI_TX1_CLKN	26	25	MIPI_DSI_TX0_CLKN
MIPI_DSI_TX1_CLKP	28	27	MIPI_DSI_TX0_CLKP
GND	30	29	GND
MIPI_DSI_TX1_D2N	32	31	MIPI_DSI_TX0_D2N
MIPI_DSI_TX1_D2P	34	33	MIPI_DSI_TX0_D2P
GND	36	35	GND
MIPI_DSI_TX1_D3N	38	37	MIPI_DSI_TX0_D3N
MIPI_DSI_TX1_D3P	40	39	MIPI_DSI_TX0_D3P

2.3.17   JDCIN connector (JDCIN2)
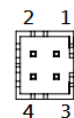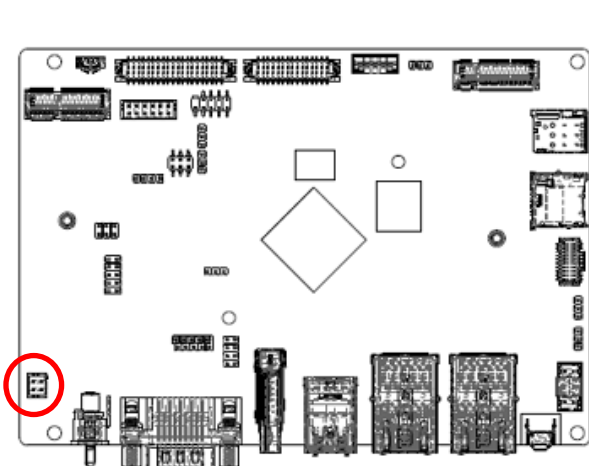
Signal	PIN	PIN	Signal
GND	2	1	+24V_ADP
GND	4	3	+24V_ADP

2.3.18 JRS connector (JRS2)
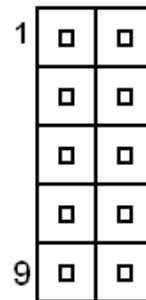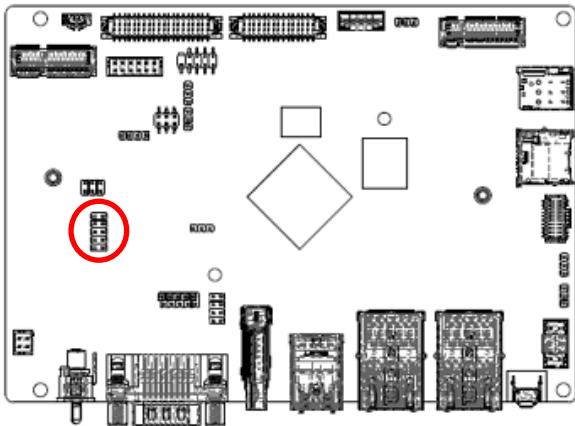
Signal	PIN	PIN	Signal
COM4_RXD	1	2	COM3_RXD
COM4_TXD	3	4	COM3_TXD
COM4_RTS	5	6	COM3_RTS
COM4_CTS	7	8	COM3_CTS
GND	9	10	GND

2.3.19 JRS connector (JRS3)
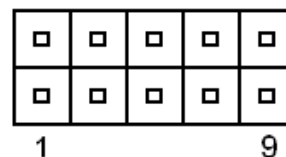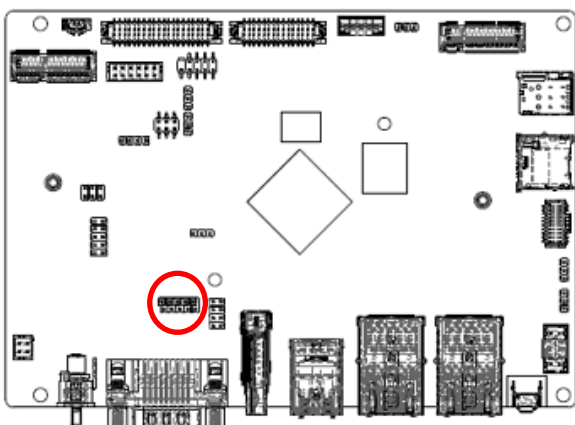
Signal	PIN	PIN	Signal
RXD_B	1	2	DCD#_B
TXD_B	3	4	DTR#_B
RTS#_B	5	6	N/A
CTS#_B	7	8	N/A
GND	9	10	N/A

2.3.20　JSENSE connector (JSENSE)
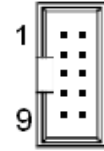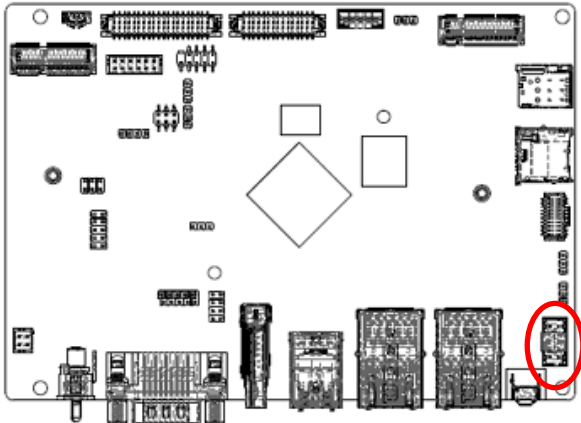
Signal	PIN	PIN	Signal
+3VS_SEN_CONN	1	2	+3VS_SEN_CONN
I2C3_SCL_3.3V_CONN	3	4	I2C5_SCL_3.3V_CONN
I2C3_SDA_3.3V_CONN	5	6	I2C5_SDA_3.3V_CONN
SENSE0_IRQ_R	7	8	SENSE2_IRQ_R
GND	9	10	GND

2.3.21　JTB connector (JTB1)
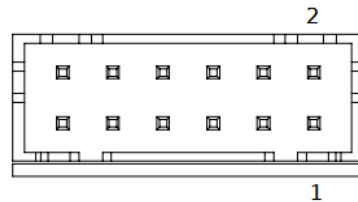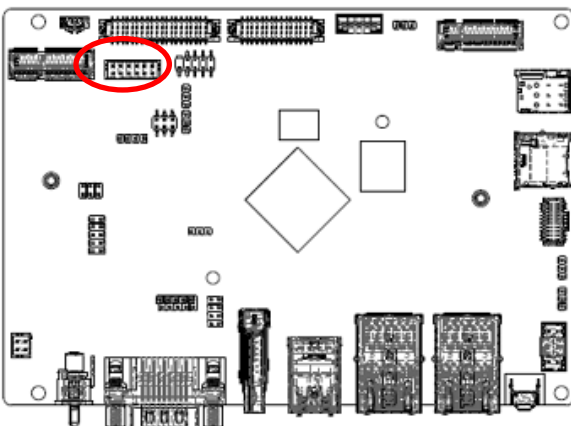
Signal	PIN	PIN	Signal
GND	2	1	+PWR_JTB1 (+5VALW)
BU1_TV_3V	4	3	LINUX_SW
VOL_DOWN_3V	6	5	VOL_UP_3V
BU_BR+_3V	8	7	PWRBTN_3V
BU7_3V	10	9	BU_BR-_3V
LED_ORANGE_R	12	11	LED_GREEN_R

3. Mechanical Drawing

146.05

101.6

1.6

18
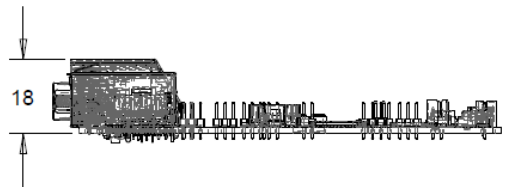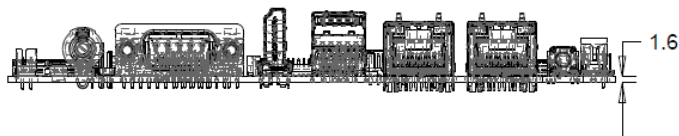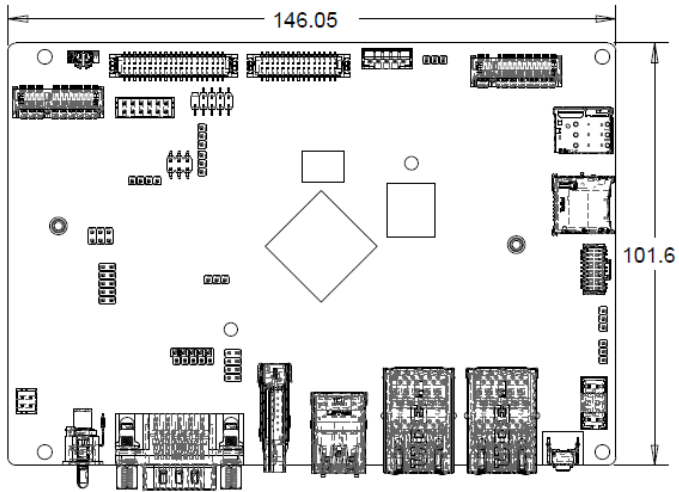
Unit: mm

4. Maintenance & Troubleshooting

System Maintenance Introduction

If the components of the product fail they must be replaced.

Please contact the system reseller or vendor to purchase the replacement parts. Please follow the safety precautions outlined in the sections that follow

General Safety Precautions

Please ensure the following safety precautions are adhered to at all times.

1. Follow the electrostatic precautions outlined below whenever the device is opened.

2. Make sure the power is turned off and the power cord is disconnected whenever the product is being installed, moved or modified.

3. To prevent the risk of electric shock, make sure power cord is unplugged from wall socket. To fully disengage the power to the unit, please disconnect the power cord from the AC outlet. Refer servicing to qualified service personnel. The AC outlet shall be readily available and accessible.

4. Do not apply voltage levels that exceed the specified voltage range. Doing so may cause fire and/or an electrical shock. Use a power cord that matches the voltage of the power outlet, which has been approved and complies with the safety standard of your particular country.

5. Electric shocks can occur if the product chassis is opened when it is running. To avoid risk of electric shock, this device must only be connected to a supply mains with protective earth.

6. Do not drop or insert any objects into the ventilation openings of the product.

7. If considerable amounts of dust, water, or fluids enter the device, turn off the power supply immediately, unplug the power cord, and contact your dealer or the nearest service center.

8. This equipment is not suitable for use in locations where children are likely to be present.

9. DO NOT:

- Drop the device.
- In a site where the ambient temperature exceeds the rated temperature.

Anti-Static Precautions

WARNING:

Failure to take ESD precautions during the installation of the product may result in permanent damage to the product and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the product. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the product is opened and any of the electrical components are handled, the following anti-static precautions are strictly adhered to.

- Wear an anti-static wristband: Wearing a simple anti-static wristband can help to prevent ESD from damaging any electrical component.
- Self-grounding: Before handling any electrical component, touch any grounded conducting material. During the time the electrical component is handled, frequently touch any conducting materials that are connected to the ground.
- Use an anti-static pad: When configuring or working with an electrical component, place it on an anti-static pad. This reduces the possibility of ESD damage.
- Only handle the edges of the electrical component. When handling the electrical component, hold the electrical component by its edges. Please ensure the following safety precautions are adhered to at all times.

Maintenance and Cleaning

When maintaining or cleaning the product, please follow the guidelines below.

WARNING:
● For safety reasons, turn-off the power and unplug the PC before cleaning.
● If you dropped any material or liquid such as water onto the PC when cleaning, unplug the power cable immediately and contact your dealer or the nearest service center. Always make sure your hands are dry when unplugging the power cable.

Maintenance and Cleaning

Prior to cleaning any part or component of the product, please read the details below.
● Never spray or squirt liquids directly onto any other components.
● The interior of the device does not require cleaning. Keep fluids away from the device interior.
● Be cautious of all small removable components when vacuuming the device.
● Never drop any objects or liquids through the openings of the device.
● Be cautious of any possible allergic reactions to solvents or chemicals used when cleaning the device.
● Avoid eating, drinking and smoking within vicinity of the device.

Basic Troubleshooting

PEI Beep Codes

# of Beeps	Description
1	Memory not Installed
2	Recovery started
3	Typically for development use. The beep code is generated when DXEIPL PPI or DXE Core is not found.
4	Recovery failed
4	S3 Resume failed
7	Typically for development use. The beep code is generated when platform cannot be reset because reset PPI is not available.

DXE Beep Codes

# of Beeps	Description
1	Invalid password
4	Typically for development use. The beep code is generated when some of the Architectural Protocols are not available.
5	No Console Input or Output Devices are found
5	No Console Input Devices are found
6	Flash update is failed
7	Typically for development use. The beep code is generated when platform cannot be reset because reset protocol is not available.
8	Platform PCI resource requirements cannot be met