

DS-230

Main Board Module

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Product Warranty (24 months)

Advantech warrants to you, the original purchaser, that each 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 which have been repaired or altered by persons other than repair personnel authorized by Advantech, or which have been subject to misuse, abuse, accident or improper installation. Advantech assumes no liability under the terms of this warranty as a consequence of such events.

Because of Advantech's high quality-control standards and rigorous testing, most of our customers never need to use our repair service. If an Advantech product is defective, it will be repaired or replaced at no charge during the warranty period. For out-of-warranty repairs, you will be billed according to the cost of replacement materials, service time and freight. Please consult your dealer for more details.

If you think you have a defective product, follow these steps:

- 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 you get when the problem occurs.
- Call your dealer and describe the problem. Please have your manual, product, and any helpful information readily available.
- If your product is diagnosed as defective, obtain an RMA (return merchandise authorization) number from your dealer. This allows us to process your return more quickly.
- Carefully pack the defective product, a fully-completed Repair and Replacement Order Card and a photocopy of the proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.
- Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

Declaration of Conformity

– FCC Class B

- Declaration based on 47 CFR 15.19(a)(3)

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

- (1) This device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.”

- Statement for Class B based on 47 CFR 15.105(b)

“ Note: 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 a residential installation. 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, the user is 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 the dealer or an experienced radio/TV technician for help.”



Technical Support and Assistance

1. Visit the Advantech website at www.advantech.com/support where you can find the latest information about the product.
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 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

Warnings, Cautions and Notes



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



Caution! Cautions are included to help you avoid damaging hardware or losing data. e.g. There is a danger of a new battery exploding if it is incorrectly installed. Do not attempt to recharge, force open, or heat the battery. Replace the battery only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.



Note! Notes provide optional additional information.



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



CAUTION: To avoid risk of electric shock, this equipment must only be connected to supply mains with protective earth.



restricted access area

area accessible only to skilled persons and instructed persons with the proper authorization



Avertissements, mises en garde et notes



Attention! Les avertissements indiquent des conditions qui, si elles ne sont pas observées, peuvent causer des blessures!



Mise en garde! Des précautions sont incluses pour vous aider à éviter d'endommager le matériel ou à perdre des données. par exemple. Une pile neuve risque d'exploser si elle n'est pas installée correctement. N'essayez pas de recharger, d'ouvrir de force ou de chauffer la batterie. Remplacez la pile uniquement par le même type ou un type équivalent recommandé par le fabricant. Jetez les piles usagées conformément aux instructions du fabricant.



Remarque! Les notes fournissent des informations supplémentaires facultatives.



Cet équipement ne convient pas à une utilisation dans des lieux pouvant accueillir des enfants.



ATTENTION: Pour éviter tout risque d'électrocution, cet équipement ne doit être branché qu'au réseau d'alimentation avec une terre de protection.

Safety Instructions

1. Read these safety instructions carefully.
2. Keep this User Manual for later reference.
3. Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for 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. The openings on the enclosure are for air convection. Protect the equipment from overheating. **DO NOT COVER THE OPENINGS.**
8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
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.
14. If one of the following situations arises, get 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 does not work well, or you cannot get it to work according to the user's manual.
 - The equipment has been dropped and damaged.
 - The equipment has obvious signs of breakage.
15. **DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT WHERE THE STORAGE TEMPERATURE MAY GO BELOW -20° C (-4° F) OR ABOVE 60° C (140° F). THIS COULD DAMAGE THE EQUIPMENT. THE EQUIPMENT SHOULD BE IN A CONTROLLED ENVIRONMENT.**
16. **CAUTION: DANGER OF EXPLOSION IF BATTERY IS INCORRECTLY REPLACED. REPLACE ONLY WITH THE SAME OR EQUIVALENT TYPE RECOMMENDED BY THE MANUFACTURER, DISCARD USED BATTERIES ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.**
17. The sound pressure level at the operator's position according to IEC 704-1:1982 is no

more than 70 dB (A).

18. RESTRICTED ACCESS AREA: The equipment should only be installed in a Restricted Access Area.
19. DISCLAIMER: This set of instructions is given according to IEC 704-1. Advantech disclaims all responsibility for the accuracy of any statements contained herein.

Consignes de sécurité

1. Lisez attentivement ces instructions de sécurité.
2. Conservez ce manuel de l'utilisateur pour référence ultérieure.
3. Débranchez cet appareil de toute prise secteur avant le nettoyage. Utilisez un chiffon humide. N'utilisez pas de détergents liquides ou en aérosol pour le nettoyage.
4. Pour les équipements enfichables, la prise de courant doit être située à proximité de l'équipement et doit être facilement accessible.
5. Gardez cet équipement à l'abri de l'humidité.
6. Placez cet équipement sur une surface fiable lors de l'installation. Le laisser tomber ou le laisser tomber peut causer des dommages.
7. Les ouvertures sur le boîtier sont destinées à la convection de l'air. Protégez l'équipement de la surchauffe. NE COUVREZ PAS LES OUVERTURES.
8. Assurez-vous que la tension de la source d'alimentation est correcte avant de connecter l'équipement à la prise de courant.
9. Positionnez le cordon d'alimentation de sorte que personne ne puisse marcher dessus. Ne placez rien sur le cordon d'alimentation.
10. Tous les avertissements et mises en garde sur l'équipement doivent être notés.
11. Si l'équipement n'est pas utilisé pendant une longue période, débranchez-le 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 un choc électrique.
13. Ne jamais ouvrir l'équipement. Pour des raisons de sécurité, l'équipement ne doit être ouvert que par du personnel qualifié.
14. Si l'une des situations suivantes se produit, faites vérifier l'équipement par le personnel de service:
 1. Le cordon d'alimentation ou la fiche est endommagé
 2. Un liquide a pénétré dans l'équipement.
 3. L'équipement a été exposé à l'humidité.
 4. L'équipement ne fonctionne pas bien ou vous ne pouvez pas le faire fonctionner conformément au manuel d'utilisation.
 5. L'équipement est tombé et a été endommagé.
 6. L'équipement présente des signes évidents de rupture.
15. NE PAS LAISSER CET ÉQUIPEMENT DANS UN ENVIRONNEMENT O LA TEMPÉRATURE DE STOCKAGE POURRAIT ÊTRE INFÉRIEURE À -20 ° C (-4 ° F) OU SUPÉRIEURE À 60 ° C (140 ° F). CELA POURRAIT ENDOMMAGER L'ÉQUIPEMENT. L'ÉQUIPEMENT DOIT ÊTRE DANS UN ENVIRONNEMENT CONTRÔLÉ.
16. ATTENTION: DANGER D'EXPLOSION EN CAS DE REMPLACEMENT INCORRECT DE LA BATTERIE. REMPLACEZ UNIQUEMENT AVEC LE MÊME TYPE OU LE TYPE ÉQUIVALENT RECOMMANDÉ PAR LE FABRICANT, DÉPOSEZ LES PILES UTILISÉES SELON LES INSTRUCTIONS DU FABRICANT.
17. Le niveau de pression acoustique au poste de l'opérateur selon la norme CEI 704-1: 1982 n'est pas supérieur à 70 dB (A).
18. ZONE D'ACCÈS RESTRICTED: L'équipement ne doit être installé que dans une zone d'accès restreint.
 7. 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 document.

Packing List

Before installation, please ensure the following items have been shipped:

- 1 x DS-230 SDM Module
- 1 x WiFi antenna kit (depends on configuration)

Chapter 1

General Introduction

This chapter gives background
information on DS-230 series

1.1 Introduction

The DS-230 design is based on the Intel SDM specification and is powered by Intel® processors. DS-230 delivers 4K UHD output and smooth content streaming via a card edge connector, while maintaining high-energy efficiency. DS-230 allows slot-in integration that reduces space requirements and lowers deployment and field maintenance costs. It also features built-in I/O such as HDMI, mini DP++, USB 3.2, and a single LAN (RJ-45). DS-230 enables media playback and display and is ideal for all-in-one signage applications with space constraints.

1.2 Product Features

1.2.1 General

- Supports Intel i5 1235U, Pentium 8505
- Supports DP 1.4a & HDMI 2.0
- Supports M.2 2242 M Key for storage
- Built-in M.2 2230 E Key slot for easy expansion

1.2.2 Display

- SDM interface: HDMI 2.0 x 1, DP 1.4a x 1 @3840x2160 60Hz
Front bracket : DP 1.4a x 1 @3840x2160 60Hz

1.2.3 Thermal Solution

- Active cooling with Fan (maximum noise level less than 30dB)

1.3 Hardware & Software Specifications

- CPU: Intel i5 1235U, Pentium 8505
- System Chipset: Built-in CPU
- Graphic chipset: Integrated graphics built in Processor
- BIOS AMI uEFI 256 Mbit
- System Memory: 2 x 260pin DDR4 SODIMM, Up to 16GB single DIMM
- Storage: M.2 2242 M Key

- Operating System: Windows 10 IoT LTSC 2021, Windows 11 IoT LTSC 2024, Linux OS, Chrome OS
- SUSI: SUSI is Advantech unique hardware management that provided in standard DS-230

Windows image. Below function are included.

Watchdog Timer

Hardware Monitor

System information

- **IO Interfaces**

- Golden Finger x 1 (PCIe x8. The pin define follows Intel® SDM specifications)
- DP++ x 1
- 2 x USB 3.2 Gen2

- Ethernet Chipset:

- Speed: 10/100/1000/2500 Mbps
- Interface: 1 x RJ-45 jacks with LED
- Standard: IEEE 802.3bz (2500 Base-T) or IEEE 802.3z/ab (1000 Base-T) or IEEE 802.3u 100 Base-T compliant

- **Resolution:**

HDMI 2.0 x 1, DP 1.4a x 1 @3840x2160 60Hz

DP 1.4a x 1 @3840x2160 60Hz

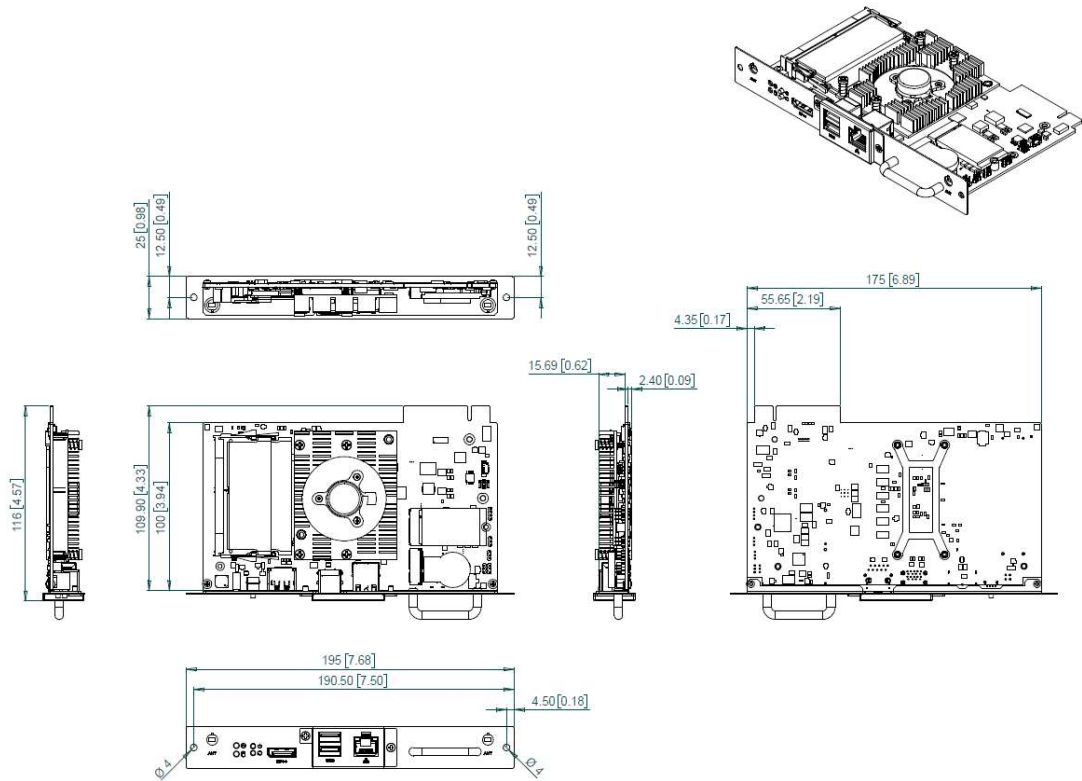
- **Expansion**

- M.2 2230 E Key x 1 for WiFi/BT
- M.2 2242 M key x 1 for storage (SATA/NVMe)

1.4 Mechanical Specification

1.4.1 Dimension

175x100x20 mm (L x W x H)



unit : mm [inch]

Figure1.1 : Diemnsions

1.4.2 Weight

1 kg

1.5 Power Requirements

1.5.1 System Power

Continuous: 12V/5.5A

Peak(max 10ms) : 12V/5.5A

1.5.2 RTC Battery

BATTERY 3V 195mAH BR2032

1.6 Environmental Specifications

1.6.1 Operating Temperature

0° C - 55°C @0.7m/s air flow

1.6.2 Relative Humidity

95% @ 40°C (Non Condensing)

1.6.3 Storage Temperature

-20 ~ 60°C (-4~140°F)

1.6.4 Vibration Loading During Operation

0.5 Grms, IEC 60068-2-64, random, 5 ~ 500 Hz, 1 hr/axis.

1.6.5 Shock During Vibration

20 G, IEC 60068-2-27, half sine, 11 ms duration

1.6.6 EMC

EMC, FCC, VCCI, RCM, UKCA (Class B for all)

Chapter 2

Hardware configuration

This chapter introduces external IO and the installation of DS-230 series Hardware

2.1 DS-230 Series I/O Connectors

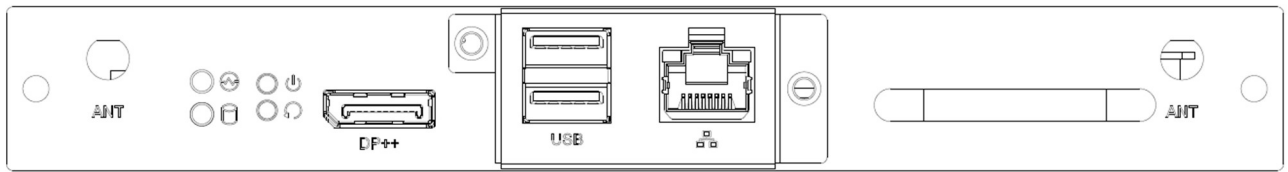


Figure2.1 : I/O Bracket

2.1.1 LED

Below LED indicator means power on status when it shows green.



Figure2.2 : Power

Below LED indicator means SSD status when it shows yellow.



Figure2.3 : SSD

2.1.2 Power On/off & Reset button

Push below button to power on/off DS-230.



Figure2.4 : Power Button

Push below button to reset DS-230.



Figure2.5 : Rest Button

2.1.3 DP

Below connector is DP connector to let user to connect to external display which is with DP interface.

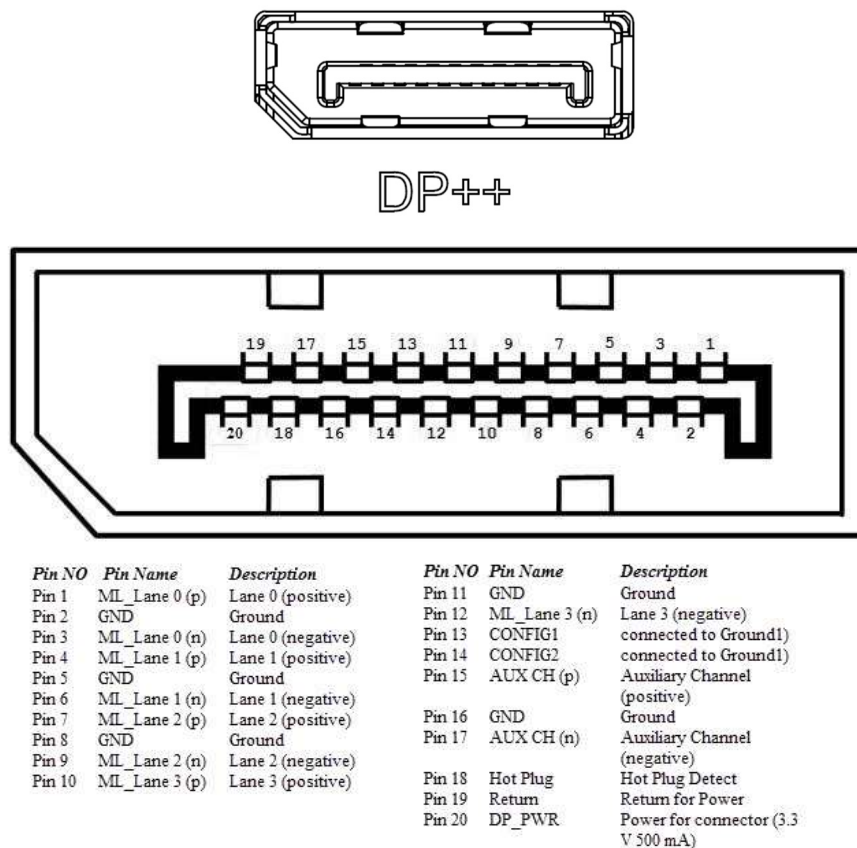


Figure2.6 : DP connector

2.1.4 USB 3.2 connector

DS-230 supports 2x USB 3.2 interfaces. The USB interfaces complies with USB UHCI, Rev. 3.2 standards. Please refer to Table for its pin assignments. USB 3.2 connectors contain legacy pins to interface with USB 2.0 devices, and a new set of pins for USB 3.2 connectivity.

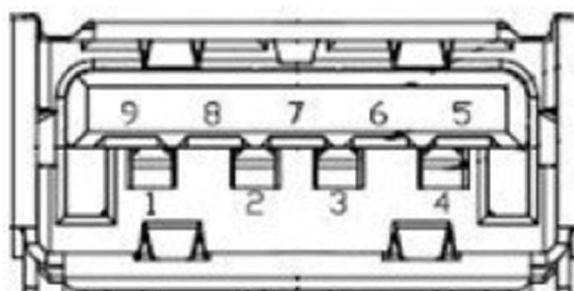


Figure2.7 : USB connector

Pin	Signal Name	Pin	Signal Name
1	+5V	2	USB_Data-
3	USB_Data+	4	GND
5	SSRX-	6	SSRX+
7	GND	8	SSTX-
9	SSTX+		

2.1.5 LAN Connector

DS-230 provides one RJ-45 LAN interface connector, fully compliant with IEEE802.3u 10/100/1000/2500 Base-T CSMA/CD standards. The Ethernet port provides a standard RJ-45 jack connector with LED indicators to show its Active/Link status and speed status.

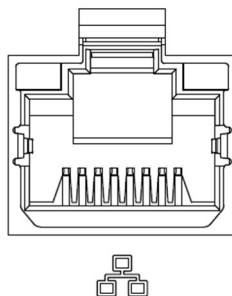


Figure2.9 : RJ45 connector

LAN Port Pin Assignments	
Pin	Signal
1	MDI0+
2	MDI0-
3	MDI1+
4	MDI1-
5	GND
6	GND
7	MDI2+
8	MDI2-

Right side LED: Green LED	
Link Status	Always turn on without transmitting/receiving data
Activity status	Flash
Left side LED: Green/Orange LED	
Status	Display
10Mbps	Always off
100Mbps	Green
1000Mbps	Orange

2.1.6 Wi-Fi Antenna

DS-230 provides two WiFi antenna connectors to connect with SMA antenna.



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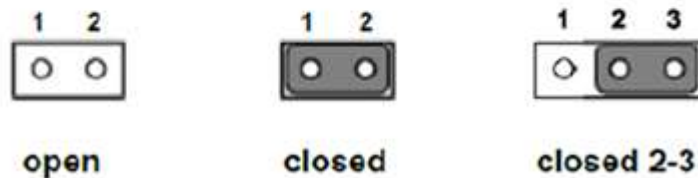
Figure2.10 : SMA connector

2.1.7 Jumpers

DS-230 can be configured to satisfy specific application requirements by setting jumpers. A jumper is a metal bridge used to close an electric circuit. 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, connect the pins with the clip. To open a jumper, remove the clip. Sometimes a jumper will have three pins – labeled 1, 2, and 3. For these jumpers, connect either pins 1 and 2, or 2 and 3.



The jumper settings are schematically depicted as follows.

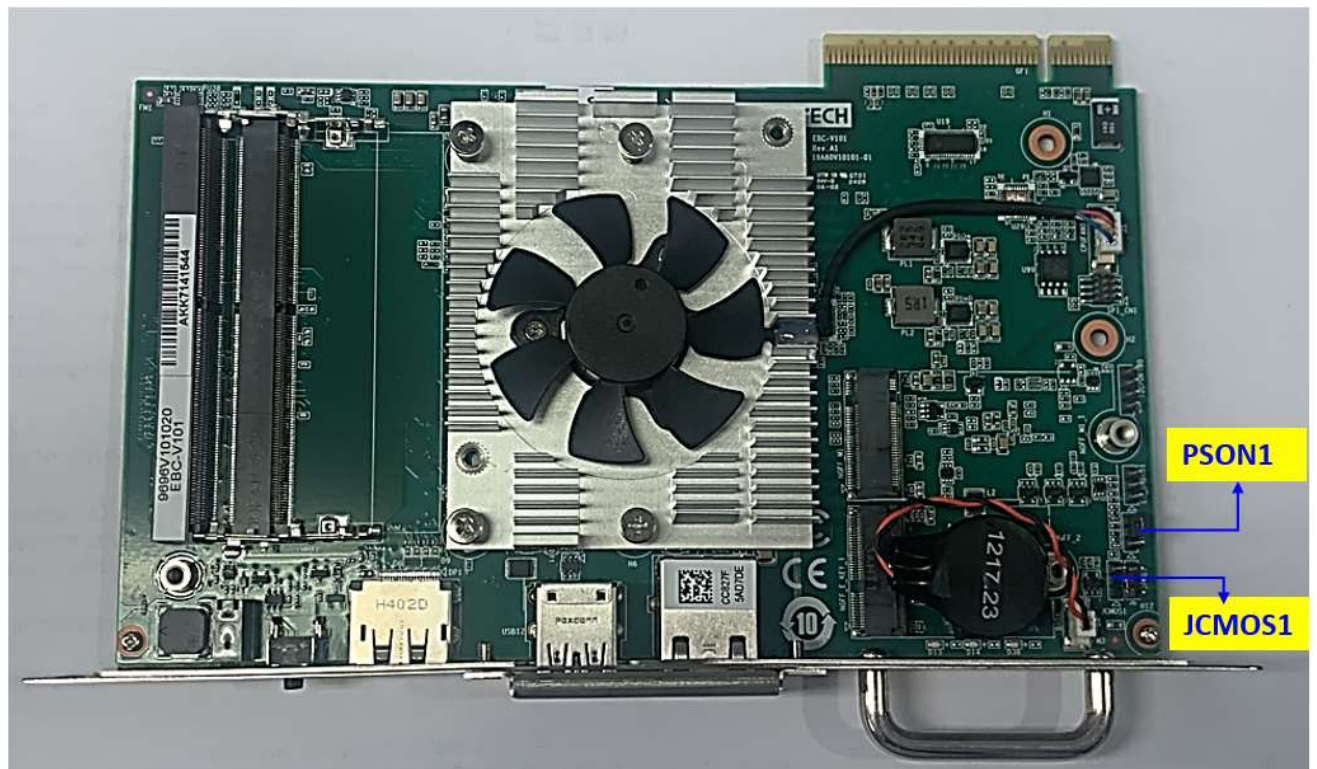


A pair of needle-nose pliers may be necessary when working with jumpers. Users with concerns about the ideal hardware configuration for their application should contact their local distributor or sales representative before making any changes. Generally, only a standard cable is required to make connections.

2.1.7.1 Jumper List

Jumper Settings	
Location	Function
PSON1	AT/ATX Mode
JCMOS1	Clear CMOS

2.1.7.2 Jumper Locations



2.1.7.3 Jumper Settings

PSON1	
PIN	Description
1-2	AT mode
2-3	ATX mode (default)

JCMOS1	
PIN	Description
1-2	Normal operation (default)
2-3	Clear CMOS