NEXCOM International Co., Ltd.

Intelligent Platform & Services Business Unit

AI Edge Computer

AIEdge-X®80 Series

User Manual

NEXCOM International Co., Ltd.
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www.nexcom.com

CONTENTS

Appendix A: Running the Software

PREFACE

Copyright

Disclaimer

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Acknowledgements

AIEdge-X®80 and its series are trademarks of NEXCOM International Co., Ltd. All other product names mentioned herein are registered trademarks of their respective owners.

Regulatory Compliance Statements

This section provides the FCC compliance statement for Class A devices and describes how to keep the system CE compliant.

Declaration of Conformity

FCC

This equipment has been tested and verified to comply with the limits for a Class A digital device, pursuant to Part 15 of 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 instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area (domestic environment) is likely to cause harmful interference, in which case the user will be required to correct the interference (take adequate measures) at their own expense.

CE

The product(s) described in this manual complies with all applicable 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.

RoHS Compliance

NEXCOM RoHS Environmental Policy and Status Update

NEXCOM is a global citizen for building the digital infrastructure. We are committed to providing green products and services, which are compliant with European Union RoHS (Restriction on Use of Hazardous Substance in Electronic Equipment) directive 2011/65/EU, to be your trusted green partner and to protect our environment.

RoHS restricts the use of Lead (Pb) < 0.1% or 1,000ppm, Mercury (Hg) < 0.1% or 1,000ppm, Cadmium (Cd) < 0.01% or 100ppm, Hexavalent Chromium (Cr6+) < 0.1% or 1,000ppm, Polybrominated biphenyls (PBB) < 0.1% or 1,000ppm, and Polybrominated diphenyl Ethers (PBDE) < 0.1% or 1,000ppm.

In order to meet the RoHS compliant directives, NEXCOM has established an engineering and manufacturing task force to implement the introduction of green products. The task force will ensure that we follow the standard NEXCOM development procedure and that all the new RoHS components and new manufacturing processes maintain the highest industry quality levels for which NEXCOM are renowned.

The model selection criteria will be based on market demand. Vendors and suppliers will ensure that all designed components will be RoHS compliant.

How to recognize NEXCOM RoHS Products?

For existing products where there are non-RoHS and RoHS versions, the suffix "(LF)" will be added to the compliant product name.

All new product models launched after January 2013 will be RoHS compliant. They will use the usual NEXCOM naming convention.

Warranty and RMA

NEXCOM Warranty Period

NEXCOM manufactures products that are new or equivalent to new in accordance with industry standard. NEXCOM warrants that products will be free from defect in material and workmanship for 2 years, beginning on the date of invoice by NEXCOM.

NEXCOM Return Merchandise Authorization (RMA)

- Customers shall enclose the "NEXCOM RMA Service Form" with the returned packages.
- Customers must collect all the information about the problems encountered and note anything abnormal or, print out any on-screen messages, and describe the problems on the "NEXCOM RMA Service Form" for the RMA number apply process.
- Customers can send back the faulty products with or without accessories (manuals, cable, etc.) and any components from the card, such as CPU and RAM. If the components were suspected as part of the problems, please note clearly which components are included. Otherwise, NEXCOM is not responsible for the devices/parts.
- Customers are responsible for the safe packaging of defective products, making sure it is durable enough to be resistant against further damage and deterioration during transportation. In case of damages occurred during transportation, the repair is treated as "Out of Warranty."
- Any products returned by NEXCOM to other locations besides the customers' site will bear an extra charge and will be billed to the customer.

Repair Service Charges for Out-of-Warranty Products

NEXCOM will charge for out-of-warranty products in two categories, one is basic diagnostic fee and another is component (product) fee.

System Level

- Component fee: NEXCOM will only charge for main components such as SMD chip, BGA chip, etc. Passive components will be repaired for free, ex: resistor, capacitor.
- Items will be replaced with NEXCOM products if the original one cannot be repaired. Ex: motherboard, power supply, etc.
- Replace with 3rd party products if needed.
- If RMA goods can not be repaired, NEXCOM will return it to the customer without any charge.

Board Level

- Component fee: NEXCOM will only charge for main components, such as SMD chip, BGA chip, etc. Passive components will be repaired for free, ex: resistors, capacitors.
- If RMA goods can not be repaired, NEXCOM will return it to the customer without any charge.

Warnings

Read and adhere to all warnings, cautions, and notices in this guide and the documentation supplied with the chassis, power supply, and accessory modules. If the instructions for the chassis and power supply are inconsistent with these instructions or the instructions for accessory modules, contact the supplier to find out how you can ensure that your computer meets safety and regulatory requirements.

Cautions

- Electrostatic discharge (ESD) can damage system components. Do the described procedures only at an ESD workstation. If no such station is available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to a metal part of the computer chassis.
- Proper grounding is essential to protect against electrical surges and ensure stable operation. Always connect the grounding wire.

Safety Information

Before installing and using the device, note the following precautions:

- Read all instructions carefully.
- Do not place the unit on an unstable surface, cart, or stand.
- Follow all warnings and cautions in this manual.
- When replacing parts, ensure that your service technician uses parts specified by the manufacturer.
- Avoid using the system near water, in direct sunlight, or near a heating device.
- The load of the system unit does not solely rely for support from the rackmounts located on the sides. Firm support from the bottom is highly necessary in order to provide balance stability.
- The computer is provided with a battery-powered real-time clock circuit. There is a 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.

Installation Recommendations

Ensure you have a stable, clean working environment. Dust and dirt can get into components and cause a malfunction. Use containers to keep small components separated.

Adequate lighting and proper tools can prevent you from accidentally damaging the internal components. Most of the procedures that follow require only a few simple tools, including the following:

- A Philips screwdriver
- A flat-tipped screwdriver
- A grounding strap
- An anti-static pad

Using your fingers can disconnect most of the connections. It is recommended that you do not use needle-nose pliers to disconnect connections as these can damage the soft metal or plastic parts of the connectors.

Safety Precautions

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 stable surface during installation. Dropping it or letting it fall may cause damage.

7. The openings on the enclosure are for air convection to 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. Place the power cord in a way so that people will not step on it. Do not place anything on top of the power cord. Use a power cord that has been approved for use 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.

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:
    a. The power cord or plug is damaged.
    b. Liquid has penetrated into the equipment.
    c. The equipment has been exposed to moisture.
    d. The equipment does not work well, or you cannot get it to work according to the user's manual.
    e. The equipment has been dropped and damaged.
    f. The equipment has obvious signs of breakage.

15. Do not place heavy objects on the equipment.

16. The unit uses a three-wire ground cable which is equipped with a third pin to ground the unit and prevent electric shock. Do not defeat the purpose of this pin. If your outlet does not support this kind of plug, contact your electrician to replace your obsolete outlet.

17. **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.

Technical Support and Assistance

1. For the most updated information of NEXCOM products, visit NEXCOM's website at www.nexcom.com.

2. For technical issues that require contacting our technical support team or sales representative, please have the following information ready before calling:
   - Product name and serial number
   - Detailed information of the peripheral devices
   - Detailed information of the installed software (operating system, version, application software, etc.)
   - A complete description of the problem
   - The exact wordings of the error messages

Warning!

1. Handling the unit: carry the unit with both hands and handle it with care.

2. Maintenance: to keep the unit clean, use only approved cleaning products or clean with a dry cloth.

Conventions Used in this Manual

Warning:
Information about certain situations, which if not observed, can cause personal injury. This will prevent injury to yourself when performing a task.

Caution:
Information to avoid damaging components or losing data.

Note:
Provides additional information to complete a task easily.

Global Service Contact Information

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Package Contents

Before continuing, please verify the contents of the product package. The items included are listed in the table below.

Item	Name	Qty
1	AIEdge-X80-NX16	1
2	AIEdge-X80-NX8	1
3	AIEdge-X80-PoE-NX16	1
4	AIEdge-X80-PoE-NX8	1
5	AIEdge-X80-NA8-S	1
6	AIEdge-X80-NA4-S	1
7	AIEdge-X80-PoE-NA8-S	1
8	AIEdge-X80-PoE-NA4-S	1
9	AIEdge-X80-NX16-S	1
10	AIEdge-X80-NX8-S	1
11	AIEdge-X80-PoE-NX16-S	1
12	AIEdge-X80-PoE-NX8-S	1

Ordering Information

Refer to the list below for the ordering information.

AIEdge-X®80-NX16 (P/N: 10W200X8000X0)
Edge AI computer with NVIDIA Jetson Orin™ NX 16GB

AIEdge-X®80-NX8 (P/N: 10W200X8001X0)
Edge AI computer with NVIDIA Jetson Orin™ NX 8GB

AIEdge-X®80-PoE-NX16 (P/N: 10W200X8002X0)
Edge AI computer with NVIDIA Jetson Orin™ NX 16GB, w/PoE

AIEdge-X®80-PoE-NX8 (P/N: 10W200X8003X0)
Edge AI computer with NVIDIA Jetson Orin™ NX 8GB, w/PoE

AIEdge-X®80-NA8-S (P/N: 10W200X8004X0)
Edge AI Computer w/ NVIDIA Jetson Orin™ Nano 8GB, Super Mode

AIEdge-X®80-NX4-S (P/N: 10W200X8005X0)
Edge AI Computer w/ NVIDIA Jetson Orin™ Nano 4GB, Super Mode

AIEdge-X®80-PoE-NA8-S (P/N: 10W200X8006X0)
Edge AI Computer w/ NVIDIA Jetson Orin™ Nano 8GB, Super Mode, w/ PoE

AIEdge-X®80-PoE-NA4-S (P/N: 10W200X8007X0)
Edge AI Computer w/ NVIDIA Jetson Orin™ Nano 4GB, Super Mode, w/ PoE

AIEdge-X®80-NX16-S (P/N: 10W200X8008X0)
Edge AI Computer w/ NVIDIA Jetson Orin™ NX 16GB, Super Mode

AIEdge-X®80-NX8-S (P/N: 10W200X8009X0)
Edge AI Computer w/ NVIDIA Jetson Orin™ NX 8GB, Super Mode

AIEdge-X®80-PoE-NX16-S (P/N: 10W200X8010X0)
Edge AI Computer w/ NVIDIA Jetson Orin™ NX 16GB, Super Mode, w/ PoE

AIEdge-X®80-PoE-NX8-S (P/N: 10W200X8011X0)
Edge AI Computer w/ NVIDIA Jetson Orin™ NX 8GB, Super Mode, w/ PoE

Chapter 1: Product Introduction

Appearance

AIEdge-X®80-NA

Front

Rear

AIEdge-X®80-NX-S

Front

Rear

Key Features

- NVIDIA Jetson Orin™ NX 16GB (100 TOPs)
- NVIDIA Jetson Orin™ NX 8GB (70 TOPs)
- 1024-core NVIDIA® Ampere GPU with 32 Tensor Cores
- 4 x GbE LAN port
- Support PoE (requires optional module)
- 1 x M.2 2280 Key M for storage, 128GB SSD in default
- 1 x M.2 3042/3052 Key B for 5G/LTE
- 1 x full size Mini PCIe for WiFi/BT
- 1 x HDMI®, 2 x COM port, 4 x USB, 1 x USB OTG
- Extended Operating Temperature: -20~60 °C
- DC in 24V with 3 pin phoenix terminal block

Hardware Specifications

Processor

- 6 core Arm® Cortex® A78AE v8.2 64 bit CPU 1.5MB L2 + 4MB L3

GPU

- NVIDIA Jetson Orin™ NX 16GB (100 TOPS)
- NVIDIA Jetson Orin™ NX 8GB (70 TOPS)

Memory

- Onboard 128-bit LPDDR5, 16GB
- Onboard 128-bit LPDDR5, 8GB

Expansion

- 1 x Full-size Mini PCIe slot, supports Wi-Fi / BT Module
- 1 x M.2 3042/3052 Key B, supports 5G / LTE Module

I/O Interface Front

- 1 x Power button
- 1 x HDD LED
- 1 x COM 1, supports RS232/422/485
- 1 x COM 2, supports RS232 (only TX/RX)
- 3 x Antenna hole

I/O Interface Rear

- 1 x M.2 M key 2242 SSD (support SATA 3.0)
- 1 x 3 pin phoenix terminal block
- 2 x USB 2.0, Type-A
- 2 x USB 3.2 Gen 1x1, Type-A
- 4 x GbE RJ45 port (3 x Intel® i210-IT, 1 x from SoM)
- 1 x HDMI® 1.4, up to 4096 x 2160@60Hz
- 1 x Micro-USB OTG

Storage

- 1 x M.2 2280 Key M SSD (PCIe Gen 3 x4), 128GB SSD in default

Power Supply

- +24V DC in

Environment

- Operating temperature:
  - Ambient with air flow: -20°C~60°C
  - Storage temperature: -20°C~80°C
- Relative humidity: 10%~95% (non-condensing)
- Vibration protection:

Random: 2Grms@5 ~500Hz, IEC 60068-2-64
Sinusoidal: 2G@5~500Hz, IEC 60068-2-6

Mechanical

- AIEdge-X®80-NA
  - Dimension: 240mm (W) x 154mm (D) x 54mm (H) (w/ wall mount)
  - Net weight: 2.03 kg/Unit
- AIEdge-X®80-NX-S
  - Dimensions: 240mm (W) x 154mm (D) x 79.9mm (H) (w/ mount bracket)
  - Net weight: 2.36 kg/Unit
- Package Carton
  - Carton Dimension: 320mm (W) x 245mm (D) x 127mm (H)
  - Gross weight: 2.42kg 1unit/per carton
  - Gross weight: 2.8kg, 1unit/per carton (AIEdge-X®80-NX-S)

Operating System

- NVIDIA Jetpack™ 6.2

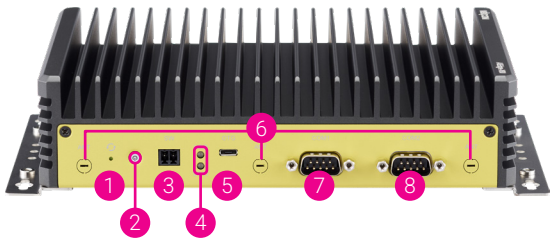
Certifications

- CE (EMC EN 55032 + EN 55024)
- FCC Class A (EMI Part 15)

Physical Features

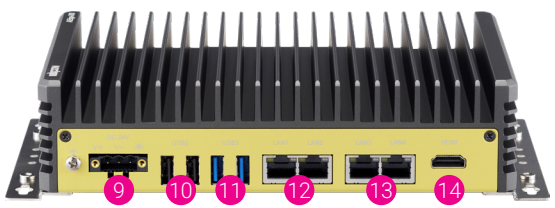
AIEdge-X®80-NA

Front Panel



1. Reset button
2. Power button
3. Remote power
4. LED indicators
5. Micro-USB OTG
6. Antenna holes
7. COM1 (RS-232/422/485)
8. COM2 (RS-232, only Tx/Rx)
9. 3-pin phoenix terminal block
10. USB 2.0 Type-A
11. USB 3.2 Type-A
12. LAN1 ports
13. LAN2 ports
14. HDMI® 1.4, up to 4096 x 2160@60Hz

Rear Panel



AIEdge-X®80-NX-S

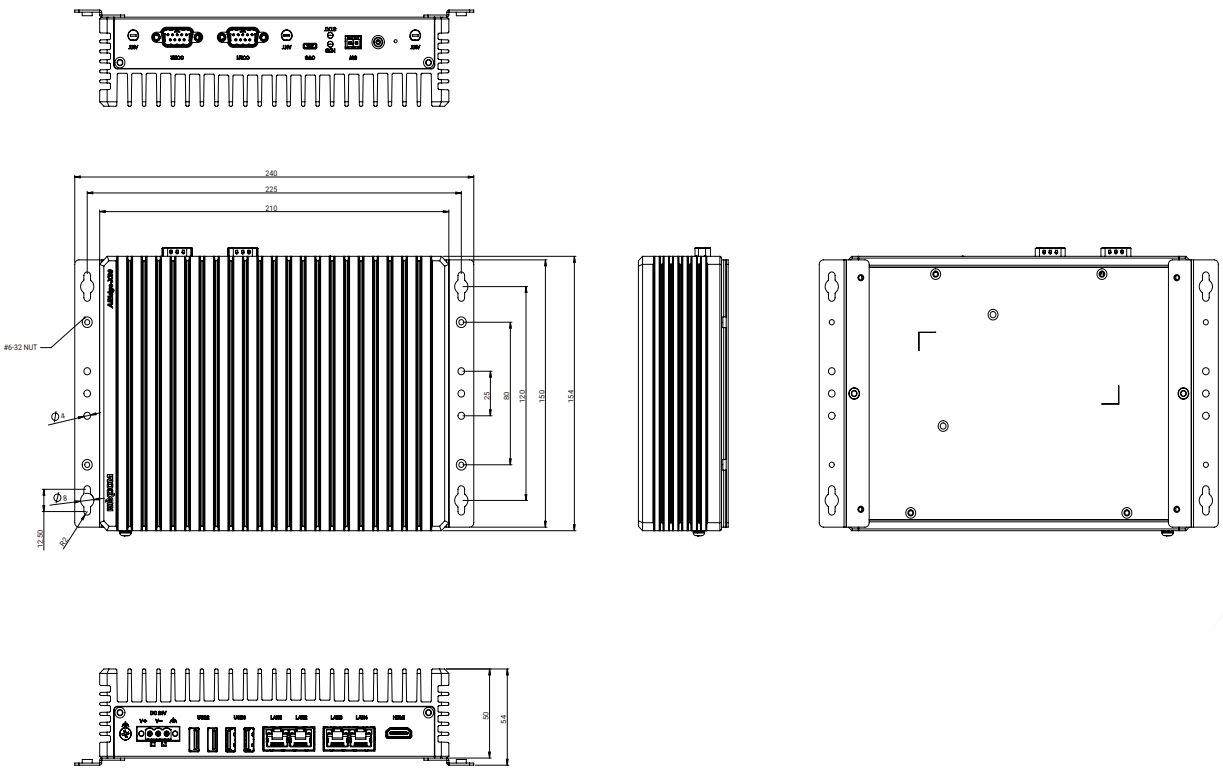
Front Panel

1. Reset button
2. Power button
3. Remote power
4. LED indicators
5. Micro-USB OTG
6. Antenna holes
7. COM1 (RS-232/422/485)
8. COM2 (RS-232, only Tx/Rx)
9. 3-pin phoenix terminal block
10. USB 2.0 Type-A
11. USB 3.2 Type-A
12. LAN1 ports
13. LAN2 ports
14. HDMI® 1.4, up to 4096 x 2160@60Hz

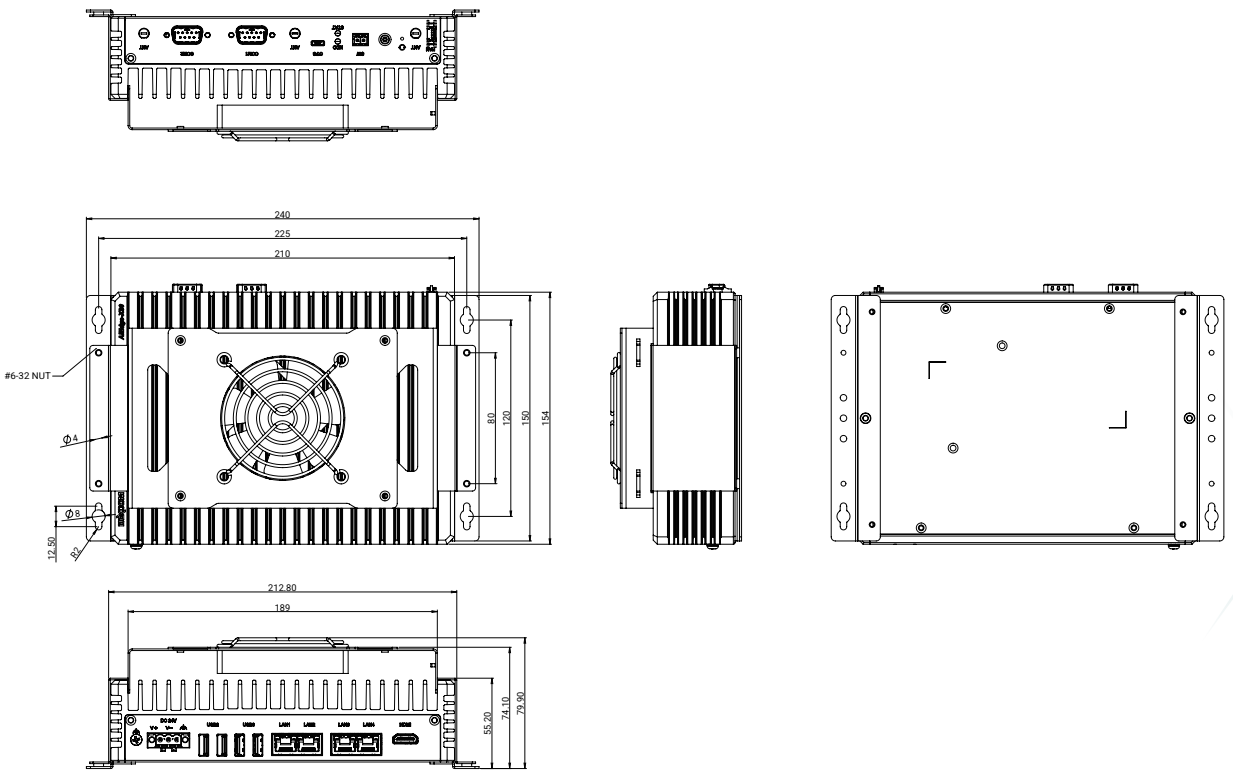
Rear Panel

Mechanical Dimensions

AIEdge-X®80-NA



AIEdge-X®80-NX-S



Chapter 2: Jumpers and Connectors

This chapter lists the locations of the jumpers and connectors for the AIEdge-X®80 series.

Before You Begin

- Ensure you have a stable, clean working environment. Dust and dirt can get into components and cause a malfunction. Use containers to keep small components separated.
- Adequate lighting and proper tools can prevent you from accidentally damaging the internal components. Most of the procedures that follow require only a few simple tools, including the following:
  - A Philips screwdriver
  - A flat-tipped screwdriver
  - A set of jewelers screwdrivers
  - A grounding strap
  - An anti-static pad
- Using your fingers can disconnect most of the connections. It is recommended that you do not use needle-nosed pliers to disconnect connections as these can damage the soft metal or plastic parts of the connectors.
- Before working on internal components, make sure that the power is off. Ground yourself before touching any internal components, by touching a metal object. Static electricity can damage many of the electronic components. Humid environments tend to have less static electricity than dry environments. A grounding strap is warranted whenever danger of static electricity exists.

Precautions

Computer components and electronic circuit boards can be damaged by discharges of static electricity. Working on computers that are still connected to a power supply can be extremely dangerous.

Follow the guidelines below to avoid damage to your computer or yourself:

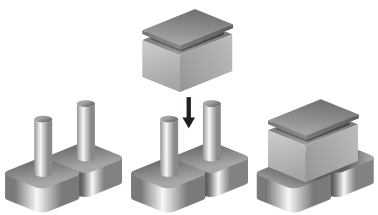
- Always disconnect the unit from the power outlet whenever you are working inside the case.
- If possible, wear a grounded wrist strap when you are working inside the computer case. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal body of any other grounded appliance.
- Hold electronic circuit boards by the edges only. Do not touch the components on the board unless it is necessary to do so. Don't flex or stress the circuit board.
- Leave all components inside the static-proof packaging that they shipped with until they are ready for installation.
- Use correct screws and do not over tighten screws.

Jumper Settings

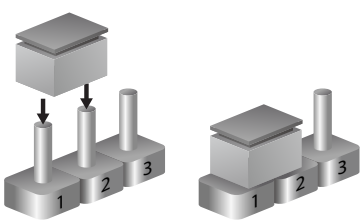
A jumper is the simplest kind of electric switch. It consists of two metal pins and a cap. When setting the jumpers, ensure that the jumper caps are placed on the correct pins. When the jumper cap is placed on both pins, the jumper is short. If you remove the jumper cap, or place the jumper cap on just one pin, the jumper is open.

Refer to the illustrations below for examples of what the 2-pin and 3-pin jumpers look like when they are short (on) and open (off).

Two-Pin Jumpers: Open (Left) and Short (Right)



Three-Pin Jumpers: Pins 1 and 2 are Short

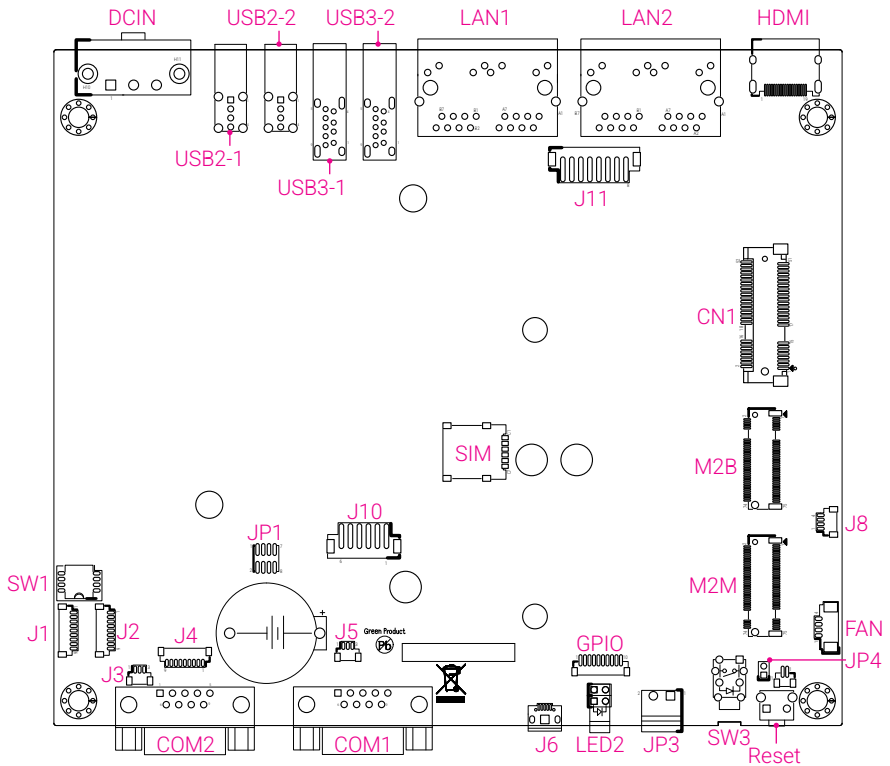


System Motherboard Overview

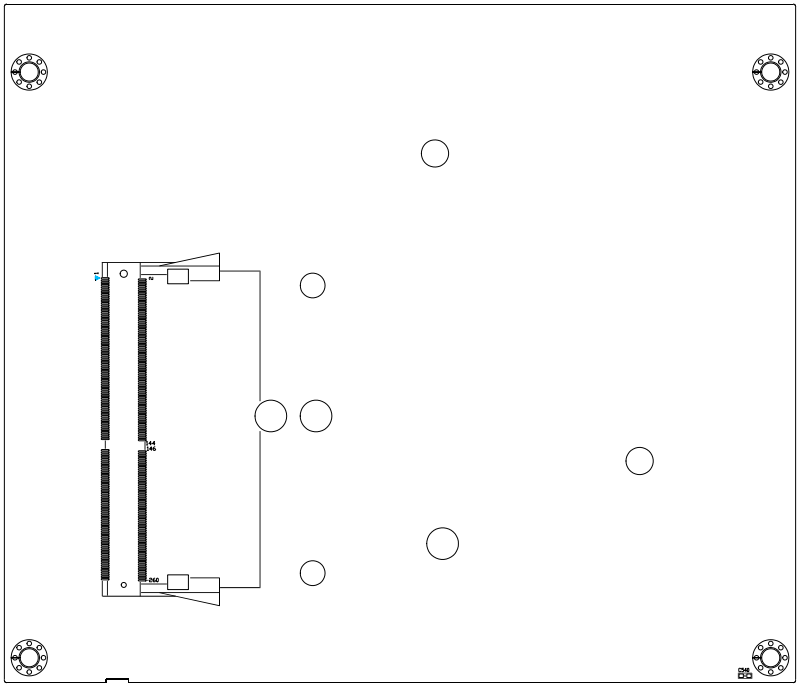
This chapter outlines the location and pin assignments of jumpers and connectors, with reference illustrations (not to scale) and pink-marked pin definitions to aid understanding.

Location of Jumpers and Connectors on the Motherboard

Top View



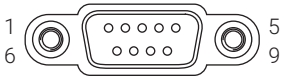
Bottom View



External I/O Interfaces

COM Port

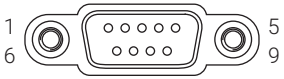
Connector interface: RS-232/422/485
Connector location: COM1



Pin	RS-232	RS-422	RS-485
1	DCD1_R	TX- (B)	D- (B)
2	RXD1_R	TX+ (A)	D+ (A)
3	TXD1_R	RX+ (A)	
4	DTR1_R	RX- (B)	
5	GND		
6	DSR1		
7	RTS1		
8	CTS1		
9	COM1RIL		

COM Port

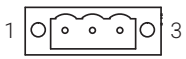
Connector interface: RS-232
Connector location: COM2



Pin	Definition
1	NA
2	CM2_RS232_RXD
3	CM2_RS232_TXD
4	NA
5	NA
6	NA
7	NA
8	NA
9	NA

DC Input

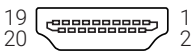
Connector type: Terminal-F-90-5
Connector location: DCIN



Pin	Settings
1	VINP1
2	VINVSS
3	VINPGND

HDMI®

Connector type: HDMI®
Connector location: HDMI®



Pin	Definition	Pin	Definition
1	HDMI_TXD2_CON_P	13	HDMI_CEC_CON
2	GND	14	GND
3	HDMI_TXD2_CON_N	15	HDMI_DDC_SCL_5V0
4	HDMI_TXD1_CON_P	16	HDMI_DDC_SDA_5V0
5	GND	17	GND
6	HDMI_TXD1_CON_N	18	VDD_5V0_HDMI_CON
7	HDMI_TXD0_CON_P	19	HDMI_HPD_CON
8	GND	MH1	FRONT_GND
9	HDMI_TXD0_CON_N	MH3	FRONT_GND
10	HDMI_TXC_CON_P	MH3	FRONT_GND
11	GND	MH4	FRONT_GND
12	HDMI_TXC_CON_N	R9	MDI_3-

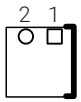
Micro-USB OTG

Connector type: Micro-USB
Connector location: J6

Pin	Settings
1	VDD_VBUS_CONN_L
2	USB0_D_N
3	USB0_D_P
4	USB0_ID_IO_CONN_D
5	GND

Remote Power

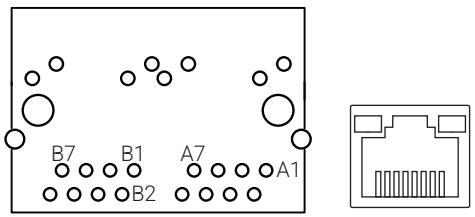
Connector type: Terminal-M-90-3.81
Connector location: JP3



Pin	Settings
1	PBT_PU
2	GND

LAN Ports

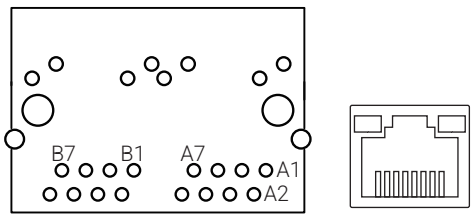
Connector location: LAN1



Pin	Definition	Pin	Definition
A1	LAN2V1_MDI1+	B1	GBEV1_MDI1+
A2	LAN2V1_MDI1-	B2	GBEV1_MDI1-
A3	LAN2V1_MDI2+	B3	GBEV1_MDI2+
A4	LAN2V1_MDI3+	B4	GBEV1_MDI3+
A5	LAN2V1_MDI3-	B5	GBEV1_MDI3-
A6	LAN2V1_MDI2-	B6	GBEV1_MDI2-
A7	LAN2V1_MDI4+	B7	GBEV1_MDI4+
A8	LAN2V1_MDI4-	B8	GBEV1_MDI4-
A9	LAN2V1_ACT#	B9	GBEV1_ACT#
A10	LAN2V1_ACT_P	B10	GBEV1_ACT_P
A11	LAN2V1_LINK1G#_R	B11	GBEV1_LINK100#
A12	LAN2V1_LINK100#	B12	GBEV1_LINK1G#_R
NH1	NH1	MH1	FRONT_GND
NH2	NH2	MH2	FRONT_GND

LAN Ports

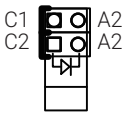
Connector location: LAN2



Pin	Definition	Pin	Definition
A1	LAN4V1_MDI1+	B1	LAN3V1_MDI1+
A2	LAN4V1_MDI1-	B2	LAN3V1_MDI1-
A3	LAN4V1_MDI2+	B3	LAN3V1_MDI2+
A4	LAN4V1_MDI3+	B4	LAN3V1_MDI3+
A5	LAN4V1_MDI3-	B5	LAN3V1_MDI3-
A6	LAN4V1_MDI2-	B6	LAN3V1_MDI2-
A7	LAN4V1_MDI4+	B7	LAN3V1_MDI4+
A8	LAN4V1_MDI4-	B8	LAN3V1_MDI4-
A9	LAN4V1_ACT#	B9	LAN3V1_ACT#
A10	LAN4V1_ACT_P	B10	LAN3V1_ACT_P
A11	LAN4V1_LINK1G#_R	B11	LAN3V1_LINK1G#_R
A12	LAN4V1_LINK100#	B12	LAN3V1_LINK100#
NH1	NH1	MH1	FRONT_GND
NH2	NH2	MH2	FRONT_GND

LED Indicators

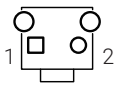
Connector type: PWH31(UGW)(UYW)-2D
Connector location: LED2



Pin	Settings
C1	HDD_LED#_8
A1	Vcc3
C2	Status_LED
A2	Vcc3

Reset

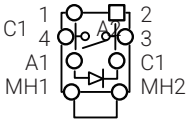
Connector function: Reset, DC12V/50mA
Connector location: RESET



Pin	Settings
1	GND
2	RST_L_Z

Power Button

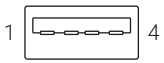
Connector function: Power button
Connector location: SW3



Pin	Definition	Pin	Definition
1	GND	2	H_PWRBTN#_M
3	H_PWRBTN#_M	4	GND
A1	PWRLED_N	C1	PWRLED_P
MH1	NC	MH2	NC

USB 2.0

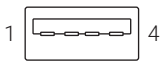
Connector type: USB CON-F-90 Type-A
Connector location: USB2-1



Pin	Settings
1	VDD20_VBUS_CONN_L
2	USB_20_N
3	USB_20_P
4	GND

USB 2.0

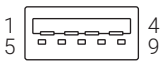
Connector type: USB3 CON-F-90 Type-A
Connector location: USB2-2



Pin	Settings
1	VDD20_VBUS_CONN_L
2	USB_20_2_N
3	USB_20_2_P
4	GND

USB 3.2

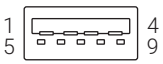
Connector type: USB3 CON-F-90 Type-A
Connector location: USB3-1



Pin	Definition	Pin	Definition
1	USB_VBUS_J4	5	USB3_RX1_F_N
2	USB_DM1_F_N	6	USB3_RX1_F_P
3	USB_DP1_F_P	7	GND
4	GND	8	USB3_TX1_C_N
		9	USB3_TX1_C_P

USB 3.2

Connector type: USB3 CON-F-90 Type-A
Connector location: USB3-2

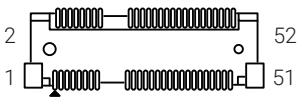


Pin	Definition	Pin	Definition
1	USB_VBUS_J4	5	USB_SS1_RX_F_N
2	USB_DM4_F_N	6	USB_SS1_RX_F_P
3	USB_DP4_F_P	7	GND
4	GND	8	USB_SS1_TX_C_N
		9	USB_SS1_TX_C_P

Internal I/O Interfaces

Mini PCIe

Connector location: CN1

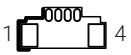


Pin	Definition	Pin	Definition
1	MPCIE_WAKE_N	2	+V3.3A_MINI_5
3	NC	4	GND
5	NC	6	V1P5
7	PCIE_L0_CLKREQ_R	8	NC
9	GND	10	NC
11	PEX_CLK0_R_N	12	NC
13	PEX_CLK0_R_P	14	NC
15	GND	16	NC
17	NC	18	GND
19	NC	20	MINIPCIE5_DIS#
21	GND	22	P5_RST#
23	PEX0_RX_N_R	24	+V3.3A_MINI_5
25	PEX0_RX_P_R	26	GND

Pin	Definition	Pin	Definition
27	GND	28	V1P5
29	GND	30	W_SM2_C
31	PEX0_TX_N_R	32	W_SM2_D
33	PEX0_TX_P_R	34	GND
35	GND	36	PCIE5_USB_N_T
37	GND	38	PCIE5_USB_P_T
39	+V3.3A_MINI_5	40	GND
41	+V3.3A_MINI_5	42	NC
43	GND	44	NC
45	NC	46	NC
47	NC	48	V1P5
49	NC	50	GND
51	MBT_DIS#_R	52	+V3.3A_MINI_5

Fan

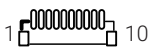
Connector form factor: WtoB, 1x4pin header, 1.0mm pitch
Connector location: FAN



Pin	Definition
1	GND
2	12V
3	FAN1TACH
4	FAN1PWM

GPIO

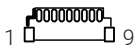
Connector form factor: WtoB, 1x4pin header, 1.0mm pitch
Connector location: GPIO



Pin	Definition
1	G_O_COM0
2	G_I_COM0
3	OUTPUT3
4	OUTPUT2
5	OUTPUT1
6	OUTPUT0
7	INPUT3
8	INPUT2
9	INPUT1
10	INPUT0

Software Console

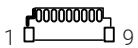
Connector form factor: WIRE-M-180, 1x pin,1.0mm pitch
Connector location: J1



Pin	Definition
1	NA
2	NA
3	NA
4	NA
5	NA
6	NA
7	CONSOL_TX
8	CONSOL_RX
9	NA

COM Port (COM1 Colay, Optional)

Connector interface: RS-232/422/485
Connector form factor: WtoB, 1x9pin header, 10.mm pitch
Connector location: J2



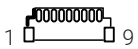
SOC Debug Port

Connector forma factor: WtoB, 1x3pin header, 1.0mm pitch
Connector location: J3

Pin	Definition
1	UART2_TX_L_C
2	GND
3	UART2_RX_L_C

COM Port (COM2 Colay, Optional)

Connector form factor: WtoB, 1x9pin header, 1.0mm pitch
Connector location: J4



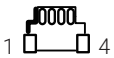
Debug Port

Connector form factor: WtoB, 1x3pin header, 1.0mm pitch
Connector location: J5

Pin	Definition
1	DEBUG_TXD
2	GND
3	DEBUG_RXD

I²C

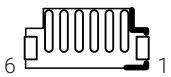
Connector form factor: WIRE-M-180, 1x4pin header, 1.0mm pitch
Connector location: J8



Pin	Definition
1	GND
2	G_SDA
3	G_SCL
4	VCC3

PoE Input

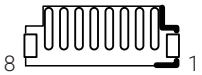
Connector form factor: WtoB, 1x6pin header, 2.0mm pitch
Connector location: J10



Pin	Definition
1	MCU_V54_NB
2	VIN_M
3	VIN_M
4	VIN_M
5	GND
6	GND

PoE Output

Connector form factor: WtoB, 1x8pin header, 2.0mm pitch
Connector location: J11



Pin	Definition
1	PSE2_OUT_P
2	PSE2_OUT_N
3	PSE1_OUT_P
4	PSE1_OUT_N
5	PSE3_OUT_P
6	PSE3_OUT_N
7	PSE4_OUT_P
8	PSE4_OUT_N

Download Port

Connector form factor: PIN-M-180, 2x5pin header, 1.27mm pitch
Connector location: JP1

Pin	Definition	Pin	Definition
1	MCU_VCC3	2	MCU_NRST
3	MCU_TRST	4	NC
5	MCU_TRST	6	MCU_SWDIO
7	NC	8	GND

Power LED

Connector form factor: PIN-M-180, 1x2pin header, 2.0 pitch
Connector location: JP4

Pin	Definition
1	PWRLED_N
2	PWRLED_P

M.2 Key B

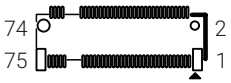
Connector form factor: M.2 Key B 2280
Connector location: M2B

Pin	Definition	Pin	Definition
1	M2B1_CONFIG3	2	+V3.3A_MINI_1
3	GND	4	+V3.3A_MINI_1
5	GND	6	M2B1_POWER_OFF#
7	PCIE1_USB_P_T	8	M2B1_W1_DIS#
9	PCIE1_USB_N_T	10	NC
11	NC		
		20	M2_GPIO5
21	M2B1_CONFIG0	22	M2_GPIO6
23	NC	24	NC
25	NC	26	M2B1_W2_DIS#
27	GND	28	NC
29	PCIE1_USB3_RXN_T	30	M2_UIM_RST_A
31	PCIE1_USB3_RXP_T	32	M2_UIM_CLK_A
33	GND	34	M2_UIM_DAT_A
35	PCIE1_USB3_TXN_T	36	M2_UIM_PWR_A
37	PCIE1_USB3_TXP_T	38	NC
39	GND	40	NC

Pin	Definition	Pin	Definition
41	NC	42	NC
43	NC	44	NC
45	GND	46	NC
47	NC	48	NC
49	NC	50	M2B_RST#
51	GND	52	NC
53	NC	54	NC
55	NC	56	M2B1_SM1_D
57	GND	58	M2B1_SM1_C
59	NC	60	NC
61	NC	62	NC
63	NC	64	NC
65	NC	66	NC
67	P1_3.5G_RST#	68	NC
69	M2B1_CONFIG1	70	+V3.3A_MINI_1
71	GND	72	+V3.3A_MINI_1
73	GND	74	+V3.3A_MINI_1
75	M2B1_CONFIG2		

M.2 Key M

Connector form factor: M.2 Key M 2242
Connector location: M2M

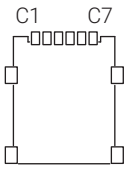


Pin	Definition	Pin	Definition
1	GND	2	V3P3_M2M
3	GND	4	V3P3_M2M
5	PCIE_RXN24_R	6	NC
7	PCIE_RXP24_R	8	NC
9	GND	10	NVME_LED
11	PCIE_TXN24_C	12	V3P3_M2M
13	PCIE_TXP24_C	14	V3P3_M2M
15	GND	16	V3P3_M2M
17	PCIE_RXN23_R	18	V3P3_M2M
19	PCIE_RXP23_R	20	NC
21	GND	22	NC
23	PCIE_TXN23_C	24	NC
25	PCIE_TXP23_C	26	NC
27	GND	28	NC
29	PCIE_RXN22_R	30	NC
31	PCIE_RXP22_R	32	NC
33	GND	34	NC

Pin	Definition	Pin	Definition
35	PCIE_TXN22_C	36	NC
37	PCIE_TXP22_C	38	NC
39	GND	40	M2M_SDA
41	PCIE_RXN21_R	42	M2M_SCL
43	PCIE_RXP21_R	44	M2M_ALERT#
45	GND	46	NC
47	PE_TXN21_C	48	NC
49	PE_TXP21_C	50	PCIE0_RST
51	GND	52	PCIE0_CLKREQ
53	PCIE0_CLK_N	54	M2M_PEWAKE#
55	PCIE0_CLK_P	56	NC
57	GND	58	NC
67	NC	68	NC
69	NC	70	V3P3_M2M
71	GND	72	V3P3_M2M
73	GND	74	V3P3_M2M
75	GND		

SIM Card Slot

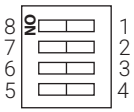
Connector location: SIM



Pin	Definition	Pin	Definition
C1	UIM2_PWR_A	C5	GND
C2	UIM2_RST_A	C6	SIM_VPP_R
C3	UIM2_CLK_A	C7	UIM2_DAT_A

COM1 Port Mode and AT/ATX Selection

Connector location: SW1



Pin	Switch Position	Mode
1	Off	RS-232 (default)
2	Off	RS-232 (default)
3	On	RS-232 (default)
4	On	ATX
	Off	AT (default)

Pin	Switch Position	Mode
1	Off	RS-485
2	On	RS-485
3	Off	RS-485
4	On	ATX
	Off	AT (default)

Pin	Switch Position	Mode
1	Off	RS-422
2	Off	RS-422
3	Off	RS-422
4	On	ATX
	Off	AT (default)

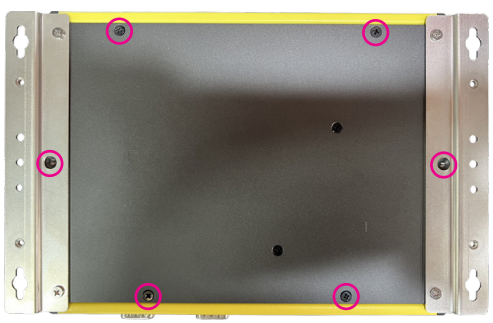
Pin	Switch Position	Mode
1	On	RS-485
2	On	RS-485
3	Off	RS-485
4	On	ATX
	Off	AT (default)

Chapter 3: System Setup

Removing the Top Cover from the Chassis

Prior to removing the chassis cover, make sure the unit's power is off and disconnected from the power sources to prevent electric shock or system damage.

- Remove the screws marked in the image below, then lift the bottom cover.



Installing LTE/5G Module

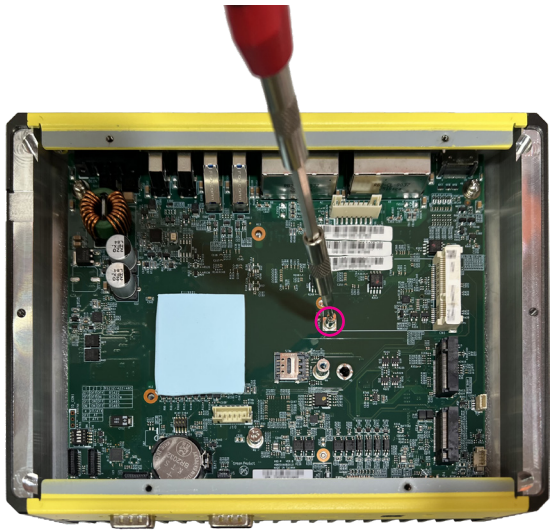
1. Locate the M.2 Key B 3042/3052 slot and loosen the screw indicated in the image below. Keep the screw in a safe place for later use.

2. Insert the module into the slot at a 45 degrees angle until the gold-plated connector on the edge of the module completely disappears inside the slot. Then secure the M.2 module using the screw loosened in the previous step.

If the module you installed is half-size, secure it with a bracket before inserting it into the M.2 slot.

Installing Wi-Fi/BT Module

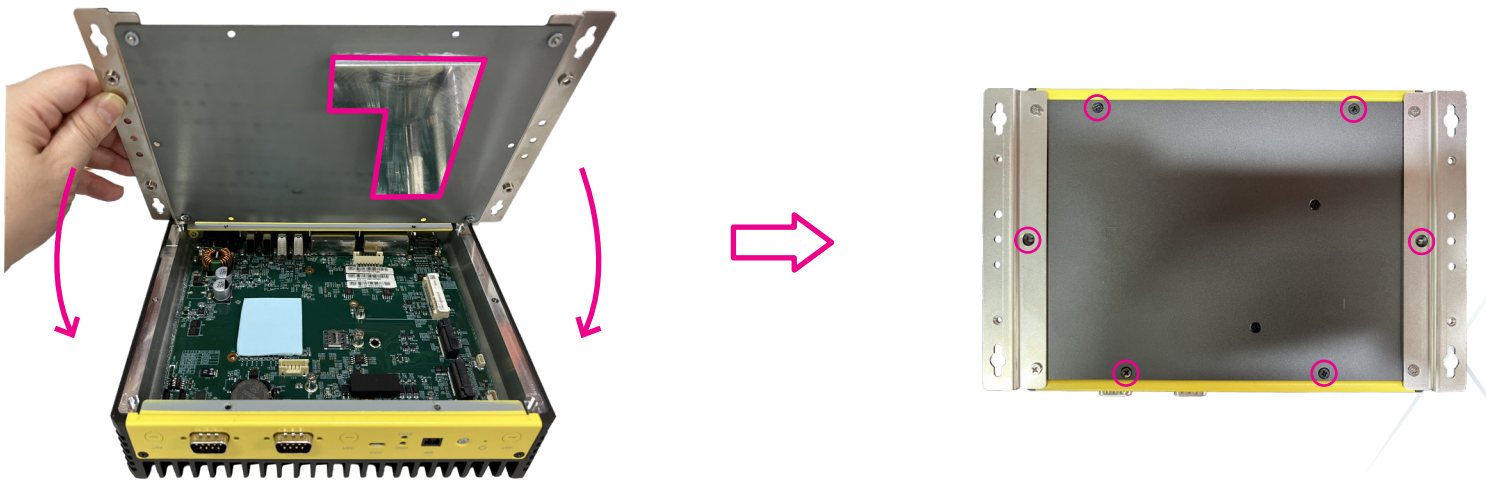
1. Locate the Mini PCIe slot and loosen the screw indicated in the image below. Keep the screw in a safe place for later use.



2. Insert the module into the slot at a 45 degrees angle until the gold-plated connector on the edge of the module completely disappears inside the slot. Then secure the M.2 module using the screw loosened in the previous step.

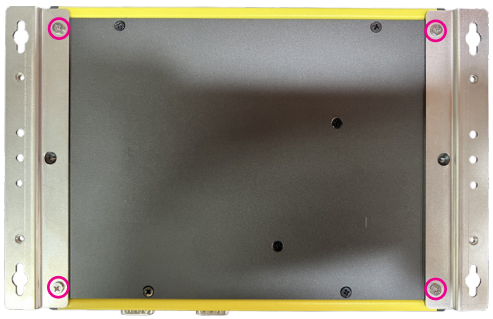
Assembling the Bottom Cover

- To assemble the bottom cover back onto the chassis, ensure it is oriented correctly. The pink highlight should face the M.2 and Mini PCIe slots. Once aligned, secure the bottom cover with the screws you previously removed.



Installing the Wall Mount

1. Turn the system over. Align the two retention screw holes in each bracket with the corresponding screw holes on the sides of the bottom surface.

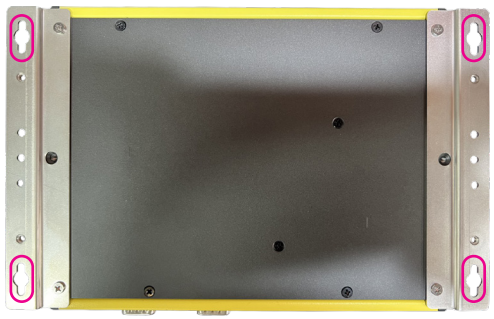


2. Secure the brackets to the system by inserting two retention screws into each bracket.

3. Drill holes in the intended installation surface.

4. Align the mounting holes on the sides of the brackets with the pre-drilled holes in the installation surface.

5. Insert four retention screws, two in each bracket to secure the system to the wall.



Appendix A: Running the Software

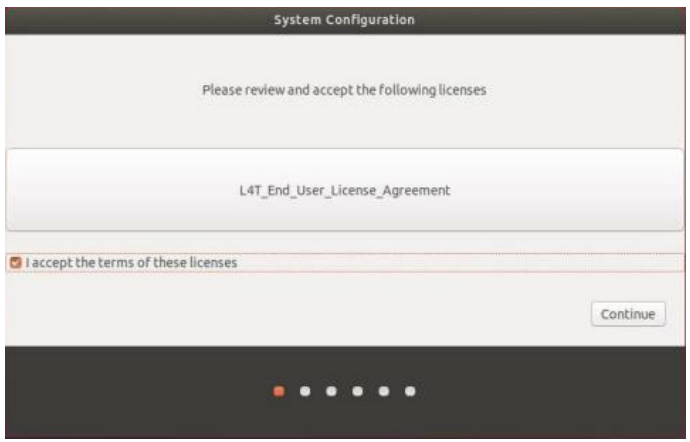
Introduction

Thank you for choosing the Nexcom AIEdge-X®80 product. When the system boots up for the first time, the initial configuration must be completed by selecting the appropriate time zone, creating a user account, and adjusting the required system settings. Once these steps are completed, install the MUT package to enable full functionality of the AIEdge-X®80 system.

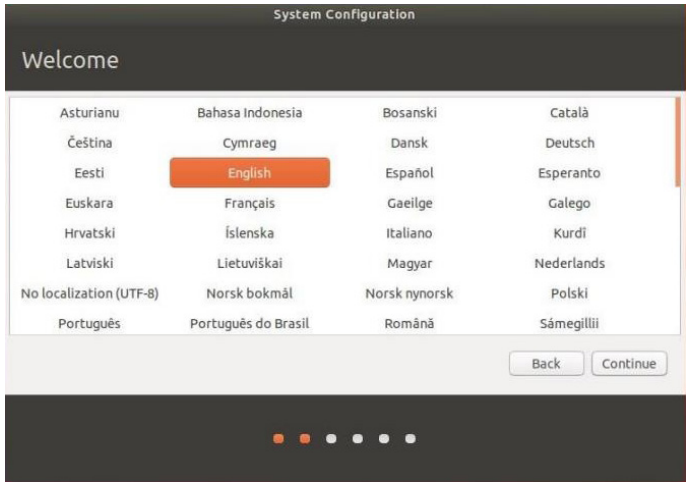
Initialization

System Configuration

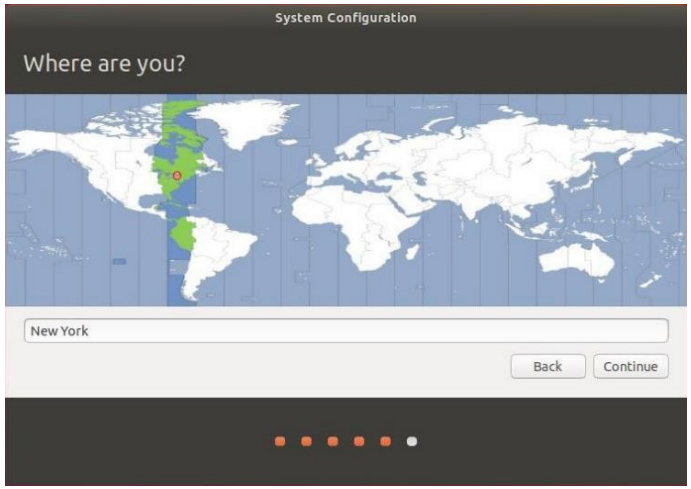
1. When the system is booted up for the first time, the screenshot should look like the image below. Accept the licenses and click **Continue**.



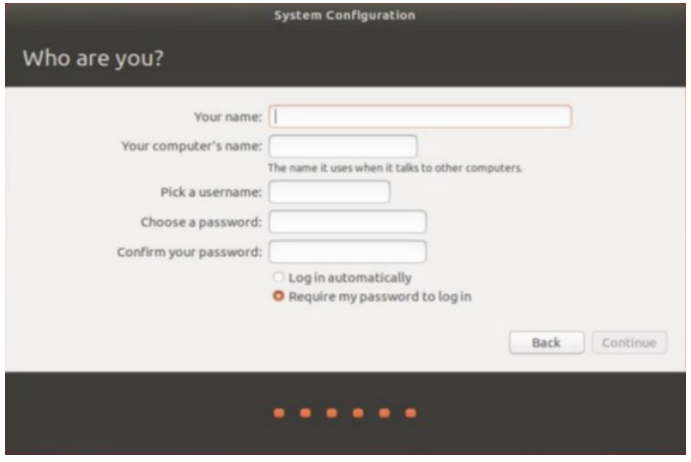
2. Select a preferred language.



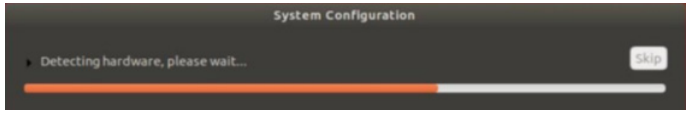
3. Specify the appropriate time zone.



4. Create an account and set up a password, then select a login preference, and click **Continue**.



5. The system will begin the download and update procedures.

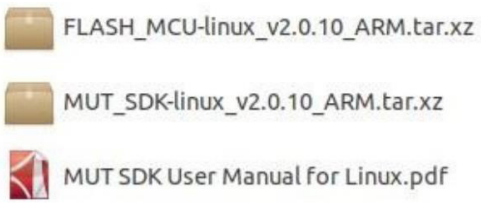


Getting Started with the SDK

Open the terminal. The installation packages and documents are located in the following path: /Nexcom/MUT.

Understanding the SDK

The MUT SDK is a service used to control the MCU of this product series. Refer to the MUT SDK User Manual document, MUT_SDK_User_Manual_for_Linux.pdf, located in the MUT folder.



Installing SDK Component

Refer to the information for installation.

Location: /nexcom/nvidia_SDK_components/install_sdk.sh
System required: 10.6 GB (SDK 9924MB, Deepstream 733MB).
The script will install SDK automatically following:

TensorRT
cuDNN
CUDA
Multimedia API
Computer Vision
Developer Tools (Nvidia Nsight System and Graphics)
Deepstream

$ sudo ./install_sdk.sh

Checking the SDK Version

$ sudo apt install python3-pip

$ sudo pip3 install jetson-stats

$ sudo jtop (Figure 1)

Move the cursor to “6INFO” and you can see the library version. You can also use another command: (Figure 2)

$ jetson_release

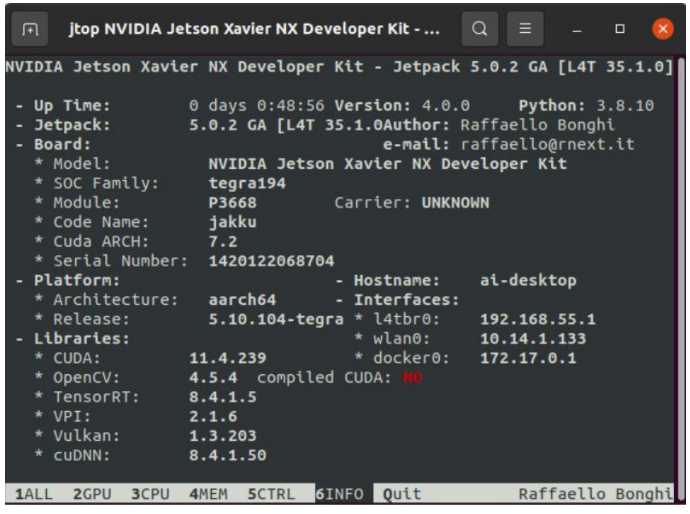


Figure 1

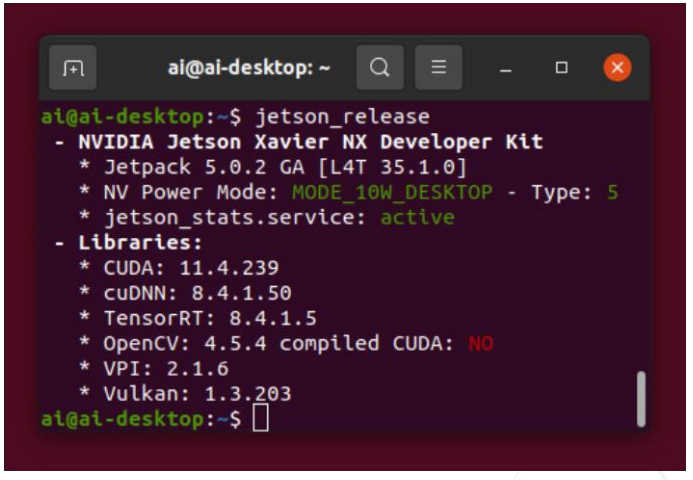


Figure 2

AI Demo

Installation

Use the install_sdk.sh script (see previous section) to install DeepStream and other SDK components.

Running the DeepStream Demo

Run the demo using the following command:

$ cd /opt/nvidia/deepstream/deepstream-6.1/samples/configs/deepstream-app

$ deepstream-app –c

source4_1080p_dec_inferresnet_tracker_sgie_tiled_display_int8.txt The result

RS-485 Configuration

Refer to the descriptions below for the RS-485 Linux parameter settings.

```
root@Genuine:/nexcom/RS232_422_485# ./x80_485_direction.sh
RS485's mode: Receive or Transmit ? (r/t): r
Receive data: Set High
Set Mode OK!
```

Select **T**/**t** for transmitting data.
Select **R**/**r** for receiving data
desktop: ~/Desktop$ ./direction-control.sh
direction-control.sh contents:

```
#!/bin/bash
read -p “High / Low ? (h/l): “ hl
if [ “$hl” == “h” ] || [ “$hl” == “H” ] ; then
echo “Set High”
gpioset 0 112=1
elif [ “$hl” == “l” ] || [ “$hl” == “L” ] ; then
echo “Set Low”
```