

MBOX6211

Industrial Mini Computer



User Manual

Version: 1.2

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Revision History:

No.	Version	Description	Date
1	V1.0	First release	Oct. 30, 2024
2	V1.1	Modified the functionality test of the serial ports	Mar. 8, 2025
3	V1.2	Added description on serial port mode selection	May 19, 2025

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Foreword

Thank you for purchasing MBOX6211 Industrial Mini Computer (“the Device” or “the Product”). This manual intends to provide guidance and assistance necessary on setting up, operating or maintaining the Product. Please read this manual and make sure you understand the structure and functionality of the Product before putting it into use.

Intended Users

This manual is intended for:

- Operator of the Product
- Technical support engineers
- Other users

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Disclaimer

While all information contained herein has been carefully checked to assure its accuracy in technical details and typography, Vantron does not assume any responsibility resulting from any error or features of this manual, nor from improper uses of this manual or the software.

It is our practice to change part numbers when published ratings or features are changed, or when significant construction changes are made. However, some specifications of the Product may be changed without notice.

Technical Support and Assistance

Should you have any question about the Product that is not covered in this manual, contact your sales representative for solution. Please contain the following information in your question:

- Product name and PO number;
- Complete description of the problem;
- Error message you received, if any.

Vantron Technology, Inc.

Address: 48434 Milmont Drive, Fremont, CA 94538

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Email: sales@vantrontech.com

Regulatory Information

The Product is designed to comply with:

- FCC
- ISED
- CE

Please refer to the Appendix for Regulatory Compliance Statement.

Symbology

This manual uses the following signs to prompt users to pay special attention to relevant information.

	Caution for latent damage to system or harm to personnel
	Attention to important information or regulations

General Safety Instructions

The Product is supposed be installed by knowledgeable, skilled persons familiar with local and/or international electrical codes and regulations. For your safety and prevention of damage to the Product and other equipment connected to it, please read and observe carefully the following safety instructions prior to installation and operation. Keep this manual well for future reference.

- Do not disassemble or otherwise modify the Product. Such action may cause heat generation, ignition, electronic shock, or other damages including human injury, and may void your warranty.
- Keep the Product away from heat source, such as heater, heat dissipater, or engine casing.
- Do not insert foreign materials into any opening of the Product as it may cause the Product to malfunction or burn out.
- To ensure proper functioning and prevent overheating of the Product, do not cover or block the ventilation holes of the Product.
- Follow the installation instructions with the installation tools provided or recommended.
- The use or placement of the operation tools shall comply with the code of practice of such tools to avoid short circuit of the Product.
- Cut off the power before inspection of the Product to avoid human injury or product damage.

Precautions for Power Cables and Accessories

-  Use proper power source only. Make sure the supply voltage falls within the specified range. The Product is designed to use 12V~24V DC. Always check whether the Product is DC powered before applying power.
-  Place the cables properly at places without extrusion hazards.
-  Use only approved antenna(s). Non-approved antenna(s) may produce spurious or excessive RF transmitting power which may violate FCC limits.
-  Cleaning instructions:
 - Power off before cleaning the Product
 - Do not use spray detergent
 - Clean with a damp cloth
 - Do not try to clean exposed electronic components unless with a dust collector
-  Power off and contact Vantron technical support engineer in case of the following faults:
 - The Product is damaged
 - The temperature is excessively high
 - Fault is still not solved after troubleshooting according to this manual
-  Do not use in combustible and explosive environment:
 - Keep away from combustible and explosive environment
 - Keep away from all energized circuits
 - Unauthorized removal of the enclosure from the device is not allowed
 - Do not replace components unless the power cable is unplugged.
 - In some cases, the device may still have residual voltage even if the power cable is unplugged. Therefore, it is a must to remove and fully discharge the device before replacement of the components.

CHAPTER 1 INTRODUCTION

1.1 Product Overview

Vantron MBOX6211 is an entry-level industrial mini computer powered by Intel® Celeron® Elkhart Lake N6211 processor that features a dual-core architecture with a base frequency of 1.2GHz. The integrated Intel® UHD Graphics GPU supports H.265/H.264 video codec, enabling smooth 4K video playback at 30Hz while maintaining low bitrates.

MBOX6211 offers two Ethernet jacks, each capable of up to 1000Mbps data transmission, ensuring fast and reliable wired networking. With support for Wi-Fi 802.11 a/b/g/n/ac and BT 5.0, it ensures reliable wireless communication across various environments. The device comes with default 4GB on-board memory and 64GB storage, with expansion options for added flexibility. Moreover, the HDMI port delivers up to 4K video output, making it ideal in industrial and multimedia settings.

MBOX6211 offers rich interfaces, such as serial ports, USB-A and USB-C, CAN, and GPIOs, allowing businesses to connect a wide range of peripherals for extended applications. Overall, MBOX6211 can be widely used in industrial automation, games, retail, and other sectors to offer a reliable and consistent user experience.

1.2 Product Features

- Intel® Celeron® N6211 dual-core processor
- 4GB LPDDR4, Optional 8GB
- 64GB eMMC 5.1, SSD expansion supported by an M.2 M-Key (2280) PCIe/SATA
- Support for up to 4K @30Hz video output
- Rich industrial I/O (USB, COM, CAN, HDMI 1.4b) for user expansion
- Gigabit Ethernet, Wi-Fi, Bluetooth
- Fanless design
- Windows 10 IoT operating system
- Ultra-compact size for flexible integration

1.3 Unpacking

The Product has been carefully packed with special attention to quality. However, should you find any component damaged or missing, please contact your sales representative in due time.

Standard accessories:

- 1 x MBOX6211 Industrial mini computer
- 2 x Wi-Fi and Bluetooth antenna
- 2 x Serial port mating connector
- 2 x CAN bus mating connector

Optional accessories:

- 1 x 12V 3A DC Power adapter
- 1 x AC Power cord

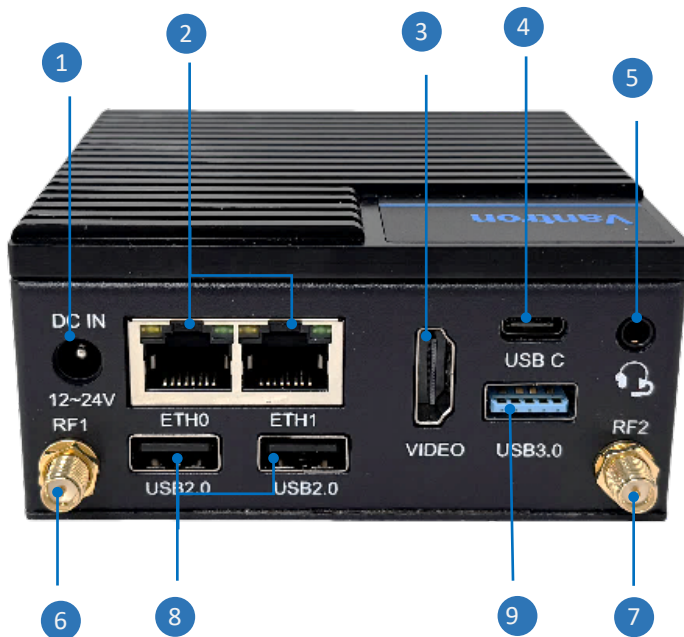
 *Actual accessories might vary slightly from the list above as the customer order might be different from the standard configuration options.*

1.4 Specifications

MBOX6211			
System	CPU	Intel® Celeron® N6211 processor, 2C2T, 1.2GHz (base), 3.0GHz (turbo), 6.5W TDP	
	GPU	Intel® UHD Graphics for 10th Gen Intel® processors	
	Memory	4GB LPDDR4 (Optional: 8GB)	
	Storage	64GB eMMC 5.1 1 x M.2 M-Key (2280), PCIe/SATA for SSD expansion, up to 1TB	
Communication	Ethernet	2 x RJ45, 10/100/1000Mbps	
	Wireless	Wi-Fi 802.11 a/b/g/n/ac + BT 5.0	
Media	Display output	1 x HDMI 1.4b, up to 4K @30Hz	
	Audio	1 x 3.5mm combo audio jack (CTIA standard)	
I/O	Serial port	2 x RS232 (C1-C3, D1-D3)	2 x RS232/RS485/RS422 (C4-C8, D4-D8)
	USB	2 x USB 2.0 Type-A 1 x USB 3.0 Type-A	1 x USB 3.0 Type-C
	CAN	2 x CAN (A: CAN1, B: CAN2)	
	DIP switch	2 x DIP switch for 120Ω CAN Bus termination resistor to prevent signal reflections (A-up: CAN1_H, B-up: CAN2_H)	
	Antenna	2 x Wi-Fi & Bluetooth SMA antenna connector (RF1, RF2)	
Miscellaneous	RTC	Supported	
	Security	TPM 2.0	
System Control	Button	1 x ON/OFF button	1 x Reset button (short press for device reboot)
	LED indicator	4 x LED indicator (Power indicator at the top by default, user definable)	
Software	OS	Windows 10 IoT	
Power	Input	12V~24V DC	1 x Power jack
	Consumption	Typical: 16W	Max.: 30W
Mechanical	Dimensions	95mm x 95mm x 44mm (not including wall mount)	
	Installation	Wall mounting	DIN rail mounting
	Weight	518g (not including accessories)	
	Cooling mode	Heat sink	
Environment Condition	Temperature	Operating: -20°C~+70°C	Storage: -40°C~+80°C
	Humidity	10%~95% RH (Non-condensing)	
	Certification	FCC, CE, ISED	

1.5 Product Layout

1.5.1 Front view



Interface	Description
1	Power jack
2	2 x RJ45 Ethernet port, 10/100/1000Mbps
3	HDMI 1.4b Type-A for video output, resolution up to 4k@30Hz
4	USB 3.0 Type-C
5	3.5mm Combo audio jack (CTIA standard)
6	Primary WLAN antenna connector
7	Secondary WLAN antenna connector
8	2 x USB 2.0 Type-A
9	USB 3.0 Type-A

1.5.2 Back view



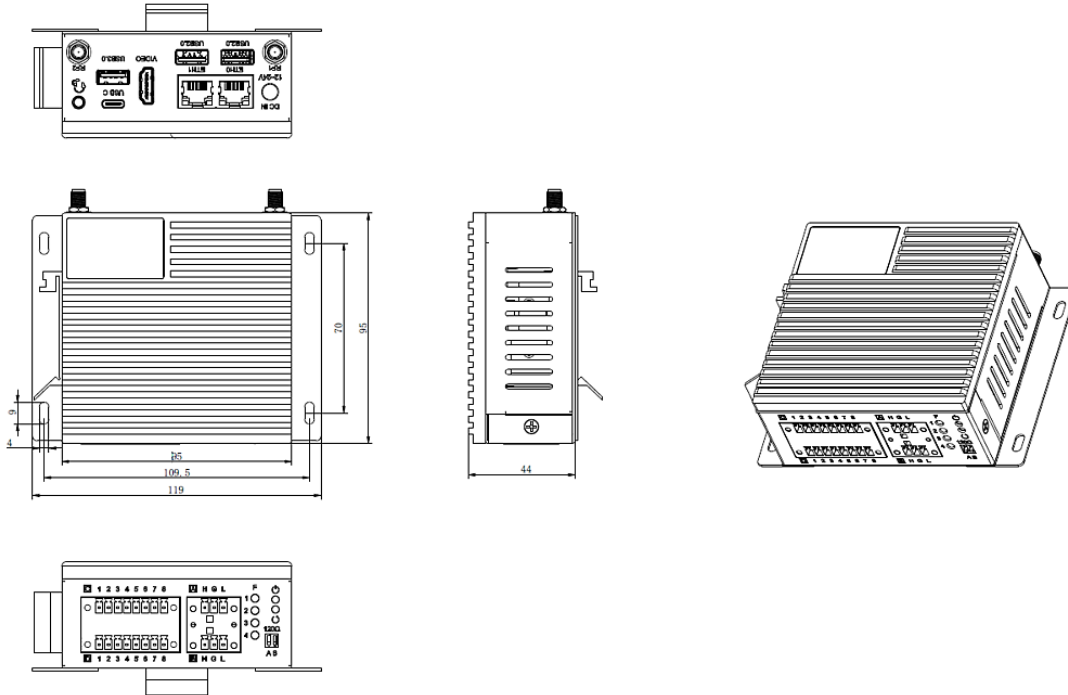
Interface	Description
1	2 × RS232 connector
2	2 × RS232/RS422/RS485 connector
3	2 × CAN bus
4	4 × LED indicator (1: Power indicator, 2~4: Programmable indicators)
5	Power button
6	Reset button (short press to restart the device)
7	DIP switches for CAN termination resistors, 2.54mm

1.6 Operating System

MBOX6211 runs Windows 10 IoT operating system.

1.7 Mechanical Dimensions

- 95mm × 95mm × 44mm



1.8 Power Supply and Consumption

MBOX6211 is designed to operate with a DC power input ranging from 12V to 24V, provided through a DC power jack. For optimal performance, it is advisable to utilize a 12V 3A DC power adapter.

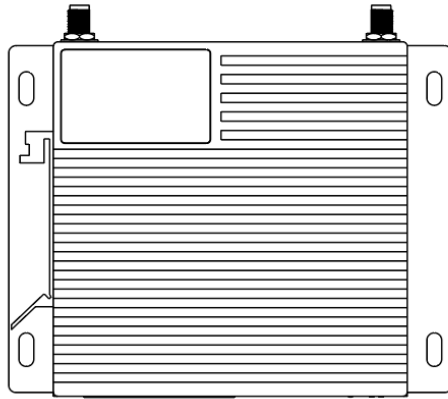
Typically, when the device is powered on without any applications running, its power consumption is approximately 16W. At its maximum load, the power consumption can reach around 30W.

CHAPTER 2 GETTING STARTED

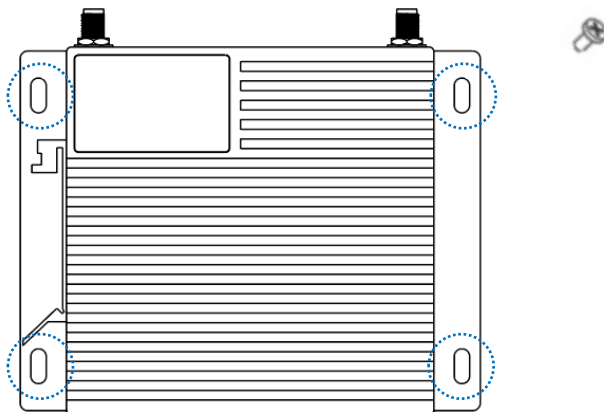
2.1 Device Installation

2.1.1 Wall mounting

1. Position the device on a desired place, for instance, a wall or a desktop, with the LED indicators facing downward for optimal visibility;



2. Align four screws (M3 recommended) with the screw holes reserved on the mounting bracket, and mark the screw positions on the mounting surface for accurate drilling;



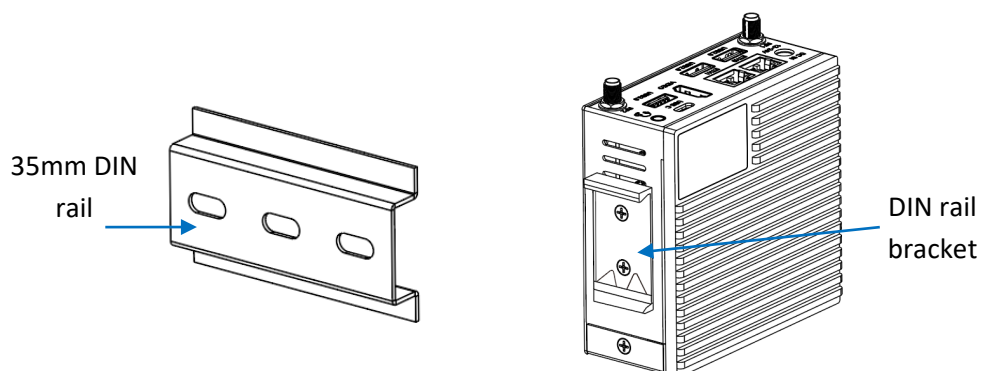
- Drill holes at the marked positions, with reference to the following table to determine the appropriate size of the drill bit as well as the clearance hole;

Coarse Thread			Clearance Hole Size		
Nominal Size	Thread Pitch	Tapping Drill Size	Close Fit	Medium Fit	Free Fit
M1	0.25	0.75	-	1.2	-
M1.1	0.25	0.85	-	-	-
M1.2	0.25	0.95	-	1.4	-
M1.4	0.3	1.1	-	1.6	-
M1.6	0.35	1.25	1.7	1.8	2
M1.8	0.35	1.45	-	2	-
M2	0.4	1.6	2.2	2.4	2.6
M2.2	0.45	1.75	-	2.8	-
M2.5	0.45	2.05	2.7	2.9	3.1
M3	0.5	2.5	3.2	3.4	3.6
M3.5	0.6	2.9	-	3.9	-
M4	0.7	3.3	4.3	4.5	4.8

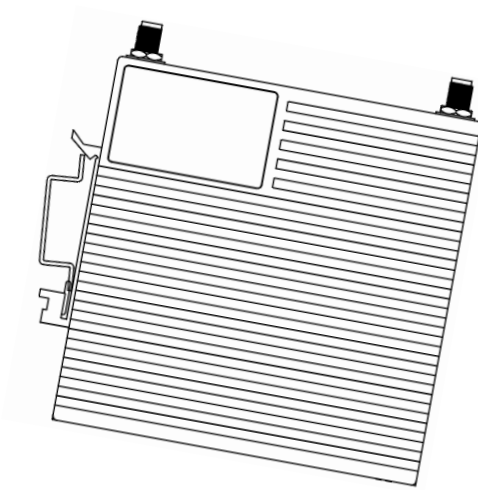
- Fasten the device firmly to the surface using the screws.

2.1.2 DIN rail mounting

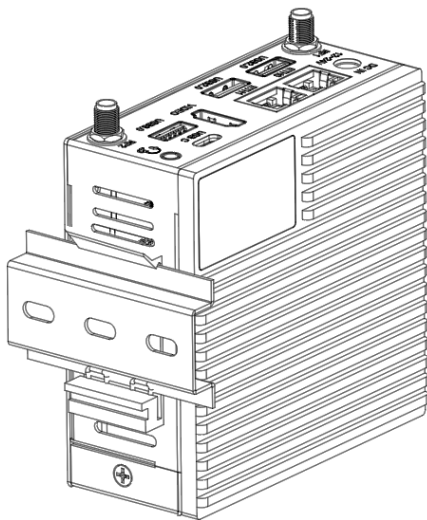
- Hold the device vertically with the DIN rail bracket facing the 35mm DIN rail;



-
2. Fit the lower side of the DIN rail to the lower clamp of the DIN rail bracket, positioning it behind the triangle fixer;



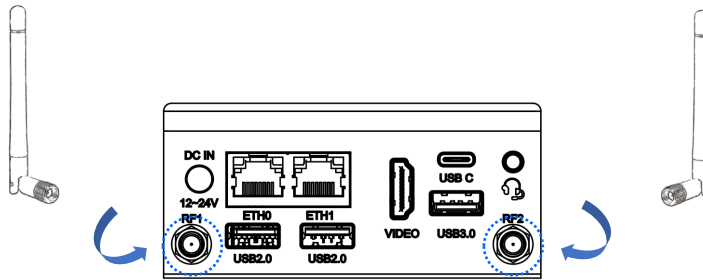
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3. Push the device firmly toward the DIN rail to secure it in the desired place;
4. Gently swing the device to make sure it is fastened to the DIN rail.



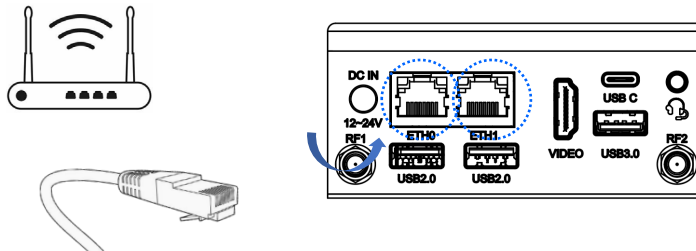
2.2 Wiring the Device

Once the device has been installed, adhere to the steps provided below to wire the device **as needed** for subsequent use.

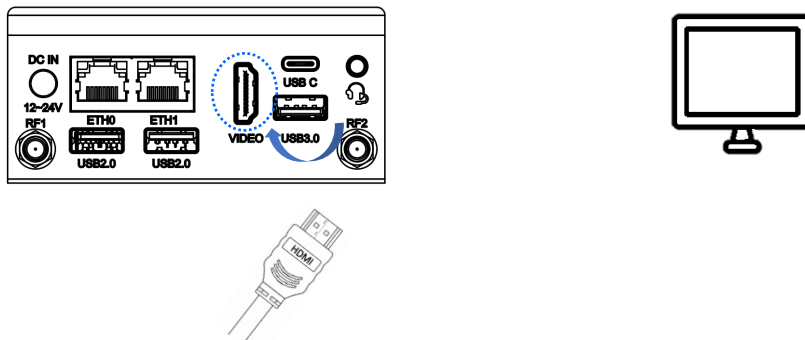
1. Install the WLAN antennas to the RF1 and RF2 antenna connectors.



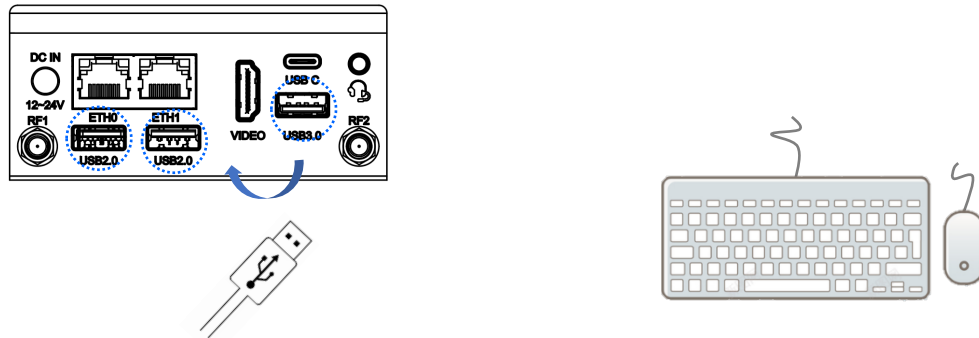
2. Use an Ethernet cable to connect the device to a router or switch via ETH0 or ETH1 for internet access.



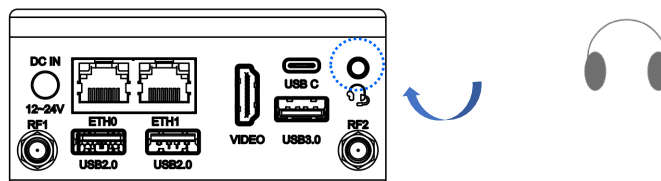
3. Use an HDMI cable to connect the device to a monitor for video output.



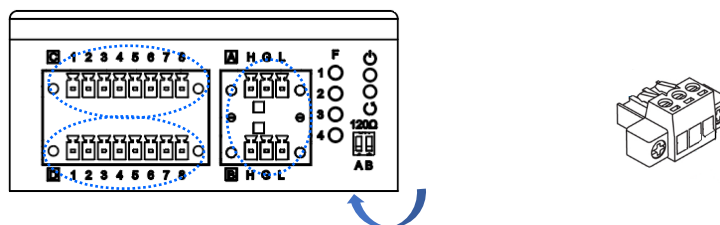
4. Connect USB HID devices to the device via the USB interfaces to facilitate device operation.



5. Connect an audio device to the device via the 3.5mm combo audio jack.



6. Install the mating connectors for RS232/485/422, and CAN.



7. Power on the device using a 12V-24 DC power adapter.



CHAPTER 3 HARWARE DESCRIPTION

This section briefs on the hardware definition and connector/jumper pinout.

3.1 Power jack

MBOX6211 is designed to connect to work with 12V-24V DC input supplied via a power jack. It is advisable to utilize a 12V 3A power adapter.

Specification: 2.5mm, 6.4mm, male



Pinout description:

Pin	Signal	Description
1	+VDC	DC-IN POWER +
2	GND	Ground
3	GND	Ground

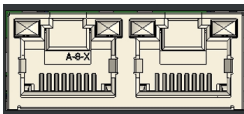
3.2 Ethernet Jack

Specifications: 10/100/1000Mbps, 4 x LED, 2 x Port, female

Each Ethernet jack has two LED indicators to indicate the link/activity status of the network.

Yellow LED (left): Solid-link up; Blinking-activity (data transfer).

Green LED (right): Solid-1000Mbps link speed; Off-10Mbps.



ETH0 (B) ETH1 (A)

Pinout description of ETH1:

Pin	Signal	Description
A2	MDI_ATD1+	Ethernet MDI 0+
A3	MDI_ATD1-	Ethernet MDI 0-
A4	MDI_ATD2+	Ethernet MDI 1+
A5	MDI_ATD2-	Ethernet MDI 2+
A6	MDI_ATD3+	Ethernet MDI 2-

A7	MDI_ATD3-	Ethernet MDI 1-
A8	MDI_ATD4+	Ethernet MDI 3+
A9	MDI_ATD4-	Ethernet MDI 3-

Pinout description of ETH0:

Pin	Signal	Description
B2	MDI_BTD1+	Ethernet MDI0+
B3	MDI_BTD1-	Ethernet MDI0-
B4	MDI_BTD2+	Ethernet MDI1+
B5	MDI_BTD2-	Ethernet MDI2+
B6	MDI_BTD3+	Ethernet MDI2-
B7	MDI_BTD3-	Ethernet MDI1-
B8	MDI_BTD4+	Ethernet MDI3+
B9	MDI_BTD4-	Ethernet MDI3-

3.3 USB 3.0 Type-A

MBOX6211 implements a USB 3.0 Type-A interface to connect peripherals.

Specifications: 3.0, Type A, 1 x port, female

3.4 USB 3.0 Type-C

MBOX6211 implements a USB 3.0 Type-C interface for super high-speed data transfer.

Specifications: 3.0, Type C, 1 x port

3.5 USB 2.0 Type-A Interface

MBOX6211 offers two USB 2.0 Type-A interfaces to connect peripherals.

Specifications: 2.0, Type A, 2 x Port, female

3.6 Video Output

MBOX6211 offers an HDMI 1.4b for video output with resolutions up to 4K @30Hz.

Specifications: Type A, 1 x port, female

Pinout description:

Pin	Signal	Description
1	HDMI_D2_P_CON	HDMI data 2 +
2	GND	Ground
3	HDMI_D2_N_CON	HDMI data 2 -
4	HDMI_D1_P_CON	HDMI data 1 +
5	GND	Ground
6	HDMI_D1_N_CON	HDMI data 1 -
7	HDMI_D0_P_CON	HDMI data 0 +
8	GND	Ground
9	HDMI_D0_N_CON	HDMI data 0 -
10	HDMI_CLK_P_CON	HDMI clock +
11	GND	Ground
12	HDMI_CLK_N_CON	HDMI clock -
13	NC	NC
14	NC	NC
15	HDMI_DDC_SCL_CON	HDMI DDC I2C clock
16	HDMI_DDC_SDA_CON	HDMI DDC I2C data
17	GND	Ground
18	HDMI_VDD_5.0V_CON	HDMI power +5V
19	HDMI_HPD_5V	HDMI hot plug detection

3.7 Audio Jack

The 3.5mm combo audio jack supports both microphone and headphone functions, and complies with the CTIA standard.

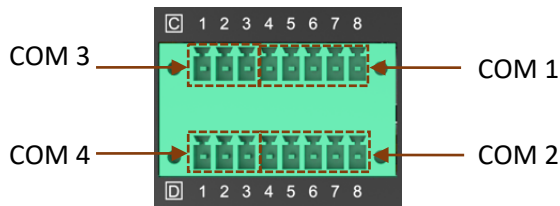
Specifications: 3.5mm, 4-pole, 1 x port, female

3.8 RS232/422/485 Connector

The device offers two RS232 connectors (C1-C3, D1-D3) and two RS232/485/422 connectors (C4-C8, D4-D8).

In the software system, pins C1-C3 are mapped to COM 3, pins D1-D3 are mapped to COM 4, pins C4-C8 are mapped to COM 1, and pins D4-D8 are mapped to COM 2. The baud rate of these ports ranges from 1200bps to 1.5Mbps.

Specifications: 2 × 8, 3.81mm, 7A, 22.7mm (H), male



Pinout description of **Row C**:

Pin	Signal	Description
1	232 TXD3	RS232 transmit data (COM 3)
2	GND	Ground
3	232 RXD3	RS232 receive data (COM 3)
4	422RX-_1	RS422 receive data - (COM 1)
5	422RX+_1 / 232 TXD1	RS422 receive data + / RS232 transmit data (COM 1)
6	GND	Ground
7	485_B_1 / 422TX-_1 / 232 RXD1	RS485 B / RS422 transmit data - / RS232 receive data (COM 1)
8	485_A_1 / 422TX+_1	RS485 A / RS422 transmit data + (COM 1)

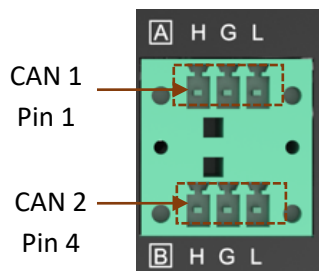
Pinout description of **Row D**:

Pin	Signal	Description
1	232 TXD4	RS232 transmit data (COM 4)
2	GND	Ground
3	232 RXD4	RS232 receive data (COM 4)
4	422RX-_2	RS422 receive data - (COM 2)
5	422RX+_2 / TXD2	RS422 receive data + / RS232 transmit data (COM 2)
6	GND	Ground
7	485_B_2 / 422TX-_2 / 232 RXD2	RS485 B / RS422 transmit data - / RS232 receive data (COM 2)
8	485_A_2 / 422TX+_2	RS485 A / RS422 transmit data + (COM 2)

3.9 CAN Bus

The device offers two CAN buses that provide reliable and flexible communication between the device and the nodes.

Specifications: 2 × 3, 3.81mm, 7A, male



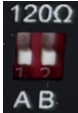
Pinout description:

Pin	Signal	Description
1	CAN1_H	CAN 1 High level
2	GND	Ground
3	CAN1_L	CAN 1 Low level
4	CAN2_H	CAN 2 High level
5	GND	Ground
6	CAN2_L	CAN 2 Low level

3.10 DIP Switch

Each CAN bus network must have termination resistors (typically 120Ω) at both ends of the physical network to effectively prevent signal reflection back onto the bus. The DIP switches allow users to activate/deactivate the resistors between the "CAN High" and "CAN Low" lines as needed.

Specifications: DIP, 2.54mm, 2-channel, 0.025A, 24V



Description:

Switch	Direction	Result
A	UP	The 120Ω termination resistor is enabled for CAN 1
B	UP	The 120Ω termination resistor is enabled for CAN 2

3.11 WLAN Antenna Connector

There are two SMA antenna connectors on the enclosure marked as RF1 and RF2 for connecting Wi-Fi antennas to provide improved signal strength.

3.12 PWR Button

The power button controls the device's power state, allowing users to:

- Turn the device on/off.
- Wake the device from the sleep mode.

3.13 Reset Button

There is a reset button on the device, providing a flexible method for users to restart the device upon a short press of it.

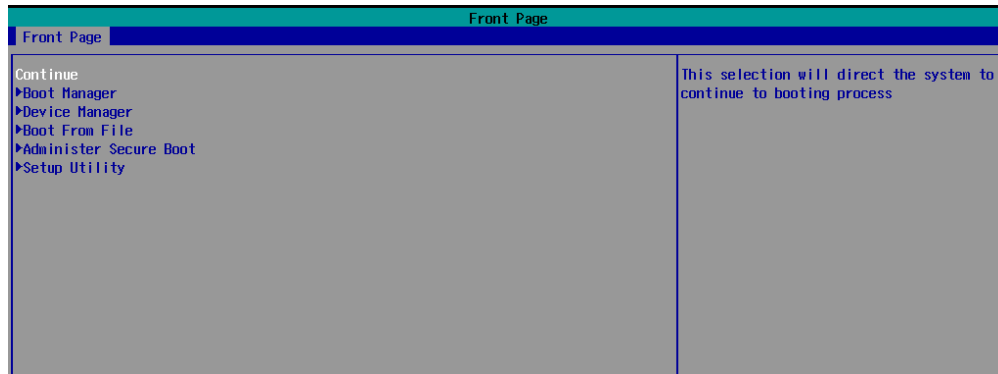
CHAPTER 4 WINDOWS SYSTEM MANUAL

Remember to connect a keyboard, mouse and monitor to the device for easier operations.

4.1 BIOS Setup

4.1.1 Entering setup

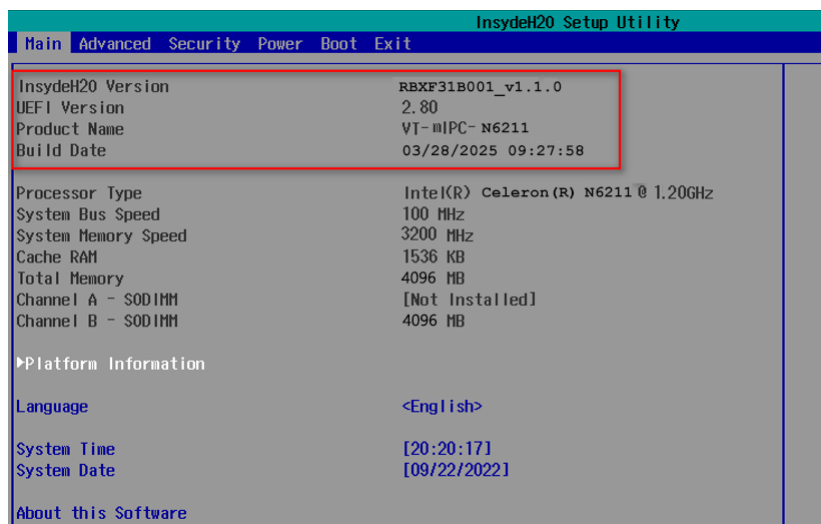
Power on the device and the system will start the power-on self-test process. Then press **ESC** to access the BIOS configuration page (front page) as shown below.



Description of the options:

Option	Description
Continue	Proceed with the booting process
Boot Manager	View all boot devices, including USB drives, SSD, etc.
Boot From File	Choose to boot from an internal file, only for EFI partition
Administer Secure Boot	Configure the secure boot function, which can prevent or allow the specified system to boot
Setup Utility	Overview of all BIOS setup options. You must be very careful when modifying the default settings.

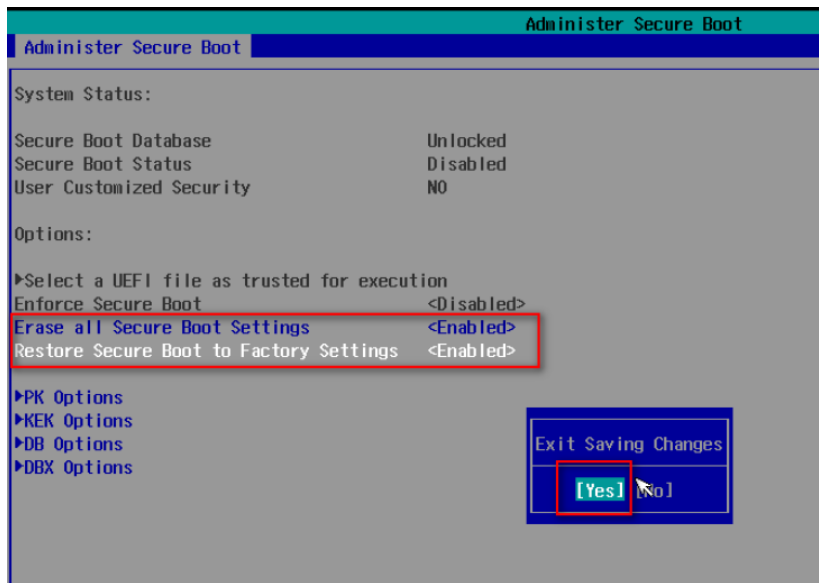
You can also check the BIOS version of the device after accessing the BIOS configuration page by navigating to the **Setup Utility > Main** menu.



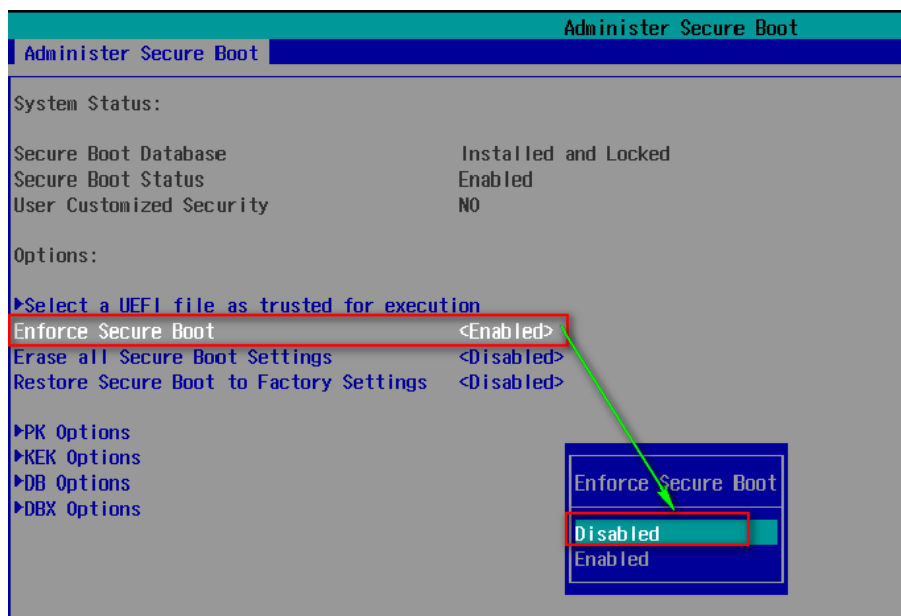
4.1.2 Secure boot

Secure Boot is firmware-dependent and requires that the computer BIOS is set to **UEFI** mode. It is disabled by default.

1. Power on MBOX6211 and press **ESC** to enter BIOS;
2. Select **Administer Secure Boot** on the front page;
3. Set **Erase all Secure Boot Settings** and **Restore Secure Boot to Factory Settings** to **Enabled**;



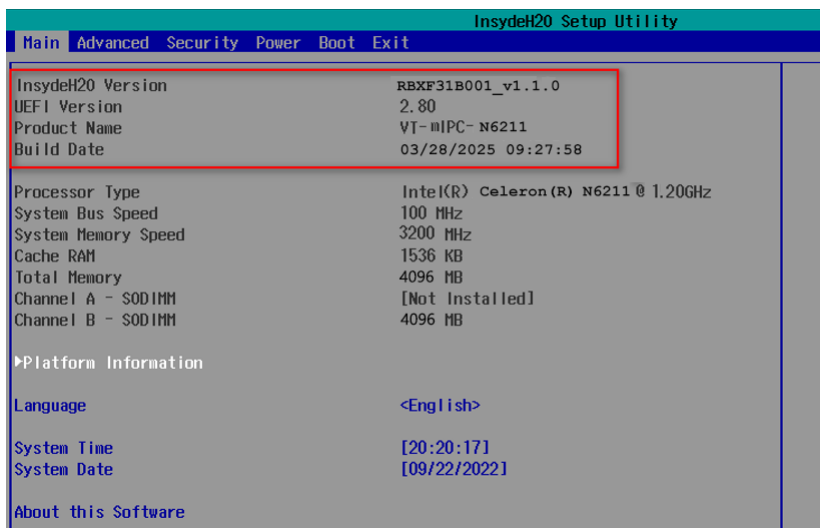
4. Press **F10** to save and exit;
5. There will be a dialog box indicating the system will be reset. Click **OK**, and the system will reboot;
6. If you need to disable Secure Boot, set **Enforce Secure Boot** to **Disabled**.



Use the up and down arrow keys on the keyboard to enter BIOS Setup Utility, which features the following menus in the menu bar:

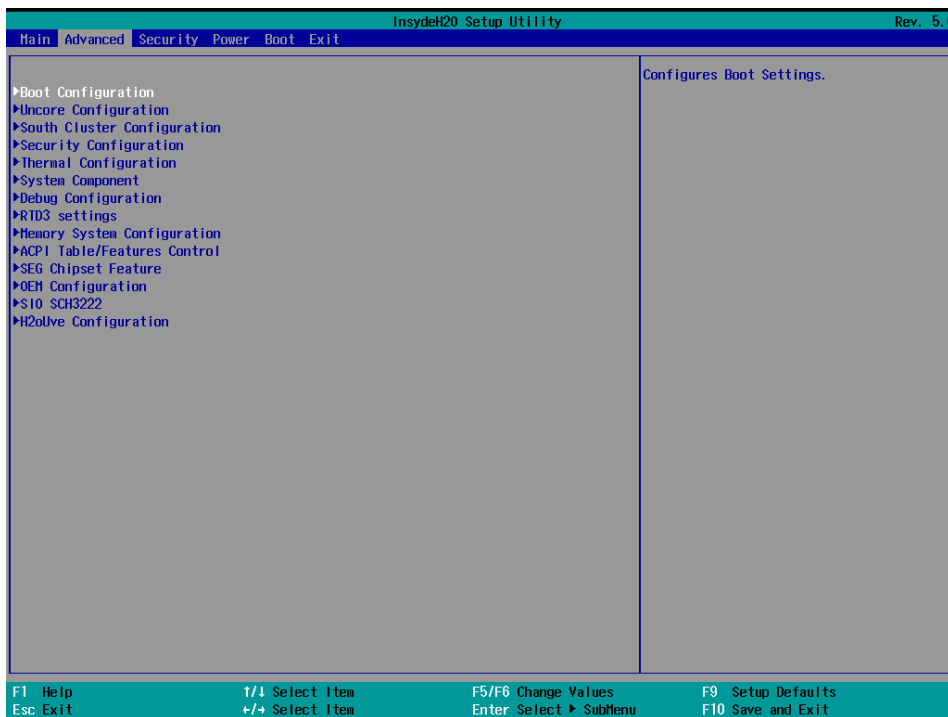
- Main (basic system configurations, like BIOS version, processor information, system language, system time and date)
- Advanced (advanced configurations to allow users to customize the system)
- Security (system security settings where users can set supervisor passwords)
- Power (CPU power settings for power management purpose)
- Boot (system boot options)
- Exit (BIOS load or exit options with or without changes saved)

4.1.3 Setup Utility – Main



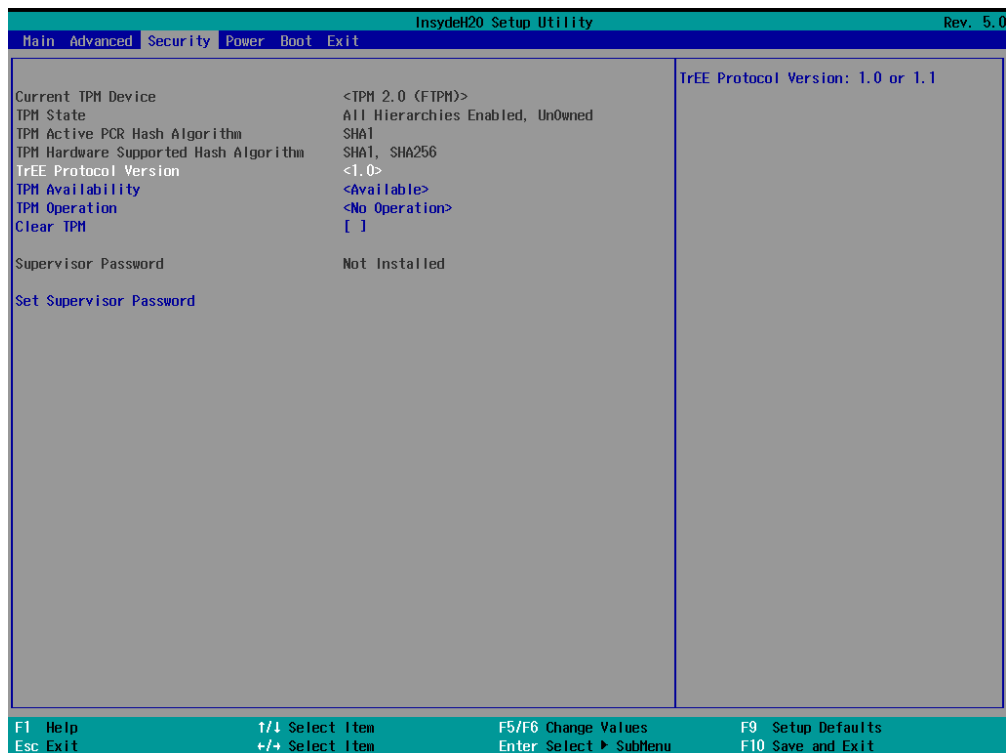
- Language: You can select from English, French, Chinese, and Japanese for system language.
- System Time: The time format is <Hour>: <Minute>: <Second>.
- System Date: The date format is <Month>/ <Day>/<Year>.

4.1.4 Setup Utility – Advanced



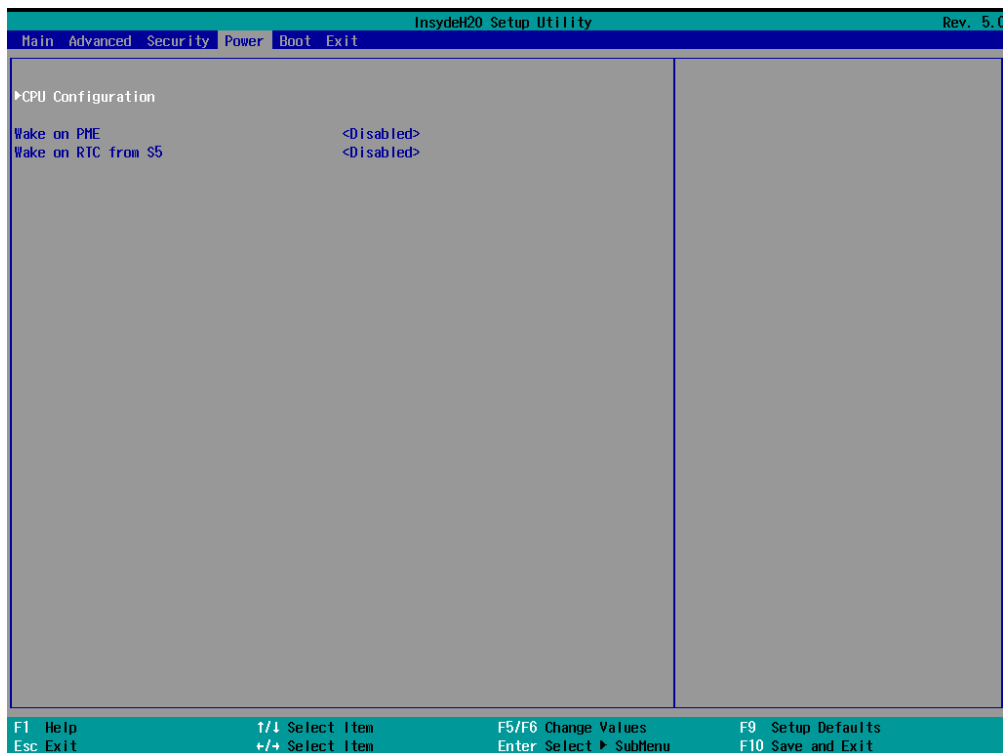
- **Boot Configuration:** You can select the operating system that you would like the device to run on.
- **Uncore Configuration:** You can customize the video settings, GOP settings, IGD settings, and IPU PCI device settings here.
- **South Cluster Configuration:** This page provides configuration options for audio, GMM, ISH, LPSS, PCIe, SATA, SCC, USB, Timer, etc.
- **Security Configuration:** TPM device settings are made here.
- **Thermal Configuration:** Thermal management settings are customized here.
- **System Component:** Spread spectrum clocking configurations could be accessed from here.
- **Debug Configuration:** You can enable/disable the debugger here.
- **Memory System Configuration:** You can enable/disable the memory scrambler and other memory-related settings here.
- **ACPI Table/Features Control:** This option allows you to enable/disable S4 wakeup from RTC (only available for ACPI).
- **SEG Chipset Feature:** This option allows you to enable/disable wakeup on USB from S5 state.
- **OEM Configuration:** LVDS configurations are available to change.
- **SIO SCH 3222:** Serial ports are configured here.
- **H2OUVE Configuration:** You can enable/disable the configuration interface of H2OUVE tool.

4.1.5 Setup Utility – Security



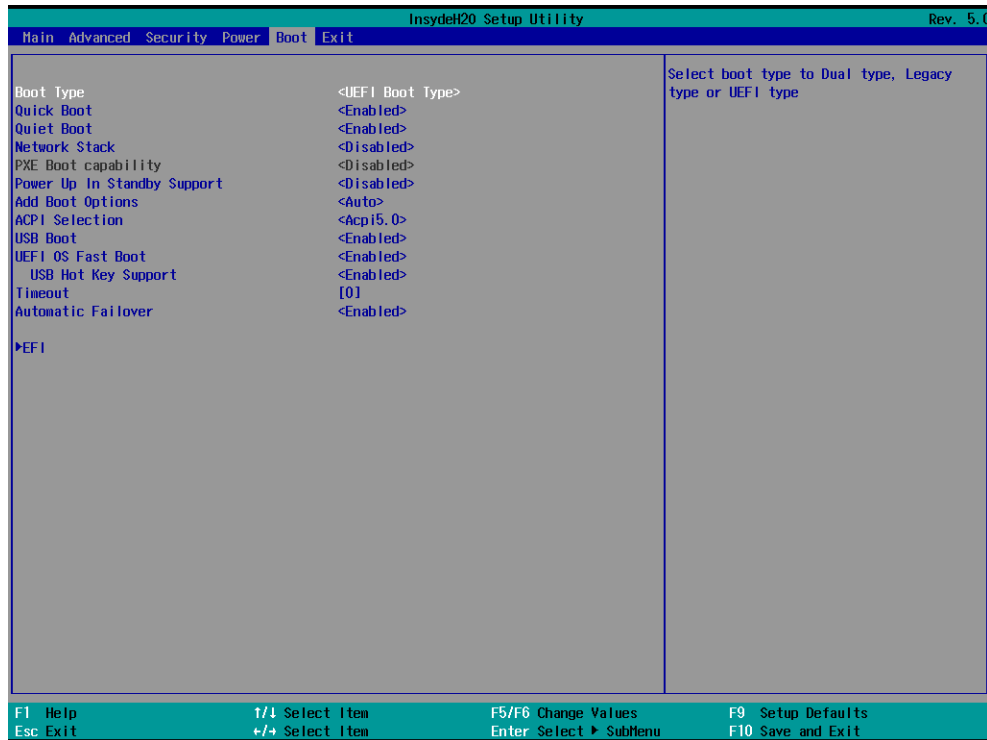
- Information of current TPM device is available here and you can set the supervisor passwords as well.

4.1.6 Setup Utility – Power



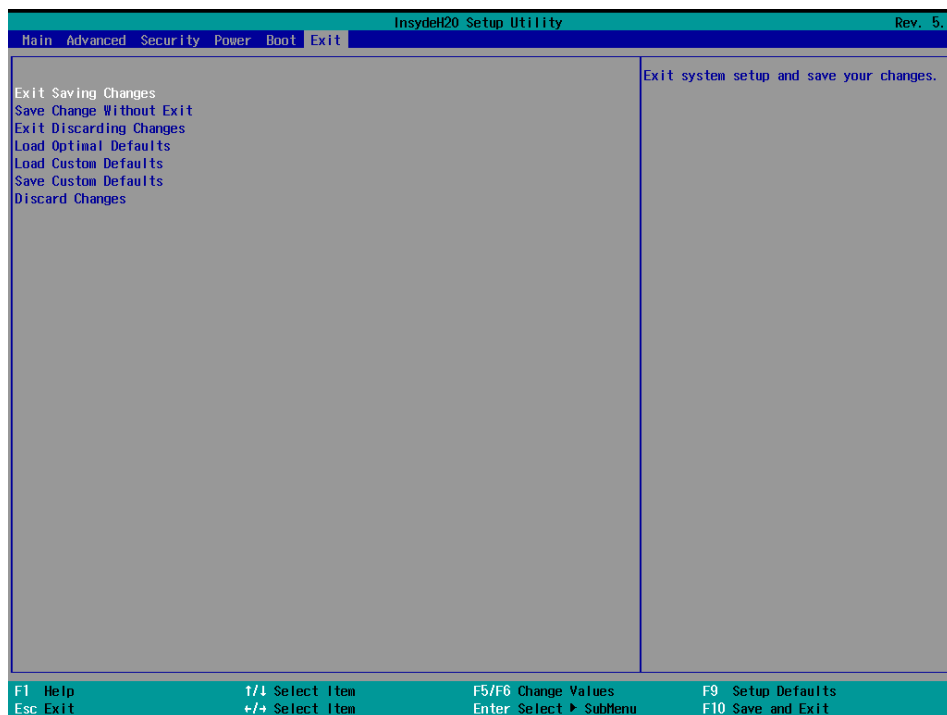
- CPU configurations are customizable.
- Options for wakeup on PME/RTC from S5 are available.

4.1.7 Setup Utility – Boot



- Users can set the boot mode, the sequence, timeout, and automatic failover of boot devices when BIOS attempts to load the operating system.
- When users want to maintain or install the system for multiple devices without inserting a CD or USB into such devices one by one, PXE boot can be an option to install the system.

4.1.8 Setup Utility – Exit

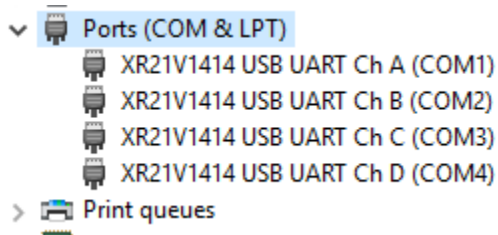


- Options for users to load or exit BIOS Setup include loading system optimal defaults or loading custom settings, exiting with custom changes save or not saved.

4.2 RS232/485/422

MBOX6211 offers two RS232 connectors (C1-C3, D1-D3) and two RS232/485/422 connectors (C4-C8, D4-D8).

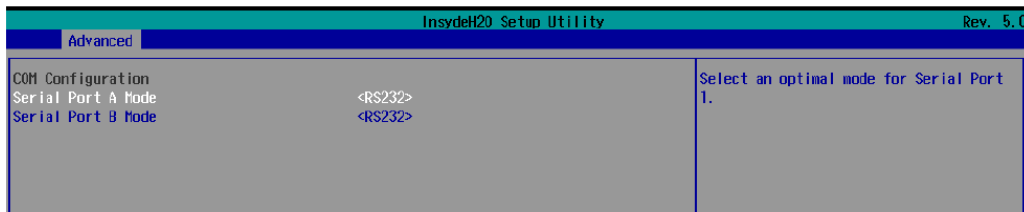
In the software system, pins C1-C3 are mapped to COM 3, pins D1-D3 are mapped to COM 4, pins C4-C8 are mapped to COM 1, and pins D4-D8 are mapped to COM 2.



4.2.1 Serial mode switch

If you wish to change the mode of the multiplexers (COM 1, COM 2), follow the steps below:

1. Power on the device and press the **ESC** key during the system boot to enter BIOS;
2. Navigate to **Setup Utility > Advanced > Vantron Configuration**;
3. Enter the **COM Configuration** menu;
4. Use the up & down arrows to move the cursor to **Serial Port A Mode/Serial Port B Mode** (Serial Port A= COM1, Serial Port B = COM 2), and press **Enter** to confirm the port selection ;



5. Use the up & down arrows to change the mode of the port (RS232/RS485/RS422);
6. Press **Enter** to confirm the selection of the mode;
7. Press **F10** to save and exit.

4.2.2 Serial port functionality test

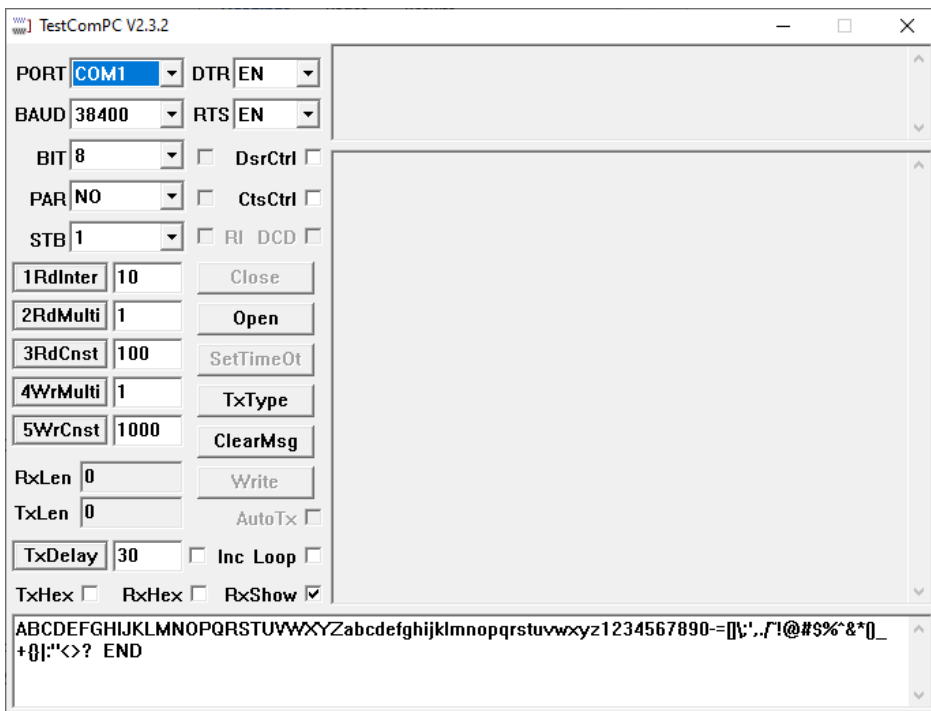
The baud rate of these ports ranges from 1200bps to 1.5Mbps. To test the functionality of the serial ports, follow the steps below.

1. Cross the pins of two serial ports;

RS232: RX to TX, GND to GND

RS422: TX+ to RX+, TX- to RX- , GND to GND

RS485: A to A, B to B
2. Connect one serial port to a Windows host computer using a serial-to-USB adapter and identify the port number using **Device Manager**;
3. Open the serial communication tool **TestCommPC Vx.x.x.exe** located in **SW-Tests\UART** in the software release package;



4. Select the current port number, then set the baud rate, stop bit (8), and parity (none) for the port;
5. Test data transmission.

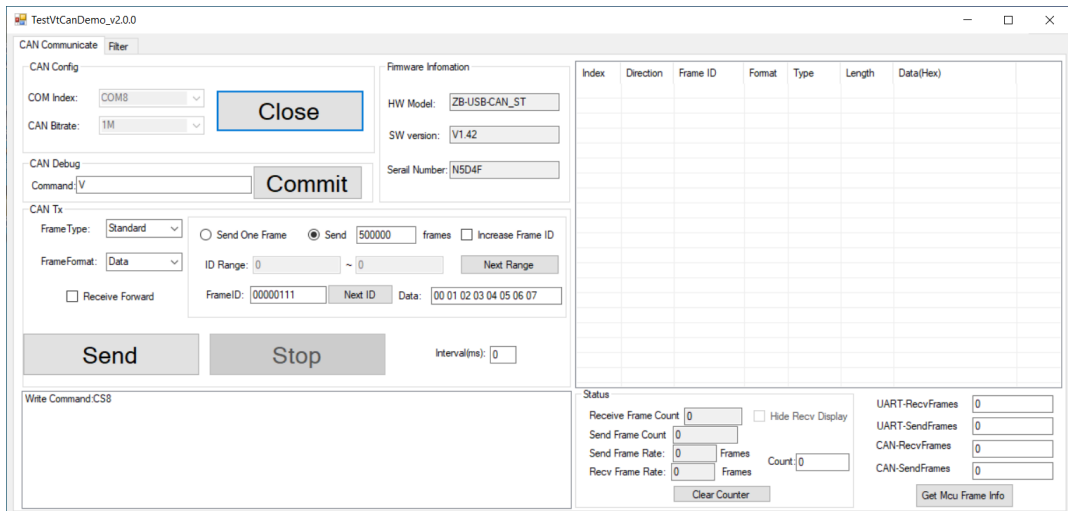
4.3 CAN Bus

To ensure reliable CAN communication, follow these steps to test the functionality of the CAN buses on the device.

1. Unless the CAN bus of the device is not placed at the end of a CAN network, ensure to dial the DIP switch up to enable the termination resistor for the specific CAN bus;
2. Connect the device to a CAN bus analyzer via the CAN bus of the prior step;

H to H, L to L, GND to GND

3. Connect the CAN bus analyzer to a Windows host computer and identify the device name of the CAN bus using **Device Manager**;
4. Open the test tool **TestVtCanDemo vxxx** located in: **SW-Tests\CAN\TestVtCanDemo vxxx.zip** in the software release package;



5. Select the COM index (device name figured out in step 3), then set the bitrate (up to 1Mbps);
6. Click **Open** to start the program.

4.3.1 Data sending

Follow the instructions below to set the transmission parameters.

Frame Type:

- Standard: To send 11-bit frames
- Extended: To send EID (29-bit) frames

Send One Frame/ Send xxx frames:

- You can select to send one frame or specified number of frames at one time.

Increase Frame ID:

- If this box is checked, each time a frame is sent, the frame ID field will be increased by 1.

Frame Format:

- Data frame: The frame contains actual data (0 to 8 bytes) in the data field of the frame
- Remote frame: The data field is empty, and it uses the frame to request that the receiving node transmit data back.

Frame ID:

- If the “**Increase Frame ID**” box is unchecked, the content in **Frame ID** will be used to fill the frame ID field while sending a frame.

Data:

- To set the data field of the frame to be sent.

Interval:

- The time interval between two frames sent.

Send:

- To start sending the frames.

Stop:

- To halt the frame sending.

Example:

The screenshot shows a 'CAN Tx' control panel with the following elements:

- Frame Type:** A dropdown menu set to 'Extend'.
- Send Mode:** Two radio buttons: 'Send One Frame' (unselected) and 'Send' (selected).
- Frames:** A text input field containing '400000' followed by the word 'frames'.
- Increase Frame ID:** A checked checkbox.
- Frame Format:** A dropdown menu set to 'Data'.
- Frame ID:** A text input field containing '00000111'.
- Data:** A text input field containing '00 01 02 03 04 05 06 07'.
- Buttons:** Two large buttons labeled 'Send' and 'Stop'.
- Interval:** A text input field labeled 'Interval(ms):' containing '0'.

4.3.2 Data Receiving

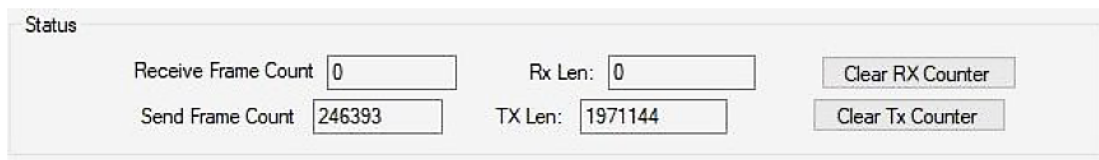
Upon clicking the **Open CAN** button, a receive thread will be created. All received CAN frames will be parsed and displayed on the **List View** field.

Receive Forward:

If the **Receive Forward** box is checked (frame sending is disabled), all received CAN frames from the other device will be retransmitted to MBOX6211. To avoid ID conflicts, the re-transmitted frame IDs will be incremented by 1.

4.3.3 TX and RX Status

All frames sent and received are recorded under the **Status** box, with the frame count and length displayed. Users have the option to clear the received or sent statistics.



The screenshot shows a 'Status' box with four input fields and two buttons. The 'Receive Frame Count' field contains '0', 'Rx Len:' is followed by '0', 'Send Frame Count' contains '246393', and 'TX Len:' is followed by '1971144'. There are buttons for 'Clear RX Counter' and 'Clear Tx Counter'.

Status	
Receive Frame Count	0
Rx Len:	0
Send Frame Count	246393
TX Len:	1971144
<button>Clear RX Counter</button>	
<button>Clear Tx Counter</button>	

4.4 Installing Windows 10 IoT System

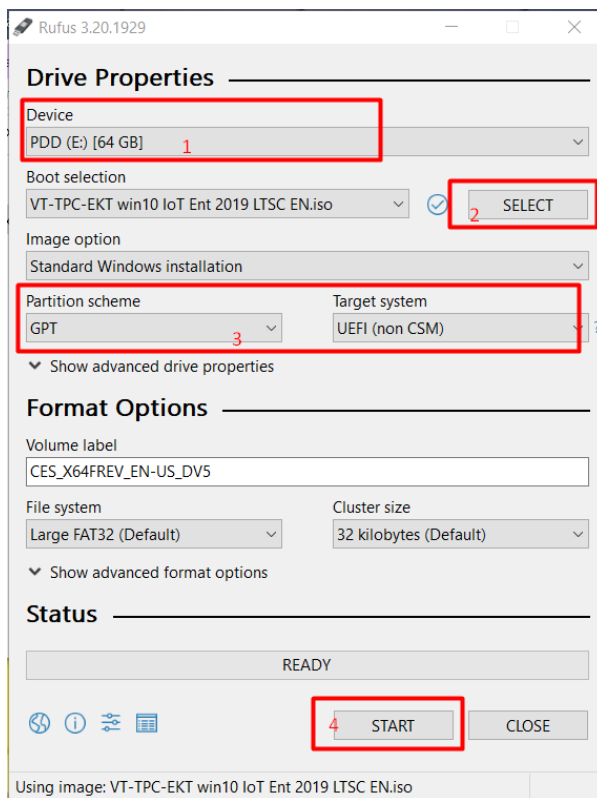
4.4.1 Prerequisites

- MBOX6211
- A USB drive with capacity no less than 8GB, preferably supporting USB 3.0
- Software release package of MBOX6211
- A program for making the bootable device: rufus-xxx .exe (path in the release package: \Win11 Image)
- Windows 10 IoT image (path in the release package: \Win10 Image)
- A host computer running Windows system
- A keyboard, mouse and monitor to connect the device for easier operation
- 12V/24V power adapter for powering up the device

4.4.2 Make a Bootable USB Drive for Windows 10 IoT

Plug the USB drive into the host computer. Run rufus-xxx .exe and it will automatically detect the USB. Then follow the steps below to make a bootable USB drive on the Rufus window.

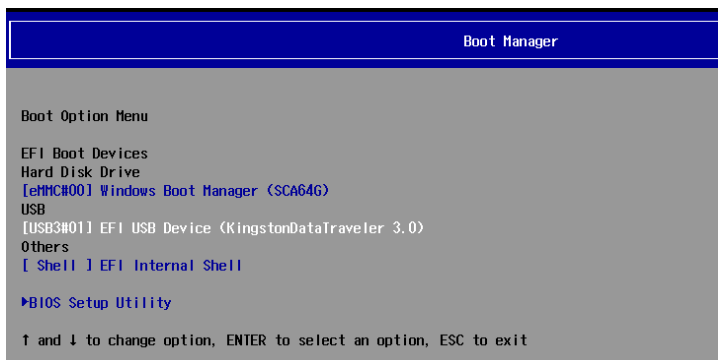
1. Click on **Device** and choose the USB you want to use from the drop-down list.
2. Select the ISO image you want to burn onto the USB from the drop-down and click **Select**.
3. Generally, users would like to create a **Standard Windows installation**, and Rufus will automatically detect the correct **Partition Scheme** based on the USB drive. Yet make sure the partition scheme is **GPT**.
4. Set the Target system as **UEFI** and the File system as **FAT32**.
5. Click **START** to make the bootable USB drive.



6. Unplug the USB drive from the host computer after the bootable device is successfully made.

4.4.3 System Installation

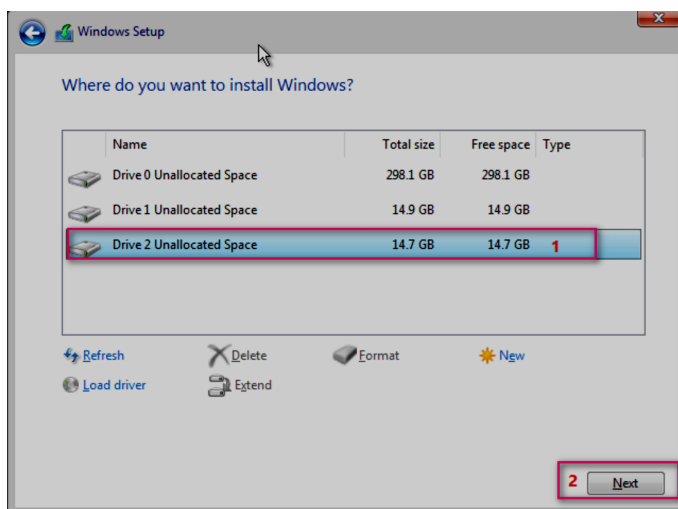
1. Plug the bootable USB drive into MBOX6211;
2. Power on the device and it will enter the boot process;
3. Press **ESC** during the system bootup to enter the BIOS configuration page;
4. Navigate to **Boot Manager** in the configuration page;
5. Select the bootable USB drive you created for the Windows image and press **ENTER**.



6. Wait until the "Where do you want to install Windows" page appears on the Windows Setup window.
7. Click **Delete** to remove all partitions from the target disk on the MBOX6211 device to ensure clean installation.

Make sure you have backed up the data in the disk before deleting the partitions because system installation will format the disk.

8. After deleting all partitions of the target disk, select it and click **Next** to proceed.



9. Wait patiently until the Windows 10 IoT desktop appears, indicating the completion of the installation.

CHAPTER 5 DISPOSAL AND WARRANTY

5.1 Disposal

When the device comes to end of life, you are suggested to properly dispose of the device for the sake of the environment and safety.

Before you dispose of the device, please back up your data and erase it from the device.

It is recommended that the device is disassembled prior to disposal in conformity with local regulations. Please ensure that the abandoned batteries are disposed of according to local regulations on waste disposal. Do not throw batteries into fire or put in common waste canister as they are explosive. Products or product packages labeled with the sign of “explosive” should not be disposed of like household waste but delivered to specialized electrical & electronic waste recycling/disposal center.

Proper disposal of this sort of waste helps avoid harm and adverse effect upon surroundings and people’s health. Please contact local organizations or recycling/disposal center for more recycling/disposal methods of related products.

5.2 Warranty

Product warranty

VANTRON warrants to its CUSTOMER that the Product manufactured by VANTRON, or its subcontractors will conform strictly to the mutually agreed specifications and be free from defects in workmanship and materials (except that which is furnished by the CUSTOMER) upon shipment from VANTRON. VANTRON's obligation under this warranty is limited to replacing or repairing at its option of the Product which shall, within **24 months** after shipment, effective from invoice date, be returned to VANTRON's factory with transportation fee paid by the CUSTOMER and which shall, after examination, be disclosed to VANTRON's reasonable satisfaction to be thus defective. VANTRON shall bear the transportation fee for the shipment of the Product to the CUSTOMER.

Out-of-Warranty Repair

VANTRON will furnish the repair services for the Product which are out-of-warranty at VANTRON's then-prevailing rates for such services. At customer's request, VANTRON will provide components to the CUSTOMER for non-warranty repair. VANTRON will provide this service as long as the components are available in the market; and the CUSTOMER is requested to place a purchase order up front. Parts repaired will have an extended warranty of 3 months.

Returned Products

Any Product found to be defective and covered under warranty pursuant to Clause above, shall be returned to VANTRON only upon the CUSTOMER's receipt of and with reference to a VANTRON supplied Returned Materials Authorization (RMA) number. VANTRON shall supply an RMA, when required within three (3) working days of request by the CUSTOMER. VANTRON shall submit a new invoice to the CUSTOMER upon shipping of the returned products to the CUSTOMER. Prior to the return of any products by the CUSTOMER due to rejection or warranty defect, the CUSTOMER shall afford VANTRON the opportunity to inspect such products at the CUSTOMER's location and no Product so inspected shall be returned to VANTRON unless the cause for the rejection or defect is determined to be the responsibility of VANTRON. VANTRON shall in turn provide the CUSTOMER turnaround shipment on defective Product within **fourteen (14) working days** upon its receipt at VANTRON. If such turnaround cannot be provided by VANTRON due to causes beyond the control of VANTRON, VANTRON shall document such instances and notify the CUSTOMER immediately.

Appendix Regulatory Compliance Statement

This product has been determined to be compliant with the applicable standards, regulations, and directives for the countries where the product is marketed.

FCC Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates 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.

This device complies with Part 15 of 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.

Note: The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user's authority to operate this equipment.

RF Radiation Exposure Statement:

1. This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator & your body.
2. The device has been evaluated to meet general RF exposure requirement.

ISED Canada Compliance Statement

This device complies with ISED Canada license-exempt RSS standard(s). Operation is subject to the following two conditions:

- (1) This device may not cause interference, and
- (2) This device must accept any interference, including interference that may cause undesired operation of the device.

Operation in the band 5150–5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems.

Exposure to radio frequency energy:

The radiated output power of this device meets the limits of ISED Canada radio frequency exposure limits. This device should be operated with a minimum separation distance of 20cm (8 inches) between the equipment and a person's body.

Le présent appareil est conforme aux CNR d'ISDE Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

- (1) l'appareil ne doit pas produire de brouillage, et
- (2) l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

La bande 5150–5250 MHz est réservée uniquement pour une utilisation à l'intérieur afin de réduire les risques de brouillage préjudiciable aux systèmes de satellites mobiles utilisant les mêmes canaux.

L'exposition à l'énergie radiofréquence:

La puissance de sortie rayonné de cet appareil est conforme aux limites de la ISDE Canada limites d'exposition aux fréquences radio. Cet appareil doit être utilisé avec une distance minimale de séparation de 20cm entre (8 pouces) l'appareil et le corps d'une personne.