IBOX6425E
Embedded Industrial Computer

User Manual

Version: 1.3

Revision History:

No.	Version	Description	Date
1	V1.0	First release	Oct. 28, 2022
2	V1.1	Updated the description of the drivers	Feb. 13, 2023
3	V1.2	Added description on serial port debugging	Oct. 19, 2023
4	V1.3	1. Updated device layout views to Gen 2; 2. Added Windows Setup instructions to the system installation process	Jun. 11, 2024

Table of Contents

Foreword

Thank you for purchasing IBOX6425E Embedded Industrial 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

Copyright

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

Tel: (650) 422-3128

Email: sales@vantrontech.com

Regulatory Information

The Product is designed to comply with:

- EMC 3 Class B
- State Radio Regulation of China (SRRC)
- RoHS

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 IBOX6425E Embedded Industrial Computer is powered by the high-performing Intel® Atom® Elkhart Lake x6425E processor that has four cores capable of delivering high computing power for various embedded applications while keeping the CPU power consumption low at just 12W. The device supports two Ethernet ports transmitting at 10/100/1000Mbps. It also boasts two M.2 B-Key slots, one for SSD expansion and the other for connection of either a Wi-Fi 802.11 a/b/g/n/ac and BT 5.0 module or a 5G module to ensure uninterrupted communication.

The device comes with an HDMI interface and a VGA interface for optimized image display. In addition, there are two serial ports to enable seamless communication with external devices, ensuring a reliable, error-free data path.

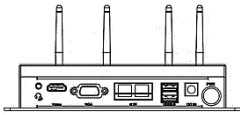
IBOX6425E offers rich peripheral interfaces, allowing businesses to connect a wide range of peripherals for extended applications. This includes devices such as barcode scanners, cameras, barcode printers and keyboard plates, making customers rest assured of a reliable and consistent user experience.

1.2 Product Feature

IBOX6425E
Intel® Elkhart Lake Atom® x6425E quad-core processor
HDMI/VGA for video output
Rich interface for expansion
Wi-Fi/BT/5G/ETH for communication
Industrial-grade wide temperature design
Ability to withstand harsh environments
Industrial longevity

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		Optional accessories	
	1 x IBOX6425E		1 x Power adapter and power cord
	2 x Wi-Fi & BT antenna		2 x 5G antenna

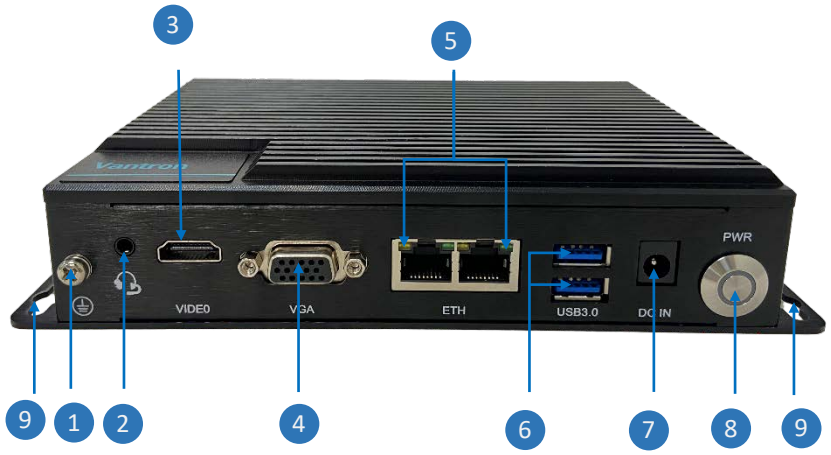
Actual accessories might vary slightly from the list above as the customer order might be different from the standard configuration options.

1.4 Specifications

IBOX6425E			
System	CPU	Intel® Atom®, Quad-core Elkhart Lake x6425E processor, 3.0GHz (Max.)	
	GPU	Intel® HD Graphics 500	
	Memory	4GB DDR4 (Up to 16GB)	
	Storage	32GB eMMC 1 x SATA slot	1 x M.2 B-Key (2242/2280), for SSD
Communication	Ethernet	2 x RJ45, 10/100/1000Mbps	
	Wireless	1 x M.2 B-Key (3042/3052) for Wi-Fi 802.11 a/b/g/n/ac + BT 5.0 (Optional: 5G)	
Media	Display	1 x Standard HDMI 2.0b (4096 x 2160 @60Hz) 1 x VGA (1920 x 1080 @60Hz)	
	Audio	1 x 3.5mm combo audio jack	
I/Os	Serial port	2 x RS232/RS485/RS422	
	USB	2 x USB 3.0 Type-A	1 x USB 3.0 Type-C
	Micro SIM slot	1 x Micro SIM slot	
	RTC	Supported	
	Watchdog	Supported	
	TPM	1 x TPM 2.0	
Expansion	M.2 slot	1 x M.2 B-Key (2242/2280) for SSD or VPU	
		1 x M.2 B-Key (3042/3052) for Wi-Fi & BT (default) or 5G	
	I/O expansion board (Optional)	2 x USB 2.0 Type-A 2 x RS232/RS485	1 x CAN 8 x GPIO
System Control	Button	1 x ON/OFF button	1 x Reset button
	LED	1 x ON/OFF LED indicator	
Software	OS	Windows 10 (IoT)	
Power	Input	1 x Power jack (12V/5A or 24V/3A)	
Mechanical	Dimensions	171mm x 128mm x 38mm (Enclosure only) 196mm x 128mm x 38mm (With bracket)	
	Installation	Wall mounting	DIN rail mounting (Optional)
	Weight	750g	
	Shock test	IEC 60068-2-27	
	Water and dust resistance	IP40	
	Cooling mode	Fanless	
Environment Condition	Temperature	Operating: -20℃~+70℃	Storage: -40℃~+85℃
	Humidity	Operating: 10%~90% RH	Storage: 5%~95% RH
	Certification	EMC 3 Class B, SRRC, RoHs ESD: ±4KV (contact) and ±8KV (air)	

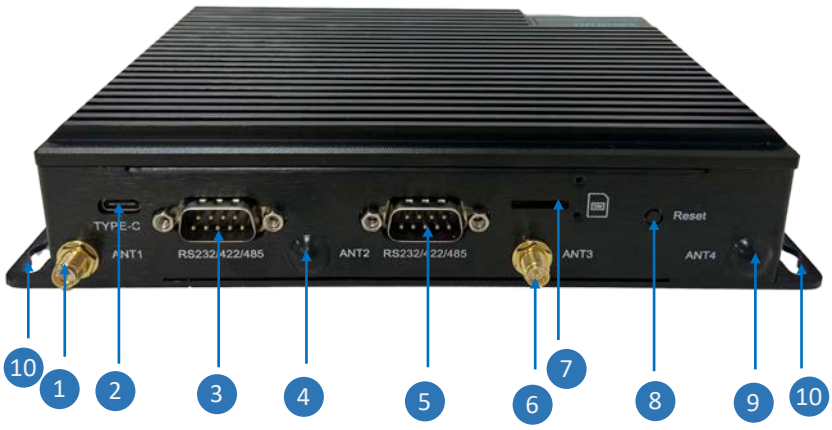
1.5 Product Layout

1.5.1 Front view



Interface	Description
1	Grounding screw
2	3.5mm Combo audio jack
3	HDMI 2.0b for video output, resolution up to 4096 x 2160 @60Hz
4	VGA for video output, resolution up to 1920 x 1080 @60Hz
5	2 x RJ45, 10/100/1000Mbps, working in the LAN area by default (customizable)
6	2 x USB 3.0 Type-A
7	Power jack
8	Power button
9	Mounting bracket

1.5.2 Back view



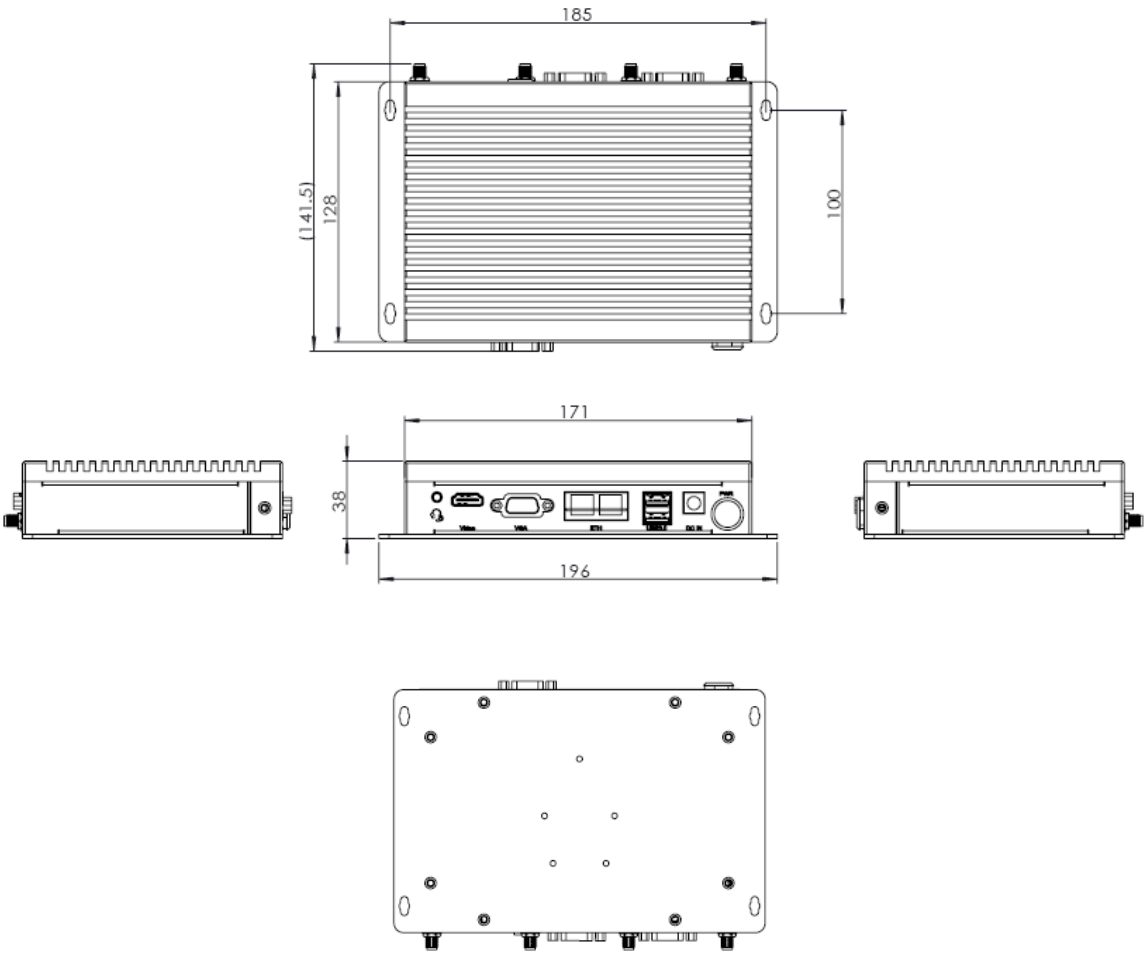
Interface	Description
1	Wi-Fi & BT primary antenna (default) / 5G cellular antenna
2	USB 3.0 Type-C
3	COM2, RS232/RS422/RS485
4	5G cellular antenna (disabled by default)
5	COM1, RS232/RS422/RS485
6	Wi-Fi & BT diversity antenna (default) / 5G cellular antenna
7	Micro SIM slot
8	Reset button (short press to restart the device)
9	5G cellular antenna (disabled by default)
10	Mounting bracket

1.6 Operating System

IBOX6425E runs Windows 10 IoT operating system.

1.7 Mechanical Dimensions

- 171mm x 128mm x 38mm (Enclosure only)
- 196mm x 128mm x 38mm (With bracket)



1.8 Power Supply and Consumption

IBOX6425E works with 12V 5A/24V 3A DC power input supplied by a power jack.

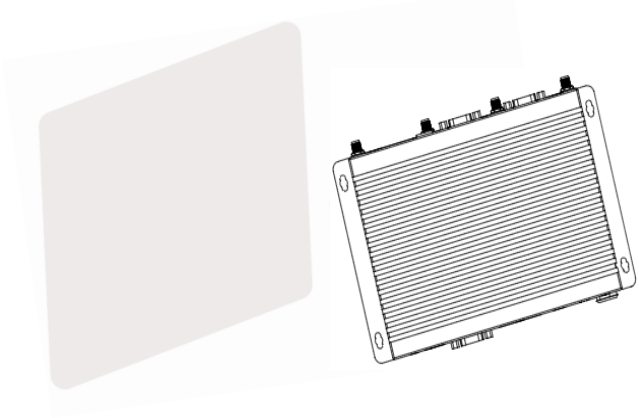
The power consumption of the device is about 15W. It should be pointed out that the power consumption is largely dependent on the RAM, storage capacity, peripherals, and other configurations of the device.

CHAPTER 2 GETTING STARTED

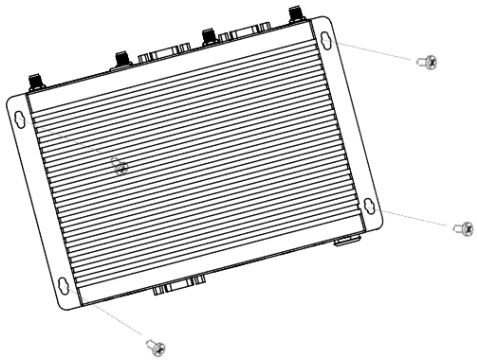
2.1 Hardware Connection

Before you proceed with the configuration of IBOX6425E, follow the steps below to finish hardware connection.

1. Position the device on a desired place, for instance, a wall or a desktop;

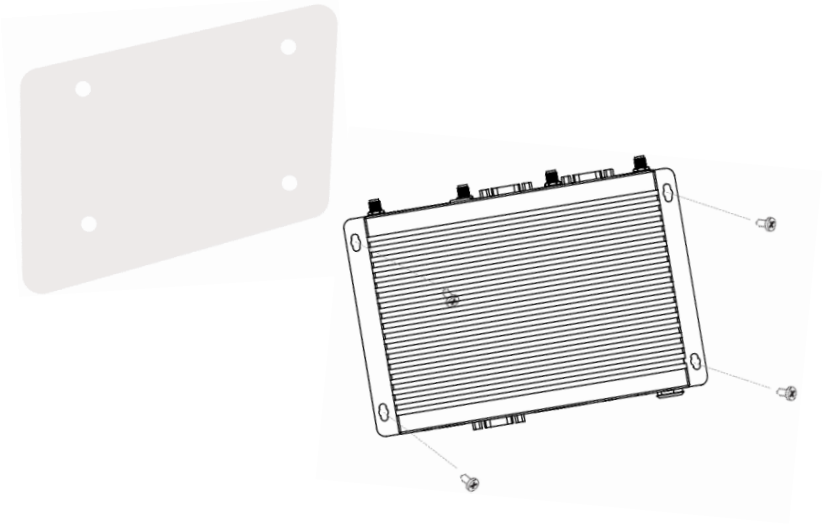


2. Align the screws (M4 x 6 / M4 x 8 recommended) to the screw holes reserved on the mounting bracket, and mark the position of the screws on the wall or the desktop;

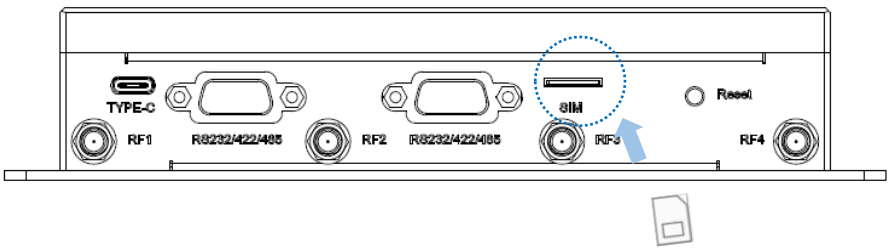


3. Drill four screw holes on the marks made in the prior step;

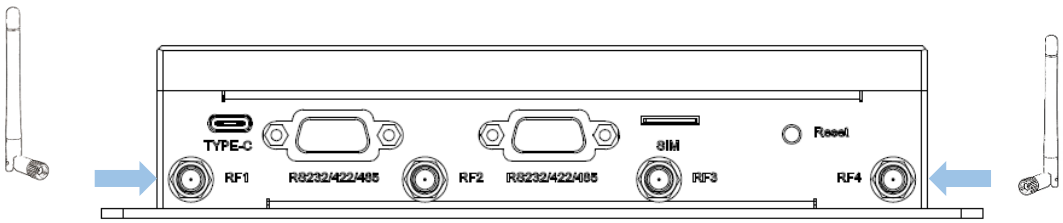
4. Place the device back and adjust the position of the bracket, if needed, then use a screwdriver to tighten the screws and secure the device;



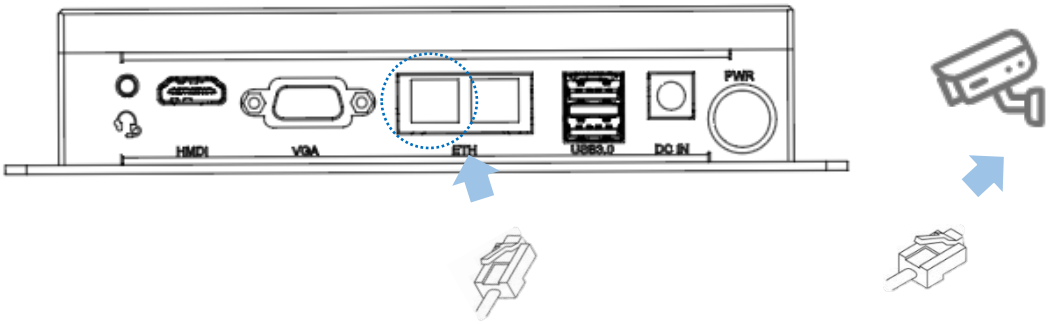
5. Insert an active SIM card, if any, into the corresponsive slot with the gold-colored contacts facing down;



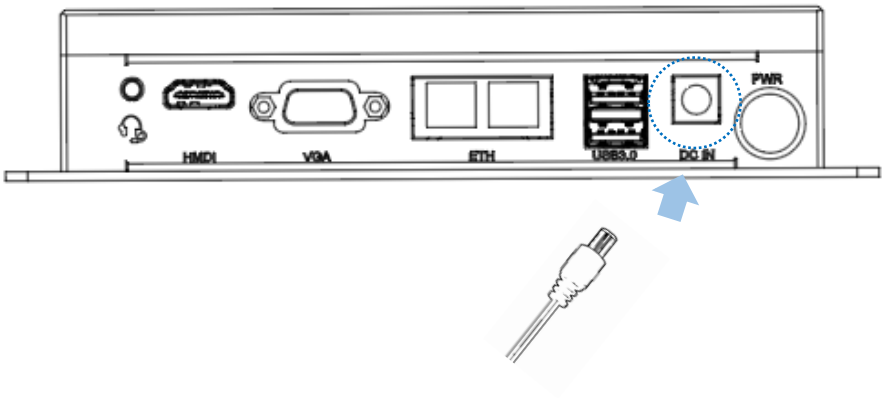
6. Push the Micro SIM card until it clicks into place;
7. Install the antennas to the antenna connectors and tighten the connectors;



8. When necessary, plug one end of an Ethernet cable into an Ethernet jack of IBOX6425E and the other end to a client device;



9. Insert the connector end of the 12V/24V DC power adapter into the DC connector of IBOX6425E ;



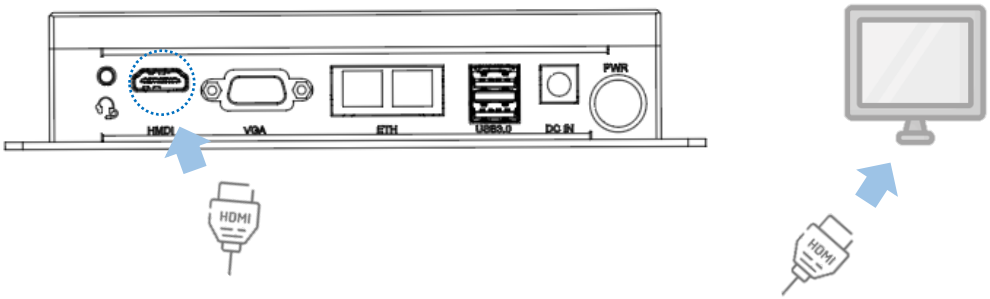
10. Plug the power adapter into the socket to power on the device.

2.2 Using the device

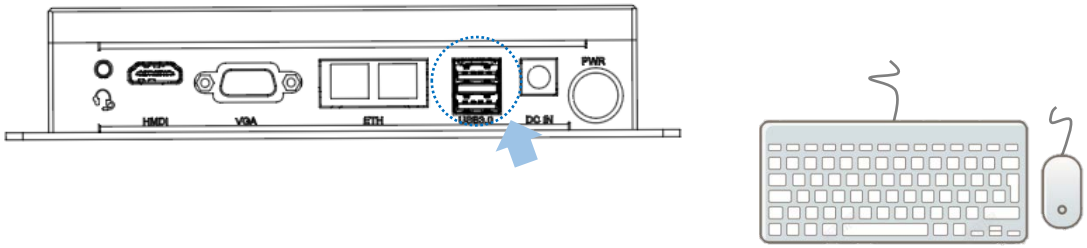
To access the GUI of the device, follow the steps below to connect it to a mouse, keyboard and monitor.

1. Insert one end of a VGA/HDMI cable to the corresponsive video interface of the device and the other end to a monitor;

The video cable shall vary with the interface to be connected, and an adapter connector is sometimes needed (HDMI interface for illustration here).

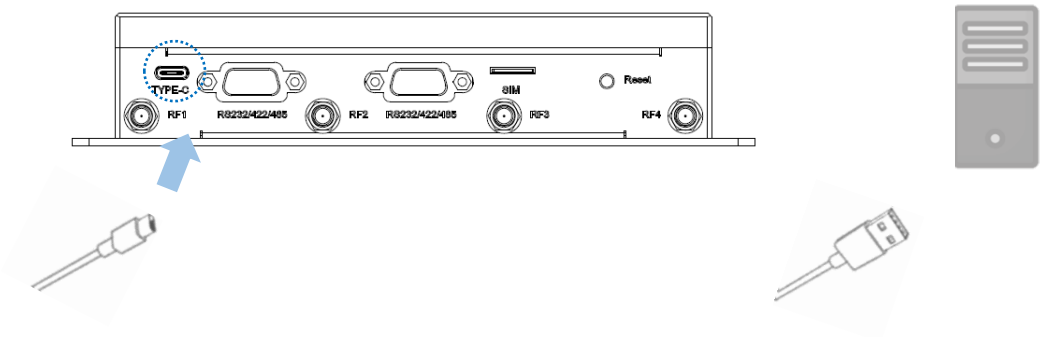


2. Connect a mouse and keyboard separately to the USB interfaces on the device;



3. Power on the device using a 12V/24 DC power adapter;

4. To debug the device remotely, use a USB Type-A to Type-C cable to connect the host computer and the USB Type-C interface on the device.



2.3 Turning on/off the device

Having set up IBOX6425E according to the aforementioned steps, users can operate the device following the steps below:

- The device will automatically boot up after power-on;
- After IBOX6425E starts up, users can:

  1. Press the ON/OFF button once to turn off the monitor/wake up the device from the sleep mode;
  2. Press the ON/OFF button and hold for 2 seconds to call the power menu, and click **Power off** to turn off the device orderly;
  3. Press the ON/OFF button and hold for about 5 seconds to turn off the device directly;
  4. When necessary, unplug the power adapter from the power connector of IBOX6425E or the outlet to force shutdown.

The actions might vary with the operating system.

CHAPTER 3 HARWARE DESCRIPTION

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

3.1 Power jack

IBOX6425E is designed to connect to work with 12V-24V DC input supplied by a power jack.

Specification: 6mm, 10mm (H), Male, WDT, THR, RoHS

CUIINC: PJ-082BH

Pinout description:

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

3.2 ON/OFF button

Button definition:

Action (with power connected)	Description
Short press	Enable sleep mode or wake up the device Turn on the device if it is previously turned off
Press and hold for 1~2 seconds	Open the power menu to power off/restart the device/make an emergency call
Press and hold for 5 seconds	Power off

There is an LED indicator on the ON/OFF button. When the device is connected to a live power source, the indicator will turn solid green.

3.3 Ethernet jack

IBOX6425E implements two Ethernet jacks.

Specification: RJ45, supporting 10M/100M/1000M Base-T4. Each Ethernet jack has two LED indicators to indicate the link/activity status of the network.

Pinout description:

Pin	Signal	Description
A1/B1	L1_CTR/L2_CTR	ACT
A2/B2	L1_MDI_0P/L2_MDI_0P	ETH signal
A3/B3	L1_MDI_0N/L2_MDI_0N	ETH signal
A4/B4	L1_MDI_1P/L2_MDI_1P	ETH signal
A5/B5	L1_MDI_1N/ L2_MDI_1N	ETH signal
A6/B6	L1_MDI_2P/ L2_MDI_2P	ETH signal
A7/B7	L1_MDI_2N/ L2_MDI_2N	ETH signal
A8/B8	L1_MDI_3P/ L2_MDI_3P	ETH signal
A9/B9	L1_MDI_3N/ L2_MDI_3N	ETH signal
A10/B10	GND	Ground
A11/B11	L1_LEDLINK+/L2_LEDLINK+	LED signal
A12/B12	L1_LEDLINK-/L2_LEDLINK-	LED signal
A13/B13	L1_LEDACT-/ L2_LEDACT-	LED signal
A14/B14	L1_LEDACT+/ L2_LEDACT+	LED signal

3.4 HDMI port

IBOX6425E offers an HDMI port (Type-A), supporting HDMI 2.0b standard with resolution up to 4096 x 2160 @60Hz.

Pinout description:

Pin	Signal	Description
1	HDMI_TXD2P_R	HDMI DATA
2	GND	Ground
3	HDMI_TXD2N_R	HDMI DATA
4	HDMI_TXD1P_R	HDMI DATA
5	GND	Ground
6	HDMI_TXD1N_R	HDMI DATA
7	HDMI_TXD0P_R	HDMI DATA
8	GND	Ground
9	HDMI_TXD0N_R	HDMI DATA
10	HDMI_TXC0P_R	HDMI CLK
11	GND	Ground
12	HDMI_TXC0N_R	HDMI CLK
13	NC	NC
14	NC	NC
15	HDMI_DDC_SCL	HDMI DDC I2C CLK
16	HDMI_DDC_SDA	HDMI DDC I2C DATA
17	GND	Ground
18	VCC_HDMI	HDMI POWER +5V
19	HDMI_HPD	HDMI HOT PLUG DETECTION

3.5 VGA port

IBOX6425E offers a VGA port that supports resolution of up to 1920 x 1080 @60Hz.

Pinout description:

Pin	Signal	Description
1	VGA_R	VGA signal
2	VGA_G	VGA signal
3	VGA_B	VGA signal
4	NC	NC
5	GND	Ground
6	GND	Ground
7	GND	Ground
8	GND	Ground
9	VCC_CRT	VGA Power
10	GND	Ground
11	NC	NC
12	VGA_DDC_DATA	VGA DATA
13	VGA_HS	VGA signal
14	VGA_VS	VGA signal
15	VGA_DDC_CLK	VGA DATA

3.6 USB 3.0 Type-A

IBOX6425E implements two USB 3.0 Type-A ports for connecting peripherals or function expansion.

Pinout description:

Pin	Signal	Description
1A/1B	VCC_USB3.0	USB Power
2A/2B	GND	Ground
3A/3B	USB2P_R/USB1P_R	USB signal
4A/4B	GND	Ground
5A/5B	USB3_RXN1_R/ USB3_RXN0_R	USB signal
6A/6B	USB3_RXP1_R/ USB3_RXP0_R	USB signal
7A/7B	GND	Ground
8A/8B	USB3_TXN1_R/ USB3_TXN0_R	USB signal
9A/9B	USB3_TXP1_R/ USB3_TXP0_R	USB signal

3.7 USB 3.0 Type-C

IBOX6425E offers a USB Type-C port that supports USB 3.0 OTG.

Pinout description:

Pin	Signal	Description
A4, B4, A9, B9	VBUS	Power
A5	CC1	TYPEC_CC1
B5	CC2	TYPEC_CC2
A8	SBU1	TYPEC_SBU1
B8	SBU2	TYPEC_SBU2
A7, B7	DM1/DM2	TYPEC_USB5DN_DM
A6, B6	DP1/DP2	TYPEC_USB5DN_DP
A3	SSTX1_N	TYPEC_SSTX1_N_C
A2	SSTX1_P	TYPEC_SSTX1_P_C
B10	SSRX1_N	TYPEC_SSRX1_N
B11	SSRX1_P	TYPEC_SSRX1_P
B3	SSTX2_N	TYPEC_SSTX2_N_C
B2	SSTX2_P	TYPEC_SSTX2_P_C
A10	SSRX2_N	TYPEC_SSRX2_N
A11	SSRX2_P	TYPEC_SSRX2_P
A1, A12, B1, B12	GND	Ground

3.8 Serial port

IBOX6425E offers two DB9 RS232/RS485/RS422 multiplexers.

Pinout description of COM1:

Pin	Signal	Description
1	DCD1_ISO/422TX+_COM1/485_A_COM1	Serial signal
2	RXD1_ISO/422TX-_COM1/485_B_COM1	Serial signal
3	TXD1_ISO/422RX+_COM1	Serial signal
4	DTR1_ISO/422RX-_COM1	Serial signal
5	ISO_GND_1	Ground
6	DSR1_ISO	Serial signal
7	RTS1_ISO	Serial signal
8	CTS1_ISO	Serial signal
9	RI1_ISO	Serial signal

Pinout description of COM2:

Pin	Signal	Description
1	DCD2_ISO/422TX+_COM2/485_A_COM2	Serial signal
2	RXD2_ISO/422TX-_COM2/485_B_COM2	Serial signal
3	TXD2_ISO/422RX+_COM2	Serial signal
4	DTR2_ISO/422RX-_COM2	Serial signal
5	ISO_GND_2	Ground
6	DSR2_ISO	Serial signal
7	RTS2_ISO	Serial signal
8	CTS2_ISO	Serial signal
9	RI2_ISO	Serial signal

3.9 Audio jack

IBOX6425E implements a 3.5mm combo audio jack that offers mono and stereo audio experience.

Pin	Signal	Description
1	Mic	Mic signal
2	HPOUT_L_CRL	HP signal
3	HPOUT_R_CRL	HP signal
4	GND	GND
5	HP_JD	HP DET
6	GND	GND

3.10 Micro SIM slot

The SIM card slot supports SIM card hot plugging. The 5G module is AT&T and Verizon pre-certified, and you may consult your sales executive for the module name before applying a SIM card from the carrier.

Pinout description:

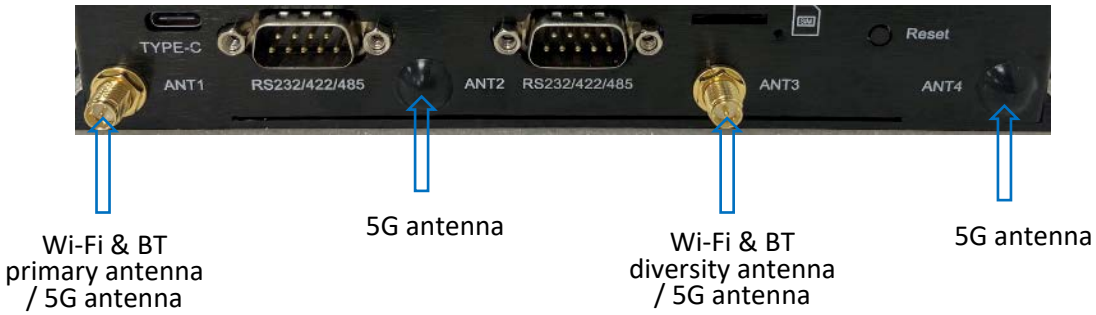
Pin	Signal	Description
C1	USIM_PWR	POWER
C2	USIM_RESET	USIM RESET
C3	USIM_CLK	USIM Signal
C4	CD	USIM Signal
C5	GND	Ground
C6	USIM_VPP	USIM Signal
C7	USIM_DATA	USIM Signal

3.11 M.2 slots

IBOX6425E offers one M.2 B-Key slot that supports 2242 & 2280 sizes to connect an SSD for storage expansion. It also offers an M.2 E-Key slot that is in 2230 size, and the M.2 E-Key slot is designed to connect either a Wi-Fi & Bluetooth module (default) or a 5G module.

3.12 Antenna connectors

There are four antenna connectors on the enclosure marked as ANT1, ANT2, ANT3, ANT4. ANT1 and ANT3 are designed to connect Wi-Fi & Bluetooth antennas by default, ANT1, ANT2, ANT3 and ANT4 together are designed to connect 5G antennas.



5G communication requires four antennas. Since the M.2 E-Key is used for Wi-Fi and BT expansion by default, the other two SMA connectors are disabled by default. The final configuration will be dependent on the customer's selection.

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 BIOS AND WINDOWS

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

4.1 BIOS Introduction

BIOS initializes hardware like CPU and memory, and saves hardware settings for installation and loading of the operating system (OS).

Users may need to run BIOS Setup program when:

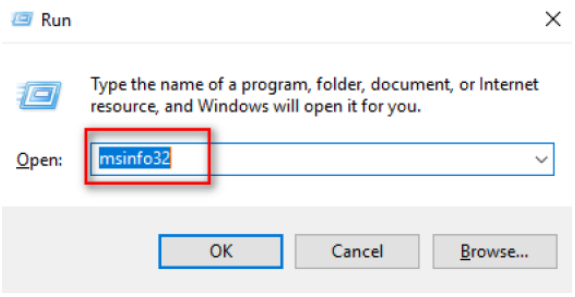
- An error message appears suggesting that the user should run BIOS Setup;
- Default settings need to be customized.

Please be aware that BIOS will be under continuous update for better system performance, therefore the description in this chapter might vary slightly and is for reference only.

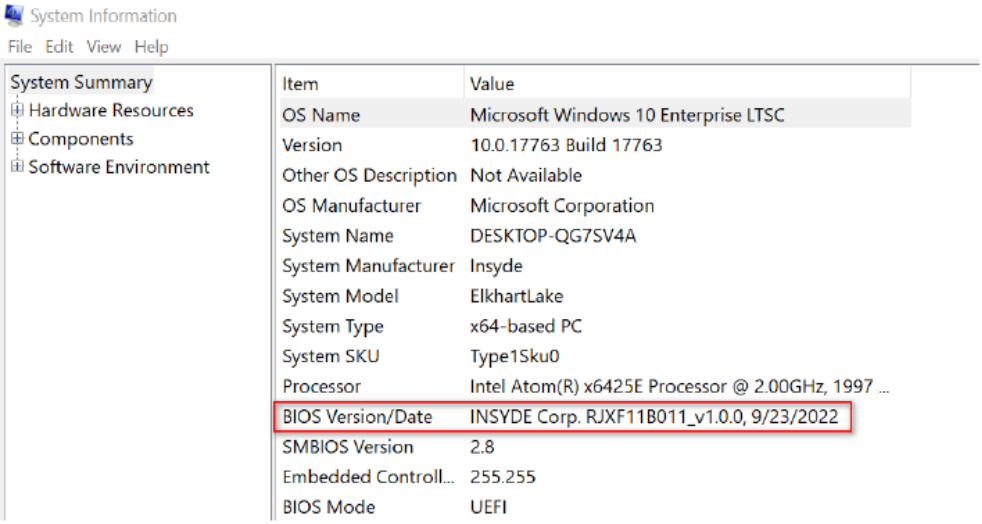
4.2 BIOS Version

The device supports Windows operating system. You can check the BIOS version of the device after bootup in accordance with the following steps:

1. Press the Windows key + R to call the command box;
2. Input msinfo32 in the command box and click **OK** to confirm;



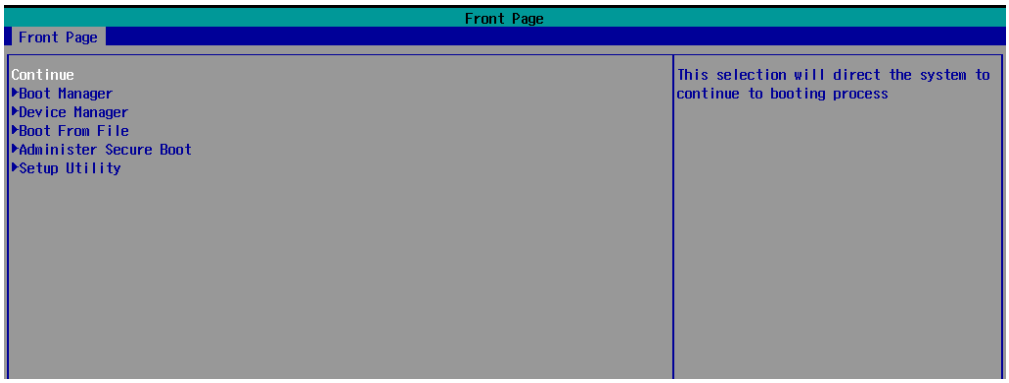
3. Move to BIOS Version/Date on the open page to check the detailed information.



4.3 BIOS Setup

4.3.1 Entering setup

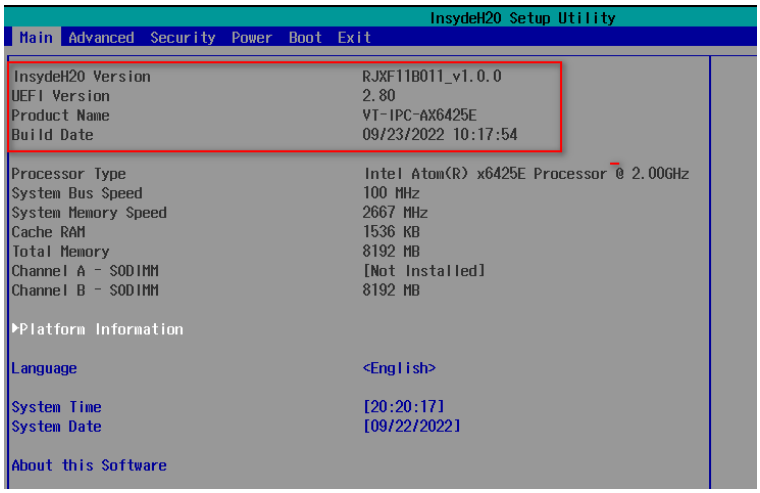
Power on the device and the system will start the power-on self-test process. Then press **ESC** to access the BIOS configuration page (front page) as shown below.



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.

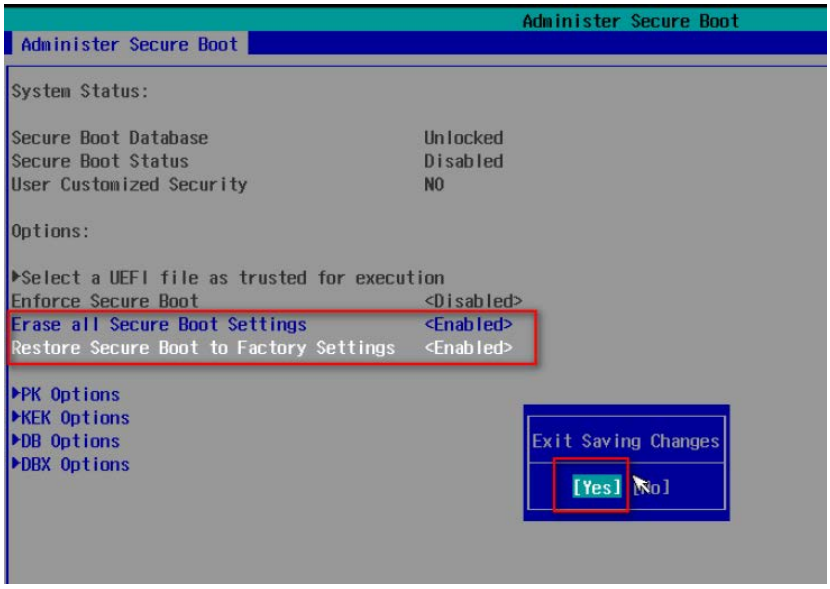
You can also check the BIOS version of the device after accessing the BIOS configuration page by navigating to the **Setup Utility** > **Main** menu.



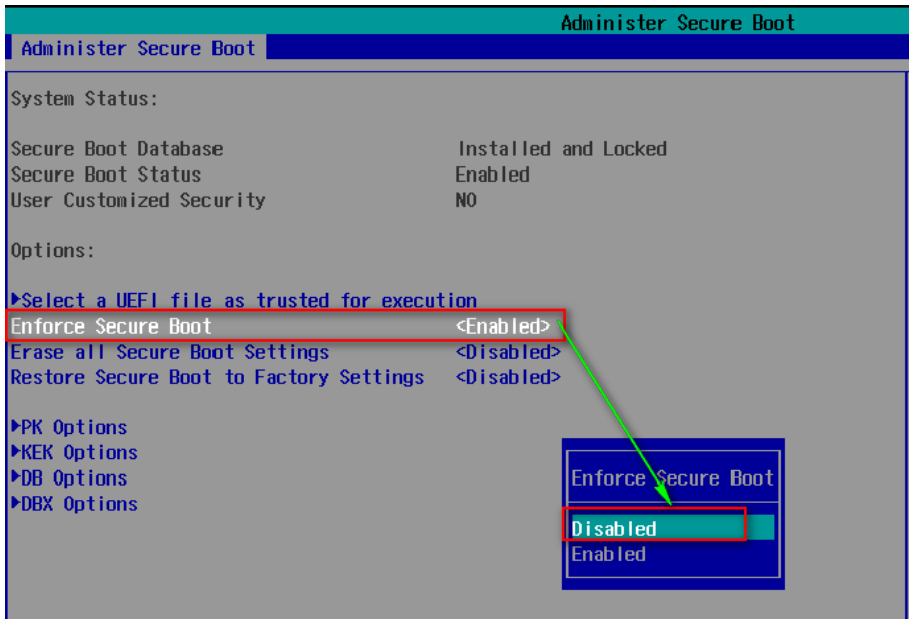
4.3.2 Secure boot

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

1. Power on IBOX6425E 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**;

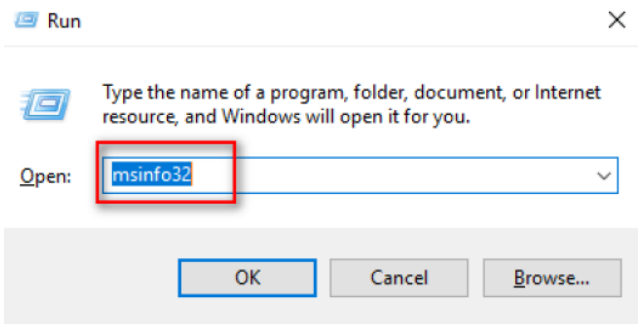


4. Press **F10** to save and exit;
5. There will be a dialog box indicating the system will be reset. Click **OK**, and the system will reboot;
6. If you need to disable Secure Boot, set **Enforce Secure Boot** to **Disabled**.

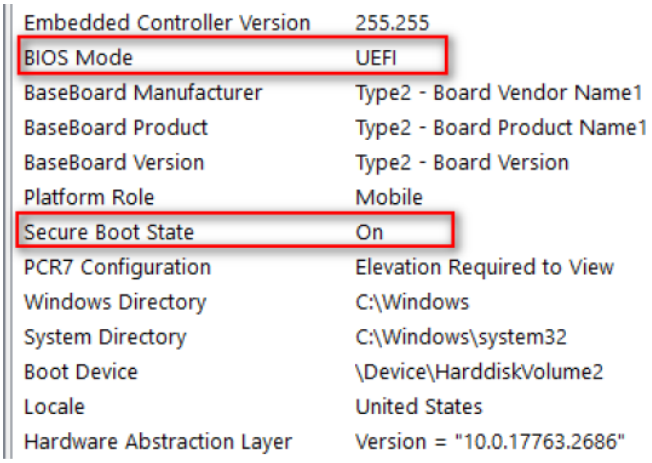


Check the Secure Boot State of the device in the Windows system:

1. Press the Windows key + R to call the command box;
2. Input msinfo32 in the command box and click **OK** to confirm;



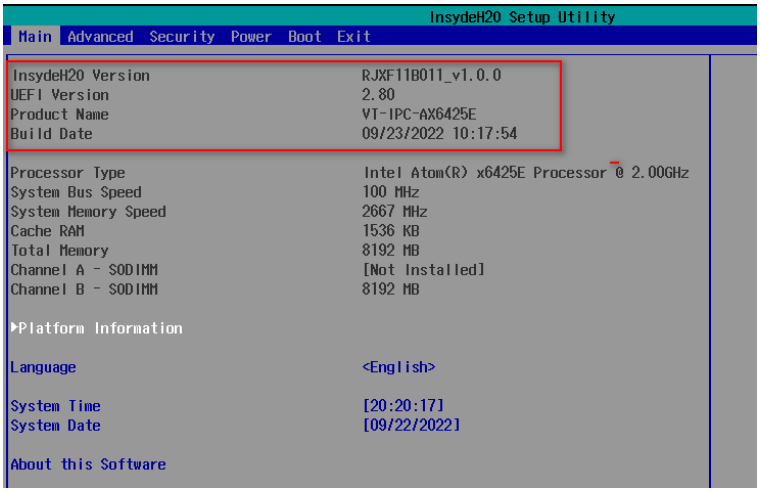
3. Move to **BIOS Mode** and **Secure Boot State** on the open page to check the detailed information.



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

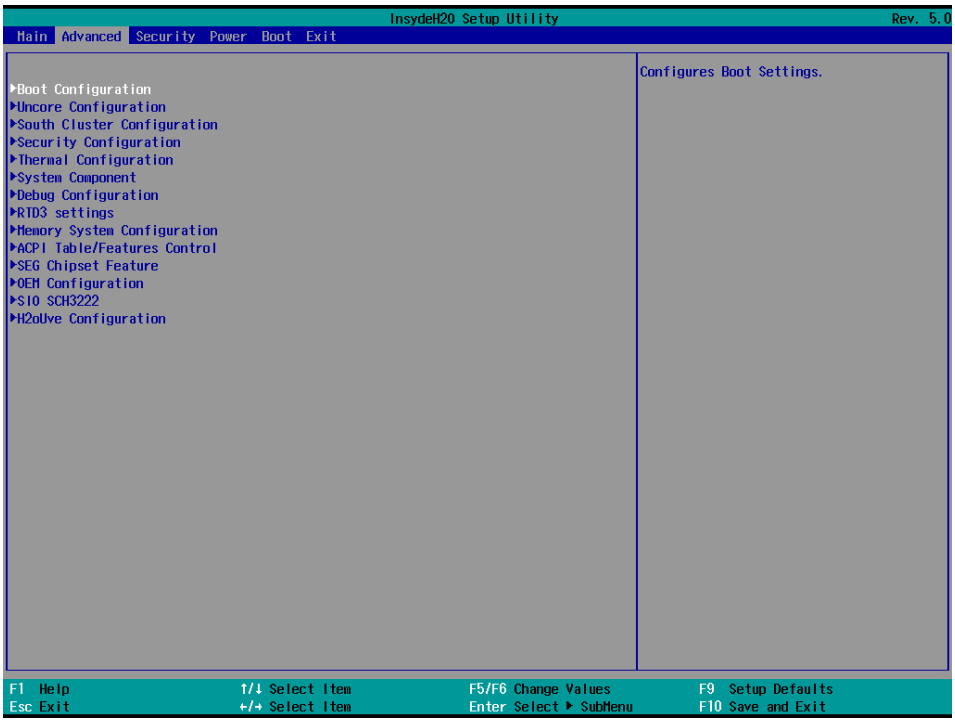
- Main (basic system configurations, like BIOS version, processor information, system language, system time and date)
- Advanced (advanced configurations to allow users to customize the system)
- Security (system security settings where users can set supervisor passwords)
- Power (CPU power settings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

4.3.3 Setup Utility – Main



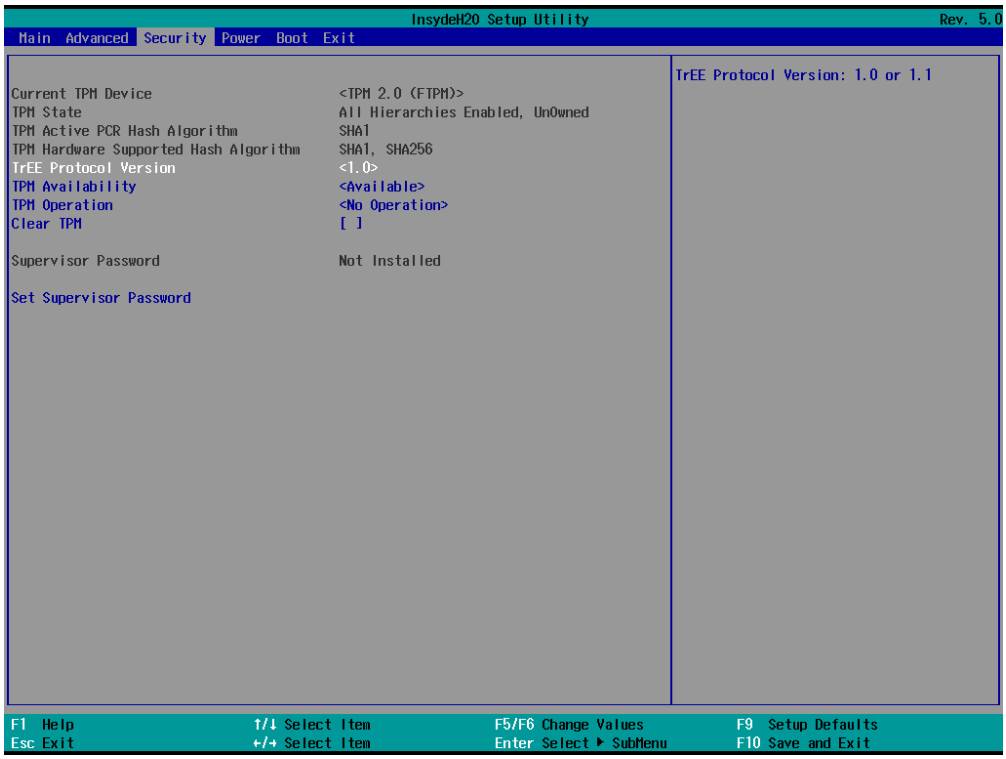
- Language: You can select from English, French, Chinese, and Japanese for system language.
- System Time: The time format is <Hour>: <Minute>: <Second>.
- System Date: The date format is <Month>/ <Day>/<Year>.

4.3.4 Setup Utility – Advanced



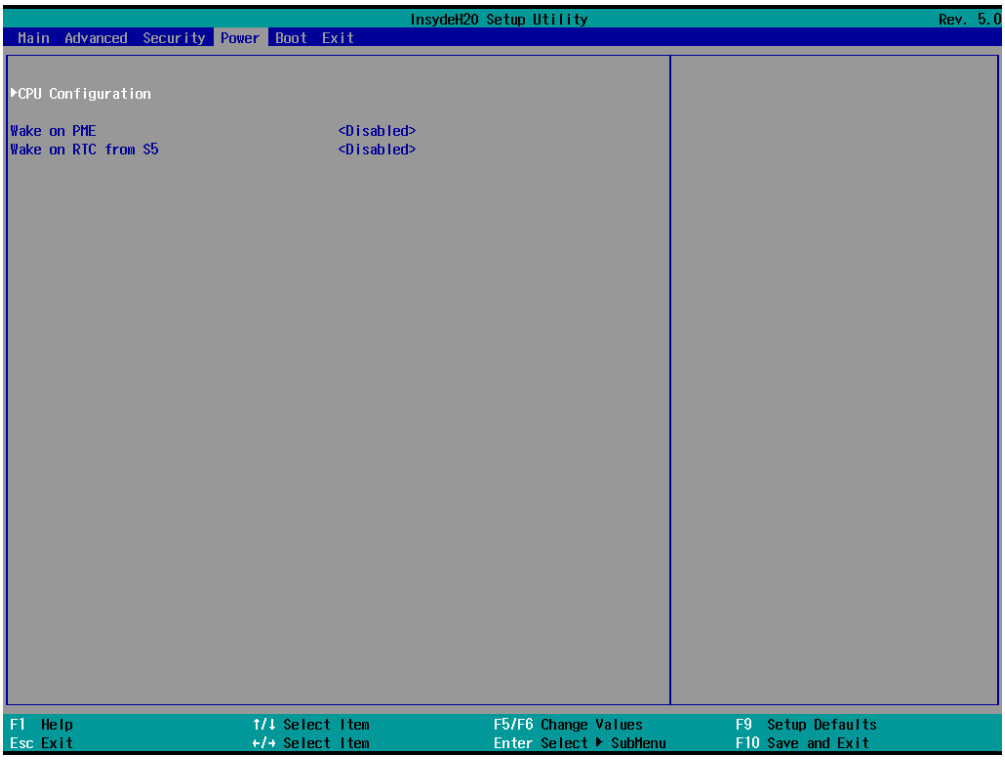
- Boot Configuration: You can select the operating system that you would like the device to run on.
- Uncore Configuration: You can customize the video settings, GOP settings, IGD settings, and IPU PCI device settings here.
- South Cluster Configuration: This page provides configuration options for audio, 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.

4.3.5 Setup Utility – Security



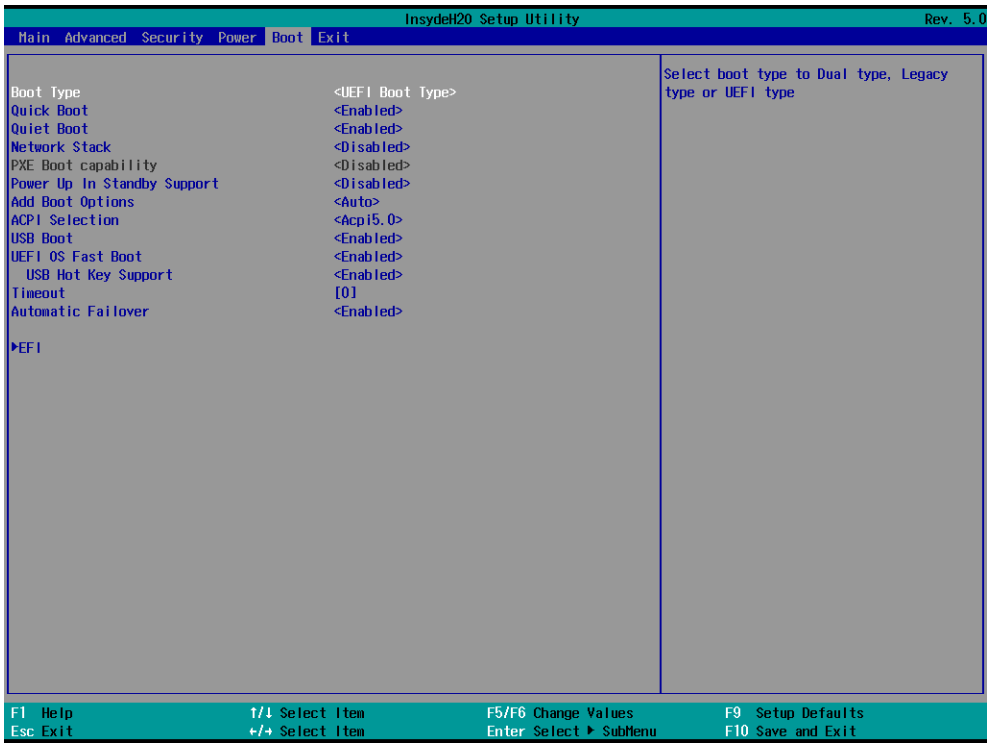
- Information of current TPM device is available here and you can set the supervisor passwords as well.

4.3.6 Setup Utility – Power



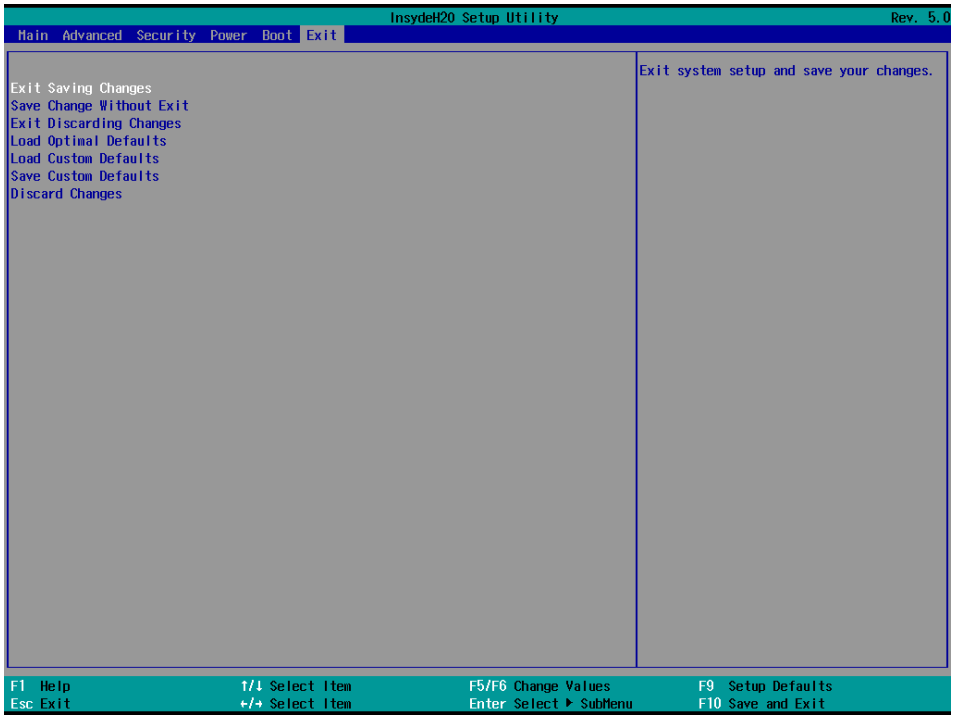
- CPU configurations are customizable.
- Options for wakeup on PME/RTC from S5 are available.

4.3.7 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.

4.3.8 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.

4.4 Driver Introduction

The table below lists the drivers in the software release package of the device (path: \Win10 Driver) that might be used to run IBOX6425E and their respective use.

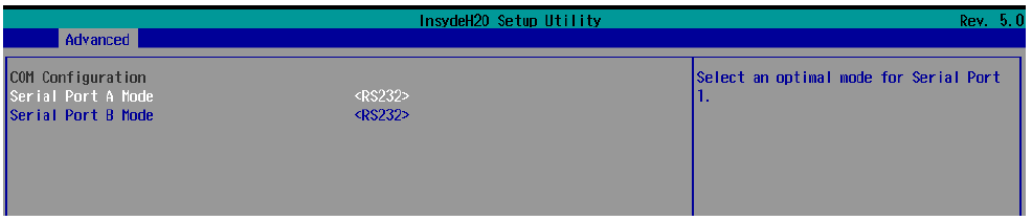
Driver folder	Description
Audio	To provide advanced audio effects and processing options for audio devices
Chipset	To tell the user if the chipset INF file needs to be updated
CSME	To provide support for various features and enhancements for graphics rendering and display
Graphic	
HID	To filter and manage the input of various HID & input devices
LAN	To provide support for the LAN7400 Ethernet Controller commonly used in network interface cards
PSE	To provide support for the Ethernet connection; to improve the performance and security of the system
Serial IO	To provide support for various input/output devices
USB2UART	To enable communication between the USB port on the device and the UART interface
WLAN&BT	To provide various features and enhancements for wireless and Bluetooth connectivity
WWAN	To enable communication between the scanner and the operating system

4.5 Serial Port

IBOX6425E implements 2 serial multiplexers (COM1 & COM2), mapped as serial port A and B respectively in the BIOS system. Both serial connectors support RS232, RS485, RS422 protocols.

If you wish to change the mode of the multiplexers,

1. Power on the device and press the **ESC** key during the system boot to enter BIOS;
2. Navigate to **Setup Utility > Advanced > COM Configuration** in sequence;
3. Use the up & down arrows to move the cursor to **Serial Port A Mode/Serial Port B Mode** (depending on which serial port you intend to use);
4. Use the up & down arrows to change the mode of the port;



5. Press **F10** to save and exit.

You can then use the **TestCommPC Vxxx** tool in the **\SW Guide\COM test** directory of the release package for serial debugging.

4.6 Installing Windows 10 System

4.6.1 Prerequisites

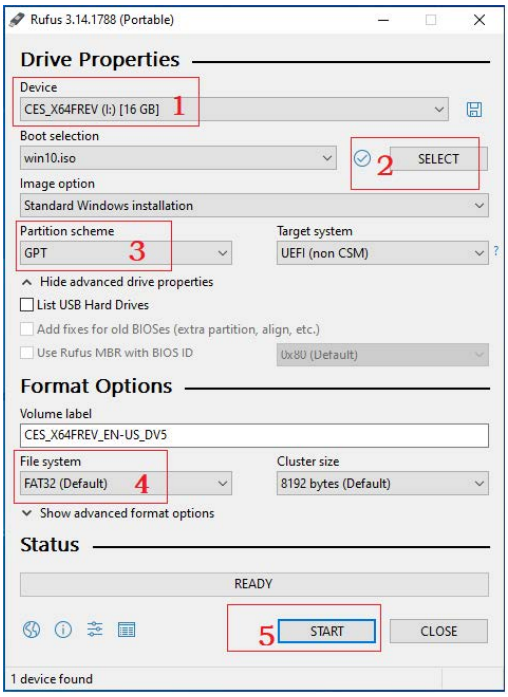
- IBOX6425E
- A USB drive with capacity no less than 8GB, preferably supporting USB 3.0
- Release package of IBOX6425E
- A program for making the bootable device: rufus-xxx .exe (path in the release package: \Win10 Image)
- Windows 10 image (path in the release package: \Win10 Image)
- A host computer running Windows system
- A keyboard, mouse and monitor to connect the device for easier operation
- 12V/24V power adapter for powering up the device

4.6.2 Make a Bootable USB Drive for Windows 10

Plug the USB drive into the host PC. 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;
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** or **NTFS**;

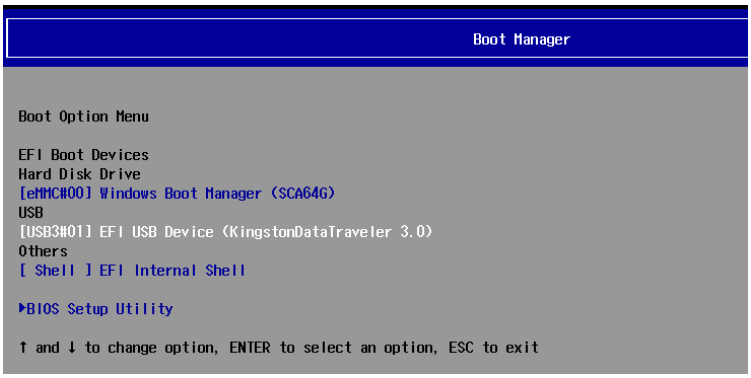
5. Click **START** to make the bootable USB drive.



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

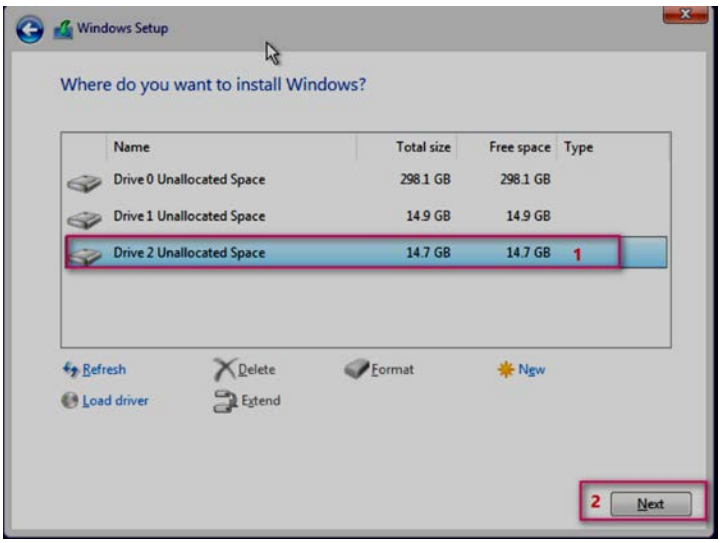
4.6.3 System Installation

1. Plug the bootable USB drive into IBOX6425E;
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 Windows 10 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 IBOX6425E 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 a shortcut of Windows 10 appears on the desktop, 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.

EMC Class B Notice for FCC

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 and your body.
2. The device has been evaluated to meet general RF exposure requirement.