



# IBASE EC3500 Ruggedized Embedded System User Manual

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## IBASE EC3500 Ruggedized Embedded System User Manual



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## Important Safety Information

Carefully read the following safety information before using this device.

### Setting up your system:

- Put the device horizontally on a stable and solid surface.
- Do not use this product near water or any heated source.
- Leave plenty of space around the device and do not block the ventilation openings. Never drop or insert any objects of any kind into the openings.
- Use this product in environments with ambient temperatures between 0°C and 60°C

### Care during use:

- Do not place heavy objects on the top of the device.
- Make sure to connect the correct voltage to the device. Failure to supply the correct voltage could damage the unit.
- Do not walk on the power cord or allow anything to rest on it.
- If you use an extension cord, make sure the total ampere rating of all devices plugged into the extension cord does not exceed the cord's ampere rating.
- Do not spill water or any other liquids on your device.
- Always unplug the power cord from the wall outlet before cleaning the device.
- Only use neutral cleaning agents to clean the device.
- Vacuum dust and particles from the vents by using a computer vacuum cleaner.

### Product Disassembly

Do not try to repair, disassemble, or make modifications to the device. Doing so will void the warranty and may result in damage to the product or personal injury.



### CAUTION

A Lithium-type battery may be provided for uninterrupted backup or emergency power.

Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries by observing local regulations

### Warranty Policy

- IBASE standard products:  
24-month (2-year) warranty from the date of shipment. If the date of shipment cannot be ascertained, the product serial numbers can be used to determine the approximate shipping date.
- 3rd party parts:  
12-month (1-year) warranty from delivery for 3rd party parts that are not manufactured by IBASE, such as CPU, CPU cooler, memory, storage devices, power adaptor, display panel and touch screen.
- PRODUCTS, HOWEVER, THAT FAIL DUE TO MISUSE, ACCIDENT, IMPROPER INSTALLATION OR UNAUTHORIZED REPAIR SHALL BE TREATED AS OUT OF WARRANTY AND CUSTOMERS SHALL BE BILLED FOR REPAIR AND SHIPPING CHARGES.

## Technical Support & Services

1. Visit the IBASE website at [www.ibase.com.tw](http://www.ibase.com.tw) to find the latest information about the product.
2. If you encounter any technical problems and require assistance from your distributor or sales representative, please prepare and send the following information:
  - Product model name
  - Product serial number
  - Detailed description of the problem
  - Error messages in text or screenshots if any
  - The arrangement of the peripherals
  - Software used (such as OS and application software)
3. If repair service is required, please download the RMA form at <http://www.ibase.com.tw/english/Supports/RMAService/>. Fill out the form and contact your distributor or sales representative.

## General Information

### Introduction

EC3500 is NVIDIA Jetson AGX Orin 64GB module delivers up to 275 TOPS of AI performance with power configurable between 15W and 60W.



### Features

- Supports NVIDIA® Jetson AGX Orin™ 32GB/64GB module
- Wide Power Input Range 9 to 36VDC
- 1 x B-Key/1 x E-Key/1 x M-Key slot
- Operating Temperature -0 ~ 50 °C

### Packing List

Your product package should include the items listed below.

- NVIDIA® Jetson™ AGX Orin series 32GB/64GB module
- Carrier board

The user's manual can be downloaded from the IBASE website.

## Specifications

<b>Product Name</b>	EC3500
<b>System Motherboard</b>	NVIDIA® Jetson AGX ORIN 32GB/64GB SOM +Carrier Board
<b>System</b>	
<b>Operating System</b>	<ul style="list-style-type: none"><li>• Ubuntu 20.04</li></ul>
<b>CPU Type</b>	EC3500-32: 8-core NVIDIA Arm® Cortex A78AE v8.2 64-bit CPU 2MB L2 + 4MB L3 EC3500-64: 12-core NVIDIA Arm® Cortex A78AE v8.2 64-bit CPU 3MB L2 + 6MB L3
<b>Memory</b>	<ul style="list-style-type: none"><li>• <b>System memory:</b> 32/64 GB 256-bit LPDDR5 204.8</li></ul>
<b>Storage</b>	<ul style="list-style-type: none"><li>• 64 GB eMMC 5.1</li></ul>
<b>Display</b>	<ul style="list-style-type: none"><li>• HDMI 2.1 Type A</li></ul>
<b>Network</b>	1x RJ-45 GbE port 1x RJ-45 10GbE port
<b>Power Supply</b>	DC-in 9 to 36 VDC
<b>Watchdog Timer</b>	Yes (256 segments, 0, 1, 2...128 secs)
<b>Dimensions (W x H x D)</b>	150mm (W) x 125mm (D) x 70mm (H) 5
<b>RoHS</b>	Yes
<b>Certification</b>	CE, FCC Class B
<b>I/O Ports</b>	
<b>DC Jack</b>	1 x 12V-24V DC jack
<b>Display</b>	1 x HDMI2.0a (up to 4K resolution)
<b>LAN</b>	1 x RJ45 GbE LAN 1 x RJ-45 10GbE port
<b>USB</b>	<ul style="list-style-type: none"><li>• 2 x USB 3.2 Gen1 Type-A</li><li>• 1x USB 3.2 Gen2 Type-C</li><li>• 1x USB 2.0 Type-C (OTG)</li></ul>

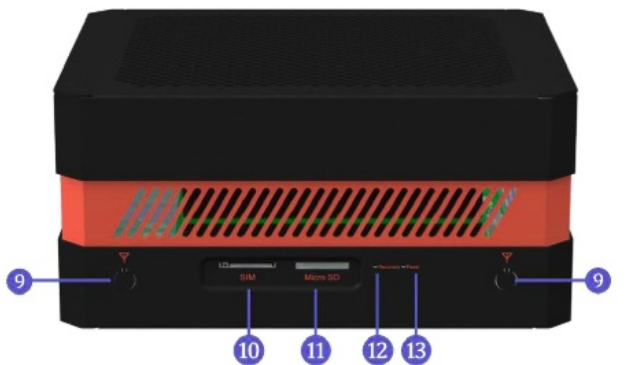
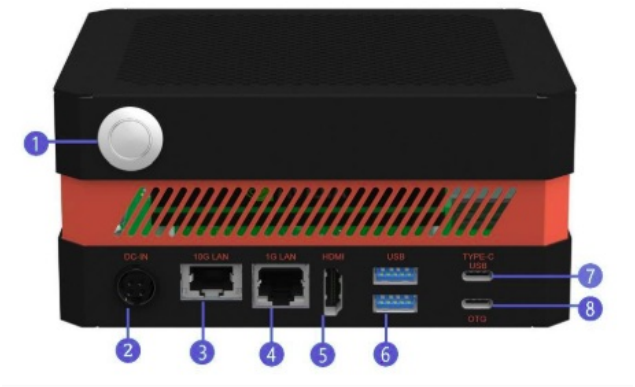
<b>Expansion Slots</b>	<ul style="list-style-type: none"> <li>• x M.2 E-Key 2230 (PCIe/USB2.0): Support WIFI/BT/GPS function·</li> <li>• 1 x M.2 M-Key 2280: Support NVMe Storage·</li> <li>• 1 x M.2 B-Key 3042/3052 (LTE/5G – USB3) w/ micro sim holder: cellular function·</li> <li>• 1 x SIM Card Slot·</li> <li>• 1 x MicroSD Slot</li> </ul>
<b>MISC.Function</b>	<ul style="list-style-type: none"> <li>• 1 x Recovery button·</li> <li>• 1 x Reset button</li> </ul>

Environment	
Operating Temperature	0 ~ 50 °C (32 ~ 140 °F)
Relative Humidity	10 ~ 90 %, non-condensing

All specifications are subject to change without prior notice.

Product View

I/O View



No.	Name	No.	Name
1	Power On/Off Button	8	USB 2.0 Type-C (OTG)
2	DC-in Jack	9	Antenna Holes
3	10G GbE LAN Port	10	SIM Card Slot
4	GbE LAN Port	11	MicroSD Slot
5	HDMI 2.1 Type A	12	Recovery button
6	USB 3.2 Gen1 Type-A	13	Reset button
7	USB 3.2 Gen2 Type-C	14	

DIN Rail Mounting View (Optional)



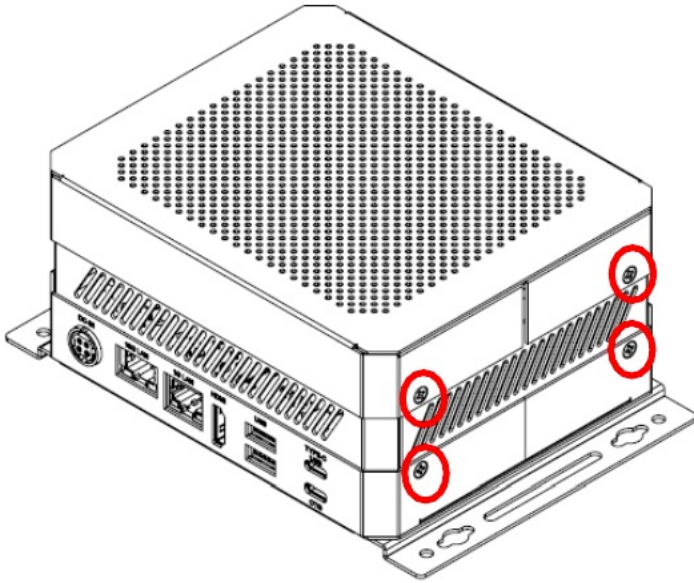
Dimensions



Hardware Configuration

## Installations

Before installing the M.2, wireless, SIM card or any other module into the device, loosen the 8 screws as shown below to remove the device cover.



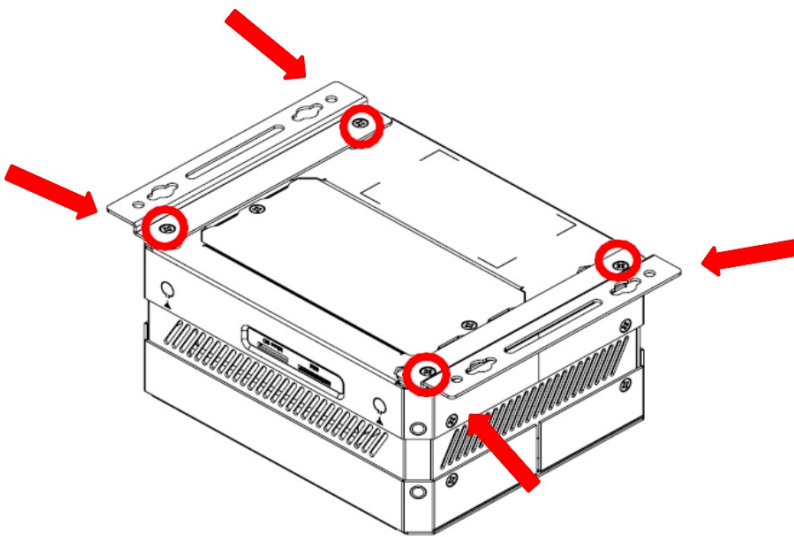
## Mounting Installation

### Requirements

Before mounting the system, ensure that you have enough room for the power adaptor and signal cable routing, and have good ventilation for the power adaptor. The method of mounting must be able to support weight of the device plus the weight of the suspending cables attached to the system. Use the following methods for mounting the device:

### Wall Mounting Installation

1. Turn the device upside down. Attach the wall-mount kit to the device using the supplied 4 screws.
2. Prepare at least 4 screws (M3) to install the device on the wall.



## HDMI Type-A Connector





Item	Description
Location	CN8
Type	HDMI Type-A female connector
Pinout	Please refer to HDMI Type-A Standard

#### DC Power Input Connector



Item	Description
Location	CN12
Type	4-Pin Male DC Power Connector
Pinout	Please refer to DC Jack Standard

Pin	Signal Name	Pin	Signal Name
1	VIN	2	GND
3	VIN	4	GND



Dual USB 3.2 Gen1 Type-A Connector



Item	Description
Location	CN11
Type	Type-A USB connector
Pinout	Please refer to USB Standard

OTG Type-C / USB 3.2 Gen2 Type-C



Item	Description
Location	CN10
Type	Dual USB TYPE-C connector
Pinout	Please refer to USB standard
Notes	#1 OTG Type-C Port#2 USB 3.2 Gen2 Type-C

Gigabit Ethernet Connector



Item	Description
Location	CN9
Type	RJ-45 connector
Pinout	Please refer to Ethernet standard
Notes	<b>LED Static ON:</b> LAN Link is active. <b>LED Blinking:</b> Data is being transmitted <b>.LED Static OFF:</b> LAN Link is inactive

#### Gigabit Ethernet Connector



Item	Description
Location	CN7
Type	RJ-45 connector
Pinout	Please refer to Ethernet standard
Notes	<b>LED Static ON:</b> LAN Link is active <b>LED Blinking:</b> Data is being transmitted <b>LED Static OFF:</b> LAN Link is inactive

**Reset Button**



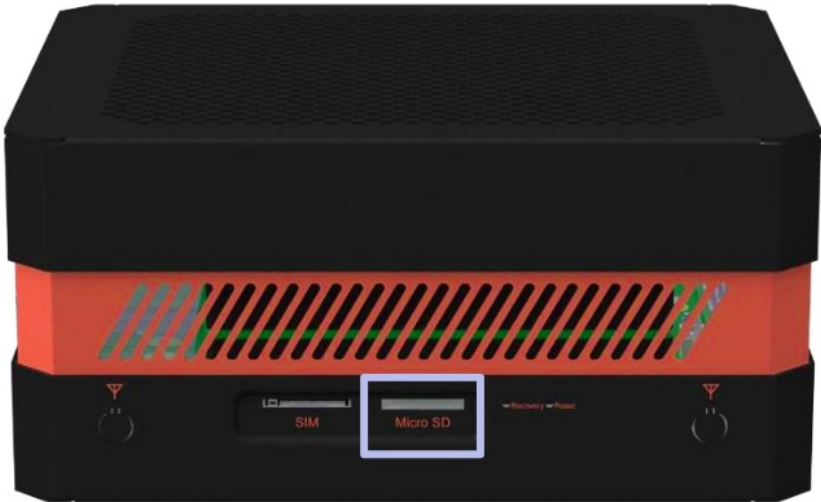
Item	Description
Location	S2
Type	Tact switch
Notes	To trigger system reset action

**Recovery Button**



Item	Description
Location	S1
Type	Tact switch
Notes	To trigger system reset action

Micro SD Card Slot



Item	Description
Location	CN5
Type	Push-Push Micro SD card holder

Micro SIM Card Socket



Item	Description
Location	CN6
Type	Push-Push SIM card socket

Driver Installation

## Software/BSP Installation

**Note:** This is for advanced users with the IBASE standard image file only.

IBASE NVIDIA Jetson products have built-in BSP so the users don't have to install it after getting the products. Since we develop our own BSP, the users may need to follow the BSP installation SOP to re install/upgrade/downgrade the BSP. Please visit the IBASE website or contact with IBASE FAE for installation guides, BSPs and technical tips.

## Recovery Mode

The OTG Type-C port of EC3500 can be connected to another host device (Linux PC running NVIDIA Jetpack™) to run recovery process for re-flashing BSP.

**Note:** Please backup user personal files before flashing process. Connect the OTG Type-C port to another host device which supplying updated BSP file.

Press and hold the Reset button, then press and hold the Recovery button continually.

After one second (1 sec.) release the Reset button first, then release the Recovery button.

The AGX Orin will show up as a new NVIDIA device on USB list (Terminal console) at the host device.

Running re-flashing BSP process can be executed by the host device now.

## Initial Setup

Before using IBASE NVIDIA product series, please follow the steps below to have initial setup.

### Prepare the materials

Please prepare the materials list below

- A monitor with HDMI and respective cables
- USB keyboard and mouse
- Ethernet cable

## Hardware connection

**ATTENTION:** Jetson Orin module is not hot-pluggable. Before installing or removing the module, the main power supply (to Power connector, CN12) must be disconnected and adequate time allowed for the various power rails to fully discharge

For the initial setup, users will need to connect LAN port, keyboard and mouse via USB interface, HDMI interface, and power connector.

## Setup details

**Step 1:** Connect to the monitor while powering off

**Step 2:** Power on and automatically enter the OS

**Step 3:** Log in to the Ubuntu OS via credentials below

**Username:** nvidia

**Password:** nvidia

For more information on how to use Ubuntu and NVIDIA Jetson modules, please visit Ubuntu and NVIDIA website.

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### **Disclaimer**

IBASE reserves the right to make changes and improvements to the products described in this document without prior notice. Every effort has been made to ensure the information in the document is correct; however, IBASE does not guarantee this document is error-free.

IBASE assumes no liability for incidental or consequential damages arising from misuse or inability to use the product or the information contained herein, and for any infringements of rights of third parties, which may result from its use.

### **Trademarks**

All the trademarks, registrations and brands mentioned herein are used for identification purposes only and may be trademarks and/or registered trademarks of their respective owners.

### **Compliance**

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

**FCC** This product has been tested and found to comply with the limits for a Class B device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with manufacturer's instructions, may cause harmful interference to radio communications.

### **WEEE**



This product must not be disposed of as normal household waste, in accordance with the EU directive of for waste electrical and electronic equipment (WEEE – 2012/19/EU). Instead, it should be disposed of by returning it to a municipal recycling collection point. Check local regulations for disposal of electronic products.

### **Green IBASE**



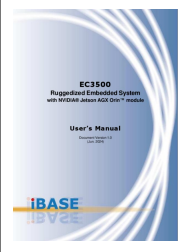
This product complies with the current RoHS directives restricting the use of the following substances in concentrations not to exceed 0.1% by weight (1000 ppm) except for cadmium, limited to 0.01% by weight (100 ppm).

- Lead (Pb)
- Mercury (Hg)
- Cadmium (Cd)
- Hexavalent chromium (Cr6+)
- Polybrominated biphenyls (PBB)
- Polybrominated diphenyl ether (PBDE)



<https://www.ibase.com.tw/>

## Documents / Resources

 The image shows the front cover of the iBASE EC3500 User Manual. It has a blue background with white text and a small iBASE logo at the bottom.	<p><b><a href="#">iBASE EC3500 Ruggedized Embedded System</a></b> [pdf] User Manual EC3500, EC3500 Ruggedized Embedded System, Ruggedized Embedded System, Embedded System, System</p>
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## References

- [iBASE - Manufacturer of Robust Embedded Computing Platforms in Taiwan](#)
- [iBASE - Manufacturer of Robust Embedded Computing Platforms in Taiwan](#)
- [User Manual](#)

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