

# Seeed Technology ODYSSEY X86 Board User Manual

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## Getting Started with ODYSSEY X86



ODYSSEY X86 v2 board powered by the latest Intel® Core™ 11th Gen. processor and Intel® UHD Graphics or Intel® Iris Xe Graphics, which delivers high CPU and AI performance for various applications. It has two high-speed 2.5-Gigabit Ethernet ports and supports hybrid connectivity including, BLE and WIFI. Meanwhile.

## Features

- Powered by the latest 11th Gen Intel® Core™ CPU and Intel® UHD Graphics or Intel® Iris Xe Graphics.
- Rich peripherals including dual® 2.5-Gigabit Ethernet ports, USB 3.2 Type-A port, USB 2.0 Type-A port, HDMI port and DP port.
- Support hybrid connectivity including BLE and WIFI
- Dual SATA III 6.0 Gbps data connectors for 3.5"/2.5" SATA hard disk drives with enough space inside the enclosure to store them both.
- M.2 B-Key/ M-Key/ E-Key for expandability such as SSD, WIFI.
- Pre-installed Windows 10 Enterprise (Unactuated), also support another Windows OS and Linux OS.

## Specification

Versions		Detail		
Platform	Processor	Intel® Core™ 11th Gen. i3 1115G4	Intel® Core™ 11th Gen. i3 1125G4	Intel® Core™ 11th Gen. i5 1135G7
	Co-processor	Microchip® ATSAM D21G18 32-Bit ARM® Cortex-M0+ @ 48MHz		
Memory	Technology	Dual Channels DDR4-3200		
	Capacity	8GB; 16GB (Support up to 64GB)		
	ECC Memory Supported	NO		
Graphics	Controller	Intel® UHD Graphics 48EUs (400 - 1250MHz)	Intel® UHD Graphics 48EUs (400 - 1250MHz)	Intel® Iris Xe Graphics G7 80EUs(400-1300MHz)
Advanced Technologies	Intel® vPro®	NO		
	Intel® Total Memory Encryption	NO		
Network	Controller	Intel® Ethernet Controller I225-V		
Wireless	WiFi	M.2 E-Key(PCIE & CNVi Support), Intel® Wi-Fi AX201(Optional)		
	Bluetooth	Bluetooth 5.0, BLE(Optional)		
Display	LCD	eDP 40-Pin 4 Lane Connector		
	HDMI	1 x HDMI 2.0b, up to 4Kx2Kx24bpp@60Hz		
	DP	1 x DP1.4a 7680x4320x24bpp@60Hz		
	Multiple Display	4 simultaneous displays with each display interface combination		
External I/O	Ethernet	2 x 2.5GbE LAN ports (RJ45, supports 10/100/1000/2500 Mbps), Intel® i225		
	HDMI/DP	One/One		

External I/O	USB Type-C	N/A		
	USB Type-A	USB2.0 Type A x1 ; USB3.2 Type A x1		
	LED	Power Status		
	Power Supply	1x5.5x2.5mm DC Jack / Wafer 2.0mm 8pin		
	Micro Sim Card Slot	1		
Internal I/O	SATA	2 x SATA Gen III 6.0 Gb/s Data Connectors + 3 x SATA Power Connectors		
	COM Port	1 x RS-232/422/485, 1 x RS-232		
	GPIO	28-Pin Arduino Co-processor 2.54mm header		
	Audio	Realtek High Definition Audio, Microphone + headphone Combo Connector		
	USB2.0	USB2.0 9-pin Header x2 480Mbps		
	Fan	2 x 12V 4-wire Fan header, PWM Control		
	Front Panel Control	Power-on, Reset, Power Status LED, SATA Status LED		
	S/PDIF	3-Pin 2.54mm Header		
	SATA Power	WAFER4-Pin 2.0 pitch Connector		
Expansion	Co-CPU. Debug Port	6-Pin 0.5mm FPC Connector (SWD)		
	M.2 M-Key	1 x M-Key 2242/2280(PCle 3.0 x4)		
	M.2 E-Key	1 x E-Key 2230(PCle 3.0 x1; USB2.0 x1; Intel CNVi)		
	M.2 B-Key	1 x B-Key 2242/2252/2280(PCle 3.0 x2; USB2.0 x1)		
	High Speed I/O	1 X PCle x4 Gen4		
Power	Supply Voltage	DC Jack: 12V		
	RTC Battery	Lithium 3V/210mAH		
Certification	EMC	CE,FCC,KC,TELEC		
Mechanical	Dimension	132mm*124mm*233mm		
	Thermal Solution	Heat Pipe Assemblies/Heat Spreading Vapor Chamber Assemblies		
	Weight	1800g		

## Comparison

Appearance			
Processor	Intel® Core™ 11th Gen. i3 1115G4	Intel® Core™ 11th Gen. i3 1125G4	Intel® Core™ 11th Gen. i5 1135G7
Cores/Threads	2C/4T	4C/8T	4C/8T
Frequency	Up to 4.10 GHz	Up to 3.70 GHz	Up to 4.20 GHz
Co-processor	Microchip® <b>ATSAMD21G18</b> 32-Bit ARM® Cortex-M0+ @ 48MHz		
Intel® vPro®	NO		
Intel® Total Memory Encryption	NO		
Graphics	Intel® UHD Graphics 48EUs (400 - 1250MHz)	Intel® UHD Graphics 48EUs (400 - 1250MHz)	Intel® Iris Xe Graphics G7 80EUs(400-1300MHz)
Memory	Dual Channels DDR4-3200(Support up to 64GB in total)		
ECC Memory Supported	NO		
Network Controller	Intel® Ethernet Controller I225-V		
Expansion	M.2 M-Key; M.2 B-Key; M.2 E-Key; 1 X PCIe x4 Gen4		
External I/O	USB Type-A(USB2.0 Type-A x1 ; USB3.2 Type-A x1); HDMI; DP; 2.5GbE LAN ports x2; Audio Jack; DC Jack(12V);		
Wireless Connectivity	Support WiFi, BLE		

## Quick Start with ODYSSEY X86

If you want to get started with ODYSSEY X86 in the fastest and easiest way, you can follow the guide below.

### Hardware Required

You need to prepare the following hardware before getting started with ODYSSEY X86

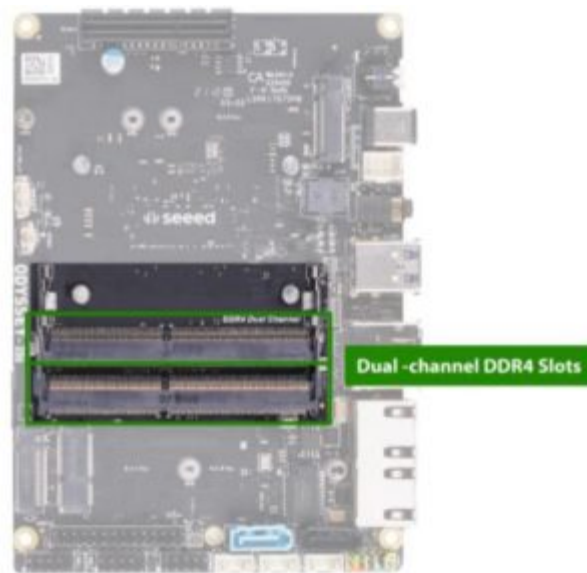
- ODYSSEY X86
- Power Adapter(provided)
- External monitor
- HDMI/DP cable
- Keyboard and Mouse

### Hardware Installation

For this part, we will introduce how to install or replace some hardware inside ODYSSEY X86. If there are no needs for you, please skip it. You might follow the Assembly Guide Manual attached at the end of this page to access to the main board of ODYSSEY X86 before reading this part.

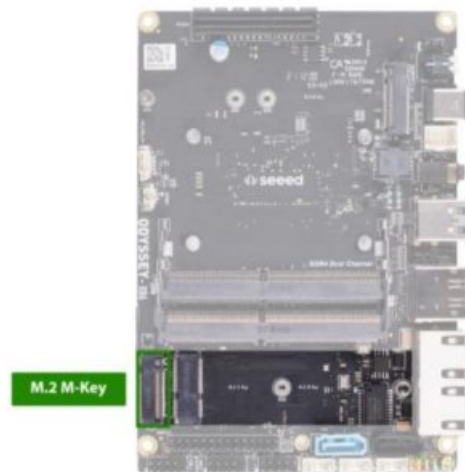
### DDR4 Installation

DDR4-3200MT/s has been pre-installed for all versions of ODYSSEY X86 but you can also add a new DDR4 to the other channel or replace the pre-installed one with your own to expand memory. The dual-channel SO-DIMM slots support DDR4- 3200MT/s up to 64GB in total.



### SSD Installation

An NV Me SSD has been pre-installed for all versions of ODYSSEY X86, while, still, the M.2 M-Key 2242/2280(PCIe 3.0 x4) allows you to replace it with the SSD you desire.



### WIFI Module Installation

All versions of ODYSSEY X86 have installed 2230 Dual Band WIFI AX201 Module at M.2 E-Key 2242/2280(PCIe 3.0x4). If you want to replace the pre-installed WIFI Module, feel free to follow the steps below.

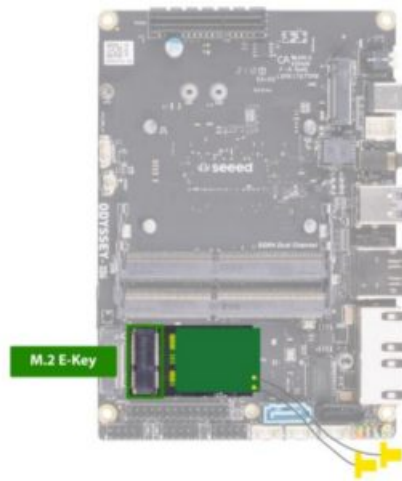
**Step 1.** Remove the SSD from M.2 M-Key slot.

**Step 2.** Take off the WIFI antenna cable and remove the pre-installed WIFI Module from M.2 E-Key.



**Step 3.** Install the new WIFI Module and connect the WIFI antenna cable back to it.

**Step 4.** Install the SSD back to M.2 M-Key.



## Hardware Connection

For this part, we will introduce the interface connection of ODYSSEY X86. There are two versions of ODYSSEY X86. Please note that different versions might have different interfaces.

## Display Connection

There are three methods for ODYSSEY X86 to connect to a display while the third method is only for High-performing versions.

**Method 1.** HDMI Port

**Method 2.** DP Port

## Keyboard and Mouse Connection

Connect keyboard and mouse through USB ports. There is one USB 3.2 port and one USB 2.0 port for Basic versions while there are one USB 3.2 port and two USB 2.0 ports for High-performing versions. Basic version

## Audio Connection

For Basic versions, the Audio Jack is on the left side I/O panel, while, for High-performing versions, it's on the right side I/O panel for High-performing versions

## Power Connection

There are two methods to power up ODYSSEY X86, and the second one is only for High-performing versions.

Method 1. Simply connect the AC-DC power adapter (included in the product box) with the AC power cord (Out of the product box but still in the package), then connect it to 12V DC Jack of ODYSSEY X86.

Method 2. Connect USB Type-C charging cable (Not included in ODYSSEY X86) to the Thunderbolt 4 USB Type-C port (This port is only available with High-performing versions)

## Operation System Installation

For all versions of ODYSSEY X86, Windows 10 Enterprise (Unactuated) has been preinstalled, you can simply boot it up and activate the OS. However, ODYSSEY X86 still supports another Windows OS and, also, Linux OS, so you can cover the preinstalled OS with the one you want.

**Note:** 5G Band(W52): indoor use only

## 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 the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient or relocate the receiving antenna.

- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

**Caution:** Any changes or modifications to this device not explicitly approved by the manufacturer could void your authority to operate this equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

### **RF Exposure Information**

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.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

This device is intended only for OEM integrators under the following conditions:

1. The antenna must be installed such that 20cm is maintained between the antenna and users, and
2. The transmitter module may not be co-located with any other transmitter or antenna.

The internal antenna and external rod antenna have been approved for the modular. The maximum antenna gain is 2.13dBi (BT/2.4G Wi-Fi Antenna 1 & 2: External Antenna) & 1.57dBi (5.2G & 5.8G Wi-Fi Antenna 1 & 2: External Antenna). For situations where the host manufacturer is responsible for an external connector, the integration instructions shall inform the installer that a unique antenna connector must be used on Part 15 authorized transmitters used in the host product.

**Important Note:** In the event that these conditions cannot be met (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization is no longer considered valid and the FCC ID cannot be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization.

Any company of the host device which installs this modular with limit modular approval should perform the test of radiated emission and spurious emission according to FCC part 15C: 15.247 and 15.407 requirements, only if the test result complies with FCC part 15.247 and 15.407 requirement, then the host can be sold legally.

### **End Product Labeling**

If the FCC identification number is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. This exterior label can use wording such as the following: Contains Transmitter Module FCC ID: Z4T-ODYSSEY-A.

### **Manual Information to the End-User**

The OEM integrator has to be aware not to provide information to the end-user regarding how to install or remove this RF module in the user's manual of the end product which integrates this module.

The end-user manual shall include all required regulatory information/warning as shown in this manual.

The modular is not intended to be fielded serviceable as, without shielding, the host manufacturer must be considered shielding when integrating a module.


When the module is installed inside another device, the user manual of this device must contain below warning statements;

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

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. The devices must be installed and used in strict accordance with the manufacturer's instructions as described in the user documentation that comes with the product.

Documents / Resources

<div><div>ODYSSEY X86 User Manual</div><div>Getting Started with ODYSSEY X86</div><div></div><div><p>ODYSSEY X86 is a single-board computer based on the Intel® Atom™ processor. It is designed for use in a variety of applications, including industrial automation, data acquisition, and embedded systems. The board is compatible with a wide range of operating systems and software. For more information, please refer to the user manual.</p><p><b>Features:</b></p><ul style="list-style-type: none"><li>• Intel® Atom™ processor (up to 1.6 GHz)</li><li>• 4GB DDR3 RAM</li><li>• 16GB eMMC storage</li><li>• 4x SATA 3.0 Gb/s</li><li>• 2x USB 3.0</li><li>• 1x VGA</li><li>• 1x RS-485</li><li>• 1x CAN</li><li>• 1x I2C</li><li>• 1x SPI</li><li>• 1x UART</li><li>• 1x I2S</li><li>• 1x ADC</li><li>• 1x DAC</li><li>• 1x PWM</li><li>• 1x GPIO</li><li>• 1x I2C</li><li>• 1x SPI</li><li>• 1x UART</li><li>• 1x I2S</li><li>• 1x ADC</li><li>• 1x DAC</li><li>• 1x PWM</li><li>• 1x GPIO</li></ul></div></div>	<div><div><a href="#">Sseed Technology ODYSSEY X86 Board</a> [pdf] User Manual</div><div>ODYSSEY-A, ODYSSEYA, Z4T-ODYSSEY-A, Z4TODYSSEYA, ODYSSEY X86 Board, X86 Board, Board</div></div>
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