

# INTRODUCTION



## Ultimate Performance

13<sup>th</sup> Intel® Core™ i5-1340P (CPU)

**12** Core      **16** Thread      Up to **4.6** GHz



\*Cinebench R23 Multi Core Score

# Push Your Visuals Further

Intel® Iris® Xe Graphics (GPU)

80 EUs

Up to 1.45 GHz

NVIDIA GeForce GTX 1050 Mobile

1610

**Intel Iris Xe Graphics (LattePanda Sigma)**

**1466**

AMD Radeon RX Vega 8

1225

AMD Radeon Pro 555X

1078

\*Cinebench R23 Multi Core Score

# Lightning-Fast Memory

Makes Every Second Count

Dual-Channel LPDDR5-6000 (32GB)

Bandwidth: 102.4GB/s

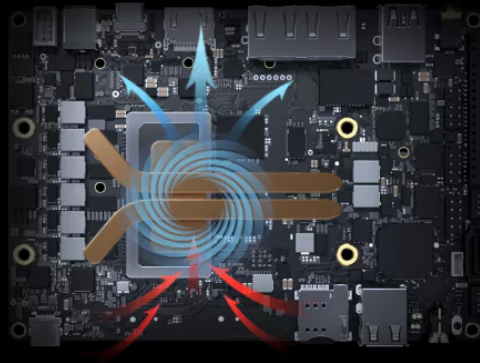
Dual-Channel DDR4-3200

Bandwidth: 51.2GB/s

Increase by **100%**

## Rapid Chill

UP TO **44W** TDP



## Silent Whisper



30dB

Whisper



35dB

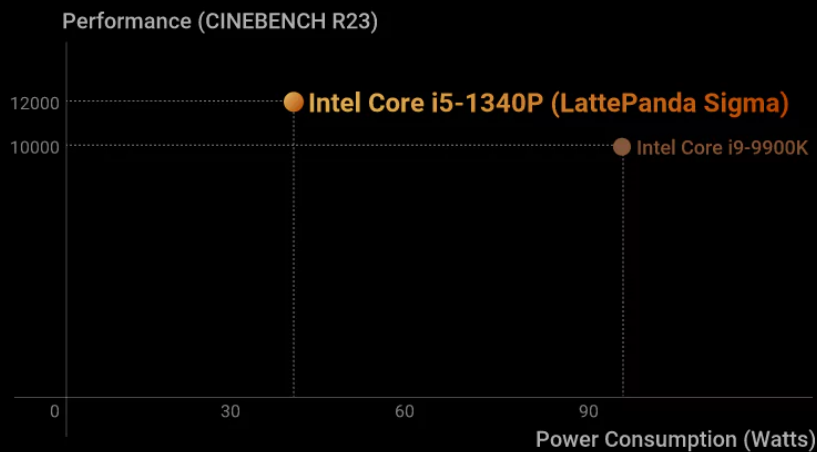
LattePanda Sigma (Idle)



40dB

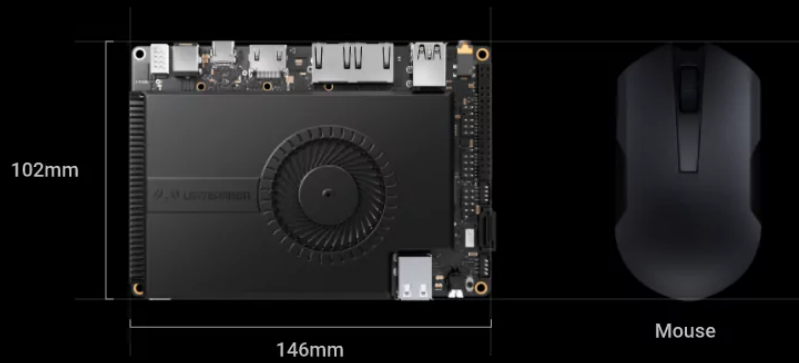
Refrigerator

## Perfect Balance Between Performance and Energy



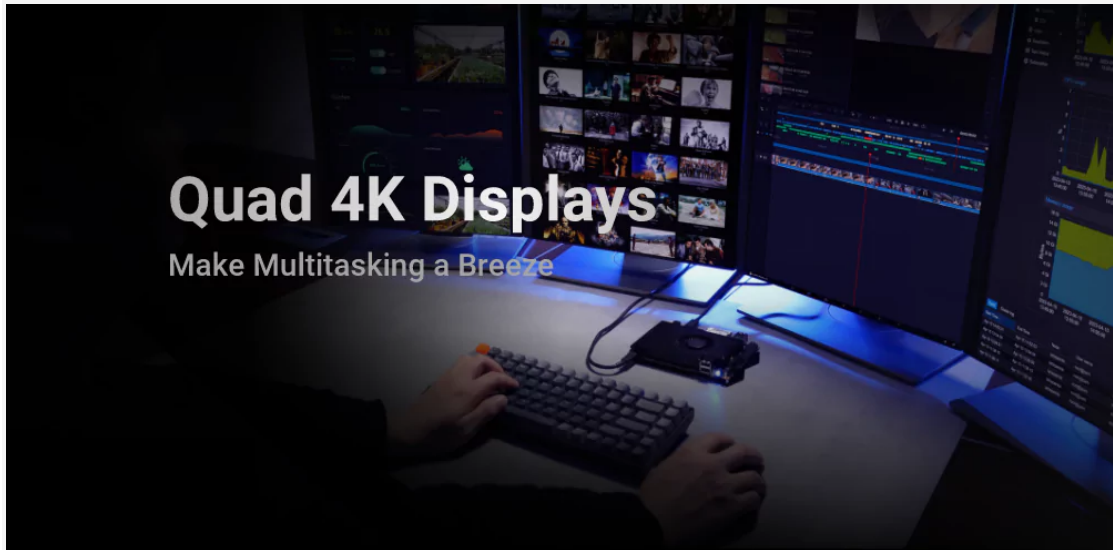
# Compact Size, Mighty Power

Break through Space Constraints



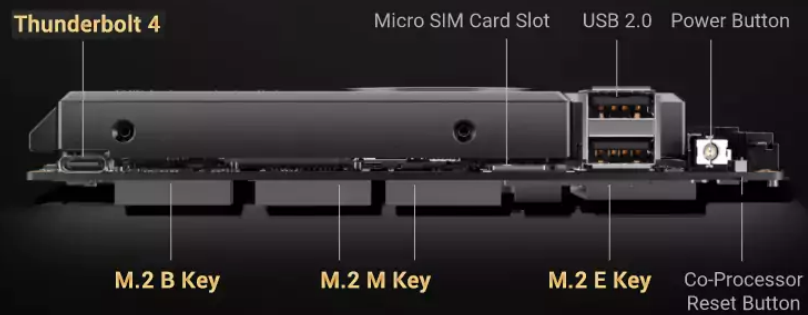
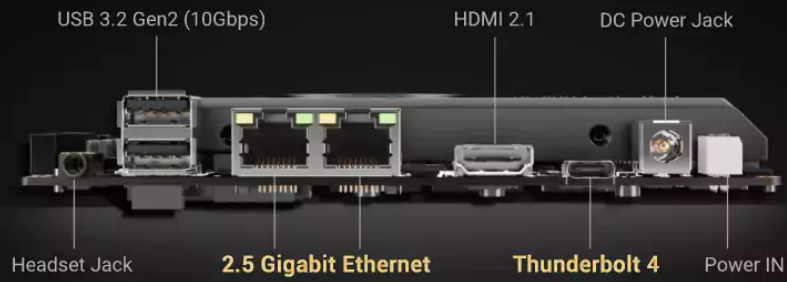
# Quad 4K Displays

Make Multitasking a Breeze



# Rich Interfaces and User-Friendly Layout

Plug and Unplug with Ease



# Diverse OS Support

Find Your Perfect Match



Windows 10



Windows 11



Ubuntu

# Ample BIOS Functions

Streamline the Deployment and Management



## Auto Power-on

Turn on automatically when power on.



## Watchdog Timer

Help the system reboot when no response or crash.



## Serial Port Redirection

Manage and debug via serials.

# Key Features



**CPU**  
Intel Core i5-1340P Raptor Lake

Up to  
**12** **16** **4.6**  
Core Thread GHz



Supports up to Four 4K Displays

Up to  
**80** **1.45**  
EUs GHz

**GPU**  
Intel Iris Xe Graphics



**LattePanda Sigma**

Memory  
**32GB**  
Dual-Channel LPDDR5-6000



Windows



Ubuntu

**2.5Gb**  
2 x Ethernet

**4x**  
M.2 Key



2 x Thunderbolt 4



Auto Power-on



Watchdog Timer



Serial Port Redirection

## Comparison Tables

SKU	Model	Processor	Memory	Storage	Wireless
DFR1080	LattePanda Sigma(16GB RAM)	Intel Core i5-1340P	16GB LPDDR5-6400	/	/
DFR1081	LattePanda Sigma (16GB RAM, 500GB SSD, WiFi 6E)			500GB WD SN770 PCIe 4.0 x4 SSD with Windows 11 Pro (not activated)	Intel AX211 WiFi 6E Module
DFR1090	LattePanda Sigma (32GB RAM)		/	/	
DFR1091	LattePanda Sigma (32GB RAM, 500GB SSD, WiFi 6E)		32GB LPDDR5-6000	500GB WD SN770 PCIe 4.0 x4 SSD with Windows 11 Pro (not activated)	Intel AX211 WiFi 6E Module

## Selection Guide of LattePanda Single Board Computer Series

Product	LattePanda V1	LattePanda 3 Delta	LattePanda Sigma
Processor	Intel® Atom® x5-Z8350	Intel® Celeron® N5105	Intel® Core™ i5-1340P
CPU Spec.	4-Core, 4-Thread 1.44 ~ 1.92GHz 2M Cache 2W TDP	4-Core, 4-Thread 2.00 ~ 2.90GHz 4M Cache 10W TDP	12-Core, 16-Thread 1.9 ~ 4.60GHz (Performance-core), 3.4 GHz (Efficient-core) 12M Cache 28W TDP
Graphics	Intel® HD Graphics	Intel® UHD Graphics	Intel® Iris® Xe Graphics
Graphics Spec.	200 ~ 500MHz 12 Execution Units	450 ~ 800 MHz 24 Execution Units	400 ~ 1450 MHz 80 Execution Units
Memory	2GB/4GB DDR3L 1066MHz Single Channel	8GB LPDDR4 2933MHz Single Channel	16GB LPDDR5 6400MHz 32GB LPDDR5 6000MHz Dual Channel
Storage	32GB/64GB eMMC V5.1	64GB eMMC V5.1	M.2 NVMe SSD (separately installed)
Network	802.11n, 2.4G, up to 150Mbps Bluetooth 4.0 100M Ethernet	802.11ax, 2.4G & 5G(160MHz), up to 2.4Gbps Bluetooth 5.2 1000M Ethernet	2 x 2500M Ethernet M.2 Wi-Fi Module (separately installed)
USB Ports	1 x USB 3.2 Gen1 Type-A (5Gbps) 2 x USB 2.0 Type-A (480Mbps)	1 x USB 3.2 Gen2 Type-A (10Gbps) 2 x USB 3.2 Gen1 Type-A (5Gbps) 1 x USB 2.0 Type-C (480Mbps)	2 x USB2.0 Type-A (480Mbps) 2 x USB3.2 Gen2 Type-A (10Gbps) 2 x Thunderbolt™ 4 Type-C (40Gbps)
Display	HDMI 1.4b, up to 1920 x 1080 @ 60Hz MIPI DSI 1.1, up to 1920 x 1080 @ 60Hz	HDMI 2.0b, up to 4096 x 2304 @ 60Hz DP 1.4 via USB Type C, up to 4096 x 2304 @ 60Hz eDP 1.4b, up to 1920 x 1080 @ 60Hz	HDMI 2.1, up to 4096 x 2304 @ 60Hz DP 1.4a, up to 7680 x 4320 @ 60Hz eDP 1.4b, up to 4096 x 2304 @ 120Hz



Expansion Slots	TF Card Slot	M.2 Key B: SATA III, USB2.0, USB3.0, SIM M.2 Key M: PCIe 3.0 x 2 TF & Micro SIM Card Slot	M.2 M Key: PCIe 3.0 x 4 M.2 M Key: PCIe 4.0 x 4 M.2 B Key: SATA III/PCIe 3.0 x 1, USB2.0, USB3.0, SIM M.2 E Key: PCIe 3.0 x 1, USB2.0, Intel CNVio Micro SIM Card Slot
Audio	3.5mm Microphone/Headphone Combo Connector	3.5mm Microphone/Headphone Combo Connector	3.5mm Microphone/Headphone Combo Connector
Co-Processor	Microchip® ATmega32U4-MU	Microchip® ATmega32U4-MU	Microchip® ATmega32U4-MU
GPIO	20 x Digital IO Pins, including: 7 x PWM Pins, 12 x Analog Pins, 1 x UART, 1 x I2C, 1 x SPI, 2 x 5V Power Pins	20 x Digital IO Pins including: 7 x PWM Pins, 12 x Analog Pins, 1 x UART 1 x I2C, 1 x SPI, 4 x 5V Power Pins, 4 x 3.3V Power Pins, 1 x ICSP, 1 x BIOS Flash, 1 x RS232, 1 x USB 2.0, 1 x Audio, 1x I2C (CPU Pins), 1 x DC Input, 1 x Power Switch, 1 x Reset Switch, 1 x S0/S3/S4	20 x Digital IO Pins, including: 7 x PWM Pins, 12 x Analog Pins, 1 x UART, 1 x I2C, 1 x SPI, 2 x 5V Power Pins, 1 x ICSP, 1 x S0/S3/S4, 1 x USB2.0, 1 x SATA III Data, 1 x SATA Power, 1 x Front Panel, 1 x Front Audio Panel, 1 x COM (RS232/RS485), 1 x DC Input
Security	None	Built-in TPM (2.0)	Built-in TPM (2.0)
Operating System	Windows 10 Ubuntu 18.04, 20.04	Windows 10 & 11 Ubuntu 22.04	Windows 10 & 11 Ubuntu 22.04
Dimension	88mm*70mm*22mm	125mm*78mm*16mm	146mm*102mm*24mm
Power Supply	MicroUSB: 5V 2.5A	USB Type C: 15V 2.4A PH2.0 4-Pin Header: 12V 3A	USB Type C: 20V 4.5A DC Jack: 19V 4.7A
BIOS Function	Auto Power-on	Auto Power-on Watchdog Timer	Auto Power-on Watchdog Timer
Fan	Fanless	Built-in fan	Built-in fan
Applications	Portable Device Logistics Robot Intelligent Gateway	Portable Device Image Recognition Auto Optical Inspection	Homelab Edge Server AI Inference
Recommendation	The choice of the most industry customers.	The most cost-effective version.	The latest and most powerful version.

## FEATURES

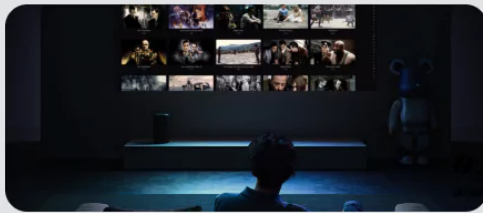
- **Ultimate Performance:** The Intel Core i5-1340P processor has 12 cores and 16 threads with a maximum turbo frequency of 4.60 GHz (performance-

core) and 3.4 GHz (efficient-core), making it a powerful and efficient processor for multitasking and demanding applications.

- **Lightning-fast Memory:** The dual-channel LPDDR5-6400 RAM with a capacity of 16GB ensures smooth and fast performance.
- **High-level Graphics Capability:** as it features the Intel Iris Xe Graphics, LattePanda Sigma Single Board Server supports multiple display outputs with high resolutions and refresh rates.
- **Quad 4K displays:** Experience unparalleled visual clarity with support for quad 4K displays, bringing your content to life like never before.
- **User-friendly Interface Layout:** plug and play with ease
- **Rich Interfaces:** Unlock limitless possibilities with rich interfaces, offering seamless connectivity and enhanced user experience.
- **Diverse OS Support:** Support Windows 10, Windows 11, and Ubuntu operating systems

## APPLICATIONS

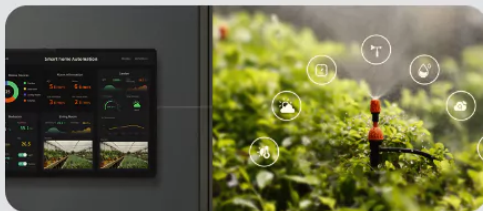
### Application



Media Server



Game Server



Home Automation



AI Inference

## SPECIFICATION

### Processor

- CPU: Intel® Core™ i5-1340P
- Cores / Threads: 12C(4P+8E) / 16T
- Max Turbo Frequency: 4.60 GHz(Performance-core), 3.4 GHz(Efficient-core)
- L2 Cache: 12 MB

- Base Power: 28 W
- Graphics: Intel® Iris® Xe Graphics
- Max Dynamic Frequency: 1.45 GHz
- Execution Units: 80
- Co-processor: Microchip® ATmega32U4-MU

### **Memory**

- Dual-Channel 16GB LPDDR5-6400
- Dual-Channel 32GB LPDDR5-6000

### **Storage**

- Drive Form Factor: M.2 SSD (NVMe/SATA), SATA Drive

### **Wireless**

- Wireless Form Factor: M.2 Wireless Module (PCIe/CNVio)

### **Display**

- HDMI Port: HDMI 2.1, Up to 4096 x 2304 @ 60Hz
- USB Type-C Port: DP 1.4a, Up to 7680 x 4320 @ 60Hz (One Monitor)
- Embedded Display Port: eDP 1.4b, Up to 4096 x 2304 @ 120Hz

### **External I/O**

- USB Type-A: 2 x USB2.0 (480Mbps)  
2 x USB3.2 Gen 2 (10Gbps)
- USB Type-C: 2 x Thunderbolt™ 4 (40Gbps)
- HDMI: HDMI 2.1
- Ethernet: 2 x 2.5GbE RJ45 Ports (Intel® i225-V Gigabit Ethernet Controller, Supports 10/100/1000/2500 Mbps, WOL)
- Power: 5.5mm x 2.5mm DC Jack
- Audio: 3.5mm Microphone Headphone Combo Connector
- Sim Card: Micro Sim Card Slot

### **Internal I/O**

- USB 2.0: 2.0mm Pitch 4-Pin Connector, 480Mbps
- Fan: 1.27mm Pitch, 12V 4-Wire Fan Connector, PWM Control
- SATA: SATA 6.0 Gb/s Data Connector, 2.0mm Pitch 4-Pin Power Connector
- Front Panel: 2.54mm Pitch 9-Pin Header, Supports Power, Reset, Power LED, HDD LED
- Front Audio Panel: 2.54mm Pitch 9-Pin Header, Supports High Definition Audio (HD), Line-Out, Mic-in
- COM: 2.54mm Pitch 9-Pin Header, Supports RS232, RS485
- GPIO: 2.54mm Pitch 34-Pin Header, Including ATmega32U4 I/O Pins, 5V Power Pins, S0/S3/S4 State Pins

- eDP: 0.5mm Pitch 40-Pin Connector, 4 Lanes

### Expansion Slot

- M.2 M Key: Type 2280, Supports PCIe 3.0 x4  
Type 2280, Supports PCIe 4.0 x4
- M.2 B Key: Type 2242/2252/2280, Supports SATA III/PCIe 3.0 x1, USB2.0, USB3.0, SIM
- M.2 E Key: Type 2230, Supports PCIe 3.0 x1, USB2.0, Intel CNVio

### Security

- TPM: Built-in TPM (2.0)

### Power

- Power Input: 5.5mm x 2.1mm DC Jack: DC 12~20V  
USB Type C: PD 20V
- Power Adapter: 19V DC, 4.74A, 90W
- RTC Battery: CR1220 Battery Holder: 3V  
1.27mm Pitch 2-Pin Connector: 3V

### Operating System

- Microsoft Windows: Windows 10, Windows 11
- Linux: Ubuntu 22.04

### Environment

- Operating Temperature: 0~45℃
- Relative Humidity: 0%~80%

### Dimension

- Form Factor: 3.5", 146 x 102 mm

## PROJECTS

### 1. [Review: The Sigma: The Most Powerful Single Board Windows PC](#)

**Introduction:** This video demos and benchmarks the new LattePanda Sigma single-board computer, which features 12 cores, 16 threads, 16GB RAM, 500GB Storage, dual 2.5Gn NICs, dual 10Gb USB, dual 40Gb Thunderbolt, and much more!

### 2. [Review: The All New LattePanda Sigma May Just Be The Ultimate X86 SBC! First Look](#)

**Introduction:** In this video we take look at the all new Lattepanda SIGMA! A Powerful X86 SBC with a 12 Core CPU, 16Gb of DDR5 Ram Running at 6400Mhz, Dual Thunderbolt 4 and loads More! It runs WIndos Or Linux and Has The Power To Games and Run high end emulators like PCSX2 for PS2,

RPCS3 for PS3 and even YUZU of Nintendo Switch! Plus when you need more GPU power you can connect an eGPU and turn it into a real gaming SBC!

### [3. Review: This Single Board Computer is Faster than a Mac Mini AND a Raspberry Pi](#)

#### **Introduction:**

This single-board computer integrates a 12-core processor, fast memory with in-band ECC support, lots of expandability, and even an integrated Arduino controller with GPIO pins. That makes the LattePanda Sigma a step beyond the Apple Mac Mini M2 (and M1) and in another stratosphere than a Raspberry Pi. This is interesting not just for the #Homelab but also those building edge applications that need a faster CPU and GPU on a SBC.

## **DOCUMENTS**

- [Product Wiki](#)
- [Certificates](#)

#### **Documentation**

- [Pin-out Diagram](#)
- [Datasheets](#)

#### **Tutorials**

- [Installing Ubuntu Operating System](#)
- [Using eDP Touch Display](#)
- [Set up Auto Power-on](#)

#### **Download**

- [Operating System](#)
- [Drivers & Software](#)
- [3D Model](#)

## **SHIPPING LIST**

- LattePanda Sigma Single Board Server x1
- Active Cooling Fan (Assembled) x1
- Metal Protective Bottom Plate x1
- Thermal Pads for M.2 SSD x2
- Power Adapter with DC cable x1
- AC Cable(EU & US & UK) for power adapter x3
- RTC Battery (Assembled) x 1

- User Manual x 1