INTRODUCTION

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
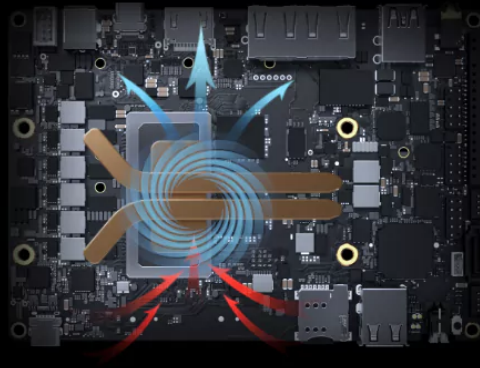
Dual-Channel LPDDR5-6400 (16GB)
Bandwidth: 102.4GB/s

Dual-Channel DDR4-3200
Bandwidth: 51.2GB/s

Increase by **100%**

Rapid Chill

UP TO **44W** TDP

Silent Whisper

30dB	35dB	40dB
Whisper	LattePanda Sigma (Idle)	Refrigerator

Perfect Balance Between Performance and Energy

Performance (CINEBENCH R23)

12000 ● Intel Core i5-1340P (LattePanda Sigma)

10000 ● Intel Core i9-9900K

0   30   60   90

Power Consumption (Watts)
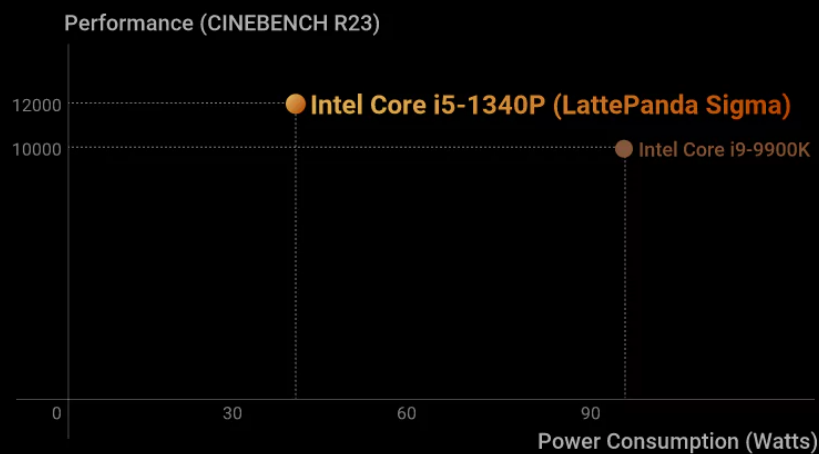
Compact Size, Mighty Power

Break through Space Constraints

102mm

146mm

Mouse
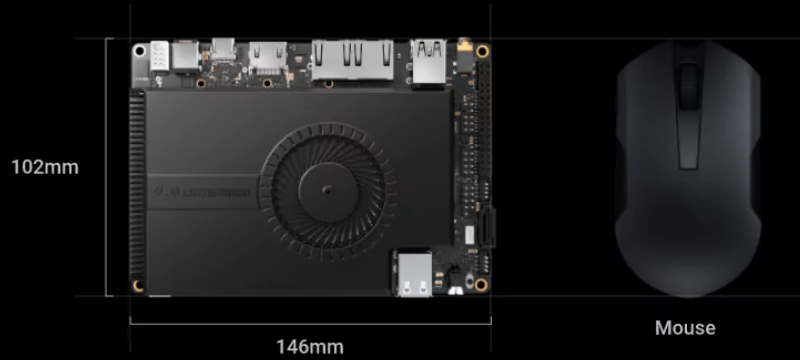
Quad 4K Displays

Make Multitasking a Breeze

Rich Interfaces and User-Friendly Layout

Plug and Unplug with Ease

USB 3.2 Gen2 (10Gbps) HDMI 2.1 DC Power Jack

Headset Jack **2.5 Gigabit Ethernet** **Thunderbolt 4** Power IN

Thunderbolt 4 Micro SIM Card Slot USB 2.0 Power Button

M.2 B Key **M.2 M Key** **M.2 E Key** Co-Processor Reset Button
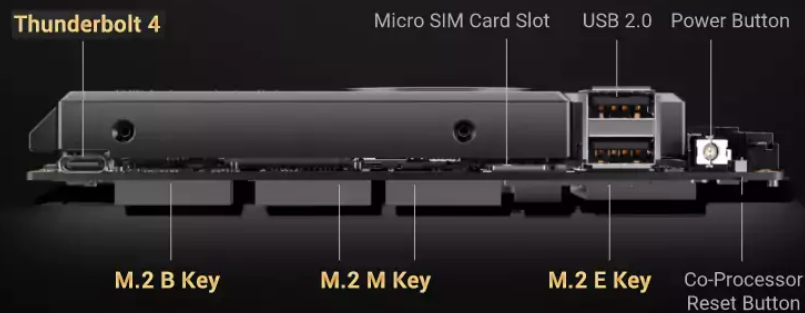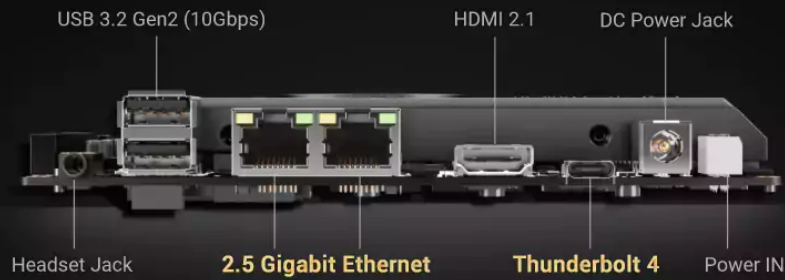
Diverse OS Support

Find Your Perfect Match
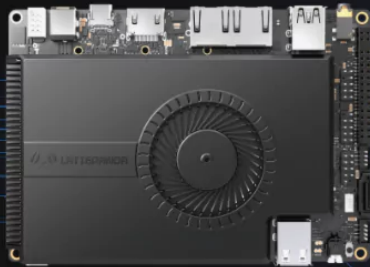
Windows 10
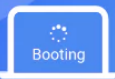
Windows 11

Ubuntu

Ample BIOS Functions

Streamline the Deployment and Management

Auto Power-on

Turn on automatically when power on.

Booting

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

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

Supports up to Four 4K Displays

80 EUs Up to **1.45** GHz

GPU
Intel Iris Xe Graphics

LattePanda Sigma

Memory
16GB
Dual-Channel LPDDR5-6400

Windows

Ubuntu

2.5Gb 2 x Ethernet

4x M.2 Key

2 x Thunderbolt 4

Booting
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)		32GB LPDDR5-6000	/	/
DFR1091	LattePanda Sigma (32GB RAM, 500GB SSD, WiFi 6E)			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, incluing: 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 incluing: 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, incluing: 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 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
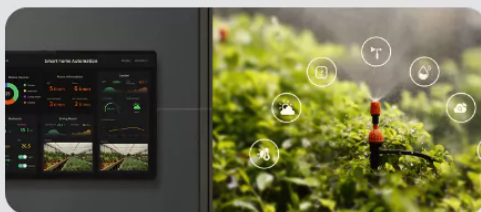
APPLICATIONS

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. [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. [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!

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 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
- M.2 NVMe SSD 500GB x1
- M.2 Intel WiFi 6E Module x1
- WiFi/BT Antenna x2