Mind Family Products

FAQ

KHADAS

Mind - Hardware

Battery

Does Mind's built-in battery allow it to function normally when the power supply is detached?

Mind's built-in battery capacity is 5.55Wh, which supports standby for about 25 hours when the device sleeps or hibernates. To turn on and use the device, the power adapter needs to be connected. It is not recommended to use the built-in battery as a standalone power supply.

How do I set the system mode that Mind enters after power disconnection? What's the difference between each mode?

There are 4 system modes that Mind can enter upon disconnecting power: Sleep, Hibernate, Turn off the display, and Do nothing.

– Sleep: After disconnecting power, the device will go to sleep. After reconnecting power, the device will reawaken automatically.

– Hibernate: After disconnecting power, the device will hibernate. After reconnecting power, press the power button to wake up the device.

– Turn off the display: After disconnecting power, any attached monitors will turn off, and the CPU will run at a reduced speed. After reconnecting to power, the device and any attached monitors will reawaken automatically.

– Do nothing: After disconnecting power, the device will remain awake, and the CPU will run at a reduced speed. When the battery power drops below 20% (after about 30 minutes), the system automatically hibernates; when the battery power drops below 10%, the device forces a shutdown. Before the device goes to hibernation, when reconnecting power, the device will reawaken automatically.

To set your preferred system mode, there are two methods:

1. Change Windows system settings: From the search bar, go to **Control Panel** > **System and Security** > **Power Options** > **Change what the power buttons do** > Select the mode you want to enter when you press the sleep button from the drop-down menu (**On battery** and **Plugged in** items) > **Save changes**.

2. Go to Mind App and change the **Device Mode When Unplugged**. You can choose from **Sleep**, **Use battery**, **Hibernate**, and **Use battery** (which matches the **Do nothing** and **Turn off the display** options in Windows system settings).

After saving your preferred settings, once power is disconnected, Mind will automatically enter the mode that you had set. Hibernate is the default mode.

When using Mind with the Mind Graphics, there is no need to change this mode. When using Mind on its own or pairing it with Mind Dock, you can go to the Mind App and set the mode to **Sleep** for a better experience. If you wish to disconnect power for a long time, it is recommended to set the device to **Sleep** or **Hibernate** to prevent data loss.

Button

What can the Mind's power button do?

1. In Windows system settings (**Control Panel** > **System and Security** > **Power Options** > **Choose what the power buttons do** > **When I press the sleep button**), you can set the system mode you want to enter after pressing the button. There are 5 system modes: sleep, hibernate, shut down, turn off the monitor, or do nothing.

2. When the power button function is set to sleep, shut down, or turn off the monitor, after the device enters the corresponding system mode, press the button to wake it up or turn it on. When set to sleep, the device wakes up automatically after plugging in the power supply.

3. To shut down Mind, press and hold the button for 3 seconds. When the shutdown prompt pop-up box appears, pull down to shut down.

4. To force shutdown, press and hold the power button for 8 seconds.

5. To restore the BIOS default configuration, press and hold the button for 30 seconds until the button light flashes.

Indicator Light

What do the different colors of the button's indicator light show?

	Breathing	Solid On	Flashing
○	The device is on and charging.	The device is powered on and the battery is full.	—
● (yellow)	The device is hibernating or powered off and charging.	—	—
● (cyan)	The device is sleeping and charging.	The device is sleeping and the battery is full.	—
● (red)	The built-in battery power is less than 30%.	—	Built-in battery is absent, cannot be recognized or the contact is poor when the device is turned on and working.
● (black)	The device is disconnected from power and is sleeping, hibernating, or shut down.		

Power Adapter

Can a low voltage power adapter be used with Mind?

The standard input voltage of Mind is 20V, and power adapters with lower voltages cannot support normal device operation. Please use the provided power adapter to fully unleash the potential of Mind.

Memory

Can I replace or upgrade the inbuilt RAM modules?

Mind uses an onboard memory solution and does not support replacement or installation of new RAM modules.

Storage

What types of SSDs do Mind's two M.2 slots support?

Mind 2 (Intel® Core™ Ultra)

Built-in SSD Slot: M.2 NVMe PCIe 4.0 2230 SSD (occupied)
Expandable SSD Slot: M.2 NVMe PCIe 4.0 2230 SSD (empty)

Mind (13th Gen Intel® Core™)

Built-in SSD Slot: M.2 NVMe PCIe 4.0 2230 SSD (occupied)
Expandable SSD Slot: M.2 NVMe PCIe 3.0 2230 SSD (empty)

What type of hard drive does Mind use?

Mind's built-in M.2 slot is occupied by an NVMe PCIe 4.0 2230 SSD, and an expandable slot is user-accessible.

What is the maximum supported SSD capacity?

Mind supports the capacity specifications of mainstream M.2 NVMe 2230 SSD hard drives on the market. The maximum SSD capacity supported by the expandable slot is 2TB (the SSD with the maximum capacity available on the market tested at Khadas Lab).

Can users install a second SSD for Mind?

There is an expandable SSD slot located at the bottom of the Mind. To install a second SSD and enjoy increased storage capacity, simply open the slot cover by pressing down on one side.

I/O & Display

What is the maximum display resolution of Mind?

When connected via the HDMI port, Mind supports up to 4K (60Hz) display. When connected via USB-C ports (including the full-featured USB-C, Thunderbolt 4 and USB4 ports), it supports up to 8K (60Hz), 4K (240Hz), and 5K (72Hz) display.

How many displays can Mind support simultaneously?

Mind supports up to 3 independent, external monitors (1 HDMI port, and 2 USB-C ports). When combined with Mind Dock or Mind Graphics, it can support up to 4 independent, external monitors.

What network connections does Mind support?

Mind connects to the internet through Wi-Fi 6E, supporting 2.4G/5G/6G frequency bands.

Does Mind support Bluetooth? What are the supported Bluetooth protocols?

Yes, Mind supports up to Bluetooth 5.3, and can be connected to devices such as Bluetooth mice, keyboards, speakers, and headphones.

Does Mind support discrete graphics cards?

Mind comes with an Intel integrated graphics card. If you need to use a discrete graphics card, it is recommended to pair Mind with Mind Graphics, which has a built-in RTX 4060 Ti desktop-class graphics card.

What are the differences in interface performance between Mind 2 and Mind?

	Mind 2	Mind
USB-C	Thunderbolt 4 × 1 USB4 × 1	Full-featured USB-C × 2
Mind Link PCIe	Max Bandwidth: PCIe 5.0 x8 Max Speed: 256 GT/s	Max Bandwidth: PCIe 4.0 x4 Max Speed: 64 GT/s
Storage (SSD)	Built-in PCIe 4.0 SSD × 1 Expandable PCIe 4.0 SSD × 1	Built-in PCIe 4.0 SSD × 1 Expandable PCIe 3.0 SSD × 1

Operating & Storage Environment

What environmental conditions is Mind designed to be used in?

Mind is an indoor office product. It can be used in a temperature range of 10 to 35℃, low-humidity and no salt spray (seaside) environment.

What are the storage conditions for Mind?

Please store Mind within a temperature range of -10 to 45℃, in an environment that is low-humidity, no salt spray, avoiding sunlight exposure.

Can Mind be used outdoors for extended periods of time?

Mind is designed to be used in indoor environments mainly. Outdoor usage may significantly reduce your device's lifespan due to changeable weather. Do not use it in harsh industrial environments (dust, high salt spray, extreme heat/cold, etc).

Security

Does Mind support hardware encryption technology?

Mind integrates Intel's built-in TPM technology, which provides hardware-level security and encryption.

Does Mind support Intel vPro remote security management technology?

Mind's Intel SoC does not support Intel vPro technology. Subsequent Mind series products will continue to be upgraded, so stay tuned.

Mind - Software

OS

Does Mind include Microsoft 365? Can I use it for free?

Mind is pre-installed with Microsoft 365 (formerly known as Office) software. Users can go to the Microsoft official website to order the required package plan.

Does Mind support the installation of other operating systems?

Mind supports the installation of Linux (Ubuntu) and Windows 10 systems, but some drivers may not be compatible. In order to fully utilize the performance of Mind, it is recommended to use the pre-installed Windows 11 system.

BIOS

Does Mind support BIOS configurations?

Currently supported BIOS configurations include: Wi-Fi network wake-up, scheduled boot, RAID0, automatic boot when connected to power, delayed boot, and disk boot options.

Does Mind support restoring the default BIOS configuration?

Mind provides an easy-to-use BIOS recovery mechanism. To restore the default BIOS configuration, just press and hold the power button for 30 seconds.

Work Mode

Does Mind 2 support different work modes?

When using the original 65W GaN power adapter, Mind 2 supports three work modes: Power-saving, Balanced, and Performance. You can go to Mind App to set your preferred mode. The CPU power consumption for these modes is 15W, 35W, and 40W, respectively.

When paired with Mind Graphics, Mind 2 draws power from Mind Graphics. In this scenario, the CPU power consumption for the three modes increases to 15W, 35W, and 45W, respectively, enabling enhanced performance to meet more demanding usage scenarios.

Mind Graphics

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Connect & Use

Can Mind Graphics be used on its own?

Mind Graphics is an external GPU (eGPU) module and isn't meant to function independently. It's designed to work alongside Khadas Mind or any other laptops or desktop computers compatible with Thunderbolt 4 or Thunderbolt 3.

How do I properly connect Mind Graphics to a power source?

Mind Graphics requires power to operate. Ensure to use the provided AC power cord to connect it to a 100V–240V power outlet. Upon doing so, Mind Graphics will power on automatically, indicated by a flashing indicator light.

Additionally, when connected to Mind, Mind Graphics can charge it through Mind Link, eliminating the need to power your Mind separately.

How do I properly connect Mind Graphics to Mind?

When using Mind Graphics with Mind for the first time, please watch the video tutorial and thoroughly follow the instructions to complete the setup. Otherwise, Mind Graphics may not function properly:

Mind Graphics First-Time Setup - Video Tutorial

(https://www.youtube.com/watch?v=kyrT9aPkNCk)

Once the upgrade is complete, you can enjoy the powerful graphics acceleration of Mind Graphics with a simple plug-and-play experience.

Mind 2 comes pre-installed with the latest software and drivers, eliminating the need for this setup procedure.

To guarantee smooth operation across different scenarios, how should the device mode be set?

Mind establishes a PCIe connection with Mind Graphics through Mind Link but currently lacks hot-swap capability. The default mode that Mind enters upon disconnecting power is **Hibernate**, ensuring that you won't need to save your files manually before unplugging; your data remains safe. To wake Mind up after reconnecting to Mind Graphics, just press the power button.

To change the device mode, go to Mind App and set the **Device Mode When Unplugged** to **Hibernate** or **Use battery**. Do NOT set it to **Sleep**, as this can trigger graphics card detection issues, stopping Mind Graphics from functioning correctly.

Switching Mind from another expansion unit (like Mind Dock) to Mind Graphics while in **Sleep** mode could result in blue screen errors due to a failure in detecting the graphics card. If this happens, long press Mind's power button until Mind Graphics' indicator light flashes and then press the power button again to restart Mind.

How do I properly disconnect Mind Graphics from Mind?

When Mind is connected to Mind Graphics, the Mind Lock Mechanism will automatically lock into place to prevent any accidental disconnection, saving your workflow from being interrupted. To disconnect, you have two options:

Option 1 - Turn Off Mind

On the Windows taskbar, click the start icon and then select the power icon > Shut down. Alternatively, you can press and hold the power button on Mind for 8 seconds to force it into shutting down. Once done, the indicator light on your Mind Graphics will start to flash for 5 seconds, and then breathe (white color). This means that Mind has been disconnected from Mind Graphics and you can remove Mind safely.

Option 2 - Press the Mind Unlock Button

Press the Mind Unlock Button located at the back of Mind Graphics. You'll see a pop-up notification on the Mind App: "Do you want to disconnect Graphics?". Click Confirm to proceed. The indicator light on Mind Graphics will start to flash for 5 seconds, and then breathe (white color), indicating you can remove Mind safely.

Forcing a Disconnection

If you can't disconnect Mind from Mind Graphics using either of the methods above, press and hold the Mind Unlock Button for 10 seconds. This will force the Mind Lock Mechanism to disengage, allowing you to safely remove Mind from Mind Graphics.

Does Mind Graphics support hot swapping?

Mind Graphics currently does not support hot swapping. To disconnect Mind from Mind Graphics while they're powered on, please refer to the instructions in "How do I properly disconnect Mind Graphics from Mind ?". Improper disconnection may result in blue screen errors or other issues.

Can Mind Graphics be used with Mind Dock at the same time?

Mind cannot connect to both Mind Graphics and Mind Dock at the same time.

Mind 2 supports simultaneous connections to Mind Graphics using the Thunderbolt interface and to Mind Dock via Mind Link.

Connecting Third Party Devices

What devices are compatible with Mind Graphics?

Mind Graphics supports connections via both USB-C and Mind Link. In addition to interfacing with Mind through Mind Link, Mind Graphics can also connect to Windows laptops or desktops equipped with Thunderbolt 4 or Thunderbolt 3 to enhance graphics performance. Moreover, its variety of ports allows for effortless peripheral expansion.

What devices and features does the USB-C interface on Mind Graphics support?

The USB-C interface on Mind Graphics is fully compatible with all Windows devices that have Thunderbolt 4 or Thunderbolt 3 interfaces.

When connected to a device with Thunderbolt 4 or Thunderbolt 3 through the USB-C interface, Mind Graphics' DisplayPort can support display outputs of up to 8K (60Hz) or 4K (240Hz), and the HDMI can handle up to 4K (60Hz). Additionally, the connected device will have access to Mind Graphics' USB-A ports, SD card reader, 2.5Gbps ethernet, as well as a microphone, 3.5mm headphone jack, and speakers. However, please note that the fingerprint reader (including its mute function) and volume button are not currently supported.

Furthermore, apart from graphics acceleration, the USB-C interface also provides up to 85W of power for laptop charging.

How to connect Thunderbolt devices to Mind Graphics?

Mind Graphics is compatible with third-party Windows devices that support Thunderbolt 4 or Thunderbolt 3, including laptops and desktops.

If your device has a dedicated GPU, follow the following steps to set it up:

1. Shut down Mind if it is presently connected to Mind Graphics, then remove it from Mind Graphics.
2. Uninstall the dedicated GPU driver from your device.
3. Use a Thunderbolt cable to link your device's Thunderbolt interface to Mind Graphics' USB-C interface.
4. Visit the Khadas official website to download the RTX 4060 Ti graphics card driver.
5. Install the graphics card driver, and then restart your device. After that, your device is ready to enjoy the graphics acceleration offered by your Mind Graphics.

If your device doesn't have a dedicated GPU, skip step 2 but continue with the other steps in order.

Can Mind Graphics charge Mind, a mobile phone, or a laptop?

Mind Graphics comes with a 300W GaN power supply. It serves not only to power the GPU but also to charge Mind via the Mind Link.

When disconnected from Mind, you can charge a laptop with up to 85W of power or a mobile phone with up to 15W of power using the USB-C interface.

Hardware Specs

Can I replace the graphics card in Mind Graphics?

Mind Graphics is designed to be compact, balancing the best performance experience with its size. Currently, its graphics card cannot be replaced.

What is the max power of Mind Graphics and its GPU?

The max power supply of Mind Graphics is 300W.

The built-in RTX 4060 Ti GPU has two versions: the 8GB GPU has a max power of 160W, and the 16GB GPU has a max power of 165W.

Does the performance of Mind Graphics differ when connected via Mind Link as opposed to Thunderbolt?

Per Khadas Lab's testing data, using Mind Link to connect the GPU for acceleration results in a 10%-30% performance boost in various scenarios, in comparison to using Thunderbolt 4.

For maximum performance from Mind Graphics, it is advised to connect Mind Graphics to Mind using Mind Link.

What are the statuses and colors of Mind Graphics' indicator light? Can I customize it?

To make sure the indicator light works properly, do not uninstall Mind App. When Mind App is installed, the indicator light on Mind Graphics has the following statuses:

Always on: Powered on and connected to Mind.
Breathing: Powered on but not connected to Mind.
Flashing: Powered and has just been disconnected from Mind.
Off: Unplugged.

Mind Graphics' indicator light is an RGB LED. When it is on, the default color is white. You can personalize this color to your preference or turn it off using the Mind App.

When connected to Mind, how many displays does Mind Graphics support?

When Mind is connected to Mind Graphics, the two devices have a total of 6 display output ports, supporting the simultaneous connection of up to 6 displays.

Mind：USB-C × 2, HDMI × 1
Mind Graphics：HDMI × 2, DisplayPort × 1

When connecting 6 displays simultaneously, 4 of the ports support Extend mode, and the remaining two ports support Duplicate mode.

The maximum resolutions for the 4 display ports supporting Extend mode are as follows:

Mind Graphics

· HDMI：4K (60Hz) × 2
· DisplayPort：4K (240Hz) or 8K (60Hz) × 1

Mind

· USB-C：4K (240Hz) or 8K (60Hz) × 1

Note: To reach the maximum resolution, a display supporting DSC is required.

What is the speed of PCIe lane when Mind Graphics is connected to Mind via Mind Link?

When Mind is connected to Mind Graphics via Mind Link, the transmission speed is 64 GT/s (PCIe 4.0 x4).

Mind 2 supports a transmission speed of 128GT/s (PCIe 4.0 x8) when connected to Mind Graphics via Mind Link.

Does Mind Graphics support AI applications?

Mind Graphics is powered by an NVIDIA RTX 4060 Ti graphics card, featuring 4352 CUDA® cores. This setup provides flawless support for AI software within the CUDA ecosystem.

If both Mind and a Thunderbolt-compatible device are connected to Mind Graphics simultaneously, which one takes priority?

Mind Graphics prioritizes the Mind Link connection over USB-C by default.

If you wish to connect Mind Graphics to another device via the USB-C port while it's connected to Mind, you must first disconnect Mind from Mind Graphics.

Should Mind Graphics be connected to another device through the USB-C port and you wish to switch to the Mind Link connection with Mind, ensure to save any data on the USB-C-connected device first. Establishing a connection between Mind and Mind Graphics will forcibly terminate the USB-C connection to the other device.

Fingerprints

How do I use the fingerprint reader on Mind Graphics?

Registered fingerprints are stored in the Windows system of Mind. Thus, if you have previously registered your fingerprints on Mind Dock, you can directly log in using the fingerprint reader on Mind Graphics when you connect it to Mind without re-registering.

If you are registering your fingerprint for the first time, follow the steps below:

Connect Mind Graphics to Mind and power it on.

Click **Start** > **Settings** > **Accounts** > **Sign-in options**, under the **Ways to sign in** column, select **Fingerprint recognition (Windows Hello)**, and follow the instructions to enter your fingerprint. Once it's complete, you can use the fingerprint reader on Mind Graphics to log in.

Mind Dock

Connect & Use

How do Mind and Mind Dock connect and disconnect?

Mind and Mind Dock are connected via Mind Link. There are alignment magnets located in the chassis of both Mind and Mind Dock. After alignment, simply press the Mind downward onto Mind Dock to establish a connection.

To ensure the connection stability of Mind Link and prevent accidental detachment, the adsorption force between Mind and Mind Dock is relatively large, and both hands are required to separate them. It is recommended to hold Mind Dock down with one hand, whilst holding the body of the Mind on the same side with the other hand and lift it vertically to complete the separation.

How do I confirm that Mind and Mind Dock are successfully connected?

When the power adapter is connected, and Mind and Mind Dock are successfully connected, the indicator light on the Mind Dock will be always on; in the non-connected state, the indicator light of the Mind Dock will breathe.

Can the Mind Dock be used by itself?

Mind Dock is a multifunctional docking station customized for Mind and can only be used with the Mind.

Does the Mind Dock come with a power adapter?

Mind Dock and Mind need to be used together, and they share the power adapter provided for Mind. If you need additional power adapters, you can purchase them through Khadas official channels.

Can Mind supply electrical power to the Mind Dock?

Yes, Mind Dock supports bi-directional power supply. Simply plug the power adapter into Mind whilst it is docked with Mind Dock. In daily usage, you can choose which device to plug the power adapter into according to your personal needs, eliminating the trouble of frequent plugging and unplugging.

Can I turn off the indicator light on Mind Dock?

After updating both the Mind Dock firmware, Mind EC firmware, and Mind App to the latest versions, if the device is powered on but not connected to the Mind for 5 minutes, the Mind Dock's indicator light will automatically turn off.

You can also go to the Mind App to set the Do Not Disturb mode for the Mind Dock. Once set successfully, when the Mind is powered off or in sleep mode, the Mind Dock indicator light will automatically turn off.

Fingerprints

How do I use the fingerprint reader on Mind Dock?

Connect Mind Dock to the Mind and turn it on. Click **Start** > **Settings** > **Account** > **Sign-in options**, under the **Ways to sign in** column, select **Fingerprint recognition (Windows Hello)**, and follow the instructions to enter your fingerprint to log in through the fingerprint reader on the Mind Dock.

Where are the fingerprints recorded by Mind Dock stored? Can I enter the fingerprints of multiple people?

The registered fingerprints are stored in Mind's Windows system. Currently, up to 10 fingerprints are supported.

I have already registered my fingerprints on Mind Dock. Do I need to re-register my fingerprints if I change the Mind Dock?

No. The registered fingerprints are stored in Mind's Windows system, so when you connect Mind to a different Mind Dock, you can still login with your registered fingerprints. Mind Dock will automatically compare it with the fingerprints in the system.

Mind App

What is Mind App? What functions does it have?

Mind App is an app specially developed for Mind series products and expansion modules. It supports Mind BIOS and EC upgrades, driver installation and upgrades, accessory device firmware upgrades, power mode settings, performance mode settings, device management and other functions. Mind App comes pre-installed on Mind devices and can be accessed via a desktop shortcut or launched by typing "Mind" in the search bar. You can also click this link to download and install the Mind App.

Does Mind App support other brands of computers?

Mind App is specially developed for Mind series products and expansion modules. Computers from other brands are currently not supported.

How do I uninstall or install the latest version of the Mind App?

Uninstalling the Mind App

In the Windows system tray, right-click the Mind App icon and select Exit.

Go to **Settings** > **Apps** > **Installed Apps**, locate **Mind**, right-click it, and select **Uninstall**.

Installing the Latest Version of the Mind App

If you haven't installed the Mind App before, visit the Khadas official website (www.khadas.com/mind/support) to download and install the latest version.

If you already have the Mind App installed, please uninstall it first, then visit the Khadas official website to download and install the latest version.

How do the device modes in the Mind App correspond to the options in Windows system settings?

There are 4 system modes that Mind can enter upon disconnecting power: Do nothing, Sleep, Hibernate, and Turn off the display. You can find this in Windows system settings by navigating to Control Panel > System and Security > Power Options > Choose what the power buttons do. Alternatively, you can change this mode in the Mind App.

– In Mind App versions earlier than v1.2, there are 4 options under **No Adapter Power Mode: Do nothing, Sleep, Hibernate**, and **Turn off the display**, which directly correspond to the options in Windows system settings.

– In Mind App versions v1.2 and later, this feature is renamed to **Device Mode When Unplugged** with 3 options: **Use battery**, **Sleep**, and **Hibernate**. Use battery matches the Do nothing and Turn off the display options in Windows system settings, and is set to Do nothing by default.

How can I manage Mind Graphics using Mind App?

You can use Mind App to manage your Mind Graphics through these functions:

– Turn the indicator light on or off and customize its color.

– View device information.

– Check for and update the firmware version.

After-Sales Service
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Mind - Warranty Policy

What is the Mind warranty policy?

Mind has a 2-year warranty, and the warranty period is based on the order date or device activation time. If there is a problem with the device, it needs to be sent back to Khadas or a local dealer for repair. Accessories that are not damaged by user-error during the warranty period can be replaced and repaired free of charge; after the warranty period is exceeded, maintenance fees will be charged according to Khadas official standards.

Mind Dock - Warranty Policy

What is the Mind Dock warranty policy?

Mind Dock has a 1-year warranty starting from the order date. Accessories that are not damaged by user-error during the warranty period can be replaced and repaired free of charge; after the warranty period is exceeded, maintenance fees will be charged according to Khadas official standards.

Mind Graphics - Warranty Policy

What is the warranty policy for Mind Graphics?

Mind Graphics has a 1-year warranty starting from the order date. If there are any performance or component failures due to quality defects within the warranty period, you're entitled to free replacement or repair services. After the warranty expires, repair fees will be charged according to our official standards.

Can I replace the internal components of Mind Graphics on my own?

Please be aware that you are not allowed to replace internal components on your own. Disassembling or replacing parts of Mind Graphics will invalidate your warranty.