iKOOLCORE®

User Manual

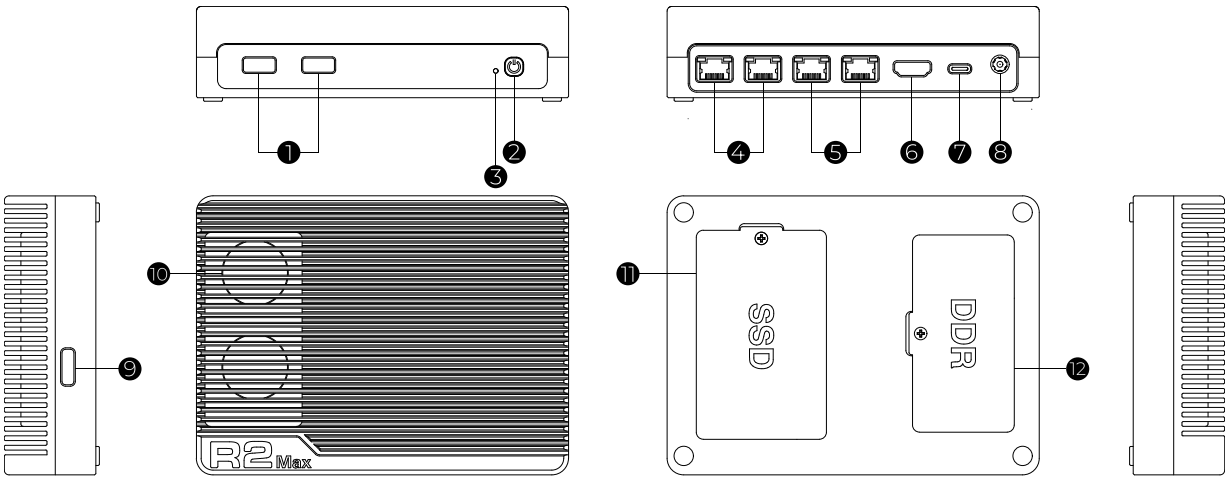
10-Gigabit Open-source Firewall

⚠️ Please note: Use this product only within the bounds of local laws and regulations.

1. Package Contents:

Main Unit x 1, Power Adapter x 1, User Manual x 1, Quality Certificate x 1

2.Product Overview and Interfaces:



❶ USB-A x 2 ❷ Power Buttom ❸ Power Indicator

❹ Marvell 10G RJ45 ❺ i226-V 2.5G RJ45 ❻ HDMI 2.0

❼ USB-C ❽ DC 12-19V Power Jack ❾ TF Slot

❿ 4010 PWM Fan ⓫ SSD Slot ⓬ DDR5 Slot

3. Hardware Specifications:

Processor	Processor Platform	12th Alder Lake-N Series
	Processor Model	Alder Lake-N N100/i3-N305
	Memory	Single Slot, DDR5 4800MHz, Max Support 32GB
	Storage	2 x M.2 2242/2280 NVMe(PCIe 2.0 x 1), Shared PCIe 3.0 x 1
Extended Interfaces	Network Ports	2 x AQC113C-B1-C 10Gbps, 2 x Intel i226-V 2.5Gbps
	USB Ports	2 x USB-A 3.1 Gen1, 1 x USB-C 3.2 Gen1
	Display Ports	1 x HDMI 2.0, 1 x USB-C(eDP 1.4a), both Support 4K@60Hz
	Power Type	1 x DC IN 12-19V
	Extend Storage	1 x TF Slot, bootable
	USB-C	Supports "One Cable Connection" technology (5V 3A Max)
Other	System Supported	Windows, Linux, Proxmox VE, pfSense, OPNsense, OpenWrt etc.
	Dimensions	157 x 118 x 40mm
	Weight	1030 g for Unit, Packaged about 1200 g

4. BIOS Settings:

1). Shortcuts:

Enter BIOS: Press ESC or F2 whthin 1 second of powering on

Boot Menu: Press F11 within 1 second of powering on

2). Power Indicator Color Settings:

To accommodate users' preferences for power indicator colors, the R2 Max supports settings the power light to bule or green. The setting path is:

Advanced > IT8613 Super IO Configuration > Power Led Settings > Green Led
> Blue Led

3). USB and Ethernet Power Settings:

Advanced > IT8613 Super IO Configuration > USB Power CTL > Enable
> Disabled

4).PWM Settings:

Advanced > Hardware Monitor

5). WOL(Wake on LAN) Settings:

Advanced > ACPI Settings > Wake by onboard LAN > Enable
> Disabled

6). Auto Power-on Settings:

Advanced > IT8613 Super iO Configuration > Restore AC Power Loss > Power On
> Power Off
> Last State

Power On: Automatically powers on when power is restored after a power outage

Power off: Remains off when power is restored after a power outage

Last State: Retains the power state (on or off) prior to the power outage when power is restored

7). Boot Option Settings:

Boot > Boot Option Priorities > Boot Option #1
> Boot Option #2
> Boot Option #3

5. BIOS Update:

⚠️ Power-On Risk: Do not interrupt power during BIOS updates, as the machine may not power on. BIOS updates are high-risk operations, and any issues such as failure to boot due to BIOS update failures will be the responsibility of the consumer for any associated after-sales costs.

1). Preparation Before Upgrading:

1 x USB Drive(formatted to FAT32 using DiskGenius), Upgrade program, Keyboard, Monitor


2). USB Drive File Praparation:

After extracting the downloaded upgrade program, copy the entire EFI folder to the root directory of the USB drive.

> U 盘(F:) > EFI > BOOT

3). Updating:

Insert the USB drive into the front USB port of the R2 Max. Remove all internal hard drives or external storage media, including TF cards. Only keep the USB drive prepared in Step 2 and the keyboard connected. Power on the device, which will automatically enter the UEFI Shell interface and begin updating or upgrading the BIOS.

```
EFI Shell version 2.80 [5.27]
...
Press ESC in 3 seconds to skip startup.nsh, any other key to continue.
fs0:\EFI\BOOT\startup.nsh> FS0:
fs0:\EFI\BOOT\startup.nsh> CD EFI\BOOT
fs0:\EFI\BOOT\startup.nsh> Fpt.efi -f R2_Max_BIOS_v1.0.0_20241008.bin
...
...
```

4). Done:

When the process is complete and the screen displays "FPT Operation Successful," the update is finished. You can then power off the device and turn it back on. After updating the BIOS, the first boot will involve hardware detection, so a longer startup time is normal. Please be patient while the device completes the startup process.

```
...
Flash device was programed. It is recommanded to perform
G3 power cycle to complete the flash process.

FPT Operation Succesful.

fs0:\EFI\BOOT>_
```

6. Common Errors and Diagnostics:

Fault Descriptions	Solutions
Cannot Power on	1. Check if the power cable is properly connected to the device's power input 2. Verify that the power supply is functioning correctly and that the voltage meets the startup requirements 3. If you hear a "beep" alarm on startup, check if the RAM is properly seated in the memory slots. Try replacing the RAM if necessary 4. Try clearing the CMOS: Remove the CMOS battery from the motherboard, wait for 3 minutes, then reinsert the battery and try powering on again
Cannot Find Boot Device	1. Check if the system hard drive is properly installed in the device. 2. Verify that the system hard drive is functioning correctly 3. If using a USB drive, ensure that the bootable USB drive is correctly created and has the proper boot partition 4. Try replacing the boot media
Network Card Speed Incorrect	1. Check if the system drivers are correctly installed 2. Verify the speed settings of the connected device for the network port with incorrect speed. 3. Ensure the network cable is an 8-pin Cat 5e or higher standard. Check for any physical damage or disconnections in the cable.
System Continuously Restarts	1. Check if the processor is overheating and visually inspect whether the fans are operating normally 2. Verify if any incompatible software or hardware is installed, and try removing them to test system stability 3. Use antivirus tools to scan for any malware or viruses on the device 4. Ensure that the power supply meets system requirements: it is recommended to use at least a 12V 4A or higher power supply 5. Investigate memory compatibility and stability issues
Cannot Output Display Signal	1. Ensure that both the R2 Max and the monitor are properly connected to power and powered on 2. Try replacing the HDMI cable 3. Test with a different monitor 4. Test using a USB-C port with a monitor that supports Type-C signal transmission.

7. Cautions:

⚠ Burn Risk: Avoid prolonged contact with the metal chassis to prevent burns from low temperatures.

⚠ Device Damage: Do not use a power supply exceeding 19V to avoid damaging the device. Any issues caused by using an incorrect power supply, such as failure to power on, are the responsibility of the consumer.

⚠ Power-On Risk: BIOS updates are high-risk operations. Any issues resulting from BIOS update failures, such as failure to power on, will incur after-sales costs borne by the consumer.

⚠ Warranty Risk: Do not disassemble the device without authorization. Removing the tamper-proof label will void official warranty services.

⚠ Warranty Information: Due to the compact and highly integrated design of the device, avoid disassembling it to prevent issues such as failure to power on. If the device malfunctions during normal use, please contact our after-sales service at (service@ikoolcore.com) for free warranty service. For faults outside the warranty period, we can still provide repair services, but material and labor costs may apply. Damage caused by misuse or accidents is not covered under warranty.

Warranty Card

Model	R2 Max	Configuration	
Date		Order Num	
Contact		Phone Num	
Address			
Description:			

Repair Records

Date	
Content: Signature:	
Date	
Content: Signature:	

iKOOLCORE®

快速入门指南

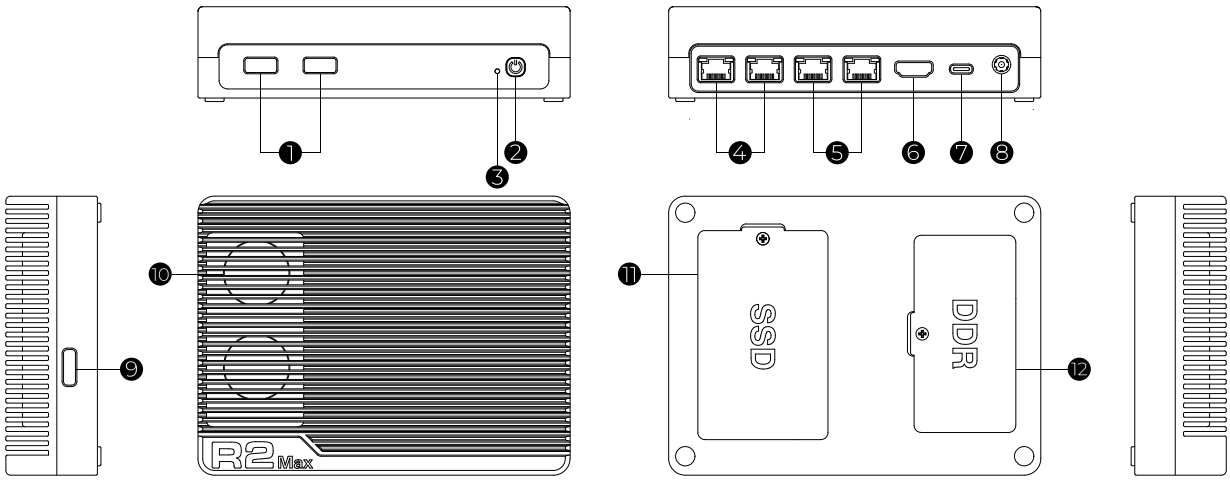
万兆开源防火墙 智能网关

⚠：请在当地国家或地区法律法规允许的范围内使用本产品！
请勿拆卸本设备，以免失去保修服务！

1. 包装内含：

整机 x 1, 电源适配器 x 1, 快速入门指南 x 1, 合格证 x 1

2. 产品外观和功能接口：



❶ USB-A x 2　❷ 电源按钮　❸ 电源指示灯

❹ Marvell 10G 电口　❺ i226-V 2.5G 电口　❻ HDMI 2.0

❼ 多功能 USB-C　❽ DC 12-19V 电源口　❾ TF 卡槽

❿ 4010 温控风扇　⓫ SSD 硬盘位　⓬ DDR5 内存位

3. 硬件参数：

重要参数	处理器平台	12 代低功耗 Alder Lake-N 系列处理器
	处理器型号	Alder Lake-N N100/i3-N305
	内存设计	单槽设计, 笔记本型 DDR5 4800MHz, 最大支持 32 GB
	内部存储	2 x M.2 2242/2280 NVMe(PCIe 2.0 x 1), 共享 PCIe 3.0 x 1
外部接口	网络接口	2 x AQC113C-B1-C 10Gbps, 2 x Intel i226-V 2.5Gbps
	USB接口	2 x USB-A 3.1 Gen1, 1 x USB-C 3.2 Gen1
	显示接口	1 x HDMI 2.0, 1 x USB-C(eDP 1.4), 均支持 4K@60 帧输出
	电源接口	1 x DC IN 12-19V
	存储扩展	1 x TF 卡槽，可支持系统引导启动
	USB-C	支持“一线连”技术(5V 3A Max)，支持反向供电，支持 eDP 信号
其他	支援系统	Windows, Linux, Proxmox VE, pfSense, OPNsense, OpenWrt 等
	整机尺寸	157 x 118 x 40mm
	整机重量	单主机 1030 克，包装后约 1200克

4. 系统设置：

1). 快捷键：

进入 BIOS：上电启动的 1 秒内，按下 ESC 或 F2 按键，即可进入 BIOS 界面

进入快速启动选择：上电启动后 1 秒内，按下 F11

2). 电源灯颜色设定：

为了满足部分用户对电源灯颜色的个性化需求，R2 Max 支持在 BIOS 下设定电源灯为蓝色或绿色，设置路径为：

Advanced > IT8613 Super IO Configuration > Power Led Settings > Green Led
> Blue Led

3). USB 与网口带电与否设置：

Advanced > IT8613 Super IO Configuration > USB Power CTL > Enable
> Disabled

4). PWM 智能温控的设置：

Advanced > Hardware Monitor

5). WOL(Wake on LAN)设置：

Advanced > ACPI Settings > Wake by onboard LAN > Enable
> Disabled

6). 来电自启设置：

Advanced > IT8613 Super iO Configuration > Restore AC Power Loss > Power On
> Power Off
> Last State

Power On(开机): 在电力恢复时，系统会自动开机；

Power off(关机): 在电力恢复时，系统会保持关机；

Last State(恢复上次状态): 系统会根据断电前的状态做出反应。

7). 启动顺序设置：

Boot > Boot Option Priorities > Boot Option #1 第 1 启动顺序
> Boot Option #2 第 2 启动顺序
> Boot Option #3 第 3 启动顺序

5. BIOS升级与更新：

⚠不开机风险：BIOS 更新过程中切勿断电，否则机器将不开机；BIOS 更新属于高风险性操作，因 BIOS 更新失败导致的不开机等故障，由消费者承担售后产生的所需费用。

1). 升级前准备工作：

1 x 空白 U 盘(使用 DiskGenius 格式化成 FAT32 格式) 、升级程序、键盘、显示器


2). U 盘文件准备工作：

将下载好的升级程序解压后，复制整体 EFI 文件夹到 U 盘根目录

> U 盘(F:) > EFI > BOOT

3). 开始更新或升级：

将 U 盘插入 R2 Max 前置USB-A 接口，拆下设备上的所有内置硬盘或外置其他存储介质，包括 TF 卡；只保留插入第 2 步准备好的 U 盘和插入的键盘，然后上电开机，设备将自动进入 UEFI Shell 界面，并开始跑码更新或升级 BIOS

```
EFI Shell version 2.80 [5.27]
...
Press ESC in 3 seconds to skip startup.nsh, any other key to continue.
fs0:\EFI\BOOT\startup.nsh> FS0:
fs0:\EFI\BOOT\startup.nsh> CD EFI\BOOT
fs0:\EFI\BOOT\startup.nsh> Fpt.efi -f R2_Max_BIOS_v1.0.0_20241008.bin
...
...
```

4). 更新完成：

当跑码结束，屏幕输出 FPT Operation Succesful 即表示更新结束。此时，可直接断电并重新上电等待重新开机。更新 BIOS 后的首次开机需要重新进行硬件检测，遇到首次开机慢属于正常现象，请耐心等待设备自动启动。

```
...
Flash device was programed. It is recommanded to perform
G3 power cycle to complete the flash process.

FPT Operation Succesful.

fs0:\EFI\BOOT>_
```

6. 注意常见错误与诊断：

故障描述	解决方法
无法开机	1. 检查电源是否正常插入设备电源输入口； 2. 检查电源是否工作正常，电源电压是否符合开机电压要求； 3. 如果开机“哔哔”报警，检查内存条是否正常插入设备内存插槽；尝试更换内存 4. 尝试清除 CMOS：移除主板 CMOS 电池并静置 3 分钟后重新尝试开机；
无法找到启动设备	1. 检查系统硬盘是否正确安装在设备上； 2. 检查系统硬盘是否正常工作； 3. 如果是U盘，请确保启动U盘被正确地制作和创建，且带有正确的启动分区； 4. 尝试更换启动介质；
网卡速率不正确	1. 检查系统驱动是否正确被安装； 2. 检查对应速率不正确的网口连接的对向设备的速率； 3. 检查网线是否为 8 芯超五类以上标准，检查有无物理断线，断连；
系统不断重启	1. 检查处理器是否过热，并目视风扇是否正常运转； 2. 检查是否安装了不兼容的软件和硬件，并尝试移除后重试系统稳定性； 3. 使用病毒查杀工具，检测设备是否中病毒； 4. 检测所使用的电源是否达到系统要求：推荐至少 12V 4A 及以上电源； 5. 排查内存兼容性和稳定性问题
无法正常输出显示信号	1. 检查R2 Max和显示器是否都正常插入电源并开机； 2. 尝试更换 HDMI 连接线缆； 3. 尝试更换显示器测试； 4. 尝试使用 USB-C 口连接支持 TYPE-C 信号传输的显示器测试

7. 注意事项：

⚠低温烫伤：请勿长时间触摸金属外壳，以免导致低温烫伤。

⚠设备损毁：请勿使用超过 19V 的电源插入设备，以免烧毁设备，因使用不符合要求的电源导致机器不开机等故障的，由消费者自行承担。

⚠不开机风险：BIOS 更新属于高风险性操作，因 BIOS 更新失败导致的不开机等故障，由消费者承担售后产生的所需费用。

⚠失去保修风险：请勿在未获得授权的前提下拆解设备，防拆标签一经撕毁，即失去官方保修服务。

⚠关于保修：因设备设计紧凑小巧，主板集成度高，请勿自行拆装设备以免导致不开机等故障。如机器正常使用发生故障，请邮件(service@ikoolcore.com)联系我们的售后服务邮箱获得免费质保服务。质保期外故障，我们仍可为您提供维修服务，但我们可能会收取一定的物料成本和人力成本。一切人为或意外造成的产品损坏均不在保修范围内。

保修卡

产品名称	R2 Max	硬件配置	
购买日期		订单编号	
联系人		联系电话	
退回地址			
故障描述：			

维修记录

维修日期	
维修内容： 维保人员签字：	
维修日期	
维修内容： 维保人员签字：	