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HUNSN RS41

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Model: RS41

1. INTRODUCTION

This manual provides essential information for the setup, operation, maintenance, and troubleshooting of your HUNSN RS41 Micro Firewall Appliance. The RS41 is a barebone mini PC designed for network applications such as firewalls, VPN routers, and other network services. It features a fanless design, multiple 2.5GbE network ports, and supports various operating systems.

Please note that this is a barebone unit. System memory, a storage drive, and an operating system are required to complete the system functionality.

2. PRODUCT OVERVIEW

The HUNSN RS41 is a compact, fanless device built with an aluminum chassis, ensuring silent operation and efficient heat dissipation. It is equipped with either a Celeron N4505 or Pentium Silver N6000 processor, supporting AES-NI for enhanced security operations.



Figure 1: HUNSN RS41 Micro Firewall Appliance

3. SETUP INSTRUCTIONS

3.1 Unpacking and Inspection

Carefully unpack the HUNSN RS41 appliance. Verify that all components listed in the packing list are present: the RS41 firewall appliance, power supply, power cord, and warranty card. Inspect the device for any physical damage.

3.2 Installing Memory and Storage

The RS41 requires user-supplied RAM and storage. It supports:

- **Memory:** Two SODIMM DDR4 2933 MHz slots, supporting up to 32GB total.
- **Storage:** One M.2 2280 NVME PCIe 2x SSD slot and one 2.5-inch SATA SSD/HDD bay.

To install these components:

1. Locate the four screws on the bottom panel of the appliance. Remove these screws to access the internal components.
2. Carefully install the SODIMM DDR4 modules into their respective slots.
3. Install the M.2 NVME SSD into its slot.
4. For a 2.5-inch SATA drive, connect it to the SATA data and power cables. The drive is typically not screwed in due to space constraints but should fit snugly. Ensure the SATA cable is properly routed to avoid interference when closing the chassis.
5. Once components are installed, reattach the bottom panel and secure it with the four screws.

3.3 Connecting Peripherals

Refer to the images below for port identification:



Figure 2: Front Panel I/O



Figure 3: Rear Panel I/O

- **Power:** Connect the provided power supply to the DC_IN port on the rear panel.
- **Network:** Connect your network cables to the 2.5GbE LAN ports (ETH0-ETH3) on the rear panel.

- **Display:** If needed for initial setup or BIOS access, connect a monitor to the HDMI or DisplayPort (DP) on the front panel.
- **USB Devices:** Connect a keyboard and mouse to the USB 3.0 ports on the front or USB 2.0 ports on the rear.
- **Console:** The COM port can be used for serial console access.
- **SIM Card:** Insert a SIM card into the SIM slot if using a compatible Mini PCIe WiFi/4G module (sold separately).

3.4 Operating System Installation

The RS41 supports various operating systems, including 5.10.x and above core-based FreeBSD router systems, Linux distributions, and Windows OS. It supports UEFI boot only.

1. Prepare a bootable USB drive with your desired operating system (e.g., pfSense, OPNsense, Debian, Windows).
2. Connect the USB drive to a USB port on the RS41.
3. Power on the device. During startup, repeatedly press the **DEL** key to enter the AMI BIOS setup utility.
4. In the BIOS, navigate to the boot options and set your USB drive as the primary boot device. Save changes and exit.
5. Follow the on-screen instructions to install your operating system.

4. OPERATING THE DEVICE

4.1 Power On/Off

- **Power On:** Press the power button on the front panel. The device supports hardware auto power-on by default.
- **Power Off:** Perform a graceful shutdown through your operating system. Alternatively, press and hold the power button for a few seconds to force a shutdown.

4.2 Network Configuration

The RS41 features four 2.5GbE I226-V network ports. After installing your operating system, configure the network interfaces according to your specific network requirements (e.g., WAN, LAN, OPT interfaces for firewall setups).

4.3 Advanced Features

- **AES-NI Support:** The CPU supports AES-NI, which can be leveraged by compatible operating systems and applications for hardware-accelerated encryption/decryption, improving VPN performance.
- **Network Wake-up:** The device supports Wake-on-LAN (WoL) functionality. Ensure this feature is enabled in the BIOS and configured in your operating system if desired.
- **System Power Management:** Utilize the BIOS settings and operating system features for efficient power management.

5. MAINTENANCE

The HUNSN RS41 features a fanless cooling system, which eliminates the need for fan cleaning. However, proper maintenance practices are still recommended to ensure longevity and optimal performance:

- **Environment:** Operate the device within the specified temperature range of 0°C to 70°C. Ensure adequate

airflow around the aluminum chassis to facilitate heat dissipation. Avoid placing the device in enclosed spaces or near heat sources.

- **Cleaning:** Keep the exterior of the device clean and free from dust. Use a soft, dry cloth for cleaning. Do not use liquid cleaners directly on the device.
- **Humidity:** Maintain relative humidity between 10% and 90% (non-condensing).
- **Firmware/Software Updates:** Regularly update your operating system and any installed software to ensure security and stability.

6. TROUBLESHOOTING

If you encounter issues with your HUNSN RS41, refer to the following troubleshooting steps:

6.1 No Power / Device Not Turning On

- Verify that the power adapter is securely connected to both the device's DC_IN port and a working power outlet.
- Check the power brick for any indicator lights, which typically confirm it is receiving power.
- Ensure the power button on the front panel is pressed correctly.
- If the device remains unresponsive, disconnect the power, wait 30 seconds, and reconnect.

6.2 Display Issues / No Video Output

- Ensure the monitor is correctly connected to the HDMI or DisplayPort and is powered on.
- Try a different display cable or monitor if available.
- Access the BIOS (press **DEL** during boot) to check display settings.

6.3 Operating System Not Booting

- Verify that RAM modules and storage drives (M.2 SSD, 2.5-inch SATA drive) are correctly seated. Loose connections can prevent booting.
- Enter the BIOS and confirm the boot order is set correctly for your installed operating system drive.
- If recently installed, ensure the operating system installation was successful and the bootloader is properly configured for UEFI.

6.4 Network Connectivity Problems

- Check that network cables are securely connected to the 2.5GbE LAN ports and your network devices (router, switch).
- Verify network configuration within your operating system.
- Ensure the network drivers are correctly installed and recognized by the operating system.

6.5 Overheating Concerns

While the device is fanless, it relies on its aluminum chassis for heat dissipation. If the device feels excessively hot:

- Ensure it is placed in an area with good ventilation, away from direct sunlight or other heat sources.
- Avoid stacking other devices on top of it or placing it in an enclosed cabinet without airflow.
- Confirm that the ambient temperature is within the specified operating range.

7. SPECIFICATIONS

Feature	Specification
Model Number	RS41
Chassis	Aluminum
CPU	Celeron Processor N4505 / Pentium Silver N6000
AES-NI Support	Yes
Memory	2 x SODIMM DDR4 2933 MHz, max. 32GB
Storage	1 x M.2 2280 NVME PCIe 2x SSD, 1 x 2.5 Inch SATA SSD/HDD
Network Card	4 x 2.5GbE I226-V
I/O Interface (Front)	Clear CMOS, Console, Power ON/OFF, 2 x USB3.0, Type-C, HDMI, DP, SIM Slot, RST
I/O Interface (Rear)	4 x LAN, DC_IN, 2 x USB2.0
Expansion	1 x Mini PCIE for WiFi/4G (with SIM slot)
Power Input	DC100-240V AC/50-60hz, 12V3A
Operating Temperature	0°C ~ 70°C
Storage Temperature	-20°C ~ 80°C
Relative Humidity	10% ~ 90% non-condensing
TDP	10W
Cooling System	Fanless
Dimensions	163 x 126 x 53mm
Weight	1.2 kgs
System Compatibility	5.10.x+ FreeBSD, Linux distros, Windows OS (UEFI support only)

8. WARRANTY AND SUPPORT

8.1 Warranty Information

The HUNSN RS41 Micro Firewall Appliance comes with a warranty that covers both labor and parts. Please refer to the warranty card included in your package for specific terms, conditions, and duration of coverage.

8.2 Technical Support

For technical assistance, troubleshooting beyond this manual, or warranty claims, please contact HUNSN customer support. Contact information can typically be found on the warranty card or the official HUNSN website.

