

# TerraMaster F4-424

## 4-Bay High Performance NAS For Business

### Datasheet



It features the Intel Celeron N95 4-core 4-thread processor with a maximum turbo frequency of 3.4GHz, integrated Intel® UHD Graphics card with a maximum dynamic frequency of 0.75GHz, and supports AES NI hardware encryption. Equipped with 8GB DDR5 4800MHz memory, two 2.5G Ethernet ports, and built-in dual M.2 NVMe slots for SSD caching, it significantly boosts the storage efficiency of the disk array. This makes the F4-424 an ideal high-performance storage solution for small and medium-sized business users engaged in virtualization and database applications.

## Designed for High Performance Requirements

The 4-Bay F4-424 is suitable for SMB users who need high-performance storage solutions. High performance means that users can easily handle high-load workflows, while multiple business-level backup solutions guarantee data safety and safeguard against the risk of data loss.

## Faster Application Response

Featuring a more powerful CPU and DDR5 memory, the F4-424 represents a performance improvement of more than 140% on the previous generation. Application load times have increased by 90%, file and photo retrieval speed by 40%, database response speed by 50%, and the PHP response for web pages has seen a remarkable 60% improvement. Such enhanced performance enables seamless handling of high-load workflows.

## Higher Transmission Speed

The F4-424 is configured with two 2.5 GbE interfaces, supporting a 2.5 GbE high-speed network bandwidth. The linear data transmission speed can reach 283 MB/s (Seagate IronWolf 18TB x 4, RAID 0). Link Aggregation offers a network bandwidth up to 5 Gb, thereby providing a cost-effective solution for multi-user and high-concurrent file access.

## Powerful Multimedia Service

With 4K video decoding capability, the F4-424 is compatible with uPnP/DLNA protocol and can stream videos to various multimedia devices, including computers, smart phones, media players and televisions, by using TerraMaster's proprietary application Multimedia Server or the one from another third-party, to deliver users constant, reliable entertainment experiences.

## Flexible Storage Configuration

The F4-424 supports various RAID types including TRAIID/Single/RAID 0/1/5/6/10. It offers online capacity expansion and online migration for RAID types. Hot Spare can be configured for the disk array. It supports the creation of multiple storage spaces, and ext 4 or BTRFS file systems can be selected in accordance with various business requirements. When used in conjunction with TerraMaster USB DAS devices, the F4-424 has the ability to flexibly expand storage capacity.

## Professional Operating System

TNAS runs on TOS, a TerraMaster operating system developed based on Linux. Extensive research into the needs of various business users and the resultant continued evolution of multiple TOS generations has enabled it to integrate all-round professional storage management functions including network management, permission management, storage management, and resource monitoring via user-friendly, intuitive, and flat web interfaces. It also provides hundreds of free apps for the app market.

## Across-Platform File Services

The ability of the F4-424 to support most file services (SMB, AFP, SFTP/FTP, iSCSI, NFS, and WebDAV) enables it to successfully address the across-platform file service needs of different network environments. Moreover, the F4-424 supports Windows AD domain and LDAP, thereby facilitating the incorporation of the existing IT environments of business users and improving management efficiency. The presence of permission management at the level of users, user groups, and file directories means that the F4-424 can satisfy the comprehensive requirements of business users for inter-departmental collaboration and data security.

## Rich Backup Solutions

TOS can protect valuable data using visual user interfaces and trustworthy storage solutions thanks to its integration with multiple backup applications that can address backup needs in an array of circumstances.

**Centralized Backup:** Backup for servers, virtual machines, employee PCs, and file servers can be initiated at the TNAS end, thus facilitating the rapid restoration of data after incidents.

**Duple Backup:** In order to provide several offsite backup versions, Duple Backup provides advanced data protection by backing up files to another remote TNAS, file server, or cloud drive.

**Snapshot:** It is possible to take continuous snapshots of your folders or iSCSI LUNs by enabling the snapshot schedule with the advanced storage technology and optimized snapshot technology available via the BTRFS file system. When problems arise, the system can roll back to points-in-time and restore to the last backup, thereby ensuring that your data is well protected.

**CloudSync:** This backs up or synchronizes TNAS data with the cloud drive, which not only improves the availability of cloud data, but also provides several offsite backup versions, thus safeguarding the security of your data.

## **Virtualized Applications**

The F4-424 satisfies virtualized application needs and provides additional functionality within one device with the use of professional virtualized apps, including VirtualBox and Docker, and by cooperating with Docker-compose and Portainer. This lowers the cost of corporate investment in IT.

## **System Level Security Protection**

Increased cyberattacks mean that the system security of network devices security system are obliged to address considerable challenges. TOS enables various systematic safeguards, such as pam identity authentication, AES 256 encryption, automatic account lockout, anti-DoS attack, firewall and Security Isolation Mode. Hence, it effectively reduces the risks of malicious attacks on your devices.

## **Multiple Commercial Applications**

TNAS allows business users to easily build file servers, mail servers, web servers, FTP servers,

MySQL databases, CRM, Node.js, Java VMs, and many other services, thereby satisfying the commercial requirement of various SMBs in such fields as education, consulting, finance, scientific research, and law.

## **Easier Hard Disk Replacement**

The F4-424 is designed with a tool-free hard disk tray, removing the need for any tool during hard disk installation. The F4-424 also features TerraMaster's unique Push-Lock design, which automatically locks the hard disk on insertion to prevent it from coming loose or going offline. As a result, it is extremely convenient for users who need to replace hard disks frequently for data exchange, as their installation takes less than 10 seconds.

## **Easy Installation of M.2 SSD**

To facilitate the installation of M.2 SSDs, TerraMaster has specially designed a side sliding cover for the F4-424 chassis, which is simply pushed aside to install M.2 SSDs. TerraMaster also provides hand-tightened screws, making it easy to install an SSD within 5 seconds.

## **Better Heat Dissipation**

The F4-424 features an intelligent temperature-controlled fan, which ensures optimal working conditions by automatically adjusting fan speed according to hard disk temperature. It also has a dedicated ventilation channel for M.2 SSDs to accommodate hybrid storage applications. Even under full load, the temperature of any M.2 SSDs can be kept within a reasonable range.

## **Less Noise**

The unit's close placement to the user has required a design that achieves greatly reduced noise to meet the strict requirements for these levels in desktop products. The high-speed rotation of disks and heads in HDDs when reading and writing produces vibrations with noticeable noise. These vibrations may resonate with the product's cavity and amplify the overall noise. To combat this, besides incorporating additional shock-absorbing measures,



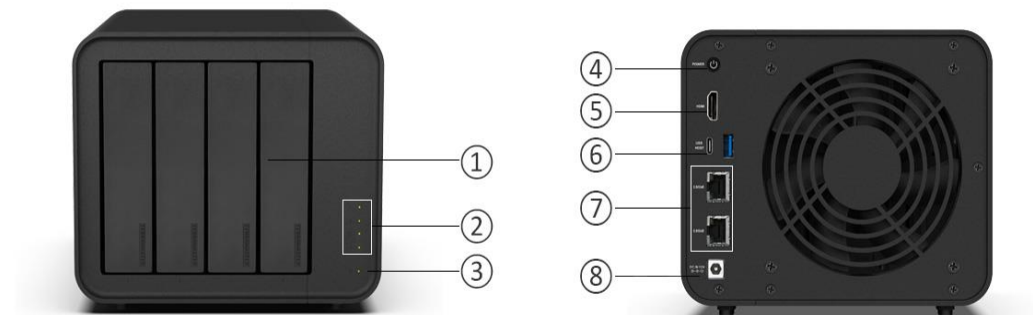
TerraMaster's engineers have designed numerous special sound-absorbing panels in the new structure to minimize noise. Testing has shown that the new generation of products achieve noise levels 50% lower than the previous generation's, with a noise level in standby mode of only 21 dB(A)!

(Test conditions: Using 2 SATA HDDs/SSDs in standby mode; Test environment noise: 17.3dB(A); Test distance: 1m)

## **Worry-free After-sales-service**

TerraMaster implements its unique after-sales-service policy that “provides replacements within 2 years” and offers worry-free quality assurance through real-time online customer service, a professional technical forum, an online user guide, a technical service mailbox, and remote troubleshooting.

## Panel Illustration:



SN	Item	Description
①	Hard drive tray	3.5" SATA HDD; 2.5" SATA HDD; 2.5" SATA SSD
②	Hard drive indicator	Green: Normal operation status Green (flickering): Reading/writing data Off: No hard drive detected
③	Power indicator	Green: Normal operation status Off: No hard drive detected

## Rear Cover Illustration:

SN	Item	Description
④	Power switch	On: Power on Off: Power off
⑤	HDMI interface	For displaying the software codes or commands, not for video playing.
⑥	USB host (×2)	Use to connect USB storage device or USB wireless adaptor
⑦	Network interface	2500M/1000M/100M bps network interface
⑧	Power interface	DC 12V input

## Specifications:

<b>Processor</b>	
Processor Model	Intel® N95
Processor Architecture	X.86 64-bit
Processor Frequency	Max burst up to 3.4 GHz
CPU Single-Core Score	/
Hardware Encryption Engine	√
Hardware Transcoding Engine	H.264, H.265, MPEG-4, VC-1; maximum resolution: 4K (4096 x 2160); maximum frame rate per second (FPS): 60
<b>Memory</b>	
System Memory	8 GB DDR5 non-ECC SODIMM
Pre-installed Memory module	8 GB DDR5 non-ECC SODIMM (1x 8 GB)
Total Memory Slot Number	1 (DDR5 SODIMM)
Maximum Supported Memory	32 GB DDR5 non-ECC SODIMM
Note	TerraMaster reserves the right to replace memory modules with the same or higher frequency based on supplier's product life cycle status. Rest assured that the compatibility and stability have been strictly verified with the same benchmark to ensure identical performance.
<b>Storage</b>	
Disk Slot Number	4
Compatible Drive types	3.5" SATA HDD
	2.5" SATA HDD
	2.5" SATA SSD
Maximum Internal Raw Storage Capacity	88 TB (22 TB x4) (Capacity may vary by RAID types)
Drive Hot Swap	√
Note	<p>. Hard drive vendors will release their latest models of hard drives, and Maximum internal raw storage capacity may be adjusted accordingly.</p> <p>. The maximum single volume size is not directly related to the maximum raw capacity.</p>
<b>File System</b>	
Internal Drive	Btrfs, EXT4
External Drive	EXT3, EXT4, NTFS, FAT32, HFS+, BTRFS
<b>External Ports</b>	
RJ-45 1GbE Network Jack	/
RJ-45 2.5GbE Network Jack	2
RJ-45 10GbE Network Jack	/
SFP+ 10GbE Network Jack	/
USB3.1 Host Port	2(10Gbps)
USB2.0 Host Port	/
COM	/



HDMI	1
VGA	/
PCIe Slots	/
M.2 2280 NVMe Slot	2
Appearance	
Size (H*W*D)	222 x 179 x 154 mm
Packaging Size (H*W*D)	300 x 275 x 186 mm
Weight	3.4 kg
Others	
System Fan	120 x 120 x 25mm 1PCS
Fan Mode	Smart, High speed, Middle speed, Low speed
Noise Level	21.0 dB(A) (Using 2 SATA HDDs/SSDs in standby mode; Test environment noise: 17.3dB(A); Test distance: 1m)
Power Supply	90W
Redundancy Power Supply	/
AC Input Voltage	100V - 240V AC
Current Frequency	50/60 Hz, Single frequency
Power Consumption	33.0 W(Fully loaded Seagate 4TB ST4000VN008 hard drive(s) in read/write state)
	13.0 W (Fully loaded Seagate 4TB ST4000VN008 hard drive(s) in hibernation)
Limited warranty	2 years
Certificate	FCC, CE, CCC, KC
Environment	RoHS, WEEE
Temperature	
Working Temperature	0°C ~ 40°C (32°F ~ 104°F)
Storage Temperature	-20°C ~ 60°C (-5°F ~ 140°F)
Relative Humidity	5% ~ 95% RH
Package Contents	
	Host unit (x1)
	Power cord (x1)
	Power Adapter(x1)
	RJ-45 network cable (x1)
	Quick Installation Guide (x1)
	Limited Warranty Note(x1)
	Screws(a few)

TOS Features	
OS Supported	
Supported Client OS	Windows OS, Mac OS, Linux OS
Supported Web Browsers	Google Chrome 97.0.xxxx, Mozilla Firefox 9.3, Apple Safari 12.1 ; Microsoft Edge 99.0.xx or later version.
Supported mobile OS	iOS14.0, Android 10.0 or later version
Storage Management	
Supported RAID Types	TRAIID, Single, JBOD, RAID 0, RAID 1, RAID5, RAID 6, RAID 10
Maximum Internal Volume Number	256
Maximum iSCSI Target	128
Maximum iSCSI LUN	256
Volume Expansion with Larger HDDs	TRAIID, RAID 1,RAID5,RAID 6,RAID10
Volume Expansion by Adding a HDD	TRAIID, RAID5,RAID6
RAID Migration	√
SSD Cache	√
Hot Spare	√
SSD TRIM	√
Hard Drive S.M.A.R.T.	√
Seagate IHM	√
NVRAM write cache(BBU-protected)	/
Shared Folder Snapshot	√
LUN Snapshot	/
File Services	
File Protocol	SMB/AFP/NFS/FTP/SFTP/WebDAV
Maximum Concurrent SMB/AFP/FTP/SFTP Connections	512
Windows Access Control List (ACL) Integration	√
NFS Kerberos Authentication	√
Account & Shared Folder	
Maximum local user's account number	2048
Maximum local group number	512
Maximum shared folders number	512
Maximum shared folders syncing tasks	8
Backup	
Rsync Backup	√

Duple Backup	√
Centralized Backup	√
Snapshot	√
USB Backup	√
Cloud Sync	√
Time Machine Backup	√
File System Snapshot	√
TFM Backup	√
<b>Networking</b>	
TCP/IP	IPv4/IPv6
Protocols	CIFS/SMB, NFS, FTP, SFTP, HTTPS, SSH, iSCSI, SNMP
Link Aggregation	√
DLNA Compliance	√
VPN Client	√
VPN Server	√
Proxy Client	√
Proxy Server	/
UPnP/Bonjour Discovery	√
TNAS.online Remote Access	√
DDNS	√
<b>Access Right Management</b>	
Batch users creation	/
Import/Export users	√
User Quota Management	√
Local user access control for CIFS/SAMBA and FTP	√
<b>Domain Authentication</b>	
AD Domain	√
LDAP Client	√
LDAP Server	/
<b>Security</b>	
Firewall Protection	√
Account Auto-block Protection	√
AES Volume and Shared Folder Encryption	√
Importable SSL certificate	√
Instant Alert via email, Desktop Notification, Beep	√
RSA 2048 Encryption (TOS 5.0)	√
PAM (Pluggable Authentication Modules)	√
OTP Authentication (TOS 5.0)	√
HyperLock File System (TOS 5.0)	√

<b>Power Management</b>	
Power Resume	√
Scheduled Power On/Off	√
Wake up On LAN (WOL)	√
UPS Supported	√
<b>Administration</b>	
Multi-window, Multi-task System Management	√
Custom Desktop	√
Control Panel	√
Resource Monitor	√
Syslog	√
OS UI Language	English, German, French, Spanish, Italian, Magyar, Chinese, Japanese, Korean, Turkish, Portuguese, Russian
<b>Applications</b>	
Application Center	√
iSCSI Target	√
Terra Photos	√
TerraSync	√
Duple Backup	√
CloudSync	√
Centralized Backup	√
USB Backup	√
VPN Server	√
Transmission	√
qBittorent	√
Aria 2	√
Terra Search	√
Deduplication	√
Web Server	√
Clam Antivirus	√
EMBY	√
Multi Media Server	√
Plex Media Server	√
Docker Manager	√
Snapshot	√



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