

TerraMaster F4-424 Max

4-Bay High Performance Hybrid NAS

Datasheet



The F4-424 Max is equipped with a powerful 10-core 12-thread CPU, making it ideal for SMB users looking for high-performance storage solutions. The hybrid storage design combines mechanical hard drives and SSDs to utilize the provided 20Gb high-speed bandwidth, providing exceptional data throughput that can meet the most stringent customer demands. Additionally, the advanced noise reduction design ensures that the F4-424 Max can operate quietly while still delivering robust performance, offering a unique advantage as compared to existing products.

New Heights of Performance

The F4-424 Max surpasses its predecessor, the F4-424 Pro; this latest generation of 4-bay NAS clearly offers the strongest performance to date. It features an Intel Core i5 1235U 10-core 12-thread processor with a maximum turbo frequency of 4.4GHz, as well as integrated Intel® Iris® Xe Graphics with a maximum dynamic frequency of 1.2GHz. It also supports AES NI hardware encryption. Supported by the inclusion of 8GB DDR5 4800MHz memory, two 10G Ethernet ports, and dual built-in M.2 NVMe slots that allow hyper caching, the new design significantly boosts the storage efficiency of the disk array, making the F4-424 Max an ideal high-performance storage solution for small and medium-sized business users engaged in both virtualization and database applications.

The Quietest 4-Bay Hybrid NAS

TerraMaster engineers have meticulously designed multiple shock-absorbing structures and employed a range of innovative noise-reduction measures to effectively reduce noise in use. The result of these enhancements is that the F4-424 Max remains both quiet and cool even under full loading. Rigorous testing confirms that this new generation product's noise level is 50% lower than that of the previous generation in operation, and in standby mode, it operates at just 21 dB(A). This exceptional sound management allows the F4-424 Max to provide robust support for complex work while maintaining a tranquil office environment.

Testing conditions: Two SATA HDD/SSD in standby mode: ambient noise during testing of 17.3 dB(A); testing distance: of 1 meter.

Faster Application Responses

With its powerful CPU and DDR5 memory, the F4-424 Max offers performance improvement of over 220% on that given by the previous generation. Application load times are improved by up to 160%, file and photo retrieval speed is decreased by 90%, database response speed is 100% better, and the PHP response for web pages offers a remarkable 110% improvement. Naturally, this enhanced performance enables seamless handling of high-load workflows.

20Gb Lightning-Fast Throughput

The F4-424 Max features two 10GbE copper cable Ethernet ports that offer up to 20Gbps in bandwidth for data transmission. In real-world scenarios, this, combined with SMB multichannel technology, allows the F4-424 Max to deliver impressive throughput performance, with linear write speeds up to 2090MB/s and exceptional 4K random read/write speeds reaching up to 400MB/s. This outstanding performance ensures smooth image and video read/write capabilities, which perfectly meet the needs of companies involved in areas such as film production, post-production, and design. Additionally, the F4-424 Max excels in terms of read/write performance for virtualization environments and database applications.

Powerful Multimedia Service

The F4-424 Max's formidable 4K video decoding prowess offers seamless compatibility with the uPnP/DLNA protocol. When paired with TerraMaster's dedicated Multimedia Server application, or even third-party servers such as Plex, Emby, and Jellyfin, it effortlessly streams videos to a myriad of multimedia devices including PCs, smartphones, media players, and televisions. Enjoy uninterrupted and immersive viewing experiences at the touch of a button.

Versatile Storage Options, Configure as You Wish

The F4-424 Max offers a comprehensive range of storage configurations; in particular, it supports various RAID types, including Single, RAID 0, 1, 5, 6, and 10. It can also utilize TerraMaster's innovative flexible array (TRAID/TRAID+), which readily enables online capacity expansion, migration, and redundant disk configuration within the array. Users can create multiple storage spaces and choose between the ext4 or Btrfs file systems, based on their business needs. For added flexibility, the F4-424 Max can be paired with the TerraMaster USB DAS disk array to seamlessly expand storage capacity as needed.

A New Generation of Operating System

The F4-424 Max features the latest TOS 6 operating system, which introduces over 40 new features and optimizes more than 370 details to create an unparalleled upgrade experience. TOS 6 also boasts a completely revamped user interface, as well as transforming the system from the inside out. The enhanced security measures also ensure that it can provide even more secure and reliable data storage. Additionally, TOS 6 is fully compatible with the Ubuntu root file system, making it familiar and easy to maintain for a wide range of users.

Cross-Platform File Services

The F4-424 Max supports a wide range of mainstream file services, including SMB, SFTP/FTP, iSCSI, NFS, and WebDAV, thus fully meeting a plethora of cross-platform file service needs in various network environments. It is compatible with both the Windows AD domain and LDAP, making it easy to integrate into existing enterprise IT environments to improve management efficiency. Additionally, it offers multi-level permission management for users, user groups, and file directories, thus supporting comprehensive cross-department collaboration as well as meeting data security requirements for the most stringent of enterprises.

Prioritizing Digital Asset Protection for All

At TerraMaster, safeguarding user data is a top priority, and we have thus developed a suite of exceptionally effective data backup tools to comprehensively protect your digital assets. The

TerraMaster File System Snapshot (TFSS) and Snapshot services provide snapshot capabilities across volume to folder levels that actively shield your data from ransomware, reducing external risks. The intelligent offline backup feature, USB Copy, provides an additional layer of defense against malicious attacks, while in terms of a more holistic backup approach, Duple Backup presents a one-stop solution for implementing a 3-2-1 backup strategy across volumes, folders, and iSCSI LUN data.

Furthermore, TerraMaster's Centralized Backup solution is tailored to meet the custom backup requirements of commercial users by providing active central management of all backup tasks, thus catering to Windows workstations, file servers, and virtual machines. Using TerraMaster lets you rest assured that your digital assets are thoroughly protected against even unforeseen threats.

Virtualization Tools to Facilitate Every Project

By leveraging the virtualization tools and hybrid storage architecture of the TerraMaster Operating System (TOS), the F4-424 Max offers a range of exceptional advantages in terms of virtualization. The Docker Manager visualization tool makes managing containers and projects effortless, while VirtualBox support allows you to create a highly efficient virtualized environment that can enable new businesses to launch and become successfully operational in a very short time.

Effortless File Synchronization Across Every Device

By using TerraMaster's TerraSync service to transform a NAS into a private cloud server, eliminating file access barriers, you can allow users unrestricted access to personal or shared files from any location, at any time, across multiple platforms and devices. With TerraSync, synchronizing files seamlessly across devices has never been more straightforward.

CloudSync Simplifies Your Workflow

With TerraMaster's CloudSync, users can seamlessly link their cloud storage and NAS to facilitate the synchronized sharing of data. CloudSync consolidates various mainstream cloud synchronization functions (including those of Google Drive, OneDrive, Amazon S3, Dropbox, Baidu, and Alibaba Cloud), enabling users to simplify their workflows by managing all cloud synchronization requirements within a single application.

System Level Security Protection

In the face of increasingly rampant cyber attacks, network device security may encounter unprecedented challenges. TOS thus offers a comprehensive suite of security measures, including PAM authentication, OTP two-factor authentication, AES 256 encryption, automatic account lockout, anti-DoS attack protocols, firewalls, and security isolation modes, all of which are designed to effectively reduce the risk of malicious attacks. The recently introduced Security and Privacy Control

(SPC) module enhances system security tenfold as compared to previous iterations by ensuring that all executable programs running on the system are authorized and legitimate, thus protecting user data from both hackers and ransomware .

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 similar services, thereby satisfying the commercial requirements of various SMBs in diverse fields such as education, consulting, finance, scientific research, and law.

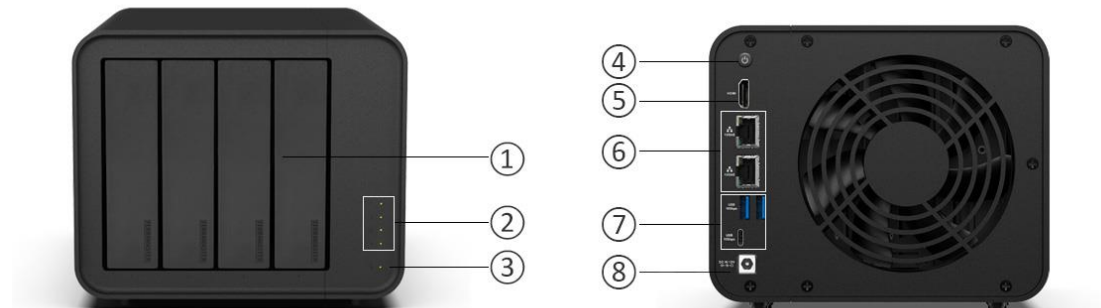
Easier Hard Disk Replacement

The F4-424 Max is designed with a tool-free hard disk tray, removing the need for any tool during hard disk installation. The F4-424 Max 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. This is extremely convenient for users who need to replace hard disks frequently for data exchange, as installation takes less than 10 seconds.

Easy Installation of M.2 SSDs

To facilitate the installation of M.2 SSDs, TerraMaster has designed a sliding side cover for the F4-424 Max chassis that may be simply pushed aside. The use of hand-tightened screws then makes it easy to install an SSD within 5 seconds.

Rear Cover 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
④	Power switch	On: Power on Off: Power off
⑤	HDMI interface	For displaying the software codes or commands, not for video playing.
⑥	Network interface	10000M/2500M/1000M/100M bps network interface
⑦	USB host	Use to connect USB storage device or USB wireless adaptor
⑧	Power interface	DC 12V input

Specifications:

Processor	
Processor Model	Intel Core i5-1235U
Processor Architecture	X.86 64-bit
Processor Frequency	10-Core (Max burst up to 4.4 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
Memory	
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	2 (DDR5 SODIMM)
Maximum Supported Memory	64 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.
Storage	
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>
File System	
Internal Drive	Btrfs, EXT4
External Drive	EXT3, EXT4, NTFS, FAT32, HFS+, BTRFS
External Ports	
RJ-45 1GbE Network Jack	/
RJ-45 2.5GbE Network Jack	/
RJ-45 10GbE Network Jack	2
SFP+ 10GbE Network Jack	/
USB3.2 Host Port	Type A *2 (10 Gbps) ; Type C *1 (10 Gbps)
USB2.0 Host Port	/
COM	/

HDMI	1
VGA	/
PCIe Slots	/
M.2 2280 NVMe Slot	2 (PCIe 4.0 x4)
Appearance	
Size (H*W*D)	222 x 179 x 154 mm
Packaging Size (H*W*D)	277 x 277 x 186 mm
Weight	Net Weight: 2.2 Kg Gross 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 M.2 SSDs in standby mode; Test environment noise: 17.3dB(A); Test distance: 1m)
Power Supply	120 W
Redundancy Power Supply	/
AC Input Voltage	100V - 240V AC
Current Frequency	50/60 Hz, Single frequency
Power Consumption	46.0 W(Fully loaded WD RED WD221KFGX 22TB hard drive(s) in read/write state)
	17.5 W (Fully loaded WD RED WD221KFGX 22TB 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, 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	TRIAD,TRAIID+, RAID 1,RAID5,RAID 6,RAID10
Volume Expansion by Adding a HDD	TRIAD, 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	√
Networking	
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	√
Access Right Management	
Batch users creation	/
Import/Export users	√
User Quota Management	√
Local user access control for CIFS/SAMBA and FTP	√
Domain Authentication	
AD Domain	√
LDAP Client	√
LDAP Server	/
Security	
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 6.0)	√
PAM (Pluggable Authentication Modules)	√
OTP Authentication (TOS 6.0)	√

HyperLock File System (TOS 6.0)	√
Power Management	
Power Resume	√
Scheduled Power On/Off	√
Wake up On LAN (WOL)	√
UPS Supported	√
Administration	
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
Applications	
Application Center	√
iSCSI Target	√
Terra Photos	√
TerraSync	√
Duple Backup	√
CloudSync	√
Centralized Backup	√
USB Backup	√
VPN Server	√
Transmission	√
qBittorrent	√
Aria 2	√
Terra Search	√
Deduplication	√
Web Server	√
Clam Antivirus	√
EMBY	√
Multi Media Server	√
Plex Media Server	√
Docker Manager	√
Snapshot	√

Distributor

SIMET BILISIM TEKNOLOJILERI A.S.

www.simet.com.tr

TerraMaster Technology Co., Ltd.

2-A1, Building A, Zhangkeng Industrial Park, Minkang Road, Shenzhen China.

Website: www.terra-master.com

Email: sales@terra-master.com

Tel: +86 755 81798555

Copyright@ TerraMaster 2024, All Rights Reserved. TerraMaster, the TerraMaster logo are trademarks or registered trademarks of TerraMaster Technology Co., Ltd. Other product and company names mentioned herein may be trademarks of their respective companies. TerraMaster may make changes to specification and product descriptions at anytime without notice.

Copyright@ TerraMaster 2024, All Right Reserved