MN09 SERIES
NAS HDD

Toshiba MN09 series of 3.5-inch[1] 7200 rpm hard disk drives (HDD) deliver up to 18 TB[2] of storage capacity, making it higher storage capacities as work-from-home customers need fast access to data and the ability to archive and share data in private cloud environments.

The new 18 TB NAS offering is a 9-platter helium-sealed conventional magnetic recording (CMR) drive, which leverages Toshiba's new innovative Flux Control Microwave-Assisted Magnetic Recording (FC-MAMR) technology. FC-MAMR advances CMR capacity to 18 TB and delivers increased density per platter over previous designs. The MN09 is the 3rd generation to use Toshiba's pioneering 9-platter helium-sealed mechanical design.

Product image may represent a design model.

KEY FEATURES

- Up to 18 TB Capacity (model line-up also includes 16 TB)
- 7200 rpm Performance
- SATA 6.0 Gbit/s[5][6] Interface
- MTTF[3] of 1 200 000 hours
- 180 total TB Transferred per Year Workload[4] Rating
- Rotational Vibration (RV) Sensors for Great Scalability and Good Performance
- 24/7 operation

APPLICATIONS

- Home and SOHO NAS
- Small business server and storage
- Archiving and data back-up
- Private cloud storage

SPECIFICATIONS

Item		MN09ACA18T	MN09ACA16T
Interface		SATA-3.3	
Formatted Capacity		18 TB	16 TB
Performance	Interface Speed	6.0 Gbit/s, 3.0 Gbit/s, 1.5 Gbit/s	
	Rotation Speed	7200 rpm	
	Buffer Size	512 MiB[6]	
	Max Data Transfer Speed (Sustained) (Typ.)	268 MiB/s	
Logical Data Block Length		Host 512 B, Disk 4096 B[7]	
Supply Voltage	Allowable Voltage	DC +12 V[8] ± 10 % DC +5 V[8]+10 % / -7 % [9]	
Power Consumption	Operating[10] (Typ.)	7.48 W	
	Active Idle (Typ.)	4.14 W	
Acoustics[11] (Sound Power)	Active Idle (Typ.)	20 dB	
	Seek (Typ.)	32 dB	

ENVIRONMENTAL LIMITS

Item		MN09ACA18T MN09ACA16T
Temperature	Operating (surface)	5 to 60 °C (no condensation)
	Non-Operating (ambient)	-40 to 70 °C[15] (no condensation)
Humidity	Operating	5 to 90 %RH (no condensation)
	Non-Operating	5 to 95 %RH (no condensation)
Shock	Operating	686 m/s^2 {70 G} (2 ms duration)
	Non-Operating	2450 m/s^2 {250 G} (2 ms duration)
Vibration[12]	Operating[13]	7.35 m/s^2 {0.75 G} (5 to 300 Hz) 2.45 m/s^2 {0.25 G} (300 to 500 Hz)
	Non-Operating[14]	29.4 m/s^2 {3.0 G} (5 to 500 Hz)
Altitude	Operating	–305 to +3048 m (5 to 55 °C Ambient)
	Non-Operating	–305 to +12192 m

RELIABILITY

Item	MN09ACA18T MN09ACA16T
MTTF / AFR[18]	1 200 000 h[16] / 0.73 %[17]
Non-recoverable Error Rate	1 error per 10^{14} bits read
Load / Unload (Max)	300 000 times
Availability	24 hours/day, 7 days/week
Rated Annual Workload (Total TB Transferred per Year, R/W)	180 TB/year

MECHANICAL SPECIFICATIONS

Item	MN09ACA18T MN09ACA16T
Width (Max)	101.85 mm
Height (Max)	26.1 mm
Length (Max)	147 mm
Weight (Max)	720 g

[1] "3.5-inch" mean the form factor of HDDs. They do not indicate drive's physical size.
[2] Definition of capacity: Toshiba defines a terabyte (TB) as 1 000 000 000 000 bytes. A computer operating system, however, reports storage capacity using powers of 2 for the definition of 1TB = 2^{40} = 1 099 511 627 776 bytes and therefore shows less storage capacity. Available storage capacity (including examples of various media files) will vary based on file size, formatting, settings, software and operating system, such as Microsoft Operating System and/or pre-installed software applications, or media content. Actual formatted capacity may vary.
[3] MTTF (Mean Time to Failure) is not a guarantee or estimate of product life; it is a statistical value related to mean failure rates for a large number of products which may not accurately reflect actual operation. Actual operating life of the product may be different from the MTTF.
[4] Workload is defined as the amount of data written, read or verified by commands from host system.
[5] Read and write speed may vary depending on the host device, read and write conditions, and file size.
[6] A mebibyte (MiB) means 2^{20}, or 1 048 576 bytes, and a gibibyte (GiB) means 2^{30}, or 1 073 741 824 bytes.
[7] Read–modify-write is supported. [8] Input voltages are specified at the HDD connector side, during HDD ready state.
[9] Make sure the value is not less than DC -0.3 V (less than -0.6 V, 0.1 ms) when turning on or off the power. [10] Operating watt is measured using 80 % random read/write and 20 % performance idle. [11] The measuring method is based on ISO 7779. [12] Vibration applied to the HDD is measured at near the mounting screw hole on the frame as much as possible. [13]At random seek write/read and default on retry setting with log sweep vibration. [14]At power-off state after installation.
[15]The range of altitude is 3 048 m or less. Up to 55 °C at 7620 m. Up to 40 °C at 12 192 m. [16] MTTF of the HDDs during its life time is 1 200 000 hours.
[17] AFR (Annual Failure Rate) of the HDDs is 0.73 %. [18] MTTF and AFR are defined under the following condition. 24 hours/day, 7 days/week, average HDA surface temperature:40 °C or less, workloads: 180 TB/year, which is defined as the amount of data written, read or verified by commands from host system.
Continual or sustained operation at case HDA surface temperature above 40 °C may degrade product reliability.