

HDD

> MN05ACA/MN04ACA SERIES NAS HDD

Toshiba's MN05ACA/MN04ACA series of 3.5-inch^[1] 7,200 rpm hard disk drives (HDD) deliver up to 8 TB^[2] of storage capacity, making it suitable storage solution for home and SOHO NAS applications. To address the demanding requirements, these HDDs provide enterprise class 1,000,000 hour MTTF, 180TB/year^[3] workload rating and support for 24x7 power-on operation. The MN series also features rotational vibration (RV) sensors which automatically detect and compensate for transient vibrations to deliver consistent performance in multi-bay storage enclosures.



> KEY FEATURES

- Up to 8 TB Capacity (model line-up also includes 6TB and 4TB)
- 7,200 rpm Performance
- SATA 6.0 Gbit/s^[4] Interface
- MTTF of 1,000,000 hours^[5]
- 180 total TB Transferred per Year Workload Rating
- Rotational Vibration (RV) Sensors for Great Scalability and Good Performance
- 24x7 operation

> APPLICATIONS

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

> MAIN SPECIFICATIONS

Item		MN05ACA800	MN05ACA600	MN04ACA400
Interface		SATA (1.5 Gbit/s, 3.0 Gbit/s, 6.0 Gbit/s)		
Formatted Capacity		8 TB	6 TB	4 TB
Performance	Interface Speed	6.0 Gbit/s Max.		
	Rotation Speed	7,200 rpm ± 0.1 %		
	Average Latency Time	4.17 ms		
	Buffer Size	128 MiB ^[6]		
Logical Data Block Length		HOST: 512 B, DISK: 4,096 B ^[7]		HOST: 512 B DISK: 512 B or 4,096 B ^[7]
Supply Voltage	Allowable Voltage	12 V ^[8] ± 10 % / 5 V ^[8] ± 5% ^[9]		
Power Consumption	Operating ^[10]	9.2 W Typ.	10.1 W Typ.	9.6 W Typ.
	Active Idle	6.2 W Typ.	6.7 W Typ.	5.2 W Typ.
Acoustics ^[11] (Sound Power)	Active Idle	33 dB Typ.		30 dB Typ.
	Seek	35 dB Typ.		34 dB Typ.

> RELIABILITY

Item	Specification
MTTF	1,000,000 hours
Non-recoverable Error Rate	1 error per 10 ¹⁴ bits read
Load / Unload	300,000 times (Max.)
Availability	24 hours/day, 7 days/week
Rated Annual Workload (Total TB Transferred per Year, R/W)	180 TB/year

➤ MECHANICAL SPECIFICATIONS

Item	MN05ACA800	MN05ACA600	MN04ACA400
Width	101.85 mm Max.		
Height	26.1 mm Max.		
Length	147 mm Max.		
Weight	770 g Max.		720 g Max.

➤ ENVIRONMENTAL LIMITS

Item	Specification	
Ambient temperature	Operating	0 °C to 60 °C
	Non-Operating	- 40 °C to 70 °C
Humidity	Operating	5 % to 90 % R.H. (No condensation)
	Non-Operating	5 % to 95 % R.H. (No condensation)
Shock	Operating	70 G (2 ms duration)
	Non-Operating	250 G (2 ms duration)
Vibration ^[12]	Operating ^[13]	0.75 G (5 to 300 Hz) 0.25 G (300 to 500 Hz)
	Non-Operating ^[14]	5 G (5 to 500 Hz)
Altitude	Operating	- 305 m to 3,048 m
	Non-Operating	- 305 m to 12,192 m

➤ ENVIRONMENTAL FEATURE

Item	Specification
RoHS ^[15]	Compatible
Halogen free ^[16]	Yes
Antimony free ^[16]	Yes

[1] "2.5-inch" and "3.5-inch" mean the form factor of HDDs or SSDs. They do not indicate drive's physical size.

[2] Definition of capacity: Toshiba defines a megabyte (MB) as 1,000,000 bytes, a gigabyte (GB) as 1,000,000,000 bytes and 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 1GB = 2³⁰ = 1,073,741,824 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] Workload is defined as the amount of data written, read or verified by commands from host system.

[4] Read and write speed may vary depending on the host device, read and write conditions, and file size.

[5] 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.

[6] A kibibyte (KiB) means 2¹⁰, or 1,024 bytes, a mebibyte (MiB) means 2²⁰, or 1,048,576 bytes, and a gibibyte (GiB) means 2³⁰, 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 -0.3V DC (less than -0.6V, 0.1ms) 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] Toshiba Storage & Electronic Devices Solutions Company defines "RoHS-Compatible" products as products that either (i) contain no more than a maximum concentration value of 0.1% by weight in Homogeneous Materials for lead, mercury, hexavalent chromium, polybrominated biphenyls (PBBs) and polybrominated diphenyl ethers (PBDEs) and of 0.01% by weight in Homogeneous Materials for cadmium; or (ii) fall within any of the application exemptions set forth in the Annex to the RoHS Directive (Directive 2011/65/EC of the European Parliament and of the Council of 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment). "Homogeneous Material" means a material of uniform composition that cannot be mechanically disjointed (meaning separated, in principle, by mechanical actions such as unscrewing, cutting, crushing, grinding and/or abrasive processes) into different materials. Examples of "Homogeneous Materials" would be individual types of plastics, ceramics, glass, metals, alloys, paper, board, resins and coatings.

[16] Toshiba Semiconductor & Storage Products Company defines halogen-free and antimony-free SSD and HDD products as those meeting all of the following requirements: (a) containing bromine (Br) and chlorine (Cl) at no more than 900 parts per million (ppm) by weight for each element, and containing bromine and chlorine in an aggregate amount not exceeding 1500 ppm by weight; and (b) containing no more than 1000 ppm antimony (Sb) by weight. For the avoidance of doubt, Halogen-Free/Antimony-Free SSD or HDD products may not be entirely free of bromine, chlorine, or antimony, and may contain other element of the halogen family.

Before creating and producing designs and using, customers must also refer to and comply with the latest versions of all relevant TOSHIBA information and the instructions for the application that Product will be used with or for.