

MN10 SERIES NAS HDD

Toshiba MN10 series of 3.5-inch ^[1] 7200 rpm hard disk drives (HDD) deliver up to 20 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.

Toshiba's leadership in precision industrial laser welding technology is put to use to permanently seal helium inside the 10-disk mechanics.

To address NAS-class requirements, MN10 series provide 1.2 million hours MTTF / MTBF ^[16] 300 TB/year workload rating and support 24/7 power-on operation.



Product image may represent a design model.

KEY FEATURES

- 20 TB Capacity
- 7200 rpm Performance
- SATA 6.0 Gbit/s ^[3] Interface
- MTTF / MTBF of 1 200 000 hours
- 300 total TB Transferred per Year Workload Rating ^[17]
- 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

SPECIFICATION

Item		MN10ACA20T
Interface		SATA-3.3
Formatted Capacity ^[2]		20 TB
Performance	Interface Speed ^[3]	6.0 Gbit/s, 3.0 Gbit/s, 1.5 Gbit/s
	Rotation Speed	7200 rpm
	Buffer Size ^[4]	512 MiB
	Maximum Sustained Data Transfer Speed ^[6] (Typ.)	268 MiB/s
Logical Data Block Length ^[6]		HOST 512 B, DISK 4096 B
Supply Voltage	Allowable Voltage	12 V ^[7] ±10 % / 5 V ^[7] +10 % / -7 % ^[8]
Power Consumption	Random R/W ^[9] (Typ.)	8.02 W
	Active Idle (Typ.)	4.41 W
Acoustics ^[11] (Sound Power)	Active Idle (Typ.)	20 dB
	Seek (Typ.)	32 dB

ENVIRONMENTAL LIMITS

Item		Specification
Enclosure surface temperature	Operating	5 °C to 60 °C (No condensation)
Ambient temperature	Non-Operating ^[11]	-40 °C to 70 °C (No condensation)
Relative Humidity	Operating	5 % to 90 % R.H. (No condensation)
	Non-Operating ^[11]	5 % to 95 % R.H. (No condensation)
Altitude	Operating	-305 m to 3048 m
	Non-Operating ^[14]	-305 m to 12 192 m
Shock ^[12]	Operating	490 m/s ² { 50 G } (2 ms duration)
	Non-Operating	1960 m/s ² { 200 G } (2 ms duration)
Vibration ^{[12][13]}	Operating	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 ^[15]	29.4 m/s ² { 3.0 G } (5 to 500 Hz)

RELIABILITY

Item	Specification
MTTF / MTBF (AFR) ^[16]	1 200 000 hours (0.73 %)
Non-recoverable Error Rate	1 per 10 ¹⁵ bits read
Load / Unload	600 000 times
Availability	24 hours/day, 7 days/week
Rated Annual Workload ^[17]	300 TB per year

MECHANICAL SPECIFICATIONS

Item	Specification
Width (Max)	101.85 mm
Height (Max)	26.1 mm
Length (Max)	147.0 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 = 2⁴⁰ = 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] Read and write speed may vary depending on the host device, read and write conditions, and file size.

[4] A mebibyte (MiB) means 2²⁰, or 1 048 576 bytes.

[5] The maximum sustained data rate and interface speed may be restricted to the response speed of host system and by transmission characteristics. 1 Gbit/s = 1 000 000 000 bits/s. 1 MiB/s = 1 048 576 bytes/s

[6] Read-modify-write is supported.

[7] Input voltages are specified at the HDD connector side, during HDD ready state.

[8] Make sure the value is not less than -0.3 V DC (less than -0.6 V, 0.1 ms) when turning on or off the power.

[9] Operating watt is measured using 80 % random read / write and 20% performance idle.

[10] The measuring method is based on ISO 7779.

[11] Non-operating condition (except storage condition) assumes short term transportation.

[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] The range of altitude is 3048 m or less. Up to 55 °C at 7620 m. Up to 40 °C at 12 192 m.

[15] At power-off state after installation

[16] MTTF / MTBF (Mean Time to Failure / Mean Time Between Failures) of the HDDs during its life time is 1 200 000 hours and AFR (Annualized Failure Rate) is 0.73 %. (POH: 8760 hours per one year (24 hours per one day, 7 days per one week). Average HDA surface temperature: 40 °C or less, workloads: 300 TB per one 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.

[17] Workload is defined as the amount of data written, read or verified by commands from host system.

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