Toshiba Begins Sampling of 30-34 TB SMR Nearline Hard Disk Drives

Düsseldorf, Germany, 31 March 2026 – Toshiba Electronics Europe GmbH (Toshiba) has announced the M12 Series of 3.5-inch[1] nearline hard disk drives (HDDs) for hyperscale and cloud service providers operating large-scale data centers. The new series uses Shingled Magnetic Recording (SMR) technology to deliver storage capacities[2] ranging from 30 to 34 TB[3]. Sample shipments have begun and Toshiba also plans to begin sample shipments of M12 drives that use Conventional Magnetic Recording (CMR) to deliver capacities of up to 28 TB in the third quarter of 2026.

Today is *World Backup Day*, the annual international initiative to remind companies and individuals of the importance of backing up and protecting their data. That need is now greater than ever, as the constant expansion of digital services and video content distribution, the widespread adoption of cloud services, and, most recently, the increasing use of data-hungry AI and data science, are driving forward immense growth in the volumes of data generated and stored worldwide.

The requirement from data centers, the repositories for most of the world's digital data, is for higher-capacity, better performing HDDs to support more efficient system configurations. The M12 Series is designed to address this demand by significantly increasing storage capacity in the standard 3.5-inch nearline HDD form factor.

M12 Series drives leverage Toshiba's proprietary design and analysis technologies

cultivated through the development of slim and compact products. They surpass previous generations (CMR MG11 and SMR MA11 Series) by incorporating an additional magnetic disk, bringing the total to 11 disks. Additionally, the recording media used in the M12 Series replaces the standard aluminum substrate with glass, which offers greater durability and enables a thinner design. Their enclosures are helium-filled, and the drives combine Toshiba's proprietary Flux Control Microwave-Assisted Magnetic Recording (FC-MAMR™) technology with SMR, achieving storage capacities of 30 to 34 TB.

SMR technology increases recording density by overlapping data tracks, much like roof shingles. However, due to data track overlap, random write operations can cause performance degradation. To overcome this, the M12 Series HDDs adopt a host-managed SMR architecture, in which the host system manages data placement and rewriting within the drive. This approach enables more efficient data handling and reduces performance degradation in server and storage system environments.

The new SMR HDDs reach a maximum data transfer rate of 282 MiB/s[4], an improvement of approximately 8%, while power consumption per terabyte (W/TB) is approximately 18 % lower than that of the previous generation of products. Designed for continuous 24/7 operation, the M12 Series supports an annual workload[5] rating of 550 TB and offers an MTTF/MTBF[6] of 2.5 million hours, an annualised failure rate (AFR) of 0.35 %.

Looking ahead, Toshiba plans to further increase HDD capacity through the adoption of next-generation recording technologies, including Heat Assisted Magnetic Recording (HAMR), and products featuring a 12-disk configuration[7]. Increasing HDD capacity is key to addressing the constantly growing storage demands of data centers.

For more information on Toshiba's full line of HDD storage products, please visit: https://www.toshiba-storage.com/.

[1] "3.5-inch" means the form factor of HDDs. They do not indicate the drive's physical size.
[2] Range of storage capacity with variable capacity formatting applied.
[3] Definition of capacity: One terabyte (TB) = one trillion bytes, but actually available storage capacity may vary, depending on operating environment and formatting. Available storage capacity (including examples of various media files) will vary based on file size, formatting, settings, software and operating system and/or pre-installed software applications, or media content. Actual formatted capacity may vary.
[4] A mebibyte (MiB) means 1,048,576 bytes. Read and write speeds may vary depending on the host device, read and write conditions, and file size.
[5] Workload is a measure of data throughput in a year, and it is defined as the amount of data written, read or verified by commands from the host system.
[6] MTTF/MTBF (mean time to failure/mean time between failure) is not a guarantee or estimate of the product life; rather it is a statistical value related to mean failure rates for a large number of products, which may not accurately reflect actual operation. The actual product life of the product may vary.

[7] ""Toshiba First in Industry to Verify 12-Disk Stacking Technology for Hard Disk Drives"" announced on October 14, 2025.

* FC-MAMR™ is a trademark of Toshiba Electronic Devices & Storage Corporation.
* Other company names, product names, and service names may be trademarks of their respective companies.
* Information in this document, including product prices and specifications, content of services and contact information, is current and believed to be accurate as of the date of the announcement, but is subject to change without prior notice.

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About Toshiba Electronics Europe
Toshiba Electronics Europe GmbH (TEE) offers European consumers and businesses a wide variety of hard disk drive (HDD) products plus semiconductor solutions for automotive, industrial, IoT, motion control, telecoms, networking, consumer and white goods applications. Next to HDDs, the company's broad portfolio encompasses power semiconductors and other discrete devices ranging from diodes to logic ICs, optical semiconductors as well as microcontrollers and application specific standard products (ASSPs) amongst others. In addition, TEE offers SCiB™ battery cells and modules with lithium titanium oxide (LTO) for heavy-duty applications.

TEE has its headquarters in Düsseldorf, Germany, with branch offices in France, Italy, Spain, Sweden and the United Kingdom providing marketing, sales and logistics services.

Visit Toshiba's websites at www.toshiba-storage.com, www.toshiba.semicon-storage.com and www.scib.jp/en for further company and product information.

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