

Quantum®

R-Series

Ruggedized In-Vehicle Data Storage



> DATASHEET

In-vehicle storage for autonomous vehicle testing, surveillance, rolling stock, and on-set video capture carries unique requirements not addressed by traditional IT storage offerings. These storage systems must have the performance and capacity to retain data streams from more than a dozen cameras and sensors simultaneously, and do so within the constraints of a moving car—not to mention dynamic environmental conditions with limited physical space and electrical power.

DESIGNED FOR IN-VEHICLE CONDITIONS

The autonomous test vehicle is controlled by a network of sensors, cameras, GPS, IMUs, ECUs and high-performance compute processing. The Quantum R-Series is designed specifically for this challenging environment, and the demands of that use case make it ideally suited for use in any application capturing a lot of data in a rugged environment. Dual 10 GbE ports and optional SSD drives provide the needed performance without creating bottlenecks or dropping data. The small form factor chassis design minimizes storage space, enabling more room for ECUs, compute or other hardware components. A 12VDC power supply eliminates inefficient AC power conversion, minimizing electrical power consumption and enabling the electronics to operate without drawing down the battery. Finally, the design is ruggedized to operate in a broad range of environmental conditions.

SMALL FORM FACTOR DESIGN

The nature of testing or remote deployments takes into account that plans change or vary depending on test objectives, prior results and the availability of new technology. The Quantum storage solution provides flexibility to align storage capacity, performance and cost with test requirements by choosing SSDs or HDDs in 2.5" or 3.5" form factors. The removable drive magazines provide additional flexibility. Magazines can easily be swapped if test requirements change or to provide extended capacity during long, cross-country tests.

QUICKLY UPLOAD DATA

It is also critical to provide users of the data—engineers, editors, scientists, analysts—with prompt access to the latest data. This means transferring data from the vehicle to the shared storage environment. When testing is complete, drive magazines are loaded into a storage chassis for immediate ingest at the processing site. The chassis has optional 120VAC–240VAC and dual 10 Gb Ethernet to support garage power requirements and fast performance. Placing a new magazine into the vehicle enables data collection to continue with minimal downtime.

FEATURES & BENEFITS

Small Form Factor Design

Minimize storage space; make room for electronic controls, compute and other electronic equipment.

Removable Magazine

Swap magazines for unlimited capacity during long test cycles and fast offload at garage station.

Designed for In-Vehicle Conditions

Ruggedized design and 12VDC power ensure easy integration, efficient power use and reliable operation.

Multiple Drive Options

Choose SSD or HDD, 2.5" or 3.5" to align performance, capacity and cost to specific testing requirements.

RAID Support

Ensures high performance and reliability, including RAID 5 or 6 for added protection.

Magazine Carrier

Optional ruggedized case provides protection and security for drive magazines during storage and transport.

Upload Content to High-Performance Shared Storage

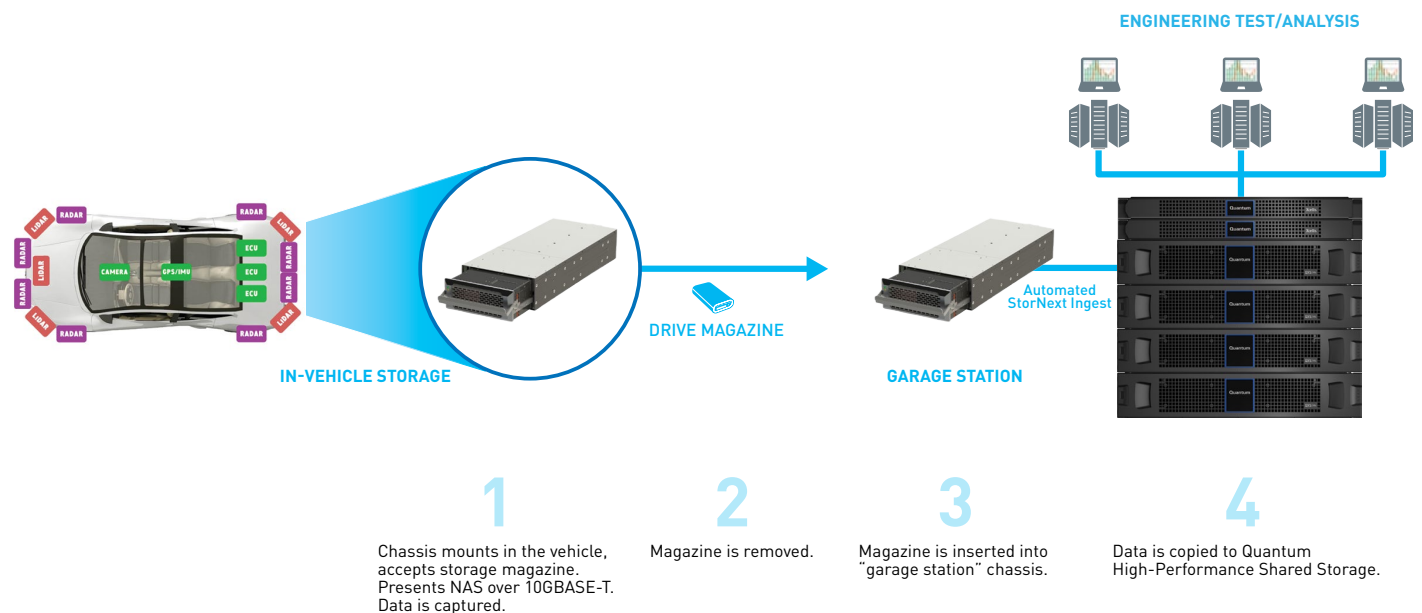
Data stored on an R-Series magazine can be uploaded into a StorNext® environment using the StorNext FlexSync™ feature (both purchased separately) to quickly upload content to a shared storage environment.

> **LEARN MORE:**
www.quantum.com/autonomy

SPECIFICATIONS

Feature	Specification	Note
Dimensions (w x h x d)	Inch: 9 x 5.25 x 21 CM: 23 x 13 x 53	Small footprint increases room for other components.
Drive Support	2.5" or 3.5" HDD and SSD	Flexibility to balance performance, capacity and cost.
Removable Magazine	Up to 6 drives per magazine	Swap magazines to extend test capacity; transfer data to upload station, minimizing car downtime and engineering access to the newest test data.
Raw Capacity (per magazine)	60 TB (HDD); up to 46 TB (SSD)	Capacity for multiple days of testing (most vehicles) with extra magazines available if more capacity is needed.
RAID Configurations	RAID 0, 1, 5, 6, 10	Configurable to meet specific needs; RAID 5 or 6 recommended for most deployments.
Host Connectivity	2x 10 GbE RJ45	Enables recording for many hi-res devices and high-performance data center ingest.
Other Connectivity	1x USB, 1x HDMI, 1x 1 GbE	1 GbE for device management.
Performance	Up to 1.6 GB/sec (SSD); up to 400 MB/sec (HDD)	SSD performance is at the 2x 10 GbE line speed, supporting high performance needs; HDD provides lower cost for lower performance needs.
Power Supply	12VDC or 120VAC-240VAC	12VDC for higher efficiency and ease of integration to car; 120VAC-240VAC for garage station.
Wattage	Max 320 W; Operational 225 W	Lower power enables more cameras, sensors and electronics to run without draining the battery.
Mounting	Rail	For ease of integration.
OS	Ubuntu, with NAS stack preloaded	Efficient, reliable operation.
Magazine Carrier	Optional ruggedized case for magazine storage and transfer	Protect and secure data during storage and transfer to/from garage upload station.

*Specifications subject to change.



The removable drive magazine simply and quickly uploads car data to the development team from the storage chassis mounted in the garage station.

ABOUT QUANTUM

Quantum technology and services help customers capture, create, and share digital content—and preserve and protect it for decades at the lowest cost. Quantum's platforms provide the fastest performance for high-resolution video, images, and industrial IoT, with solutions built for every stage of the data lifecycle, from high-performance ingest to real-time collaboration and analysis and low-cost archiving. Every day the world's leading entertainment companies, sports franchises, research scientists, government agencies, enterprises, and cloud providers are making the world happier, safer, and smarter on Quantum. See how at www.quantum.com.