

## Q160 Intelligent Disk Drive with DisCache™

### 160 Megabyte Formatted Capacity Drive with Integrated SCSI Controller

A member of Quantum's Q200 Series™ of intelligent disk drives, the Q160 combines the highest capacity of this product family with the highest level of performance. Because all drives in the Q200 Series share the same SCSI implementation and custom integrated controller, the Q200 Series guarantees compatibility among the family and makes it easier than ever before to upgrade systems or to offer alternative storage capacities.

### Brilliant Performance

The Q160 features DisCache™, a look ahead disk cache to significantly increase data throughput. Like any caching system, DisCache acts as a high speed memory — in this case between the disk and host system. DisCache is 60 KB of RAM that anticipates host system requests for sequential read operations. Since many applications employ sequential reads about 50% of the time, performance improvements with DisCache can be dramatic.

Because cache performance is highly dependent upon applications, the Q160 offers programmable options to fine tune DisCache performance for individual system needs. In particular, DisCache allows users to turn the cache on or off, choose the amount of data to prefetch, and increase the likelihood that requested data already resides in the cache.

Of course, disk caching isn't the only feature contributing to brilliant performance. The Q160 offers an intelligent defect management scheme that handles errors without requiring additional seeks. In addition, cylinder skewing minimizes latency when accessing data stored across cylinder boundaries.

Finally, the Q160 employs powerful SCSI commands to relieve the host system

of many aspects of disk management. For example, the full disconnect/arbitration/reconnect feature improves system performance significantly by keeping the SCSI bus free as much as possible. To give another example, the SCSI Copy command allows the Q160 to transfer data to another peripheral device with minimal host intervention.

### Assured Data Integrity

The Q160 is at the head of its class in data integrity features. This drive was designed with data integrity in mind beginning with Quantum's embedded servo approach. Embedded servos (on all sectors of all surfaces) ensure the drive maintains the correct positioning at all times by reducing susceptibility to thermal or mechanical problems. Conservative linear and track densities also ensure high data integrity. The Q160 employs a defect management scheme which is both flexible and dynamic, offering user programmable options and handling media defects initially as well as throughout the product's life.

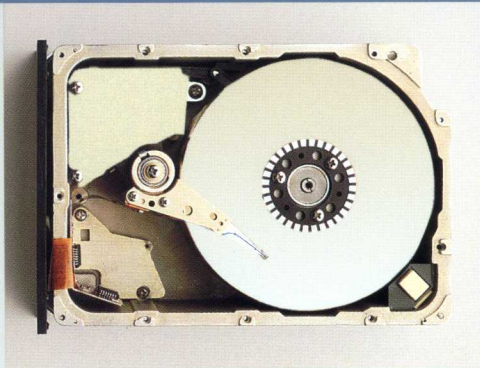
In addition, the error handling capability goes beyond defect management to perform automatic retries and correct data through powerful (96 bit) error correction codes. Finally, to prevent data integrity problems from damage to data areas, the Q160 features a dedicated landing zone for heads and Quantum's patented AIRLOCK™ actuator lock.

### Proven Reliability

When it comes to reliability, the Q160 is smarter than ever. A simple design, based on fewer mechanical parts and a single printed circuit board, forms the basis for exceptional reliability. The mean time between failure (MTBF) specification is 25,000 hours, including the drive and its embedded controller. The entire subsystem is designed, manufactured and tested by Quantum to simplify integration into systems and guarantee reliability.

- 160 MB formatted capacity
- DisCache — a 60 KB look ahead disk cache
- Mean-Time-Between-Failure of 25,000 hours (operating)
- Industry standard ANSI/SCSI host interface
- Supports common command set
- SCSI bus data transfer rate of up to 1.25 Mbytes/second
- Full disconnect/arbitrate/reconnect capability
- Powerful Reed-Solomon ECC with one 17-bit burst error correction and three burst error detection
- Automatic retry for read disk errors
- User selectable transparent defect mapping
- High performance in-line sector defect skipping and reassignment of new defective sectors without need to reformat
- Patented AIRLOCK® shipping lock and dedicated landing zone
- Support for logical block size of 512, 1024, or 2048 bytes
- Multiple block transfer up to 64K blocks

# QUANTUM Q200 SERIES™



## Q160 SCSI Commands

Copy	Request Sense
Format Unit	Reserve
Inquiry	Rezero Unit
Mode Select	Seek
Mode Sense	Send Diagnostics
Read	Start/Stop Unit
Read Buffer	Test Unit Ready
Read Capacity	Verify
Read Defect Data	Write
Reassign Block	Write Buffer
Release	

## Specifications

### Disk Drive Architecture

Capacity (formatted)	160 MB
Heads	12
Disks	6
Format	32 sectors x 512 bytes
Tracks	9,876
Track Density (TPI)	876
Flux Density (FCI)	15,000
Recording Density (BPI)	20,000
Encoding Scheme	RLL 1,7

### Performance Specifications

Transfer Rate (Mbits/Sec)	10	
Seek Time (msec)	Typical	Maximum
Average	26	30
Track-to-Track	4	6
Full Stroke	49	55

Seek Times specified are at nominal environmental conditions and include settling.

DisCache:™ 60 KB Look Ahead Disk Cache with user programmable options

## Reliability Specifications

MTBF: 25,000 POH  
 PM: not required  
 MTTR: 30 minutes  
 Component design life: 5 years

### Error Rates:\*

Soft Read Errors: 1 per 10<sup>10</sup> bits read  
 Defect Read Errors: 1 per 10<sup>12</sup> bits read  
 Unrecoverable Data Errors: 1 per 10<sup>14</sup> bits read  
 Seek Errors: 1 per 10<sup>6</sup> seeks

\*Exclusive of ECC or retries

## Physical Specifications

### Mechanical Specifications:

Height: 3.25 in./8.26 cm  
 Width: 5.75 in./14.6 cm  
 Depth: 8.05 in./20.44 cm  
 Weight: 6.1 lbs./2.8 kg  
 50 pin dual in-line SCSI connector  
 4 pin industry std power connector

### Environmental Conditions:

	Operating	Non-operating
Temperature	4 to 50°C	-40 to 60°C
Humidity (non-condensing)	8 to 85% RH	5 to 95% RH
Altitude	up to 3 km	up to 12 km

### Power Requirements:

+5 VDC at: 1.45A Typical  
 1.80A Maximum  
 +12 VDC at: 1.53A Typical  
 4.40A Maximum  
 (at power on)

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Specifications subject to change without notice.

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