Quantum

QXS-4 Hybrid Storage

> DATASHEET

High-performance, ultra-high-density storage

The QXS™-4 hybrid storage series features Q-Tier, Q-Tools, Q-Turbo, high-capacity drives, and next-generation host connection speeds.

The QXS-4 Series' high performance with extreme low latency is optimized to handle the extreme random data access patterns associated with virtualized environments. Offering 6400 megabytes per second sequential reads and 5300 megabytes per second sequential writes, this series is ideal for both VDI and server virtualization environments.

High performance computing (HPC) applications, cloud storage, and virtual server environments require powerful storage with the ability to deliver quick response to random workloads. The QXS-4 Series delivers industry-leading sequential throughput, as well as an impressive 120,000 IOPS sustained from disk for real-time access to business-critical data, such as databases and business analytics.

QXS-4 hybrid storage arrays have a unique dynamic heuristic algorithm that enables tiering of data, promoting active workloads to the fastest tier every five seconds with no performance penalty. This provides the most-needed data with the highest I/O possible.

Acquiring a storage system that had the performance needed was very expensive and often very difficult to manage.

Manageability is a cornerstone of the QXS-4 Series. Q-Tools includes:

1. Thin Provisioning
2. Automatic Pooling
3. Quick – provides an accelerated rebuild operation as only the sectors that contain actual data are rebuilt, resulting in up to five times faster restoration.
4. Q-Turbo – simultaneously writes to both controllers, increasing performance by 50%.

Other optional management tools are:

1. Q-Snap – redirect on write snapshots (pointers).
2. Q-Replication – asynchronous replication.
3. Q-Copy – snapshot.

The QXS-4 series arrays are easy to manage with the Storage Management Console. You can manage all array functions without the need for host-based software, including the Management Console that saves time with configuration and installation wizards, schedulers, and the administration of Q-Tools data protection software.

These models support the following host connection types: 8Gb Fibre Channel, 16Gb Fibre Channel, 12Gb SAS, 1Gb iSCSI, or 10Gb iSCSI.

MODEL QXS-424 (FIBRE CHANNEL, iSCSI, SAS)

With Twenty-Four 2.5" Drives	
Drives per array	Up to 24 (SSD, SAS, 15K, 7K, Encrypted)
Max capacity per chassis	48TB
Expanded Capacity	384TB
Performance	
Read	6.4GB/s
Write	5.3GB/s
Physical	
Depth (excluding cable)	20.46in/51.9cm
Height	3.5in/8.9cm
Width	17.6in/44.7cm
Chassis weight	36.4lb/16.5kg
Chassis weight with drives	51.8lb/23.5kg

MODEL QXS-448 (FIBRE CHANNEL, iSCSI, SAS)

With Forty-Eight 2.5" Drives	
Drives per array	Up to 48 (SSD, SAS, 15K, 7K, Encrypted)
Max capacity per chassis	96TB
Expanded Capacity	384TB
Performance	
Read	6.4GB/s
Write	5.3GB/s
Physical	
Depth (excluding cable)	30.6in/77.724cm
Height	3.5in/8.9cm
Width	17.6in/44.7cm
Chassis weight	48lb/21.8kg
Chassis weight with drives	74.9lb/34kg

MODEL QXS-456 (FIBRE CHANNEL, iSCSI, SAS)

With Fifty-Six 3.5" Drives	
Drives per array	Up to 56 (SSD, SAS, 15K, 7K)
Max capacity per chassis	448TB
Expanded Capacity	1.9PB
Performance	
Read	6.4GB/s
Write	5.3GB/s
Physical	
Depth (excluding cable)	32.9in/83.56cm
Height	7in/17.8cm
Width	17.6in/44.7cm
Chassis weight	105lb/47.6kg
Chassis weight with drives	198lb/89.9kg

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

TECHNICAL SPECIFICATIONS

HOSTS

External Ports	4 per controller/8 maximum
Fibre Channel	
Host Speed	16Gb, 8Gb Fibre Channel
Interface Type	SFP+
iSCSI Models	
Initiators	10Gb NIC or 1Gb, 10Gb iSCSI
Interface Type	SFP+
SAS	
Initiators	12Gb, 6Gb, SAS 3.0 (Serial-attached SCSI)
Interface Type	Mini-SAS HD

DRIVE SUPPORT

QXS-412, 424, 448, 456	SAS, Nearline SAS, SSD

EXPANSION EBODS

x12ES (6Gb)	(1 RAID, 3 EBOD), 48 Drives
x24ES (6Gb)	(1 RAID, 3 EBODs), 96 Drives
x48ES (6Gb)	(1 RAID, 7 EBODs) or 248 Drives
x56ES (6Gb)	(1RAID, 3 EBODs) or 248 Drives

HIGH-AVAILABILITY FEATURES

Redundant Hot-Swap Controllers
Redundant Hot-Swap Disk, Fans, Power
Dual Power Cords
Hot Standby Spare
Automatic Failover
Multi-Path Support

PROTOCOLS AND STANDARDS

IP (RFC, 984, 1092) SCSI-2 and SCSI-3
OpenStack Cinder compatible

SUPPORT

Standard Software Warranty	Includes 30 days of 5x9 telephone and email software support.
Standard Hardware Warranty	Three-year next business day parts replacement. Replacement item shipment targeted for next business day. Customer will perform the replacement and return of the failed item. Parts replacement service available 5x9 via telephone or email.

RAID

Levels Supported	0,1,3,5,6,10, and 50

SYSTEM CONFIGURATION

Cache Memory	6GB per controller
Virtual Disks per System	32
Volumes per System	1024
Mirrored Cache	Yes – Q-Turbo
Super Capacitor Cache Backup	Yes
Cache Backup to Flash	Yes – Non-volatile

MANAGEMENT

Interface Types	10/100/1000 Ethernet, Mini USB
Protocols Supported	SNMP, SSL, SSH, SMTP, SMI-S Provider, HTTP(s)
Management Software	Q-Tools
Remote Diagnostics	
Non-Disruptive Updates	
Volume Expansion	

COMPLIANCE AND STANDARDS

NEBS Level3, MIL-SPEC 810G
IP (RFC, 894, 1092), SCSI-2 and SCSI-3

POWER REQUIREMENTS – AC INPUT

Input Power Requirements	100-240VAC 50/60Hz – QXS-412, 424, 448 200-240V 50/60Hz, 5-5A (1220W) – QXS-456
Max Input Power	375W maximum continuous – QXS-412 400W maximum continuous – QXS-424 640W maximum continuous – QXS-448
Heat Dissipation	1488BTUs/hour – QXS-412, 424 2245BTUs/hour – QXS-448 4095BTUs/hour – QXS-456

QXS-412.424 BRONZE RATE – HIGH EFFICIENCY

82 percent @ 20 percent load
86 percent @ 80 percent load
85 percent @ 100 percent load

QXS-448 GOLD RATE – HIGH EFFICIENCY

75 percent @ 10 percent load
88 percent @ 20 percent load
92 percent @ 80 percent load
88 percent @ 100 percent load

QXS-456 GOLD RATE – HIGH EFFICIENCY

82 percent @ 10 percent load
90 percent @ 20 percent load
94 percent @ 50 percent load
81 percent @ 100 percent load

POWER REQUIREMENTS – DC INPUT

Voltage	-39 to -72DC, -48/-60V nominal
Max Input Power	500W maximum continuous
Heat Dissipation	1706BTUs/hour – QXS-412, 424 2245BTUs/hour – QXS-448

TEMPERATURE AND HUMIDITY RANGES

Operating Temperature	41°F to 104°F (5°C to 40°C)
Shipping Temperature	-40°F to 158°F (-40°C to 70°C) -23°F to 158°F (-5°C to 70°C) – QXS-448 Note: Derate 2°C for every km, up to 3000 meters
Operating Humidity	10% to 90% RH @ 104°F (40°C), non-condensing
Non-Operating Humidity	Up to 93% RH @ 104°F (40°C), non-condensing

DECLARED ACOUSTIC NOISE LEVELS

Sound Power	LWAd=6,75 B – QXS-412, 424, 448 LWAd < 78 dBA @ 27°C – QXS-456
Sound Pressure	LpAm-55dB[A]

SHOCK AND VIBRATION

Shock, Operational	3Gs for 10ms, half sine – QXS-412, 424, 448, 456 5 pulses each direction, rail mounted QXS-448 3Gs for 11ms – QXS-456
Shock, Non-Operational	10Gs for 11ms, half sine 1" drop to hard unyielding surface per NEBS GR-63-CORE Unpackaged Equipment Shock Criteria (4.3.2)
Vibration, Operation	5Hz to 500Hz, 0.21 Grms flat spectrum – QXS-412, QXS-424 5Hz to 500Hz, 0.14 Grms flat spectrum – QXS-448 5Hz to 500Hz, 0.1436 Grms flat spectrum – QXS-456
Vibration, Non-Operational	3-365-3Hz, 1.22 Grms, Z-axis, 0.85 Grms, X- & Y-axis shaped spectrum

REGULATORY

Safety	UL 60950-1, 2nd edition (United States) CAN/CSA-C22.2 No.60950-1 2nd edition (Canada) EN 60950-1 (European Union) IEC 60950-1 (International) EN 60950-1 (GS Mark, Germany) CCC Mark (China PRC)

ELECTROMAGNETIC COMPATIBILITY

Emissions	CFR47 Par 15 Subpart B Class A (United States) ICES-003 Class A (Canada) EN 55022 Class A (EU) EN 300 386 Class A (EU Telco) AS/NZS CISPR 22 Class A (Australia, New Zealand) VCCI Class A (Japan) GOST R 51318.22 Class A (Russia) KN 22 Class A (S. Korea) CMS 13438 Class A (Taiwan)
Harmonics	EN 61000-3-2 (EU)
Flicker	EN 61000-3-3 (EU)
Immunity	EN 55024 (EU) EN 300 386 (EU Telco) GOST R 51318.24 (Russia) KN 24 (S. Korea)
RoHS and WEEE	RoHS-6/6 Compliance, China RoHS, WEEE
Country Approvals	United States, Canada, European Union (EU), Australia/ New Zealand, Japan, China (PRC), Russia, Mexico, Germany, South Korea, Taiwan, India

ABOUT QUANTUM

Quantum is a leading expert in scale-out storage, archive, and data protection, providing solutions for capturing, sharing, and preserving digital assets over the entire data lifecycle. From small businesses to major enterprises, more than 100,000 customers have trusted Quantum to address their most demanding data workflow challenges. Quantum's end-to-end, tiered storage foundation enables customers to maximize the value of their data by making it accessible whenever and wherever needed, retaining it indefinitely and reducing total cost and complexity. See how at **www.quantum.com/customerstories**.

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DS00505A-v02 Nov 2016