

# Exar's Hifn Express DR 1600 Series Advanced Data Reduction Cards

## DATA REDUCTION AND PROTECTION SOLUTIONS FOR THE EVOLVING DATA CENTER



The DR1600 series cards were designed to assist IT administrators in managing the exponential growth in data and supporting the dynamic IT infrastructure required to address an increasingly demanding business environment. Today's businesses need to be agile—with no down time—to respond quickly to changing market conditions. Operational excellence is a must to ensure that resources are utilized efficiently and cost-effectively. Services and information need to be available 24x7 and across multiple geographies. Information protection is mandatory as data is being transmitted between locations and across different networks. Furthermore, increasing energy costs require a more energy efficient data center.

Given this business environment, IT infrastructure needs the ability to support a high quality of service (QoS); the flexibility to add resources or applications in a non-disruptive manner; provide high availability, security and data protection; virtualization; scalability and high performance; and have a small carbon footprint.

The DR 1600 series provides power efficient acceleration capabilities for data compression, encryption, and deduplication for enterprise class storage applications.

### High performance

- Complete hardware offload frees up valuable CPU resources for other applications
- 1,800MB/sec throughput enables both in-line and post processing storage capacity optimization and encryption
- Hash, compress and encrypt in one pass
- Load balancing across multiple cards

### High availability

- Unified API software architecture provides failover protection in case of card failure
- All hardware functionality supported in software

### Flexibility to select data reduction and level of security

- Advanced data reduction capabilities:
  - Compression: eLZS lossless compression
  - Hash acceleration for deduplication: SHA 256, SHA 160, MD5
- Security / encryption capabilities:
  - 256/512-bit key AES-XTS
  - 128/256-bit key AES GCM
  - AES-CBC plus HMAC-SHA160

### End-to-end data protection

- Built-in functionality for detecting, isolating and preventing the propagation of corrupt data caused by silent disk errors, application interaction or memory errors
- Full internal data path integrity checking on card

### Operational efficiency (reduced OpEx / CapEx)

- Enables storage capacity optimization: data reduction is typically 2:1 with compression; greater reductions are achievable with deduplication
- Reduces disk capacity requirements and purchases, reduces power consumption and footprint, lowers cooling requirements

### New Unified API Software

- Simplifies system integration and reduces time to market
- Software integration across systems platforms enables compatible databases and allows DR cards to be installed non-disruptively



Hifn Express DR 1600 Series  
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### STORAGE SYSTEM APPLICATIONS

- Network-Attached Storage (NAS)
- Direct-Attached Storage (DAS)
- Storage Area Network (SAN)
- Disk backup and archival servers, offering:
  - Data deduplication
  - Continuous Data Protection (CDP)
  - Snapshot and replication
  - Disk-to-Disk (D2D)
  - Virtual Tape Library (VTL)
  - Content-Addressable Storage (CAS)
- Tape backup servers

EXPRESS DR 1600, 1605, 1610, 1615, 1620, 1625	
<b>KEY FEATURES</b>	
Data Reduction Algorithms	eLZS and LZS
Encryption / Decryption	128/256-bit key AES GCM, AES-CBC plus HMAC-SHA160, 256/512-bit key AES-XTS
Hashing for Deduplication	SHA256, SHA160 and MD5
Performance / Throughput	See table below
Performance Features	<ul style="list-style-type: none"> <li>• Compression, hash and encryption in a single pass</li> <li>• Hash acceleration for deduplication</li> <li>• Up to 4 cards per system</li> <li>• Automatic load balancing</li> <li>• Hardware-assisted scatter gather (unlimited buffers)</li> </ul>
Ease of Use	New API simplifies integration and reduces time to market
Reliability and Service Features	<ul style="list-style-type: none"> <li>• Software failover protection (All HW functionality) in case of card failure</li> <li>• End-to-end data integrity (On chip/card and off card error detection)</li> <li>• Complete verification of compressed, encrypted and hash data.</li> <li>• Thermal monitoring with IRQ</li> <li>• Status log to NVRAM</li> <li>• 64KB NVRAM accessible to application read/write</li> </ul>
<b>CARD SPECIFICATIONS</b>	
Bus Interface	PCI Express x8 PCI Express Base Specification Rev. 1.1
Form Factor	Low profile half-length PCI Express
Card Dimensions	<b>Height:</b> 6.89 cm (2.71 in) <b>Length:</b> 16.77 cm (6.60 in) <b>Component side:</b> 1.45 cm max. (0.57 in) <b>Solder side:</b> 0.27 cm max. (0.11 in)
Bracket Dimensions	Standard: 1.84 x 7.92 cm (0.73 in x 3.12 in) Optional: 1.84 cm x 12.00 cm (0.73 in x 4.73 in)

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<b>ENVIRONMENTAL SPECIFICATIONS</b>	
Temperature and Humidity	<b>Operating:</b> 0°C/32°F to 55°C/131°F; 10% to 90% RH non-condensing <b>Storage:</b> -10°C/14°F to 70°C/158°F; 5% to 95% RH non-condensing
Required Airflow	None (@ 55°C operating, sea level)
Material Safety	RoHS-6
<b>AGENCY APPROVALS</b>	
Safety	<b>USA:</b> UL60950-1, 1st Edition <b>European Community:</b> EN 60950-1, Low voltage directive 2006/95/EC and EMC directive 2004/108/EC <b>Canada:</b> cUL CSA C22.2 No. 60950-1-03
EMI and EMC	<b>USA:</b> FCC Part 15, Class B <b>Canada:</b> ICES-003[B], NMB-003[B] <b>European Community:</b> EN55022:2006, EN55024:1998 <b>Japan:</b> VCCI V-3/2008.04, Class B <b>Taiwan:</b> BSMI CNS13438:95(2006) Class B <b>New Zealand/Australia:</b> AS/NZS CISPR22 <b>Korea:</b> MIC KN22/KN24
<b>OS SUPPORT AND HOST UTILITIES</b>	
Host Utilities and Applications	Power-on Self Test (POST); DMA and card configuration; error log configuration; decompression; demonstration and test applications
Operating Systems Supported	Windows Server 2003 R2 32/64 bit Windows Server 2008 32/64 bit Red Hat Enterprise Linux 4 32/64 bit Red Hat Enterprise Linux 5 32/64 bit Novell SUSE ELS 9 32/64 bit Novell SUSE ELS 10 32/64 bit
<b>ORDER INFORMATION</b>	
Standard Package Contents	Individual Express DR card with bracket
Standard Warranty	1 year hardware warranty
Order Part Numbers	See table below

PRODUCT	ORDER NUMBER	PERFORMANCE	CAPABILITY		POWER CONSUMPTION	
			Compression	Encryption and Hash	Typical Watts	Maximum Watts
Express DR 1600	1600R	300 MB/sec	✓		3.60	5.02
Express DR 1605	1605R	300 MB/sec	✓	✓	4.20	6.25
Express DR 1610	1610R	900 MB/sec	✓		4.32	5.95
Express DR 1615	1615R	900 MB/sec	✓	✓	5.52	8.62
Express DR 1620	1620R	1,800 MB/sec	✓		5.28	8.05
Express DR 1625	1625R	1,800 MB/sec	✓	✓	8.40	12.21



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