Custom Removable Storage Solutions

Secure Data Storage in Compact Enclosures

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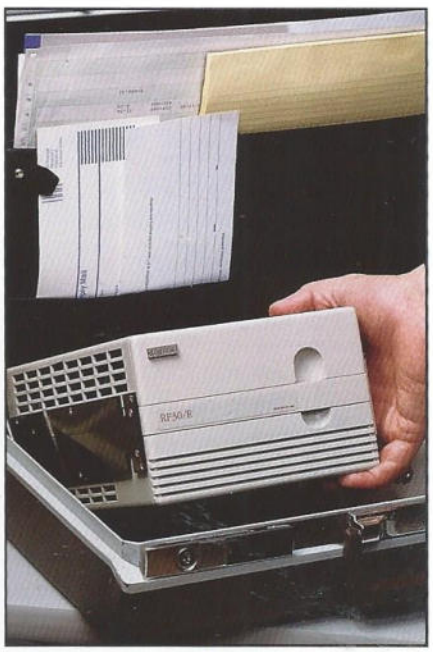


Removable Data Storage for a Wide Range of Digital Systems

Digital's Removable Storage Solutions provide secure data storage for the popular MicroVAX, VAXstation, and DECstation systems, which are compatible with Q-bus, Digital Storage Systems Interconnect (DSSI) and Small Computer Systems Interface (SCSI) technologies.

These solutions offer the high level of data security, integrity, availability, and reliability needed for demanding business and technical applications. Their quiet performance, compact design, and desktop system compatibility makes them well suited to today's computing environments. They also provide investment protection through full Digital Storage Architecture (DSA) functionality.

Together, Digital's pedestal-mounted, custom rackmounted, tabletop and platform (diskless) systems represent a secure, single vendor solution for the removable data storage requirements of your enterprise.

Highlights

- Security. Removable disks containing sensitive data can be readily placed and stored in secure areas.
- Transportability. With disks housed in removable canisters, data can be quickly and easily moved to alternative systems or storage locations.
- Flexibility. Customers can choose from among tabletop, rack-mounted, pedestal-mounted and custom platform systems in a variety of disk capacities.
- Growth. Add more disk storage capacity whenever your computing needs grow.
- Compatibility. Digital offers removable storage systems based on SCSI and DSSI technologies.
- Commitment. Removable storage systems employing Digital's proven storage technology are designed, tested, and built to the highest quality standards.
- DSA functionality. All removable storage family products are compatible across technological generations, providing unprecedented investment protection.
- Data availability. Through the inherent features of DSA, VAXcluster Systems, and the early warning service capability inherent in VAXsimPLUS software, data availability is maximized.

Q-bus, DSSI Storage Technology Delivers Top Performance

Digital's high performance, cost-effective, compact removable storage configurations are the 150MB formatted RF30 and RF71 Integrated Storage Elements (ISE). RSEs are contained in compact, shock-mounted canisters that are easily removed from and inserted into rack, pedestal or system enclosures.

RSEs employ several key features to maintain the same high level of data integrity and performance as fixed ISE systems. These features include automatic bad block replacement and a 264-bit Error Correction Code (ECC). The ECC replaces blocks of data after multiple retries and before hard data errors. Servo information is placed within the tracks of each data surface and between the blocks so the drive mechanics know precisely where the head is located.

Like the fixed disk ISEs, RSEs have excellent multi-drive performance. When linked together with DSSI-dedicated transfer channels, multiple RSEs can achieve full linear throughput.

In addition, RSEs check the DSSI bus for incoming commands or data, physically preventing canisters from being removed while there is bus activity or while the disk is spinning. A light indicates when it is safe to remove the drive.

The RSE uses high-density media storage technology (VLSI) to reduce the size, weight, and number of mechanical parts. There is less heat generated during operation, resulting in greater long-term reliability; a heat sensor is included to prevent the RSE from overheating. For safe transport, a rigid, padded carrying case is available to provide greater protection for the canisters.

Data availability can be maximized through the use of VAXsimPLUS, a knowledge-based Digital software tool which analyzes the number and type of errors recorded by the system, predicts failures, and suggests corrective maintenance. Both the RF30 and RF71 RSE designs ensure compatibility with future storage systems through full implementation of DSA, the Digital Storage Architecture.

Custom Removable Tabletop Storage

With the proliferation of workstations and other powerful desktop systems in critical engineering and business environments, many users need to secure their data from unauthorized access. But customers also need the size, speed, storage capacity, system compatibility, and functionality that only SCSI-based Winchester-type disk drives can provide.

The solution is Digital's Custom Removable Tabletop Storage solutions. These disk drives connect to the industry-standard SCSI interface used by Digital's VAX and Reduced Instruction Set Computing (RISC) desktop systems and workstations.

Based on Digital's 332MB formatted RZ55 and 665MB formatted RZ65 Winchester disk drives, removable storage devices are mounted in an attractive, compact 5.25-inch, shock-mounted canister which fits easily and securely into a tabletop enclosure.

Engineered with the open office or laboratory environment in mind, removable SCSI-based tabletop disk drives enable customers to realize generous amounts of storage capacity in small amounts of desktop space. The tabletop enclosure measures just 5.6″ high by 8.6″ wide by 17.5″ deep.

Digital's Removable Tabletop SCSI Drives undergo extensive system integration testing to ensure that all Digital SCSI peripherals — disks, tapes, and CDROM drives — operate together with unerring constancy on the SCSI bus.

Custom Removable Rackmounted Storage

Many users want the convenience and security of removable data storage, with the flexibility and expandability of rackmounted peripherals. Digital meets this need with custom rackmounted removable storage products for its Q-bus-based MicroVAX systems. These products feature the RF30 RSE and RF71 RSE housed in protective, rackmountable containers.

The removable rackmounted storage product containers measure 19″ wide by 5 1/4″ high by 24″ deep, to fit perfectly in 19-inch wide industry-standard NEMA cabinet racks. Each comes standard with a single disk drive; a second drive is optional. Customers can purchase multiple rackmounted storage containers as needed to expand their removable data storage capacity up to 2.4 Gigabytes. These storage systems can be easily integrated with Digital's MicroVAX subsystems, standard pedestals and fixed ISE

storage subsystems and other rack-mounted devices in standard cabinets.

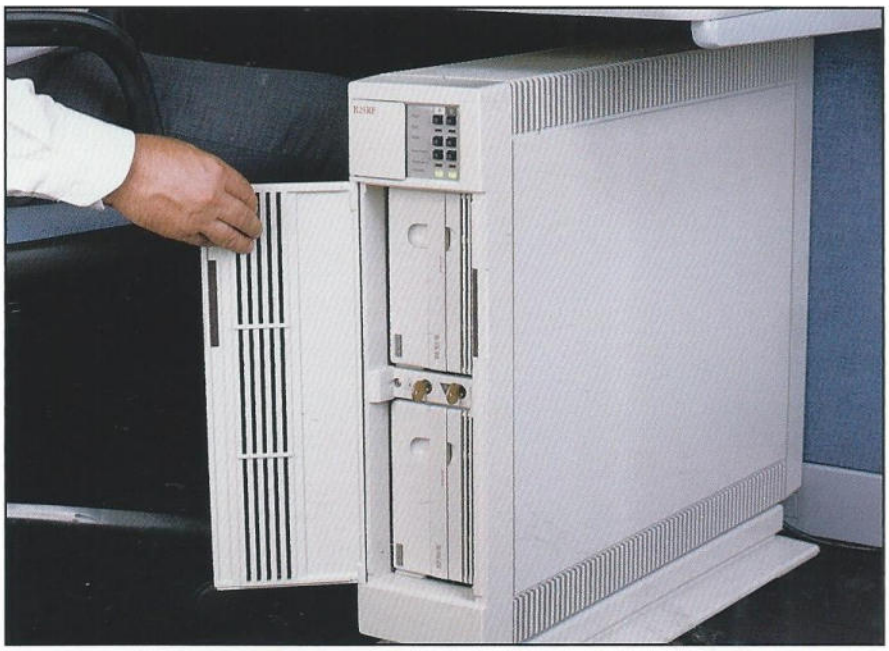
The Removable Rackmounted Storage Products are also available as part of a family of Custom Platform Systems that include Digital MicroVAX 3000-class CPUs packaged with RF30 and RF71 RSEs in cabinet racks.

Custom Platform Systems

For customers who want maximum convenience when configuring and ordering their computing equipment, Digital's Custom Platform Systems are complete, preconfigured packages consisting of Digital CPUs and removable data storage products. Based on the popular VAXstation 3100 and MicroVAX 3000-family, Digital's Custom Platform Systems meet customer needs for high-performance host system technology and high-density, high-capacity, fully-removable storage subsystems.

Removable Pedestal-mounted Storage

If your organization requires large volumes of secure data for its Q-bus-based MicroVAX systems, Digital's Removable Pedestal-Mounted Storage systems can meet your needs. These systems feature an attractive, office-compatible expansion pedestal which holds up to two Removable Storage Elements (RSEs). The RF30 RSE (150 megabytes of formatted storage) and RF71 RSE (400 megabytes of formatted storage) are advanced, 5.25-inch Winchester disk drives housed in protective canisters that can be physically removed from the office



pedestal and carefully safeguarded to ensure confidentiality.

Digital's Storage Systems Interconnect (DSSI) technology enables users to connect up to six RF30 or RF71 RSEs in any combination to individual MicroVAX systems with either the Q-bus-based KFQSA adapter or an embedded adapter. Up to 2.4 Gigabytes storage capacity can be added to any MicroVAX system; additional capacity can be achieved with other configurations. The result is abundant storage capacity, increased I/O throughput, enhanced data integrity, and availability.

Tailored Service

The Removable Desktop Storage Family is fully warranted and serviced by Digital.

Digital provides one of the most comprehensive portfolios of services in the industry, designed to support customers throughout the computing life-cycle — planning and design, implementation, and ongoing maintenance. Services range from traditional on-site hardware and software services, to multi-vendor and network maintenance support, to facility construction and recovery services, to security consulting services.

The type and amount of support necessary to meet individual needs may be custom tailored. Whatever the service solution, you benefit from a single point of contact.

Removable Storage Elements Specifications

	RF30	RF71
Capacity		
Formatted capacity	150MB	400MB
Unformatted capacity [1]	200MB	532MB
Performance		
Throughput I/O req/sec. [2]	32	32
Response time with controller [3]	35ms	34.2ms
Peak transfer rate	1.5MB/s	1.5MB/s
Average seek time	21ms	21ms
Average rotational latency	8.3ms	8.3ms
Start/stop time (maximum)	15 s/15 s	15 s/15 s
Canister Characteristics		
Height	11.2cm (4.4 in.)	11.2cm (4.4 in.)
Width	18.4cm (7.25 in.)	18.4cm (7.25 in.)
Depth	32cm (10.3 in.)	26.2cm (10.3 in.)
Weight	3.2kg (7 lbs)	6.5kg 14.3 lbs)

1 Unformatted capacity is provided for comparison purposes only. Only formatted capacity is accessible to the user in any disk drive.

2 For typical VAX I/O environment, with specification margin and subsystem overhead. The throughput specified is measured with double-buffered single-sector random reads.

3 The response time specified is measured at the controller interface with single-threaded single-sector random reads.

For More Information

Digital will work with you to evaluate your application needs and help configure the most appropriate storage systems based on your business requirements.

For more information on Digital's removable storage solutions, contact your local Digital Sales Representative or call 800-832-6277 or 603-884-8990. Additional information on Digital's removable storage solutions is available in Digital publication #EC-F0318-45.

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Specifications, SCSI Disk-based Products

	RZ55-Based Products	RZ56-Based Products
Formatted capacity	332MB	665MB
Average access time	24ms	24.3ms
Peak transfer rate, MB/Sec.	1.25*	1.5*
Form factor	5.25″ (Full-Height)	5.25″ (Full-Height)
Power Requirements (DC)		
Voltage	120 VAX	
Frequency	60 Hz.	
Operating Environment		
Temperature	10°C to 40°C (50°F to 104°F)	
Relative Humidity	8% to 80% with a maximum wet bulb 25.6°C (78°F) Non-condensing	
Altitude	8,000 feet	
Non-operating Environment		
Temperature	-30°C (-22°F) to 66°.C (151°F)	
Relative Humidity	8% to 95% with a maximum wet bulb 46°C (115°F) Non-condensing	
Altitude	16,000 feet	
Mechanical Shock		
Operating	2 g-force for 10ms. (Half-Sine Wave)	
Non-Operating	40 g-force for 11 ms. (Half-Sine Wave)	
Physical Characteristics		
Measurement	Canister	Chassis
Height	4.5 in. (11.43 cm)	5.6 in. (14.22 cm)
Width	7.5 in. (19.05 cm)	8.6 in. (21.84 cm)
Depth	10.25 in. (26.04)	17.5 in. (44.45 cm)
Weight	11.5 lbs. (5.22 kg)	12.2 lbs (5.54 kg)

*4.0 MB/s in Bus Synchronization Mode in the DECstation 3100 system

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