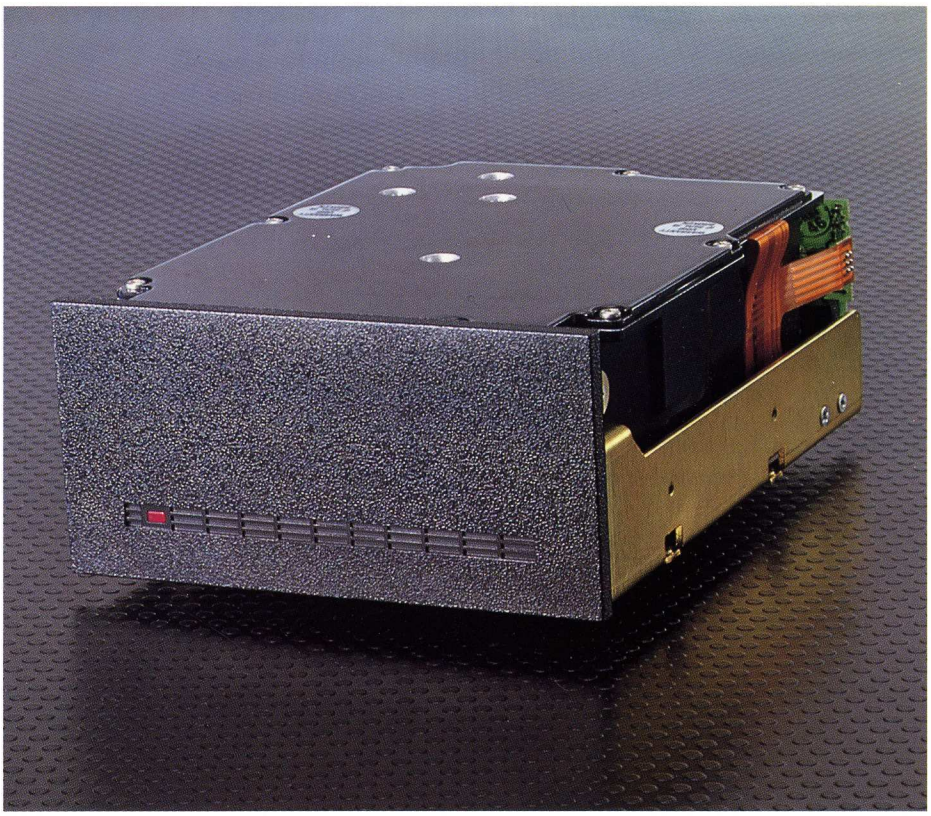
Wren™ VII
5¼-Inch Rigid Disk Drive

IMPRIMIS

The Imprimis Wren VII is a high-capacity full-height 5¼-inch Winchester disk drive. The Wren VII features the high performance and reliability designed into the Wren family of products. The Wren VII is offered in the high performance SCSI interface.

The Wren VII provides 1.2 gigabyte (GB) unformatted storage using Zoned Bit Recording (ZBR) with a data transfer performance of 15 to 21 MHz. The Wren VII includes an enhanced SCSI interface and a 256 KB data buffer with improved Read Look Ahead features. ZBR is an exclusive feature of Wren drives with the SCSI interfaces. The Wren VII offers high capacity and fast average access time of 16.5 msec. Wren VII is tomorrow's capacity and performance with today's technology and availability.

The reliability of the Wren VII drive is enhanced by incorporation of a lifetime environmental control system with a patented low vapor diffusion breather filter, high performance-low noise thin film media, thin film heads and surface mount technology (SMT) circuit boards.



Features

- Capacity of 1.2 gigabyte (GB) unformatted
- SCSI interface
- In-hub spindle motor allows eight disks in 5¼-inch form factor
- Average seek as fast as 16.5 msec
- Patented tri-phase servo for faster access
- Transfer rate of 15-21 MHz (SCSI)
- Synchronous data rate up to four Mbytes/sec (SCSI)
- Read Ahead Buffer Management
- Zoned Bit Recording (ZBR)
- Low audible noise
- Low power consumption – 27 watts
- Cool operation – no external cooling required
- 40,000-hour MTBF
- Patented low vapor diffusion breather filter
- Read/write heads automatically retract to non-data zone
- Automatic actuator restraint/ shipping lock
- Internal shock mounts
- Patented, balanced, low-mass, straight-arm, rotary, voice coil actuator
- No mounting restrictions
- Surface mount technology reduces electronics to two boards

Tri-phase Servo

This patented servo design allows greater servo sampling, allowing faster actuator speeds than conventional designs. A unique feature of this design is the automatic single track seek error correction capability.

Eight-Disk Design

The Wren VII utilizes eight platters of thin film media. The industry standard form factor is achieved by the use of a high energy, low power in-hub spindle motor.

The servo surface of the Wren VII has been moved from the more traditional lower surface of the bottom platter to the center of the platter stack. This design reduces the effect of off data track errors due to thermal changes and shock, thus adding margins to the drive.

Low-mass Actuator Improves Performance

The heads are mounted on a patented straight-line arm connected to a balanced rotary voice coil actuator. This design has 60 percent less mass than other designs. High-energy magnets in the voice coil further improve speed, resulting in a typical average seek of 16.5 milliseconds.

Applications

The Wren VII is designed for applications where capacity and performance are important. These applications frequently are multi-user, multi-tasking systems and local area networks with file server requirements.

- Small business systems
- Office automation
- Word processing
- Local area networks
- Multi-user microcomputers
- Engineering workstations
- CAD/CAM
- Artificial intelligence

SCSI Interface

The embedded SCSI controller conforms with the ANSI SCSI standard and the Common Command Set. The SCSI interface supports multiple initiators, disconnect/reconnect, self-configuring host software and automatic features that relieve the host from the need to deal with the physical characteristics of the disk drive.

Low Power Consumption

The Wren VII typically draws only 27 watts, resulting in cool operation, higher MTBF and reduced operating cost.

Read Ahead Buffer Management

The Wren VII SCSI device contains an intelligent 256K data buffer that provides a Read Look Ahead function. All data from the starting logical block address to the end of the physical track is read into the data buffer. This buffer data is then available for subsequent read commands, eliminating the need to access the disk. A substantial increase in data throughput is achieved.

Lifetime HDA Environmental Control

The head disk assembly of the Wren VII incorporates a lifetime environmental control system with a patented low vapor diffusion filter. This system uses advanced two-phase air filtration, activated carbon to absorb thin film media harmful gases, and a unique desiccant module that controls HDA internal humidity. A capillary tube in the breather filter restricts water vapor entry.

The base casting is epoxy coated and all HDA internal metal parts are coated. This lifetime environmental control system provides internal humidity and corrosion control, and absorption of harmful gases, resulting in a higher margin product.

Quality Designed In

Features such as HDA environmental control allow Imprimis to provide the high-performance high-reliability disk drives in the high volumes demanded today. The margins are designed into the Wren VII to allow maximum application flexibility.

Product Safety Standards

All Wren family products meet requirements for UL, CSA and VDE certification. Wren drives are supplied as Class A computing devices per FCC rules governing radio frequency and electromagnetic interference.

Maintenance and Spares

All Imprimis products are backed by a comprehensive maintenance and spares support program.

Repair

Imprimis provides a dedicated repair facility for all Wren family products.

The Wren Family

The Wren family provides a range of models from 48 to 1200 megabytes.

- Wren II: 48 to 135 Mbytes
  - — ST506
  - — ESDI
  - — RLL to 135 Mbytes
- Wren II HH:
  - — ST506 51 Mybtes
  - — RLL to 77 Mbytes
  - — PCAT to 80 Mbytes
- Wren III: 101 to 182 Mbytes
  - — ESDI
  - — SCSI
- Wren III HH: 106 Mbytes
  - — ESDI
  - — SCSI
- Wren IV: 350 to 376 Mbytes
  - — SCSI
- Wren V: 383 to 702 Mbytes
  - — ESDI
  - — SCSI
- Wren V HH: 209 Mbytes
  - — SCSI
- Wren VI: 766 Mbytes
  - — ESDI
  - — SCSI
- Wren VI HH: 182 to 383 Mbytes
  - — ESDI
  - — PCAT
- Wren VII: 1200 Mbytes
  - — SCSI

Specifications	94601-12G
Capacity Mbytes	
SCSI-unformatted	1200
Configuration	
Number of disks	8
Data surfaces	15
Servo surfaces	1
Recording method	ZBR
Performance	
Average seek time (ms)	16.5
Data transfer rate (Mbits/sec)	15-21
Reliability and Maintainability	
Error rate	
Recoverable	1 in 10^{10} bits read, max
Unrecoverable	1 in 10^{12} bits read, max
Seek	1 in 10^{6} seeks, max
MTBF	40,000 hours
Preventive maintenance	None
Power Requirements	
DC	+12V (± 5%) 1.7A typical +5V (± 5%) .8A typical
Power dissipation	27 Watts
Environmental	
Temperature	
Operating	10° to 50° C (50° to 122° F)
Storage	−10° to 54° C (14° to 120° F)
Transit	−40° to 70° C (−40° to 158° F)
Relative humidity	
Operating	8% to 80%
Storage	8% to 90%
Transit	5% to 95%
Altitude	
Operating	−300 m to 3000 m (−1,000 to 10,000 ft)
Transit	−300 m to 12,000 m (−1,000 to 40,000 ft)
Acoustical noise	
Operating	Less than or equal to 50 dBa
Physical	
Height	82.55 mm (3.25 in)
Width	147 mm (5.75 in)
Depth	203 mm (8.0 in)
Weight	3.9 kg (8 lbs)

Specifications subject to change without notice.

IMPRIMIS

A Subsidiary of Control Data

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