Wren™ 5¼-inch Rigid Disk Drive

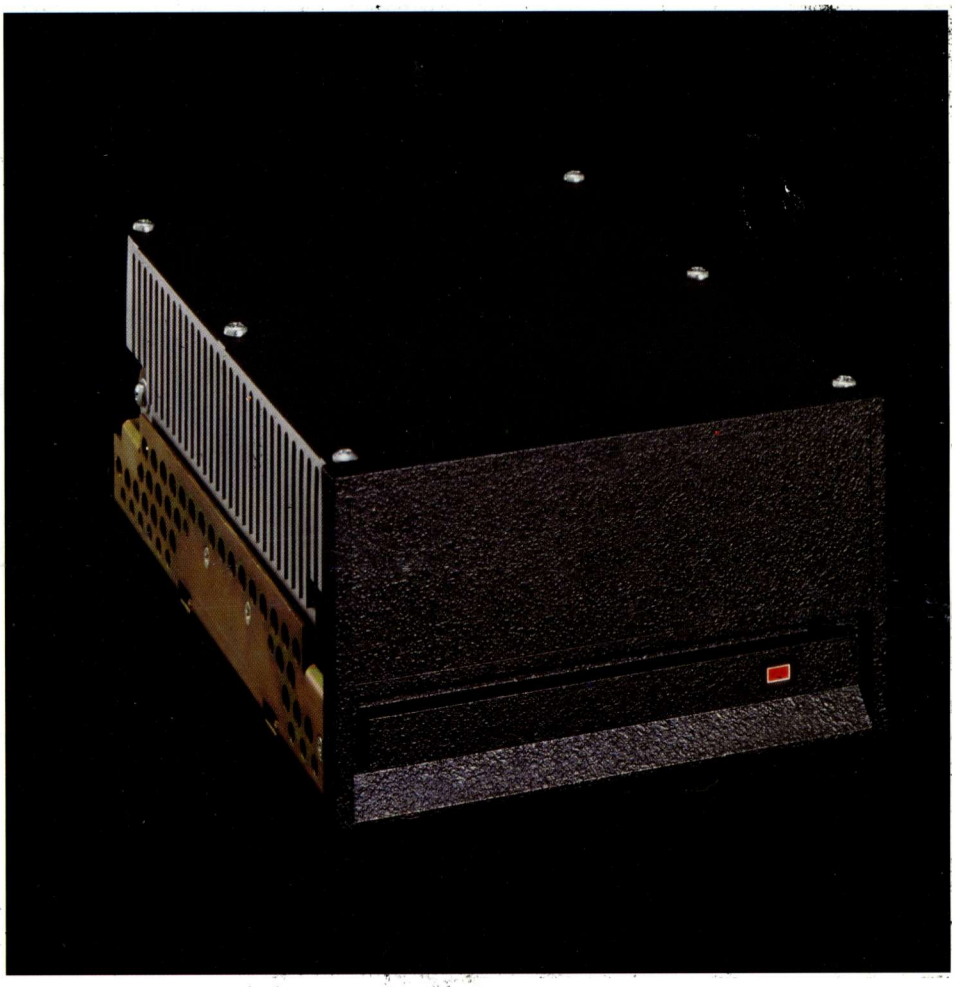
Designed for Original Equipment Manufacturers (OEM)

The Control Data 9415 Wren Disk Drive is a 5¼-inch unit that provides 21 to 86 megabytes of unformatted storage. Data is stored on non-removable, lubricated media contained in an ultra clean, sealed recording environment.

A Wren drive mounts vertically or horizontally in the same space as a 5¼-inch Flexible Disk Drive (FDD).

Features

- ☐ Full data recovery circuitry (with the -6 ESDI and -3 FDI interfaces)
- ☐ User-defined sectoring
- ☐ Ultra clean, sealed head, disk and actuator chamber
- ☐ Rotary arm voice coil actuator
- ☐ Dedicated head-landing zone
- ☐ Automatic actuator restraint
- ☐ Microcomputer control
- ☐ Closed loop servo system
- ☐ Brushless DC motor
- ☐ Large-Scale Integrated (LSI) circuits
- ☐ Low noise level for office use
- ☐ No preventive maintenance
- ☐ Maximum power dissipation less than 130 Btu per hour
- ☐ Internal shock mounts
- ☐ Vertical or horizontal mounting
- ☐ Same mounting as 5¼-inch FDD



Wren II

Interface

The Wren is available with three drive level interfaces:

-5—An MFM transfer code that provides compatibility with the Seagate ST506/ST412 interface. This interface has a transfer rate of 5 megabits per second and a track capacity of 10,416 bytes.

-6—Enhanced Small Device Interface (ESDI) incorporates data recovery and separation functions in the drive (Wren II only). The ESDI supports either step or serial modes and the three following sectoring modes: address marks, sector pulses or byte clock. ESDI provides a 5 megabit per second transfer rate.

-3—An NRZ data plus clock transfer code that provides compatibility with the FDI Interface CDC® 9410 Series Drives (Wren I only). This interface has a transfer rate of 4.84 megabits per second and a track capacity of 10,080 bytes.

Heads and Disks

The Wren drive contains disks that are located in an environmentally sealed chamber. No unfiltered outside air is drawn into the unit. Air is recirculated within the disk/actuator chamber and passes through a filter to ensure a contamination-free environment.

Wren drives use the latest technology. This includes low mass, lightly loaded read/write heads.

Wren I

Positioning System

The heads are attached to a precisely controlled rotary-arm voice coil head positioner. A microcomputer and a dedicated servo surface provide head positioning control.

Electronics

The servo positioning system, combined with Phase-Locked Oscillator (PLO) data recovery and reference clocking on the 9415-6 and -3, can increase data integrity and provide precise recovery of written data.

Applications

- ☐ Desktop computers
- ☐ Small business systems
- ☐ Word processing systems
- ☐ Automated office multi-user systems
- ☐ Distributed processing networks
- ☐ Process control
- ☐ Automated test equipment
- ☐ Numerical control
- ☐ CAD/CAM systems

Options/Accessories

- ☐ Power supply with cables
- ☐ Front panel with indicator
- ☐ Maintenance manual

Maintenance and Spares

All Control Data products are backed by comprehensive maintenance and spare parts support programs.

SPECIFICATIONS

	Wren I 9415-21	Wren I 9415-36	Wren II 9415-48	Wren II 9415-67	Wren II 9415-86
Capacity (Mbytes)					
-3 Interface (FDI)	21.07	35.12	NA	NA	NA
-6 Interface (ESDI)	NA	NA	48.3	67.6	86.91
-5 Interface (ST506)	21.77	36.29	48.2	67.4	86.71
Configuration					
Number of Disks	2	3	3	4	5
Data Surfaces	3	5	5	7	9
Servo Surfaces	1	1	1	1	1
Tracks Per Surface	697	697	925	925	925
Track Density (TPI)	800	800	960	960	960
Recording Density (BPI)					
-3 Interface	8,730	8,730	NA	NA	NA
-6 Interface	NA	NA	9,274	9,274	9,274
-5 Interface	9,000	9,000	9,274	9,274	9,274
Recording Method	MFM	MFM	MFM	MFM	MFM
Performance					
Rotation Speed	3,600 r/min				
Average Latency	8.33 ms				
Access Time (ms)					
Track-to-Track, Max	9	9	8	8	8
Track-to-Track, Typical	5	5	7	7	7
Average, Worst Case*	45	45	35	35	35
Average, Typical	40	40	30	30	30
Maximum, Worst Case*	90	90	75	75	75
Minimum, Typical	80	80	70	70	70
Step Pulse Rate (kHz)	125 max	125 max	125 max	125 max	125 max

*Worst case averages are derived by dividing the sum of the times for all possible seeks by the total number of seeks for all temperature and voltage tolerances.

Typical access times are derived from observed values under normal operating conditions.

	-3 (FDI)	-6 (ESDI)	-5 (ST506)
Interface			
Type	-3 (FDI)	-6 (ESDI)	-5 (ST506)
Transfer Rate (Mbits/s)	4.84	5.00	5.00
Data Code	NRZ	NRZ	MFM

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	15,000 hours
MTTR	.5 hours
Preventive Maintenance	None
Service Life	5 years or 30,000 hrs
Power Requirements	
AC	Not required
DC	+12 V(±5%), +5 V(±5%)
Power Dissipation	28 W (95.5 Btu), typical
Environmental	
Temperature	10 to 46°C (50 to 115°F)
Humidity	20 to 80% RH
Altitude	−300 to 3,000 m
Physical	
Height	82.55 mm (3.25 in)
Width	147 mm (5.75 in)
Depth	203 mm (8 in)
Weight	3.56 kg (8 lb)

Specifications subject to change without notice.

Control Data sales offices are located in principal cities throughout the world.

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