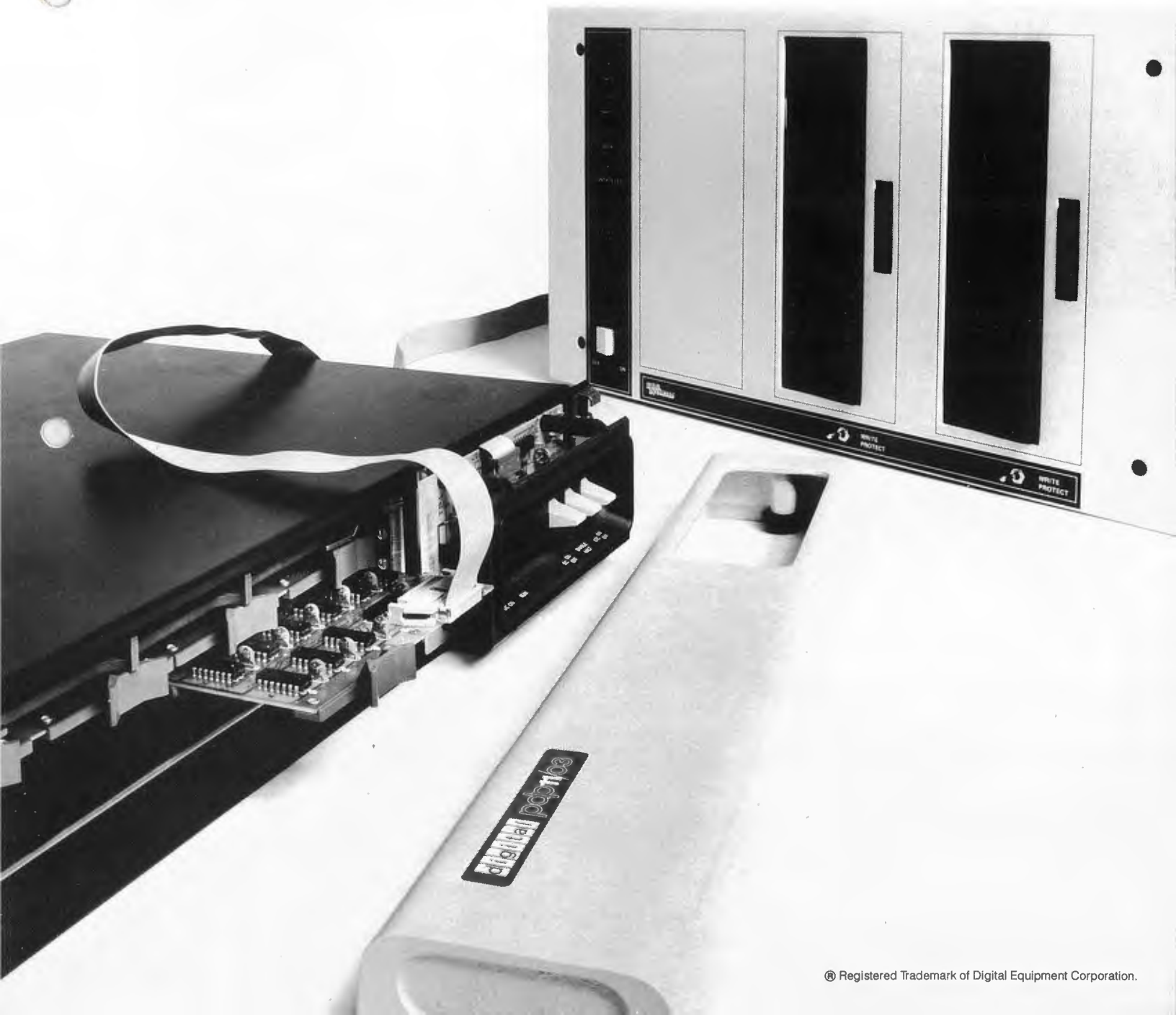
628

The DSD-210 Floppy Disk System is totally compatible with any DEC® minicomputer.



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Total DEC compatibility, and more.

The DSD 210 floppy disk system is 100% compatible with all DEC® PDP®-8, PDP®-11 and LSI-11 systems. And it's head and shoulders above its only competition, DEC's RX01.

The DSD 210 costs you less, you can have it sooner, and it provides you with more useful features.

Compare them side by side and decide for yourself which gives you better value.

	DSD 210	DEC RX01
PDP-8, PDP-11, LSI-11 hardware, instruction set, and media compatible	YES	YES
Software compatible with all DEC operating systems	YES	YES
IBM 3740 Format	YES	YES
Write protect switches	**YES**	**NO**
Automatic head unload	YES	YES
Ceramic read/write head	YES	YES
Holds 256,256 bytes per diskette	YES	YES
Diskette formatting capability	**YES**	**NO**
Drives per controller	**1, 2 ,or 3**	**1 or 2**
Interchangeable 50/60 Hz operation	**YES**	**NO**
Digital phase-lock-loop data separation circuit	YES	YES
Front panel activity LED lights	**YES**	**NO**
Front panel system status indicators	**YES**	**NO**
Modular construction	**COMPLETE**	**PARTIAL**
Self-testing microcode	**EXTENSIVE**	**MINIMAL**
Field-proven Shugart drives	**YES**	**NO**
Delivery time	**WEEKS**	**MONTHS**

Data Systems

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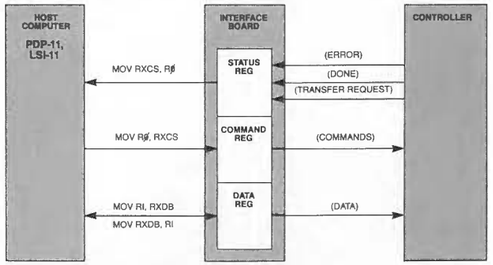
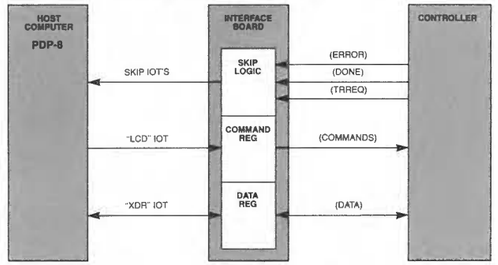
Software

These I/O instructions access the DSD 210. They are identical to those used for the DEC RX01.

PDP-11 and LSI-11



PDP-8/A,/E,/F,/M



DSD 210-11 and DSD 210-L11 Peripheral Device Register Definitions.

Command and Status Register (RXCS=17717∅)

Bits 15: Error detected, cleared by initialize or new command.
14: DSD 210 initialize.
13-8: unused
7: Transfer Request
6: Interrupt enabled, On done
5: Done Flag (read only); third unit select (write only)
4: Unit select
3-1: Function select
0 = fill buffer
1 = read buffer
2 = write sector
3 = read sector
4 = not used
5 = read status
6 = write deleted data
7 = read error register
0: Execute

Data Buffer Register (RXDB=177172)

RXDB—Data Buffer
The RXCB may represent one of four controller registers. The protocol of the function in progress determines RXDB context.

RXTA—Track Address

RXSA—Sector Address

RXES—Error and Status

Bits 15-8: Not used
7: Drive ready-selected drive has diskette installed and up to speed
6: Deleted data was read on last sector
5-4: Not used
3: Diskette write protected
2: Initialize done
1: Parity error detected; sets RXCS ER
0: CRC error detected on data read; sets RXCS ER

Interrupts.
The DSD 210 interrupts on priority level 5 to LØC 264.
Format function.
To format, specify a write operation to sector number 152_8 of the track to be formatted. 26 sector numbers pass through the RXDB in sequence to specify the sector interleaving pattern.

DSD 210-8 IOT Definitions.

675∅—Not Used
6751 LCD—Load Command Register; Clear AC.

Bits 0-3: not used
4: Maint. mode
5: 1=8 bit mode
0=12 bit mode
6: Third unit select
7: Unit select
8-10: Function select
0 = fill buffer with 64 12-bit words or 128 bytes.
1 = read buffer
2 = write sector
3 = read sector
4 = not used
5 = read status
6 = write deleted data
7 = read error register
11: not used

6752-XDR—Transfer Data Register

When the controller is done, the XDR instruction can be used to transfer the RXES from the interface register to the AC.

Bits 0-3: unused
4: Drive ready, selected drive has diskette installed and up to speed.
5: Deleted data was read on last sector.
6-7: not used
8: Diskette write protected
9: Initialize done.
10: Parity error detected; sets RXCS ER.
11: CRC error detected on data read; sets RXCS ER.

6753-STRF—Skip on transfer request; clear flag. (An XDR instruction is requested.)
6754-SERF—Skip on error flag set; clear flag.
6755-SDNR—Skip on done flag set; clear flag.
6756-INTR—Enable or disable disk interrupts.
AC-11=1 enables interrupts on flag set.
AC-11=0 disable interrupts.
6757-INIT—Initialize the DSD-210 controller and interface.

Short delivery simplifies your buying projections.
You don't have to project your configuration mix six months to a year in advance.

Interface cards eliminate unnecessary cabling by plugging directly into the computer chassis.
Our PDP-11 card plugs into any small peripheral controller slot; our LSI-11 card plugs into any QBus slot; and our PDP-8 card plugs into any Omnibus® slot.

IBM 3740 formatting capability lets you format diskettes in any standard IBM sector interleaving scheme.
Allows optimum sector interleaving and eliminates the need for interleaving in software.

Self-testing microcode and front panel indicators guard against undetected errors.
The self-testing microcode confirms the correct operation of the formatter/controller as well as many drive functions. If an error occurs, front panel indicators aid in its quick diagnosis and correction.

Microprocessor controller minimizes external interconnections.
Eliminates a major source of computer system problems.

Complete documentation and necessary hardware comes with every system.
You get a general product description, software manual, complete schematic, a parts list cross-indexed to the vendor's part number so you can buy spares direct; one diskette for each drive; diagnostic paper tapes; diagnostic and formatting program and bootstrap program in source and binary forms; a power cord; and the appropriate interface card.

Digital phase-lock-loop data separator assures accurate data retrieval.
A 20 MHz clock keeps the system completely stable.

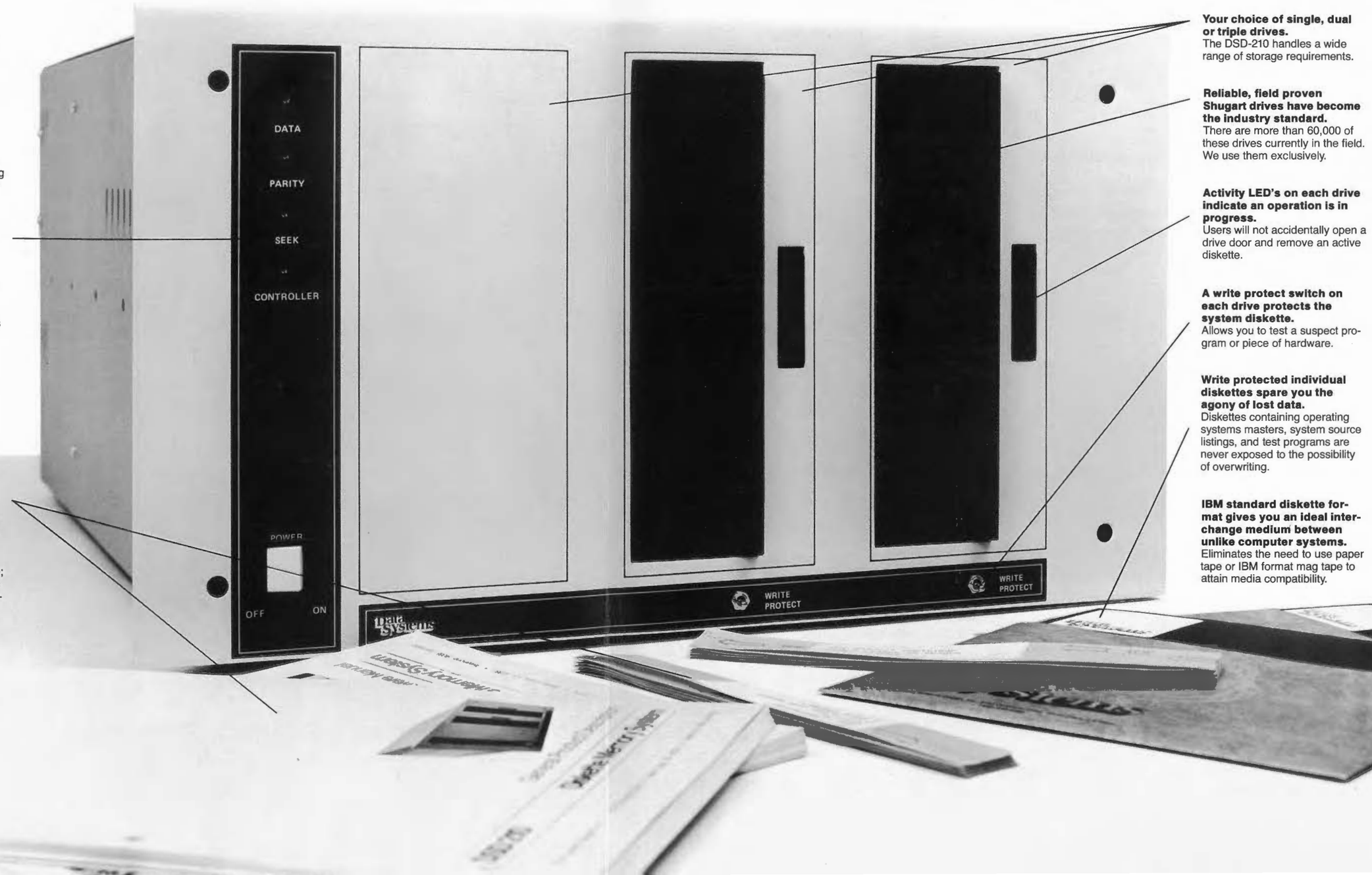
Automatic head unload reduces disk/head wear.
The head unloads automatically if there is no operation pending. It automatically reloads when there is data to be written or read.

Low cost conversion kit changes unit between 50 and 60 Hz operation.
You can order systems at 60 Hz for local checkout and then switch them to 50 Hz for shipment.

PC board legends identify each device for easier troubleshooting.
You get a quick association between a device on a schematic and a device on a PC board.

Switches on the controller board assign logical unit numbers to the physical units to aid in diagnosing disk drive related problems.
You can reassign or deassign the logical unit number of a faulty drive to isolate a drive error.

Completely modular construction lets even semi-technical users swap modules with only the simplest of tools.
There are no soldered connections between major modules. All connectors and connections are keyed to eliminate guesswork or misconnections.



Your choice of single, dual or triple drives.
The DSD-210 handles a wide range of storage requirements.

Reliable, field proven Shugart drives have become the industry standard.
There are more than 60,000 of these drives currently in the field. We use them exclusively.

Activity LED's on each drive indicate an operation is in progress.
Users will not accidentally open a drive door and remove an active diskette.

A write protect switch on each drive protects the system diskette.
Allows you to test a suspect program or piece of hardware.

Write protected individual diskettes spare you the agony of lost data.
Diskettes containing operating systems masters, system source listings, and test programs are never exposed to the possibility of overwriting.

IBM standard diskette format gives you an ideal interchange medium between unlike computer systems.
Eliminates the need to use paper tape or IBM format mag tape to attain media compatibility.

Specifications

Storage Medium	Type: IBM Diskette or Certified Equivalent
	Number of Tracks: 77
	Tracks Per Inch: 48
	Track Width: .3048 mm (.012 in)
	Track-To-Track Spacing: .508 mm (.020 in)
Recording Technology:	Recording Mode: Double Frequency
	Bit Density (Inner Track): 3200 bpi
	Bit Transfer Rate: 250K bits per second
	Read/Write Head: Ceramic
Maximum Capacity (Unformatted):	Drive: 3.2 megabits
	Track: 41.7 kilobits
Maximum Capacity (Formatted):	Drive: 256,256 Bytes
	System: 768,768 Bytes
Disk Speed:	Rotational Speed: 360 RPM ±2%
	Rotational Time: 166 ms
	Average Latency: 83 ms
Head Positioning (Access) **Time:**	Head Positioning: 8 ms track-to-track
	Head Loading Time: 40 ms
Environmental Characteristics:	Operating Temperature: 15.5°C (60°F) to 32°C (90°F)
	Maximum Rate of Change: 15°F per hour
	Relative Humidity: 20% to 80% at 29.4°C (85°F)
	Storage Temperature: −40°C (−40°F) to 51.6°C (125°F)
Power Requirements (Dual Drive):	AC Voltage (Standard): 115 VAC, 60 Hz@ 2.5 Amps
	AC Voltage (Optional): 115 VAC, 60 Hz, or 230 VAC, 60 Hz, or 230 VAC, 50 Hz
Physical Characteristics:	Height: 266.7 mm (10.5 in)
	Width: 431.8 mm (17 in)
	Depth: 571.5 mm (22.5 in)
	Weight (dual drive): 24.5 kgs (54 lbs)

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