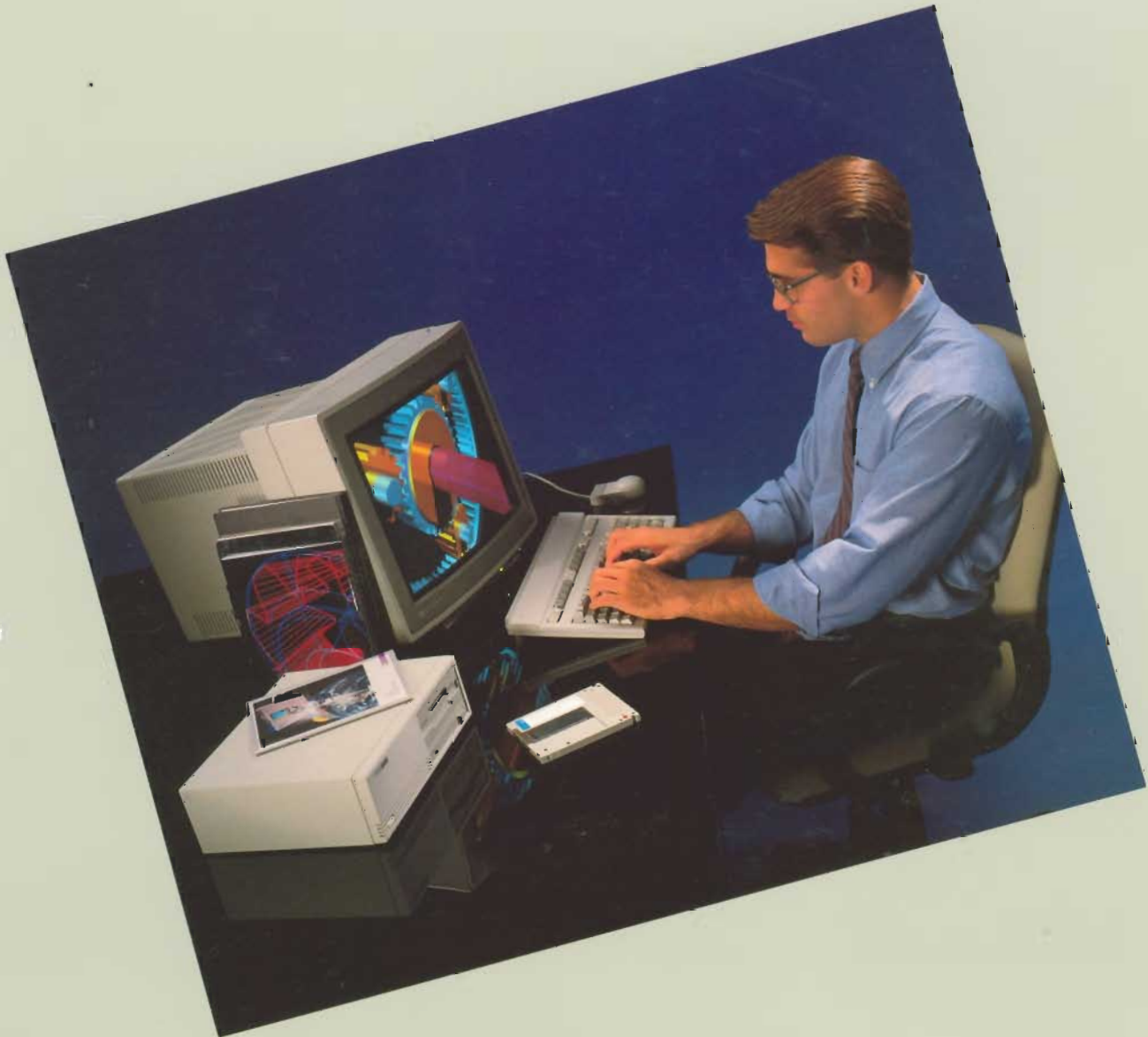# The HP Series 6300 Model 650/A Rewritable Optical Disk Drive

Product Brief

A new way of thinking about data storage that provides quicker, easier access to all of your work

Imagine the ease of using a computer system that has enough storage capacity to save huge text, image, graphic or voice files without running out of space. . . .

Imagine being able to retrieve a file you haven't accessed in years, within seconds, without having to search for a tape buried in a tape library. . . .

Imagine having direct access to several years worth of work, and think about the effect that would have on your ability to perform analyses and make crucial decisions. . . .

Imagine feeling secure knowing that your files can be archived for at least ten years with no maintenance whatsoever, and remain just as readable as the day they were saved. . . .

These capabilities and more are available today with the HP Series 6300 Model 650/A Rewritable Optical Disk Drive. . . .

It's a new way to think about data storage, limited only by your imagination.

The Model 650/A is a Direct Access Secondary Storage (DASS) system that fills the gap between high-performance hard disks and low-cost tape storage systems. It allows random access to vast amounts of information that can be changed and rewritten as often as necessary.

Direct Access Secondary Storage (DASS)
The Model 650/A provides economical "online" storage to previously "offline" data because storage capacity can be increased simply by purchasing additional media. The Model 650/A works best with large or infrequently accessed files due to an average access time of 107 ms and a sustained read transfer rate of 680 Kbytes per second. Like hard disks, no special software is required to use the drive.

Unlike tape systems, where a file must first be located and then copied to a hard disk for data manipulation, the Model 650/A allows you to work with data directly on the rewritable optical disk. Its sustained write transfer rate of 340 Kbytes per second allows faster backup than with 1/4-inch tape systems. (The write transfer rate is half the read rate because writes require two passes.)

Reliable, Durable Media
The Model 650/A takes advantage of Magneto-Optical technology to write and read data. A laser light focuses on the disk's inner magnetic layer, so minor scratches, dust or fingerprints on the outer surface have no effect on the integrity or readability of the data. Optical disks are immune to head crashes, and they're not susceptible to damage from magnetic interference, radiation, and common office mishandling. An unlimited number of write/rewrite passes can be made with

no degradation of data. These durable disks can be stored for at least ten years with no loss of data and, unlike conventional tape backup systems, no retensioning, reconditioning or maintenance is required.

High-capacity Storage
The 5.25-inch rewritable optical disks used with the Model 650/A provide 325 megabytes of storage per side. Eject the disk and turn it over for a total of 650 megabytes of storage per disk. One optical disk provides the same storage capacity as nine HP9144A 1/4-inch cartridge tapes or sixteen 1600 bpi 1/2-inch tapes at a comparable price. But optical disks require no special maintenance, so they're more cost effective per megabyte than tapes. In addition, they're easier to transport and mail, and they require less room for storage.

Supporting Industry Standards
Hewlett-Packard's Model 650/A protects your long-term investment by supporting industry standards. The Model 650/A conforms to the ANSI and ISO definition for Continuous Composite format, providing compatibility with the rewritable drives and media of other manufacturers.

SCSI Interface
The Model 650/A implements the Small Computer Systems Interface in asynchronous mode.

HP Service and Support
HP's worldwide organization provides a local, familiar service and support team, now and in the future.

The following applications will realize tremendous benefits from direct access and repeated modification of large data files:

High-performance graphics file **storage,** especially in 3D design automation, image processing, simulation, solids modeling, and animation.

Historical data collection and analysis, especially for manufacturing processes, sales history, financial results, and customer records.

Data backup where convenient file retrieval is necessary.

Data security where sensitive files need to be removed for safekeeping.

Removable Media
Storage capacity of the Model 650/A expands infinitely with the purchase of additional disks. Also, removable disks ensure the security of your data, allowing you to lock sensitive data disks in a safe, store them in a secure area, or take cartridges with you when you leave the office.

Markets

The Model 650/A excels in applications where large volumes of completed work files or collected data must be stored, but where direct access to the data is necessary for repeated use and modification.

High-performance graphics workstation users will notice significant improvements in productivity by being able to repeatedly access and modify large files.

Military or Defense installations with a need to transport or secure sensitive data files can take advantage of removable media.

Small multi-user systems or small workstation/PC networks can use the Model 650/A as a file server providing direct access to rewritable data.

Features	Advantages	Benefits
High-capacity, rewritable optical storage.	More data can be stored "online."	You have quicker, easier access to vast amounts of data.
Removable disks.	Disks can be removed for safety; storage capacity is infinitely expandable by purchasing additional disks.	One slim disk equals nine 1/4-inch tape cartridges, so the disks take less storage space. More convenient data security and/or data sharing.
Random access.	Archived files do not need to be copied to a hard disk; you work directly with the archives.	Archives can be searched quickly, so you have direct access to the data you need.
Industry standard format.	Multiple sources are available for media. Compatible growth path is ensured.	Media costs are lower. Data interchange will be possible between vendors.
Magneto-Optical laser technology.	Disks can be written to and erased repeatedly without media wear or data degradation.	Your investment in media can be defrayed over 10 years or longer.

Technical Information*

Performance Specifications

Formatted capacity
1024 byte sectors	650 Mbytes (325 per side)
512 byte sectors	594 Mbytes (297 per side)

Seek Times
Short stroke (across 2.2 Mbytes)	22 ms
Average	95 ms
Full stroke	185 ms

Average Rotational Delay 12.5 ms

Data Transfer Rate
Reads (maximum sustained)	680 Kbytes/sec.
Writes (maximum sustained)	340 Kbytes/sec.
Burst	1.2 Mbytes/sec.

Disk Performance Index (1 Kbyte)
Short Stroke Read	27.0 I/Os/sec.
Average Read	8.9 I/Os/sec.
Average Write	7.3 I/Os/sec.

Recording Characteristics
Continuous Composite Format
Bytes per Sector	512/1024 media dependent
Sectors per Track	31/17 media dependent
Tracks per surface	18751
Tracks per inch	15875
Error Rate	Less than 1 block in error per 10^{14} bytes

Interface   SCSI single-ended, asynchronous

Environmental Conditions

Shock (non-operating)   80 G @ 3 ms half-sine waveform

Vibration (5-500 HZ)
Operating	0.21 G rms
Non-operating Random	2.40 G rms
Non-operating Swept-sine	0.75 G 0-peak

Altitude
Operating	4,572 m (15,000 ft.)
Non-operating	15,240 m (50,000 ft.)

Acoustic Emissions
(A-weighted sound power)   5.0 bels

	SUBSYSTEM	MEDIA
Temperature		
Operating	10° to 40°C	10° to 50°C
Non-operating	-30° to 60°C	-10° to 55°C
Gradient	10°C/hour	10°C/hour
Transportation (<14 consecutive days)		-40° to 60°C

Humidity (non-condensing)		
Operating	15 to 80%	10 to 80%
Non-operating	10 to 90%	10 to 90%
Maximum Wet Bulb	29°C	29°C

Power Requirements

Line Voltage
120V setting	100-127V, single phase
240V setting	200-240V, single phase

Line Frequency   50-60 Hz

Power Consumption (typical)   175 Watts

Service Characteristics

Mean time to repair	30 minutes
Preventive maintenance	None required

Physical Characteristics

Dimensions
Height	105 mm (4.25 in)
Width	325 mm (12.8 in)
Depth	285 mm (11.2 in)

Weight
Net	8.6 kg (19.0 lb)
Shipping Weight	11.2 kg (24.7 lb)

Product Certifications

Safety
IEC 380; 435
UL 478 (5th Edition) Listed
CSA 220-M1986
TUV approved to VDE 0806

Electromagnetic Emissions
FCC 47 CFR Part 15, Subpart J - Class "B"
FTZ 1046/84 - Level "B"
CISPER 22, ODB
SABS

Laser
IEC 825
CDRH 21 CFR Chapter 1, Subpart J Registered
TUV approved to VBG93, VDE 0837
TSH approved to Decision 472
BS 4803 part 2

* Data subject to change.

Ordering Information

The HP 6300 Model 650/A disk subsystem includes the rewritable disk mechanism, controller, power supply, subsytem package, user guide, SCSI terminator, power cord, and one 1024 byte sector rewritable optical disk cartridge giving 650 Mbytes of formatted storage.

Product:

HP Series 6300 Model 650/A C1701A
   Delete optical disk cartridge .... Opt. 1AK
   Add 3 optical disk cartridges (1024 byte sector) .... Opt. 1BB
   Add 1 metre SCSI cable .... Opt. AF3

Additional Optical Disk Cartridges (1024 byte sector) .. 92280A
0.5 m (1.6 ft.) SCSI peripheral interface cable 92222A
1.0 m (3.3 ft.) SCSI peripheral interface cable 92222B
2.0 m (6.6 ft.) SCSI peripheral interface cable 92222C
1.0 m (3.3 ft.) SCSI extender cable 92222D
19" Rack Slide Kit 19500B