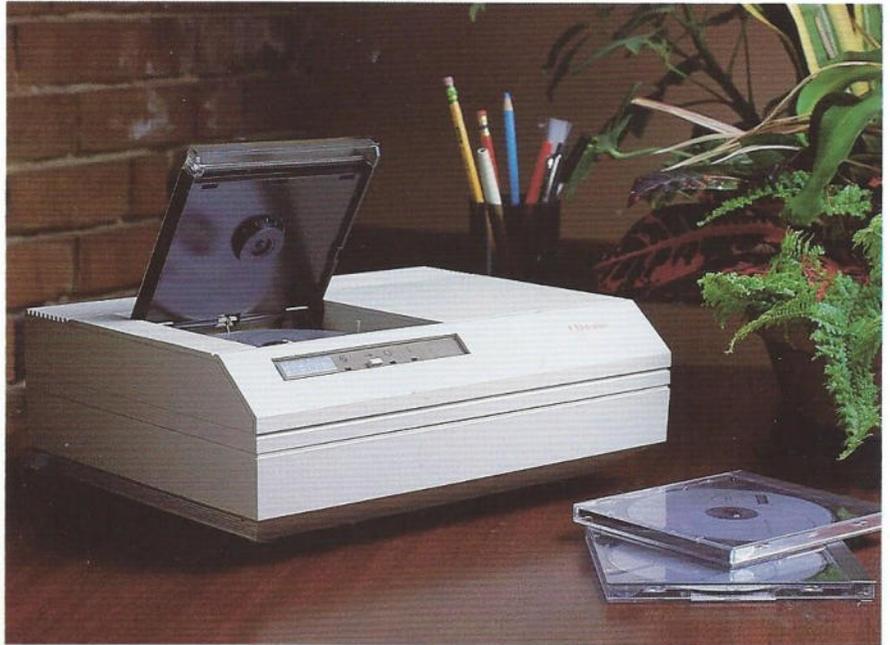


CD Reader and CDROM

A Revolution In Information Delivery

digital



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Digital has linked the exciting new technology of the digital optical disk to the power of MicroVAX to create a new, more effective way to distribute and use large amounts of stable information. For the first time, users can have enormous databases, catalogs, software, or historical records at their own workstations—to use, sort, or manipulate as required—without the cost and inconvenience of dialup lines or requests to a central computer, and without the cumbersome problem of dealing with masses of paper or stacks of microfiche. The gain in productivity can be enormous.

The key to this new technique is the CD Reader, our new data-oriented, read-only optical disk subsystem—a device so innovative, reliable and convenient, it will revolutionize the way you distribute and retrieve your information.

At the heart of this new subsystem is a remarkable optical disk called CDROM (Compact Disk Read Only Memory) that can hold up to 600 Mbytes of data on a single 12-centimeter (4.7-inch) platter. These disks are inexpensive to produce in quantity because they are prerecorded and pressed as phonograph records are. And they are so durable, you can carry them or ship them easily, and they will last for years of use.

Digital is the first to offer an integrated system approach with the hardware, software and support you need to join this new and exciting revolution. Combine all of these advantages with the exceptional reliability and ease of use of Digital's microsystems, and you have a powerful new information delivery solution.

Highlights

- 600-Mbyte capacity allows a compact disk (120-millimeter/4.7-inch diameter) to hold the equivalent of 200,000 single-spaced type-written pages or 1,600 floppy disks.
- Text, data, graphics, and images can all be distributed on CDROM disks. Adherence to worldwide format standards allows you to use disks from many sources.
- Productivity improves because you can use your information more effectively.
- The removable, durable disks can be interchanged and shipped with ease, can be handled as easily as phonograph records, and do not wear out from use.
- Low-cost replicated media and hardware make CD Reader a cost-effective alternative to hardcopy and dialup databases. It is ideal for distributing relatively stable information to a large number of users.
- Powerful error correction features in both the drive and controller assure you of high data integrity.
- The highly reliable system lets you access your information when you need it.
- The compact, quiet, tabletop drive is perfectly suited for an office environment.

A More Productive Alternative to Microfiche, Paper, and Dialup Lines

CDROM and CD Reader systems form an excellent vehicle for distributing relatively stable information—catalogs, reference libraries, design drawings, software and documentation, computer-based instruction, financial data, and the like that only need to be updated monthly, quarterly, or less often. For users of information, and for companies evaluating alternative ways of distributing such information, CD Reader offers enormous gains in productivity.

Because of its huge disk capacity, the CD Reader allows you to have these large databases or multiple information products right at your fingertips—available locally, without delay. And because the information is in digital electronic form, you can search and manipulate the data or generate reports on your MicroVAX system as quickly and easily as you would handle data on any other write-protected disk.

Compare that speed and convenience with the difficulty and slowness of searching paper printouts or microfiche. And consider the space you'll save when one compact disk replaces 200,000 sheets of paper; complicated filing systems and overflowing storerooms can become a thing of the past.

Compared to dialup systems, CD Reader offers more predictable access to the stable portion of a database (you'll still need to use a read/write medium for rapidly changing information). Because you own the disk, you can use it when you wish, as often as you wish, without the cost of

repeated access charges or the frustration of slow response during peak hours. Even your company's own central computer will generally be slower to give you the reports you need—and a lot less convenient.

In short, whatever medium you are using today to distribute and use stable information, CD Reader offers the opportunity to greatly increase your productivity and that of your organization.

CDROM Disks—High-Capacity Portable Media

The CDROM disk is a small, portable plastic platter that offers 600-Mbyte formatted capacity for text, data, graphics, and images. The recording format conforms to the worldwide Philips/Sony standard, thus allowing you to use disks from varied sources.

Data are stored as pits and flat areas, arranged along a spiral track on the reflective layer within the disk. This layer is covered on both sides by transparent protective layers, which help account for the disk's durability and make it much easier to handle than magnetic media. CDROM disks require about the same care as phonograph records.

When a disk is read, the CD Reader uses a focused laser beam to track and detect the pits and flat areas. The resolution of the laser/optical system combines with the drive's constant-feedback tracking system and an innovative data encoding algorithm to provide the very high bit density that gives CDROM its capacity.

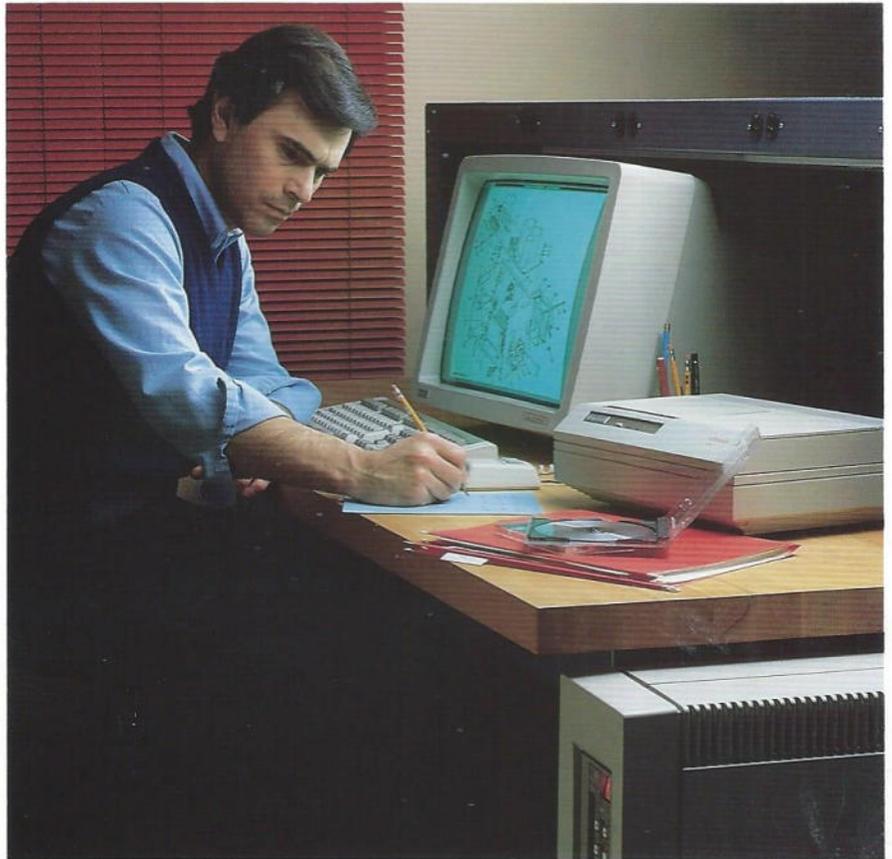
Because the laser beam can travel over a relatively long path without losing focus, the optical reading head can be kept more than 1 millimeter away from the disk. This eliminates the possibility of head crashes and allows the disk to be removed from the drive, so you can carry it or ship it wherever the information is needed. Since the head never contacts the disk, you needn't worry about the disk wearing out—even after years of use.

CDROM Production—for Low-Cost, Widespread Distribution

When you are ready to convert a database to CDROM form, the process is straightforward, and Digital will provide assistance and guidance.

CDROM disks are manufactured in a master-and-replicate process that is conceptually similar to that used for phonograph records. Data is prepared on magnetic tape; the tape is used to create a master disk, and derivatives of the master are then used to press multiple copies for distribution. As with records, you cannot record directly on the disks.

Another similarity is that CDROM disks are extremely cost-effective when 100 or more copies are made, but are less economical when the mastering cost is amortized over fewer copies. However, if the added utility of having information locally available is high, then CDROM may be cost-justified at volumes less than 100 copies. This manufacturing process also explains why CDROM is more suitable for stable data than for rapidly changing information. Infrequent updates make the most cost-effective use of the master-and-replicate cycle, which takes several weeks.



Outstanding Protection for Your Data

From the time information is submitted for conversion to CDROM form, to the time the replicated disk is read, the accuracy of your data is safeguarded by a powerful set of tools.

During mastering and replication, extreme care is taken to ensure clean environmental conditions. This, combined with extensive quality-assurance testing, results in replicated disks having a very low bit-error rate.

In addition, two interleaved Reed-Solomon ECC codes (error correcting

codes), as well as CRC (cyclic redundancy check) algorithms, are appended to your data when it is encoded on the disk. When the disk is read, the CD reader and controller use the ECC codes to detect and correct any errors that may occur, and then use the CRC information to check that all errors have been corrected.

The final result of these powerful capabilities is virtually perfect data; you can expect to see no more than 1 incorrect bit in 150 CDROM disks. This data integrity is comparable to that seen on today's magnetic disks.

CD Reader—Fast, Reliable and Convenient

The CD Reader is supplied as a complete subsystem, including the compact, table-top reader, a dual-height Q-bus controller for MicroVAX or VAXstation systems, and all necessary cables. The reader's small size, quietness, and ease of use make it ideal for the office environment. Its high reliability means it will be ready to run when you are ready to use it, and your cost of ownership will be low.

The reader's performance is fast compared to most alternative means of distributing information. On the average, the reader will locate any piece of information on a CDROM disk in 1 to 2 seconds, and it will then transfer the information to your computer at 150 Kbytes per second—approximately five times faster than you'd receive data from a magnetic floppy disk.

To access and process the data on the optical disk, you can use Digital's VAX/VTX software or many other database packages that are supported by the VMS operating system.

For Further Information...

Digital's CD Reader systems are creating a revolution in information delivery and retrieval. To learn more about the systems and support services, and to understand how Digital can help you improve productivity by converting your company's distribution techniques to this new medium, contact your Digital sales representative.

Specifications

Read Performance

Average access time	1.5 seconds
Average transfer rate	150 KB/s

Data Organization

Capacity	600 MB (formatted) per disk
Format	Philips/Sony CDROM standard
Corrected bit error rate	10^{-12}
Medium	Replicated optical disk, 120-mm (4.7-in) diameter

Power Requirements

Input power	100/120 V or 220/240 V @50/60 Hz
Drive	18.8 W maximum
Controller	2.7 A @ +5 V

Physical Characteristics

Height	11.5 cm (4.5 in)
Width	32 cm (12.6 in)
Depth	26.5 cm (10.25 in)
Weight	5.2 kg (11.5 lb)

Configuration Rules

Maximum drives per controller	2
Interface	Q-bus
Mounting requirements	Single Q-bus dual-height module slot
Software support	MicroVMS V4.1 on MicroVAX I MicroVMS V4.2 on MicroVAX II Digital Storage Architecture device

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