

RRD40 Compact Disk Drive

Innovation in Software Distribution for Desktop Systems

digital



The Compact Disk Distribution Resource for Desktop Worksystems

Linking the exciting technology of the compact disk to the power of desktop worksystems, Digital has created a new, more effective way to distribute and use large amounts of stable information. Users can have access to very large databases, including software, documentation, catalogs, or historical records at their own workstations. By eliminating the cost and inconvenience of dialup lines, requests to a central computer, masses of paper and stacks of microfiche, users will experience significant gains in productivity.

The key to this new resource is the RRD40 Compact Disk Drive, our new data-oriented, read-only optical disk subsystem. At the heart of this new subsystem is the CDROM (Compact Disk Read Only Memory) optical disk 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 in a manner similar to phonograph records. They are so durable, you can carry them or ship them easily, and they will last for years of use.

Digital now offers an integrated system approach to software distribution with the hardware, software and support you need to take advantage of this new and exciting resource. 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 system.

Highlights

- Low cost CDROM subsystem facilitates software distribution and on-line access to documentation.
- 600-Mbyte capacity allows a compact disk (120-millimeter/4.7-inch diameter) to hold the equivalent of 1,600 floppy disks or 200,000 typewritten pages. Average access time is a fast 500 ms.
- Text, data, graphics, and images can all be distributed on CDROM disks. RRD40 is network accessible for quick, easy distribution of data and software to remote locations.
- Suitable for both Q-bus and Small Computer Systems Interface (SCSI)-based systems, the RRD40 can also download software and documentation to systems that are not Q-bus or SCSI-based via an Ethernet Local Area Network.
- The removable, durable disks can be interchanged and shipped with ease, can be handled as easily as phonograph records, and do not wear out. The disk is enclosed in a protective self-loading cartridge carrier.
- Low-cost replicated media and hardware make the RRD40 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.
- Digital is committed to CDROM as the primary distribution device for VMS documentation and software layered products. CDROM facilitates easier software installation, quick and convenient access to system information for a large number of users, and more frequent updates of coordinated software product releases.

A Powerful Tool for Software Distribution and Online Documentation

The RRD40 CDROM subsystem offers an excellent vehicle for distributing VMS software, layered applications, software upgrades, and revisions to desktop worksystems. Loading the VMS operating system can be accomplished in 5 minutes, which is a significant time savings over traditional tape-based systems. The disk drive is an industry-standard, front-loading, 5.25-inch half-height device that fits conveniently into the system cabinet or is available in a desk-top enclosure. The media is a removable 4.7-inch compact disk enclosed in a protective self-loading cartridge carrier.

Suitable for both Q-bus and Small Computer Systems Interface (SCSI)-based systems, the RRD40 appears to the controller as a high capacity, write-protected Winchester disk drive. In addition, system managers can download software and documentation to systems that are not Q-bus or SCSI-based by configuring the RRD40 into an Ethernet Local Area Network.

The RRD40 provides a powerful resource for local access to online documentation. Users can have instant access to the most current documentation and eliminate the need to thumb through manuals or communicate with other systems for help. The information contained on a single compact disk can eliminate volumes of hardcopy, freeing office shelf space and lowering storage costs.

CDROM Disks—High-capacity Portable Media

The RRD40 CDROM disk is a small, portable plastic platter that offers 600-Mbyte formatted capacity for text, data, graphics, and images. Information is 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 easier to handle than magnetic media. RRD40 disks require about the same care as phonograph records.

When a disk is read, the RRD40 uses a focused laser beam to track and detect the pits and flat areas. 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

For organizations that want to use CDROM to distribute their own information, the process of converting a database to CDROM form is straightforward. Digital's Educational Services organization can 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 the magnetic tape; the tape is used to make 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.

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 correction 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 RRD40 uses the ECC codes to detect and correct any errors that may occur, and then uses the CRC information to check that all errors have been corrected.



Available in tabletop and imbedded models, the RRD40 suits a variety of configuration needs.

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.

RRD40 – Fast, Reliable, and Convenient

The RRD40 is available in embedded or tabletop versions for SCSI systems and in a tabletop enclosure for Q-bus systems. Small size, quietness, and ease of use make the RRD40 suitable for desktop use. 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 one-half second, and it will then transfer the information to your computer at 150 Kbytes per second.

For Further Information...

To learn more about the RRD40 and support services, and to understand how Digital can help you improve productivity by converting your company's distribution techniques to this new medium, please contact your Digital sales representative.

Specifications

Read Performance

Avg. access time	0.5 seconds
Avg. transfer rate	150 Kb/s

Data Organization

Capacity	600 MB disk (formatted)
Data format	Philips/Sony CDROM std.
Medium	Replicated Optical Disk, 120 mm
Corrected bit error rate	Not greater than 1 in 10 ¹³

	Tabletop SCSI	Imbedded SCSI	Tabletop Q-bus
Power Requirements			
Input power	100/120 V or 220/240 V @ 50/60 Hz	≤1A @ +5 V DC, +12 V DC	100/120 V or 220/240 V @ 50/60 Hz
Drive	20 W max.	17 W max.	20 W max.
Controller	N/A	N/A	2.7 A @ +5 V

Physical Characteristics

Height	11.5 cm (4.5 in)	4.1 cm (1.63 in)	11.5 cm (4.5 in)
Width	32.0 cm (12.6 in)	14.6 cm (5.75 in)	32.0 cm (12.6 in)
Depth	26.5 cm (10.25 in)	20.8 cm (8.19 in)	26.5 cm (10.25 in)
Weight	5.2 kg (11.5 lb)	1.5 kg (3.3 lb)	5.2 kg (11.5 lb)

Configuration Rules

Max. drives/system	4*	1	System dependent
Max. drives/controller	N/A	N/A	2
Mounting requirements	N/A	System dependent	Single Q-bus dual-height module slot

*The SCSI bus will support up to four external storage devices, which may be CDROM, disk or tape drives.

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