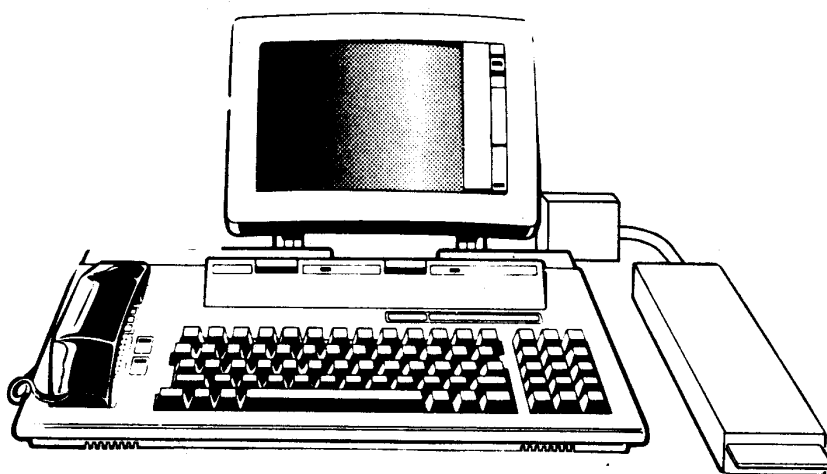


COMPUTER ONE OPD DISK SYSTEM

USER GUIDE



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Computer One welcomes any ideas and comments you may have on the product. These and any bug reports or further enquiries should be sent to:

Technical Enquiries, Computer One Limited, Science Park, Milton Road, Cambridge CB4 4BH.

Microdrive is a trademark of Sinclair Research Limited.

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CHAPTER ONE

INTRODUCTION

1.1 Introduction

The **Computer One OPD Disk System** brings you a whole range of powerful new features, carefully integrated into the OPD operating system. Now you can store and retrieve programs and files in standard MSDOS* format at the touch of a button.

With single and twin drive options, the **Computer One Disk System** represents the most flexible and ergonomic disk available to OPD users. **Computer One Disk Systems** are built in the UK to exacting standards, and incorporate high quality, large capacity 3.5" disk technology. The system also provides expansion capability to accommodate 5.25" MSDOS format disks, allowing you to link into your existing MSDOS data files.

Features

- full range of file facilities supported
- single or twin configurations available
- standard MSDOS file formats
- 5.25" disk option (for reading MSDOS format disks)
- twelve month warranty
- ideal for many powerful business applications:
 - accounts
 - database
 - file transfer
 - word processing

*This manual assumes a general working knowledge of the OPD and Microdrive** file facilities. Details of these are available in your OPD Handbook.*

* MSDOS is a trademark of Microsoft Corporation.

** *Microdrive* is a trademark of Sinclair Research Limited

1.2 Contents of the Computer One Disk System

Having unpacked your **Computer One Disk System** you should have

- 1 Computer One Disk Interface
- 1 Disk Drive Unit
- 1 User Manual
- 1 Registration and Warranty card

If any of these items appear to be missing then should contact your dealer immediately.

1.3 Registration and Warranty

The enclosed Registration and Warranty card should be completed and returned to **Computer One** upon purchase of the system. In doingso the equipment will be warranted as stated for a period of 12 months and you will be included on our Product Update Notification list.

CHAPTER TWO

GETTING STARTED

2.1 Installing the Computer One Disk System

1. **IMPORTANT:** Ensure that your OPD is **SWITCHED OFF** before you begin.
2. Insert the **Computer One Disk Interface** in the rear, right-hand Rompack Slot with the disk drive connection slot facing the right.

The interface casing has been designed to fit securely in the Rompack slot. It can however, only be inserted one way around and should not be forced as this may damage both it and the Rompack.

3. Ensuring that the disk drive unit is switched off, plug the ribbon cable at the rear of your disk drive into the connection slot on the side of the disk interface. To do this, you should match the notches in the middle of both the slot and the cable connector, then push the connector into the slot. The two 'locking clips' on the connection slot will "click" to hold the cable firmly in place.
4. The disk drive should now be switched on, both at the mains and the power switch at the rear of the unit. Switch on your OPD as normal.
6. The OPD will power up as normal. After a few seconds, the screen will either show the Top Level Menu, or ask you to "**Press START for Top Level Menu**".
7. If this does not happen, or if the screen shows garbled lines of text, then you should switch off and check that the Interface is correctly fitted as described above. If this fails to remedy the problem, then the Interface may be faulty and should be returned to **Computer One** directly.

You should ensure that your disk has been removed from the drive when switching on or off your OPD computer. Failure to do this may result in loss of data or corruption of your disk.

2.2 Configuring your OPD to use the disk

Normally, the OPD is configured so that L accesses the left-hand microdrive and R accesses the right-hand microdrive. When you install your Disk System, you will need to reconfigure the machine so that either L or R will access the Disk Drive.

If you have a twin-drive, L and R may be assigned to Disk Drives A and B and you will be unable to use the microdrives unless you alter the configuration to do so.

To reconfigure your machine:

1. Select **"Applications"** from Top Level Menu.
2. Select **"Disk Utilities"**
3. Select **"Change meanings of L,R"**.
4. Change either L or R to Disk Drive A by pressing *f1* or *f2*.
5. Press **START** to return to the Top Level Menu.

CHAPTER THREE

USING THE DISK SYSTEM

Because special care has been taken to integrate the disk system within the OPD's own menu driven system all the facilities of the **Computer One Disk System** can be readily accessed with a few simple keystrokes.

In addition to the standard Microdrive Utilities, the disk system is supplied with a number of specific disk facilities accessed from the **Disk Utilities** option in the **Applications Menu**. These are briefly described below.

3.1 Format Disk

This procedure initialises a blank disk into a format that the OPD can read from or write to. It should be noted that any files previously stored on the disk will be destroyed by this operation.

The disk to be formatted should be inserted into drive A of your disk drive (*the upper drive in a dual drive system*), with the write protect notch on the left hand side and in the closed position.(see Fig. 2). To format the disk, you should:

- Select the "Format Disk" option from the **Disk Utilities** menu.
- Type in your disk name, using up to eight letters/numbers - and press f1 to begin formatting.
- The light at the front of the disk drive will come on. The screen will show "**Formatting cylinder**" and will count from 0 to 79 as formatting progresses.
- A check will then be made of the *sector clusters* and the message "**FORMAT COMPLETED**" will be displayed once formatting has finished. An indication will be also be given of the number of sectors correctly formatted.
- Press the START to return to the Top Level Menu.

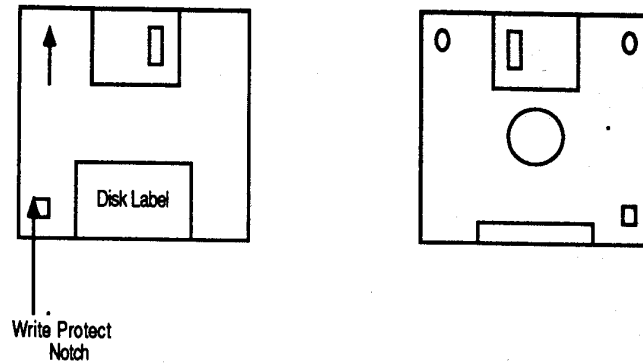


Fig. 2

3.2 Backup Disk

The facility exists within the **Computer One Disk System** to do a track for track copy of your disk onto another disk. The source disk ie. the one you wish to copy, must be inserted in Drive A of your disk drive and you will be prompted to swap source and destination disks when necessary. Press the Space Bar after each swap has been made.

*Users with twin drive systems should note that a file for file copy of a disk can be made using the **Copy Cartridge** facility and in this way both drives may be used, removing the need for swapping disks.*

3.3 Change Meanings of L and R

See section 2.2

3.4 Change Mode

This option will invoke double track stepping so 40 track MSDOS files can be read on an 80 track disk drive, therefore allowing IBM format disks to be read in an OPD drive.

Normally the system should be set to read OPD disks ie. Normal Mode. This allows 80 track MSDOS disks to be read in an 80 track disk drive. If a 40 track disk drive is attached the system should always be set to read in OPD mode. Only 40 track disks can then be read.

It should be noted that when creating an IBM format disk that all filenames should be presented in upper case otherwise the IBM may not recognise them.

3.5 Start Disk Driver

The disk system requires a small amount of internal memory to store certain data for its own use. The **Housekeeping** facility allows you to remove the Computer One Disk system from the OPD's allocation, therefore freeing this extra memory. The Start Disk Driver option will restart the disk system, and return to the Top Level Menu.

*This option will only appear on the **Disk Utilities** menu after having deleted the disk allocation using the **Housekeeping** facility.*

CHAPTER FOUR

COMPATIBILITY

4.1 MICRODRIVE COMPATIBILITY

The usual facilities available from Housekeeping's Microdrive Utilities will work as expected. For full details you should see your OPD Handbook.

Facilities include :

Display Cartridge Details
Create File
Rename File

CopyFile
Delete File
Copy Cartridge

There is also no reason why any other utilities or applications you may have should not operate normally with the **Computer One Disk System**. However, it should be noted that as the Disk Sytem utilises a small amount of OPD memory some Applications requiring very large amounts of memory may fail and should therefore be run from microdrive eg. the CONFIG package,

4.2 COMMUNICATIONS COMPATIBILITY

It should be noted that as with the microdrive facility strong disk usage is not permitted when employing the modem. Any disk activity will be temporarily halted until the modem use has ceased.

CHAPTER FIVE

TECHNICAL INFORMATION

This section of the guide is intended purely as a technical reference for development of Disk System applications.

Disk Format

The disk format chosen is that used by MSDOS computers; in particular the Apricot 720k version. Please see a standard MSDOS text for a definition of the contents of the File Allocation Table (FAT) and the Root Directory. Sub-directories are not implemented.

The MSDOS version 2 formats are supported, but the following (Apricot standard) parameters are specified for disks formatted by the **Computer One Disk Interface**.

Tracks	: 80
Sides	: 2
Sectors/Track	: 9
Sectors size	: 512 bytes
FAT size	: 3 sectors
Cluster size	: 2 sectors/cluster
Directory size	: 11 sectors
Directory entries	: 176 files
MSDOS 'type'	: \$FE

Sector Numbering

The physical sectors on the disk are numbered from 1 to 9 each side. These real sectors are accessed from the driver using logical sector numbers in the range 0 to 1439 (the total number of sectors - 1). It is only at the last stage that the logical to physical transformation takes place:

eg.	Logical sector 0	= Track 0, Side 1, Sector 1
	Logical sector 8	= Track 0, Side 1, Sector 9
	Logical sector 9	= Track 0, Side 2, Sector 1
	Logical sector 109	= Track 1, Side 1, Sector 2
	Logical sector 1439	= Track 79, Side 2, Sector 9

The data sectors in a file are stored in one or more clusters, where a cluster is the minimum unit of allocation (2 sectors). The File Allocation Table contains a 12 bit entry for each cluster. This entry either indicates it is empty (zero stored) or it is being used. If it is being used then the value of the entry is the number of the following cluster in the file or a 'last cluster in file' marker. Therefore, with a starting cluster in a file description entry, a chain of clusters for the data in each file is stored.

OPD Catalogue Handling

The OPD Microdrive system implements a catalogue by having two files called ICAT1 and ICAT2, containing file description entries. These files have to be emulated by the disk driver to provide the correct interface. The Open code checks whether an access is being made to ICAT1 and if so specially sets up the Channel Control Area to fake a microdrive catalogue on subsequent reads. The code for a QBA sets up this fake information. The first 512 bytes correspond to the Volume Description Record. The second 512 bytes have dummy entries for just two files, ICAT1 or ICAT2. The third and subsequent 512 byte blocks have the real MSDOS file entries expanded for OPD consumption (11 to an OPD block). The Load File IO operation for catalogue files simply queues up several QBA reads.

Disk Change

No provision is made for the user to change disks whilst the drive is selected. However, a disk may be changed whilst its drive is deselected. When a new file is opened and the drive has been deselected, the Volume Information is read into the buffer area to see if the disk has changed. If there are still any files open then the current open will fail.

OPD RAM Usage

The device driver grabs 1024 bytes as general working storage and N times 512 bytes storage for each disk FAT table and Directory, where N is their combined sector count (in our case 3+11 = 14 sectors). The general work storage space, pointed to be A6, is immobile and permanently frozen.

The second 512 bytes of the working store is used as a general buffer whilst reading less than whole sectors and when assembling sectors of data when reading the catalogue etc. The first 512 bytes are split up into several distinct parts. There are two data areas for information particular to each of the possible drives. There is a block with a copy of the current CCA being inspected, containing standard EDMAN fields and a few FDC specific extensions. Finally, in addition to some random variables, there is an area used for dummy Catalogue read MSDOS file entries and Catalogue QBA blocks.

The driver also references the ED Comms table (using A3) to transfer data between the driver and the external device handler. This data space is in an area held by EDMAN. This area contains the current drive data pointer, the required operations, sectors etc. for physical IO and transfer addresses/counts.

TECHNICAL SPECIFICATION:

The disk system is supplied with an interface module that slots into the top of the Rompack.

Disk drive:

No. of tracks: 80
No. of sides: 2
Formatted capacity: 720K
Average access time: 96ms
Track to track: 3ms
Settling time: 15ms
Rotational speed: 300rpm
Encoding format: MFM (double density)
MTBF: 2000 cycles

Physical Details: (Single Drive)

Height: 4.5cm
Width: 10.5cm
Depth: 24cm
Weight: 1.74Kg
Main cables: 185cm

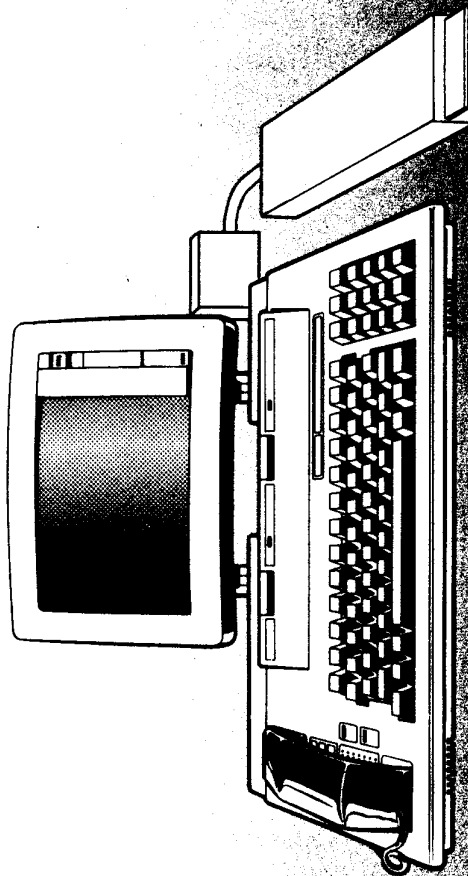
Power requirements:

Interface: 5V 250mA
Single drive: 240V AC 12VA

DEALER:

EXPAND YOUR

ICL ONE PER DESK . . .



Computer One Per Desk

THE COMPUTER ONE OPD DISK SYSTEM

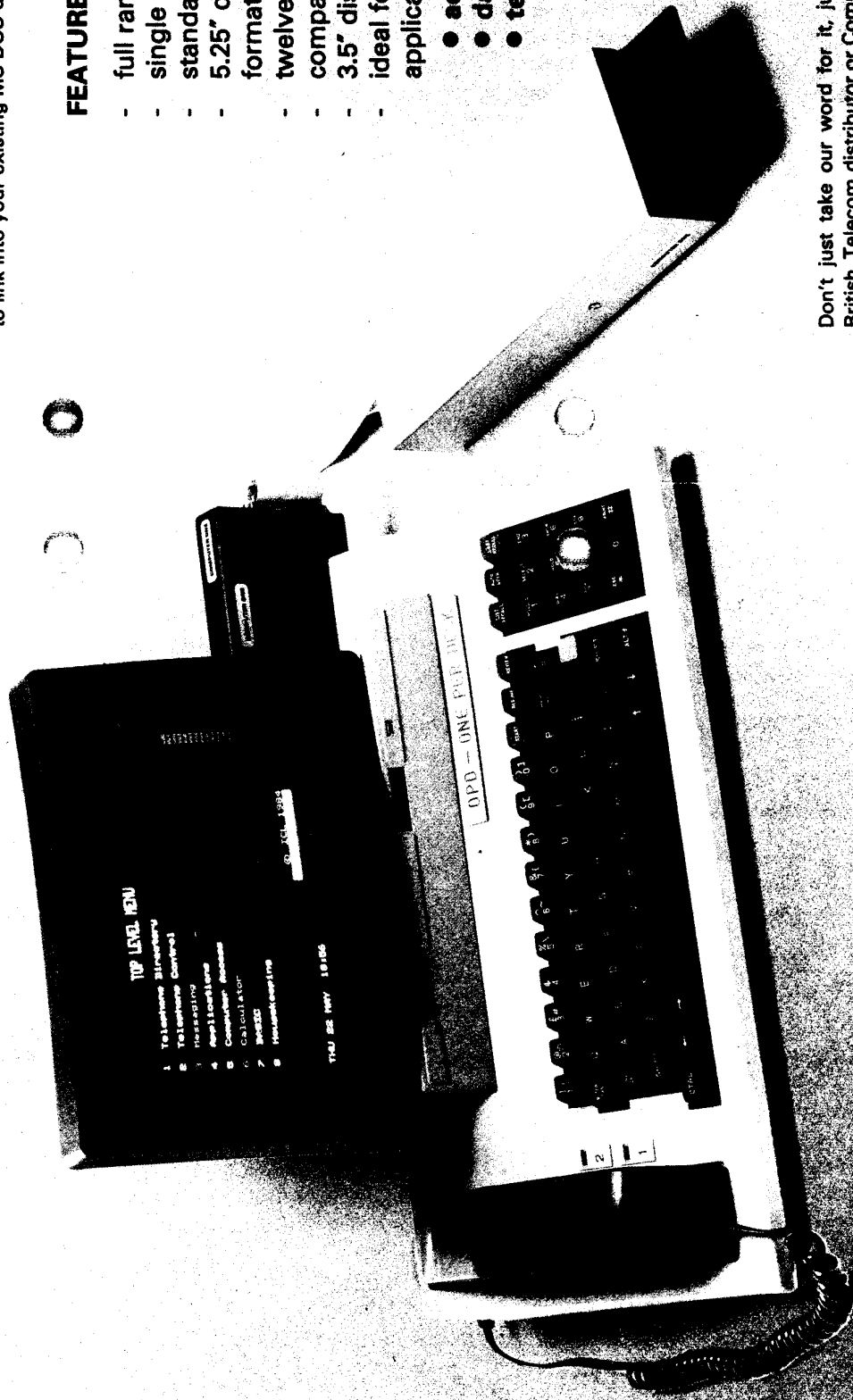
The newest, most versatile disk system for One Per Desk ... and it's available now!

The Computer One OPD disk system brings you a whole range of powerful new features, carefully integrated into the OPD operating system. Now you can store and retrieve hundreds of programs and files in standard MS DOS* format at the touch of a button.

With single and twin drive options, the Computer One disk system represents the most flexible and ergonomic disk system available to OPD users. Computer One disk systems are built in the UK to exacting standards, and incorporate high quality, large capacity 3.5" disk technology. The system also provides expansion capability to accommodate 5.25" MS DOS format disks allowing you to link into your existing MS DOS data files.

FEATURES:

- full range of file facilities supported
- single or twin configurations available
- standard MS DOS file formats
- 5.25" disk option (for reading MS DOS format disks)
- twelve month warranty
- compact ergonomic design
- 3.5" disk format
- ideal for many powerful business applications:
 - accounts
 - file transfer
 - database
 - data collection
 - telex
 - word processing



Don't just take our word for it, just contact your local ICL or British Telecom distributor or Computer One direct for a full demonstration of the system that will revolutionise your OPD workstation.

*MS DOS is a trademark of Microsoft Corporation.