



M-Systems
Flash Disk Pioneers

User Manual

DiskOnChip Dip EVB (Evaluation Board)

DEC-99

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1 Preface

DiskOnChip® DIP Evaluation Board (“EVB”) is an ISA card with a socket for a 32-pin DIP DiskOnChip. The DiskOnChip DIP EVB is a useful tool for designers who need to evaluate, program and test a DiskOnChip, even before the target platform is available.

The M-Systems DiskOnChip is a high performance single-chip Flash disk, available in standard DiskOnChip 2000 or DiskOnChip Millennium 32-pin DIP and DiskOnChip Millennium TSOP-II packages.

This unique product offers a data storage solution for applications with limited space and a wide range of capacity requirements such as embedded systems, Internet access devices, network computers and mobile systems.

The DiskOnChip DIP devices can be plugged into the target platform, as well as into the DiskOnChip DIP EVB. Access in both cases is achieved by using standard utilities (DFORMAT, DINFO, DUPDATE, and so on). In addition, the EVB can be used to duplicate DiskOnChip devices (using the GETMIMG and PUTMIMG utilities). Refer to the "DiskOnChip Utilities User Manual" for further information.

2 DiskOnChip DIP EVB

DiskOnChip DIP EVB includes a 32-pin DIP socket and simple address decoding. DiskOnChip requires a memory window of only 8KB. The DiskOnChip DIP EVB is designed to accept one of three addresses: hex C800h, D000h or D800h. The desired address should be selected according to the tables found in the following section.

2.1 Determining Window Address

The board includes a jumper (JP1) that determines the memory window base address that the DiskOnChip will be mapped into (see Table 1). The window size is 8KB, according to the DiskOnChip requirements.

The factory default addresses, occupied by the DiskOnChip, are D000h to D7FFh.

Table 1: JP1 Settings

1	2	C800-CFFF
3	4	D000-D7FF
5	6	D800-DFFF

2.2 No Wait State Mode on an ISA BUS

Note: You can activate the no wait state mode only if the target platform supports #srdy signals.

The board includes a jumper (JP2) that determines the no wait state mode.

When the no wait state mode is activated, it can improve DiskOnChip performance by up to 30% of its original ISA BUS performance.

The no wait state mode will affect target sockets as shown in the following table:

Table 2: JP2 Settings

No Wait State	JP2 1-2	JP2 3-4
Default- Not Active	N.C.	N.C.
Only Socket One is Active	N.C.	Short
All Sockets are Active	Short	N.C.

3 DiskOnChip Integration into the Target Platform

As demonstrated by the DiskOnChip DIP EVB, the integration of DiskOnChip into a target platform is very simple. Since the platform generates the address decoding, the only additional effort required is the integration of a standard 32-pin DIP socket. For information on how to integrate the DiskOnChip into your target design, refer to Application Note AP-DOC-010: “Designing with DiskOnChip”.

4 How to Use the DiskOnChip DIP EVB

4.1 Requirements

1. A PC with a free ISA bus slot.
2. 8KB free memory space in the ROM expansion memory of the PC (between C800 and E800).

4.2 Step-by-Step Operation of the DiskOnChip DIP EVB

1. Make sure the system power is switched off.
2. Plug the DiskOnChip into the socket on the DiskOnChip DIP EVB. Make sure that the DiskOnChip is inserted in the right direction!

Note: Be sure to insert pin (marked by a dot) into hole 1 in the socket (marked by a dot).

Warning: The DiskOnChip might be damaged if inserted in the wrong direction.

3. Make sure that the DiskOnChip DIP EVB setup is correct (usually, address hex D000h is a good choice).
4. Plug the DIP EVB into the target host’s free ISA slot.
5. Switch on power to the host system.



The DiskOnChip drivers' messages will appear on the screen. If this does not occur, the DiskOnChip might not have been programmed, or the card's setup may be wrong.

The DiskOnChip is available as a standard disk drive, and can be used to store and run any standard software.

4.3 Identifying the DiskOnChip

Two utilities can be used to identify the DiskOnChip. If the drivers were loaded properly, meaning, the sign-on messages appeared, then you can use DINFO. If the messages did not appear, then you can use DOCPMAP /I to search for the DiskOnChip.

4.4 Reformatting the DiskOnChip

Warning: Running DFORMAT will erase all data from the DiskOnChip. Make sure to back up your data before running this utility.

The DiskOnChip can be reformatted onboard using the DFORMAT utility. The DFORMAT utility can be used regardless of whether the device was recognized by the system and was assigned a drive letter. Assuming the drive letter assigned is D, the command in the first case is:

```
DFORMAT D:
```

After running DFORMAT, you must reset the system to allow the changes to take effect.

In case the DiskOnChip was not assigned a drive letter, it is necessary that you have the start address of the window address in which the DiskOnChip is mapped in the system memory. Use the DOCPMAP utility (see section 4.3, above) to find the base address of the DiskOnChip. Assuming the DiskOnChip was mapped to hex D000 address, and that the firmware file supplied by M-Systems is named DOC2 . EXB, the command is:

```
DFORMAT /WIN:D000 /S:DOC2 . EXB
```

Please refer to the "DiskOnChip Utilities User Manual" for detailed information on the DFORMAT utility.

5 Utilities for the DiskOnChip

All DiskOnChip utilities can be used as described in the "DiskOnChip Utilities User Manual".

6 DiskOnChip DIP EVB Parts Description

The DiskOnChip DIP EVB includes the following parts:

- The address decoder, implemented with ½ 74FCT139 and 74FCT138 devices.
- For LED driver, 74 HCT 04 is used.
- No Wait State signal is generated with ½ 74FCT 139 and FST 3125.
- The DiskOnChip (U1).
- Jumpers (JP1, JP2).

Reminder: This package includes a product manual containing application notes, data sheet and a distribution diskette with the utilities and firmware for the DiskOnChip.

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