M-Systems
Flash Disk Pioneers

FFD 2.5" and 3.5" IDE Plus Flash Disk
User Manual

DOCUMENT CONTROL INFORMATION

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TABLE OF CONTENTS

1   GENERAL

This manual provides you with the information you need to properly install your new FFD 2.5"
or 3.5" IDE Plus Flash Disk. M-Systems recommends that qualified and trained personnel install
the drive.

The following chapters contain handling information, mounting considerations, address and
configuration setups, cabling and connector information and information about obtaining
technical assistance and service.

Remember - Always back up your data before adding disk drives to your system!

2   KIT CONTENTS

Ensure that your kit contains the following items:

For 2.5" version:

- FFD 2.5" IDE Plus Flash Disk

- Four mounting screws and two jumpers, M-Systems part no. 48-PK-008-00.

For 3.5" version:

- FFD 3.5" IDE Plus Flash Disk

- Four mounting screws and two jumpers, M-Systems part no. 48-PK-016-00.

If any items are missing, please contact your dealer.

3   VISUAL INSPECTION

Before unpacking or handling a drive, take all proper electrostatic discharge (ESD) precautions,
including personnel and equipment grounding.

Before you begin installing the IDE Plus, inspect the package and device as follows:

- If the shipping container appears to be damaged or water stained, notify your dealer.

- Remove the disk from its shipping enclosure and inspect it for any damage that may have
  occurred during shipment. If any damage is observed, notify your dealer.

- Record the disk serial number and shipment date.

- Retain the original shipping enclosure and all packing material for re-shipment.

4 HANDLING INSTRUCTIONS

You can prolong the life of your IDE Plus, increase its reliability and prevent unnecessary damage by following the instructions listed below. Failure to follow any of these instructions may void your warranty.

- Always take all proper electrostatic discharge (ESD) precautions, including personnel and equipment grounding.

- Always operate the IDE Plus within the environmental specifications.

- Always use a grounded wrist strap when handling the IDE Plus. Drives that are not installed in the system are sensitive to ESD damage.

- Always handle the IDE Plus carefully.

- Never switch DC power to the drive by plugging an electrically live source cable into the drive's power connector.

- Pay attention to the cable polarity whenever connecting the drive to the cable.

5 FFD IDE PLUS DRIVE CONFIGURATION

5.1 Master and Slave Jumper Settings

5.1.1 FFD 2.5" IDE Plus

Prior to mounting the drive in the system drive bay, the FFD 2.5" IDE Plus must be configured according to Figure 1and Figure 2.
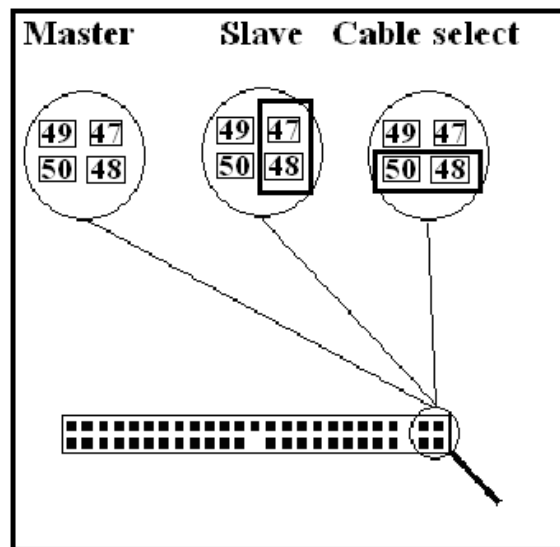

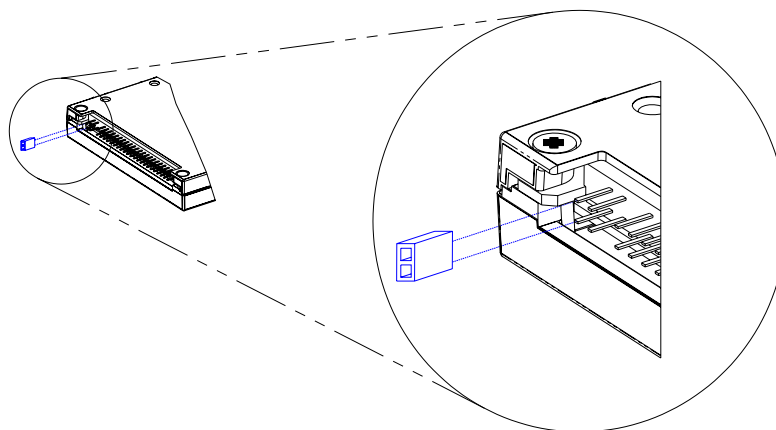*Figure 1: FFD 2.5" IDE Plus Address Setting by Jumper*

Figure 2: FFD 2.5″ IDE Plus Slave Setting by Jumper

5.1.2 FFD 3.5" IDE Plus

Prior to mounting the drive in the system drive bay, the FFD 3.5" IDE Plus must be configured according to Figure 3.
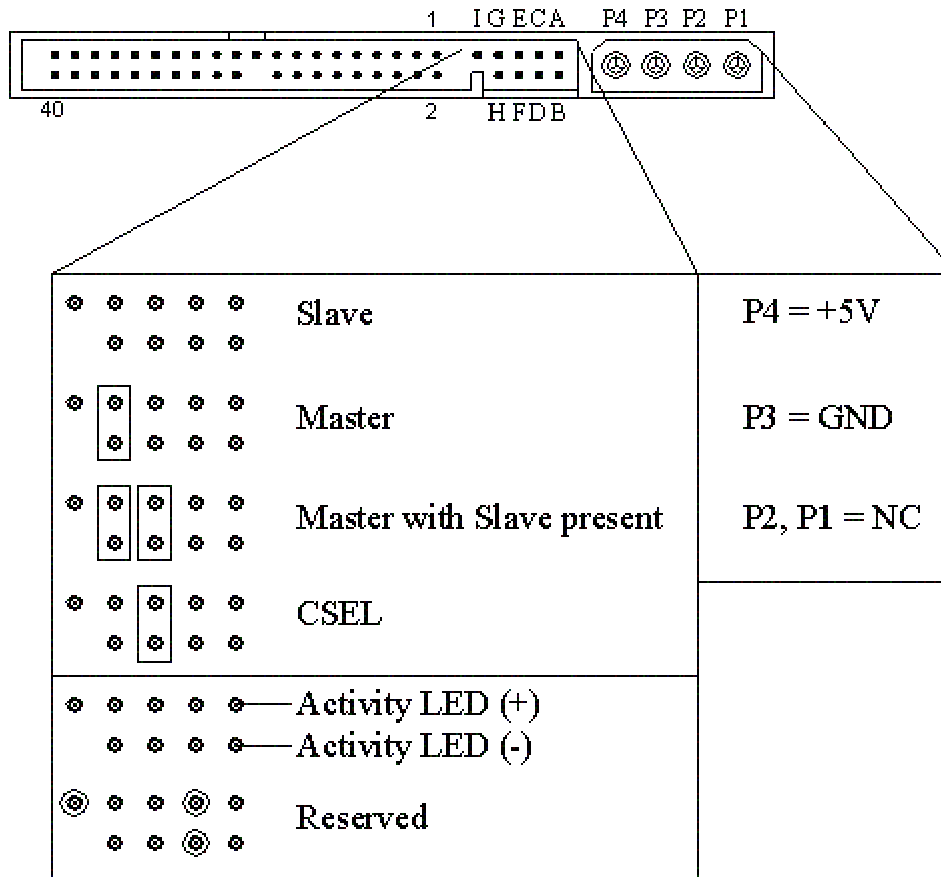

Figure 3: FFD 3.5″ IDE Plus Jumper Settings

5.2 Write-Protect Jumper Settings

The FFD IDE Plus has a write-protect option that is controlled by the jumper settings.

5.2.1 FFD 2.5" IDE Plus

Figure 4 illustrates the jumper configuration for the write-protect option for the FFD 2.5" IDE Plus.
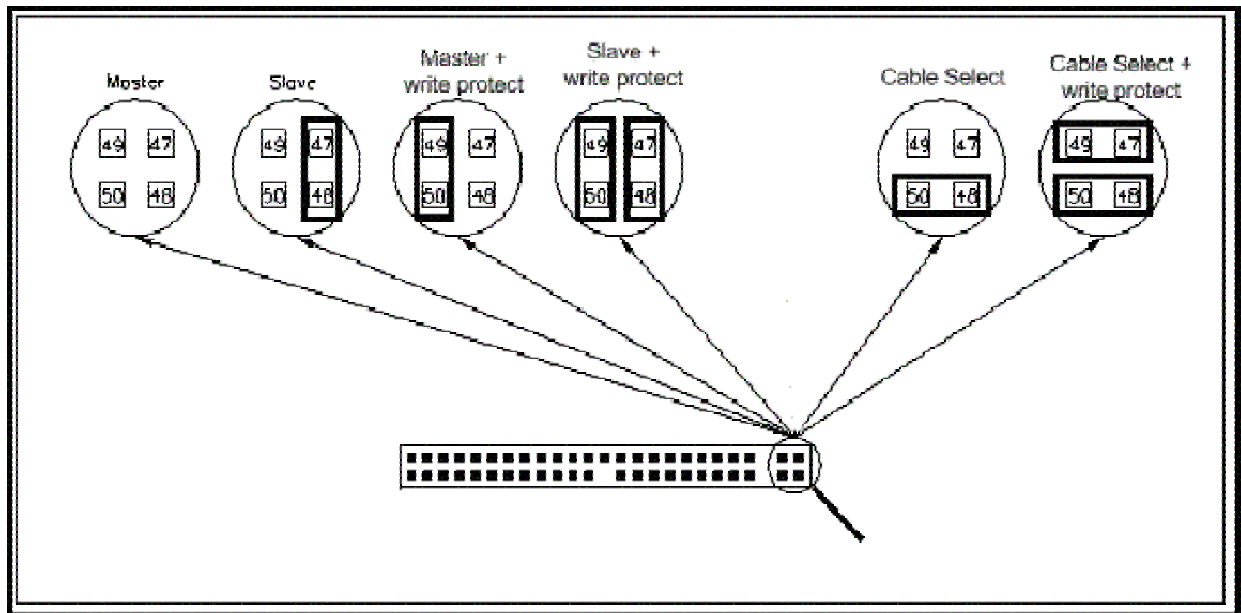

Figure 4: FFD 2.5″ IDE Plus Write Protect Jumper Settings

5.2.2 FFD 3.5" IDE Plus

Figure 5: illustrates the jumper configuration for the write-protect option for the FFD 3.5" IDE Plus.
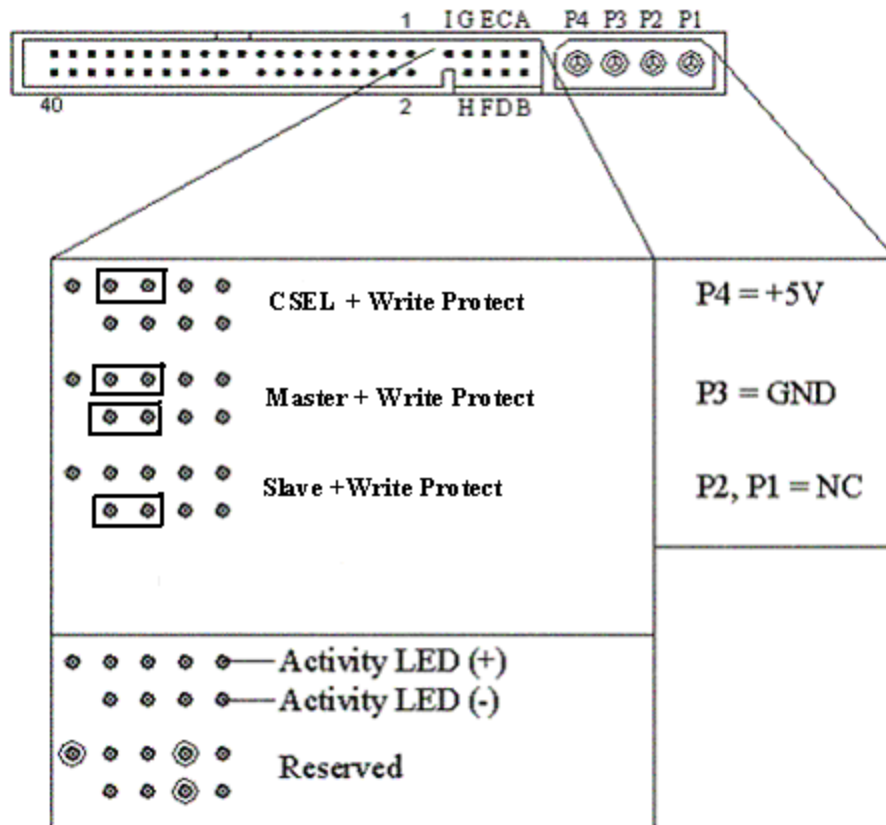

Figure 5: FFD3.5" IDE Plus Write Protect Jumper Settings

5.3 Interface Connectors

5.3.1 FFD 2.5" IDE Plus

The FFD 2.5" IDE Plus has a 2.00 mm pitch interface connector located on the rear panel. The DC power and IDE bus are input through a non-shielded 50-pin flat cable.
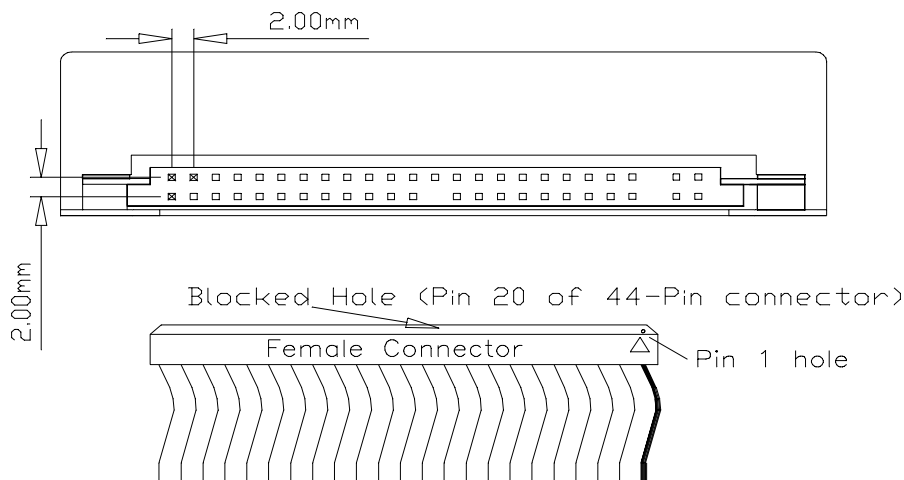

Figure 6: FFD 2.5" IDE Plus Interface Connector

It is recommended that the mating connector be blocked at pin 27 using a special plastic key (the key can be ordered from the connector manufacturer). This prevents possible damage to the disk by connecting the cable with a 180º rotation.

5.3.2 FFD 3.5" IDE Plus

The FFD 3.5" IDE Plus should be connected using a 40-pin I/O cable connector with a 2.54 mm pitch interface connector.

As with the FFD 2.5" IDE Plus, it is recommended that the mating connector be blocked at pin 27 using a special plastic key (the key can be ordered from the connector manufacturer). This prevents possible damage to the disk by connecting the cable with a 180º rotation.

5.4 IDE Cable

The cable length should not exceed 18 inches.

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6   INSTALLATION

6.1   System Requirements

In order to install the IDE Plus in your system, ensure that you have the following items:

- System mounting hardware

- 44-pin ribbon IDE cable for FFD 2.5" IDE Plus, or 40-pin cable for FFD 3.5" IDE Plus

6.2   FFD IDE Plus Configuration

Before mounting the drive into the system drive bay, you must first configure the IDE Plus by setting the address jumper to comply with your system requirements. See Section 5 for details.

6.3   FFD IDE Plus Installation

The IDE Plus can be installed in the system in any mounting position. Unlike rotating disks that have an axis of rotation, the IDE Plus is not susceptible to damage due to its orientation.

Note: It is not necessary to perform a low-level format on the IDE Plus. The drive is shipped low-level formatted and ready for use.

6.3.1   Installing the FFD IDE Plus in a PC Environment

To install the IDE Plus:

1. Power down the PC and remove the cover.

2. Configure the IDE Plus jumper settings according to the information provided in Section 6.2.

3. Connect a cable between the IDE Plus and the host. Make sure to orient the cable so that pin 1 of the IDE Plus is connected to pin 1 of the host adapter.

4. Mount the IDE Plus into a free drive bay.

5. Close the PC cover and power on the PC.

6. The host BIOS sign-on message will appear and display a key sequence to enter the BIOS setup. Set up the BIOS to recognize the IDE Plus (refer to the BIOS documentation for the disk installation procedure).

You are now ready to use the IDE Plus. If you encounter any problems, refer to Section 8 for troubleshooting information.

6.3.2   Using the FFD IDE Plus in an MS-DOS-Based Platform

After installing the IDE Plus (as described in Section 6.3), it must be installed as a disk drive under DOS. Run the DOS commands listed below and follow the instructions displayed for each command. For more information regarding the DOS commands, refer to your DOS manual.

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1. Run the DOS FDISK program to partition the IDE Plus.

2. Run the DOS FORMAT command to high-level format the IDE Plus.

3. If you want the IDE Plus to be a bootable drive, run the DOS SYS command and change its partition to active.

7 DRIVE PARAMETERS

Most IDE device drivers can automatically detect the total number of sectors in the IDE Plus, using the IDENTIFY DRIVE command, and configure them accordingly. However, some older device drivers need to obtain the drive geometry parameters manually. The physical drive parameters are just a convention and have no effect on the way data is stored within the IDE Plus.

Table 1: Drive Parameters

Unformatted Disk Capacity (MB)	Total Number of User-Addressable Sectors in LBA Mode (Words 60/61 of IDENTIFY information)	Number of Logical Sectors per Track (Words 6 and 56 after power-on of IDENTIFY information)	Number of Logical Heads (Words 3 and 55 after power-on of IDENTIFY information)	Number of Logical Cylinders (Words 1 and 54 after power-on) of IDENTIFY information)	Current CHS Capacity (Sectors) (Words 57/58 after power-on of IDENTIFY information)
256	499456	63	16	495	498960
512	1002752	63	16	994	1001952
1024	2009344	63	16	1993	2008944
2048	4011008	63	16	3979	4010832
3072	6035712	63	16	5987	6034896
4096	8037376	63	16	7973	8036784
5120	10062336	63	16	9982	10061856
6144	12063744	63	16	11968	12063744
7168	14088960	63	16	13977	14088816
8192	16090112	63	16	15962	16089696
9216	18115328	63	16	16383	16514064
10240	20116480	63	16	16383	16514064
12288	24142848	63	16	16383	16514064
14336	28170240	63	16	16383	16514064
16384	32196608	63	16	16383	16514064
18432	36222976	63	16	16383	16514064
20480	40249344	63	16	16383	16514064
22528	44275712	63	16	16383	16514064
24576	48302080	63	16	16383	16514064
26624	52329472	63	16	16383	16514064
28672	56355840	63	16	16383	16514064
30720	60382208	63	16	16383	16514064
32768	64408576	63	16	16383	16514064

Unformatted Disk Capacity (MB)	Total Number of User-Addressable Sectors in LBA Mode (Words 60/61 of IDENTIFY information)	Number of Logical Sectors per Track (Words 6 and 56 after power-on of IDENTIFY information)	Number of Logical Heads (Words 3 and 55 after power-on of IDENTIFY information)	Number of Logical Cylinders (Words 1 and 54 after power-on) of IDENTIFY information)	Current CHS Capacity (Sectors) (Words 57/58 after power-on of IDENTIFY information)
34816	68434944	63	16	16383	16514064
36864	72461312	63	16	16383	16514064
38912	76488704	63	16	16383	16514064
40960	80515072	63	16	16383	16514064
43008	84541440	63	16	16383	16514064
45056	88567808	63	16	16383	16514064
47104	92594176	63	16	16383	16514064

8   TROUBLESHOOTING

The problems that arise in most installations are summarized below:

- Cables:
    - o   Homemade, short, flat ribbon cables with bad contacts or cheap cables
    - o   Mixing round cables with flat cables
- Cable Length:
    - o   Exceeds the limit specified in the standard
    - o   Cables are too long to support the transfer rate
- Device Address Conflict:
    - o   Adding a new device with an IDE setting identical to an existing device on the bus
    - o   Connection
    - o   Connecting a cable in reverse polarity

9   HOW TO GET HELP

If you need technical assistance with the installation and/or configuration of your IDE Plus, contact one of the sources listed on the contact page. Before you call, please be sure to have the following information available for the customer support representative:

- Product and serial number of your IDE Plus.
- Description of computer hardware (manufacturer, model, attached devices, etc.).
- Description of your IDE host adapter and associated drivers.
- Description of your software (operating system, version, application software, etc.).
- A complete description of the problem.
- The exact wording of any error messages.

Before contacting M-Systems directly, first contact your dealer. If your dealer cannot provide the help you need, you can obtain technical support directly from M-Systems at one of the numbers listed on the contact page.

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