

Chapter 1 - Introduction

Product Description

Western Digital's WD93028X, WD93038X and WD93048X are intelligent drives for the IBM PC/XT and compatibles. Their architectures integrate an ST412/ST506 compatible hard drive assembly with a controller on a single printed circuit board that is mounted on the disk drive chassis. The integration of disk drive and controller increases reliability and performance by eliminating redundant circuitry. Models WD93028X, WD93038X and WD93048X offer 20, 30, and 40 megabytes of storage respectively, in a 3.5-inch form factor. These drives are also available in a 5.25-inch frame (WD95028X, WD95038X and WD95048X).

System Requirements

You can use your drive in an IBM PC/XT or compatible system that has these operating systems: MS-DOS version 2.0 and higher or Novell NetWare. Contact your Western Digital dealer if you need information about other operating systems.

Unpacking Your Intelligent Drive

Examine the shipping container for obvious signs of shipping damage (holes, crushed corners, etc.) Notify the carrier and your Western Digital dealer if shipping damage has occurred.

Western Digital intelligent drives are precision products that are engineered to withstand normal handling when installed according to the following instructions. Care must be taken to avoid excessive mechanical shock or static electrical discharge that can permanently damage the drive assembly and void the warranty. When the drive is not in its shipping container or installed in its proper host enclosure, it must be placed on an antistatic surface. Handle the drive only by holding the metal chassis of the drive assembly. Do not touch circuit board components or manually rotate the stepper motor shaft. Do not attempt to open the drive's sealed compartment. Failure to observe these restrictions will void your warranty.

Chapter 2 - Installation

This section explains how to install your Western Digital intelligent drive in an IBM PC-XT. If you have an XT compatible, see your system's manual. For those who require technical information beyond the scope of these basic installation procedures, see the appendices of this guide.

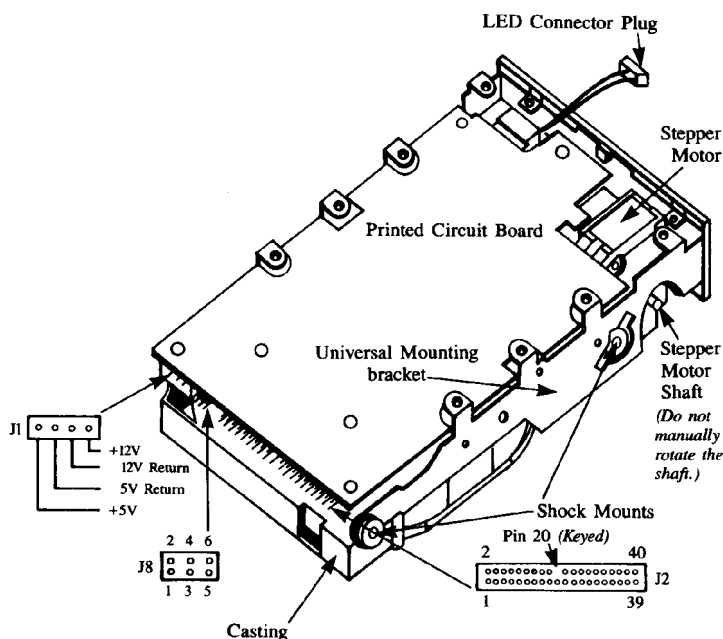


Figure 2-1. Connector Locations

Layout

Figure 2-1 shows the placement of the drive connectors (J1, J2 and J8). Look at your drive and compare it with Figure 2-1.

Hardware Installation

The following steps describe the physical installation of the drive in a front panel slot. These Western Digital drives are available in 3.5 inch and 5.25 inch form factors. Your drive is equipped with the necessary hardware (frame, bezel and LED) for your particular installation. Installation procedures assume that there is no other hard drive currently installed in your system.

If you are installing two drives in your system or if you have an existing hard drive, see Appendix B.

Caution

To avoid electrical shock, make sure that all power to your computer is off and the power cord is unplugged.

1. Before you remove any cables, note their location (for easy reassembly). Remove the power cord and all interface cables from the computer.
2. Remove the cover of the computer according to the instructions in your Owner's Manual.
3. Verify that no jumpers are installed on the drive J8 connector.

Your intelligent drive is configured for the translation mode. To configure your drive for non-translation mode, see Appendix B.

4. Connect the interface cable to the drive J2 connector.

Warning

Damage to the drive may occur if the interface cable is attached incorrectly. To prevent an incorrect connection, use a cable which has been keyed at both the drive and host ends of the interface cable. See Figure 2-1 which shows pin 20 as the key. Also, the J8 jumpers may look as if they are

part of the 40-pin connector. Examine the pins closely to determine correct connection.

5. Carefully slide the drive into the appropriate front panel slot.
6. Mount the drive to the host system using 6-32, 3/16" screws.

After securely mounting the drive, verify that nothing interferes with the free movement of the drive's shock mounts.

Warning

The only electrical ground contact should be from the universal mounting bracket to the frame on the host system. Do not ground to the hard drive assembly (HDA) casting. Screws which are too long will cause a ground loop to the HDA and defeat the shock mounting or possibly damage board components. The screw should engage no more than six threads (3/16 inch).

7. Connect the power cable to the drive J1 connector.
8. If your system is an XT compatible that has a 40-pin connector on the motherboard which is specifically designed for interfacing with a hard drive, then plug the host interface cable into this drive connector.

If your system motherboard does not have a 40-pin hard drive connector (the IBM XT does not have such a connector) or if you intend to have two hard drives, see step 9.

If your system does not have a power connector for the drive, you need to connect the drive to an adapter card with a power connector; such as Western Digital's WDXT-150 (supports one drive only), see step 9.

9. If you are installing a Western Digital adapter card, turn to Appendix D. Follow the instructions provided to install the adapter card.

If you are installing an adapter card from another manufacturer, see the documentation provided with that card. Follow the instructions provided to install the adapter card.

- 10.** Replace the system cover. Make sure that cables are out of the way and not caught between the cover and boards. Check that the cables do not obstruct the air flow path from the fan or vents.
- 11.** Reattach all interface cables and power cords to the back panel of the system. The hardware installation is now complete. Follow the instructions for formatting your intelligent drive.

Hard Disk Specifications

Encoding Method	RLL 2, 7	
Data Transfer Rate:	7.5 MBits/sec	
Sectoring:	Soft	
Cylinder Count:	No Translation	Translation
20Mb	782(0-781)	615(0-614)
30 Mb	782(0-781)	615 (0-614)
40 Mb	782 (0-781)	977 (0-976)
Heads		
20Mb	2 heads	4 heads
30Mb	3 heads	6 heads
40Mb	4 heads	5 heads
Head Park Cylinder		
20 & 30 Mb	862	684
40Mb	862	999
Sectors per Track:	27	17
Bytes per Sector:	512	512

Appendix B - Configuration Options

Configure the Drive in Non-Translation Mode

Your intelligent drive may be configured for the translation mode or the non-translation mode. The translation mode allows you to use your Western Digital intelligent drive with an older system BIOS and/or operating system which only supports MFM drives with 17 sectors per track. The non-translation mode accommodates an RLL drive with 27 sectors per track.

When pins 1 and 2 are shorted together, the translate option is disabled. If pin 1 is open, the translate option is enabled, and the drive can be used with any BIOS that accommodates the following parameters:

Table B-1. Drive Parameters

Translation				Non-translation		
	20Mb	30Mb	40Mb	20Mb	30Mb	40Mb
cyl	615	615	977	782	782	782
head	4	6	5	2	3	4

Alternate Drive Configurations

This section briefly discusses alternate drive configurations:

Virtual Drive Formatting and Operation

If you have partitioned the drive into two virtual drives, do not run IBM advanced Diagnostics on the first virtual drive. Doing so will destroy the data on the second virtual drive when the write test is issued.

CAUTION

Do not use the virtual drive option in a system with two physical drives.

Dual Drive Option

If you are installing two physical drives in your XT system the first drive must be selected at port address 320 (Hex). The first drive's BIOS resides at address C8000 (Hex), assuming a Western Digital BIOS.

Select the second drive at port address 324 (Hex). The BIOS resides at CA000 (Hex), assuming a Western Digital BIOS. Both drives therefore have separate cables connecting them to the motherboard. You will require Western Digital's WDXT-140 adapter card, which has two 40-pin connectors.

Plug Drive 0 into J 1 connector and Drive 2 into J2 connector on the adapter card. This will automatically select the correct port and BIOS address.

Note

If you need a configuration other than those discussed in this guide, contact your Western Digital dealer before proceeding with your installation.