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LIBRARY

For information on other technical support, contact your distributor.

FCA

NO COPY

This equipment generates radio waves, which may interfere with other electronic equipment. If you experience such interference, you should stop using the equipment and contact your distributor for more information. This equipment is designed to operate in accordance with the FCC Class B computing device in accordance with Part 15 of FCC Rules, which are designed to prevent interference to other electronic equipment. If interference occurs, you may need to take one or more of the following measures:

- Reorient receiving antenna.
- Increase the distance between the equipment and the receiving antenna.
- Move the equipment away from the receiving antenna.
- Plug the equipment into a different outlet.

If the error persists, you should consult your distributor for more information. For additional suggestions, the Federal Communications Commission provides responsible protection against such interference. However, there is no guarantee that interference will not occur. If you have any questions, please contact your distributor for more information. This equipment is designed to operate in accordance with the FCC Class B computing device in accordance with Part 15 of FCC Rules, which are designed to prevent interference to other electronic equipment. If interference occurs, you may need to take one or more of the following measures:

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CHANGES

This document is subject to change without notice.



AHA-1020 Installation Guide

S, DRIVES, AND CONTROLLERS SUPPORTED BY THE AHA-1020

Adaptec AHA-1020 host adapter board has been successfully tested in several personal computers including, but not limited to the following:

- IBM PC™
- XT™
- AT™
- IBM Personal System/2™ Model 25
- IBM Personal System/2™ Model 30
- Compaq™ Portable
- Compaq Desktop
- Compaq 286 Portable
- Compaq 286 Desktop
- ATI PC 6300™
- Leading Edge

es:
Compaq format utility requires 17 sectors/track and thus will not function with the AHA-1020. To format, use the IBM PC-DOS or Microsoft MS-DOS™ format utility.
Requires AT&T motherboard ROMS version 1.21. With Revision 1.36, the switch number 3 on the switch block 1 (located on the motherboard closest to the back of the unit) must be in the "off" position.

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MS-DOS is a registered trademark of Microsoft Corporation.

1020 host adapter board has been tested with drives from the companies listed below. Verify current model SCSI.

Telephone Number

408-433-3340
612-931-8025
408-946-8777
408-262-7077
408-942-1700
818-709-3300
415-961-2212
303-678-2122
408-346-4600
408-432-1102
408-424-6700
408-725-0222
408-438-6550
415-490-7511
408-727-3939

Vendor

Conner Peripheral	408-942-1700
CDC	415-961-2212
Fujitsu	303-678-2122
Lapline	408-346-4600
Maxtor	408-432-1102
Micropolis	408-424-6700
Microscience	408-725-0222
Miniscribe	408-438-6550
Priam	415-490-7511
Quantum	408-727-3939
Ricoh	
Rodime	
Seagate	
Syquest	
Toshiba	

Some drives format better than others. The AHA-1020 host adapter board has been tested with these SCSI disk drives.

Model	Description
4000A	ST412/506 with MFM to SCSI
4070	ST412/506 with RLL to SCSI
4525	ESDI to SCSI
4550A	ST412/506 with MFM to Full SCSI

Adaptec	ACB
Adaptec	ACB
Adaptec	ACB

HARDWARE AND SOFTWARE REQUIREMENTS

The AHA-1020 can be installed in any IBM PC, PC XT, PC AT, PS/2 Models 25 & 30 or equivalent IBM-compatible computer. The successful installation of the Adaptec AHA-1020 to an embedded SCSI disk drive, requires the following hardware and software.

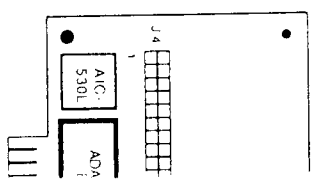
Hardware

1. IBM PC, PC XT, PC AT, or Personal System/2, Model 25 or 30 or equivalent IBM-compatible computer with:
 - a. One floppy diskette drive
 - b. One available system expansion slot
 - c. Room for one 5 1/4" or 3 1/2" Winchester (hard) disk drive
2. One 5 1/4" or 3 1/2" Winchester disk drive(s) supporting the industry-standard common command set (CCS) SCSI interface.
3. External power supply or power booster to support the power required by the SCSI disk drive. If using an PC XT or a very low power drive in the IBM PC, this is not required.
4. 50-pin flat ribbon cable to connect the drive to the host adapter.

* THE AHA-1020 must be the only controller operating a hard disk in the IBM PS/2 Models 25 and 30.

Software

1. PC XT, PC AT DOS version 2.0, or newer revisions
2. (Optional) A customer-supplied loadable device driver is needed for three to eight logical units or for systems using more than 64 MB of total disk capacity.



INTEGRATION

To install the AHA-1020, you must first configure the jumpers and the SCSI section described successfully in the

DRIVE SELECTION

The drive chart shows the selection switch location. These positions are: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12. The drive address must be set.

Parity must be

Before the drive is installed, the drive cable terminator, as it is called, must be installed on the cable in or near the drive controller. The terminator can be a resistor or a diode. The terminator must be installed on the pin DIP resistor chain must be installed on the

AHA-1020 BOARD LAYOUT

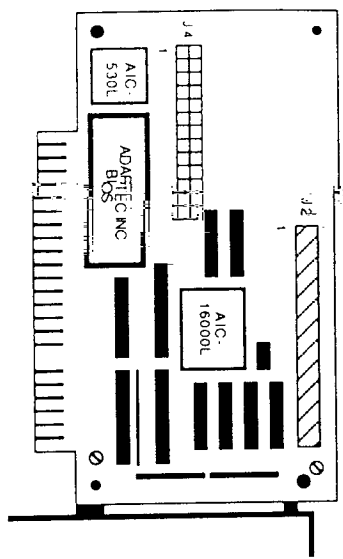


Figure 1

INTEGRATION INTO THE SYSTEM

To install the Adaptec board into your system, you must first configure the drive, check the host adapter jumpers and connect the drive cable properly. This section describes all the necessary steps needed to successfully install this hardware.

DRIVE SELECTION AND TERMINATION

The drive changeable parameters are the drive selection switches (or jumpers) and the drive termination. These parameters allow a drive to be selected as drive 0, 1, 2 or 3. This is accomplished by changing the drive address selection switches or jumpers. **Parity must be disabled on the drive.**

Before the drives can be cabled to the host adapter, the drive cable terminator must be properly set. The terminator, as its name implies, must be at the end of the cable in order to have the host adapter and drive communicate properly. The host adapter has a permanent terminator built in. The disk drives, since they can be connected in a daisy chain configuration, have a removable terminator. This is usually a 16 pin DIP resistor package. The last physical drive in the chain must have its terminator installed.

HOST ADAPTER JUMPER DEFINITION

Before beginning, verify the configuration is set up as shown. Five jumpers are installed 21-22 and 25-26.

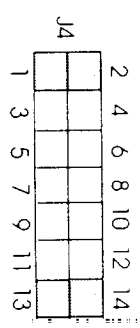


Figure 2

There should be no other jumpers on the host adapter.

DRIVE AND CONTROL

The host adapter has one connector on the J2 can connect up to one other SCSI devices with a cable.

The connector location and pin definition is shown in Figure 3. The location of pin 1 can be read on the host adapter.

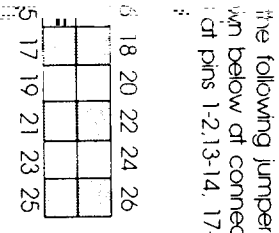


Figure 3

TERMINATION CABLEING

The cable connector, J2, SCSI disk drive, and six pin connector are shown in Figure 4. The location of the host adapter board.

Main orientation for the board is shown in Figure 1. The location of the host adapter board.

AHA-1020 PRIMARY FORMATTER

At this point, the disk must be formatted with a primary format. Primary formatting is not supported by DOS; however, it is supported by the AHA-1020 BIOS through "DEBUG." Unlike other host adapters, the AHA-1020 needs no extra software to perform the primary format. The primary format defines address fields and data fields on each track of the disk. After this is completed, bad blocks can be flagged and a directory created by a DOS "FORMAT" command.

To use the primary formatter, perform the following steps:

1. Boot DOS 2.0 or newer revisions from the DOS SYSTEMAL PROGRAMS diskette.
2. Type "DEBUG," the computer will respond with a "-".

NOTE:

Undefined characters are user inputs, <RET> means return key and parentheses mean comments.

```
A>DEBUG<RET>
(DEBUG prompt)
-G=CA000CCC<RET>
```

ADAPTEC AHA-1020 FORMAT PROGRAM
Please enter all numbers in DECIMAL

Enter sector interleave (4 to 5)<RET>

4-to-1 is the optimum interleave factor for the IBM PC/XT. Experimentation with different interleave factors is the best way of determining the optimum interleaving factor for your application.

The CCS jumper is installed on the AHA-1020. CCS drive is assumed, no defect indication is needed.

Are you sure you want to format the drive? (Y/N)

- operating system
- compatible
- power
- drive to
- power
- drive to
- operating system
- compatible
- power
- drive to

An 'N' will return to the beginning of the format program. When 'Y' is selected, the following will be shown:

Formatting Drive:...

The drive is now being formatted.

Format Completed...

Run this program again (Y/N)? Y or N

Now the primary format is complete, answer 'N' to return to the DOS >A prompt and continue.

TABLE 3 BIOS ERROR CODES

Code	Error
01	Bad Command Passed to Disk I/O
02	Address Mark Not Found
04	Requested Sector Not Found
05	Reset Failed
07	Drive Parameter Activity Failed
09	Attempt to DMA Across 64k Boundary
0B	Bad Track Flag Detected
10	Bad ECC on Disk Read
11	ECC Corrected Data Error
20	Controller Failure
40	Seek Operation Failed
80	Attached/Failed to Respond
8B	Undefined Error Occurred
FF	Sense Operation Failed

PARTITION AND FORMAT DESCRIPTION

Logical drive C: is always the first logical unit on drive 0. Logical drive D: is the second logical unit, which could be on drive 0, if large disk partitioning is used.

The disk must now be partitioned for DOS and the format verified.

1. Insert a copy of DOS that contains "FDISK" and "FORMAT" in floppy drive A.
2. Type FDISK and Select option 1: Create a DOS partition (See Chapter 4 of DOS Manual). If needed, repeat FDISK for drive D using option 5.
3. Reboot the system.
4. When complete, type FORMAT C:/S. If needed, repeat for drive D, using FORMAT D:.

This will create a DOS directory, verify the primary format and flag any bad (defective) sectors. Since the Adaptec defect handling scheme was used, there will be no bad sectors. From this point on, you can boot from the hard disk, copy files and operate your software applications.

You are up and running!

ADAPTEC AHA-1020

TROUBLESHOOTING CHECKLIST

- Probable problems: 1701 error; power-on failure; primary format failures, DOS failures.
- Check jumpers on the disk drive, be sure that the parity jumper is removed.
- Check jumpers on H/A with Figure 2.
- Check cable at J2. Be sure that pin 1 on the host adapter is connected to pin 1 of the drive.
- Check that the terminator on the drive is properly set.
- Check that the power supply can support the added current required by the drive. Be sure the +5V and +12V voltages are correct. Verify power requirements with the drive vendor.