

Hard Drive: CONNER: CP-30104H 121MB 3.5"/SL IDE / AT



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C P - 3 0 1 0 4 H   CONNER
NO MORE PRODUCED

                                     Native| Translation
                                     -----+-----+-----
Form                3.5"/SLIMLINE   Cylinders  1524| 762|   |
Capacity form/unform 121/      MB    Heads      4|  8|   |
Seek time / track   19.0/35.0 ms    Sector/track 39| 39|   |
Controller          IDE / AT        Precompensation
Cache/Buffer        32 KB LOOK-AHEAD Landing Zone
Data transfer rate   1.500 MB/S int  Bytes/Sector  512
                   4.500 MB/S ext
Recording method     RLL 1/7        operating | non-operating
                                     -----+-----
Supply voltage       5/12 V          Temperature *C    5 55 | -40 60
Power: sleep         0.3 W           Humidity %        8 80 |  8 80
  standby           0.5 W           Altitude km      -0.061 3.048| 12.192
  idle              2.8 W           Shock g          5 | 75
  seek              3.9 W           Rotation RPM     3400
  read/write        3.8 W           Acoustic dBA     40
  spin-up           W              ECC Bit          56,SPLIT
                                     MTBF h          100000
                                     Warranty Month   15
Lift/Lock/Park      YES             Certificates     CSA,IEC380,IEC435,IEC950,T...
    
```

Layout

CONNER CP30064H/CP30104H PRODUCT MANUAL REV. I, FEBRUARY, 1992

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+-----+
| +-+                |XX J5
| | |                |xx Power
| | |HDA             |
| | |                |XX 40 Pin
| +-+                |XX Task
|                    |XX File
|                    |XX
    
```


E1 - Not used.

J3 Power

```
+-----+
| 1 2 3 4 |
+-+--+--+
| | | +----- +5V
| | +----- Ground
| +----- Ground
+----- +12V
```

J5 Power Connector

```
+-----+
| 1 2 3 |
+-+--+--+
| | +----- Ground
| +----- +12V
+----- + 5V
```

Installation of the Drive and Adapter Card

1. Remove power to the computer

2. If another hard disk controller is installed, it is necessary to prevent it from responding to the addresses 1F0-7H and 3F6-7H. It is also necessary to ensure that the controller is electrically disconnected or tri-stated from IRQ14 of the motherboard bus. This may be done either by removing the board, by electrically disconnecting the signal from the interface, or by setting the jumpers of the board to select the alternate address for the hard disk.

3. Insert the board into any available card slot.

4. Configure the Host adapter for the correct configuration of your computer BIOS.

Adapter Card Jumpers E1 and E3 always not installed
 E2 and E4 always installed

Note: E3 and E4 are located in a straight line with a pin between them, as shown below. Jumper in refers to the pin jumpered to the center pin.

 E3 E4
 o o o

5. Connect power to the Disk Drive.

6. Run the DOS FDISK program (or equivalent) to establish DOS partitions.

Note: DOS 3.2 and below have limitations of 32 megabytes unless software utility is used to overcome this.

7. Run the DOS format program by typing "Format C:/S". The volume may be named with the addition of the "/V". The format will be completed and the system transferred if the "/S" option was used. The system will ask for a volume name if the "/V" option is used.

8. Files can then be copied to the C: drive from the floppy.

9. When the system is rebooted, the system should boot from the hard drive (Drive C:) if the floppy is removed.

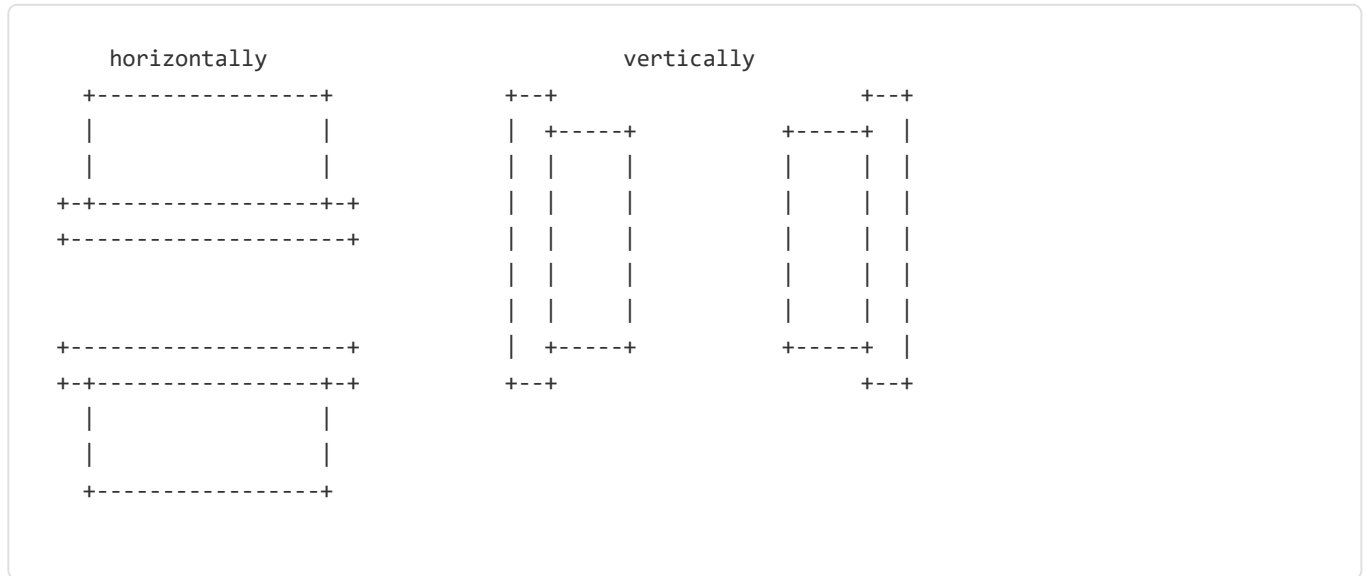
Install

CONNER CP30064H/CP30104H PRODUCT MANUAL REV. I, FEBRUARY , 1992

Notes on installation

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Installation direction



Installation direction

The drive may be mounted in any attitude!

Recommended Mounting Configuration

This drive is designed to be used in applications where the units may experience shock and vibrations at greater levels than larger and heavier disk drives.

The design features which allow greater shock tolerance are the use of rugged heads and media, a dedicated landing zone, closed loop servo positioning and specially designed motor and actuator assemblies.

Ten base mounting points are provided to the customer. The drive is mounted using 6-32 x 1/8" max. insertion for the sides, and 0.20" insertion for the bottom. The system integrator should allow ventilation to the drive to ensure reliable drive operation over the operating temperature range.

For additional vibration isolation, an external suspension system may be used.

Power Connector

The drives have a 4 pin DC power connector (J4) mounted on the PCB. The recommended mating connector is AMP part number 1-480424-0 utilizing AMP pins, part number 350078-4 or equivalent. DC power may also be supplied to the drive in some interfaces through a 3 pin connector is Molex part number 39-01-0033 utilizing Molex pins, part number 39-00-0031 or equivalent.

Task File Interface Connector

A 40 pin Task File Interface connector mounted on the printed circuit board. The recommended mating connector is Molex part number 10-91-2401 or equivalent. Two drives may be daisy chained together at this connector, and the maximum cable length is two feet.

Magnetic Field

The disk drive will meet its specified performance while operating in the presence of an externally produced magnetic field under the following conditions.

Frequency	Field Intensity
0 to 700 KHz	6 gauss maximum
700KHz to 1.5Mhz	1 gauss maximum

Acoustic Noise

The sound pressure level will not exceed 40 dBA at a distance of 1 meter from the drive.

Features

CONNER CP30064H/CP30104H PRODUCT MANUAL REV. I, FEBRUARY, 1992

Key Features

The CP30104H is a high performance 3.5 inch low-profile (1") 121 megabyte (formatted) disk drives with 19 ms average seek time, that is designed to operate on an IBM PC/AT or equivalent in translate

mode. The CP30064H is a 60 megabytes (formatted) versions of the drive. The drives feature low power requirements and high shock resistance, enabling battery operation in portable environments.

Because the drive contains the Task File within its control logic, it requires a simplified adapter board to operate. Conner Peripherals has developed an adapter board to be used in conjunction with the drive on an AT or equivalent system.

- Low power requirements enabling battery operation in portable environments.

- High performance rotary voice coil actuator with embedded servo system.

- One of seven run length limited code.

- High shock resistance

- Sealed HDA

- Automatic actuator latch against inner stop upon power-down.

- Microprocessor-controlled diagnostics routines that are automatically executed at start-up.

- Automatic error correction and retries

- 512 bytes block size

- Emulates Task File with support additional commands.

- Up to two drives may be daisy-chained on the AT interface.

- 32K Look Ahead buffer

Split ECC

The new generation of Conner drives feature a split sector, that is a 512 byte sector split into two segments. This allows improved error correction performance. The first 254 bytes of the sector are written with their own ECC syndrome which allows for a corrections of any single defect of up to 8 consecutive bits. The second 267 bytes of a sector also have their own ECC syndrome which allows an additional defect correction in the second half of the sector. This allows for 1 ECC correction for each half of a sector or up to two for each sector depending on placement.

Some diagnostics expect an uncorrectable error to be reported when there are two defects more than 8 bits apart. This will not happen if the defects are in different segments off the sector, and in that case the improved correction capability will correct both errors. On a read long, the drive returns 512 bytes of data plus 7 bytes of ECC.

Seek Times

+-----+	
Track-to-Track	msec. 8
+-----+	
	Average msec. typ. < 19
	Average msec. max. 35
+-----+	
Latency	msec. avg. 8.8
+-----+	

The timing is measured through the interface with the drive operating at nominal DC input voltages. The timing also assumes that:

- BIOS and PC system hardware dependency have been subtracted from timing measurements.

- The drive is operated using its translation drive parameters.

The average seek time is determined by averaging the seek time for a minimum of 1000 seeks of random length over the surface of the disk.

Write Precomp Register

(-HOST CS0, address 1 write only) A register previously used to set write precompensation, that is present but is used only for enabling or disabling LOOK AHEAD READ's.

Functional Description

The drive contains all necessary mechanical and electronic parts to interpret control signals, position the recording heads over the desired track, read and write data, and provide a contaminant free environment for the heads and disks.

Read/Write and Control Electronics

One integrated circuit is mounted within the sealed enclosure in close proximity to the read/write heads. Its function is to provide head selection, read pre-amplification, and write drive circuitry. The read/write heads are supported by a mechanism coupled to the voice coil actuator.

The single circuit card provides the remaining microprocessor-controlled electronic functions, which include:

- Read/Write Circuitry

- Rotary Actuator Control

- Interface Control

- Spin Speed Control

- Dynamic Braking

At power down or the start of STANDBY MODE the heads are automatically retracted to the inner diameter of the disk and are latched and parked on a landing zone that is off the data tracks.

Drive Mechanism

A brushless DC direct drive motor rotates the spindle. The motor/spindle assembly is balanced to provide minimal mechanical runout to the disks and to reduce vibration of the HDA. A dynamic brake is used to provide a fast stop to the spindle motor and when power is removed, or upon initiation of STANDBY MODE.

Air Filtration System

The head-disk assembly is a sealed enclosure with an integral 0.3 micron filter which maintains a clean environment for the heads and disks.

Head Positioning Mechanism

The four read/write heads are supported by a mechanism coupled to the voice coil actuator in the CP30104H. Two heads are removed and a counter balancing weight is substituted in the CP30064H.

Read/Write Heads and Disks

Data is recorded on 95mm diameter disk through four miniature metal-in-gap heads. The configuration is one disk and two heads for the CP30064H.

Error Correction

The drive performs internal error correction. The error correction polynomial is capable of correcting one error burst with a maximum of 8 bits in each half of a 512 byte block.

Reliability and Maintenance

MTBF	100,000 hours (base on field return data from this and prior generations of products)
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utilizing similar technology)

MTTR 10 minutes typical

Preventive Maintenance None

Component Design Life 5 years

Safety Standard

Conner Peripherals disk drives are designed to comply with relevant product safety standards such as:

- UL 478, 5th edition, Standard for Safety of Information Processing and Business Equipment, and UL 1950, Standard for Safety of Information Technology Equipment

- CSA 22.2#154, Data Processing Equipment and CSA 22.2#220, Information Processing and Business Equipment CSA 22.2#950, Safety of Information Technology Equipment

- IEC 435 Safety Requirements for Data Processing Equipment, IEC 380, Safety of Electrically Energized Office Machines, and IEC 950, Safety of Information Technology Equipment Including Electrical Business Equipment

- VDE 0805 Equivalent to IEC 435, VDE 0805 TIEL 100, Equivalent to IEC 950, and VDE 0806, Equivalent to IEC 380

- TUV Essen und TUV Rheinland

Notice

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incidental consequential damages in connection with the furnishing, performance, or use of this material.

Problems

If at power on, the drive spins up but is ignored by the system (indicated by the system taking a long time to boot) it is possible the IRQ14 is not becoming active. Check to make sure that the interrupt is isolated electrically from the original hard disk controller's IRQ13.

If at power on, the drive does not spin up right away or does not spin up until after the computer completes power on, it is possible that RESET is either continually active or is electrically connected to some other signal.

If when taking a directory it is inaccurate or does not change, it is possible that the adapter board is connected to bit 7 when address 3F7 is read.

If the computer completes its power on sequence before the drive is up completely and subsequently gets a 17xx error of some sort, and if a subsequent warm boot is successful, it is possible the BIOS is expecting a different status at power on before the system is ready. Either delay the power on sequence or change the BIOS to expect a 00 status before the drive becomes ready.

Additionally, if the drive does not function as indicated, combinations of jumpers E2, E3 and E4 can be made to determine the correct configuration. An explanation of the jumpers follows:

Jumper E2 enables or disables chip select 1 (CS1). Installed enables it.

Jumper E3 will clear IRQ14 with deassertion of Host SLV/ACT.

Jumper E4 will clear IRQ14 with a status read only.

Care must be exercised with the routing of the power & signal cables. They should not be routed next to the drive PCB or other high frequency or large current switching signals. Improper drive operating can result from improper cable routing.



Search