



DATA TECHNOLOGY
C O R P O R A T I O N

5150CRH DISK CONTROLIER

INSTALLATION GUIDE

DATA TECHNOLOGY CORPORATION
Printed in Taiwan July '87

2551 Walsh Avenue
Santa Clara, CA 95051
U.S.A.
Telephone (408) 727-8899
TWX 474-5044 DTCSC

***** WARNING *****

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- * Reorient the receiving antenna.
- * Relocate the computer with respect to the receiver.
- * Move the computer away from the receiver.
- * Plug the computer into a different outlet so that computer and receiver are on different branch circuits.
- * If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful:

“How to Identify and Resolve Radio-TV Interference Problems”.

This booklet is available from the U.S. Government Printing Office, Washington, DC 20402. Stock No. 004-000-00345-4

NOTE: When interfacing with an external device, a shielded cable must be used to comply with FCC regulations.

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1.0 Introduction

The DTC-51 50CRH Hard Disk controller is able to control a maximum of two ST-506/412 type industry standard 3-1/2" or 5-1/4" Winchester disk drives under IBM PC DOS version 2.0 or later on an IBM PC or XT. A DC power connector (J4) is provided on the board for use as a hard card configuration.

PLEASE READ THIS INSTALLATION GUIDE CAREFULLY BEFORE STARTING INSTALLATION.

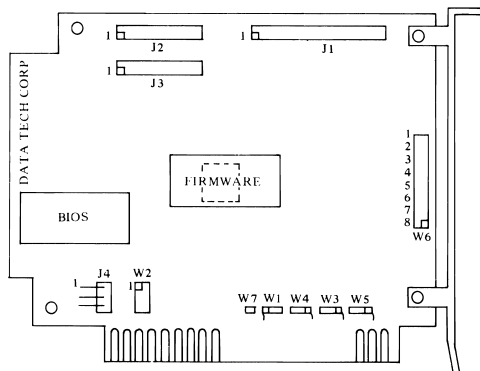


FIGURE 1. LOCATION OF JUMPERS ON DTC-51 50CRH

2.0 Jumper Setup Instructions for CXD PROM

The following information pertains to the DTC-51 50CRH when used with Data Technology Corporation's CXD BIOS.

2.1 BIOS ROM SIZE SELECT JUMPER (W1)

This jumper is provided to select the size of the ROM installed on the controller, and it is set to the correct position at the factory before shipping. It need not be changed unless a different sized BIOS is to be used in place of the standard BIOS.

- * W1: 1-2 is installed for a 8K ROM.
- W1: 2-3 is installed for a 16K ROM.

2.2 PROM ADDRESS JUMPER and PROM ENABLE JUMPER (W2)

The PROM ADDRESS jumper (W2 pin 1-6 and 2-5) allows the PROM to be relocated. The default setting places it at address C800:0000. Adding jumpers places it at alternate addresses. (see example below)

The PROM ENABLE jumper (W2 pin 3-4) enables the CXD BIOS PROM when it is installed. THIS JUMPER MUST BE INSTALLED WHEN USING THE ON-BOARD BIOS PROM FOR PROPER OPERATION OF THE CONTROLLER.

(NOTE: See Figure 1 for pin locations)

W2: 3-4	2-5	1-6	PROM ADDRESS
OUT	—	—	Prom Disabled
*IN	OUT	OUT	C800:0000
IN	OUT	IN	CA00:0000
IN	IN	OUT	D800:0000
IN	IN	IN	F400:0000

Note: When using the on board BIOS (W2 3-4 is installed) only the following combinations are valid.

If I/O address 320 to 323 is selected, then the BIOS address must be C800:0000 or F400:0000.

If I/O address 324 to 327 is selected, then the BIOS address must be CA00:0000 or D800:0000.

2.3 DMA CHANNEL SELECTION JUMPERS (W3 and W4)

This set of jumpers allow customers to use an alternate hard disk DMA channel other than the one used in the IBM PC/XT.

To select the standard DMA channel (factory setting) set W3 and W4 as follows:

- * W3 3-2 installed (selects DACK3)
- * W4 1-2 installed (selects DREQ3)

(NOTE: * Factory setting)

2.3 Con't

To select the alternate DMA channel set W3 and W4 as follows:

W3 1-2 installed (selects DACK1)

W4 3-2 installed (selects DREQ1)

2.4 INTERRUPT SELECTION JUMPER (W5)

The Interrupt Selection Jumper allows the user to select an alternate hard disk interrupt other than the one used in an IBM PC/XT.

To select the standard interrupt IRQ5:

* Install W5 3-2 (factory setting)

To select an alternate interrupt IRQ2:

Install W5 1-2

2.5 SOFTWARE-READABLE JUMPERS (W6)

This 8 position jumpers are used to set for your Winchester drive type. Factory setting is for all 8 jumpers to be removed for default auto to drive configuration. In the factory mode no changes are required to the 8 position jumpers. However, an option of manual setting of drive types by jumper settings is provided. See section 4.0 for manual drive type jumper settings.

2.6 PRIMARY/SECONDARY PORT ADDRESS JUMPER (W7)

* W7 installed = Primary Port Address
(320 to 323 Hex)

W7 not installed = Secondary Port Address
(324 to 327 Hex)

If P/S address 320 to 323 is selected, then the BIOS address must be C800:0000 or F400:0000.

If P/S address 324 to 327 is selected, then the BIOS address must be CA00:0000 or D800:0000.

2.7 DC POWER CONNECTOR (J4)

DC power can be provided to the drive from this connector when the controller is used as a hard card. Refer to the following pin outs.

2.7 Con't

Pin Number	Pin Description
1	+ 12V
2	+ 12V
3	+ 5V
4	N.C. (Keyed Pin, connector pin removed)
5	Gnd
6	Gnd

3.0 Cable Requirements

- The following ribbon cables are required for the different configurations.
 - One internal drive:
one 20-conductor cable
one 34-conductor cable
 - Two internal drives:
two 20-conductor cables
one 34-conductor twisted or flat daisy chain cable
- The 34 pin cable connects to J1 on the 5150CRH.
- The 20 pin cable connects to J2 and/or J3.
The drive Logical Unit Number is determined by a setting on the disk drive, not by the choice of cable connector J2 or J3.

(see Figure 1 for location of cable connectors)

4.0 Initial Power Up

- Place a copy of IBM DOS 2.0 or later into floppy drive A: and apply power to the system in the normal sequence.
- The system will come up with the following message:

* Controller board configuration*
Hard Disk 1 : Configuration parameters not found.
(Your system may come up with "Hard Disk 2:..." if you installed two physical drives).

4.0 Con't

To install configuration parameters, run DEBUG from floppy disk "A" as follows:

```
A > debug
g = C800:5
```

Insert DOS diskette in drive "A".
System will reboot! Please wait...

(NOTE: See section 2.2 for the correct prom address if you did not select the default setting of C800:0000)

- c. If this step has been successfully completed, continue on with Section 6.0 "Formatting The Disk" before trying to use your disk.

5.0 Formatting The Disk

Warning! The Data Technology Corporation hard disk formatting utility will erase all data on the hard disk! It should only be run once, the first time you install your hard disk.

- a. After starting DOS successfully from the floppy drive, execute the command: debug

(If your DOS came on two diskettes, the DEBUG program may be on the second diskette). Debug will respond with a "-" prompt.

- b. Respond to the "-" prompt with the command:

```
g = C800:5
```

(See section 2.2 for the correct prom address if you did not select the default setting of C800:0000)

- c. This will initiate the hard disk format utility and the following message will appear:

* Format Utility *

Drive no (1-2): (Enter the drive number that you want to format.)
Interleave (2-9): (Enter the interleave factor desired. For optimal system performance an interleave of 3 is recommended).

5.0 Con't

- d. A drive table will appear after you have answered the above questions.
- e. After you have selected the correct drive type by the table number or by W6 jumper, the following questions will appear. Answer with the appropriate information as each question appears.

- * Cyl:
- * Heads:
- * Precomp:
- * Reduced write current:
- * Step rate:

Correct drive type (Y/N)?

Enter drive defect table? (Y/N)

Is above information correct? (Y/N)

Ready to ERASE Entire Disk? (Y/N)

- f. If the drive type that you have is not listed in the drive table, select table number 15 for the FREE FORMAT. The following questions will appear:

Cylinders ((1-1024):

Heads (1-16):

Step rate (micro sec): (default = 40)
(5, 10, 20, 30, 40, 50, 60, 70)

Set Reduced Write Current at cylinder:
(1 to max cylinders) (default = none)

Set Write Precompensation at cylinder:
(1 to max cylinders) (default = none)

Enter drive defect table? (Y/N)

Is above information correct? (Y/N)

Ready to ERASE Entire Disk? (Y/N)

- g. When the formatting is done, the program will exit to DOS and you will receive the "A>" prompt.
- h. If you have more than one hard disk, repeat this procedure for the next physical hard disk.
- i. Proceed with the normal DOS procedure for bringing up a hard disk using FDISK and FORMAT commands. See your DOS manual for further instructions.

6.0 Drive Type Jumper Settings for CXD03A

drive number is shown as 1 or 2 and corresponds to the Drive select jumper on the disk drive. When two drives are used, combine the jumper settings according to drive number.

Key: OFF = remove jumper (open)
 ON = set jumper on (closed)
 xx = set jumper according to drive type

Drive Type	Drive Number	Jumper Settings							
		1	2	3	4	5	6	7	8
0: ST-225/Tandon-262	1	xx	xx	ON	ON	xx	xx	ON	ON
	2	ON	ON	xx	xx	ON	ON	xx	xx
1: ST-4038	1	xx	xx	OFF	ON	xx	xx	ON	ON
	2	OFF	ON	xx	xx	ON	ON	xx	xx
2: Miniscribe-3425 Microscience-725	1	xx	xx	ON	OFF	xx	xx	ON	ON
	2	ON	OFF	xx	xx	ON	ON	xx	xx
3: ST-212/ST-412	1	xx	xx	OFF	OFF	xx	xx	ON	ON
	2	OFF	OFF	xx	xx	ON	ON	xx	xx
4: Priam-V150	1	xx	xx	ON	ON	xx	xx	OFF	ON
	2	ON	ON	xx	xx	OFF	ON	xx	xx
5: Priam-V170	1	xx	xx	OFF	ON	xx	xx	OFF	ON
	2	OFF	ON	xx	xx	OFF	ON	xx	xx
6: ST-425	1	xx	xx	ON	OFF	xx	xx	OFF	ON
	2	ON	OFF	xx	xx	OFF	ON	xx	xx
7: Tandon-362/ST-138	1	xx	xx	OFF	OFF	xx	xx	OFF	ON
	2	OFF	OFF	xx	xx	OFF	ON	xx	xx
8: ST-4051/Tandon-755	1	xx	xx	ON	ON	xx	xx	ON	OFF
	2	ON	ON	xx	xx	ON	OFF	xx	xx
9: ST-251	1	xx	xx	OFF	ON	xx	xx	ON	OFF
	2	OFF	ON	xx	xx	ON	OFF	xx	xx
10: ST-213/Syquest-312 Miniscribe-3012/3212	1	xx	xx	ON	OFF	xx	xx	ON	OFF
	2	ON	OFF	xx	xx	ON	OFF	xx	xx
11: Tandon-703	1	xx	xx	OFF	OFF	xx	xx	ON	OFF
	2	OFF	OFF	xx	xx	ON	OFF	xx	xx
12: Maxtor-1085	1	xx	xx	ON	ON	xx	xx	OFF	OFF
	2	ON	ON	xx	xx	OFF	OFF	xx	xx
13: ST-4096	1	xx	xx	OFF	ON	xx	xx	OFF	OFF
	2	OFF	ON	xx	xx	OFF	OFF	xx	xx
14: OKI-540	1	xx	xx	ON	OFF	xx	xx	OFF	OFF
	2	ON	OFF	xx	xx	OFF	OFF	xx	xx
15: Free Format	1	xx	xx	OFF	OFF	xx	xx	OFF	OFF
	2	OFF	OFF	xx	xx	OFF	OFF	xx	xx

Revision Record

ECO #	Rev	Date	Description
	A	06-16-87	Initial release
	B	10-01-87	Production release