



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

INSTALLATION GUIDE

FOR THE

7280 PC/AT

1:1 INTERLEAVE

WINCHESTER & FLOPPY DISK CONTROLLER

## PREFACE

\* \* \* WARNING \* \* \*

### COPYRIGHT

(C) 1988 Data Technology Corporation.  
All rights reserved

This manual and the product described in it are copyrighted by Data Technology or by Data Technology's suppliers, with all rights reserved. Under the copyright laws, this manual may not be copied, in whole or in part, without the written consent of Data Technology, except in the normal use of the product or to make a backup copy. This exception does not allow copies to be made for others, whether or not sold, but all of the material purchased (with all backup copies) may be sold, given or loaned to another person. Under the law, copying includes translating into another language.

### TRADEMARKS

IBM, PC/AT, DOS, OS/2, SPEEDSTOR, DISK MANAGER, and VFEATURE DELUXE are registered trademarks of their respective companies.

### DOCUMENT RECORD

Data Technology Corporation Part Number 09-00422A-1  
May 18, 1988.

### REVISION RECORD

ECO #	REV	DATE	DESCRIPTION
	A	05-17-88	Initial release

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:

U.S. Government Printing Office  
Washington, DC 20402.

Stock No. 004-000-00045-4

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

## TABLE OF CONTENTS

	PAGE
1.0 INTRODUCTION.....	1
2.0 FEATURES.....	1
3.0 EQUIPMENT NEEDED TO DO INSTALLATION.....	1
4.0 BOARD LAYOUT AND JUMPER LOCATIONS.....	2
5.0 JUMPER SETTINGS.....	2
5.1 (W1) NOT LOADED.....	2
5.2 PRIMARY/SECONDARY PORT ADDRESS (W2 & W3).....	2
5.3 FLOPPY DATA RATE CONTROL (W4).....	2
5.4 FIRMWARE/HARDWARE DRIVE SELECT MODE (W5).....	3
5.5 AUTO-DESELECT MODE (W6).....	3
5.6 FLOPPY PRECOMPENSATION CONTROL (W7).....	3
6.0 INSTALLATION OF THE DISK DRIVES.....	3
6.1 FLOPPY DRIVE INSTALLATION.....	3
6.2 HARD DRIVE INSTALLATION.....	4
7.0 FORMATTING THE DRIVE.....	5
7.1 LOW LEVEL FORMAT.....	5
7.2 DOS FDISK AND DOS FORMAT.....	6

## 1.0 INTRODUCTION

The DTC 7280 controller is designed to function as a combination MFM Winchester disk drive and floppy disk drive controller in IBM PC/AT or compatible systems that do not contain the floppy drive function on the motherboard or on another controller board in the system.

The 7280 is able to control up to two industry standard qualified Winchester disk drives and up to two standard floppy disk drives that can be any combination of single- or double density or single- or double-sided floppy drives. The 7280 can also support 360kB, 1.2MB, 720kB, and 1.44MB 3.5- inch floppy disk drives.

NOTE: The 7280 can support up to three internal floppy disk drives. However, a software driver is required to access the third floppy drive.

## 2.0 FEATURES

The 7280 MFM controller operates asynchronously to the system clock and adds no wait states to the computer's request to transfer a byte or word. The 7280 operates at 1:1 interleaving for high-speed AT-compatible systems and is compatible with I/O BUS speeds of up to 16MHz. Additionally, the 7280 is only 3.9 inches in height and fits into "baby AT" chassis.

## 3.0 EQUIPMENT NEEDED TO DO INSTALLATION

The following equipment is needed to install the DTC 7280 controller:

For one hard disk and one or two floppies:

- 1 - 20 pin flat ribbon data cable for the hard disk.
- 1 - 34 pin (twisted or flat) ribbon cable for the hard disk.
- 1 - 34 pin twisted ribbon daisy chain cable for the floppy disk drive (s).

For two hard disks and one or two floppies:

- 2 - 20 pin flat ribbon data cables for the hard disks.
- 1 - 34 pin (twisted or flat) ribbon daisy chain cable for the hard disks.
- 1 - 34 pin twisted ribbon daisy chain cable for floppy disk drive (s).

Software: DOS 2.1 or later with these 3 files:  
 DEBUG, FDISK, and FORMAT  
 (NOTE: the 7280 is OS/2 compatible).

## 4.0 BOARD LAYOUT & JUMPER LOCATIONS

Refer to diagram 1.0 for jumper locations.

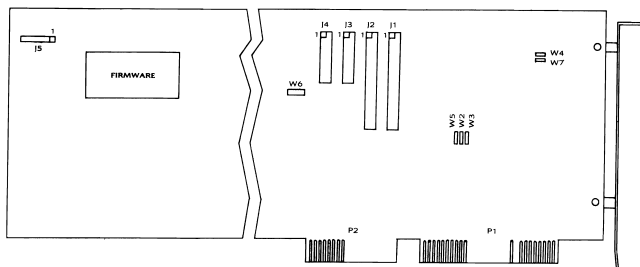


DIAGRAM 1.0 - 7280 BOARD LAYOUT

## 5.0 JUMPER SETTINGS

### 5.1 THE 7280 DOES NOT CONTAIN JUMPER (W1)

### 5.2 PRIMARY/SECONDARY PORT ADDRESS JUMPERS (W2 & W3)

W2 and W3 jumpers are for the I/O port addresses.

- \* W2 and W3 not installed = Primary port address  
1F0 to 1F7, 3F0 to 3F7
- W2 and W3 installed = Secondary port address  
170 to 177, 370 to 377

### 5.3 INITIAL FLOPPY DATA RATE CONTROL JUMPER (W4)

Jumper W4 controls the power-up data transfer rate for the floppy drives.

- W4 installed = 250KHz
- \* W4 not installed = 500KHz

(NOTE: \* Factory Setting)

### 5.4 FIRMWARE/HARDWARE DRIVE SELECT MODE (W5)

Two modes of drive selection are supported. In the hardware drives select mode the drive number is driven directly to the drive interface. In the firmware drive select mode the drive number is intercepted by the controller firmware.

- \* W5 installed = Hardware Select Mode
- W5 not installed = Firmware Select Mode

### 5.5 AUTO-DESELECT MODE (W6)

This jumper is used to control the drive select light (LED). Removal of this jumper will cause the drive light (LED) to remain brightly illuminated whenever power is on.

- \* W6 installed = Auto-deselect enabled
- W6 not installed = Auto-deselect disabled

### 5.6 FLOPPY PRECOMPENSATION CONTROL JUMPER (W7)

Two modes of precompensation for the floppy drive are supported on the 7280.

- W7 installed = precompensation at 125ns
- \* W7 not installed = precompensation is scaled by the data rate of the floppy drive.  
(125ns for 500KHz, 208ns for 300KHz, and 250ns for 250KHz).

## 6.0 INSTALLATION FOR THE DISK DRIVES

The 7280 controller has four cable connectors J1, J2, J3, and J4. (NOTE: The connector locations and pin 1 orientation for these connectors are shown in diagram 1.0).

### 6.1 FLOPPY DRIVE INSTALLATION

#### 6.1.1 Single - Floppy Drive System

Install the 34 pin header connector onto J1 of the controller with the colored edge of the twisted ribbon cable aligned to pin 1.

Install the 34 pin edge connector onto the disk drive with the colored edge of the twisted ribbon cable aligned to pin 1 of the drive edge connector.

(NOTE: \* Factory Setting)

Be sure the floppy disk drive terminator is installed and set the disk drive select switches to drive select 1. This assumes the drive selects are numbered 1 to 4.

### 6.1.2 Dual - Floppy Drive System

Install the 34 pin header connector onto J1 of the controller with the colored edge of the daisy chained ribbon cable aligned to pin 1.

Install the other 34 pin edge connectors onto the disk drives with the colored edge of the daisy chained ribbon cable aligned to pin 1 of the drive edge connectors.

Be sure the last physical floppy disk drive on the daisy chain has the terminator resistor installed. The drive at the end of the cable will be used as drive A. Set both drives to drive select 2. This assumes the drive selects are numbered 1 to 4.

## 6.2 HARD DRIVE INSTALLATION

### 6.2.1. Single - Hard Drive System

Install the 34 pin header connector onto J2 of the controller with the colored edge of the ribbon cable aligned to pin 1. Install the 20 pin header connector onto J3 of the controller with the colored edge of the ribbon cable aligned to pin 1.

Install the 20 and 34 pin edge connectors onto the disk drive with the colored edges of the cables aligned with pin 1 of the drive edge connectors.

Be sure the disk drive has the terminating resistor installed. Set the disk drive select switches for drive select 1 when using a flat 34 pin cable and drive select 2 when using a twisted 34 pin cable. This assumes the drive selects are numbered 1-4.

### 6.2.2 Dual - Hard Drive System

Install the 34 pin header connector onto J2 of the controller with the colored edge of the daisy chain ribbon cable aligned to pin 1. Install the 20 pin header connectors onto J3 of the controller for drive number one and J4 for drive number two.

Install the two 20 pin edge connectors and the 34 pin daisy chained ribbon cable edge connector onto the disk drives with the colored edges of the cables aligned with pin 1 of the drive edge connectors.

Be sure the last physical drive on the daisy chain is terminated. The drive at the end of the cable will be drive C. When using a flat 34 pin daisy chain cable, set drive C to drive select 1 and set drive D to drive select 2. When using a twisted 34 pin daisy chain cable, set both drives to drive select 2. This assumes the drive selects are numbered 1 to 4. REFER TO YOUR DISK DRIVE OWNER'S MANUAL FOR INFORMATION ABOUT PROPER DRIVE TERMINATION AND SELECT SWITCHES.

## 7.0 FORMATTING THE DRIVE

Once the controller and disk drive hardware installation is complete, the hard disk drive (s) require low level formatting, DOS level partitioning (FDISK), and DOS level formatting (FORMAT).

### 7.1 LOW LEVEL FORMAT

7.1.1 Insert your IBM Diagnostic diskette (or equivalent program for IBM compatibles) into the floppy disk drive and turn on the system power.

=====

**WARNING:** IBM Advanced Diagnostics does not support 1:1 Interleaving. Consult your IBM Compatible System's Owners Manual in order to determine if a 1:1 interleave format can be supported by your AT compatible system.

=====

7.1.2 After the system completes the initial system test, the diagnostic menu will appear on the screen. This program provides functions for preparation of a new fixed disk drive including selecting drive type, formatting (low level), verification, and defect mapping of the drive. All are done in a menu driven fashion.

7.1.3 Using the menu driven options: select setup options, select proper drive types, and execute the low level format. Consult your System Technical Reference Manual for further information on these parameters.

7.1.4 Upon initiation of low level format the following message will appear:

```
**** WARNING ****  
ALL DATA ON THE FIXED DISK WILL BE DESTROYED  
DO YOU WANT TO CONTINUE?  
ENTER (Y/N)
```

Enter "Y" to proceed with low level format.

## 7.2 DOS FDISK AND DOS FORMAT

From the "A" floppy disk drive, proceed to load and execute the FDISK and FORMAT programs as described in your system DOS manual in order to complete the hard disk drive preparation.

### \*\*\* NOTE \*\*\*

In order to avoid the DOS partitioning limit of 32 Megabytes, commercially available software (such as Speedstor, Disk Manager, VFeature Deluxe, etc.) will allow you to create DOS partitions greater than 32 Megabytes.

DOS revisions 3.3 and above will also allow users to access greater than 32 Megabytes on a disk drive. Consult your DOS manual for information.