LCS-6200 Series

HARD/FLOPPY DISK

CONTROLLER

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Introduction

The LCS-6200 Series Hard/Floppy Disk Controller is designed to be used with the IBM PC/XT and XT compatibles. It is equipped with the following versatile and powerful features:

Features:

- Host Interface: IBM PC/XT or its compatibles.

- 1 or 2 floppy disk drives can be connected (For LCS-6220 only)
  - 5.25" FDD with 360KB capacity.

- 1 or 2 hard disk drives can be connected
  - Supports both 5.25" and 3.5" hard disk drives.
  - Up to 16 different drive types can be chosen by jumper settings.
  - Indefinite drive types can be chosen with key-in mode selected.

(The jumper settings for drive types and key-in mode selection will be described later.)

Specification:

		LCS-6210	LCS-6220
HOST I/F		IBM PC/XT	
FIXED DISK		1. Form Factor 5¼" or 3½"x2 2. I/F ST-506/ST-412 3. Data Rate 5M Bits/Sec. 4. Cylinders 1,024 Max 5. Heads 8 Max	
FLOPPY DISK		—	5¼" x 2
ECC (11 Bits)		Standard	
SECTOR LENGTH		512 Bytes	
SPLIT MODE		Yes (in head number)	
COMPATIBILITY		MS-DOS 2.0 or later versions	
POWER	+ 5V	0.8A	1.0A
	+12V	50mA	

* Specifications are subject to change without prior notice.

Configuration-Jumper Settings

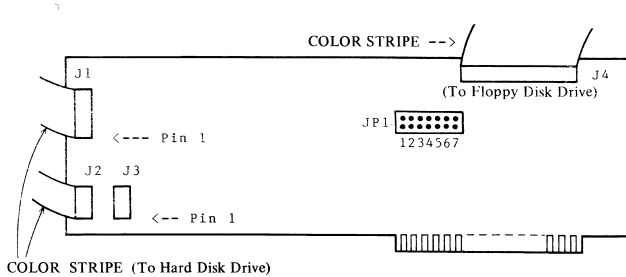Refer to Fig.1 (Fig.2) for location of jumpers on the LCS-6220 (LCS-6210D) when configuring your system.

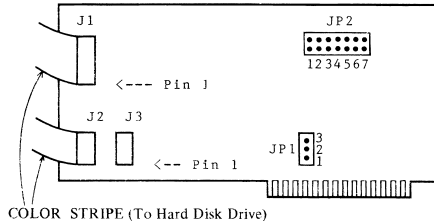
Fig.1 The Layout of the Jumpers on the LCS-6220

Fig.2 The Layout of the Jumpers on the LCS-6210D

Jumper Settings:

JP1: (For LCS-6210D only)
Address Selection

JP1: (1,2) Closed to select address E8000
JP1: (2,3) Closed to select address C8000
(Factory Setting)

You will find three holes instead of a jumper at JP1 location. Use the solder and any conductive wire to weld and link the desired holes for selecting the appropriate address.

JP2 (For LCS-6210D), **JP1** (For LCS-6220):
Drive Type and Key-in Mode Selection

Refer to the table on the next page for jumper settings.

Table 1

| | | | | | **Jumper Settings for Drive A** | | | |
Type	**Capacity**	**Head**	**Cyl**	**Step Rate**	**1**	**2**	**3**	**4**
1	20MB	4	612	17.6us	OP	OP	OP	OP
						(Factory Setting)		
2	20MB	4	612	200.00us	CL	OP	OP	OP
3	10MB	2	612	17.6us	OP	CL	OP	OP
4	10MB	2	612	200.00us	CL	CL	OP	OP
5	10MB	4	306	17.6us	OP	OP	CL	OP
6	10MB	4	306	200.00us	CL	OP	CL	OP
7	20MB	8	306	17.6us	OP	CL	CL	OP
8	21MB	4	640	17.6us	CL	CL	CL	OP
9	22MB	6	440	200.00us	OP	OP	OP	CL
10	30MB	5	695	17.6us	CL	OP	OP	CL
11	32MB	6	640	17.6us	OP	CL	OP	CL
12	32MB	5	733	17.6us	CL	CL	OP	CL
13	40MB	8	612	17.6us	OP	OP	CL	CL
14	42MB	5	977	17.6us	CL	OP	CL	CL
15	45MB	5	1023	17.6us	OP	CL	CL	CL
16	40MB	6	820	17.6us	CL	CL	CL	CL

| | | | | | **Jumper Settings for Drive B** | | |
Type	**Capacity**	**Head**	**Cyl**	**Step Rate**	**5**	**6**	**7**
1	Drive 1 not connected				OP	OP	OP
						(Factory Setting)	
2	The parameters of Drive 1 is the same as the parameters of Drive 0				CL	OP	OP
3	Key-in mode				OP	CL	OP
4	10MB	2	612	17.6us	CL	CL	OP
5	20MB	4	612	17.6us	OP	OP	CL
6	20MB	4	612	200.00us	CL	OP	CL
7	Reserved for non-standard Drive (Contact seller for further information)				OP	CL	CL
8	Split mode (Drive #0 is splitted into 2 logical drives)				CL	CL	CL

Hardware Installation

Refer to the following illustrations to install LCS-6200 Series:

For LCS-6220:

Block Diagram
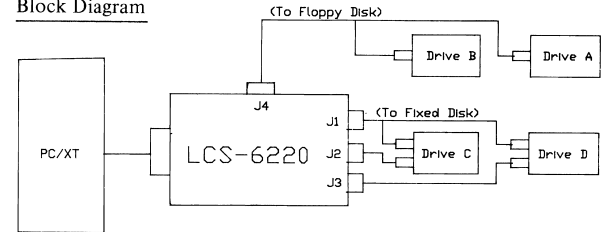
Cable Connection
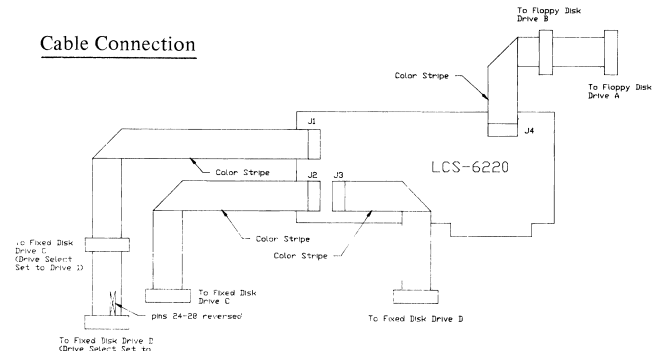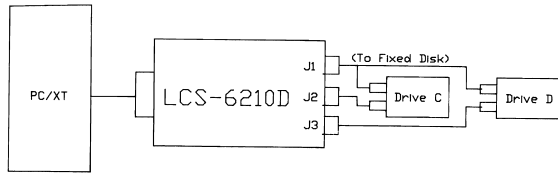

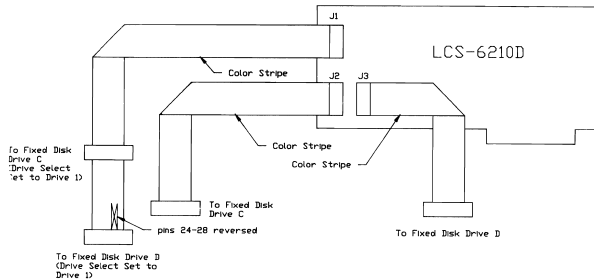**Remark**: Cables are optional and two options are available:

1. For 1 hard disk drive
2. For 2 hard disk drives

For LCS-6210D:

Block Diagram

Cable Connection

Remark: Cables are optional and two options are available:

1. For 1 hard disk drive
2. For 2 hard disk drives

Software Installation

This section contains instructions for preparing your operating system to recognize the LCS-6200 Series controller. Refer to the following instructions.

1. Insert the MS-DOS system diskette (Ver. 2.0 or later).
2. Turn on the power.
3. Select proper Drive Type. LCS-6200 Series provides two ways to set up the specific type of the user's hard disk drive and they are described as follows:

   (i) Select your desired drive type by setting the related jumpers according to the preceding section "Jumper Settings". Only 16 different drive types are available when using this method. The low-level Format procedure will be described later in the "Key-in mode not-selected" section.

   or

   (ii) Select the desired drive type by keying in the proper cylinders, heads and step rate during the procedure of low-level Format, it will be described later in the "Key-in mode selected" section. Indefinite drive types are available by using this method. But prior to do that, the user must select "Key-in mode" by setting the related jumpers according to the preceding section "Jumper Settings".

4. Execute low-level Format. Follow instructions on the next page.

The following are two different procedures of the low-level Format, refer to the preceding steps and choose one of the following:

Key-in Mode not selected:

If key-in mode is not selected, you can proceed as follows:

```
A > DEBUG  < CR >
-G = C800:5  < CR >

HARD DISK CONTROLLER UTILITY            Version XX

1. Low-level format
2. Parking
3. Quit

Choose ? 1     < CR >

Which drive to be low level formatted (0/1) ? 0  < CR >
Are you sure (y/n) ? y  < CR >

Formatting .......                           .
LOW-LEVEL FORMAT COMPLETED

Do you want to set more bad tracks (y/n) ? y  < CR >
Enter cylinder number : 600    < CR >
Enter head number : 4    < CR >

Do you want to set more bad tracks (y/n) ? n  < CR >

A >
```

≫   Enter your desired parameters after each message. The above characters underlined are the example for your reference.

Key-in mode selected:

If key-in mode is selected, you can proceed as follows:

```
A > DEBUG   < CR >
-G = C800:5   < CR >

HARD DISK CONTROLLER UTILITY.           Version XX

1. Low-level format
2. Parking
3. Quit

Choose ? 1     < CR >

Do you want to split hard disk drive (y/n) ? n   < CR >

Which drive to be low-level formatted (0/1) ? 0   < CR >

Do you want to use the default parameters:
[20MB, cylinder:612, heads:4, step rate:17.6us] (y/n) ? n   < CR >

Enter total cylinders: 640   < CR >
Enter total heads: 4   < CR >

Select step rate: <1>. 17.6us  <2>. 200us ? 1   < CR >
Are you sure (y/n) ? y   < CR >

Formatting .......
LOW-LEVEL FORMAT COMPLETED

Do you want to set more bad tracks (y/n) ? y   < CR >
Enter cylinder number: 615   < CR >
Enter head number: 2   < CR >

Do you want to set more bad tracks (y/n) ? n   < CR >

A >
```

≫   Enter your desired parameters after each message. The above characters underlined are the example for your reference.

5. Load and execute the FDISK and FORMAT programs after the system finishes the low-level Format. Follow instructions in your DOS reference manual.

The hard disk drive is a very complicated and delicate mechanism and it may probably be damaged by violent shock or vibration during transportation. So be sure to lock the read/write heads of your hard disk before shipping.

To park your hard disk R/W head, follow instruction below:

```
A > DEBUG  < CR >
-G = C800:5  < CR >

HARD DISK CONTROLLER UTILITY.              Version XX

1. Low-level format
2. Parking
3. Quit

Choose ? 2   < CR >

Which drive to be parked (0/1) ? 0   < CR >

Enter the desired cylinder to be parked (in decimal) 615  < CR >

Drive parked in specified cylinder.

A >
```

The hard disk drive will be automatically unlocked upon power on.

Trademarks:

IBM PC\XT, PC-DOS: IBM Corp.

MS-DOS : Microsoft Corp.

ST-506, ST-412 : Seagate Technology.

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