VL-BUS SUPER I/O

USER'S GUIDE

NO.278

Installation Guide

The **NO.278** Controller is a VL-Bus IDE and ISA floppy, serial and parallel port controller.

It uses the faster VL-Bus for massive data transfer with an IDE hard disk while maintaining full ISA bus compatibility with other operations.

Please read the section **Major Components** first, and refer to figure 1 for installing the VL-Bus IDE disk controller in your system.
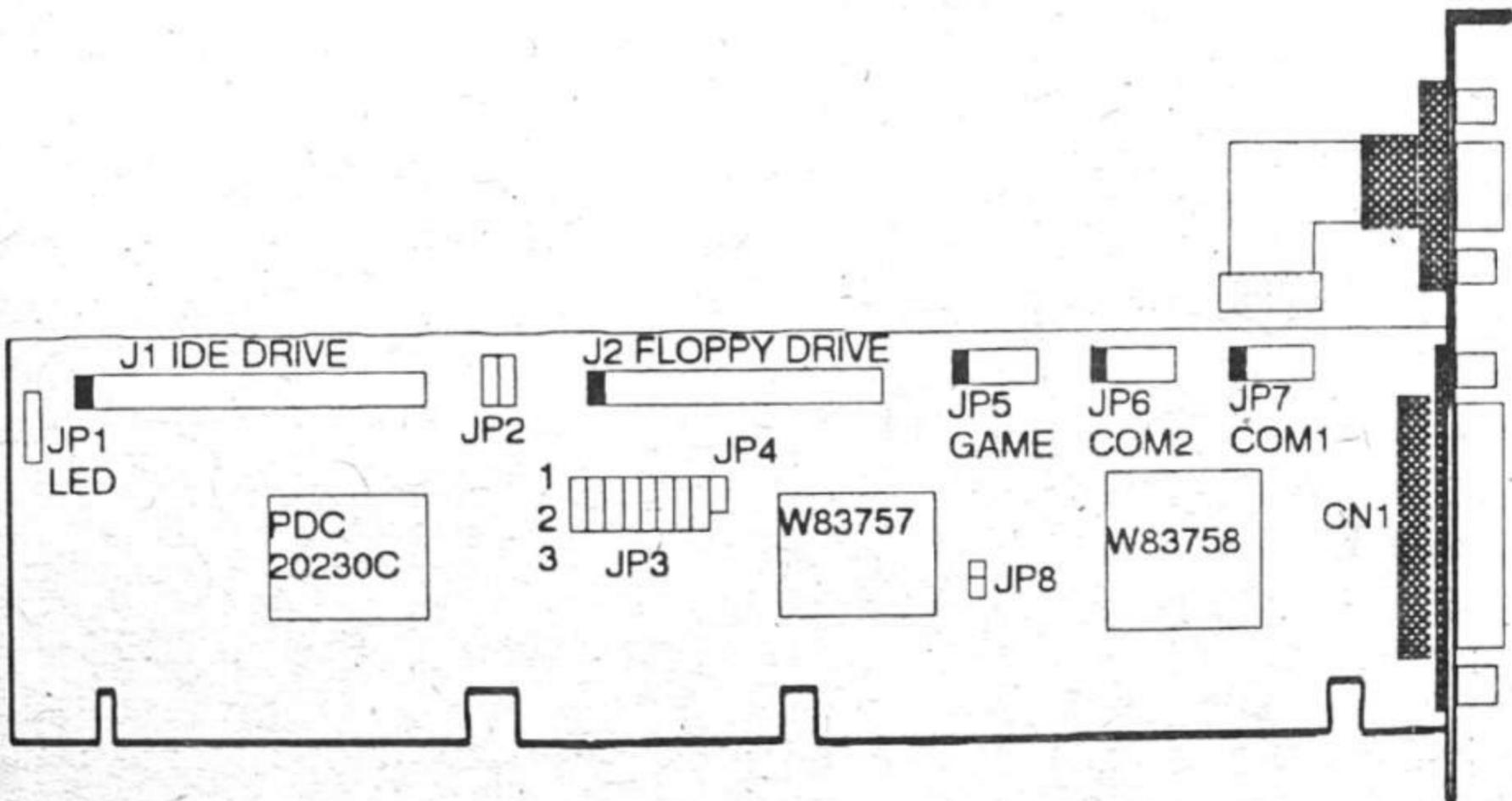

Fig 1.Connectors and jumpers diagram

Chapter 1 : Major Components

This chapter contains a brief description of the major components of the VL-IDE controller.

(1) IDE VL-Bus Interface

This Application Specific IC PDC20230C (U1) interfaces between standard IDE drives and the VL-Bus. Since the VL-Bus data transfer rate is much higher than what IDE drives can support, the drives will dictate the total throughput of the disk subsystem. The PDC20230C supports 8 different drive speeds (speed 0 ~ 7, where larger number means higher speed). The IDE drive(s) attached to the VL-IDE Controller are set to run at some initial but reliable speed by the JP2 hardware jumpers. After the PC system is brought up, the IDE drive(s) will be programmed individually by the device driver(s) to run at their optimal speed(s). Detailed information about the speed setting will be described in chapter 2 "Device Driver and Installation Utility". Modern IDE drives should support speed 2 or higher. Since the electronic design of a drive could change with the model number, **it is recommended to set the drive to run at speed 2 initially by jumper JP2.**

(2) Super I/O

These two chips (W83757 & W83758; U2 & U3) provide the functions of a floppy disk controller, two serial ports, one parallel port and one game port. The floppy controller supports two floppy drives with a density of up to 1.44 MB. Because these functions are usually slow, they use conventional ISA protocol to communicate with the motherboard. By adjusting the jumpers, various serial and parallel port configurations can be selected.

Chapter 2 : Device Driver and Installation Utility

Two diskettes are enclosed in the NO.278 package:

I.   "**Drivers and Installation Utility**" diskette contains a README file, an intelligent installation utility **VLIDE.EXE**, and the device drivers for DOS, Windows and Netware.

II.   "**Unix device driver**" diskette contains the device driver for Unix.

The installation procedures of Unix device drivers can be found in the README file on the diskette I. Therefore, the following description in this chapter will concentrate on the diskette I and the related information.

The device drivers for DOS, Windows and Netware

The diskette I contains the following device drivers.

VLIDE.SYS is the driver for **DOS**.

VLIDE.386 is the driver for **Microsoft Windows 3.1**.

VLIDE.ADD is the driver for **IBM OS/2 2.0 and 2.1**.

VLIDE310.DSK is the driver for **Netware 386 3.10**.

VLIDE311.DSK is the driver for **Netware 386 3.11**.

VLIDE401.DSK is the driver for **Netware 386 4.01**.

VLIDE401.DDI is the installation information file for **Netware 386 4.01**.

ATDISK.SYS is the driver for **Microsoft Windows NT 3.1**.

NTINS.BAT is the installation batch file for **Windows NT 3.1**.

CITURBO.EXE is the set mode Utility for **Windows NT 3.1**.

These device drivers enhance the performance by **32-bit VL-Bus I/O** and **read / write multiple commands**. Two operating modes, Turbo(T) and **Fast(F)**, are supported by these device drivers. In **Turbo**(T) mode (the default operation mode), the system will use 32-bit VL-Bus I/O and the read / write multiple commands supported by most new IDE drives. The **Fast(F)** operation uses the 32-bit VL-Bus I/O. However, it does not use the read / write multiple commands.

Note that not all IDE drives support the read / write multiple commands. Usually, you may set your VL-IDE controller to run under the Turbo mode. If your system is installed with DOS, when your system is brought up and the DOS driver VLIDE.SYS is well installed, the driver will automatically issue an Identify Drive command to check if the attached IDE drive(s) support the read/write multiple commands. In the case your drive(s) does not support the read/write multiple commands, the VL-IDE disk controller will automatically be forced to run under the Fast mode.

The device drivers for DOS, Windows and Netware all have an internal table that contains the optimal speed setting parameters for the most popular IDE drives. When the system is brought up, appropriate speed setting parameters in the table are used to program the VL-IDE controller automatically. This feature enables your IDE drives to deliver the best performance to your system.

Chapter 3 describes the installation procedures of these device drivers.

The README file

The README file contains the manual installation process of the device drivers for DOS, Windows, Netware and Unix, and some extra parameters come with the device drivers. Please browse the file or you can print it for future reference.

The installation utility -- VLIDE.EXE

VLIDE.EXE provides the following functions:

(1) To analyze your hard drive:

As described, the device drivers for DOS, Windows and Netware all have an internal table which contains the optimal speed setting parameter for the most popular IDE drives. When executing the VLIDE.EXE, this utility will identify the hard drives attached on the VL-IDE controller.

If the drive(s) can be found in the table, the utility will select the parameter in the device drivers. If not, the utility will perform a real speed test to determine the optimal parameters, and reconfigure the device drivers for DOS, Windows and Netware automatically.

(2) To install the device drivers for DOS and Windows:

VLIDE.EXE provides a friendly interface and procedure to install the device drivers for DOS and Windows. Please refer to chapter 3 for detailed information.

Chapter 3 : VL-IDE Installation Procedure

This chapter describes the installation procedure for DOS users. Refer to the README file in the "Drivers and Installation Utility" diskette for related installation procedures, if your VL-IDE controller is to run under other operating systems.

(1) Set IDE disk drive jumpers (optional).

The disk drive jumper should be kept at the factory default settings when you have only one drive. If you are connecting two drives, set one as the master and the other as the slave drive. Refer to the disk drive's installation guide for proper jumper settings.

(2) Select the drive speed.

It's recommended to set the initial drive speed to speed 2 by hardware jumper JP2. Refer to table 2 for setting configurations.

Speed 0	Speed 2	Speed 4	Speed 6
1-2	2-3	1-2	2-3
4-5	4-5	5-6	5-6

Table 2. JP2 drive speed settings

(3) Leave only one active floppy controller in your system.

You may remove or disable the floppy disk controller already in your system, or adjust the jumper which sits across JP3 pin 22 ~ 23 to pin23 ~ 24 to disable the floppy controller on the VL-IDE disk controller. Refer to Table 3 when required.

(4) Select the serial and parallel port.

JP3 is a three-row 24-pin jumper block. There are three main functions controlled by JP3. Serial port 1 (JP7) can be configured as COM1 or COM3; Serial port 2 (JP6) can be configured as COM2 or COM4; The address of the parallel port (CN1) can be set as 3BCH, 378H or 278H. The floppy disk controller can be enabled or disabled.

JP3 Layout & Default :

```
1  4  7  10 13 16 19 22
2  5  8  11 14 17 20 23
3  6  9  12 15 18 21 24
```

	COM 1 (3F8H)	1-2 ; 5-6
Serial port 1 (JP7)	COM 3 (3E8H)	2-3 ; 4-5
	Disabled	2-3 ; 5-6
	COM 2 (2F8H)	7-8 ; 11-12
Serial port 2 (JP6)	COM 4 (2E8H)	8-9 ; 10-11
	Disabled	8-9 ; 11-12
	LPT 1 (3BCH)	13-14 ; 16-17
Parallel port (CN1)	LPT 2 (378H)	13-14 ; 17-18
	LPT 3 (278H)	14-15 ; 16-17
	Disabled	14-15 ; 17-18
Parallel port	IRQ 5	19-20
Interrupt	IRQ 7	20-21
Floppy Controller	Enabled	22-23
Enabling	Disabled	23-24

Table 3. JP3 jumpers I/O address configuration table

Jumper JP4 determines if the parallel port is bi-directional or output only.

Printer port	Output only	Short, jumper in
Bi-direction control	Bi-direction	Open, jumper out

Table 4. JP4 jumper table

Jumper JP8 determines if the Game port is Enabled or Disabled.

Game port	Enabled	Short, jumper in
(JP5)	Disabled	Open, jumper out

Table 5. JP8 jumper table

Connect the COM port cable to JP7 (serial port 1) or JP6 (serial port 2) after JP3 and JP4 are properly set up.

Note that the colored band must be on pin 1.

(5) Install the VL-IDE controller, the IDE drives and the floppy drives.

Plug the VL-IDE controller into a 32-bit VL-Bus slot. Connect the IDE cable to J1 and to the IDE drive(s). Connect the floppy cable to J2 and to the floppy drive(s). Both cables should have the colored bands on the cable to indicate the pin 1 positions. Connect the front panel disk activity LED to JP1. Connect the positive pin to either pin 1 or 4.

(6) Perform the system CMOS setup.

Enter the correct drive geometry information.

(7) Install the operating system.

For DOS users, partition and format the drive(s) using DOS FDISK and FORMAT utilities.

(8) Install the device drivers.

The device drivers can be installed manually or by the installation utility.

Install the device drivers for DOS and Windows by Installation Utility - VLIDE.EXE:

You can use VLIDE.EXE to install the drivers for DOS and Windows easily:

Execute the utility and refer to related Help Screen for more information about this utility.

It is strongly recommended to install the device drivers for DOS and Windows through the installation utility.

Once you have installed the device drivers by VLIDE.EXE, you will see the following prompt message on the screen:

HDD 0 setting :
Fast Mode, Speed 5 by DEVICE DRIVER AUTOMATICALLY
HDD 1 setting :
Turbo Mode, Speed 5 by DEVICE DRIVER AUTOMATICALLY

Where the underlined parameters will vary with the hard drive(s) attached.

Install the device drivers manually:

Copy the device drivers to proper path of your hard drive and edit the specific configuration files manually. Detailed procedures can be found in the README file on the "Drivers and Installation Utility" diskette.

As some IDE drives may not respond to the Identify Drive command from the device driver correctly, you may need to install the device driver manually and add appropriate parameters to ensure reliable operation of such IDE drive(s). Please browse the README file for more information.

Some important information you should notice when executing the installation utility:

(1) This Installation utility can only be executed from floppy drive and needs at least 300KB free space on the floppy diskette.

(2) Since this utility will possibly reconfigure the device drivers in the diskette, it can not be write-protected during operation. It is strongly recommended to make a copy diskette and execute the installation utility with the copy one.

(3) The device drivers are reconfigured, according to the hard drive(s) detected and analyzed during the installation, to ensure optimal performance and reliable disk operation. If the device drivers in your system is copied from other PCs, instead of being installed as described above, your IDE drive(s) may not be able to work reliably. VL-Bus is a trademark of the Video Electronics Standards Association