

WAFER-5826

**Low Power GX1-300 MMX
with SVGA/LCD, CardBus
Ethernet, & Audio SBC.
Ver 1.0**

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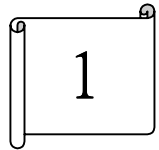
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Introduction

WAFER-5826 is designed for limited space applications with only the size of a 3½" hard drive. It supports the full functions of an AT & ATX-compatible industrial computer on a single board. The WAFER-5826 is equipped with a low-power consumption and high performance GX1-300 processor on board. It also contains an SDRAM SODIMM socket that can support up to 512MB memory.

The WAFER-5826 provides an Ethernet interface, audio interface, EIDE interface, one CardBus interface, one parallel port, two serial RS-232 ports, two USB ports, and a mini-DIN PS/2 keyboard/mouse interface. The built-in SVGA/LCD display controller supports both the CRT and LCD display simultaneously. It offers the resolutions of LCD screen up to 800 x 600 and CRT resolutions up to 1280 x 1024 @ 16 colors. The display type is configured by software utility. The Flash ROM contains both the system BIOS and the VGA BIOS. The modification, in case of necessary, could be done by reprogramming the Flash ROM.

1.1 Specifications

*NS GX1-300 MMX 32-Bit x86 Processor

Supports Intel MMX instruction set extension for the acceleration of multi media applications

16 KB unified L1 cache

Five-stage pipelined integer unit

Integrated Floating Point Unit (FPU)

***System memory:** One 144-pin SODIMM socket support up to 512 MB SDRAM

***BIOS:** AWARD 256 KB Flash memory

***Display Controller**

MediaGx processor has applied the UMA technology that provides 1-4MB display memory, to be set up by BIOS
Supports CRT and TFT LCD displays simultaneously
Supports 18-bit TFT LCD panel resolution up to 1024x768 @ 18bpp

Supports non-interlaced CRT monitor's resolutions up to [1280x1024 @ 256](#) colors or 1024x768 @ 16bpp

***Audio**

Compliant to AC97, support stereo

Connector: Speaker, Mic-in, Line-in, Line-out, and CD-ROM in

***IDE interface:** The IDE support to two PCI Enhanced IDE hard drives

***FDD interface:** support up to two floppy disk drives, 5.25" (360KB and 1.2MB) and/or 3.5" (720KB, 1.44MB, and 2.88MB)

***CardBus interface:** one PC Card 95/97 compliant sockets interface supports the 32-bit CardBus (Card-32) and 16-bit CardBus (Card-16) without external buffers. Also, support ZV (Zoom Video) Card control interface without external buffers

***Serial ports:** two RS232 ports

***Parallel port:** One Parallel port, supports SPP/EPP/ECP mode, IEEE 1284 compatible.

***PS/2 Mouse/Keyboard connector:** A6-pin mini DIN connector is located on the mounting bracket for easy connection to a keyboard or PS/2 mouse

***USB interface:** two USB ports, USB 1.0 compliant

***Power management:** supports power saving modes including Normal/Doze/Sleep modes. APM1.1 compliant

***WatchDog timer:** can be set to 1-255 second's period. Reset was generated when CPU did not periodically trigger the timer.

***10/100Mbps Ethernet Controller:** Realtek RTL8139 IEEE802.u 100 BASE-TX standard Dual Auto-sensing

interface to 10MBps or 100MBps networks. On board RJ45 connector provides easy connection.

* **Power supply:** +5V (4.75V to 5.25V) @1.5A (typical)

* **Operating temperature:** -20-60°C (-4-140°F)

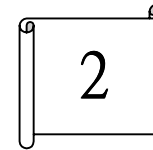
* **Dimension:** 5.9" (L) x4.2" (W) (145mmx102mm)

1.2 What You Have

Before you begin installing the product, please check if the following materials are included in the package:

- 1 Wafer-5826 All-in-one single board computer
- 1 CD disk for utility and drivers
- 1 2.5" IDE flat cable (44-pin 2.0mm pitch to 44-pin 2.0mm pitch)
- 1 floppy cable (for 3.5" FDD only)
- 1 one to two 6pin mini Din connector for keyboard and mouse
- 1 serial port cable
- 1 standard D25 connector for parallel cable
- 1 audio cable
- 1 Power cable

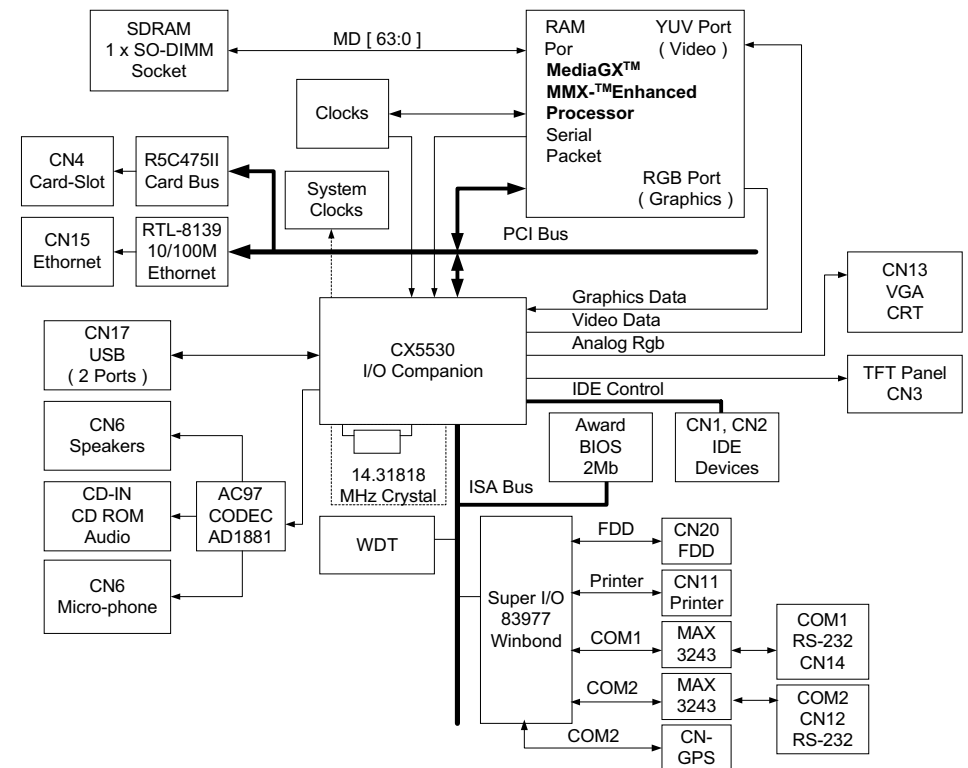
If any of these items are missing or damaged, contact your distributor or sales representative immediately.



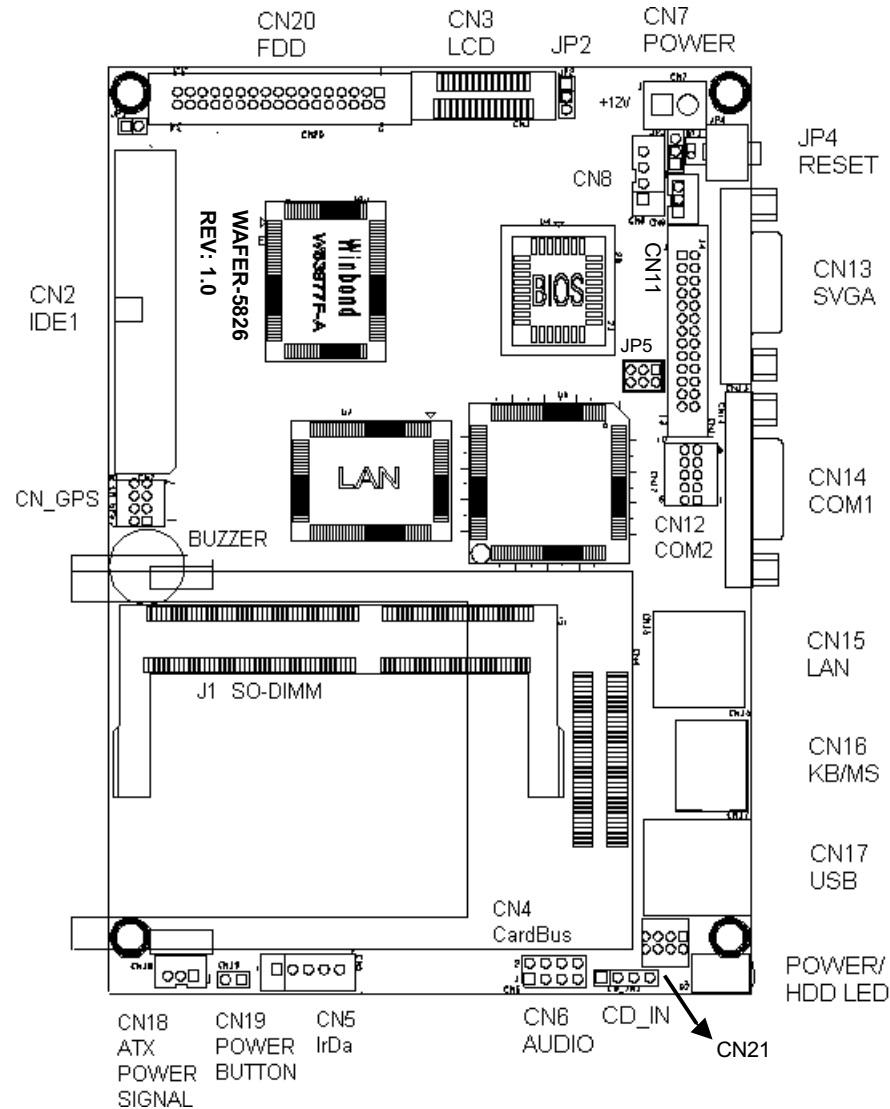
Installation

This chapter gives instructions about how to set up the WAFER-5826 hardware, including directions of setting jumpers and connecting peripherals, switches and indicators. Before installation, please pay attention to the unpacking precautions on the following page for safety.

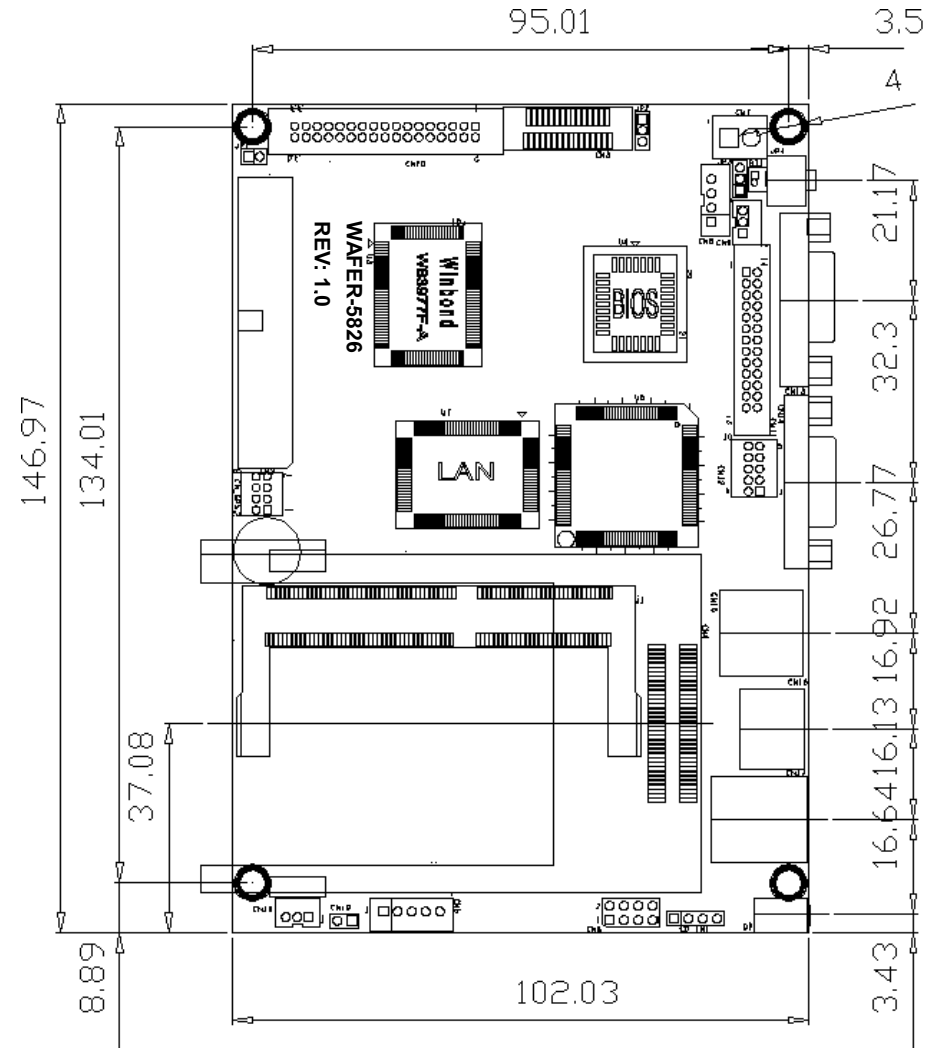
2.1 Wafer-5826 Block Diagram & Board Layout



Wafer-5826 Block diagram



Wafer-5826 Board Layout



Wafer-5826 Board Dimension

2.2 Unpacking Precautions

Some components of WAFER-5826 SBC are very sensitive to static electric charges and can be damaged by a sudden rush of power. To protect it from unintended damage, be sure to note these precautions:

Ground yourself to remove any static charge before touching the Wafer-5826 SBC. You can do it by using a grounded wrist strap at all times or by frequently touching any conducting materials that is connected to the ground.

Handle your Wafer-5826 SBC by its edges. Don't touch IC chips, leads or circuitry if not necessary.

Do not plug any connector or jumper while the power is on.

2.3 System Memory DRAM

There is one 144-pin SO-DIMM socket to accept 3.3V non-buffered SDRAM. The max Memory size is 512MB.

2.4 Watch-Dog Timer Setting

The WatchDog Timer is enabled by reading port 543H. It should be triggered before the time-out period ends, otherwise it will assume the program operation is abnormal and will issue a reset signal to restart. The WatchDog Timer is disabled by reading port 143/943H. For Detail information on Watch-Dog Timer, Refer to Appendix A

- JP1: Watch-Dog Active Type Setting

| JP1 | DESCRIPTION |
|-------|-------------------------|
| SHORT | RESET WHEN WDT TIME-OUT |
| OPEN | DISABLE WDT |

2.5 Clear CMOS Setup

If you have to clear the CMOS Setup (for example, if you forgot the password, you should clear the CMOS and then set the password again.), you should close the JP3 (Pin2 and Pin3) about 3 seconds, then open it again. Opening JP3 can set the CMOS back to normal operation mode,

- JP3 Clear CMOS Setup (Reserved Function)

| JP3 | DESCRIPTION |
|-----|------------------|
| 1-2 | Normal Operation |
| 2-3 | Clear CMOS Setup |

2.6 LCD Vcc Voltage Selector

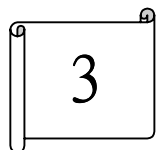
The LCD interface connector CN3 can provide 5V or 3.3V power supply by selecting the JP2 to meet the different LCD requirement.

| JP2 | DESCRIPTION |
|-----|-------------|
| 1-2 | 5V |
| 2-3 | 3.3V |

2.7 UART B Selector

If you have to use GPS receives module with Wafer-5826. You can connect GPS receives module to the connector CN-PGS by a cable. Before using PGS module, you have to switch UART B to CN-GPS. The connector CN-GPS provide TTL level signal.

| | JP5 | |
|------|-------------|-------------|
| COM2 | (1,3) short | (2,4) short |
| GPS | (3,5) short | (4,6) short |



Connection

This chapter describes how to connect peripherals, switches and indicators to the WAFER-5826 board.

3.1 Floppy Disk Drive Connector (CN20)

WAFER-5826 board is equipped with a 34-pin daisy-chain driver connector cable.

CN20: FDC CONNECTOR

| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
|---------|-------------|---------|-----------------|
| 1 | GROUND | 2 | REDUCE WRITE |
| 3 | GROUND | 4 | N/C |
| 5 | GROUND | 6 | N/C |
| 7 | GROUND | 8 | INDEX# |
| 9 | GROUND | 10 | MOTOR ENABLE A# |
| 11 | GROUND | 12 | DRIVE SELECT B# |
| 13 | GROUND | 14 | DRIVE SELECT A# |
| 15 | GROUND | 16 | MOTOR ENABLE B# |
| 17 | GROUND | 18 | DIRECTION# |
| 19 | GROUND | 20 | STEP# |
| 21 | GROUND | 22 | WRITE DATA# |
| 23 | GROUND | 24 | WRITE GATE# |
| 25 | GROUND | 26 | TRACK 0# |
| 27 | GROUND | 28 | WRITE PROTECT# |
| 29 | GROUND | 30 | READ DATA# |
| 31 | GROUND | 32 | SIDE 1 SELECT# |
| 33 | GROUND | 34 | DISK CHANGE# |

3.2 PCI E-IDE Disk Drive Connector (CN2)

For IDE HDD connection, The Wafer-5826 was designed with one 2.0mm connector (CN2), which could be converted to two 2.54mm standard IDE connector via proprietary cable. Using this cable you can attach two IDE hard disk drives to the WAFER-5826.

CN2: 44-pin Primary Mini-pitched IDE Interface Connector

- CN2: Primary IDE Interface Connector

| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
|---------|-------------|---------|----------------|
| 1 | RESET# | 2 | GROUND |
| 3 | DATA 7 | 4 | DATA 8 |
| 5 | DATA 6 | 6 | DATA 9 |
| 7 | DATA 5 | 8 | DATA 10 |
| 9 | DATA 4 | 10 | DATA 11 |
| 11 | DATA 3 | 12 | DATA 12 |
| 13 | DATA 2 | 14 | DATA 13 |
| 15 | DATA 1 | 16 | DATA 14 |
| 17 | DATA 0 | 18 | DATA 15 |
| 19 | GROUND | 20 | N/C |
| 21 | IDE DRQ | 22 | GROUND |
| 23 | IOW# | 24 | GROUND |
| 25 | IOR# | 26 | GROUND |
| 27 | IDE CHRDY | 28 | GROUND |
| 29 | IDE DACK | 30 | GROUND-DEFAULT |
| 31 | INTERRUPT | 32 | N/C |
| 33 | SA1 | 34 | N/C |
| 35 | SA0 | 36 | SA2 |
| 37 | HDC CS0# | 38 | HDC CS1# |
| 39 | HDD ACTIVE# | 40 | GROUND |
| 41 | VCC | 42 | GROUND |
| 43 | GROUND | 44 | GROUND |

3.3 Parallel Port (CN11)

This port is usually connected to a printer. The WAFER-5826 includes an on-board parallel port (CN11), accessed through a 26-pin flat-cable connector.

- CN11: Parallel Port Connector

| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
|---------|--------------------|---------|------------------|
| 1 | STROBE# | 2 | DATA 0 |
| 3 | DATA 1 | 4 | DATA 2 |
| 5 | DATA 3 | 6 | DATA 4 |
| 7 | DATA 5 | 8 | DATA 6 |
| 9 | DATA 7 | 10 | ACKNOWLEDGE |
| 11 | BUSY | 12 | PAPER EMPTY |
| 13 | PRINTER SELECT | 14 | AUTO FORM FEED # |
| 15 | ERROR# | 16 | INITIALIZE |
| 17 | PRINTER SELECT LN# | 18 | GROUND |
| 19 | GROUND | 20 | GROUND |
| 21 | GROUND | 22 | GROUND |
| 23 | GROUND | 24 | GROUND |
| 25 | GROUND | 26 | N/C |

3.4 Serial Ports (CN14, CN12)

The Wafer-5826 offers two high speeds NS16C550 compatible UARTS with Read/Receive 16 byte FIFO. These ports let you connect to serial devices or a communication network. One 9-pin D-SUB connector and one 10-pin header are provided by the WAFER-5826. The detailed pin assignment of the connectors are specified as following tables:

- CN14: Serial Port1 Connector (9-pin DSUB)

| PIN NO. | DESCRIPTION |
|---------|---------------------------|
| 1 | DATA CARRIER DETECT (DCD) |
| 2 | RECEIVE DATA (RXD) |
| 3 | TRANSMIT DATA (TXD) |
| 4 | DATA TERMINAL READY (DTR) |
| 5 | GROUND (GND) |
| 6 | DATA SET READY (DSR) |
| 7 | REQUEST TO SEND (RTS) |
| 8 | CLEAR TO SEND (CTS) |
| 9 | RING INDICATOR (RI) |

- CN12: Serial Port2 Connector (10-pin 2.0mm Header)

| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
|---------|-------------|---------|-------------|
| 1 | DCD | 2 | DSR |
| 3 | RX | 4 | RTS |
| 5 | TX | 6 | CTS |
| 7 | DTR | 8 | RI |
| 9 | GND | 10 | N/C |

3.5 Audio Connector

The audio function was organized by CX5530 I/O companions and AC97 CODEC. You can use CD-IN as the input port (e.g.: connected to the output of CD player), depending on the type of connector that you have.

- CD-IN: CD_AUDIO INPUT Connector

| PIN NO. | DESCRIPTION |
|---------|-------------|
| 1 | JCD_R |
| 2 | GND |
| 3 | GND |
| 4 | JCD_L |

- CN6: Audio Connector

This is the output port of your Sound System. Pin 1-3 can be connected to earphone or loudspeaker. Pin 5-6 can be used as input port if it is connected to the earphone jack of your CD. Pin 7-8 is for microphone.

| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
|---------|-------------|---------|-------------|
| 1 | LINE OUT L | 2 | GND |
| 3 | LINE OUT R | 4 | GND |
| 5 | LINE IN R | 6 | LINE IN L |
| 7 | MIC | 8 | GND |

3.6 Keyboard & PS/2 Mouse Connector (CN16)

A 6-pin mini DIN connector (CN16) is located on the mounting bracket for easy connection to a keyboard or PS/2 mouse. The card comes with a cable to convert the 6-pin mini-DIN connector to two 6-pin mini-DIN connector for keyboard and mouse connection

- CN16: 6-pin Mini-DIN Keyboard & Mouse Connector

| PIN NO. | DESCRIPTION |
|---------|----------------|
| 1 | KEYBOARD DATA |
| 2 | MOUSE DATA |
| 3 | GROUND |
| 4 | +5V |
| 5 | KEYBOARD CLOCK |
| 6 | MOUSE CLOCK |

3.7 USB Port Connector (CN17)

The WAFER-5826 provides two USB interfaces, which gives the complete plug and play, for up to 127 external devices.

- CN17: Internal USB Connector

| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
|---------|-------------|---------|-------------|
| 1. | USBVCC1 | 2. | D1- |
| 3. | D1+ | 4. | GND |
| 5. | USBVCC2 | 6. | D2- |
| 7. | D2+ | 8. | GND |
| 9. | GND | 10. | GND |

3.8 IrDA Infrared Interface Port (CN5)

The WAFER-5826's built-in an IrDA port which supports Serial Infrared (SIR) or Amplitude Shift Keyed IR (ASKIR) interface. Using the IrDA port have to set SIR or ASKIR model in the BIOS's Peripheral Setup's COM2. Then the normal RS-232 COM2 will be disabled.

- CN5: IrDA connector

| PIN NO. | DESCRIPTION |
|---------|-------------|
| 1 | VCC |
| 2 | NC |
| 3 | IRRX |
| 4 | Ground |
| 5 | IR-TX |

3.9 VGA Connector (CN13)

The WAFER-5826's built-in 15-pin VGA connector accepts the CRT monitor.

- CN13: 15-pin Female Connector

| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
|---------|-------------|---------|-------------|
| 1 | RED | 2 | GREEN |
| 3 | BLUE | 4 | NC |
| 5 | GROUND | 6 | GROUND |
| 7 | GROUND | 8 | GROUND |
| 9 | NC | 10 | GROUND |
| 11 | NC | 12 | DDC DAT |
| 13 | HSYNC | 14 | VSYNC |
| 15 | DDCCLK | | |

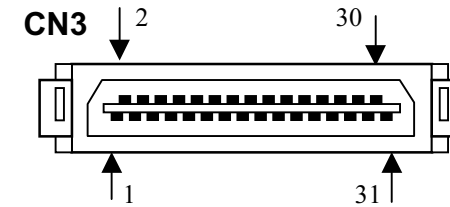
3.10 LCD Interface Connector

The WAFER-5826 provides a 31-pin connector for the LCD flat panel interface. The Wafer-5826 comes to support TFT LCD panels at following display options: (This is a reference table only, may support more panels)

| Video Display type | Resolution | Example |
|--------------------|-------------------------------|--------------------|
| TFT VGA | 640X480 , 64K Color , 18bits | Toshiba LTM10C209A |
| TFT SVGA | 800X600 , 64K Color , 18bits | Toshiba LTM12C275A |
| TFT XVGA | 1024X768 , 64K Color , 18bits | LG LM151X1 |

The display options need to be setup manually from BIOS. The BIOS **“Integrated Peripheral”** Setup will allow you to choose display resolution either 640X480 or 800X600, 1024X768.

- CN3: LCD Interface Connector – only supports up to 18 bit LCD. For better display quality, the length of LCD cable should be shorter than 35 cm.



| PIN NO. | FUNCTION | PIN NO. | FUNCTION |
|---------|----------|---------|----------|
| 1 | GND | 2 | SHFCLK |
| 3 | LP | 4 | FLM |
| 5 | GND | 6 | RED0 |
| 7 | RED1 | 8 | RED2 |
| 9 | RED3 | 10 | RED4 |
| 11 | RED5 | 12 | GND |
| 13 | GREEN0 | 14 | GREEN1 |
| 15 | GREEN2 | 16 | GREEN3 |
| 17 | GREEN4 | 18 | GREEN5 |
| 19 | GND | 20 | BLUE0 |
| 21 | BLUE1 | 22 | BLUE2 |
| 23 | BLUE3 | 24 | BLUE4 |
| 25 | BLUE5 | 26 | GND |
| 27 | M | * 28 | PLCD |
| 29 | PLCD | 30 | PLCD |
| 31 | NC | | |

<Note> Pin 28,29,30 “PLCD”, the voltage of LCD can be selected 5V or 3.3V by the jumper JP2.

- CN8: LCD Inverter Connector

| PIN NO. | DESCRIPTION |
|---------|-------------|
| 1 | NC |
| 2 | ENABKL |
| 3 | GND |
| 4 | GND |

3.11 LAN RJ45 Connector

The WAFER-5826's built-in RJ45 LAN connector is for 10/100Mbps Ethernet (RTL8139C).

- CN15: LAN RJ45 Connector

| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
|---------|-------------|---------|-------------|
| 1 | TX+ | 5 | NC |
| 2 | TX- | 6 | RX- |
| 3 | RX+ | 7 | NC |
| 4 | NC | 8 | NC |

- Ethernet LED setup

| LED | ACTIVE INDICATION |
|-------------|-------------------|
| Green lamp | RX |
| Orange lamp | TX |

3.12 External Power Connector

The WAFER-5826 has an on-board external power connector CN7. You can connect power directly to the CPU board.

- CN7: External Power Connector

| PIN NO. | DESCRIPTION |
|---------|-------------|
| 1 | +5V |
| 2 | GROUND |

3.13 Power and HDD LEDS

- D2: Power / HDD setup

| LED | ACTIVE INDICATION |
|-------------|-------------------|
| Green lamp | Power |
| Orange lamp | HDD |

3.14 Reset Button

- JP4: Reset Button

| PIN NO. | DESCRIPTION |
|---------|-------------|
| 1 | RESET |
| 2 | GND |

3.15 CardBus Connector

The WAFER-5826 provides a CardBus interface for CardBus devices and PCMCIA(Type II) devices. (CN4)

- CN4: CardBus Connector

| PIN NO. | FUNCTION | PIN NO. | FUNCTION |
|---------|----------|---------|----------|
| 1 | GND | 2 | D3 |
| 3 | D4 | 4 | D5 |
| 5 | D6 | 6 | D7 |
| 7 | CE1# | 8 | A10 |
| 9 | OE# | 10 | A11 |
| 11 | A9 | 12 | A8 |
| 13 | A13 | 14 | A14 |
| 15 | WE# | 16 | READY |
| 17 | VCC | 18 | VCC |
| 19 | A16 | 20 | A15 |
| 21 | A12 | 22 | A7 |
| 23 | A6 | 24 | A5 |
| 25 | A4 | 26 | A3 |
| 27 | A2 | 28 | A1 |
| 29 | A0 | 30 | D0 |
| 31 | D1 | 32 | D2 |
| 33 | WP | 34 | GND |
| 35 | GND | 36 | CD1# |
| 37 | D11 | 38 | D12 |
| 39 | D13 | 40 | D14 |
| 41 | D15 | 42 | CE2# |
| 43 | VS1# | 44 | IORD# |
| 45 | IOWR# | 46 | A17 |
| 47 | A18 | 48 | A19 |
| 49 | A20 | 50 | A21 |
| 51 | VCC | 52 | VCC |
| 53 | A22 | 54 | A23 |
| 55 | A24 | 56 | A25 |
| 57 | VS2# | 58 | RESET |
| 59 | WAIT# | 60 | INPACK# |
| 61 | REG# | 62 | BVD2 |
| 63 | BVD1 | 64 | D8 |
| 65 | D9 | 66 | D10 |
| 67 | CD2# | 68 | GND |

| | | | |
|----|-----|----|-----|
| 69 | GND | 70 | GND |
|----|-----|----|-----|

3.16 ATX Power Signal Connector

- CN18: ATX Signal

| PIN NO. | Description |
|---------|-------------|
| 1 | 5VSB |
| 2 | GND |
| 3 | PSON |

- CN19: Power Button

| PIN NO. | Description |
|---------|-------------|
| 1 | PIN1 |
| 2 | PIN2 |

3.17 GPS Receive Module Connector

The WAFER-5826 was built-in a TTL level Serial Port interfaces connector, which can be connected to GPS Receive Module. (CN-GPS)

- CN-GPS: TTL level Serial Port Signal

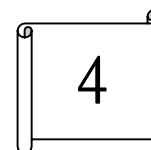
| PIN NO. | Description | PIN NO. | Description |
|---------|-------------|---------|-------------|
| 1 | N/C | 2 | 3.3V |
| 3 | TXD | 4 | BAT3V |
| 5 | RXD | 6 | N/C |
| 7 | N/C | 8 | GND |

3.18 Power/LAN/HDD LED Connector

The WAFER-5826 was built-in a Power/HDD/LAN LED connector, which can be connected to LED in the front panel .

- CN21: LED Signal

| PIN NO. | Description | PIN NO. | Description |
|---------|-------------|---------|-------------|
| 1 | Power LED - | 2 | Power LED + |
| 3 | HDD LED - | 4 | HDD LED + |
| 5 | LAN LED0 - | 6 | LAN LED0 + |
| 7 | LAN LED1 - | 8 | LAN LED1 + |



AWARD BIOS Setup

WAFER-5826 uses the AWARD PCI/ISA BIOS for system configuration. The AWARD BIOS setup program is designed to provide maximum flexibility in configuring the system by offering various options that may be selected to meet end-user requirements. This chapter is written to assist you in the proper usage of these features.

4.1 GETTING START

When you turn on the power button, the BIOS will enter the Power-On-Self-Test routines. These routines will be executed for system test and initialization and system configuration verification. After the POST routines are completed, the following message appears:

" Hit DEL if you want to run SETUP"

To access AWARD BIOS SETUP UTILITY, press key.

The following screen will be displayed at this time:

| ROM PCI/ISA BIOS (2A434I9E) CMOS SETUP UTILITY AWARD SOFTWARE, INC. | |
|---|--------------------------|
| STANDARD CMOS SETUP | INTEGRATED PERIPHERALS |
| BIOS FEATURES SETUP | SUPERVISOR PASSWORD |
| CHIPSET FEATURES SETUP | USER PASSWORD |
| POWER MANAGEMENT SETUP | IDE HDD AUTO DETECTION |
| PNP/PCI CONFIGURATION | SAVE & EXIT SETUP |
| LOAD BIOS DEFAULTS | EXIT WITHOUT SAVING |
| LOAD SETUP DEFAULTS | |
| Esc : Quit | ↑ ↓ ← → : Select Item |
| F10 : Save & Exit Setup | (Shift)F2 : Change Color |

4.2 STANDARD CMOS SETUP

The Standard CMOS Setup is used for basic hardware system configuration. The main function is for Date/Time setting and Floppy/Hard Disk Drive setting. Please refer the following screen for this setup.

```
ROM PCI/ISA BIOS (2A434I9E)
STANDARD CMOS SETUP
AWARD SOFTWARE, INC.
```

| | | | | | | | | |
|---|--------|------|------|------|---------|------|--------|------|
| Date (mm:dd:yy) : Tue, May 29 2001 | | | | | | | | |
| Time (hh:mm:ss) : 16 : 41 : 13 | | | | | | | | |
| HARD DISKS | TYPE | SIZE | CYLS | HEAD | PRECOMP | LANE | SECTOR | MODE |
| Primary Master | : AUTO | 0 | 0 | 0 | 0 | 0 | 0 | AUTO |
| Primary Slave | : AUTO | 0 | 0 | 0 | 0 | 0 | 0 | AUTO |
| Secondary Master | : AUTO | 0 | 0 | 0 | 0 | 0 | 0 | AUTO |
| Secondary Slave | : AUTO | 0 | 0 | 0 | 0 | 0 | 0 | AUTO |
| Drive A : None | | | | | | | | |
| Drive B : None | | | | | | | | |
| Video : EGA/VGA | | | | | | | | |
| Halt On : All,But Keyboard | | | | | | | | |
| ESC : Quit ↑ ↓ → ← : Select Item PU/PD/+/- : Modify | | | | | | | | |
| F1 : Help (Shift)F2 : Change Color | | | | | | | | |

To set the Date, for example, press either the arrow or <Enter> button on your keyboard to select one of the fields (Month, Date or Year) then press either <PgUp> or <PgDn> to increase or decrease the value of that field. Do the same steps for Time setting.

For IDE hard disk drive setup, please check the following possible setup procedure:

1. Use the Auto setting for detection during boot-up.

2. Use the IDE HDD AUTO DETECTION in the main menu, the computer will automatically detect the HDD specifications.
3. Manually enter the specifications by yourself from the "User" option.

Note:

If you need more information on any particular field, just highlight it then press <F1> button. A pop-up window will come out to give you more information on that field.

4.3 BIOS FEATURES SETUP

This BIOS Features Setup is designed for the 'fine tuning' of your system in order to improve its performance. As for normal operation, you don't have to change any default setting. The default setting is pre-set for most reliable operation.

ROM PCI/ISA BIOS (2A434I9E)
BIOS FEATURES SETUP
AWARD SOFTWARE, INC.

| | | | |
|----------------------------|------------|--------------------------|--------------------|
| Virus Warning | : Disabled | Video BIOS Shadow | : Enabled |
| CPU Internal Cache | : Enabled | C8000-CBFFF Shadow | : Disabled |
| Quick Power On Self Test | : Enabled | CC000-CFFFF Shadow | : Disabled |
| Boot From LAN First | : Disabled | D0000-D3FFF Shadow | : Disabled |
| Boot Sequence | : A,C,SCSI | D4000-D7FFF Shadow | : Disabled |
| Swap Floppy Drive | : Disabled | D8000-DBFFF Shadow | : Disabled |
| Boot Up Floppy Seek | : Enabled | DC000-DFFFF Shadow | : Disabled |
| Boot Up NumLock Status | : On | Cyrix 6x86/MII CPUID | : Enabled |
| Boot Up System Speed | : High | | |
| Gate A20 Option | : Fast | | |
| Memory Parity Check | : Enabled | | |
| Typematic Rate Setting | : Disabled | | |
| Typematic Rate (Chars/Sec) | : 6 | | |
| Typematic Delay (Msec) | : 250 | | |
| Security Option | : Setup | ESC : Quit | ↑↓+ : Select Item |
| PCI/VGA Palette Snoop | : Disabled | F1 : Help | PU/PD/+/- : Modify |
| OS Select For DRAM > 64MB | : Non-OS2 | F5 : Old Values (Shift) | F2 : Color |
| Report No FDD For WIN 95 | : Yes | F6 : Load BIOS Defaults | |
| | | F7 : Load Setup Defaults | |

4.4 CHIPSET FEATURES SETUP

This setup function works mostly on board's chipset. This option is used to change the chipset's configuration. Please, carefully change any default setting, otherwise the system will run unstable.

ROM PCI/ISA BIOS (2A434I9E)
CHIPSET FEATURES SETUP
AWARD SOFTWARE, INC.

| | | | |
|---------------------------|------------|--------------------------|--------------------|
| SDRAM CAS latency Time | : 3 T | | |
| SDRAM Clock Ratio Div By | : 4 | | |
| 16-bit I/O Recovery (CLK) | : 5 | | |
| 8-bit I/O Recovery (CLK) | : 5 | | |
| USB Controller | : Disabled | | |
| | | ESC : Quit | ↑↓+ : Select Item |
| | | F1 : Help | PU/PD/+/- : Modify |
| | | F5 : Old Values (Shift) | F2 : Color |
| | | F6 : Load BIOS Defaults | |
| | | F7 : Load Setup Defaults | |

<Note> SDRAM Clock Ratio Div By: This option is used to set the operating frequency of DRAM. If your board is equipped with GX1-300MHz CPU and the setting is "4", then the operating frequency will be 75 MHz (300/4)

4.5 POWER MANAGEMENT SETUP

Power Management Setup helps user to handle the WAFER-5826 board's "green" function. This feature can shut down the video display and hard disk to save energy, for example. The power management setup screen is as following

```

ROM PCI/ISA BIOS (2A434I9E)
POWER MANAGEMENT SETUP
AWARD SOFTWARE, INC.

Power Management      : Disabled
** PM Timers **
Doze Mode             : Disabled
Standby Mode          : Disabled
HDD Power Down        : Disabled
MODEM Use IRQ         : NA
Throttle Duty Cycle   : 33.3 %

IRQ1 (KeyBoard)      : ON
IRQ3 (COM 2)         : OFF
IRQ4 (COM 1)         : OFF
IRQ5 (LPT 2)         : OFF
IRQ6 (Floppy Disk)   : OFF
IRQ7 (LPT 1)         : OFF
IRQ9 (IRQ2 Redir)    : OFF
IRQ10 (Reserved)     : OFF
IRQ11 (Reserved)     : OFF
IRQ12 (PS/2 Mouse)  : OFF
IRQ13 (Coprocessor) : OFF
IRQ14 (Hard Disk)    : OFF
IRQ15 (Reserved)     : OFF

ESC : Quit      ↑↓←→ : Select Item
F1  : Help      PU/PD/+/- : Modify
F5  : Old Values (Shift)F2 : Color
F6  : Load BIOS Defaults
F7  : Load Setup Defaults
    
```

4.6 PNP / PCI CONFIGURATION

This menu is used to assign certain IRQ to your PNP/PCI devices manually.

```

ROM PCI/ISA BIOS (2A434I99)
PNP/PCI CONFIGURATION
AWARD SOFTWARE, INC.

PNP OS Installed      : No
Resources Controlled By : Auto
Reset Configuration Data : Disabled

PCI IRQ Activated By : Level

ESC : Quit      ↑↓←→ : Select Item
F1  : Help      PU/PD/+/- : Modify
F5  : Old Values (Shift)F2 : Color
F6  : Load BIOS Defaults
F7  : Load Setup Defaults
    
```

PNP OS Installed: if you install Plug and Play operating system (OS), the OS will reassign the interrupt if you select *Yes* in this field. If you install a non-Plug and Play OS or if you want to prevent reassigning of interrupt settings, select *No* in this field.

Resources Controlled By: select *Auto* if you want the computer to assign the IRQs automatically and vice versa.

Reset Configuration Data: *Enabling* this field means you allow the configuration data to be reset.

IRQ-xx assigned to: these fields show whether certain IRQ is used by a PCI / ISA card

4.7 LOAD BIOS DEFAULTS

```

ROM PCI/ISA BIOS (2A434I9E)
  CMOS SETUP UTILITY
  AWARD SOFTWARE, INC.

STANDARD CMOS SETUP      INTEGRATED PERIPHERALS
BIOS FEATURES SETUP      SUPERVISOR PASSWORD
CHIPSET FEATURES SETUP    USER PASSWORD
POWER MANAGEMENT SETUP    IDE HDD AUTO DETECTION
PNP/PCI CONFIGURA        ETUP
LOAD BIOS DEFAULT         Load BIOS Defaults (Y/N)? N  SAVING
LOAD SETUP DEFAULTS

Esc : Quit                ↑ ↓ → ← : Select Item
F10 : Save & Exit Setup   (Shift)F2 : Change Color
  
```

If you select 'Y' to this field, the BIOS Defaults will be loaded except Standard CMOS SETUP. The default settings are not optimal and turning all high performance into disable condition. Select 'N' to abort.

Suggestion: for the first time or for our primary user, we suggest you to use LOAD SETUP DEFAULTS because it is the most safely mode for your system.

4.8 LOAD SETUP DEFAULTS

```

ROM PCI/ISA BIOS (2A434I9E)
  CMOS SETUP UTILITY
  AWARD SOFTWARE, INC.

STANDARD CMOS SETUP      INTEGRATED PERIPHERALS
BIOS FEATURES SETUP      SUPERVISOR PASSWORD
CHIPSET FEATURES SETUP    USER PASSWORD
POWER MANAGEMENT SETUP    IDE HDD AUTO DETECTION
PNP/PCI CONFIGURA        Load SETUP Defaults (Y/N)? N  ETUP
LOAD BIOS DEFAULT         SAVING
LOAD SETUP DEFAULTS

Esc : Quit                ↑ ↓ → ← : Select Item
F10 : Save & Exit Setup   (Shift)F2 : Change Color
  
```

If you select 'Y' to this field, the Setup Defaults will be loaded except Standard CMOS SETUP. The default settings are optimal configuration settings for your system.

4.9 INTEGRATED PERIPHERALS

ROM PCI/ISA BIOS (2A434I9E)
INTEGRATED PERIPHERALS
AWARD SOFTWARE, INC.

| | |
|----------------------------------|--------------------------------------|
| IDE HDD Block Mode : Enabled | Onboard Parallel Port : 378/IRQ7 |
| Primary IDE Channel : Enabled | Parallel Port Mode : SPP |
| Master Drive PIO Mode : Auto | |
| Slave Drive PIO Mode : Auto | |
| Secondary IDE Channel : Enabled | |
| Master Drive PIO Mode : Auto | |
| Slave Drive PIO Mode : Auto | |
| IDE Primary Master UDMA : Auto | Build in CPU Audio : Enabled |
| IDE Primary Slave UDMA : Auto | Audio I/O Base Address : 220H |
| IDE Secondary Master UDMA: Auto | MPU-401 I/O Base Address : 330H |
| IDE Secondary Slave UDMA: Auto | Audio IRQ Select : IRQ 5 |
| | Audio Low DMA Select : DMA 1 |
| | Audio High DMA Select : DMA 5 |
| | Joystick Status : Enabled |
| | Multiple Monitor Support : M/B First |
| KBC input clock : 8 MHz | |
| Onboard FDC Controller : Enabled | |
| Onboard Serial Port 1 : 3F8/IRQ4 | Video Memory Size : 4.0 M |
| Onboard Serial Port 2 : 2F8/IRQ3 | Display status : Both |
| UART Mode Select : Normal | Flat Panel Resolution : 800x600 |

This option is used to assign Onboard I/O, IRQ, DMA etc. If you don't know how to configure them, just press <F7> to load Setup Defaults.

The flat panels will then be applied with two modes: 640x480 or 800x600, for which it need to set up from BIOS for proper flat panel resolution.

- **Build in CPU Audio -- Enabled, Disabled**
To disable or enable the audio function.
- **Audio I/O Base Address -- 220H, 240H, 260H, 280H**
To select the I/O address for the audio function.
- **MPU-401 I/O Base Address -- 300H, 330H, Disabled**
To select the I/O address for the MPU-401 (midi interface) function.
- **Audio IRQ Select -- 5, 7, 10, Disabled**
To select the interrupt for the audio function.
- **Audio Low DMA Select -- DMA0, DMA1, DMA3, Disabled**

To select the high DMA channel.

- **Audio High DMA Select -- DMA5, DMA6, DMA7, Disabled**
To select the high DMA channel.
- **Multiple Monitor Support -- No Onboard, PCI first, M/B first**
To select the primary VGA for multiple monitor support in WINDOWS.
- **Video Memory Size -- 1.5M, 2.5M, 4.0M**
To select the size of Video memory. It makes use of system memory for display.

4.10 SUPERVISOR PASSWORD AND USER PASSWORD

Supervisor Password sets a password that is used to protect your system and Setup Utility. Supervisor Password has higher priority than User Password. Once you setup the password, the system will always ask you to key-in password every time you enter the BIOS SETUP. If you enter the BIOS SETUP with Supervisor Password, you can choose every setup/option on the main menu but with User Password, you can only choose three setup/options (USER PASSWORD, SAVE & EXIT SETUP and EXIT WITHOUT SAVING). To disable these passwords, enter the BIOS SETUP room with Supervisor Password and then just press the <Enter> key instead of entering a new password when the 'Enter Password' prompts pop-up.

N.B. : if you forget the password, do the Clear/Reset CMOS procedure (see Section 2.5 Clear CMOS Setup)

4.11 IDE HDD AUTODETECTION

This option detects the parameters of an IDE hard disk drive (HDD sector, cylinder, head, etc) automatically and will put the parameters into the Standard CMOS Setup screen. Up to 2 IDE drives can be detected and the parameters will be listed in the box. Press <Y> if you accept these parameters. Press <N> to skip the next IDE drives.

Note: If your IDE HDD was formatted in previous older system, incorrect parameters may be detected. In this case, you need to enter the correct parameters manually or low-level format the disk

4.12 SAVE & EXIT SETUP

Select this option when you finish setting all the parameters and want to save them into the CMOS. Just simply press <Enter> key and all the configuration changes will be saved

```
ROM PCI/ISA BIOS (2A434I9E)
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

STANDARD CMOS SETUP      INTEGRATED PERIPHERALS
BIOS FEATURES SETUP      SUPERVISOR PASSWORD
CHIPSET FEATURES SETUP    USER PASSWORD
POWER MANAGEMENT SETUP    IDE HDD AUTO DETECTION
PNP/PCI CONFIGURA      ETUP
LOAD BIOS DEFAULT        SAVING
LOAD SETUP DEFAULTS

SAVE to CMOS and EXIT (Y/N)? N

Esc : Quit                ↑ ↓ → ← : Select Item
F10 : Save & Exit Setup   (Shift)F2 : Change Color
```

4.13 EXIT WITHOUT SAVING

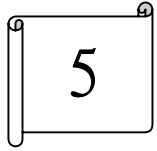
Select this option if you want to exit the Setup without saving the changes that you made. Just simply press <Enter> key and you will exit the BIOS SETUP without saving the changes.

```
ROM PCI/ISA BIOS (2A434I9E)
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

STANDARD CMOS SETUP      INTEGRATED PERIPHERALS
BIOS FEATURES SETUP      SUPERVISOR PASSWORD
CHIPSET FEATURES SETUP    USER PASSWORD
POWER MANAGEMENT SETUP    IDE HDD AUTO DETECTION
PNP/PCI CONFIGURA      ETUP
LOAD BIOS DEFAULT        SAVING
LOAD SETUP DEFAULTS

Quit Without Saving (Y/N)? N

Esc : Quit                ↑ ↓ → ← : Select Item
F10 : Save & Exit Setup   (Shift)F2 : Change Color
```



SVGA Setup

5.1 Introduction

The WAFER-5826 is equipped with on-board LCD/VGA interface. The description below is its specifications and features:

5.1.1 Chipset

The WAFER-5826 uses a Cyrix CX5530 chipset as its SVGA controller. It is compatible with many common 18-bit LCD displays and traditional analog CRT monitors. The VGA BIOS supports LCD. Besides, it also accepts interlaced and non-interlaced analog monitors (color and monochrome VGA) with high-resolution quality while maintaining complete IBM VGA compatibility. But digital monitors (i.e. MDA, CGA, and EGA) can be NOT supported. Multiple frequency (multi-sync) monitors are operated as if they were analog monitors.

5.1.2 Display memory

Having 1.5 ~ 4 MB UMA memory, the VGA controller can make CRT displays or color panel displays perform with resolutions up to 1024 x 768 at 64 K colors. The display memory can be modified up to 4 MB in BIOS for true-color resolution of 1024 x 768.

5.1.3 Display drivers

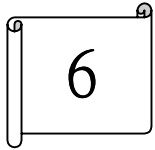
1. Win95,98 drivers(VGA & Audio) in driver CDROM
Vga \ MediaGX \ Win9X \ National Geode Win9x
Drivers1.2.exe

2. WinNT4.0 drivers in driver CDROM
Vga \ MediaGX \ Nt40 \

5.2 Further Information

For more detailed information about the PCI/SVGA installation in your WAFER-5826, including driver updates, troubleshooting instructions, please refer to the following webs which provide some resources you may need. If not find the information you need, please contact with your local contributor or ICP support team:

ICP web site: www.iei.com.tw



Audio

6.1 Introduction

With on-board audio interface, the WAFER-5826 can perform high-quality stereo sound and FM music synthesis (ESFM) by using the CX5530 audio controller. The audio interface has functions of recording, compressing, and playing back voice, sound, and music with a built-in mixer control. In addition, the on board audio interface supports the Plug and Play (PnP) standard and provides PnP configuration for audio, FM, and MPU-104 logical devices. It is compatible with AC97 version 2.0, voice, and music functions. The ESFM synthesizer is register compatible with the OPL3 and has extended capabilities.

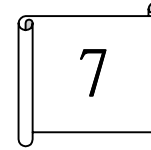
6.1.1 Audio drivers

1. Installing software driver in Windows NT

The driver was provided from the CD utility.
WinNT4.0 Audio drivers in Driver CDROM
Audio \ MediaGX \ Nt40 \

2. Installing software driver in Win95/98

The audio drivers will be installed automatically while you install the display driver.



PCI Bus Ethernet Interface

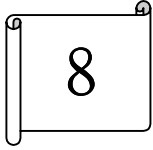
7.1 Introduction

The WAFER-5826 provides a high performance 32-bit Ethernet chipset which is completely compliant with IEEE 802.3 100 Mbps CSMA/CD standards. It is both 100Base-T and 10Base-T compatible. The major network operating system fits it. The medium type can be set up via the RSET8139.exe program included on the utility CD.

The Ethernet port supplies a standard RJ-45 connector on board. To utilize the network boot feature is by incorporating the boot ROM image files for the appropriate network operating system. The boot ROM BIOS files are combined with system BIOS, which can be enabled/disabled in the BIOS setup.

The 8139x utility tools all in driver CDROM

Lan \ Realtek \ 8139c \



CardBus Interface

8.1 Introduction

The WAFER-5826 provides a high performance 32-bit PCI bus Interface to CardBus interface chipset, which can support the 32-bit CardBus (Card-32), and the 16-bit CardBus (Card-16). It also supports ZV (Zoom Video) Card control interface without external buffers.

8.1.1 Chipset

The R5C475II is a PC card control offering a single chip solution as a bridge between PCI bus and CardBus. Concerning the card control interface, the R5C475II's register set is compatible with the Intel 82365SL and Ricoh's RF5C396/366 in order to maintain backward compatibility with a existing 16-bit PC Card compliant with PCMCIA2.1/JEIDA4.2 so that the existing PC card are available.

8.2 Support

In the CardBus standard adopted by PC Card 95, the data transfer bus was extended to 32bit and bus clock became 33MHz. Since the busmaster mode is also implemented, CardBus is suitable for high performance required multimedia cards such as fast LAN Card, VIDEO Card or graphic processing cards. With the ZV Card such as MPEG cards, Multimedia environment will be easily realized.

16-bit PC Card control interface signals, controlled by the timing synthesizer circuit, are programmable so that not only timing requirement of 16-bit PC Card compliant with PCMCIA2.1/JEIDA4.2 but also faster timing requirement than it is available.

Recognition of CardBus or 16-bit PC Card is examined automatically when cards are inserted, and the card control interface will be composed properly on the result of recognition. So, CardBus card and 16-bit PC Card are available simultaneously

8.3 Software Support

8.3.1 OS Support

[Windows 98]

R5C475II is fully supported by Windows 98.

8.3.2 R5C475II Installation

[Windows 98]

No configuration is necessary except the general setting of BIOS. (4.3)

Appendix A. Watch-Dog Timer

The WatchDog Timer is a device to ensure that standalone systems can always recover from catastrophic conditions that cause the CPU to crash. This condition may have occurred by external EMI or a software bug. When the CPU stops working normally, hardware on the board will perform hardware reset (cold boot) to bring the system back to a known state.

Three I/O ports control the WatchDog Timer.

| | | |
|---------------|-------|--|
| 543 | Write | Set Watch-Dog Time period |
| 543 (hex) | Read | Enable the refresh the WatchDog Timer. |
| 143/943 (hex) | Read | Disable the WatchDog Timer. |

Prior to enable the WatchDog Timer, user has to define Timer first. The output data is a value of time interval and the range of the value is from 01(hex) to FF (hex) and time interval 1 sec to 255 sec.

| Data | Time Interval |
|------|---------------|
| 01 | 1 sec |
| 02 | 2 sec |
| 03 | 3 sec |
| 04 | 4 sec |
| . | . |
| . | . |
| . | . |
| FF | 255 sec |

This will enable and activate the countdown timer which will eventually time out and reset the CPU to ensure that this reset condition does not occur, the Watch-Dog Timer must be periodically refreshed by reading the same I/O port 143/943H and 543H. This

must be done within the time out period that is selected by software, please refer to the example program.

A tolerance of at least 5% must be maintained to avoid unknown routines within the operating system (DOS), such as disk I/O that can be very time consuming. Therefore if the time out period has been set to 10 seconds, the I/O port 543H must be read within 7 seconds.

Note: when exiting a program it is necessary to disable the WatchDog Timer, otherwise the system will reset.

Example assembly program:

```
TIMER_PORT    = 543H
TIMER_START   = 543H
TIMER_STOP    = 943H
```

```
;; INITIAL TIME PERIOD COUNTER
MOV DX, TIME_PORT
OUT AL, 8:8 SECONDS
```

```
;; ADD YOUR APPLICATION HERE
MOV DX, TIMER_START
IN AL, DX.    ;; START COUNTER
```

```
;; ADD YOUR APPLICATION HERE
```

```

W_LOOP:
MOV DX, TIMER_STOP
IN AL, DX
MOV DX, TIMER_START
IN AL, DX.      ;; RESTART COUNTER

;; ADD YOUR APPLICATION HERE
CMP EXIT_AP, 0
JNE W_LOOP
MOV DX, TIMER_STOP
IN AL, DX
;; EXIT AP

```

Appendix B. I/O Address Map

B.1 System I/O Address Map

| I/O Address Map | Description |
|-----------------|--------------------------------------|
| 000-01F | DMA Controller #1 |
| 020-021 | Interrupt Controller # 1, Master |
| 022-023 | Chipset address |
| 040-05F | System Timer |
| 060-06F | Standard 101/102 keyboard Controller |
| 070-07F | Real time Clock, NMI Controller |
| 080-0BF | DMA Page Register |
| 0A0-0BF | Interrupt Controller # 2 |
| 0C0-0DF | DMA Controller # 2 |
| 0F0-0F0 | Clear Math Coprocessor Busy |
| 0F1-0F1 | Reset Math Coprocessor |
| 0F8-0FF | Math Coprocessor |
| 1F0-1F8 | VIR BUS Master PCI IDE Controller |
| 200-207 | Game I/O |
| 278-27F | Reserved |
| 2F8-2FF | Serial Port 2 |
| 378-37F | Parallel Printer Port 1 |
| 3B0-3DF | Cyrix Graphic Adapter |
| 3F0-3F7 | Floppy Disk Controller |
| 3F8-3FF | Serial Port 1 |
| 543 | Watch dog timer enable |
| 143/943 | Watch dog timer disable |

PnP audio I/O map range from 220~250H (16 bytes)

MPU-401 select from 300~330H (2 bytes)

B.2 DMA channel assignments

| Channel | Function |
|---------|------------------------------|
| 0 | Available |
| 1 | Audio* |
| 2 | Floppy disk (8-bit transfer) |
| 3 | Parallel** |
| 4 | Cascade for DMA controller 1 |
| 5 | Audio* |
| 6 | Available |
| 7 | Available |

* Audio DMA defaults setting: DMA 1.5

Audio High DMA select: DMA 1.3

Audio Low DMA select: DMA 5.6.7

** Parallel port DMA default setting: DMA 3

Parallel port DMA select: DMA 1.3

B.3 Interrupt assignments

| Interrupt # | Interrupt source |
|-------------|---------------------------------------|
| NMI | Parity error detected |
| IRQ 0 | System timer |
| IRQ 1 | Keyboard |
| IRQ 2 | Interrupt from controller 2 (cascade) |
| IRQ 8 | Real-time clock |
| IRQ 9 | Available |
| IRQ 10 | Available |
| IRQ 11 | Available |
| IRQ 12 | PS/2 mouse |
| IRQ 13 | Numeric data processor |
| IRQ 14 | Fixed disk controller |
| IRQ 15 | USB controller |
| IRQ 3 | Serial communication port 2 |
| IRQ 4 | Serial communication port 1 |
| IRQ 5 | Audio* |
| IRQ 6 | Diskette controller (FDC) |
| IRQ 7 | Parallel port 1 (print port) |

* Audio default setting: IRQ5

Ethernet IRQ is automatic set by the system

B.4 1st MB memory map

| Address | Description |
|-------------|------------------|
| F000h-FFFFh | System ROM |
| D800h-EFFFh | Unused |
| C800h-D7FFh | Ethernet ROM* |
| C000h-C7FFh | Expansion ROM* |
| B800h-BFFFh | CGA/EGA/VGA text |
| B000h-B7FFh | Unused |
| A000h-AFFFh | EGA/VGA graphics |
| 0000h-9FFFh | Base memory |
| D000-D400H | Available |

* Default setting

** If Ethernet boot ROM is enabled.