

**FWS-825**

2U Rackmount

Firewall Platform

1 3.5" Disk Drive bay

6 Optional LAN Ports

4 USB Ports

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## Packing List

Before you begin installing your card, please make sure that the following materials have been shipped:

- Serial ATA Cable
- HDD Power Cable
- POWER Cord
- Screw Accessory
- CPU Cooler Fan for LGA 775 Pentium<sup>®</sup> 4
- LAN Card
- PCI Riser Card
- 2U ATX Power Supply
- Quick Installation Guide
- Utility CD-ROM
- FWB-880N Firewall Board
- FWC-825 Chassis

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

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Chapter

1

**General  
Information**

## 1.1 Introduction

---

FWS-825 is a 2U rackmount firewall platform for high performance firewall applications. Mainly designed for system integrator or users who require compact system.

The FWS-825 supports Intel® LGA 775 CPU board and is equipped with 2U ATX power supply. It also features 6 optional LAN ports for network application system. FWS-825 can be standard mounted and easy to fit into limited space environment.

## 1.2 Features

---

- 2U Rackmount Firewall Platform
- Supports Intel® Pentium® 4/ Celeron®-D LGA775 CPU up to 3.8GHz (Prescott CPU/ Dual Core CPU) firewall board
- DDR 2 Memory supports up to 4GB
- Supports standard 2U power supply up to 350W
- Six optional LAN ports
- One internal 3.5" serial ATA hard disk drive bay
- Two USB connectors on rear panel and two on front panel

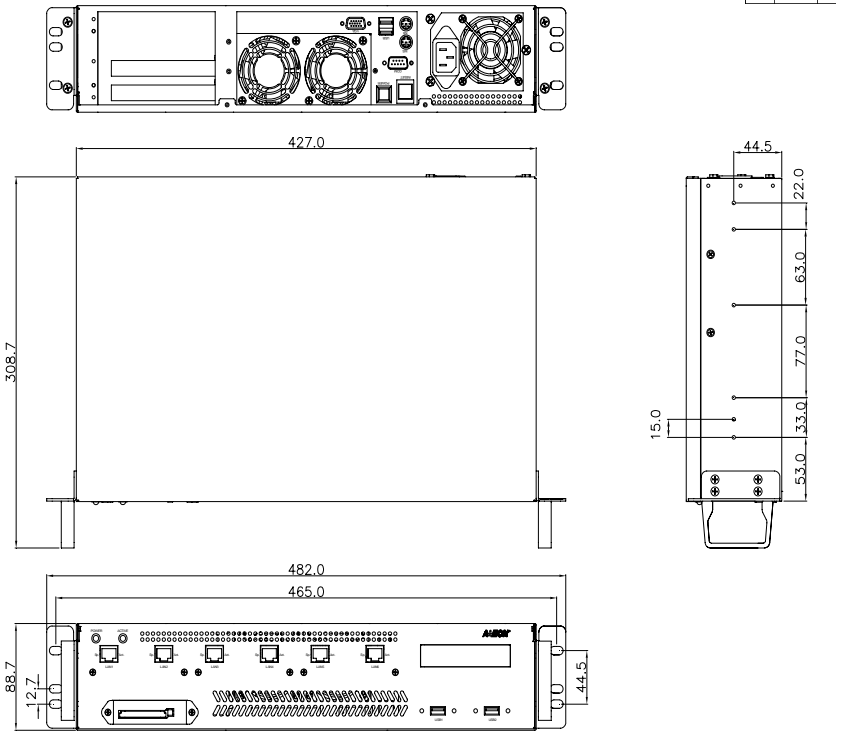
### 1.3 Specifications

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<b>Construction:</b>	2U 19" Rackmount Chassis
<b>CPU</b>	Intel Pentium <sup>®</sup> 4/Celeron-D LGA775 CPU up to 3.8GHz (Prescott CPU/Dual Core CPU)
<b>Memory</b>	DDR2 Memory Support up to 4GB (4 x DIMM Slots)
<b>LAN</b>	6 x Gigabit LAN (optional)
<b>Expansion Interface</b>	2 x PCI Slot (Riser Card, 5V only) 1 x Mini PCI Slot
<b>Storage</b>	Internal : One 3.5" Hard Disk Drive
<b>System Fan</b>	Two 6cm Ball Bearing Fan
<b>Front I/O panel</b>	Power LED X 1 Hard Disk Drive Active LED X 1 USB 2.0 Connector X 2 LAN Connector with LED x 6 CF Card Slot x 1
<b>Rear I/O Panel</b>	Two horizontal add-on card window DB-9 connector x 1 Power ON/OFF Switch X 1 Reset Button X 1 USB 2.0 Connector x 2 PS/2 Keyboard & Mouse Connector x 1 VGA DB-15 Port x 1

<b>Power Requirement</b>	2U ATX 350W power supply
<b>Color</b>	Black
<b>Dimensions</b>	19" (W) x 12.2" (D) x 3.5" (H) (482mm x 309mm x 89mm)
<b>Carton Size</b>	23.8" (W) x 18.7" (D) x 9.8" (H) (605mm x 475mm x 250mm)
<b>Net weight</b>	17.6 lb (8 kg)
<b>Gross weight</b>	26.4 lb (12 kg)
<b>Operating Temp.</b>	32°F ~ 104°F (0°C ~ 40°C)
<b>Storage Temp.</b>	-4°F ~ 140°F (-20°C ~ 60°C)
<b>Operating humidity:</b>	10 ~ 80%
<b>Storage humidity:</b>	10 ~ 80% @ 40°C, non-condensing
<b>Vibration</b>	0.5G / 5 ~ 500Hz / operation (3.5" Hard Disk Drive) 1.5G / 5 ~ 500Hz / non operation
<b>Shock</b>	10G peak acceleration (11 m sec. duration), operation 20G peak acceleration (11 m sec. duration), non operation
<b>EMC</b>	CE, FCC Class A

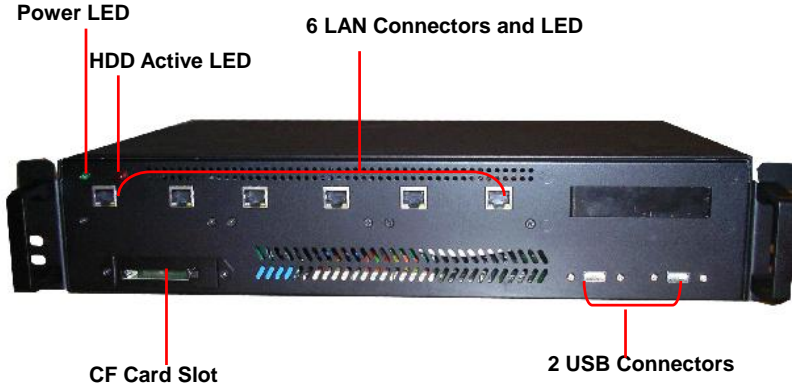
### 1.4 Dimension Diagram



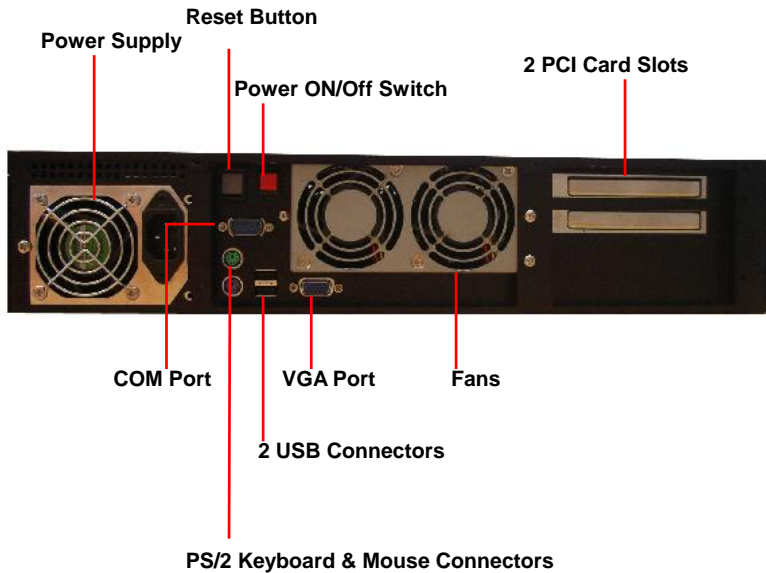
## 1.5 General System Information

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### Front Panel:



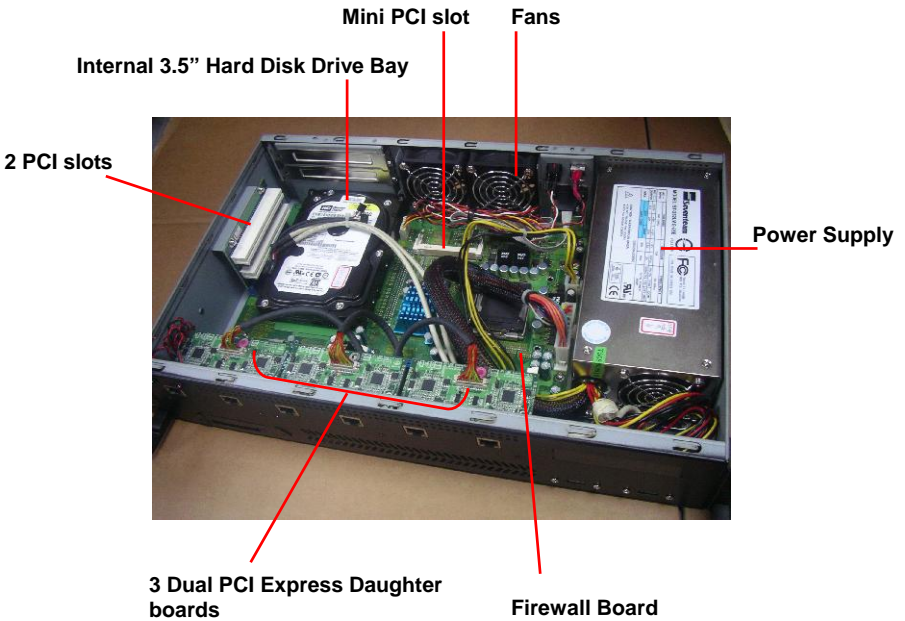
### Rear Panel:



**LAN LED color and function**

Name	Color	Description
LAN Link/Activity (Act.)	Green	LAN Access
	-	Idle
GbE LAN Speed (SP.)	Orange	1Gbps connection
	Green	100Mbps connection
	-	10Mbps connection

**Internal:**



## Chapter

# 2

## **FWB-880N Quick Installation Guide**

*Notice:*

*The Quick Installation Guide is derived from Chapter 2 of the user manual. For other chapters and further installation instructions, please refer to the user manual CD-ROM that came with the product.*



## 2.1 Safety Precautions

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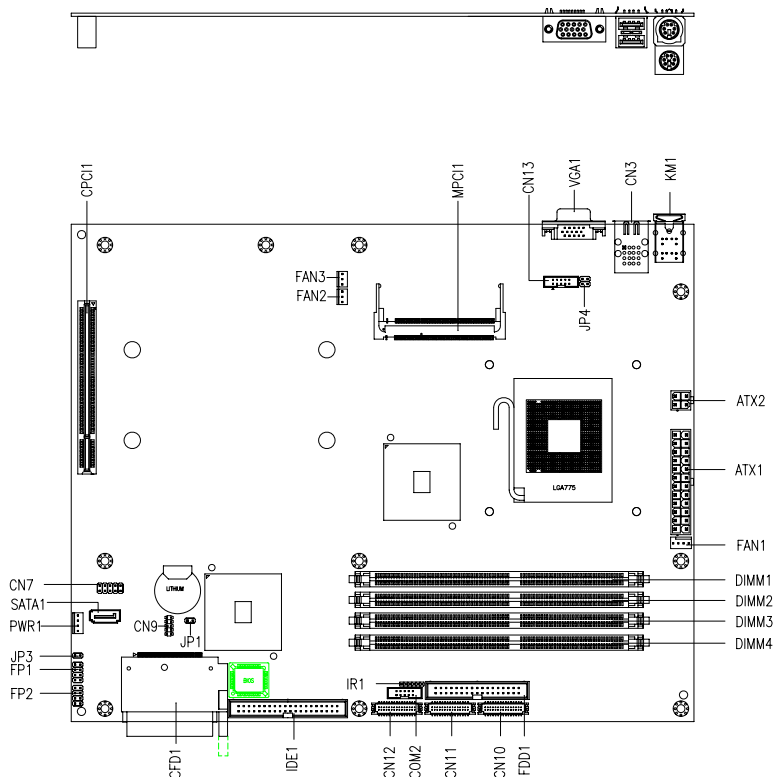
**Warning!**

*Always completely disconnect the power cord from your board whenever you are working on it. Do not make connections while the power is on, because a sudden rush of power can damage sensitive electronic components.*

**Caution!**

*Always ground yourself to remove any static charge before touching the board. Modern electronic devices are very sensitive to static electric charges. Use a grounding wrist strap at all times. Place all electronic components on a static-dissipative surface or in a static-shielded bag when they are not in the chassis*

## 2.2 Location of Connectors and Jumpers





## 2.4 List of Jumpers

---

The board has a number of jumpers that allow you to configure your system to suit your application.

The table below shows the function of each of the board's jumpers:

<b>Label</b>	<b>Function</b>
JP1	Clear CMOS
JP3	CFD Master / Slave select

## 2.5 List of Connectors

---

The board has a number of connectors that allow you to configure your system to suit your application. The table below shows the function of each board's connectors:

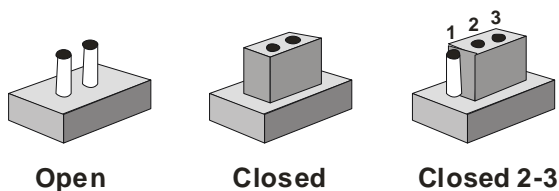
<b>Label</b>	<b>Function</b>
FP1	Front Panel Connector 1
FP2	Front Panel Connector 2
ATX1	24-pin ATX Power
ATX2	4-pin ATX Power +12V Connector
DIMM1~4	DIMM Slot
VGA1	VGA Display Connector
CFD1	Compact Flash Slot
SATA1	SATA connector
PWR1	On board SATA HDD's Power connector
CN3	Rear USB Connector X 2
CN7	Front USB connectors x2
MPC11	Mini PCI slot
CPC11	PICMG PCI slot
CN10~12	PCI express X1 connector
KM1	PS2 Keyboard/Mouse Connector
COM1 (CN13)	RS-232/422/485 Serial Port Connector
FAN1	4-pin Fan Connector
FAN2~3	3-pin Fan Connector

## 2.6 Setting Jumpers

---

You configure your card to match the needs of your application by setting jumpers. A jumper is the simplest kind of electric switch. It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To “close” a jumper you connect the pins with the clip.

To “open” a jumper you remove the clip. Sometimes a jumper will have three pins, labeled 1, 2 and 3. In this case you would connect either pins 1 and 2 or 2 and 3.



A pair of needle-nose pliers may be helpful when working with jumpers.

If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any change.

Generally, you simply need a standard cable to make most connections.

## 2.7 Clear CMOS (JP1)

---

JP1	Function
Short	Clear
Open	Protected (Default)

## 2.8 Front Panel Connector (FP1)

---

Pin	Signal	Pin	Signal
1	Power On Button(+)	2	Reset Switch(+)
3	Power On Button(-)	4	Reset Switch(-)
5	IDE LED(+)	6	Power LED(+)
7	IDE LED(-)	8	Power LED(-)

## 2.9 Front Panel Connector (FP2)

---

**Note:** Internal Buzzer enable: Close Pin 5,7

Pin	Signal	Pin	Signal
1	External Speaker (+)	2	KeyBoard Lock (+)
3	NC	4	GND
5	Internal Buzzer(-) (Default)	6	I2C Bus SMB Clock
7	External Speaker (-) (Default)	8	I2C Bus SMB Data

## 2.10 USB Connector (CN7)

---

Pin	Signal	Pin	Signal
1	+5V	2	GND
3	USB D1-	4	GND
5	USB D1+	6	USB D2+
7	GND	8	USB D2-

---

9	GND	10	+5V
---	-----	----	-----

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### 2.11 RS-232/422/485 Serial Port Connector (COM1) (CN13)

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Pin	Signal	Pin	Signal
1	DCD(422TXD-/485DATA-)	2	RXD(422RXD+)
3	TXD(422TXD+/485DATA+)	4	DTR(422RXD-)
5	GND	6	DSR
7	RTS	8	CTS
9	RI	10	N.C

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### 2.12 Fan Connector (FAN1)

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Pin	Signal
1	GND
2	+12V
3	Speed Sense
4	Speed CTRL

---

### 2.13 Fan Connector (FAN2~3)

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Pin	Signal
1	GND
2	+12V
3	Speed Sense

---

## 2.14 Removing the Cover

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Before you install drives or plug-in cards into the FWS-825, please switch the unit off and remove the power cord first.

### Open the upper lid of the FWS-825



- Unscrew the upper lid



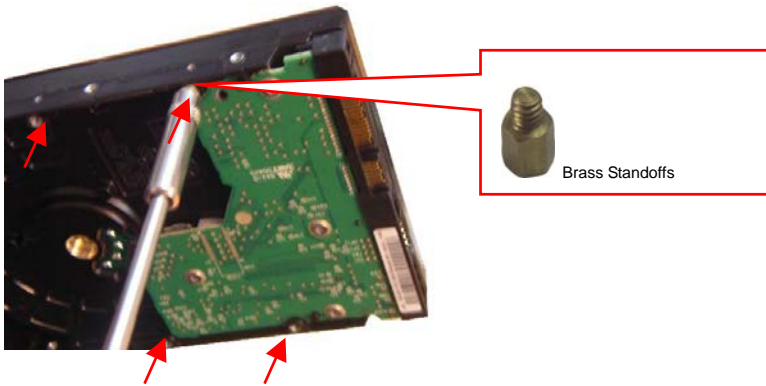
- Isolate the upper lid from the chassis

## 2.15 Adding a Serial-ATA Hard Disk Drive

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FWS-825 supports Serial-ATA Hard Disks only. To install the hard disk drive, please follow the figures and procedures below:

**Step 1:** Screw four brass standoffs into hard disk drive.

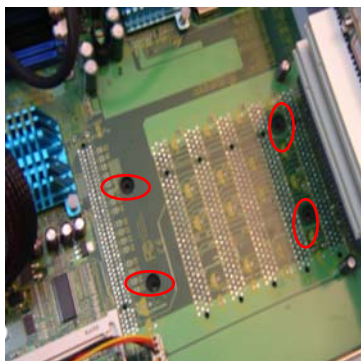


**Step 2:** Insert the disk drive power cable and signal cable into Serial-ATA hard disk drive.



**Step 3:** Fasten the Serial-ATA hard disk drive to the firewall board from the bottom of the chassis with four screws.

**Note:** Make sure of the correct positions of the four screw holes when fastening the drive.



**Step 4:** Connect the disk drive power cord and signal cables properly.



## 2.16 Installing PCI Card & mini PCI Cards

---

To install a PCI card and mini PCI card, please follow the figures and procedures below.

**Step 1:** Unscrew and remove the system fans.



**Step 2:** Unfasten and remove the I/O bracket



**Step 3:** Insert PCI Card and fasten it.



**Step 4:** Insert the Mini PCI Card obliquely.



**Note:** If you don't have mini PCI Card, this step may be left out.

**Step 5:** Install system fan, close the cover and fasten it then.



## 2.17 Installing a CF Card

---

To install a CF card, please follow the figures and procedures below.

**Step 1:** Insert the CF card to the slot on front panel of the Chassis until the black button pops out.



---

**Note:** If you want to remove the CF card, please push the black button to eject it.



Chapter

3

**Award  
BIOS Setup**

### 3.1 System Test and Initialization

---

These routines test and initialize board hardware. If the routines encounter an error during the tests, you will either hear a few short beeps or see an error message on the screen. There are two kinds of errors: fatal and non-fatal. The system can usually continue the boot up sequence with non-fatal errors. Non-fatal error messages usually appear on the screen along with the following instructions:

Press <F1> to RESUME

Write down the message and press the F1 key to continue the boot up sequence.

#### **System configuration verification**

These routines check the current system configuration against the values stored in the CMOS memory. If they do not match, the program outputs an error message. You will then need to run the BIOS setup program to set the configuration information in memory.

There are three situations in which you will need to change the CMOS settings:

1. You are starting your system for the first time
2. You have changed the hardware attached to your system
3. The CMOS memory has lost power and the configuration information has been erased.

The FWS-825 CMOS memory has an integral lithium battery backup for data retention. However, you will need to replace the complete unit when it finally runs down.

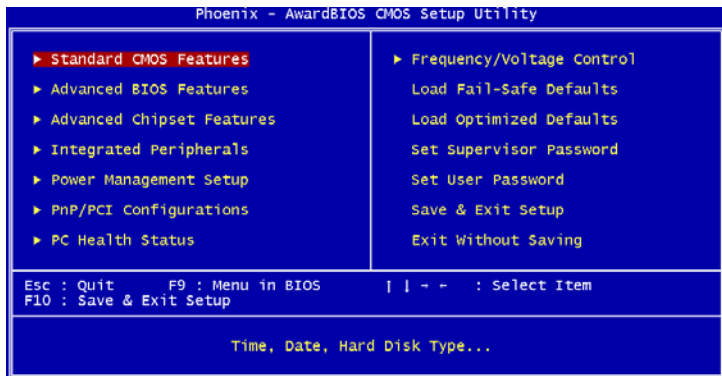
## 3.2 Award BIOS Setup

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Awards BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This type of information is stored in battery-backed CMOS RAM so that it retains the Setup information when the power is turned off.

### Entering Setup

Power on the computer and press <Del> immediately. This will allow you to enter Setup.



### Standard CMOS Features

Use this menu for basic system configuration. (Date, time, IDE, etc.)

### Advanced BIOS Features

Use this menu to set the advanced features available on your system.

## **Advanced Chipset Features**

Use this menu to change the values in the chipset registers and optimize your system performance.

## **Integrated Peripherals**

Use this menu to specify your settings for integrated peripherals. (Primary slave, secondary slave, keyboard, mouse etc.)

## **Power Management Setup**

Use this menu to specify your settings for power management. (HDD power down, power on by ring, KB wake up, etc.)

## **PnP/PCI Configurations**

This entry appears if your system supports PnP/PCI.

## **PC Health Status**

This menu allows you to set the shutdown temperature for your system.

## **Frequency/Voltage Control**

Use this menu to specify your settings for auto detect DIMM/PCI clock and spread spectrum.

## **Load Fail-Safe Defaults**

Use this menu to load the BIOS default values for the minimal/stable performance for your system to operate.

## Load Optimized Defaults

Use this menu to load the BIOS default values that are factory settings for optimal performance system operations. While AWARD has designated the custom BIOS to maximize performance, the factory has the right to change these defaults to meet their needs.

## Set Supervisor/User Password

Use this menu to set Supervisor/User Passwords.

## Save and Exit Setup

Save CMOS value changes to CMOS and exit setup.

## Exit Without Saving

Abandon all CMOS value changes and exit setup.

**You can refer to the "AAEON BIOS Item Description.pdf" file in the CD for the meaning of each setting in this chapter.**

### Note:

FWS-825 does not support AC-97 Audio, onboard LAN, LPT, and COM2 onboard, therefore, please ignore these BIOS options in Award BIOS Setup Menu.

Chapter

4

**Driver  
Installation**

The FWB-880N comes with an AutoRun CD-ROM that contains all drivers and utilities that can help you to install the driver automatically.

Insert the driver CD, the driver CD-title will auto start and show the installation guide. If not, please follow the sequence below to install the drivers.

***Follow the sequence below to install the drivers:***

- Step 1 – Install PER-C101 or PER-C102 Daughter Board LAN Driver
- Step 2 – Install Intel INF Update
- Step 3 – Install Intel Extreme Graphics Driver
- Step 4 – Install Hardware Doctor Driver

USB 2.0 Drivers are available for download using Windows<sup>®</sup> Update for both Windows<sup>®</sup> XP and Windows<sup>®</sup> 2000. For additional information regarding USB 2.0 support in Windows<sup>®</sup> XP and Windows<sup>®</sup> 2000, please visit [www.microsoft.com/hwdev/usb/](http://www.microsoft.com/hwdev/usb/)

Please read instructions below for further detailed installations.

## 4.1 Installation:

---

Insert the FWS-825 CD-ROM into the CD-ROM drive. And install the drivers from Step 1 to Step 5 in order.

Step 1 – Install PER-C101 or PER-C102 Daughter Board LAN Driver

### ***PER-C101***

1. Click on the **LAN** folder
2. Select the folder of Broadcom
3. Select the BCM5721 or BCM5751 & BCM5789 folder
4. Follow the instructions that the window shows
5. The system will help you install the driver automatically

### ***PER-C102***

1. Click on the **LAN** folder
2. Select the folder of Marvell
3. Follow the instructions that the window shows
4. The system will help you install the driver automatically

Step 2 – Install Intel **INF** Update Driver

1. Click on the **INF** folder and go to the **Public** folder
2. Choose the folder of **Ver.7.2.1.1003**
3. Double click on the **\*.exe** file
4. Follow the instructions that the window shows
5. The system will help you install the driver automatically

### Step 3 – Install Intel Graphics Driver

1. Click on the **VGA** folder
2. Select the folder of ***FWB-880***
3. Choose the OS your system is
4. Double click on the **\*.exe** file located in each OS folder
5. Follow the instructions that the window shows
6. The system will help you install the driver automatically

### Step 4 – Install Hardware Doctor

1. Click on the ***Hardware Doctor*** folder
2. Select the ***FWB-880*** folder
3. Double click on the **\*.exe** file
4. Follow the instructions that the window shows
5. The system will help you to install the driver automatically

Appendix

**A**

# Programming the Watchdog Timer

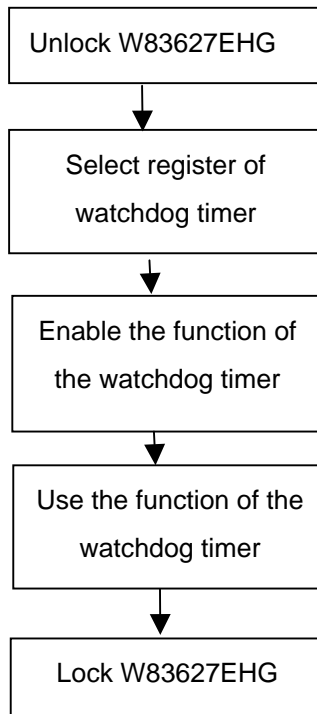
## A.1 Programming

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FWB-880N utilizes W83627EHG chipset as its watchdog timer controller.

Below are the procedures to complete its configuration and the AAEON initial watchdog timer program is also attached based on which you can develop customized program to fit your application.

### Configuring Sequence Description



There are three steps to complete the configuration setup:

- (1) Enter the W83627EHG config Mode

- (2) Modify the data of configuration registers
- (3) Exit the W83627EHG config Mode. Undesired result may occur if the config Mode is not exited normally.

### (1) Enter the W83627EHG config Mode

To enter the W83627EHG config Mode, two special I/O write operations are to be performed during Wait for Key state. To ensure the initial state of the key-check logic, it is necessary to perform two write operations to the Special Address port (2EH). The different enter keys are provided to select configuration ports (2Eh/2Fh) of the next step.

	Address Port	Data Port
87h,87h:	2Eh	2Fh

### (2) Modify the Data of the Registers

All configuration registers can be accessed after entering the config Mode. Before accessing a selected register, the content of Index 07h must be changed to the LDN to which the register belongs, except some Global registers.

### (3) Exit the W83627EHG config Mode

The exit key is provided to select configuration ports (2Eh/2Fh) of the next step.

	Address Port	Data Port
0aah:	2Eh	2Fh

### WatchDog Timer Register I (Index=F5h, Default=00h)

**CRF5 (PLED mode register. Default 0 x 00)**

**Bit 7-6** : select PLED mode

= 00 Power LED pin is tri-stated.

- = 01 Power LED pin is driven low.
- = 10 Power LED pin is a 1Hz toggle pulse with 50 duty cycle.
- = 11 Power LED pin is a 1/4Hz toggle pulse with 50 duty cycle.

**Bit 5-4** : Reserved

**Bit 3** : select WDTO count mode.

- = 0 second
- = 1 minute

**Bit 2** : Enable the rising edge of keyboard Reset (P20) to force Time-out event.

- = 0 Disable
- = 1 Enable

**Bit 1-0** : Reserved

**WatchDog Timer Register II (Index=F6h, Default=00h)**

- Bit 7-0** = 0 x 00 Time-out Disable
- = 0 x 01 Time-out occurs after 1 second/minute
- = 0 x 02 Time-out occurs after 2 second/minutes
- = 0 x 03 Time-out occurs after 3 second/minutes
- .....
- = 0 x FF Time-out occurs after 255

second/minutes

### WatchDog Timer Register III (Index=F7h, Default=00h)

- Bit 7** : Mouse interrupt reset Enable or Disable  
= 1 Watchdog Timer is reset upon a Mouse interrupt  
= 0 Watchdog Timer is not affected by Mouse interrupt
- Bit 6** : Keyboard interrupt reset Enable or Disable  
= 1 Watchdog Timer is reset upon a Keyboard interrupt  
= 0 Watchdog Timer is not affected by Keyboard interrupt
- Bit 5** : Force Watchdog Timer Time-out. Write Only  
= 1 Force Watchdog Timer time-out event: this bit is self-clearing
- Bit 4** : Watchdog Timer Status. R/W  
= 1 Watchdog Timer time-out occurred  
= 0 Watchdog Timer counting
- Bit 3-0** : These bits select IRQ resource for Watchdog. Setting of 2 selects SMI.

## A.2 W83627EHG Watchdog Timer Initial Program

---

Example: Setting 10 sec. as Watchdog timeout interval

```

;////////////////////////////////////
Mov dx,2eh           ;Enter W83627EHG config mode
Mov al,87h          (out 87h to 2eh twice)
Out dx,al
Out dx,al
;////////////////////////////////////
Mov al,07h
Out dx,al
Inc dx
Mov al,08h          ;Select Logical Device 8 (GPIO Port
2)
Out dx,al
;////////////////////////////////////
Dec dx
Mov al,30h          ;CR30 (GP20~GP27)
Out dx,al
Inc dx
Mov al,01h          ;Activate GPIO2
Out dx,al

```

;/;;;

```
Dec dx
Mov al,0f5h           ;CRF5 (PLED mode register)
Out dx,al
Inc dx
In al,dx
And al,not 08h       ;Set second as counting unit
Out dx,al
```

;/;;;

```
Dec dx
Mov al,0f6h           ; CRF6
Out dx,al
Inc dx
Mov al,10             ;Set timeout interval as 10 sec.
Out dx,al
```

;/;;;

```
Dec dx                 ;Exit W83627EHG config mode
Mov al,0aah           (out 0aah to 2eh once)
Out dx,al
```

;/;;;