

COM-45SP

Intel® Core™ 2 Duo/ Celeron® M

(Socket-P Based) Processor

24-bit Dual-channel LVDS LCD/ TV

DDRIII 800/1066 SODIMM Memory

High Definition Audio

Copyright Notice

This document is copyrighted, 2009. All rights are reserved. The original manufacturer reserves the right to make improvements to the products described in this manual at any time without notice.

No part of this manual may be reproduced, copied, translated, or transmitted in any form or by any means without the prior written permission of the original manufacturer. Information provided in this manual is intended to be accurate and reliable. However, the original manufacturer assumes no responsibility for its use, or for any infringements upon the rights of third parties that may result from its use.

The material in this document is for product information only and is subject to change without notice. While reasonable efforts have been made in the preparation of this document to assure its accuracy, AAEON assumes no liabilities resulting from errors or omissions in this document, or from the use of the information contained herein.

AAEON reserves the right to make changes in the product design without notice to its users.

Acknowledgments

All other products' name or trademarks are properties of their respective owners.

- Award is a trademark of Award Software International, Inc.
- CompactFlash™ is a trademark of the Compact Flash Association.
- Intel®, Core™ 2 Duo and Celeron® M are trademarks of Intel® Corporation.
- Microsoft Windows® is a registered trademark of Microsoft Corp.
- ITE is a trademark of Integrated Technology Express, Inc.
- IBM, PC/AT, PS/2, and VGA are trademarks of International Business Machines Corporation.
- SoundBlaster is a trademark of Creative Labs, Inc.

All other product names or trademarks are properties of their respective owners.

Packing List

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

- 1 COM-45SP CPU module
- 1 CD-ROM for manual (in PDF format) and drivers
- 5 M2.5 screws

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

Application Notes

1. Display port support

When PCI-E [x16] signals are occupied by the graphics card, SDVO, DisplayPort, HDMI and DVI signals cannot be used or implemented. Otherwise, when either of SDVO, DisplayPort, HDMI or DVI is used or implemented, the others cannot be used or implemented at the same time.

2. Linux support

Some functions of COM-45SP cannot work well in some Linux versions, for example, LAN function in Fedora 9 because of the supporting issue of new chipset.

AAEON has tested Fedora 10 on COM-45SP and the functions work well.

Contents

Chapter 1 General Information

1.1 Introduction.....	1-2
1.2 Features	1-3
1.3 Specifications	1-4

Chapter 2 Quick Installation Guide

2.1 Safety Precautions	2-2
2.2 Location of Connectors/Jumpers & Mechanical Drawings	2-3
2.3 List of Jumpers	2-5
2.4 List of Connectors	2-5
2.5 AT/ATX Selection (S1)	2-5
2.6 COM Express ROW C/D Connector (CN1).....	2-6
2.7 COM Express ROW A/B Connector (CN2).....	2-10
2.8 SPI Flash Programming Connector (Optional)(CN3)	2-15
2.9 Battery Connector (Optional) (BAT1).....	2-15

Chapter 3 Award BIOS Setup

3.1 System Test and Initialization.	3-2
3.2 Award BIOS Setup	3-3

Chapter 4 Driver Installation

4.1 Installation	4-3
------------------------	-----

Appendix A Programming The Watchdog Timer

A.1 General Information	A-2
A.2 Access Interface	A-2
A.3 Registers Description	A-3
A.4 F7511 Watchdog Timer Initial Program	A-5

Appendix B I/O Information

B.1 I/O Address Map	B-2
B.2 Memory Address Map	B-3
B.3 IRQ Mapping Chart	B-4
B.4 DMA Channel Assignments	B-4

Chapter

1

**General
Information**

1.1 Introduction

To accommodate fast growing marketing segments, AAEON has developed a brand new COM (Computer-on-module) Express CPU Module. The COM-45SP, and its accompanying carrier board-ECB-916M, adopts Intel Core 2 Duo/ Celeron M (socket-P based) processor and Intel's GM45+ICH9M chipset, offering high speed PCI-Express [x16] and PCI-Express [x1] bus interfaces for your high performance applications requiring high-speed and greater stability. The COM Express CPU Module offers flexibility and time-to-market advantages over a fully customized platform.

AAEON's COM-45SP supports 24-bit dual-channel LVDS LCD interface and supports two DDRIII 800/1066 SODIMM memory module up to 8GB. A high definition audio interface is available to connect to an audio codec on the carrier board. Moreover, four SATA II interfaces are featured giving the user flexibility in storage choices.

To satisfy the requirements of leading-edge applications in gaming, entertainment, industrial automation, medical, and POS, etc, COM Express carrier boards can be designed with features and technologies specifically targeting the needs of the different market segments. AAEON can design your COM Express carrier board to meet your specific project requirements.

1.2 Features

- Intel® Core™ 2 Duo/ Celeron® M (Socket-P Based) Processors
- Intel® GM45 + ICH9M
- Dual-channel DDRIII 800/1066 Memory, Max. 8GB
- Gigabit Ethernet
- CRT, Up to 24-bit Dual-channel LVDS LCD, TV, DisplayPort, HDMI, DVI (Please refer to the Application Notes.)
- High Definition Audio Interface
- SATA II x 4
- USB2.0 x 8
- PCI x 4, PCI-Express [x16] x 1, PCI-Express [x1] x 5
- Wide DC Input Range, +8.5V to +19V
- COM Express Basic Module Pin-out Type II

1.3 Specifications

System

- CPU Intel® Core™ 2 Duo/ Celeron® M (Socket-P based) Processor
- System Memory 204-pin DDRIII SODIMM x 2, supports DDRIII 800/1066 up to 8GB and dual-channel function
- Chipset Intel® GM45 + ICH9M
- Ethernet Intel® 82567 for 10/100/1000Base-TX Ethernet
- TPM v1.2
- BIOS Award BIOS v8.0, SPI type, 2MB ROM
- EEPROM Atmel® AT24C02, save BIOS and configuration data
- Wake on LAN Yes
- H/W status monitoring CPU Temperature Monitoring
- Watchdog Timer Fintek F75111
- Expansion Interface PCI-Express [x16] x 1 (shared with 2 SDVOs/ 3 DisplayPorts/ 2 HDMI/ 2 DVIs) (Please refer to the Application Notes) => Can be configured as PCI-Express [x1] / [x2] / [x4] / [x8] ;

- PCI-Express [x1] x 5;
 32-bit PCI x 4;
 LPC bus x 1;
 SMBus x 1;
 I2C x 1
- Power Requirement Wide DC Input Range, +8.5V DC to +19V DC, 2-pin wafer for RTC battery
- Power Consumption Intel® T9400 2.53GHz, DDRIII 1066 2GB; 3.94A @ +12V, 0.38A @ +5V
- Board Size 4.92" (L) x 3.75" (W)
(125mm x 95mm)
- Gross Weight 0.66 lb (0.3kg)
- Operating Temperature 32°F~140°F (0°C~60°C)
- Storage Temperature -40°F~176°F (-40°C~80°C)
- Operating Humidity 0%~90% relative humidity, non-condensing

Display: Supports CRT/LCD, CRT/TV, CRT/DVI, LCD/TV, LCD/DVI Simultaneous/ Dual View Displays

- Chipset Intel® GM45 integrated
 Integrated hardware MPEG2 decoder, supports WMV9 (VC-1) and H.264 (AVC)

- Memory Shared system memory above 512MB/ DVMT 5.0
- Resolution Up to 2048 x 1536 (QXGA) for CRT; Up to 2048 x 1536 (QXGA) for LCD
- LCD Interface Up to 24-bit dual-channel LVDS
- SDVO Supports SDVO x 2 (Shared with PCI-Express [x16])
- HDMI Supports HDMI x 2 (Shared with PCI-Express [x16] , needs to add a level shifter)
- DVI Supports DVI x 2 (Shared with PCI-Express [x16] , needs to add a level shifter)
- DisplayPort Supports DisplayPort x 3 (Shared with PCI-Express [x16])
- TV-out Intel® GM45 integrated, supports NTSC/ PAL/ HDTV; HDTV supports: 480p/720p/1080i/1080p; Supports Composite Video, S-Video and Component Video (YPbPr) on carrier board

I/O

- Storage SATA II x 4
- USB USB2.0 x 8
- Audio High Definition Audio
- GPIO Up to 4 in or 4 out

Chapter

2

Quick Installation Guide

Notice:

The Quick Installation Guide is derived from Chapter 2 of 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

Warning!



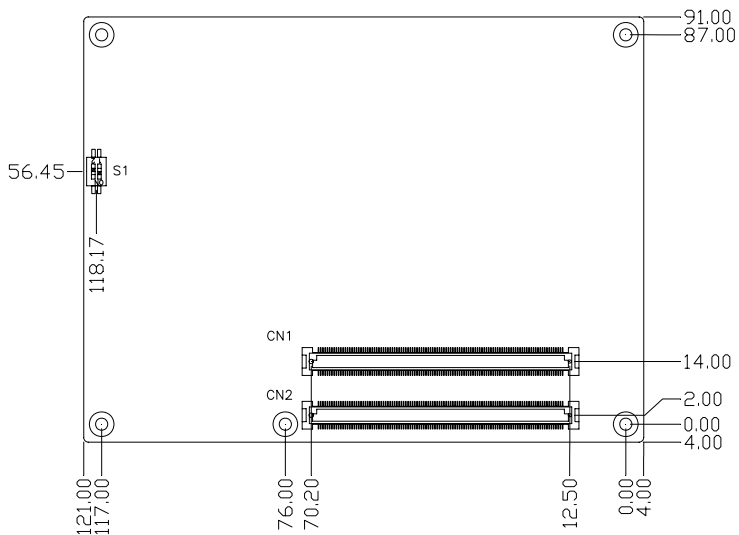
Always completely disconnect the power cord from your board whenever you are working on it. Do not make connections while the power is on, because a sudden rush of power can damage sensitive electronic components.

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

Solder Side



2.3 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:

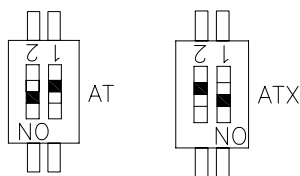
Label	Function
S1	AT/ATX Selection

2.4 List of Connectors

There are a number of connectors in the board that allow you to configure your system to suit your application. The table below shows the function of each connector in the board:

Label	Function
CN1	COM Express ROW C/D Connector
CN2	COM Express ROW A/B Connector
CN3	SPI Flash Programming Connector (Optional)
BAT1	Battery Connector (Optional)

2.5 AT/ATX Selection (S1)



Lable	Function
1(On), 2(Off)	ATX (Default)
1(Off), 2(On)	AT

2.6 COM Express ROW C/D Connector (CN1)

Row C		Row D	
C1	GND (FIXED)	D1	GND (FIXED)
C2	N.C.	D2	N.C.
C3	N.C.	D3	N.C.
C4	N.C.	D4	N.C.
C5	N.C.	D5	N.C.
C6	N.C.	D6	N.C.
C7	N.C.	D7	N.C.
C8	N.C.	D8	N.C.
C9	N.C.	D9	N.C.
C10	N.C.	D10	N.C.
C11	GND (FIXED)	D11	GND (FIXED)
C12	N.C.	D12	N.C.
C13	N.C.	D13	N.C.
C14	N.C.	D14	N.C.
C15	PCI_PME#	D15	N.C.
C16	PCI_GNT2#	D16	N.C.
C17	PCI_REQ2#	D17	N.C.
C18	PCI_GNT1#	D18	N.C.
C19	PCI_REQ1#	D19	PCI_GNT3#
C20	PCI_GNT0#	D20	PCI_REQ3#
C21	GND (FIXED)	D21	GND (FIXED)

C22	PCI_REQ0#	D22	PCI_AD1
C23	PCI_RESET#	D23	PCI_AD3
C24	PCI_AD0	D24	PCI_AD5
C25	PCI_AD2	D25	PCI_AD7
C26	PCI_AD4	D26	PCI_C/BE0#
C27	PCI_AD6	D27	PCI_AD9
C28	PCI_AD8	D28	PCI_AD11
C29	PCI_AD10	D29	PCI_AD13
C30	PCI_AD12	D30	PCI_AD15
C31	GND (FIXED)	D31	GND (FIXED)
C32	PCI_AD14	D32	PCI_PAR
C33	PCI_C/BE1#	D33	PCI_SERR#
C34	PCI_PERR#	D34	PCI_STOP#
C35	PCI_LOCK#	D35	PCI_TRDY#
C36	PCI_DEVSEL#	D36	PCI_FRAME#
C37	PCI_IRDY#	D37	PCI_AD16
C38	PCI_C/BE2#	D38	PCI_AD18
C39	PCI_AD17	D39	PCI_AD20
C40	PCI_AD19	D40	PCI_AD22
C41	GND (FIXED)	D41	GND (FIXED)
C42	PCI_AD21	D42	PCI_AD24
C43	PCI_AD23	D43	PCI_AD26
C44	PCI_C/BE3#	D44	PCI_AD28
C45	PCI_AD25	D45	PCI_AD30

C46	PCI_AD27	D46	PCI_IRQC#
C47	PCI_AD29	D47	PCI_IRQD#
C48	PCI_AD31	D48	PCI_CLKRUN#
C49	PCI_IRQA#	D49	PCI_M66EN
C50	PCI_IRQB#	D50	PCI_CLK
C51	GND (FIXED)	D51	GND (FIXED)
C52	PEG_RX0+	D52	PEG_TX0+
C53	PEG_RX0-	D53	PEG_TX0-
C54	TYPE0#	D54	PEG_LANE_RV#
C55	PEG_RX1+	D55	PEG_TX1+
C56	PEG_RX1-	D56	PEG_TX1-
C57	TYPE1#	D57	TYPE2#
C58	PEG_RX2+	D58	PEG_TX2+
C59	PEG_RX2-	D59	PEG_TX2-
C60	GND (FIXED)	D60	GND (FIXED)
C61	PEG_RX3+	D61	PEG_TX3+
C62	PEG_RX3-	D62	PEG_TX3-
C63	RSVD	D63	RSVD
C64	RSVD	D64	RSVD
C65	PEG_RX4+	D65	PEG_TX4+
C66	PEG_RX4-	D66	PEG_TX4-
C67	RSVD	D67	GND
C68	PEG_RX5+	D68	PEG_TX5+
C69	PEG_RX5-	D69	PEG_TX5-

C70	GND (FIXED)	D70	GND (FIXED)
C71	PEG_RX6+	D71	PEG_TX6+
C72	PEG_RX6-	D72	PEG_TX6-
C73	SDVO_DATA	D73	SDVO_CLK
C74	PEG_RX7+	D74	PEG_TX7+
C75	PEG_RX7-	D75	PEG_TX7-
C76	GND	D76	GND
C77	RSVD	D77	N.C.
C78	PEG_RX8+	D78	PEG_TX8+
C79	PEG_RX8-	D79	PEG_TX8-
C80	GND (FIXED)	D80	GND (FIXED)
C81	PEG_RX9+	D81	PEG_TX9+
C82	PEG_RX9-	D82	PEG_TX9-
C83	RSVD	D83	RSVD
C84	GND	D84	GND
C85	PEG_RX10+	D85	PEG_TX10+
C86	PEG_RX10-	D86	PEG_TX10-
C87	GND	D87	GND
C88	PEG_RX11+	D88	PEG_TX11+
C89	PEG_RX11-	D89	PEG_TX11-
C90	GND (FIXED)	D90	GND (FIXED)
C91	PEG_RX12+	D91	PEG_TX12+
C92	PEG_RX12-	D92	PEG_TX12-
C93	GND	D93	GND

C94	PEG_RX13+	D94	PEG_TX13+
C95	PEG_RX13-	D95	PEG_TX13-
C96	GND	D96	GND
C97	RSVD	D97	PEG_ENABLE#
C98	PEG_RX14+	D98	PEG_TX14+
C99	PEG_RX14-	D99	PEG_TX14-
C100	GND (FIXED)	D100	GND (FIXED)
C101	PEG_RX15+	D101	PEG_TX15+
C102	PEG_RX15-	D102	PEG_TX15-
C103	GND	D103	GND
C104	VCC_12V	D104	VCC_12V
C105	VCC_12V	D105	VCC_12V
C106	VCC_12V	D106	VCC_12V
C107	VCC_12V	D107	VCC_12V
C108	VCC_12V	D108	VCC_12V
C109	VCC_12V	D109	VCC_12V
C110	GND (FIXED)	D110	GND (FIXED)

2.7 COM Express ROW A/B Connector (CN2)

Row A		Row B	
A1	GND (FIXED)	B1	GND (FIXED)
A2	GBE0_MDI3-	B2	GBE0_ACT#
A3	GBE0_MDI3+	B3	LPC_FRAME#
A4	GBE0_LINK100#	B4	LPC_AD0

A5	GBE0_LINK1000#	B5	LPC_AD1
A6	GBE0_MDI2-	B6	LPC_AD2
A7	GBE0_MDI2+	B7	LPC_AD3
A8	GBE0_LINK	B8	LPC_DRQ0#
A9	GBE0_MDI1-	B9	LPC_DRQ1#
A10	GBE0_MDI1+	B10	LPC_CLK
A11	GND (FIXED)	B11	GND (FIXED)
A12	GBE0_MDI0-	B12	PWRBTN#
A13	GBE0_MDI0+	B13	SMB_CK
A14	GBE0_CTREF	B14	SMB_DAT
A15	SUS_S3#	B15	SMB_ALERT#
A16	SATA0_TX+	B16	SATA1_TX+
A17	SATA0_TX-	B17	SATA1_TX-
A18	SUS_S4#	B18	SUS_STAT#
A19	SATA0_RX+	B19	SATA1_RX+
A20	SATA0_RX-	B20	SATA1_RX-
A21	GND (FIXED)	B21	GND (FIXED)
A22	SATA2_TX+	B22	N.C.
A23	SATA2_TX-	B23	N.C.
A24	SUS_S5#	B24	PWR_OK
A25	SATA2_RX+	B25	N.C.
A26	SATA2_RX-	B26	N.C.
A27	BATLOW#	B27	WDT
A28	ATA_ACT#	B28	AC_SDIN2

A29	AC_SYNC	B29	AC_SDIN1
A30	AC_RST#	B30	AC_SDIN0
A31	GND (FIXED)	B31	GND (FIXED)
A32	AC_BITCLK	B32	SPKR
A33	AC_SDOOUT	B33	I2C_CK
A34	BIOS_DISABLE#	B34	I2C_DAT
A35	THRMTRIP#	B35	THRM#
A36	USB6-	B36	USB7-
A37	USB6+	B37	USB7+
A38	USB_6_7_OC#	B38	USB_4_5_OC#
A39	USB4-	B39	USB5-
A40	USB4+	B40	USB5+
A41	GND (FIXED)	B41	GND (FIXED)
A42	USB2-	B42	USB3-
A43	USB2+	B43	USB3+
A44	USB_2_3_OC#	B44	USB_0_1_OC#
A45	USB0-	B45	USB1-
A46	USB0+	B46	USB1+
A47	VCC_RTC	B47	EXCD1_PERST#
A48	EXCD0_PERST#	B48	EXCD1_CPPE#
A49	EXCD0_CPPE#	B49	SYS_RESET#
A50	LPC_SERIRQ	B50	CB_RESET#
A51	GND (FIXED)	B51	GND (FIXED)
A52	N.C.	B52	N.C.

A53	N.C.	B53	N.C.
A54	GPI0	B54	GPO1
A55	PCIE_TX4+	B55	PCIE_RX4+
A56	PCIE_TX4-	B56	PCIE_RX4-
A57	GND	B57	GPO2
A58	PCIE_TX3+	B58	PCIE_RX3+
A59	PCIE_TX3-	B59	PCIE_RX3-
A60	GND (FIXED)	B60	GND (FIXED)
A61	PCIE_TX2+	B61	PCIE_RX2+
A62	PCIE_TX2-	B62	PCIE_RX2-
A63	GPI1	B63	GPO3
A64	PCIE_TX1+	B64	PCIE_RX1+
A65	PCIE_TX1-	B65	PCIE_RX1-
A66	GND	B66	WAKE0#
A67	GPI2	B67	WAKE1#
A68	PCIE_TX0+	B68	PCIE_RX0+
A69	PCIE_TX0-	B69	PCIE_RX0-
A70	GND (FIXED)	B70	GND (FIXED)
A71	LVDS_A0+	B71	LVDS_B0+
A72	LVDS_A0-	B72	LVDS_B0-
A73	LVDS_A1+	B73	LVDS_B1+
A74	LVDS_A1-	B74	LVDS_B1-
A75	LVDS_A2+	B75	LVDS_B2+
A76	LVDS_A2-	B76	LVDS_B2-

A77	LVDS_VDD_EN	B77	LVDS_B3+
A78	LVDS_A3+	B78	LVDS_B3-
A79	LVDS_A3-	B79	LVDS_BKLT_EN
A80	GND (FIXED)	B80	GND (FIXED)
A81	LVDS_A_CK+	B81	LVDS_B_CK+
A82	LVDS_A_CK-	B82	LVDS_B_CK-
A83	LVDS_I2C_CK	B83	LVDS_BKLT_CTRL
A84	LVDS_I2C_DAT	B84	VCC_5V_SBY
A85	GPI3	B85	VCC_5V_SBY
A86	KBD_RST#	B86	VCC_5V_SBY
A87	KBD_A20GATE	B87	VCC_5V_SBY
A88	PCIE0_CK_REF+	B88	RSVD
A89	PCIE0_CK_REF-	B89	VGA_RED
A90	GND (FIXED)	B90	GND (FIXED)
A91	RSVD B91	B91	VGA_GRN
A92	RSVD	B92	VGA_BLU
A93	GPO0	B93	VGA_HSYNC
A94	RSVD	B94	VGA_VSYNC
A95	RSVD	B95	VGA_I2C_CK
A96	GND	B96	VGA_I2C_DAT
A97	VCC_12V	B97	TV_DAC_A
A98	VCC_12V	B98	TV_DAC_B
A99	VCC_12V	B99	TV_DAC_C
A100	GND (FIXED)	B100	GND (FIXED)

A101	VCC_12V	B101	VCC_12V
A102	VCC_12V	B102	VCC_12V
A103	VCC_12V	B103	VCC_12V
A104	VCC_12V	B104	VCC_12V
A105	VCC_12V	B105	VCC_12V
A106	VCC_12V	B106	VCC_12V
A107	VCC_12V	B107	VCC_12V
A108	VCC_12V	B108	VCC_12V
A109	VCC_12V	B109	VCC_12V
A110	GND (FIXED)	B110	GND (FIXED)

2.8 SPI Flash Programming Connector (Optional) (CN3)

Pin	Signal	Pin	Signal
1	+3.3V	2	GND
3	SPI_CS#0	4	SPI_CLK
5	SPI_SO	6	SPI_SI
7	N.C	8	N.C

2.9 Battery Connector (Optional) (BAT1)

Pin	Signal
1	+3V_BAT
2	GND

Below Table for China RoHS Requirements

产品中有毒有害物质或元素名称及含量

AAEON Main Board/ Daughter Board/ Backplane

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
印刷电路板 及其电子组件	×	○	○	○	○	○
外部信号 连接器及线材	×	○	○	○	○	○
<p>O: 表示该有毒有害物质在该部件所有均质材料中的含量均在 SJ/T 11363-2006 标准规定的限量要求以下。</p> <p>X: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T 11363-2006 标准规定的限量要求。</p> <p>备注: 此产品所标示之环保使用期限, 系指在一般正常使用状况下。</p>						

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.

3.2 Award BIOS Setup

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 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.

Chapter

4

**Driver
Installation**

The COM-45SP 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 Chip Driver

Step 2 – Install VGA Driver

Step 3 – Install LAN Driver

Step 4 – Install Audio Driver

Step 5 – Install Touch Panel Driver

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

Please read instructions below for further detailed installations.

4.1 Installation:

Insert the COM-45SP CD-ROM into the CD-ROM drive. And install the drivers from Step 1 to Step 5 in order.

Step 1 – Install Chip Driver

1. Click on the **Step 1 – chip** folder and double click on the **Setup.exe**
2. Follow the instructions that the window shows
3. The system will help you install the driver automatically

Step 2 – Install VGA Driver

1. Click on the **Step 2 – vga** folder and select the OS folder your system is
2. Double click on the **Setup.exe** file located in each OS folder
3. Follow the instructions that the window shows
4. The system will help you install the driver automatically

Step 3 –Install LAN Driver

1. Click on the **Step 3 – LAN driver** folder and double click on The **Autorun.exe** file located in each OS folder
2. Follow the instructions that the window shows
3. The system will help you install the driver automatically

Step 4 –Install Audio Driver

1. Click on the **Step 4 –Audio** folder and select the OS folder your system is
2. Double click on **.exe** file located in each OS folder
3. Follow the instructions that the window shows
4. The system will help you install the driver automatically

Step 5 –Install Touch Panel Driver

1. Click on the **Step 5 –Touch Panel** folder and double click on the **Setup.exe** file
2. Follow the instructions that the window shows
3. The system will help you install the driver automatically

Appendix

A

Programming the Watchdog Timer

A.1 General Information

The COM-45SP utilizes Fintek F75111 chipset as its watchdog timer Controller.

The other Watchdog timer is set to second or minute and the range is 0 to 256 seconds or minutes.

When the timeout has occurred, that will generate a status bit to indicate it and write one will be clear.

A.2 Access Interface

The F75111 provides one serial access interface, I2C Bus, to read/write internal registers. The address of Serial Bus is configurable by using power-on trapping of standby power VBS3V. The pin 3 (GPIO13/I2C _ADDR) is multi-function pin. During the VSB3V power-on, this pin serves as input detection of logic high or logic low. This pin is default pull-down resistor with 100K ohms mapping the Serial Bus address 0x9C (1001_1100). Another Serial Bus address 0x6E (0110_1110) is set when external pull-up resistor with 10K ohms is connected in this pin.

A.3 Registers Description

Configuration and function select Register – Index 03h

Power-on default [7:0] =0000_1000b

Bit	Name	R/W	PWR	Description
7	Reserved	R/W	VSB3V	
6	IRQ_LEVEL	R/W	VSB3V	Select IRQ Polarity (Level). Set to 1, IRQ is low active and SMI# is high active. Default, the IRQ is high active and SMI# is low active.
5	IRQ_MODE	R/W	VSB3V	IRQ/SMI# mode select. 0-Level mode (IRQ mode), 1-Pulse Mode (SMI# mode). If pulse mode is selected, the active pulse is over 100us.
4-3	PIN12_MODE	R/W	VSB3V	00: GPIO12 01: LED12 IN this mode can use REG 0x06(bit5,4) to select LED frequency. 10: IRQ 11: WDTOUT11#
2	PIN11_MODE	R/W	VSB3V	0: GPIO11 1: LED11 IN this mode can use REG 0x06(bit3,2) to select LED frequency.
1-0	PIN10_MODE	R/W	VSB3V	00: GPIO10 01: LED10 IN this mode can use REG 0x06(bit1,0) to select LED frequency. 10,11: WD_OUT

Watchdog Timer Control Register – Index 36h

Power-on default [7:0] =0000_0000b

Bit	Name	R/W	PWR	Description
7	Reserved	RO	VSB3V	Reserved. Read will return 0.
6	STS_WD_TMOUT	R/W	VSB3V	Watchdog is timeout. When the watchdog is timeout, this bit will be set to one. If set to 1, write 1 will clear this bit. Write 0, no effect.

5	WD_ENABLE	R/W	VSB3V	Enable watchdog timer.
4	WD_PULSE	R/W	VSB3V	Watchdog output level or pulse. If set 0 (default), the pin of watchdog is level output. If write 1, the pin will output with a pulse.
3	WD_UNIT	R/W	VSB3V	Watchdog unit select. Default 0 is select second. Write 1 to select minute.
2	WD_HACTIVE	R/W	VSB3V	Program WD2 output level. If set to 1 and watchdog asserted, the pin will be high. If set to 0 and watchdog asserted, this pin will drive low (default).
1-0	WD_PSWIDTH			Watchdog pulse width selection. If the pin output is selected to pulse mode. This pulse width can be chosen. 00b-1m second. 01b-20m second. 10b-100m second. 11b- 4 second.

Watchdog Timer Range Register – Index 37h

Power-on default [7:0] =0000_0000b

Bit	Name	R/W	PWR	Description
7-0	WD_TIME	R/W	VSB3V	Watchdog timing range from 0~255. This unit is either second or minute programmed by the watchdog timer control register bit3.

A.4 F75111 Watchdog Timer Initial Program

```
#include <stdio.h>
#include <conio.h>

void Chk_Ready();

#define SMBus_Port    0x500
#define I2C_Addr     0x6E

void main (void)
{
//device ID(smbus):6Eh,index:3h data:3h      //Set pin10 as WDTOUT2#
    outportb(SMBus_Port+0x04,I2C_Addr);
    delay(10);
    Chk_Ready();
    outportb(SMBus_Port+0x03,0x3);
    delay(10);
    outportb(SMBus_Port+0x05,0x3);
    delay(10);
    outportb(SMBus_Port+0x02,0x48);
    delay(10);
    Chk_Ready();
//device ID(smbus):6Eh,index:37h data:05h   //Set Watchdog Timer Rang
register to //be 5
```

```
    outputb(SMBus_Port+0x04,I2C_Addr);
delay(10);
    Chk_Ready();
outputb(SMBus_Port+0x03,0x37);
delay(10);
outputb(SMBus_Port+0x05,0x05);
delay(10);
outputb(SMBus_Port+0x02,0x48);
delay(10);
    Chk_Ready();
//device ID(smbus):6Eh,index:36h data:30h    //Enable Watchdog Timer 2 and
output //a pulse when timeout.
    outputb(SMBus_Port+0x04,I2C_Addr);
delay(10);
        Chk_Ready();
        outputb(SMBus_Port+0x03,0x36);
        delay(10);
        outputb(SMBus_Port+0x05,0x30);
        delay(10);
        outputb(SMBus_Port+0x02,0x48);
        delay(10);
        Chk_Ready();
}

void Chk_Ready()
```

```
{  
  
    int inputbuffer;  
    int index;  
    index=0;  
    while(index<0x800)  
    {  
        inputbuffer=inportb(SMBus_Port);  
        delay(10);  
        outportb(SMBus_Port,0x42);  
        delay(10);  
  
        if((inputbuffer&0x02)!=0)  
            return;  
        if((inputbuffer&(0xbf))==0)  
            return;  
        if((inputbuffer&0x04)==0)  
            return;  
        index++;  
    }  
    printf("\nDevice not ready!\n");  
    outportb(SMBus_Port,0xFF);  
    exit(0);  
}
```

Appendix

B

I/O Information

































B.1 I/O Address Map

Input/output (IO)	
[00000000 - 0000000F]	Direct memory access controller
[00000000 - 00000CF7]	PCI bus
[00000010 - 0000001F]	Motherboard resources
[00000020 - 00000021]	Programmable interrupt controller
[00000022 - 0000003F]	Motherboard resources
[00000040 - 00000043]	System timer
[00000044 - 0000004D]	Motherboard resources
[00000050 - 0000005E]	Motherboard resources
[00000060 - 00000060]	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
[00000061 - 00000061]	System speaker
[00000062 - 00000063]	Motherboard resources
[00000064 - 00000064]	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
[00000065 - 0000006F]	Motherboard resources
[00000070 - 00000073]	System CMOS/real time clock
[00000074 - 0000007F]	Motherboard resources
[00000080 - 00000090]	Direct memory access controller
[00000091 - 00000093]	Motherboard resources
[00000094 - 0000009F]	Direct memory access controller
[000000A0 - 000000A1]	Programmable interrupt controller
[000000A2 - 000000BF]	Motherboard resources
[000000C0 - 000000DF]	Direct memory access controller
[000000E0 - 000000EF]	Motherboard resources
[000000F0 - 000000FF]	Numeric data processor
[00000274 - 00000277]	ISAPNP Read Data Port
[00000279 - 00000279]	ISAPNP Read Data Port
[00000290 - 0000029F]	Motherboard resources
[000002E8 - 000002EF]	Communications Port (COM4)
[000002F8 - 000002FF]	Communications Port (COM2)
[00000378 - 0000037F]	Printer Port (LPT1)
[00000380 - 0000038B]	Mobile Intel(R) 4 Series Express Chipset Family
[000003C0 - 000003DF]	Mobile Intel(R) 4 Series Express Chipset Family
[000003E8 - 000003EF]	Communications Port (COM3)
[000003F0 - 000003F5]	Standard floppy disk controller
[000003F7 - 000003F7]	Standard floppy disk controller
[000003F8 - 000003FF]	Communications Port (COM1)
[00000400 - 000004BF]	Motherboard resources
[000004D0 - 000004D1]	Motherboard resources
[00000500 - 0000051F]	Intel(R) ICH9 Family SMBus Controller - 2930
[00000880 - 0000088F]	Motherboard resources
[00000A79 - 00000A79]	ISAPNP Read Data Port
[00000D00 - 0000FFFF]	PCI bus
[00008000 - 00008FFF]	Intel(R) ICH9 Family PCI Express Root Port 3 - 2944
[0000A000 - 0000AFFF]	Intel(R) ICH9 Family PCI Express Root Port 2 - 2942
[0000B000 - 0000BFFF]	Intel(R) ICH9 Family PCI Express Root Port 1 - 2940
[0000BF00 - 0000BF1F]	Intel(R) PRO/1000 PL Network Connection
[0000C000 - 0000CFFF]	Mobile Intel(R) 45 Express Chipset Series PCI Express Root Port - 2A41
[0000D000 - 0000DFFF]	Intel(R) ICH9 Family PCI Express Root Port 4 - 2946
[0000E800 - 0000E80F]	Intel(R) ICH9M/M-E 2 port Serial ATA Storage Controller 2 - 292D
[0000EC00 - 0000EC0F]	Intel(R) ICH9M/M-E 2 port Serial ATA Storage Controller 2 - 292D
[0000ED00 - 0000ED03]	Intel(R) ICH9M/M-E 2 port Serial ATA Storage Controller 2 - 292D
[0000EE00 - 0000EE07]	Intel(R) ICH9M/M-E 2 port Serial ATA Storage Controller 2 - 292D
[0000EF00 - 0000EF03]	Intel(R) ICH9M/M-E 2 port Serial ATA Storage Controller 2 - 292D
[0000F000 - 0000F007]	Intel(R) ICH9M/M-E 2 port Serial ATA Storage Controller 2 - 292D
[0000F200 - 0000F20F]	Intel(R) ICH9M/M-E 2 port Serial ATA Storage Controller 1 - 2928
[0000F300 - 0000F30F]	Intel(R) ICH9M/M-E 2 port Serial ATA Storage Controller 1 - 2928
[0000F400 - 0000F403]	Intel(R) ICH9M/M-E 2 port Serial ATA Storage Controller 1 - 2928
[0000F500 - 0000F507]	Intel(R) ICH9M/M-E 2 port Serial ATA Storage Controller 1 - 2928
[0000F600 - 0000F603]	Intel(R) ICH9M/M-E 2 port Serial ATA Storage Controller 1 - 2928
[0000F700 - 0000F707]	Intel(R) ICH9M/M-E 2 port Serial ATA Storage Controller 1 - 2928
[0000F800 - 0000F81F]	Intel(R) ICH9 Family USB Universal Host Controller - 2936
[0000F900 - 0000F91F]	Intel(R) ICH9 Family USB Universal Host Controller - 2935
[0000FA00 - 0000FA1F]	Intel(R) ICH9 Family USB Universal Host Controller - 2934
[0000FB00 - 0000FB1F]	Intel(R) ICH9 Family USB Universal Host Controller - 2939
[0000FC00 - 0000FC1F]	Intel(R) ICH9 Family USB Universal Host Controller - 2938
[0000FD00 - 0000FD1F]	Intel(R) ICH9 Family USB Universal Host Controller - 2937
[0000FE00 - 0000FE1F]	Intel(R) 82567LM Gigabit Network Connection

B.2 Memory Address Map

[-]	[A]	AAEON-D19D6647E
[+]	[M]	Direct memory access (DMA)
[+]	[I]	Input/output (IO)
[+]	[I]	Interrupt request (IRQ)
[+]	[M]	Memory
[+]	[M]	[00000000 - 0009FFFF] System board
[+]	[M]	[000A0000 - 000BFFFF] Mobile Intel(R) 4 Series Express Chipset Family
[+]	[M]	[000A0000 - 000BFFFF] PCI bus
[+]	[M]	[000C0000 - 000DFFFF] PCI bus
[+]	[M]	[000E0000 - 000EFFFF] System board
[+]	[M]	[000F0000 - 000FFFFF] System board
[+]	[M]	[00100000 - 7BB8FFFF] System board
[+]	[M]	[7BB90000 - 7BBFFFFF] System board
[+]	[M]	[7BC00000 - 7BCFFFFF] System board
[+]	[M]	[7BC00000 - FEBFFFFF] PCI bus
[+]	[M]	[D0000000 - DFFFFFFF] Mobile Intel(R) 4 Series Express Chipset Family
[+]	[M]	[E0000000 - EFFFFFFF] Motherboard resources
[+]	[M]	[FC800000 - FCBFFFFF] Mobile Intel(R) 4 Series Express Chipset Family
[+]	[N]	[FCC00000 - FCF7FFFF] Intel(R) PRO/1000 PL Network Connection
[+]	[N]	[FCC00000 - FD37FFFF] Intel(R) ICH9 Family PCI Express Root Port 1 - 2940
[+]	[N]	[FD3E0000 - FD37FFFF] Intel(R) PRO/1000 PL Network Connection
[+]	[N]	[FD400000 - FD47FFFF] Mobile Intel(R) 45 Express Chipset Series PCI Express Root Port - 2A41
[+]	[N]	[FD700000 - FD77FFFF] Mobile Intel(R) 45 Express Chipset Series PCI Express Root Port - 2A41
[+]	[N]	[FD800000 - FD87FFFF] Intel(R) ICH9 Family PCI Express Root Port 4 - 2946
[+]	[N]	[FD900000 - FD97FFFF] Intel(R) ICH9 Family PCI Express Root Port 4 - 2946
[+]	[N]	[FDA00000 - FDA7FFFF] Intel(R) ICH9 Family PCI Express Root Port 3 - 2944
[+]	[N]	[FD800000 - FD87FFFF] Intel(R) ICH9 Family PCI Express Root Port 3 - 2944
[+]	[N]	[FDC00000 - FDC7FFFF] Intel(R) ICH9 Family PCI Express Root Port 2 - 2942
[+]	[N]	[FDD00000 - FDD7FFFF] Intel(R) ICH9 Family PCI Express Root Port 2 - 2942
[+]	[N]	[FDE00000 - FDE7FFFF] Intel(R) ICH9 Family PCI Express Root Port 1 - 2940
[+]	[N]	[FDFC0000 - FDF7FFFF] Intel(R) 82567LM Gigabit Network Connection
[+]	[N]	[FDF40000 - FDF77FFF] Microsoft UAA Bus Driver for High Definition Audio
[+]	[N]	[FDFFC000 - FDFFC0FF] Intel(R) ICH9 Family SMBus Controller - 2930
[+]	[N]	[FDFFD000 - FDFFD3FF] Intel(R) ICH9 Family USB2 Enhanced Host Controller - 293A
[+]	[N]	[FDFFE000 - FDFFE3FF] Intel(R) ICH9 Family USB2 Enhanced Host Controller - 293C
[+]	[N]	[FDFFF000 - FDF7FFFF] Intel(R) 82567LM Gigabit Network Connection
[+]	[M]	[FEC00000 - FEC00FFF] System board
[+]	[M]	[FED00000 - FED000FF] System board
[+]	[M]	[FED00000 - FED003FF] High precision event timer
[+]	[M]	[FED13000 - FED1FFFF] System board
[+]	[M]	[FED20000 - FED3FFFF] System board
[+]	[M]	[FED40000 - FED44FFF] PCI bus
[+]	[M]	[FED45000 - FED9FFFF] System board
[+]	[M]	[FEE00000 - FEE00FFF] System board
[+]	[M]	[FFB00000 - FFB7FFFF] System board
[+]	[M]	[FFB80000 - FFBFFFFF] Intel(R) 82802 Firmware Hub Device
[+]	[M]	[FFF00000 - FFFFFFFF] System board

B.3 IRQ Mapping Chart

[-]	 AAEON-D19D6647E
[+]	 Direct memory access (DMA)
[+]	 Input/output (IO)
[-]	 Interrupt request (IRQ)
	<ul style="list-style-type: none">  (ISA) 0 High precision event timer  (ISA) 1 Standard 101/102-Key or Microsoft Natural PS/2 Keyboard  (ISA) 3 Communications Port (COM2)  (ISA) 4 Communications Port (COM1)  (ISA) 6 Standard Floppy disk controller  (ISA) 8 High precision event timer  (ISA) 9 Microsoft ACPI-Compliant System  (ISA) 10 Communications Port (COM3)  (ISA) 11 Communications Port (COM4)  (ISA) 13 Numeric data processor  (PCI) 5 Intel(R) ICH9 Family SMBus Controller - 2930  (PCI) 16 Intel(R) ICH9 Family PCI Express Root Port 1 - 2940  (PCI) 16 Intel(R) ICH9 Family USB Universal Host Controller - 2937  (PCI) 16 Intel(R) PRO/1000 PL Network Connection  (PCI) 16 Mobile Intel(R) 4 Series Express Chipset Family  (PCI) 16 Mobile Intel(R) 45 Express Chipset Series PCI Express Root Port - 2A41  (PCI) 17 Intel(R) ICH9 Family PCI Express Root Port 2 - 2942  (PCI) 18 Intel(R) ICH9 Family PCI Express Root Port 3 - 2944  (PCI) 18 Intel(R) ICH9 Family USB Universal Host Controller - 2936  (PCI) 18 Intel(R) ICH9 Family USB2 Enhanced Host Controller - 293C  (PCI) 19 Intel(R) ICH9 Family PCI Express Root Port 4 - 2946  (PCI) 19 Intel(R) ICH9 Family USB Universal Host Controller - 2939  (PCI) 19 Intel(R) ICH9 Family USB Universal Host Controller - 2935  (PCI) 19 Intel(R) ICH9M/M-E 2 port Serial ATA Storage Controller 1 - 2928  (PCI) 19 Intel(R) ICH9M/M-E 2 port Serial ATA Storage Controller 2 - 292D  (PCI) 20 Intel(R) 82567LM Gigabit Network Connection  (PCI) 21 Intel(R) ICH9 Family USB Universal Host Controller - 2938  (PCI) 22 Microsoft UAA Bus Driver for High Definition Audio

B.4 DMA Channel Assignments

[-]	 AAEON-D19D6647E
[-]	 Direct memory access (DMA)
	<ul style="list-style-type: none">  2 Standard floppy disk controller  4 Direct memory access controller
[+]	 Input/output (IO)
[+]	 Interrupt request (IRQ)
[+]	 Memory