

**COM-965**

Intel® Core 2 Duo/  
Celeron® M (Socket-P based) Processors  
Up to 24-bit Dual-channel LVDS LCD/TV  
Two DDRII 533/ 667 SODIMM Memory  
High Definition Audio

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## Packing List

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

- 1 COM-965 CPU module
- 1 CD-ROM for manual (in PDF format) and drivers
- 5 M2.5 x 4mm screws

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

## Application Notes

### **Display issue for 640x480 LVDS LCD panel:**

If the customer uses 640x480 LVDS LCD panel and Intel Graphics Utility to set the Extended Desktop mode, this panel will not have any display.

## FAQ

### **How can I install the OS into the SATA and IDE Hard Disk Drive when I choose the "Enhanced Mode" in the BIOS?**

**Answer:** please follow the steps below to install the OS:

1. Choose the "Enhanced Mode" in the BIOS
2. Connect the SATA Hard Disk Drive first only
3. Install the OS and then connect the IDE Hard Disk Drive

AAEON strongly suggests you not to connect the SATA and IDE Hard Disk Drive to install the OS simultaneously since it may cause the failure of the OS installation.

For more details, please contact with AAEON Application Engineering Department for help.

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Chapter

1

**General  
Information**

## **1.1 Introduction**

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To accommodate fast growing marketing segments, AAEON has developed a brand new COM (Computer-on-module) Express CPU Module. The COM-965, and its accompanying carrier board-ECB-916M, adopts Intel Core 2 Duo/ Celeron M (Socket-P based) processors and Intel's GME965 chipset, offering high speed PCI-Express bus interface and serial ATA 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-965 supports up to 24-bit dual-channel LVDS interface and supports two DDRII 533/667 SODIMM memory module up to 4GB. A high definition audio interface is available to connect to an audio codec on the carrier board. Moreover, one PATA and three SATA 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

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- COM Express Basic Module Pin-out Type II
- Intel® Core 2 Duo/ Celeron® M (Socket-P Based) Processors
- Intel® GME965 + ICH8-M Chipset
- Dual-channel DDRII 533/667 Memory, Up To 4GB
- CRT/ Up to 24-bit Dual-channel LVDS LCD/ TV
- Gigabit Ethernet
- High Definition Audio Interface
- Wide DC Input Range, +8.5V DC to +19V DC

### 1.3 Specifications

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#### System

- CPU Intel® Core 2 Duo / Celeron® M (Socket-P Based) Processors
- System Memory DDRII SODIMM x 2, supports DDRII 533/667 up to 4GB
- Chipset Intel® GME965 + ICH8-M
- Ethernet Intel 82566 for Gigabit Ethernet
- BIOS Award Plug & Play BIOS—2MB Flash
- H/W status monitoring CPU Temperature Monitoring
- Watchdog Timer Fintek F75111
- Power Requirement Wide DC Input Range, +8.5V DC to +19V DC
- Board Size 4.92" (L) x 3.74" (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
- MTBF (Hours) 100,000

**Display: Supports CRT/LCD, CRT/TV, LCD/TV Simultaneous/  
Dual View Display**

- Chipset Intel® GME965 integrated
- Memory Shared system memory up to 384MB
- Resolution Up to 2048 x 1536 (QXGA) @ 60Hz 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 ])
- TV-out Intel® GME965 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 PATA x 1, SATA x 3
- USB USB2.0 x 8
- Audio High Definition Audio

## 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

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**Warning!**

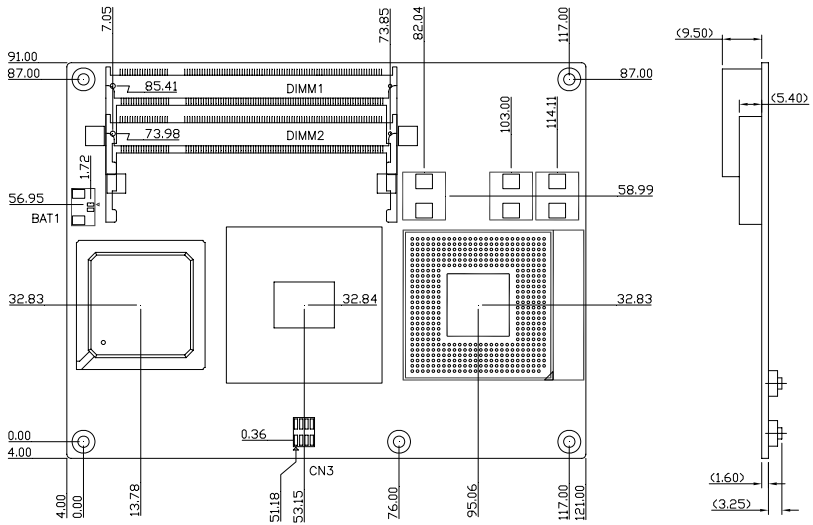
*Always completely disconnect the power cord from your board whenever you are working on it. Do not make connections while the power is on, because a sudden rush of power can damage sensitive electronic components.*

**Caution!**

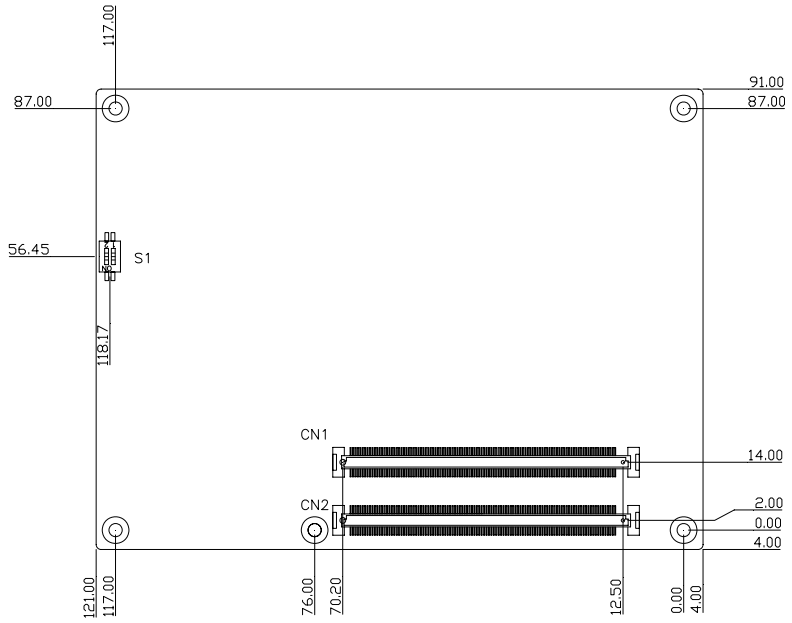
*Always ground yourself to remove any static charge before touching the board. Modern electronic devices are very sensitive to static electric charges. Use a grounding wrist strap at all times. Place all electronic components on a static-dissipative surface or in a static-shielded bag when they are not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

## 2.2 Location of Connectors/ Jumpers & Mechanical Drawings

### Component Side



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:

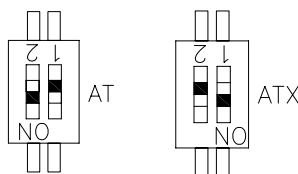
| Label | Function         |
|-------|------------------|
| S1    | AT/ATX Selection |

## 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 (Option) |
| BAT1  | Battery Connector (Option)               |

## 2.5 AT/ATX Selection (S1)



| Label         | 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    | IDE_D7      | D2    | IDE_D5      |
| C3    | IDE_D6      | D3    | IDE_D10     |
| C4    | IDE_D3      | D4    | IDE_D11     |
| C5    | IDE_D15     | D5    | IDE_D12     |
| C6    | IDE_D8      | D6    | IDE_D4      |
| C7    | IDE_D9      | D7    | IDE_D0      |
| C8    | IDE_D2      | D8    | IDE_REQ     |
| C9    | IDE_D13     | D9    | IDE_IOW#    |
| C10   | IDE_D1      | D10   | IDE_ACK#    |
| C11   | GND (FIXED) | D11   | GND (FIXED) |
| C12   | IDE_D14     | D12   | IDE_IRQ     |
| C13   | IDE_IORDY   | D13   | IDE_A0      |
| C14   | IDE_IOR#    | D14   | IDE_A1      |
| C15   | PCI_PME#    | D15   | IDE_A2      |
| C16   | PCI_GNT2#   | D16   | IDE_CS1#    |
| C17   | PCI_REQ2#   | D17   | IDE_CS3#    |
| C18   | PCI_GNT1#   | D18   | IDE_RESET#  |
| 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 | IDE_CBLID#  |
| 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_SDOUT      | 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  | 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<br>(Pb) | 汞<br>(Hg) | 镉<br>(Cd) | 六价铬<br>(Cr(VI)) | 多溴联苯<br>(PBB) | 多溴二苯醚<br>(PBDE) |
| 印刷电路板<br>及其电子组件  | ×         | ○         | ○         | ○               | ○             | ○               |
| 外部信号<br>连接器及线材   | ×         | ○         | ○         | ○               | ○             | ○               |
|  |           |           |           |                 |               |                 |
|  |           |           |           |                 |               |                 |
|  |           |           |           |                 |               |                 |
|  |           |           |           |                 |               |                 |
|  |           |           |           |                 |               |                 |
|  |           |           |           |                 |               |                 |
|  |           |           |           |                 |               |                 |
| <p><b>O:</b> 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><b>X:</b> 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.

The COM-965 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

---

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.**

Chapter

4

**Driver  
Installation**



The COM-965 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 TPM Driver

Step 6 – Install Touch Panel 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 COM-965 CD-ROM into the CD-ROM drive. And install the drivers from Step 1 to Step 6 in order.

### Step 1 – Install Chip Driver

1. Click on the **Step 1 – chip** folder and double click on the ***infinst\_autol.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 **.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 select the OS folder your system is
2. Double click on the **.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 4 –Install Audio Driver

1. Click on the **Step 4 –AUDIO** folder and double click on the **WDM\_R141.exe**
2. Follow the instructions that the window shows
3. The system will help you install the driver automatically

#### Step 5 –Install TPM Driver

1. Click on the **Step 5 – TPM DRIVER** 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 6 –Install Touch Panel Driver

1. Click on the **Step 6 –touchpanel** 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

Appendix

A

# Programming the Watchdog Timer

## A.1 General Information

---

The COM-965 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 Control Register – Index 01h

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

| Bit | Name                       | Description  |
|-----|----------------------------|--|
| 7   | INIT                       | Software reset for all registers including Test Mode registers. Users use only.  |
| 6   | Reserved                   |  |
| 5   | EN_WDT10                   | Enable Reset Out. If set to 1, enable WDTOUT10# output. Default is disable.  |
| 4   | Reserved                   |  |
| 3   | Reserved                   |  |
| 2   | Reserved                   |  |
| 1   | SMART_POWER<br>_MANAGEMENT | Set this bit to 1 will enable auto power down mode, when all function are idle then 20ms the chip will auto power down, it will wakeup when GPIO state change or read write register |
| 0   | SOFT_POWER_<br>DOWN        | Set this bit to 1 will power down all of the analog block and stop internalclock, write 0 to clear this bit or when GPIO state change will auto clear this bit to 0.                 |

#### WDTOUT Control Register – Index 34h

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

| Bit | Name       | Description  |
|-----|------------|--|
| 7-3 | Reserved   |  |
| 2   | SEL_RST_2S | When set this bit to 1, the WDTOUT10 low pulse width is 2 Sec, if set to 0 the low pulse width is 100ms. |

|   |               |   |
|---|---------------|---|
| 1 | WDTOUT10_OINV | WDTOUT10# output level inverting. When write 1, the output pin will be inverted. Default is low active when time is out |
| 0 | STS_WDTOUT10  | Indicate WDTOUT10 is occurred. Write 1 to clear this bit. Writing 0 is invalid.   |

### WDTOUT Control Register – Index 35h

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

| Bit | Name         | Description   |
|-----|--------------|---|
| 7   | WDT10_ENABLE | Enable WDTOUT10 Output Timer. If set to 1, the WDTOUT10 timer will be started. When WDTOUT10# is asserted, low pulse is occurred.                       |
| 6-0 | WD1_PTIME    | WDTOUT10 Pre-counter time in second.<br>000_0000b – 0 second (Default)<br>000_0001b – 1 second<br>000_0010b – 2 seconds<br>:<br>111_1111b – 127 seconds |

## A.4 F75111 Watchdog Timer Initial Program

---

```
.MODEL SMALL
```

```
.CODE
```

```
Main:
```

```
    push  cx
    mov   al, 20h           ;Enable WDT(Value to write)
    mov   cl, 01h          ;F75111 register index
    mov   ch, 6eh          ;(Serial Bus address 0x6E)
    call  Ct_I2CWriteByte
    mov   al, 01h          ;Indicate WDTOUT10 is occurred
    mov   cl, 34h          ;F75111 register index
    mov   ch, 6eh          ;6eh (Serial Bus address 0x6E)
    call  Ct_I2CWriteByte

    mov   al, 83h          ;Enable WDTOUT10 Output Timer:3 seconds
    mov   cl, 35h          ;F75111 register index
    mov   ch, 6eh          ;6eh (Serial Bus address 0x6E)
    call  Ct_I2CWriteByte
    pop   cx
    ret
```

```
Ct_I2CWriteByte Proc Near
```



```
push ax
push cx

mov dx,SMBus_Port +04h ;SMBus_Port(500h)
mov al,ch ;ID cmd(Write)
out dx,al
call Delay5ms
call Delay5ms

pop ax
mov dl,03h
out dx,al ;Index
call Delay5ms
call Delay5ms

pop ax
mov dl,05
out dx,al ;Data0
call Delay5ms
call Delay5ms

mov dl,02h
mov al,48h
out dx,al ;write data
call Delay5ms
```

```
    call    Delay5ms

    mov     cx, 100h
@@:
    newiodelay
    loop   short @B

    ret
Ct_I2CWriteByte    Endp CALL Check_Chip
```

Appendix

**B**

# I/O Information

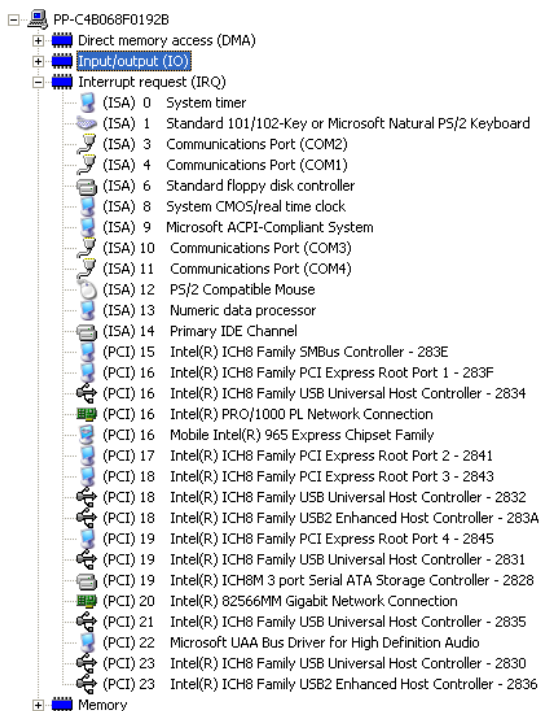
## B.1 I/O Address Map

|                 |  |
|-----------------|--|
| PP-C4B068F0192B |  |
| +               | Direct memory access (DMA)   |
| +               | Input/output (IO)  |
|                 | [00000000 - 0000000F] Direct memory access controller                            |
|                 | [00000000 - 000000CF] 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                                     |
|                 | [000001F0 - 000001F7] Primary IDE Channel  |
|                 | [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)  |
|                 | [000003B0 - 000003BF] Mobile Intel(R) 965 Express Chipset Family                 |
|                 | [000003C0 - 000003DF] Mobile Intel(R) 965 Express Chipset Family                 |
|                 | [000003E8 - 000003EF] Communications Port (COM3)                                 |
|                 | [000003F0 - 000003FF] Standard floppy disk controller                            |
|                 | [000003F6 - 000003F6] Primary IDE Channel  |
|                 | [000003F7 - 000003F7] Standard floppy disk controller                            |
|                 | [000003F8 - 000003FF] Communications Port (COM1)                                 |
|                 | [00000400 - 000004BF] Motherboard resources                                      |
|                 | [000004D0 - 000004D1] Motherboard resources                                      |
|                 | [00000500 - 0000051F] Intel(R) ICH8 Family SMBus Controller - 283E               |
|                 | [00000880 - 0000088F] Motherboard resources                                      |
|                 | [00000A79 - 00000A79] ISAPNP Read Data Port                                      |
|                 | [00000D00 - 0000FFFF] PCI bus  |
|                 | [0000A000 - 0000AFFF] Intel(R) ICH8 Family PCI Express Root Port 2 - 2841        |
|                 | [0000B000 - 0000BFFF] Intel(R) ICH8 Family PCI Express Root Port 1 - 283F        |
|                 | [0000BF00 - 0000BF1F] Intel(R) PRO/1000 PL Network Connection                    |
|                 | [0000C000 - 0000CFFF] Intel(R) ICH8 Family PCI Express Root Port 4 - 2845        |
|                 | [0000E000 - 0000EFFF] Intel(R) ICH8 Family PCI Express Root Port 3 - 2843        |
|                 | [0000F200 - 0000F20F] Intel(R) ICH8M 3 port Serial ATA Storage Controller - 2828 |
|                 | [0000F300 - 0000F30F] Intel(R) ICH8M 3 port Serial ATA Storage Controller - 2828 |
|                 | [0000F400 - 0000F403] Intel(R) ICH8M 3 port Serial ATA Storage Controller - 2828 |
|                 | [0000F500 - 0000F507] Intel(R) ICH8M 3 port Serial ATA Storage Controller - 2828 |
|                 | [0000F600 - 0000F603] Intel(R) ICH8M 3 port Serial ATA Storage Controller - 2828 |
|                 | [0000F700 - 0000F707] Intel(R) ICH8M 3 port Serial ATA Storage Controller - 2828 |
|                 | [0000F800 - 0000F80F] Intel(R) ICH8M Ultra ATA Storage Controllers - 2850        |
|                 | [0000F900 - 0000F91F] Intel(R) ICH8 Family USB Universal Host Controller - 2832  |
|                 | [0000FA00 - 0000FA1F] Intel(R) ICH8 Family USB Universal Host Controller - 2831  |
|                 | [0000FB00 - 0000FB1F] Intel(R) ICH8 Family USB Universal Host Controller - 2830  |
|                 | [0000FC00 - 0000FC1F] Intel(R) ICH8 Family USB Universal Host Controller - 2835  |
|                 | [0000FD00 - 0000FD1F] Intel(R) ICH8 Family USB Universal Host Controller - 2834  |
|                 | [0000FE00 - 0000FE1F] Intel(R) 82566MM Gigabit Network Connection                |
|                 | [0000FF00 - 0000FF07] Mobile Intel(R) 965 Express Chipset Family                 |

## B.2 Memory Address Map

| Address Range          | Device Name   |
|------------------------|---|
| [00000000 - 0009FFFF]  | System board  |
| [000A0000 - 000BFFFF]  | Mobile Intel(R) 965 Express Chipset Family                |
| [000A0000 - 000BFFFF]  | PCI bus   |
| [000C0000 - 000DFFFF]  | PCI bus   |
| [000E0000 - 000EFFFF]  | System board  |
| [000F0000 - 000FFFFFF] | System board  |
| [00100000 - 1F6DFFFF]  | System board  |
| [1F6E0000 - 1F6FFFFFF] | System board  |
| [1F700000 - 1F7FFFFFF] | System board  |
| [1F750000 - FEBFFFFFF] | PCI bus   |
| [D0000000 - DFFFFFFF]  | Mobile Intel(R) 965 Express Chipset Family                |
| [E0000000 - EFFFFFFF]  | Motherboard resources                                     |
| [FD300000 - FD3FFFFFF] | Mobile Intel(R) 965 Express Chipset Family                |
| [FD700000 - FD7FFFFFF] | Intel(R) ICH8 Family PCI Express Root Port 4 - 2845       |
| [FD800000 - FD8FFFFFF] | Intel(R) ICH8 Family PCI Express Root Port 4 - 2845       |
| [FD900000 - FD9FFFFFF] | Intel(R) ICH8 Family PCI Express Root Port 3 - 2843       |
| [FDA00000 - FDAFFFFFF] | Intel(R) ICH8 Family PCI Express Root Port 3 - 2843       |
| [FDB00000 - FDBFFFFFF] | Intel(R) ICH8 Family PCI Express Root Port 2 - 2841       |
| [FDC00000 - FDCFFFFFF] | Intel(R) ICH8 Family PCI Express Root Port 2 - 2841       |
| [FDD00000 - FDDFFFFFF] | Intel(R) ICH8 Family PCI Express Root Port 1 - 283F       |
| [FDE00000 - FDEFFFFFF] | Intel(R) ICH8 Family PCI Express Root Port 1 - 283F       |
| [FDEE0000 - FDEFFFFFF] | Intel(R) PRO/1000 PL Network Connection                   |
| [FDFC0000 - FDFDFFFF]  | Intel(R) 82566MM Gigabit Network Connection               |
| [FDFP4000 - FDFP7FFF]  | Microsoft UAA Bus Driver for High Definition Audio        |
| [FDFFC000 - FDFFC0FF]  | Intel(R) ICH8 Family SMBus Controller - 283E              |
| [FDFFD000 - FDFFD3FF]  | Intel(R) ICH8 Family USB2 Enhanced Host Controller - 2836 |
| [FDFFE000 - FDFFE3FF]  | Intel(R) ICH8 Family USB2 Enhanced Host Controller - 283A |
| [FDFFF000 - FDFFFFFFF] | Intel(R) 82566MM Gigabit Network Connection               |
| [FEB00000 - FEBFFFFFF] | Mobile Intel(R) 965 Express Chipset Family                |
| [FEC00000 - FEC0FFFF]  | System board  |
| [FED13000 - FED1FFFF]  | System board  |
| [FED20000 - FED3FFFF]  | System board  |
| [FED40000 - FED44FFF]  | PCI bus   |
| [FED45000 - FED9FFFF]  | System board  |
| [FEE00000 - FEE0FFFF]  | System board  |
| [FFB00000 - FFB7FFFF]  | System board  |
| [FFB80000 - FFBFFFFFF] | Intel(R) 82802 Firmware Hub Device                        |
| [FFF00000 - FFFFFFFF]  | System board  |

## B.3 IRQ Mapping Chart



## B.4 DMA Channel Assignments

