

COM-915 A2.0

Intel®(Socket 478-based) Pentium®M/

Celeron® M Processors

18-bit Dual-channel LVDS

One DDRII 400/533 SODIMM Memory

High Definition Audio Interface

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Packing List

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

- 1 COM-915 A2.0 CPU Module
- 1 CD-ROM for manual (in PDF format) and drivers

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

Application Notes

1. Intel® Banias-core CPUs in COM-915 A2.0

TF-COM-915-A20 only supports Intel® Dothan-core (90nm) CPUs. Please do not use Intel® Banias-core (0.13 μ m) CPUs on TF-COM-915-A20 directly. It may damage the CPUs. If you want to use Intel® Banias-core (0.13 μ m) CPUs, some components on COM-915 A2.0 have to be changed. Please contact AAEON's sales if you have the special request.

2. Compatibility issue for Transcend USB thumb drive

Some Transcend USB thumb drives may not be able to be used as the boot device because of the compatibility issue.

For more details, please contact AAEON's Customer Service Department for help.

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 and Mechanical Drawings	2-3
2.3 List of Connectors/ Switch.....	2-5
2.4 Setting Jumpers	2-6
2.5 AT/ATX Selection (S1)	2-7
2.6 COM Express Row AB (CN1)	2-7
2.7 COM Express Row CD (CN2).....	2-12

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 Programming	A-2
A.2 IT8712 Watchdog Timer Initial Program.....	A-6

Appendix B I/O Information

B.1 I/O Address Map	B-2
B.2 1 st MB 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 Express CPU Module. The COM-915 A2.0, and its accompanying carrier board-ECB-916M, adopts Intel's 915GME 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.

AEON's COM-915 A2.0 supports 18-bit dual-channel LVDS TFT panel and one DDRII 400/533 SODIMM memory module up to 2GB. High Definition (HD) audio interface can be used by the carrier board's audio codec. The parallel port, serial port and floppy drive connector can be implemented on the carrier board via LPC ICs, ex. SIO.

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® Pentium® M/ Celeron® M Processors
- Intel® 915GME + ICH6M
- DDRII 400/533 Memory, Max. 2GB
- 10/100Base-TX Ethernet
- CRT/ 18-bit Dual-channel LVDS LCD
- High Definition Audio Interface
- PATA x 1/ SATA II x 2
- USB2.0 x 8
- PCI x 4, PCI-Express [x16] x 1, PCI-Express [x1] x 4
- DC +12V Operating Voltage, 3.3V For RTC
- COM Express Basic Module Pin-out Type II

1.3 Specifications

System

- CPU Intel® Socket 478-based Pentium® M/Celeron® M Processor
- System Memory DDRII SODIMM x 1, supports non-ECC DDRII 400/533 up to 2GB
- Chipset Intel® 915GME + ICH6M
- Ethernet Intel® 82562ET, 10/100Base-TX
- BIOS Award BIOS – 1MB PLCC-type ROM
- EEPROM Atmel AT24C02, save BIOS and configuration data
- Wake On LAN Yes
- BBS (BIOS Boot Spec.) Yes
- H/W status monitoring CPU temperature monitoring
- Watchdog Timer Fintek F75111
- RTC From ICH6M
- Expansion Interface PCI-Express [x16] x 1 (shared with 2 SDVO ports);
PCI-Express [x1] x 4;
32-bit PCI x 4;
LPC bus x 1;
SMBus x 1;

- Power Requirement I2C x 1
DC +12V operating voltage/ 3.3V for RTC; 2-pin wafer for RTC battery
- 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)
- Operating Humidity 0% ~ 90% relative humidity,
non-condensing
- OS Windows 2000; Windows 32-bit
XP Pro; Windows XP Embedded;
WinCE5.0; Linux Red Hat/Fedora

Display: Supports CRT/LCD simultaneous/dual view displays

- Chipset Intel® 915GME integrated
- Memory Shared system memory up to
128MB
- Resolution Up to 2048 x 1536 (QXGA) @
75Hz for CRT;
Up to 1600 x 1200 (UXGA) for
LCD;
Up to 1920 x 1200 (WUXGA) for
LCD
- LCD Interface 18-bit dual-channel LVDS

- SDVO Supports SDVO x 2 (Shared with PCI-Express [x16])

I/O

- Storage PATA x 1 (Two devices); SATAII x 2
- 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!

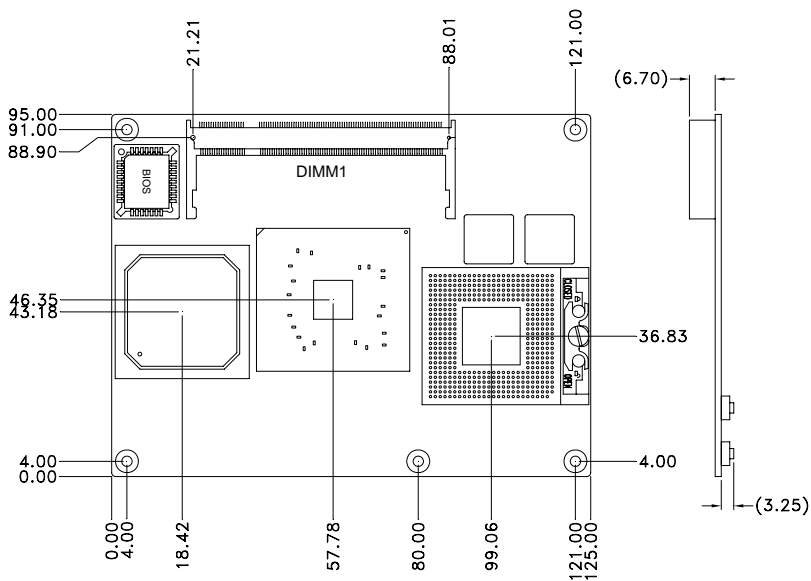
Always completely disconnect the power cord from your board whenever you are working on it. Do not make connections while the power is on, because a sudden rush of power can damage sensitive electronic components.

Caution!

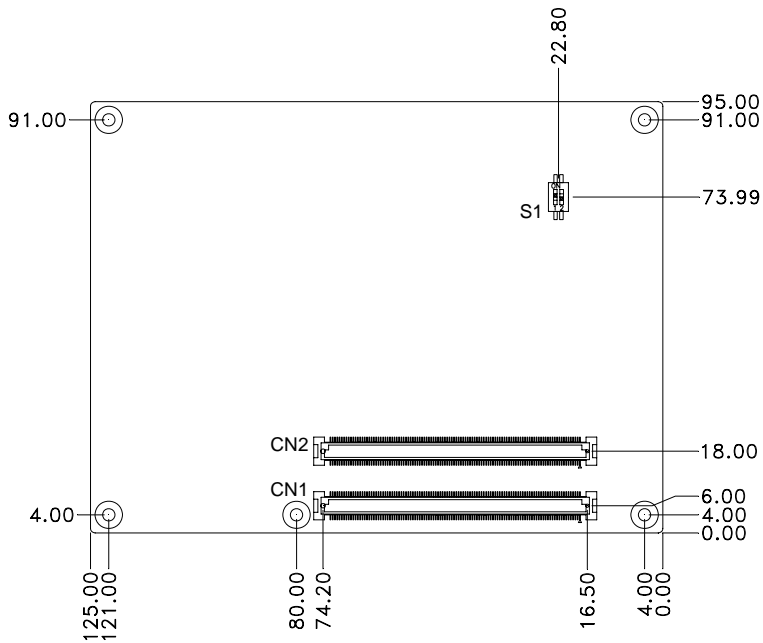
Always ground yourself to remove any static charge before touching the board. Modern electronic devices are very sensitive to static electric charges. Use a grounding wrist strap at all times. Place all electronic components on a static-dissipative surface or in a static-shielded bag when they are not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

2.2 Location of Connectors/ Jumpers and Mechanical Drawings

Component Side



Solder Side



2.3 List of Connectors/ Switch

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

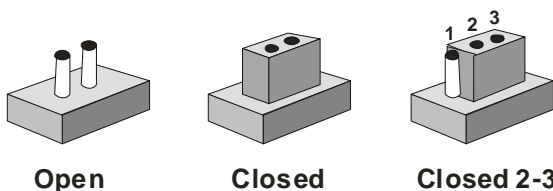
Connectors/ Switch

Label	Function
DIMM1	DDRII SODIMM
CN1	COM Express Row AB
CN2	COM Express Row CD
S1	AT/ATX Selection

2.4 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.

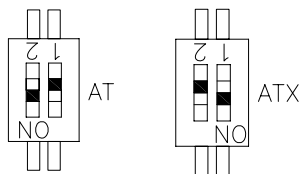


A pair of needle-nose pliers may be helpful when working with jumpers.

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.

2.5 AT/ATX Selection (S1)



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

2.6 COM Express Row AB (CN1)

Row A		Row B	
A1	GND (FIXED)	B1	GND (FIXED)
A2	NC	B2	GBE0_ACT#
A3	NC	B3	LPC_FRAME#
A4	GBE0_LINK100#	B4	LPC_AD0
A5	NC	B5	LPC_AD1
A6	NC	B6	LPC_AD2
A7	NC	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	NC	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	NC	B22	NC
A23	NC	B23	NC
A24	SUS_S5#	B24	PWR_OK
A25	NC	B25	NC
A26	NC	B26	NC
A27	BATLOW#	B27	WDT
A28	SATALED#	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	PCIE2_RST#
A48	PCIE1_RST#	B48	EXCD1_CPPE#
A49	EXCD0_CPPE#	B49	SYS_RESET#
A50	LPC_SERIRQ	B50	CB_RESET#
A51	GND (FIXED)	B51	GND (FIXED)
A52	NC	B52	NC
A53	NC	B53	NC
A54	GPI0	B54	GPO1
A55	NC	B55	NC
A56	NC	B56	NC
A57	GND	B57	GPO2
A58	PCIE_TXP3	B58	PCIE_RXP3
A59	PCIE_TXN3	B59	PCIE_RXN3
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	NC
A78	NC	B78	NC
A79	NC	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	PCIESLOT1_CLK	B88	RSVD
A89	PCIESLOT1_CLK#	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	NC
A98	VCC_12V	B98	NC
A99	VCC_12V	B99	NC
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)
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2.7 COM Express Row CD (CN2)

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	NC
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_RXP1	D55	PEG_TXP1
C56	PEG_RXN1	D56	PEG_TXN1
C57	TYPE1#	D57	TYPE2#
C58	PEG_RXP2	D58	PEG_TXP2
C59	PEG_RXN2	D59	PEG_TXN2
C60	GND (FIXED)	D60	GND (FIXED)
C61	PEG_RXP3	D61	PEG_TXP3
C62	PEG_RXN3	D62	PEG_TXN3
C63	RSVD	D63	RSVD
C64	RSVD	D64	RSVD
C65	PEG_RXP4	D65	PEG_TXP4
C66	PEG_RXN4	D66	PEG_TXN4
C67	RSVD	D67	GND
C68	PEG_RXP5	D68	PEG_TXP5

C69	PEG_RXN5	D69	PEG_TXN5
C70	GND (FIXED)	D70	GND (FIXED)
C71	PEG_RXP6	D71	PEG_TXP6
C72	PEG_RXN6	D72	PEG_TXN6
C73	SDVO_DAT	D73	SDVO_CLK
C74	PEG_RXP7	D74	PEG_TXP7
C75	PEG_RXN7	D75	PEG_TXN7
C76	GND	D76	GND
C77	RSVD	D77	IDE_CBLID#
C78	PEG_RXP8	D78	PEG_TXP8
C79	PEG_RXN8	D79	PEG_TXN8
C80	GND (FIXED)	D80	GND (FIXED)
C81	PEG_RXP9	D81	PEG_TXP9
C82	PEG_RXN9	D82	PEG_TXN9
C83	RSVD	D83	RSVD
C84	GND	D84	GND
C85	PEG_RXP10	D85	PEG_TXP10
C86	PEG_RXN10	D86	PEG_TXN10
C87	GND	D87	GND
C88	PEG_RXP11	D88	PEG_TXP11
C89	PEG_RXN11	D89	PEG_TXN11
C90	GND (FIXED)	D90	GND (FIXED)
C91	PEG_RXP12	D91	PEG_TXP12
C92	PEG_RXN12	D92	PEG_TXN12

C93	GND	D93	GND
C94	PEG_RXP13	D94	PEG_TXP13
C95	PEG_RXN13	D95	PEG_TXN13
C96	GND	D96	GND
C97	RSVD	D97	NC
C98	PEG_RXP14	D98	PEG_TXP14
C99	PEG_RXN14	D99	PEG_TXN14
C100	GND (FIXED)	D100	GND (FIXED)
C101	PEG_RXP15	D101	PEG_TXP15
C102	PEG_RXN15	D102	PEG_TXN15
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)

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-915 A2.0 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 Intel[®] Inf Driver

Step 2 – Install Intel[®] VGA Driver

Step 3 – Install Intel[®] LAN Driver

Step 4 – Install Realtek 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-915 A2.0 CD-ROM into the CD-ROM drive.
And install the drivers from Step 1 to Step 5 in order.

Step 1 – Install Intel® Inf Driver

1. Click on the **Step 1 – Intel Inf Driver** folder
2. Double click on the **Setup.exe**
3. Follow the instructions that the window shows
4. The system will help you install the driver automatically

Step 2 – Install Intel® VGA Driver

1. Click on the **Step 2 – Intel VGA Driver** folder
2. Double click on the **Setup.exe**
3. Follow the instructions that the window shows
4. The system will help you install the driver automatically

Step 3 – Install Intel® LAN Driver

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

Step 4 –Install Realtech Audio Driver

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

Appendix

A

Programming the Watchdog Timer

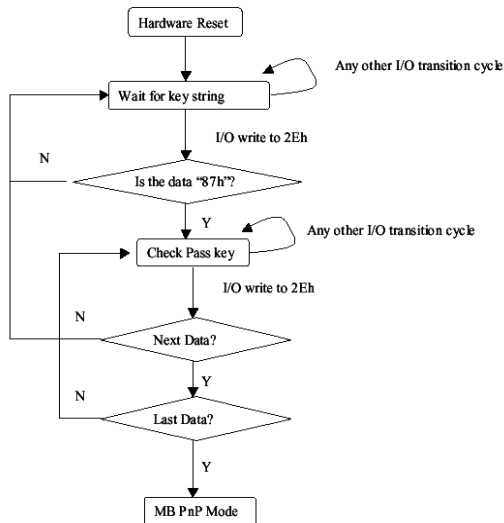
A.1 Programming

COM-915 A2.0 utilizes ITE 8712 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

After the hardware reset or power-on reset, the ITE 8712 enters the normal mode with all logical devices disabled except KBC. The initial state (enable bit) of this logical device (KBC) is determined by the state of pin 121 (DTR1#) at the falling edge of the system reset during power-on reset.



There are three steps to complete the configuration setup: (1) Enter the MB PnP Mode; (2) Modify the data of configuration registers; (3) Exit the MB PnP Mode. Undesired result may occur if the MB PnP Mode is not exited normally.

(1) Enter the MB PnP Mode

To enter the MB PnP Mode, four 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 four write operations to the Special Address port (2EH). Two different enter keys are provided to select configuration ports (2Eh/2Fh) of the next step.

	Address Port	Data Port
87h, 01h, 55h, 55h:	2Eh	2Fh

(2) Modify the Data of the Registers

All configuration registers can be accessed after entering the MB PnP 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 MB PnP Mode

Set bit 1 of the configure control register (Index=02h) to 1 to exit the MB PnP Mode.

WatchDog Timer Configuration Registers

LDN Index R/W Reset Configuration Register or Action				
All	02H	W	N/A	Configure Control
07H	71H	R/W	00H	WatchDog Timer Control Register
07H	72H	R/W	00H	WatchDog Timer Configuration Register
07H	73H	R/W	00H	WatchDog Timer Time-out Value Register

Configure Control (Index=02h)

This register is write only. Its values are not sticky; that is to say, a hardware reset will automatically clear the bits, and does not require the software to clear them.

Bit	Description
7-2	Reserved
1	Returns to the Wait for Key state. This bit is used when the configuration sequence is completed
0	Resets all logical devices and restores configuration registers to their power-on states.

WatchDog Timer Control Register (Index=71h, Default=00h)

Bit	Description
7	WDT is reset upon a CIR interrupt
6	WDT is reset upon a KBC (mouse) interrupt
5	WDT is reset upon a KBC (keyboard) interrupt
4	WDT is reset upon a read or a write to the Game Port base address
3-2	Reserved
1	Force Time-out. This bit is self-clearing
0	WDT Status
	1: WDT value reaches 0.
	0: WDT value is not 0

WatchDog Timer Configuration Register (Index=72h,**Default=00h)**

Bit	Description
7	WDT Time-out value select
	1: Second
	0: Minute
6	WDT output through KRST (pulse) enable
5-4	Reserved
3-0	Select the interrupt level ^{Note} for WDT

WatchDog Timer Time-out Value Register (Index=73h,**Default=00h)**

Bit	Description
7-0	WDT Time-out value 7-0

A.2 IT8712 Watchdog Timer Initial Program

```
.MODEL SMALL
```

```
.CODE
```

Main:

```
CALL Enter_Configuration_mode
```

```
CALL Check_Chip
```

```
mov cl, 7
```

```
call Set_Logic_Device
```

```
;time setting
```

```
mov cl, 10 ; 10 Sec
```

```
dec al
```

Watch_Dog_Setting:

```
;Timer setting
```

```
mov al, cl
```

```
mov cl, 73h
```

```
call Superio_Set_Reg
```

```
;Clear by keyboard or mouse interrupt
```

```
mov al, 0f0h
```

```
mov cl, 71h
```

```
call Superio_Set_Reg
```

```
;unit is second.
```

```
mov al, 0C0H
```

```
mov cl, 72h
```

```
call Superio_Set_Reg
```

```
; game port enable  
mov cl, 9  
call Set_Logic_Device
```

```
Initial_OK:  
CALL Exit_Configuration_mode  
MOV AH,4Ch  
INT 21h
```

```
Enter_Configuration_Mode PROC NEAR  
MOV SI,WORD PTR CS:[Offset Cfg_Port]
```

```
MOV DX,02Eh  
MOV CX,04h  
Init_1:  
MOV AL,BYTE PTR CS:[SI]  
OUT DX,AL  
INC SI  
LOOP Init_1  
RET  
Enter_Configuration_Mode ENDP
```

```
Exit_Configuration_Mode PROC NEAR  
MOV AX,0202h  
CALL Write_Configuration_Data
```

RET

Exit_Configuration_Mode ENDP

Check_Chip PROC NEAR

MOV AL,20h

CALL Read_Configuration_Data

CMP AL,87h

JNE Not_Initial

MOV AL,21h

CALL Read_Configuration_Data

CMP AL,12h

JNE Not_Initial

Need_Initial:

STC

RET

Not_Initial:

CLC

RET

Check_Chip ENDP

Read_Configuration_Data PROC NEAR

MOV DX,WORD PTR CS:[Cfg_Port+04h]

OUT DX,AL

```
MOV DX,WORD PTR CS:[Cfg_Port+06h]
IN AL,DX
RET
Read_Configuration_Data ENDP
```

```
Write_Configuration_Data PROC NEAR
MOV DX,WORD PTR CS:[Cfg_Port+04h]
OUT DX,AL
XCHG AL,AH
MOV DX,WORD PTR CS:[Cfg_Port+06h]
OUT DX,AL
RET
Write_Configuration_Data ENDP
```

```
Superio_Set_Reg proc near
push ax
MOV DX,WORD PTR CS:[Cfg_Port+04h]
mov al,cl
out dx,al
pop ax
inc dx
out dx,al
ret
Superio_Set_Reg endp.Set_Logic_Device proc near
Set_Logic_Device proc near
```

```
push ax
push cx
xchg al,cl
mov cl,07h
call Superio_Set_Reg
pop cx
pop ax
ret
Set_Logic_Device endp

;Select 02Eh->Index Port, 02Fh->Data Port
Cfg_Port DB 087h,001h,055h,055h

DW 02Eh,02Fh
```

END Main

Note: Interrupt level mapping

0Fh-Dh: not valid

0Ch: IRQ12

.

.

03h: IRQ3

02h: not valid

01h: IRQ1

00h: no interrupt selected

Appendix

B

I/O Information

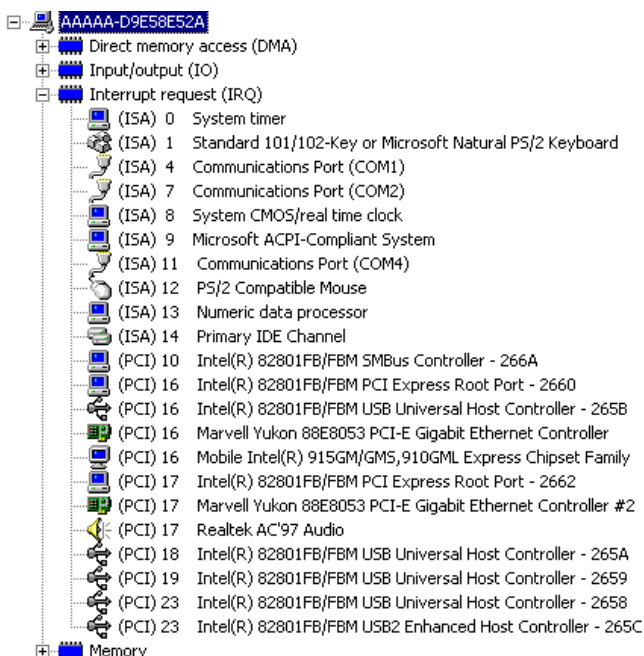
B.1 I/O Address Map

AAAAA-D9E58E52A	
+	Direct memory access (DMA)
+	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 - 0000005F] 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
	[00000295 - 00000314] Motherboard resources
	[000002F8 - 000002FF] Communications Port (COM4)
	[00000378 - 0000037F] Printer Port (LPT1)
	[000003B0 - 000003BB] Mobile Intel(R) 915GM/GMS,910GML Express Chipset Family
	[000003C0 - 000003DF] Mobile Intel(R) 915GM/GMS,910GML Express Chipset Family
	[000003E8 - 000003EF] Communications Port (COM2)
	[000003F6 - 000003F6] Primary IDE Channel
	[000003F8 - 000003FF] Communications Port (COM1)
	[00000400 - 000004BF] Motherboard resources
	[000004D0 - 000004D1] Motherboard resources
	[00000500 - 0000051F] Intel(R) 82801FB/FBM SMBus Controller - 266A
	[00000880 - 0000088F] Motherboard resources
	[00000A79 - 00000A79] ISAPNP Read Data Port
	[00000D00 - 0000FFFF] PCI bus
	[0000B000 - 0000B0FF] Marvell Yukon 88E8053 PCI-E Gigabit Ethernet Controller
	[0000B000 - 0000BFFF] Intel(R) 82801FB/FBM PCI Express Root Port - 2660
	[0000C000 - 0000C0FF] Marvell Yukon 88E8053 PCI-E Gigabit Ethernet Controller #2
	[0000C000 - 0000CFFF] Intel(R) 82801FB/FBM PCI Express Root Port - 2662
	[0000D000 - 0000D0FF] Realtek AC'97 Audio
	[0000D800 - 0000D81F] Intel(R) 82801FB/FBM USB Universal Host Controller - 2659
	[0000D900 - 0000D91F] Intel(R) 82801FB/FBM USB Universal Host Controller - 265A
	[0000DA00 - 0000DA1F] Intel(R) 82801FB/FBM USB Universal Host Controller - 265B
	[0000DB00 - 0000DB07] Mobile Intel(R) 915GM/GMS,910GML Express Chipset Family
	[0000DC00 - 0000DC3F] Realtek AC'97 Audio
	[0000DD00 - 0000DD1F] Intel(R) 82801FB/FBM USB Universal Host Controller - 2658
	[0000F000 - 0000F00F] Intel(R) 82801FBM Ultra ATA Storage Controllers - 2653

B.2 1st MB Memory Address Map

Address Range	Device
[00000000 - 0009FFFF]	System board
[000A0000 - 000BFFFF]	Mobile Intel(R) 915GM/GMS,910GML Express Chipset Family
[000A0000 - 000BFFFF]	PCI bus
[000C0000 - 000DFFFF]	PCI bus
[000D3800 - 000D3FFF]	System board
[000E0000 - 000EFFFF]	System board
[000F0000 - 000F7FFF]	System board
[000F8000 - 000FBFFF]	System board
[000FC000 - 000FFFFF]	System board
[00100000 - 1F7EFFFF]	System board
[1F7F0000 - 1F7FFFFF]	System board
[1F800000 - FEBFFFFF]	PCI bus
[C0000000 - CFFFFFFF]	Mobile Intel(R) 915GM/GMS,910GML Express Chipset Family
[D0000000 - D00FFFFF]	Intel(R) 82801FB/FBM PCI Express Root Port - 2660
[D0020000 - D0023FFF]	Marvell Yukon 88E8053 PCI-E Gigabit Ethernet Controller
[D0100000 - D01FFFFF]	Intel(R) 82801FB/FBM PCI Express Root Port - 2662
[D0120000 - D0123FFF]	Marvell Yukon 88E8053 PCI-E Gigabit Ethernet Controller #2
[D0200000 - D027FFFF]	Mobile Intel(R) 915GM/GMS,910GML Express Chipset Family
[D0280000 - D02FFFFF]	Mobile Intel(R) 915GM/GMS,910GML Express Chipset Family
[D0300000 - D033FFFF]	Mobile Intel(R) 915GM/GMS,910GML Express Chipset Family
[D0340000 - D03403FF]	Intel(R) 82801FB/FBM USB2 Enhanced Host Controller - 265C
[D0341000 - D03411FF]	Realtek AC'97 Audio
[D0342000 - D03420FF]	Realtek AC'97 Audio
[E0000000 - EFFFFFFF]	Motherboard resources
[FEC00000 - FEC00FFF]	System board
[FED13000 - FED1DFFF]	System board
[FED20000 - FED8FFFF]	System board
[FEE00000 - FEE00FFF]	System board
[FFB00000 - FFB7FFFF]	System board
[FFB80000 - FFBFFFFF]	Intel(r) 82802 Firmware Hub Device
[FFF00000 - FFFFFFFF]	System board

B.3 IRQ Mapping Chart



B.4 DMA Channel Assignments

