# 3I847AW/CW

## Mobile Ivy Bridge 1047UE/i3/i7 + HM76 / DDR3 1333/1600 MHz HDMI / DVI / LAN / Audio /USB / PCIe mini card

**All-In-One**
**Intel Mobile Ivy Bridge 1047UE/i3/i7**
**VGA, DVI, HDMI, PCIe mini card**
**Multi-COM Board, Audio, LAN, SATA, USB, LVDS , Touch screen**

**NO. 3I847AW/CW**
**Release date: Nov. 11, 2013**

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User Manual edition 0.1, Nov. 11, 2013

## Warning !

1. Battery

Battery on board is consumables. We doesn't guarantee the life time of it.

2. Fanless solution with HDD

Please be aware of specification & limitation for HDD when fanless solution is implemented.

3. We will not give further notification if there is any change about the product information and the manual.

4. SATA does not support Hot SWAP.

5. There would be ± 20% difference of WDT at room temperature.

6. Please make sure the voltage specification meet the requirement of the equipment before plugging into the power.

7. SSD has 2 types, commercial grade and industrial grade, which provide different read/write speed, operation temperature and life cycle. Please contact sales for further information before ordering.

8. Caution ! Please notice that the heat dissipation problem could cause the MB system unstable. Please handle the heat dissipation properly when buying single MB.

9. Please avoid to approach the heat sink area and prevent being scalded when using the Fanless products.

10. If the users repair, modify or destroy any component of product unauthorized, We would not take responsibility or provide warranty.

11. DO NOT apply any other material onto the thermal pad in case reducing cooling performance.

12. It is important to install a System Fan toward the CPU to prevent the possibility of overheating / system hang up issues from Cedar view-D series of motherboard or else customer is required to have well cooling system to dissipate heat from CPU.

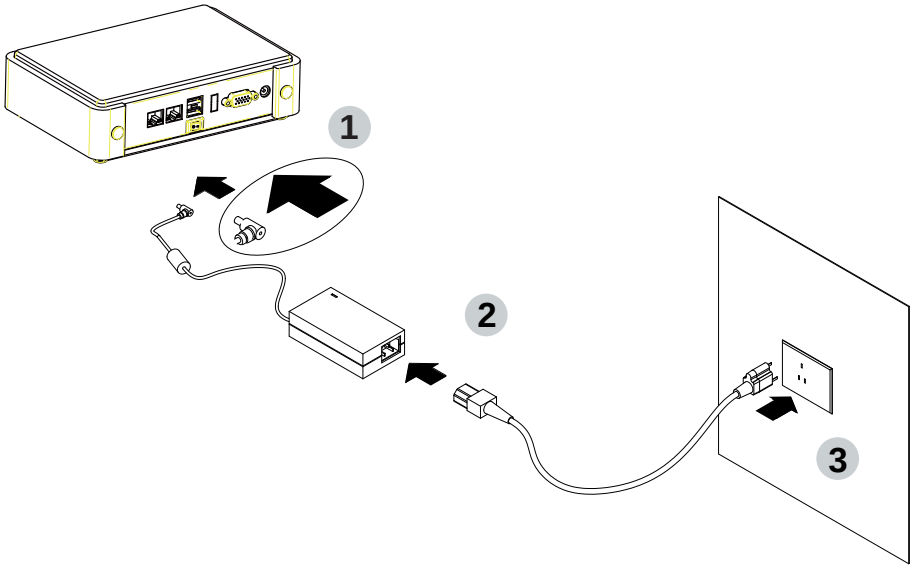
## ✻ Hardware Notice Guide

1. Before installing the power supply with this motherboard, please attach the 12V/DC ( 2 pin connector )of the adapter to motherboard first.
   After that, plug the adapter power to AC outlet.
   Always normally shut down the computer before you move the system unit or remove the power supply from the motherboard.
   Please unplug the 12V/DC ( 2 pin connector ) of the adapter from motherboard first.
   Then unplug the adapter from the AC outlet.
   Please refer to procedure from the photo 1
2. There will be high possibility to burn out the CPU if you change/ modify any parts of the CPU cooler.
3. Please wear wrist strap and attach it to a metal part of the system unit before handling a component.
   You can also touch an object that is of ground connection or with metal surface if you don't have wrist strap.
4. Please be careful when you handle this product. Pay attention to & don't touch the sharp-pointed components at the bottom PCB .
5. Please pay attention to this: Remove or change any components form the motherboard will VOID the warranty of the motherboard you purchased .
6. Before you install/remove any components or make any jumper setting on the motherboard, please make sure to disconnect the power first.
   ( Please follow the instructions as of this guide )
7. Please only use single side Mini PCIe card, do not use the double side Mini PCIe card which is not suitable.
8. Please follow this instruction carefully when using the "POWERON after PWR-Fair" function.
   When the DC power adaptor runs out of power, unplug it from the DC current;
   when power returns plug it back in only after 5 seconds. If there is a power outage, unplug it from the AC current, when power returns plug it back in only after 30 seconds.
   Otherwise it will cause system locking or serious damage.

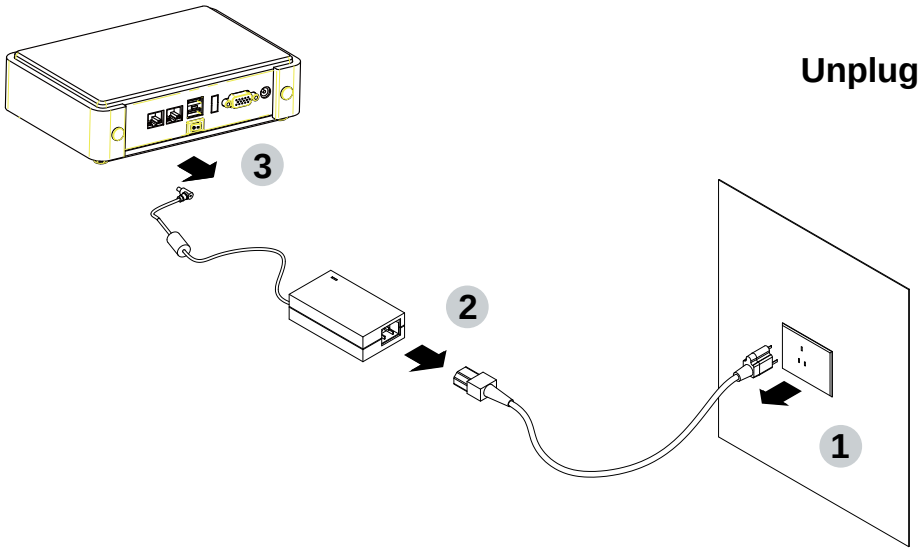
**Remark 1:**
**Always insert/unplug the 12V/DC ( 2 pin connector ) horizontally & directly from the motherboard.**
**DO NOT twist the 12V/DC ( 2 pin connector ) gently, it is designed to fit snugly . Moreover, erratic pull / push testing with the DC Jack might cause the unpredictable damage to the component & system unit.**

## Photo 1

### Insert




### Unplug



# Chapter-1

## General Information

The 3I847AW/CW is a 3.5-inch compact embedded system board that features Intel® 1. Mobile Ivy Bridge 1047UE/i3/i5/i7 Processor paired with HM76 chipset to support two super speed USB 3.0 ports, and one DDR3 SO-DIMM memory socket up to 8GB DDR3 SDRAM/ 1600MHz.

High-performance and power-efficient communication platform, the embedded motherboard of 3I847AW/CW is specially designed for advanced embedded car PC or POS system applications where the economical use of power is in high demand. Also, there is a sizable on board DDR3 memory from 3I847AW/CW motherboards which will provide more stability to the system. This motherboard will ensure the high performance levels required for today's most popular POS/Automation control applications including Embedded Car PC, POS, ATM, Kiosk and Panel PC applications.

The 3I847AW/CW integrates with Intel® HD graphics engine to support OGL 3.0, dual displays of CRT resolution up to 1920x 1200, single/dual channel 18-/ 24- bit LVDS (3I847CW) and HDMI 1080p. Besides, 3I847AW/CW has Intel LAN chipset with 10/100/1000 Mbps Ethernet for seamless broadband connectivity. With the Wake-On LAN function and the PXE function in BIOS for Intel LAN chipset, it is perfect control board for networking devices.

3I847AW/CW also supports multiple COM ports of five RS232/485 and one RS422/485 to meet the needs of connectivity for multiple COM ports. In addition, there are multi-ports of Hi-Speed USB 3.0 and USB 2.0 to enhance the host controller interface which will ensure the high performance level and flexible expansion. A single Flash chip holds the system BIOS, and you can change the Flash BIOS by the Utility Update.

The 3I847AW/CW is All-In-One board which could apply to the use of Networking, POS or Automation Control Board. It is designed to combine all necessary input and output affects interfaces, which makes it to be ideal All-In-One control board for the demand of Networking, POS and Automation Control applications. 3I847AW/CW is the perfect platform for a whole range of small form factor.

## 1-1 Major Feature

1. Mobile Ivy Bridge 1047UE/i3/i7 Processor
2. Intel® HM76 Express Chipset
3. DDR3 up to 8GB; data transfer rates of 1333MT/s and 1600 MT/s
4. 2 x Intel® Giga LAN
5. On board SSD 2/4/8/16/32/64 GBytes (Option)
6. Support expanded PCIe Mini card for PCIe x1 and USB interface,

   PCIe Mini card for PCIe x1 or mSATA and USB interface
7. Support up to 4 SATA ports
8. Hardware digital Input & Output, 8 x DI / 8 x DO

   Hardware Watch Dog Timer, 0~255 sec programmable
9. On board DC +12V
10. PCB Dimension: 146 x 102 mm
11. Up to 2 SIM card sockets
12. 3I847C: USB /COM interface Touch screen controller, support 4- , 5- , 8- wire Analog

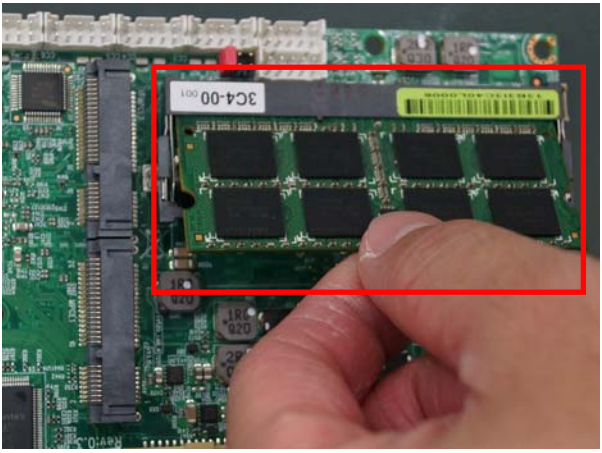
    Resistive touch screen. Resolution is up to 2048 x 2048

## 1-2 Specification

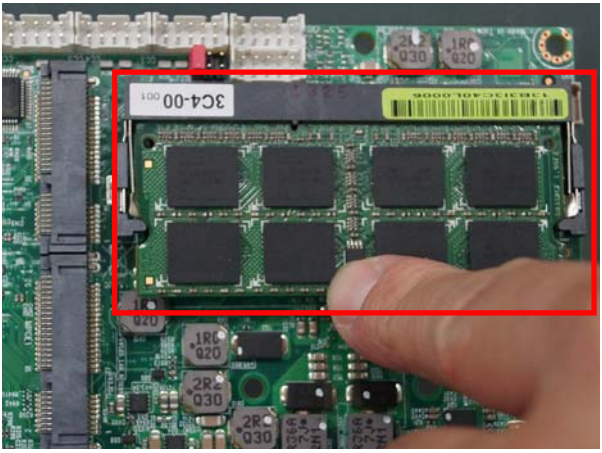
1. **CPU+Chipset:** 1. Intel Chief River platform; the two-chip platform consists of a Mobile Ivy Bridge 1047UE/i3/i5/i7 Processor and the Platform Controller Hub (PCH) Panther Point HM76 chipset
2. **Memory:** Single Channel DDR3 SODRAM 204pin, Max. 8GB, DDR3 data transfer rates of 1600 MT/s
3. **VGA:** Intel Mobile Ivy Bridge 1047UE Processor Integrated Graphics
4. **SATA:** Integrated Serial ATA Host Controller Up to 4 SATA ports: 1 SATA port 3.0 Data transfer rates up to 6.0 Gb/s (600 MB/s), 1 SATA ports 2.0 Data transfer rates up to 3.0 Gb/s (300 MB/s), 1 mini card socket for mSATA Data transfer rates up to 6.0 Gb/s (600 MB/s), 1 on board NAND drive (Option)
5. **LAN:** Intel 82579LM Gigabit Ethernet PHY & Intel 82574L PCIe LAN NIC
6. **Serial Port:** 5 x RS232 (Internal); 1 x 422/485 (Internal)
7. **USB:** 2 x USB 3.0 (external) on board; 2 x USB 2.0 on board; 5 x USB 2.0 (internal)
8. **Sound:** Intel High Definition Audio Interface
9. **Audio Amplifier:** 2 channel Class D Audio Amplifier; 2.57W/Ch (Typ.) into a 4ΩLoad, 1.46 W/Ch (Typ.) into a 8ΩLoad
10. **WDT/DIO:** Hardware digital Input & Output, 8 x DI / 4 x DO (Option) Hardware Watch Dog Timer, 0~255 sec programmable (Option)
11. **Expansion interface:** 1 PCIe Mini card for PCIe x1 and USB interface, 1 PCIe Mini card for PCIe x1 or mSATA and USB interface, up to 2 SIM card sockets (1 socket is optional and share on board SSD).
12. **BIOS:** AMI UEFI BIOS
13. **Dimension:** 145 x 102 mm
14. **Power:** On board DC +12V
15. **Power Consumption:** Please refer to Page. 84
16. **3G Wireless:** 3G SIM card reader
17. **LVDS:** 1 LVDS 2x15 pin (1.25mm) connector for 24bits/2ch LVDS interface
18. **Touch function:** 3I847C: USB /COM interface Touch screen controller, support 4- , 5- , 8- wire Analog Resistive touch screen. Resolution is up to 2048 x 2048

## 1-3 Installing the SO-DIMM

1. Align the SO-DIMM with the connector at a 45 degree angle.

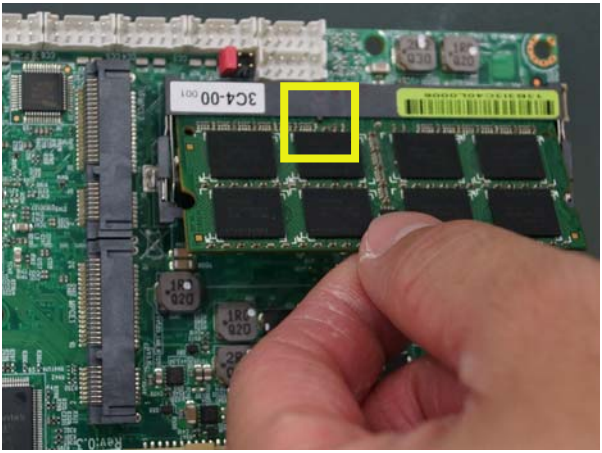


2. Press the SO-DIMM into the connector until you hear a click.

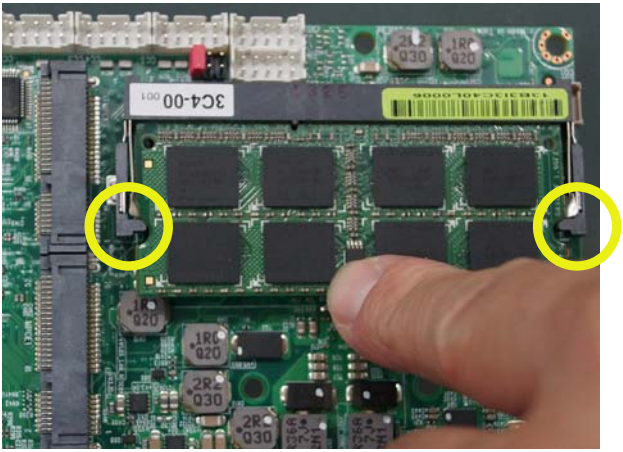


Notices:

1.The connectors are designed to ensure the correct insertion. If you feel resistance, check the connectors & golden finger direction, and realign the card.

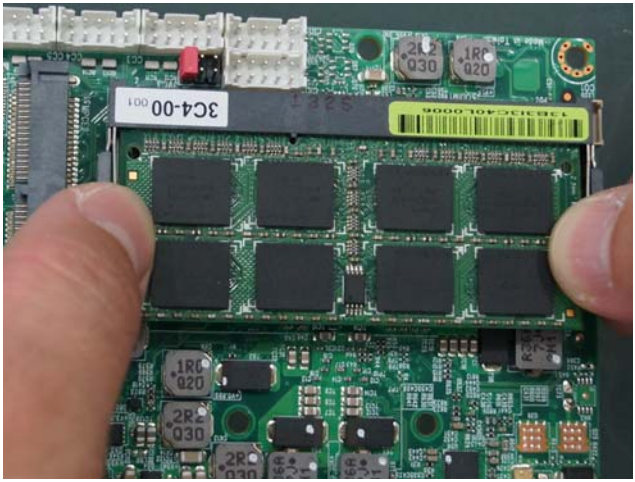


2. Make sure the retaining clips (on two sides of the slot) lock onto the notches of the card firmly.

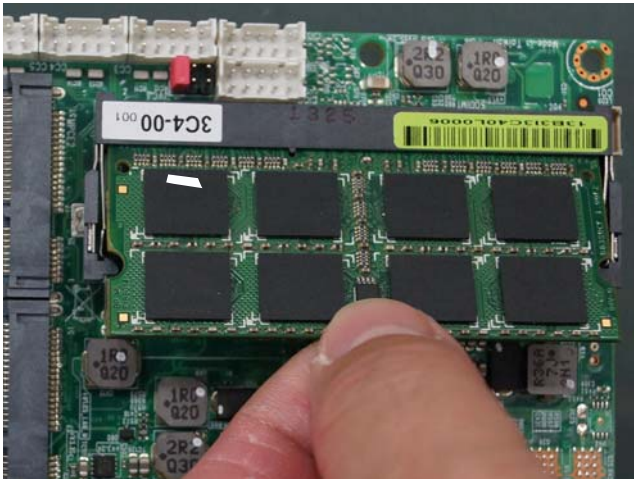


## 1-3-1.1 Removing the SO-DIMM

1. Release the SO-DIMM by pulling outward the two retaining clips and the SO-DIMM pops up slightly.



2. Lift the SO-DIMM out of its connector carefully.



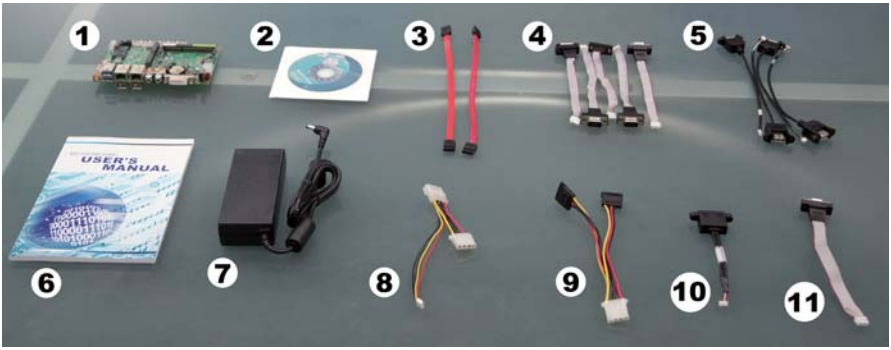
# 1-4 Directions for installing the Mini Card

1. Unscrew the screw on the board

2. Plug in the Mini Card in a 45°angle

3. Gently push down the Mini Card and screw the screw back.

## 1-5 Packing List ( 3I847AW / CW )




| | Material Code | Description | Detail Specification | Quantit |
|---|---|---|---|---|
| 1 | 7G1901-1353001-0 | MB-3I847A-3C4-00-001 | LF,3I847A-3C4-00,Rev.:001 | 1 |
| 2 | 6G8006-2344-0100 | DVD | LF,Intel Cedarview-M/D,Sandy Bridge | 1 |
| 3 | 6G6001-2203-0100 | SATA DATA Cable (Red) | LF,L=25cm | 2 |
| 4 | 6G6001-2005-0100 | COM FK | LF,2.0 2*5P/DB9P,L=15cm | 5 |
| 5 | 6G6002-8006-0100 | USB RK,(USB*1 to 1*4/1.25 Housing) | LF,L=20cm,Intel | 4 |
| 6 | 6G8001-2180-0400 | Manual | LF,M/B,3I847AW/CW | 1 |
| 7 | 6G5212-0804-0100 | 84W Power Adapter,12V/7A | LF,L Type,FSP084-DMBA1,FSP | 1 |
| 8 | 6G6003-7310-0100 | DC PK | LF,2.0 1*4/M4P M/F,L=15/5.5cm | 1 |
| 9 | 6G6003-1003-0100 | SATA Power Cable,1to2 | LF,L=15cm,SATA Power*2/4P | 1 |
| 10 | 6G6002-8603-0100 | PS/2 RK | LF,KB&Mouse Cable,L=10cm | 1 |
| 11 | 6G6001-8404-0100 | VGA FK | LF,L=15cm,2.0 2*5/DB15pin | 1 |

*The packing list above is for the users who purchase single motherboard. The users who purchase the board with chassis may refer to the packing list in the Assembly Guide.

Please contact with your dealer if any of these items is missing or damaged on delivery. And please keep all parts of the delivery package with packing materials in case if you need to deliver or store the product in the future.

# Chapter-2

## Hardware Installation

**This chapter provides the information how to install the hardware of 3I847AW/CW. Please follow section 1-6, 2-1 and 2-2 to check the delivery package and unpack carefully. Please follow the jumper setting procedure.**

## 2-1 Unpacking Precaution

The 3I847AW/CW board has been well packed with
an anti-static bag to protect its sensitive components and circuitry from damage due to static electric discharge.

NOTE!

1. Do not touch the board or any other sensitive components without all necessary anti-static protection.
2. Please pay attention to the voltage limitation of DC-IN12 V ± 5 %.
   Overuse of DC-IN voltage limitation or change to another power adapter ( not provided with this system ) will VOID warranty.

You should follow these
steps to protect the board from the static electric
discharge whenever you handle the board:

1. Ground yourself by a grounded wrist strap at all times when you handle the 3I847AW/CW.
   Well secure the ALLIGATOR clip of the strap to the end of the shielded wire lead from a grounded object. Please put on and connect the strap before handling the 3I847AW/CW for harmlessly discharge any static electricity through the strap.

2. Please use anti-static pad to put any components, parts, or tools on the pad whenever you work on them outside the computer. You may also use the anti-static bag instead of the pad. Please ask your local supplier for necessary parts on anti-static requirement.

3. Do not plug any connector or set any jumper when the power is on.

## 2-2 Unpacking checkup

First of all, please follow all necessary steps of section 2-1 to protect 3I847AW/CW from electricity discharge. With reference to section 1-6 / 1-7 / 1-8, please check the delivery package again with following steps:

1. Unpack the 3I847AW/CW board and keep all packing material, manual and driver disc etc, do not dispose !

2. Is there any components lose or drops from the board?
   DO NOT CONTINUE TO INSTALL THIS BOARD!
   CONTACT THE DEALER YOU PURCHASED
   THIS BOARD FROM, IMMEDIATELY.

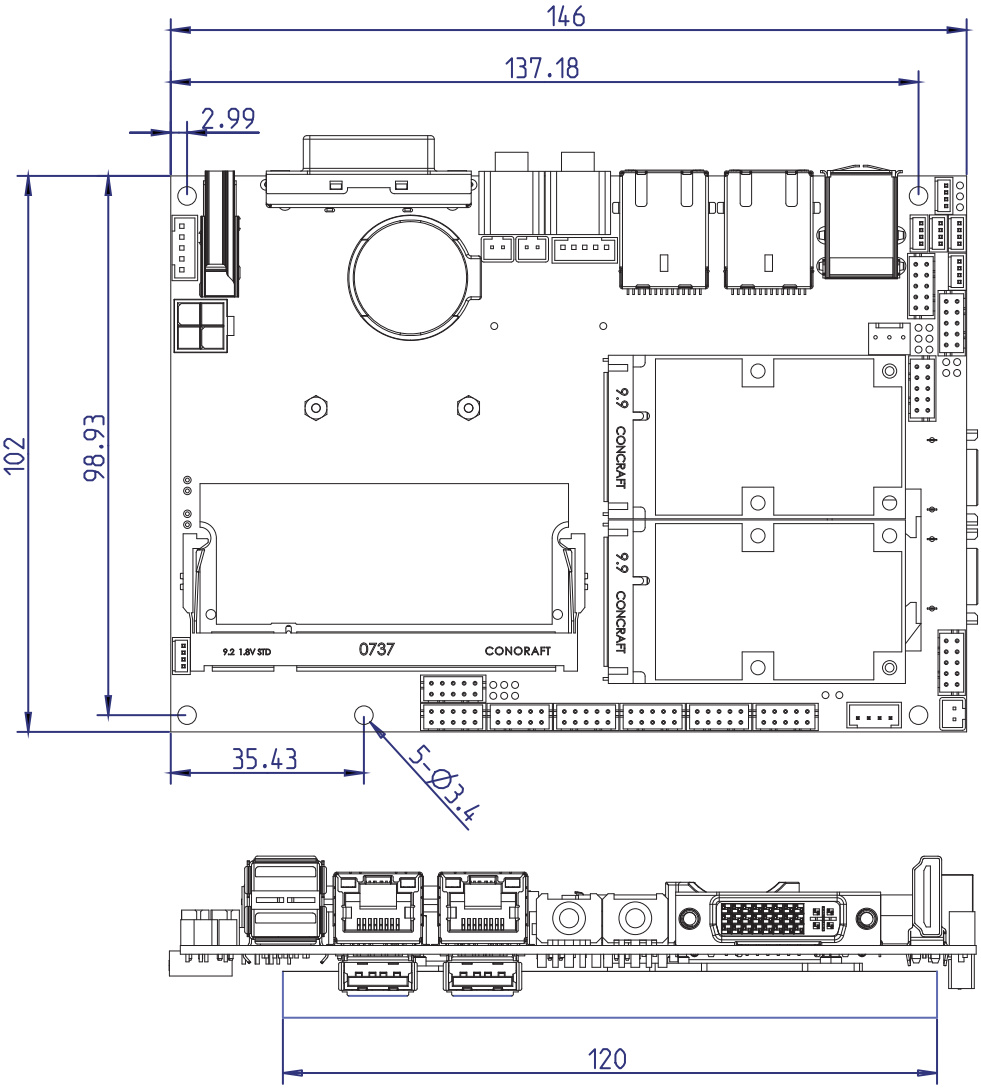
3. Is there any visible damage on the board?
   DO NOT CONTINUE TO INSTALL THIS BOARD!CONTACT
   THE DEALER YOU PURCHASED THIS BOARD FROM, IMMEDIATELY.

4. Check your optional parts (i.e. DDR, CF etc.), all necessary jumpers setting to jumper pin-set, and CMOS setup correctly.
   Please also refer to all information of jumper settings in this manual.

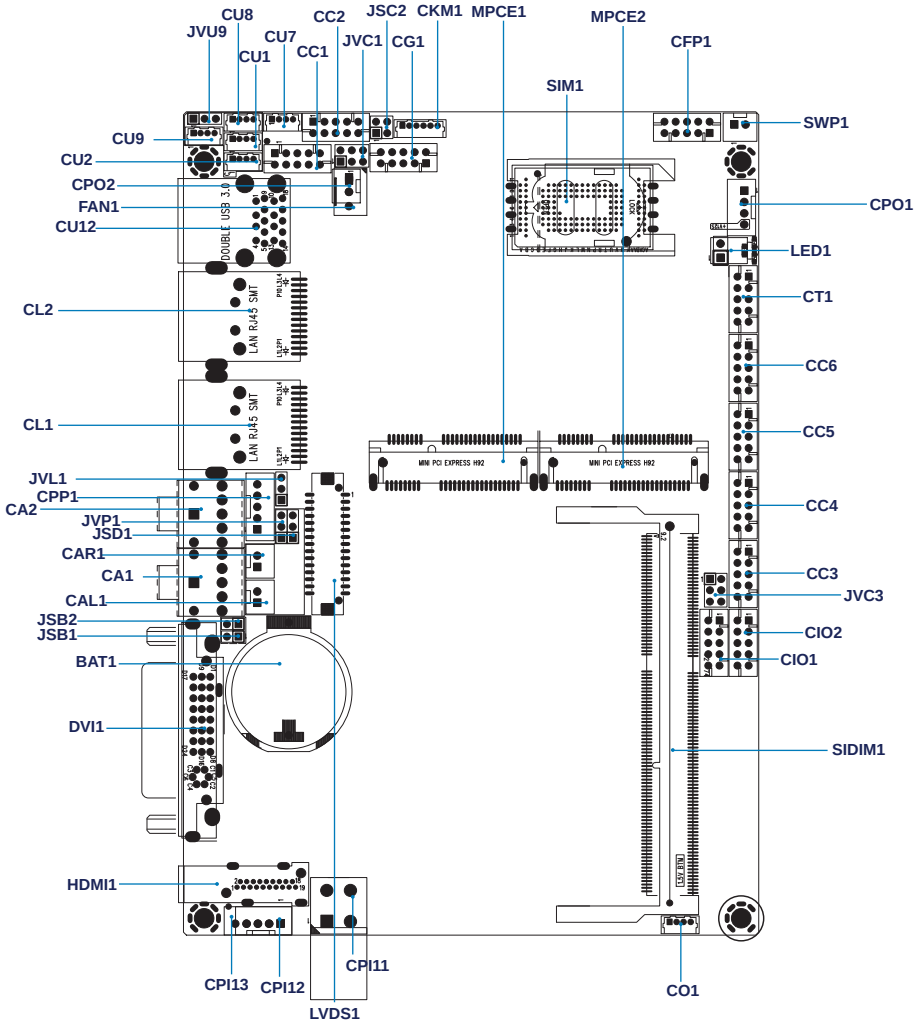
5. Check your external devices (i.e. Add-On-Card, Driver Type etc.) for complete add-in or connection and CMOS setup correctly.
   Please also refer to all information of connector connection in this manual.

6. Please keep all necessary manual and driver disc in a good condition for future re-installation if you change your Operating System.

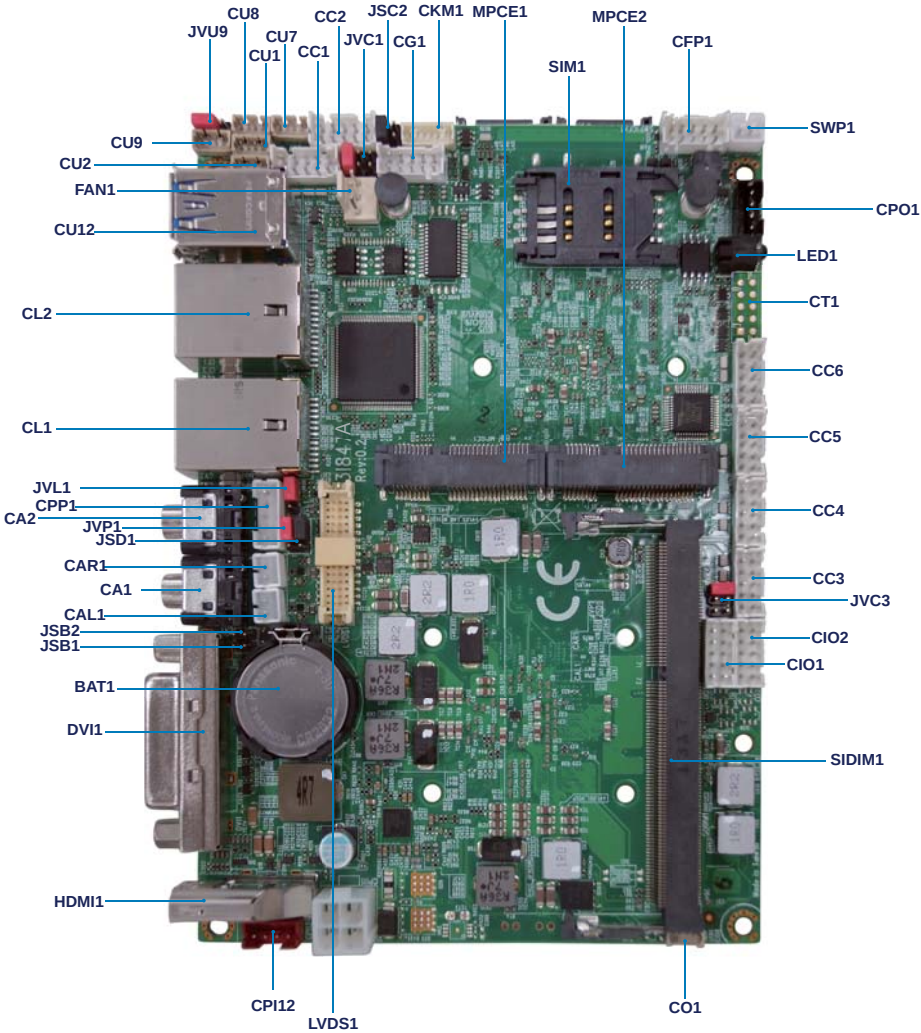
## 2-3 Dimension 145 x102 mm (3.5 inch)- 3I847AW/CW



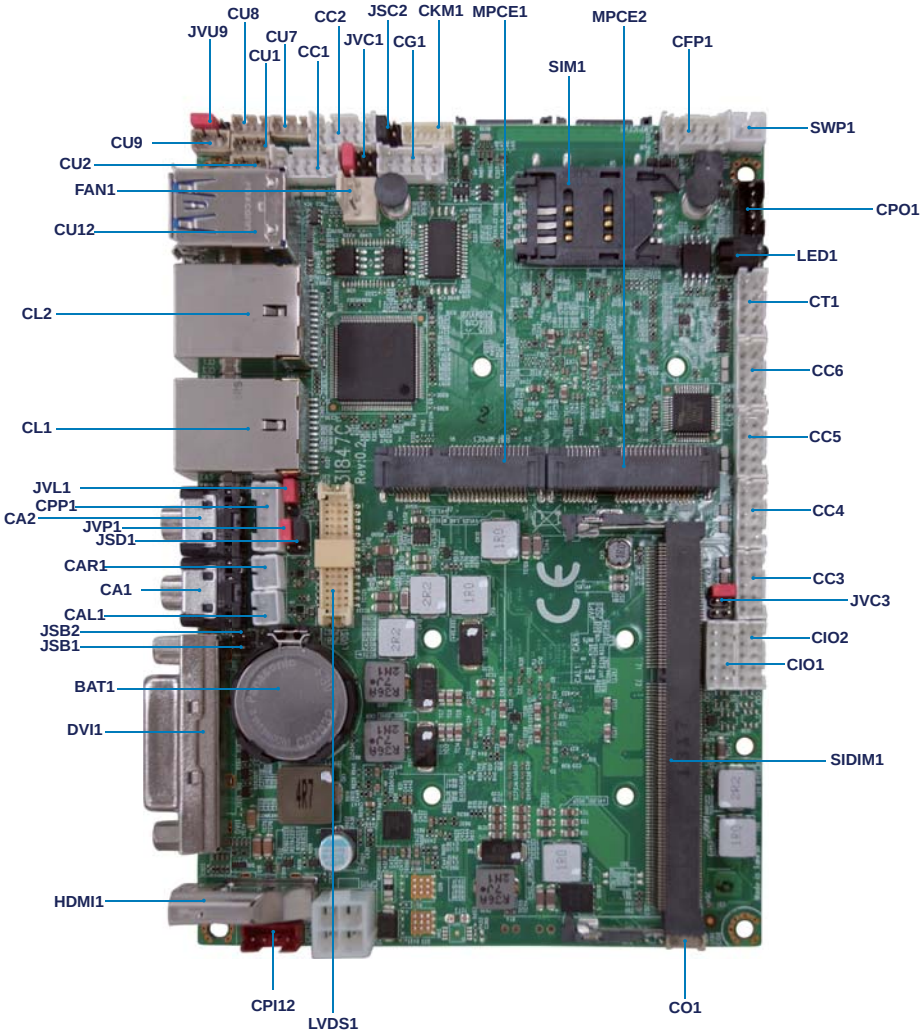
## 2-4 Layout - 3I847AW / CW



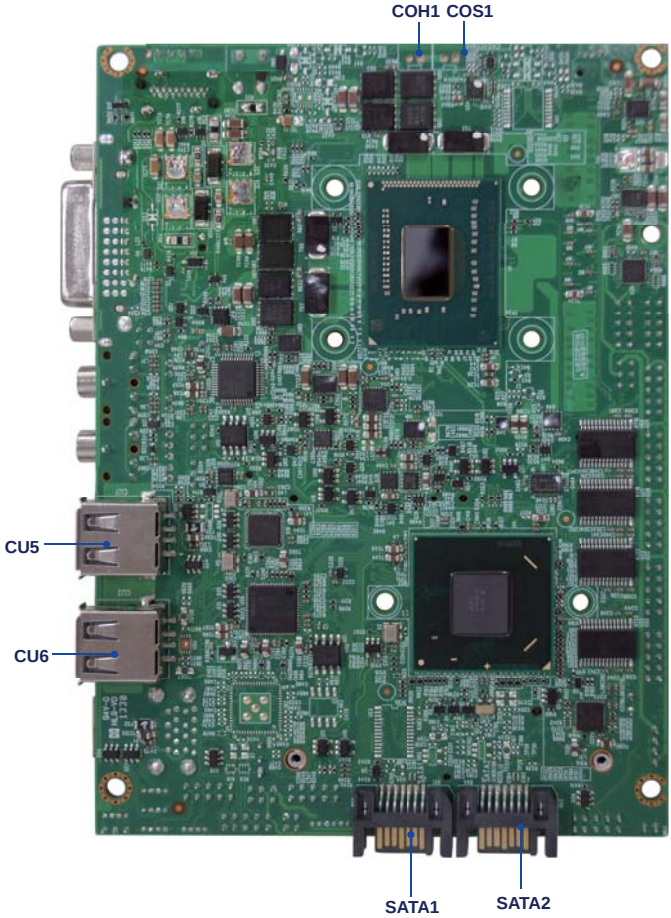
## 2-5 Diagram- 3I847AW



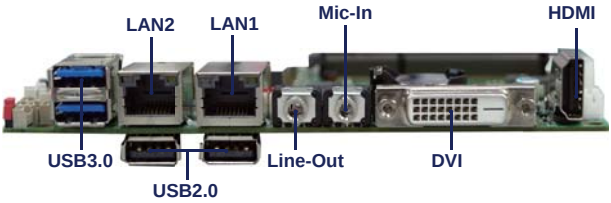
## 2-5-1 Diagram- 3I847CW



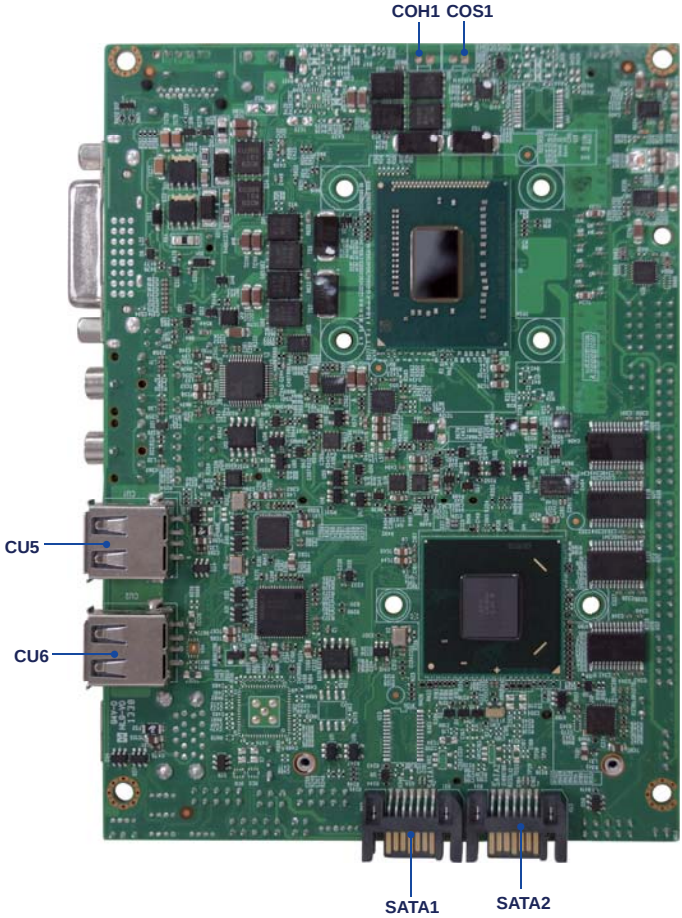
## 2-5-2 Bottom Side Diagram- 3I847A / 3I847C



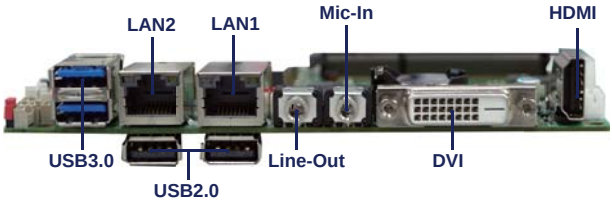

## Back Panel-3I847A / 3I847C



## 2-5-3 Bottom Side Diagram- 3I847AW / CW




## Back Panel-3I847AW / CW



## 2-6 Install Memory

This motherboard provides one 204-pin Small Outline Dual In-line Memory Module (SODIMM) socket for memory expansion available maximum to of 2GB/4GB/8GB DDR3 SDRAM.
DDR3 clock supports: DDR3 1333/1600MT/S

**Valid Memory Configurations**

| DIMM1 | System Accept or Not | Total Memory |
|---|---|---|
| | | Max. |
| DS/SS | Accept | 8GB |

**DS: Double Sided DIMM** **SS: Single Sided DIMM**

NOTE!
**The detected memory size is less than actual installed memory size since some memory has been allocated for system use.**
**That's how PC works with system memory.**

Please refer to page 9 for installation of memory module.

NOTE!

**When you install SODIMM module fully into the SODIMM socket, the eject tab should be locked into the SODIMM module very firmly and fit into its indention on both sides.**

WARNING!

**Once you hear " Beep Beep Beep" sounds after turning on the power , please check if the DRAM is installed properly or not.**

## 2-7 List of Jumpers

JSB1：CMOS clear select

JSB2：ME RTC clear select

JSC2：COM2 RS422/RS485 select

JSD1：DPC Duty select

JVC1：COM1 voltage select

JVC3：COM3 voltage select

JVL1：LCD Panel power select

JVP1：LVDS Panel Inverter power select

JVU9：USB9 voltage select

## 2-8 Jumper Setting Description

A jumper is ON as a closed circuit with a plastic cap covering two pins. A jumper is OFF as an open circuit without the plastic cap. Some jumpers have three pins, labeled 1, 2, and 3. You could connect either pin 1 and 2 or 2 and 3.
The below figure 2.2 shows the examples of different jumper settings in this manual.

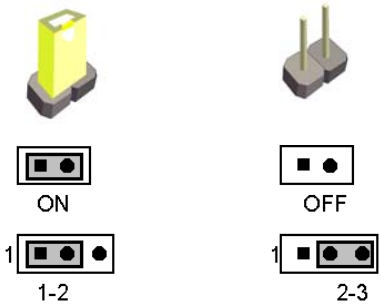



**Figure 2.2**

All jumpers already have its default setting with the plastic cap inserted as ON, or without the plastic cap as OFF. The default setting may be referred in this manual with a " * " symbol .

## 2-9 CMOS Data Clear

A battery must be used to retain the motherboard configuration in CMOS RAM. Close Pin1 and pin 2 of JSB1 to store the CMOS data.

To clear the CMOS,follow the procedures below:
1. Turn off the system and unplug teh AC power
2. Remove DC 12V power cable from DC 12V power connector
3. Locate JSB1 and close pin 1-2 for few seconds
4. Return to default setting by openning pin 1-2
5. Connect DC 12V power cable back to DC 12V Power connector

## JSB1: CMOS Data Clear

| JSB1 | Description |
|---|---|
| *open | Normal Set |
| short | CMOS Data clear |

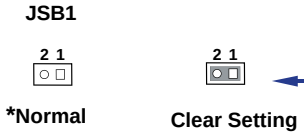
**Note：Normal work is open jumper**

Note: Do not clear CMOS unless

***1. Troubleshooting***

***2. Forget password***

***3. You fail over-clocking system***




## 2-10 JSB2：ME RTC Data clear

A battery must be used to retain the motherboard configuration in ME RAM.
Close Pin1 and pin 2 of JSB2 to store the ME data.

To clear the ME,follow the procedures below:

1. Turn off the system and unplug teh AC power
2. Remove DC 12V power cable from DC 12V power connector
3. Locate BAT1 and Remove Li battery
4. Locate JSB2 and close pin 1-2 for few seconds
5. Return to default setting by openning pin 1-2
6. Install Li battery to BAT1 connector
7. Connect DC 12V power cable back to DC 12V Power connector

| JSB2 | Description |
|---|---|
| *open | Normal set |
| short | CMOS data clear |

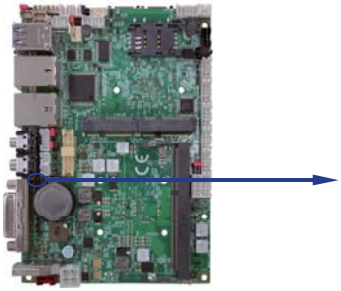
**Note：Normal work is open jumper**

Note: Do not clear CMOS unless

***1. Troubleshooting***

***2. Forget password***

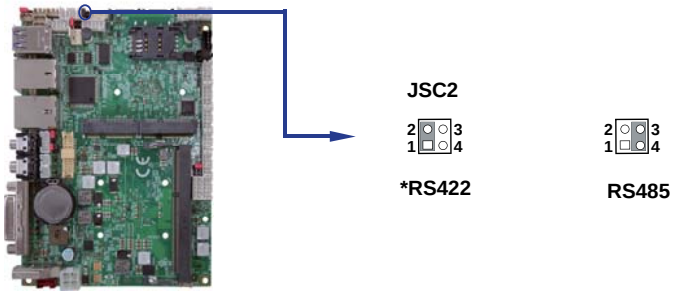
***3. You fail over-clocking system***



## 2-11 JSC2：COM2 RS422/RS485 select

| JSC2 | DESCRIPION |
|---|---|
| *1-2 | RS422 |
| 3-4 | RS485 |

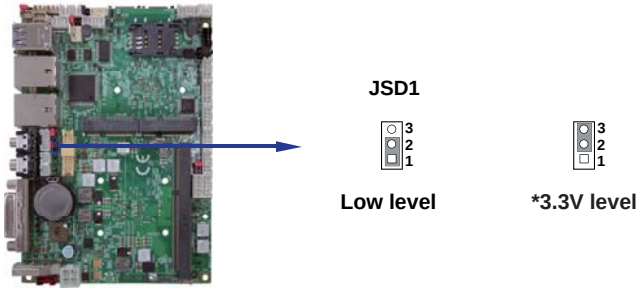
**Note：RS422/485 setting by both H/W jumper and BIOS CMOS setting**




## 2-12 JSD1：DPC Duty set

| JSD1 | DESCRIPION |
|---|---|
| 1-2 | Low 0%  (Low level ) |
| *2-3 | Hi  100% (3.3V level) |

**Note：For Panel backlight dimming default active set**

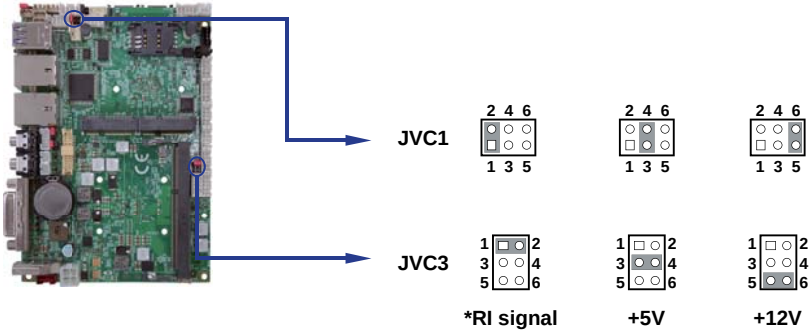


## 2-13 COM port pin9 select RI signal or Voltage source

JVC1：COM1 PIN9 select　JVC3：COM3 PIN9 select

| JVC1/3 | Descripion |
|---|---|
| *1-2 | COM port pin9 use RI signal |
| 3-4 | COM port pin9 use +5V voltage |
| 5-6 | COM port pin9 use +12V voltage |

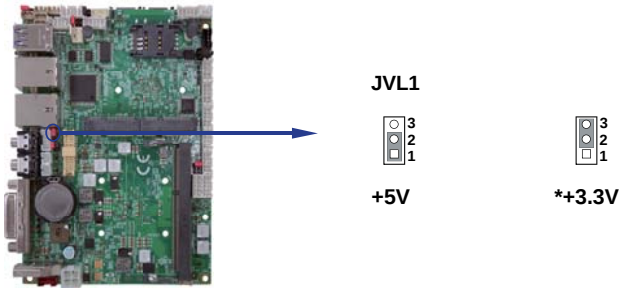
**Note：1. Note：Attention ! Check Device Power in spec**
**2. If want to use +5V/+12V need check system power design spec**




## 2-14 JVL1：LCD panel power select

| JVL1 | Descripion |
|---|---|
| 1-2 | +5V |
| *2-3 | +3.3V |

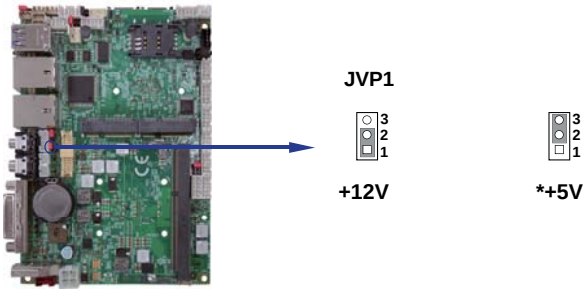
**Note：Attention ! Check Device Power in spec**



## 2-15 JVP1：LVDS panel Inverter power select

| JVP1 | Descripion |
|---|---|
| 1-2 | +12V |
| *2-3 | +5V |

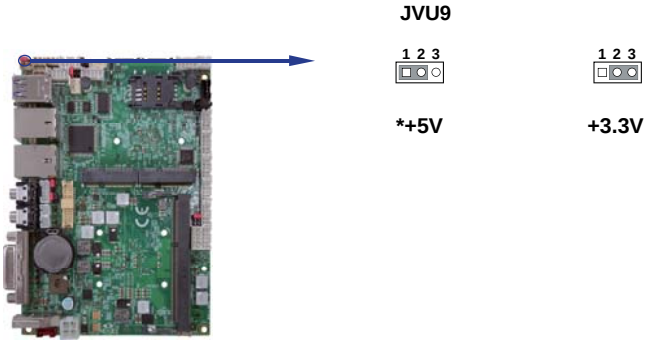
**Note：Attention ! Check Device Power in spec**




## 2-16 JVU9：USB Port 9 Voltage select

| JVU9 | Descripion |
|---|---|
| *1-2 | +5V |
| 2-3 | +3.3V |

**Note：Attention ! Check Device Power in spec**



# Chapter-3

## Connection

This chapter provides all necessary information of the peripheral's connections, switches and indicators. Always power off the board before you install the peripherals.

## 3-1 List of Connectors

CPI11：DC-in internal connector (2x2pin 4.2mm ATX connector)

CPI12：DC-in 1x4 pin (2.0mm) Red wafer connector

CPI13：DC-in 1x5 pin (2.0mm) wafer connector ( Option )

BAT1：Li 3V battery holder

CPO1：DC +5/+12V output 1x4 pin(2.0mm) Black wafer connector

CFP1：Front panel port 2x5 pin (2.00mm) wafer

SWP1：Power On/Off switch wafer

FAN1：CPU fan 1x3 pin (2.54mm) wafer

CG1：VGA port 2x5 pin (2.0mm) wafer

DVI1：DVI-D connector

HDMI1：HDMI type A connector

LVDS1：LVDS 2x15 pin (1.25mm) connector

CPP1：Panel inverter power connector 1x5 pin (2.0mm) wafer

CT1：Touch screen device 2x5 pin (2.0mm) Wafer

CA11：Line out phone jack

CA12：Mic-in phone jack

CAL1：Amplifier Line-out Left channel 2pin (2.0mm) wafer

CAR1：Amplifier Line-out Right channel 2pin (2.0mm) wafer

CC1/CC2/CC3/CC4/CC5/CC6：COM 2x5pin (2.0mm) wafer

CIO1：DI port 0 ~ 3, DO port 0 ~ 3 2x5 pin (2.0mm) wafer

CIO2：DI port 4 ~ 7, DO port 4 ~ 7 2x5 pin (2.0mm) wafer

CO1：$I^2C$ 4pin (1.25mm) wafer

CKM1：KB/MS port 1x6 pin (1.25mm) wafer connector

CL1/CL2：LAN RJ45 connector

CU5/CU6：USB port 4/5 Type A connector

## List of Connectors

CU1/CU2/CU7/CU8/CU9：USB port 0/1/12/11/13 4pin(1.25mm) wafer

CU12：Dual USB USB3.0/2.0 connector

SATA1：SATA port 0 (Gen III) connectors 7pin

SATA2：SATA port 2 (Gen II) connectors 7pin

MPCE1/MPCE2：Mini card port 1/2 sockets 52pin

SIM1：SIM port 1 card socket

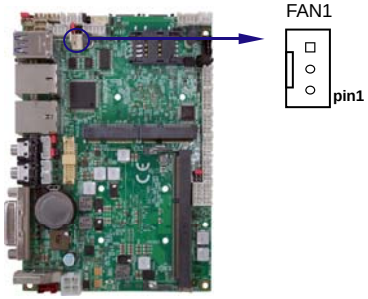
SODIM1：SO-DIM DDR3 1.5V DRAM Socket

## 3-2 FAN Connector

- **FAN1：CPU FAN connector (3pin 2.5mm wafer)**

| PIN NO. | Description |
|---|---|
| 1 | GND |
| 2 | +12V |
| 3 | FAN speed detect |

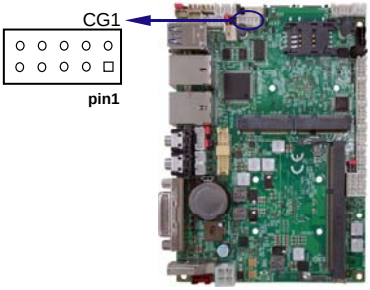
Note：DC in +12V by switch to FAN power +12V,
so DC in need stable +12V input




## 3-3 VGA port Connector

- **CG1：VGA wafer (2x5pin 2.0mm wafer )**

| PIN NO. | Description | PIN NO. | Description |
|---|---|---|---|
| 1 | BULE | 2 | GND |
| 3 | GND | 4 | DDC CLOCK |
| 5 | GREEN | 6 | V-SYNC |
| 7 | GND | 8 | H-SYNC |
| 9 | RED | 10 | DDC DATA |



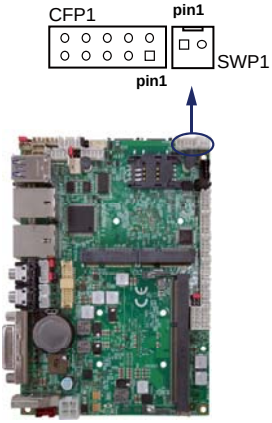

## 3-4 Front Panel connector

- **CFP1 Front panel connector (2x5pin 2.00mm wafer)**

| PIN NO. | Description | PIN NO. | Description |
|---|---|---|---|
| 1 | Power button pin | 2 | Power button GND |
| 3 | Reset pin | 4 | Reset GND |
| 5 | Power LED - | 6 | Power LED + |
| 7 | HDD LED- | 8 | HDD LED+ |
| 9 | LAN LED- | 10 | LAN LED+ |

- **SWP1 PB connector (2pin 2.0mm wafer)**

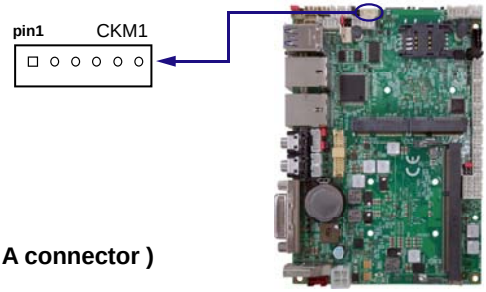
| PIN NO. | Description |
|---|---|
| 1 | Power button pin |
| 2 | Power button GND |



## 3-5 PS2 KB/MS

- **CKM1：KB/MS port 1x6pin (1.25mm) Wafer**

| PIN NO. | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| Description | +5V | KB/DAT | KB/CLK | GND | MS/DAT | MS/CLK |

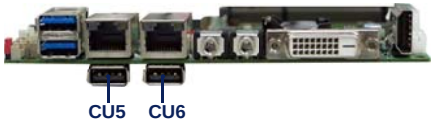



## 3-6 USB Interface

- **CU5/CU6：USB4/5 ports ( USB Type A connector )**

| PIN NO. | Description |
|---|---|
| 1 | +5V |
| 2 | USB DATA - |
| 3 | USB DATA + |
| 4 | GND |

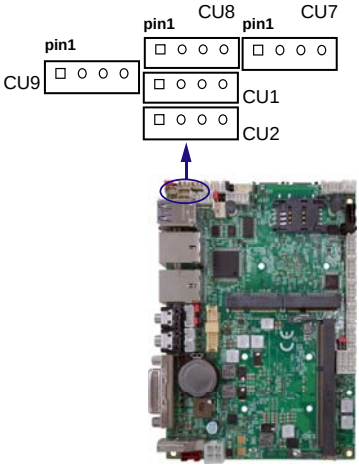
Note：1. Attention ! Check Device Power in spec




- **CU1/CU2/CU7/CU8：**
  **USB 0/1/12/11 ports (4pin 1.25mm Wafer)**

| PIN NO. | Description |
|---|---|
| 1 | +5V |
| 2 | USB DATA - |
| 3 | USB DATA + |
| 4 | GND |

Note：1. Attention ! Check Device Power in spec




- **CU9：USB13 port (4pin 1.25mm Wafer)**

| PIN NO. | Description |
|---|---|
| 1 | +5V or +3.3V |
| 2 | USB DATA - |
| 3 | USB DATA + |
| 4 | GND |

Note：1. PIN 1 Voltage select from JVU9
2. Attention ! Check Device Power in spec

- **CU12：Dual USB3.0/2.0 port (Type A jack)**

| PIN NO. | Description | PIN NO. | Description |
|---|---|---|---|
| | | 1 | USB3.0 TX+ |
| 1 | +5V | | |
| 2 | USB 2.0 D- | 2 | USB3.0 TX- |
| | | 3 | GND |
| 3 | USB 2.0 D+ | 4 | USB3.0 RX+ |
| 4 | GND | | |
| | | 5 | USB3.0 RX- |


Note：1. USB 3.0 and USB 2.0 combo Type A Jack
2. USB3.0/2.0 Keyboard and Mouse use CU12 can pitch Some OS install
And wake up Keyboard and Mouse can't work issue

# 3-7 LAN Interface

- **CL1 / CL2：LAN Giga/100Mb (RJ45 Jack)**

| PIN NO | Description | PIN NO. | Description |
|---|---|---|---|
| 1 | TR0-/TX+ | 5 | TR2-/NC |
| 2 | TR0+/TX- | 6 | TR2+/RX- |
| 3 | TR1-/RX+ | 7 | TR3-/NC |
| 4 | TR1+/NC | 8 | TR3+/NC |

- **RJ45 LAN Connector--- LED define Giga/100MB Connector**

| Back side con | RED LED | GREEN LED | YELLOW LED |
|---|---|---|---|
| Indicate | GIGA LAN Link(light) | 100Mb LAN Link(light) | Active LED Link(Blink) |

**LAN LED**

Intel 82574L / 82579LM

| Speed | 10 Mbps | | | 100 Mbps | | | 1000 Mbps | | |
|---|---|---|---|---|---|---|---|---|---|
| Indicate | Back Side | | Fornt Side | Back Side | | Fornt Side | Back Side | | Fornt Side |
| | Link Led | ACT Led | ACT Led | Link Led | ACT Led | ACT Led | Link Led | ACT Led | ACT Led |
| LAN light | | Orange | Orange | Green | Orange | Orange | Red | Orange | Orange |

# 3-8 I/O Interface

- **COM ports ( COM1~COM6 from support I/O )**

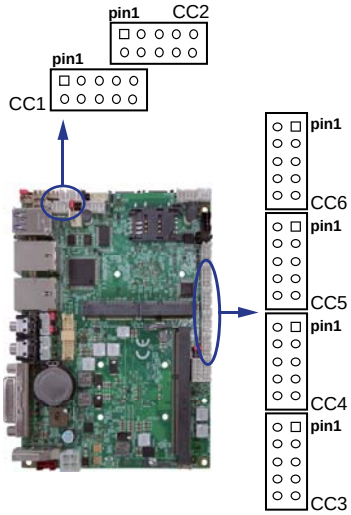
  COM1/3/4/5/6 default support RS232 mode
  COM2 default support RS422/RS485 mode

- **RS232 mode ports (2x5pin 2.0mm Wafer)**

  CC1：COM1　CC2：COM2
  CC3：COM3　CC4：COM4
  CC5：COM5　CC6：COM6

| PIN NO. | Description | PIN NO. | Description |
|---|---|---|---|
| 1 | DCD | 2 | RXD |
| 3 | TXD | 4 | DTR |
| 5 | GND | 6 | DSR |
| 7 | RTS | 8 | CTS |
| 9 | RI/VOLTAGE | 10 | +5V |

Note：1. CC2 connector RS232 function for OEM BOM request
2. The Pin 9 Voltage set by JVC1/3 for CC1/CC3




- **RS485 mode ports (2x5pin 2.0mm Wafer)**

  CC1：COM1　CC2：COM2
  CC3：COM3　CC4：COM4
  CC5：COM5　CC6：COM6

| PIN NO. | Description | PIN NO. | Description |
|---|---|---|---|
| 1 | RS485 TX- | 2 | RS485 TX+ |
| 3 | NC | 4 | NC |
| 5 | GND | 6 | NC |
| 7 | NC | 8 | NC |
| 9 | NC | 10 | +5V |

Note：1. CC1、CC3、CC4、CC5、CC6 connector RS485 function for OEM BOM request
2. BIOS need setting to RS485 mode

- **RS422 mode ports (2x5pin 2.0mm Wafer)**

  CC1：COM1　CC2：COM2

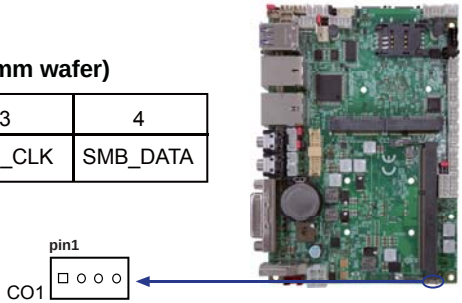
| PIN NO. | Description | PIN NO. | Description |
|---|---|---|---|
| 1 | RS422 TX- | 2 | RS422 TX+ |
| 3 | RS422 RX+ | 4 | RS422 RX- |
| 5 | GND | 6 | NC |
| 7 | NC | 8 | NC |
| 9 | NC | 10 | +5V |

Note：1. CC1 connector RS422 function for OEM BOM request
2. BIOS need setting to RS485 mode

## 3-9 $I^2C$ Bus Interface

- **CO1：$I^2C$(SM) bus connector (4 pin 1.25mm wafer)**

| PIN NO. | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Description | +3.3V | GND | SMB_CLK | SMB_DATA |




## 3-10 Audio interface

The 3I847A / 3I847C has an on-board AC'97 3D sound interface. There are the connectors of LINE OUT, MIC-IN connectors. The MIC-IN Jack header are for audio sound input. The LINE-OUT connector is a 4-pin Jack for audio sound output.

- **CA1: Line out (3.5mm phone jack)**

| PIN NO. | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Description | GND | Line OUT-L | NC | NC | Line OUT-R |

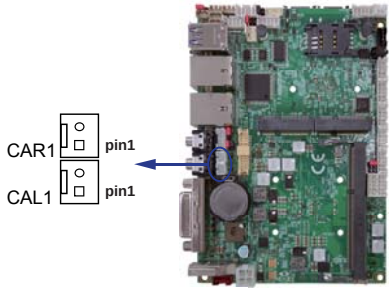
- **CA2: Mic in (3.5mm phone jack)**

| PIN NO. | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Description | GND | MIC-IN | GND | NC | MIC-IN |

- **Audio Amplifier class D Two channel**
  2.57W/Ch (Typ.) into a 4ΩLoad
  1.46 W/Ch (Typ.) into a 8ΩLoad

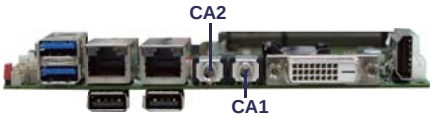
- **CAR1：Audio Amplifier Line Out Right (2pin 2.0mm wafer)**

| PIN NO. | Description |
|---|---|
| 1 | LINE-OUT_R+ |
| 2 | LINE-OUT_R- |




- **CAL1：Audio Amplifier Line Out Left (2pin 2.0mm wafer)**

| PIN NO. | Description |
|---|---|
| 1 | LINE-OUT_L+ |
| 2 | LINE-OUT_L- |



# 3-11 Digital Input / Output / Watch Dog Time

- **CIO1 DIO 0 ~ 3 (2x5pin 2.0mm wafer)**

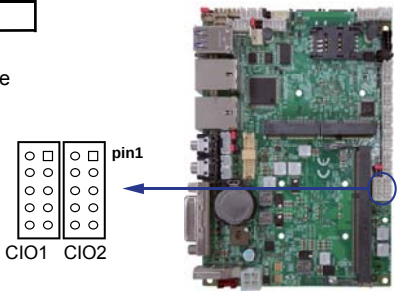
| PIN NO. | Description | PIN NO. | Description |
|---|---|---|---|
| 1 | DI-0 | 2 | DO-3 |
| 3 | DI-1 | 4 | DO-2 |
| 5 | DI-2 | 6 | DO-1 |
| 7 | DI-3 | 8 | DO-0 |
| 9 | GND | 10 | +5V |

Note：1. DI pin default pull up 10KΩ to +5V
2. If use need isolate circuit to control external device
3. F75111N-1 $I^2C$ bus address 0x9c

- **CIO2 DIO 4 ~ 7 (2x5pin 2.0mm wafer)**

| PIN NO. | Description | PIN NO. | Description |
|---|---|---|---|
| 1 | DI-4 | 2 | DO-7 |
| 3 | DI-5 | 4 | DO-6 |
| 5 | DI-6 | 6 | DO-5 |
| 7 | DI-7 | 8 | DO-4 |
| 9 | GND | 10 | +5V |

Note：1. DI pin default pull up 10KΩ to +5V
2. If use need isolate circuit to control external device
3. F75111N-1 $I^2C$ bus address 0x9c




**For F75111N $I^2C$ watch dog timer device**：
DC spec：
Input low Voltage (VIL)：+0.8 Max
Input High Voltage (VIH)：+2V Min
Output low Current (IOL)：10mA (Min) VOL=0.4V
Output High Current (IOH)：-10mA (Min) VOH=2.4V
Watch Dog Time value 0~255 sec
The system will be issued reset. When WDT is enable the hardware start down counter to zero.
The reset timer have 10~20% tolerance upon the Temperature.
Note：If want to SDK support. Please contact to sales window.

# 3-11-1 IO Device:F75111 under DOS

## The Sample code source you can download from

**Source file: F75111_Dos_Src.rar** http://tprd.info/lexwiki/index.php/IO_Device:F75111_under_DOS

**Binary file: F75111_Dos_Bin.rar**

**USERNAME & PASSWORD: sf**

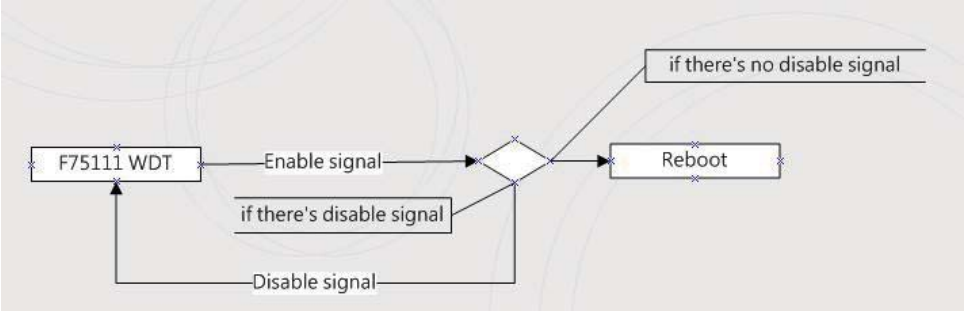
## How to use this Demo Application

1.Boot Ms-Dos Operating System

2.execute "75WDT.EXE" binary file

3.Input 1 to Enable WDT timer or input 0 to Disable it.

4.input numbers of second for chip countdown and Reset Computer




## Introduction

### Enable Watch Dog Timer

```
WriteI2CByte(I2CADDR, CONFIG, 0x03);//Set Watch Dog Timer function
WriteI2CByte(I2CADDR, WDT_TIMER, timer);//Set Watch Dog Timer range from 0-255.
WriteI2CByte(I2CADDR, WDT_TIMER_CTL, 0x73);//Enable Watch Dog Timer in second and pulse mode
```

### Disable Watch Dog Timer

```
WriteI2CByte(I2CADDR, WDT_TIMER_CTL, 0x00);
```

### Time Pause for mini seconds

```
void pause(int time)
  {
    asm mov ah,0h;          //Ah = 00 Read System Time Counter
    asm int 1ah;   //read time from Time Counter and store it in DX register
    asm add dx,time;
    asm mov bx,dx;
    label:
    asm int 1ah;
    asm cmp bx,dx;
    asm jne label;
  }
```

## 3-11-2 IO Device: F75111 under Windows

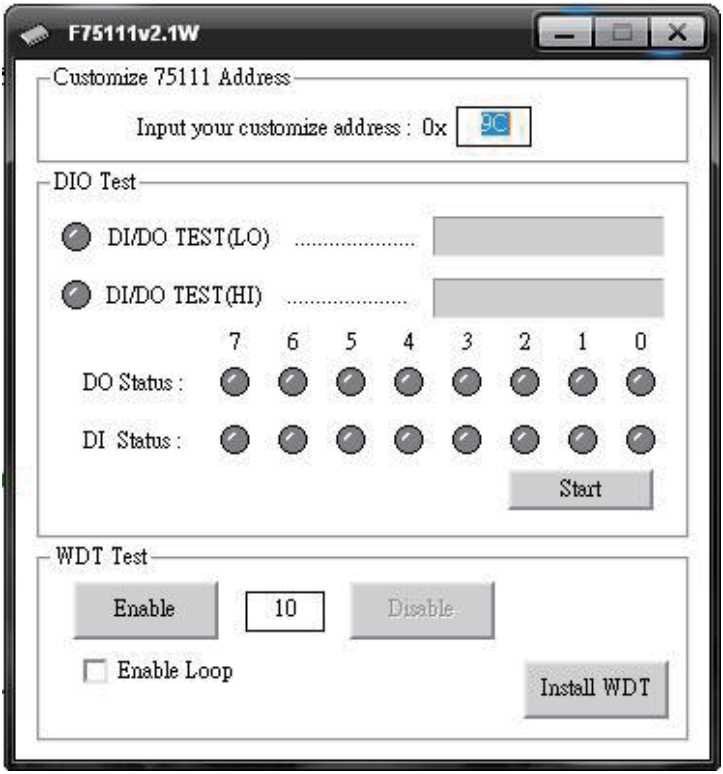
### The Sample code source you can download from

**Source file: F75111_DIOSrc.rar** http://tprd.info/lexwiki/index.php/IO_Device:F75111

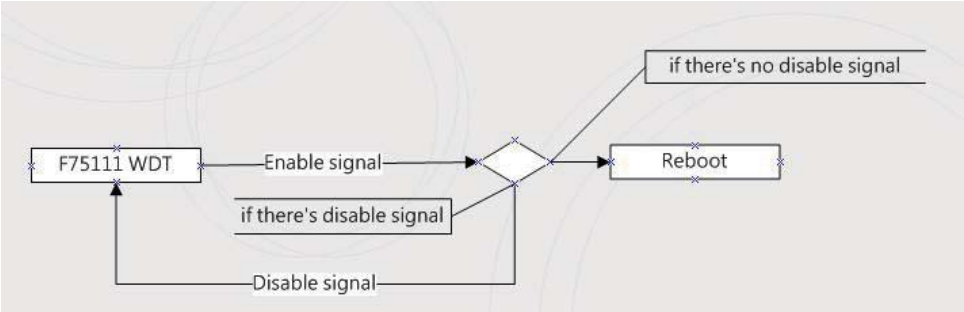
**Binary file: F75111_DemoBin.rar**

**USERNAME & PASSWORD: sf**

### How to use this Demo Application




1. **Press the "Start" button to test DIO function**
2. **Press the "Enable" button to test WDT function**
3. **Press the "Disable" button to disable WDT**
4. **Check the "Enable Loop" box and press "Enable" to do WDT loop test**
5. **Press "Install WDT" to set the system to autorun this application when booting, press again to remove this application when booting.**
6. **If WDT enable, system icon will be . if disable, system icon will be**




p.s.
f75111 send "F75111_SetWDTEnable(BYTE byteTimer)" including a parameter "timer",
if there's no disable signal (F75111_SetWDTDisable()) to stop it before timer countdown to 0, System will reboot.
if there's disable signal received, resent Enable WDT signal, for a loop to prevent from reboot

## Introduction

### Initial Internal F75111 port address (0x9c)

```
define GPIO1X, GPIO2X, GPIO3X to input or output
and Enable WDT function pin
```

### Set F75111 DI/DO ( sample code as below Get Input value/Set output value )

```
DO: InterDigitalOutput(BYTE byteValue))
DI: InterDigitalInput()
```

### Enable/Disable WDT

```
Enable : F75111_SetWDTEnable (BYTE byteTimer)
Disable: F75111_SetWDTDisable ()
```

## PULSE mode

### Sample to setting GP33, 32, 31, 30 output 1mS low pulse signal.

```
{
  this->Write_Byte(F75111_INTERNAL_ADDR, GPIO3X_PULSE_CONTROL,          0x00);   //This is setting low pulse output
  this->Write_Byte(F75111_INTERNAL_ADDR, GPIO3X_PULSE_WIDTH_CONTROL,    0x01);   //This selects the pulse width to 1mS
  this->Write_Byte(F75111_INTERNAL_ADDR, GPIO3X_CONTROL_MODE,           0x0F);   //This is setting the GP33, 32, 31, 30 to output function.
  this->Write_Byte(F75111_INTERNAL_ADDR, GPIO3X_Output_Data ,           0x0F);   //This is setting the GP33, 32, 31, 30 output data.
}
```

### Initial internal F75111

```
void F75111::InitInternalF75111()
{
   this->Write_Byte(F75111_INTERNAL_ADDR,GPIO1X_CONTROL_MODE  ,0x00);     //set GPIO1X to Input  function
   this->Write_Byte(F75111_INTERNAL_ADDR,GPIO3X_CONTROL_MODE  ,0x00);     //set GPIO3X to Input  function
   this->Write_Byte(F75111_INTERNAL_ADDR,GPIO2X_CONTROL_MODE  ,0xFF);     //set GPIO2X to Output function

   this->Write_Byte(F75111_INTERNAL_ADDR,F75111_CONFIGURATION, 0x03);     //Enable WDT OUT function
}
```

## Set output value

```
void F75111::InterDigitalOutput(BYTE byteValue)
{
    BYTE byteData = 0;
    byteData = (byteData & 0x01 )? byteValue + 0x01 : byteValue;
    byteData = (byteData & 0x02 )? byteValue + 0x02 : byteValue;
    byteData = (byteData & 0x04 )? byteValue + 0x04 : byteValue;
    byteData = (byteData & 0x80 )? byteValue + 0x08 : byteValue;
    byteData = (byteData & 0x40 )? byteValue + 0x10 : byteValue;
    byteData = (byteData & 0x20 )? byteValue + 0x20 : byteValue;
    byteData = (byteData & 0x10 )? byteValue + 0x40 : byteValue;
    byteData = (byteData & 0x08 )? byteValue + 0x80 : byteValue;                    // get value bit by bit

    this->Write_Byte(F75111_INTERNAL_ADDR,GPIO2X_OUTPUT_DATA,byteData);    // write byteData value via GPIO2X output pin
}
```

## Get Input value

```
BYTE F75111::InterDigitalInput()
{
    BYTE byteGPIO1X = 0;
    BYTE byteGPIO3X = 0;
    BYTE byteData       = 0;

    this->Read_Byte(F75111_INTERNAL_ADDR,GPIO1X_INPUT_DATA,&byteGPIO1X) ;   // Get value from GPIO1X
    this->Read_Byte(F75111_INTERNAL_ADDR,GPIO3X_INPUT_DATA,&byteGPIO3X) ;   // Get value from GPIO3X

    byteGPIO1X = byteGPIO1X  & 0xF0;                                        // Mask unuseful value
    byteGPIO3X = byteGPIO3X  & 0x0F;                                        // Mask unuseful value

    byteData = ( byteGPIO1X & 0x10 )? byteData + 0x01 : byteData;
    byteData = ( byteGPIO1X & 0x80 )? byteData + 0x02 : byteData;
    byteData = ( byteGPIO1X & 0x40 )? byteData + 0x04 : byteData;
    byteData = ( byteGPIO3X & 0x01 )? byteData + 0x08 : byteData;

    byteData = ( byteGPIO3X & 0x02 )? byteData + 0x10 : byteData;
    byteData = ( byteGPIO3X & 0x04 )? byteData + 0x20 : byteData;
    byteData = ( byteGPIO3X & 0x08 )? byteData + 0x40 : byteData;
    byteData = ( byteGPIO1X & 0x20 )? byteData + 0x80 : byteData;           // Get correct DI value from GPIO1X & GPIO3X

    return byteData;
}
```

## Enable WatchDog

```
void F75111_SetWDTEnable (BYTE byteTimer)
{
   WriteByte(F75111_INTERNAL_ADDR,WDT_TIMER_RANGE  ,byteTimer);                    // set WatchDog range and timer
   WriteByte(F75111_INTERNAL_ADDR,WDT_CONFIGURATION,WDT_TIMEOUT_FLAG | WDT_ENABLE | WDT_PULSE | WDT_PSWIDTH_100MS);
                                                                                   // Enable WatchDog, Setting WatchDog configure
}
```

**Disable WatchDog**

```
void F75111_SetWDTDisable ()
{
    WriteByte(F75111_INTERNAL_ADDR,WDT_CONFIGURATION,0x00);                    // Disable WatchDog
}
```

# 3-11-3 IO Device: F75111 VB6 under Windows

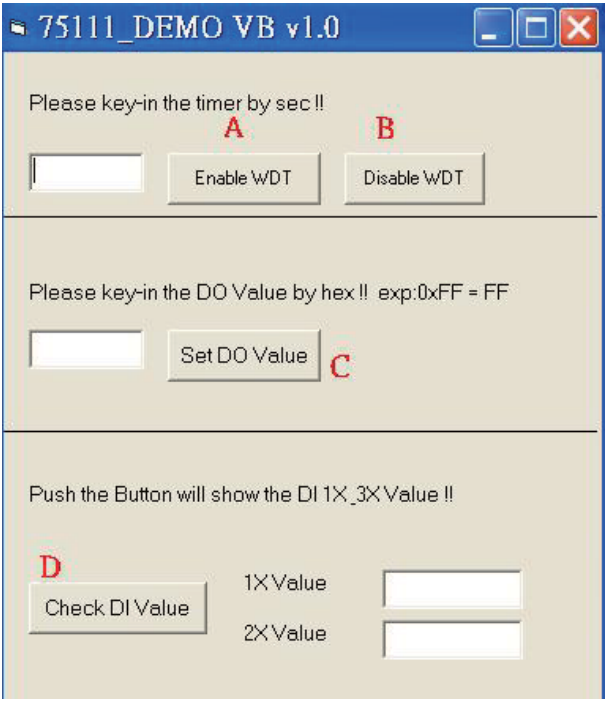
## The Sample code source you can download from

**Source file: 75111_VB_v10.rar** http://tprd.info/lexwiki/index.php/IO_Device:F75111_VB6

**Binary file: 75111_VB_Src.rar**

**USERNAME & PASSWORD: sf**

## How to use this Demo Application




**A Function - Enable WDT timer ,Key-in the value by seconds then system will reboot after value which you key-in in left text box !!**

**B Function - Disable WDT timer ,Push down the button then WDT timer value will be clear !!**

**C Function - Set DO Value ,Key-in the DO value by hex then push the button !!**

**D Function - Check DI Value ,The right side two text box will display DI 1X & 2X Value when you push down the button!!**

## SDK Function Introduction

### Function EnableWDT

```
Function EnableWDT(timer As Integer)

Call WriteI2CByte(&H3, &H3)
Call WriteI2CByte(&H37, timer)
Call WriteI2CByte(&H36, &H73)

   End Function
```

### Function DisableWDT

```
Function DisableWDT()

Call WriteI2CByte(&H36, &H0)

   End Function
```

### Function SetDOValue

```
Function SetDOValue(dovalue As Integer)

Call WriteI2CByte(&H23, &H0)
Call WriteI2CByte(&H20, &HFF)
Call WriteI2CByte(&H2B, &HFF)
Call WriteI2CByte(&H21, dovalue)

End Function
```

### Function CheckDIValue

```
Function CheckDIValue()
Dim GPIO1X     As Integer
Dim GPIO3X     As Integer
Dim DI1Xhex     As String
Dim DI3Xhex     As String

Call ReadI2CByte(&H12, GPIO1X)
Call ReadI2CByte(&H42, GPIO3X)

DI1Xhex = Hex(GPIO1X)
DI3Xhex = Hex(GPIO3X)

Text3.Text = "0x" + DI1Xhex
Text4.Text = "0x" + DI3Xhex

End Function
```

# 3-11-4 IO Device: F75111 under linux

## The Sample code source you can download from

**Source file: F75111v2.0L.tar.gz** http://tprd.info/lexwiki/index.php/IO_Device:F75111_under_linux

**Binary file: F75111v2.0LBin.tar.gz**

**USERNAME & PASSWORD: sf**

## How to compile source code

**1. Compile source code with Code::Blocks**

**download and install the Code::Block with command "apt-get install codeblocks"**

**Open an exist project(F75111.cbp) in Code::Blocks, click the compile button**

**( add an option 'pkg-config --libs gtk+-2.0 gthread-2.0' in "Project->Build Option->**

**Linker Setting->Other linker option")**

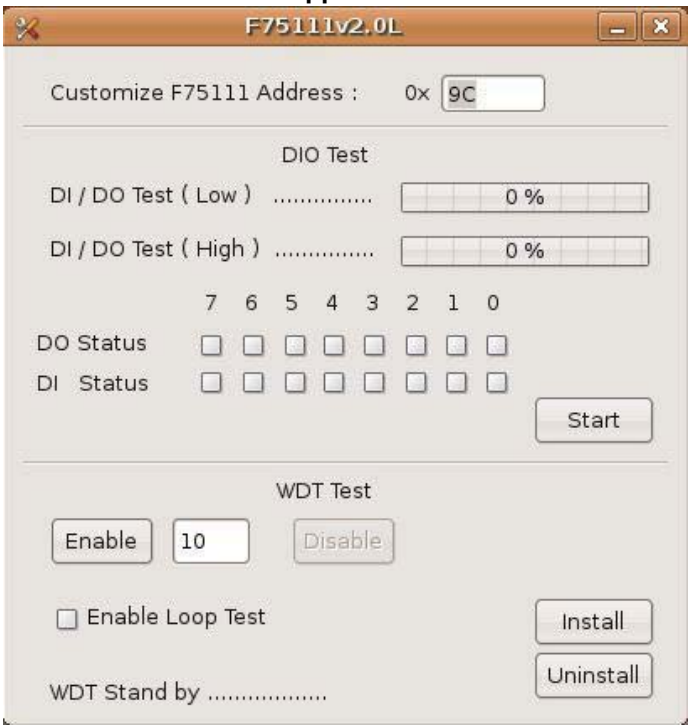
**2. Compile source code with "make"**

**1.cd F75111**

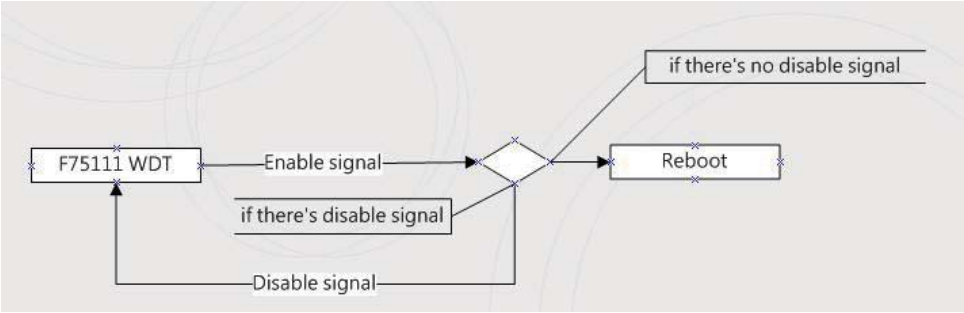
**1.make**

**1.src/f75111 // execute the binary file**

## How to use this Demo Application



1. **Press the "Start" button to test DIO function**
2. **Press the "Enable" button to test WDT function**
3. **Press the "Disable" button to disable WDT**
4. **Check the "Enable Loop" box and press "Enable" to do WDT loop test**
5. **Press "Install" to set the system to autorun this application when booting, press "Uninstall" to remove this application when booting.**
6. **If WDT enable, system icon will be blinking.**




p.s.
f75111 send "F75111_SetWDTEnable(BYTE byteTimer)" including a parameter "timer",
if there's no disable signal (F75111_SetWDTDisable()) to stop it before timer countdown to 0, System will reboot.
if there's disable signal received, resent Enable WDT signal, for a loop to prevent from reboot

## Introduction

### IO function In file SMBus.c

```
void SMBusIoWrite(BYTE byteOffset,BYTE byteData)
{
    outb( byteData , m_SMBusMapIoAddr + byteOffset);
}

BYTE SMBusIoRead(BYTE byteOffset)
{
    DWORD dwAddrVal;

    dwAddrVal = inb(m_SMBusMapIoAddr + byteOffset);
    return (BYTE)(dwAddrVal & 0x0FF);
}
```

### Initial internal F75111

```
void F75111::InitInternalF75111()
{
    this->Write_Byte(F75111_INTERNAL_ADDR,GPIO1X_CONTROL_MODE  ,0x00);      //set GPIO1X to Input  function
    this->Write_Byte(F75111_INTERNAL_ADDR,GPIO3X_CONTROL_MODE  ,0x00);      //set GPIO3X to Input  function
    this->Write_Byte(F75111_INTERNAL_ADDR,GPIO2X_CONTROL_MODE  ,0xFF);      //set GPIO2X to Output function

    this->Write_Byte(F75111_INTERNAL_ADDR,F75111_CONFIGURATION, 0x03);          //Enable WDT OUT function
}
```

## Set output value

```
void F75111::InterDigitalOutput(BYTE byteValue)
{
    BYTE byteData = 0;
    byteData = (byteData & 0x01 )? byteValue + 0x01 : byteValue;
    byteData = (byteData & 0x02 )? byteValue + 0x02 : byteValue;
    byteData = (byteData & 0x04 )? byteValue + 0x04 : byteValue;
    byteData = (byteData & 0x80 )? byteValue + 0x08 : byteValue;
    byteData = (byteData & 0x40 )? byteValue + 0x10 : byteValue;
    byteData = (byteData & 0x20 )? byteValue + 0x20 : byteValue;
    byteData = (byteData & 0x10 )? byteValue + 0x40 : byteValue;
    byteData = (byteData & 0x08 )? byteValue + 0x80 : byteValue;                    // get value bit by bit

    this->Write_Byte(F75111_INTERNAL_ADDR,GPIO2X_OUTPUT_DATA,byteData);    // write byteData value via GPIO2X output pin
}
```

## Get Input value

```
BYTE F75111::InterDigitalInput()
{
   BYTE byteGPIO1X = 0;
   BYTE byteGPIO3X = 0;
   BYTE byteData   = 0;

   this->Read_Byte(F75111_INTERNAL_ADDR,GPIO1X_INPUT_DATA,&byteGPIO1X) ;   // Get value from GPIO1X
   this->Read_Byte(F75111_INTERNAL_ADDR,GPIO3X_INPUT_DATA,&byteGPIO3X) ;   // Get value from GPIO3X

   byteGPIO1X = byteGPIO1X  & 0xF0;                                         // Mask unuseful value
   byteGPIO3X = byteGPIO3X  & 0x0F;                                         // Mask unuseful value

   byteData = ( byteGPIO1X & 0x10 )? byteData + 0x01 : byteData;
   byteData = ( byteGPIO1X & 0x80 )? byteData + 0x02 : byteData;
   byteData = ( byteGPIO1X & 0x40 )? byteData + 0x04 : byteData;
   byteData = ( byteGPIO3X & 0x01 )? byteData + 0x08 : byteData;

   byteData = ( byteGPIO3X & 0x02 )? byteData + 0x10 : byteData;
   byteData = ( byteGPIO3X & 0x04 )? byteData + 0x20 : byteData;
   byteData = ( byteGPIO3X & 0x08 )? byteData + 0x40 : byteData;
   byteData = ( byteGPIO1X & 0x20 )? byteData + 0x80 : byteData;            // Get correct DI value from GPIO1X & GPIO3X

   return byteData;
}
```

## Enable WatchDog

```
void F75111_SetWDTEnable (BYTE byteTimer)
{
    WriteByte(F75111_INTERNAL_ADDR,WDT_TIMER_RANGE  ,byteTimer);                    // set WatchDog range and timer
    WriteByte(F75111_INTERNAL_ADDR,WDT_CONFIGURATION,WDT_TIMEOUT_FLAG | WDT_ENABLE | WDT_PULSE | WDT_PSWIDTH_100MS);
                                                                                    // Enable WatchDog, Setting WatchDog configure
}
```

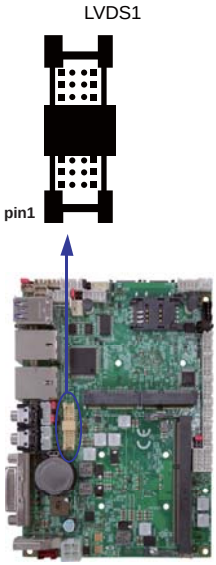
## Disable WatchDog

```
void F75111_SetWDTDisable ()
{
    WriteByte(F75111_INTERNAL_ADDR,WDT_CONFIGURATION,0x00);                         // Disable WatchDog
}
```

# 3-12 LVDS Interface Connector

- **LVDS1：LVDS interface (2x15 pin 1.25mm wafer)**

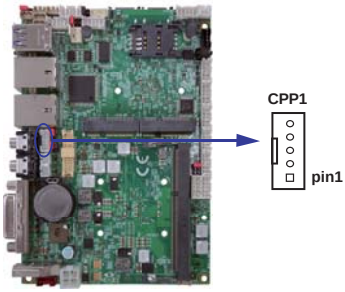
| PIN NO. | Description | PIN NO. | Description |
|---|---|---|---|
| 1 | PWM dimming | 2 | +5V |
| 3 | +LCD(5V or 3.3V) | 4 | +LCD(5V or 3.3V) |
| 5 | Channel-1-DATA3+ | 6 | Channel-0-DATA3+ |
| 7 | Channel-1-DATA3- | 8 | Channel-0-DATA3- |
| 9 | Channel-0-DATA2+ | 10 | Channel-0-CLK+ |
| 11 | Channel-0-DATA2- | 12 | Channel-0-CLK- |
| 13 | GND | 14 | GND |
| 15 | Channel-0-DATA1+ | 16 | Channel-0-DATA0+ |
| 17 | Channel-0-DATA1- | 18 | Channel-0-DATA0- |
| 19 | GND | 20 | GND |
| 21 | +LCD(5V or 3.3V) | 22 | +LCD(5V or 3.3V) |
| 23 | Channel-1-DATA2+ | 24 | Channel-1-CLK+ |
| 25 | Channel-1-DATA2- | 26 | Channel-1-CLK- |
| 27 | Channel-1-DATA1+ | 28 | Channel-1-DATA0+ |
| 29 | Channel-1-DATA1- | 30 | Channel-1-DATA0- |




Note：1. LVDS interface support 18/24bits two channel .
2. JVL1：LVDS panel +5V/+3.3V Voltage select
3. LVDS1 PIN 1 for panel backlight active, default Hi or Low by JSD1 jumper setting.
4. Pin 1 back light dimming control. Provided 200Hz / 275Hz / 380Hz / 20KHz / 25KHz and adjust PWM duty cycle by software program.

- **CPP1：Panel Inverter power (5pin 2.0mm wafer)**

| PIN NO. | Description |
|---|---|
| 1 | +12V or +5V |
| 2 | GND |
| 3 | PWM dimming |
| 4 | ENBKL (3.3V) |
| 5 | ENBKL ( 5V ) |




Note：1. JVP1 Inverter Voltage select
2. CPP1 PIN 3 and LVDS1 PIN1 is same signal. Default active setup by JSD1
3. Pin 3 back light dimming control. Provided 200Hz / 275Hz / 380Hz / 20KHz / 25KHz and adjust PWM duty cycle by software program.

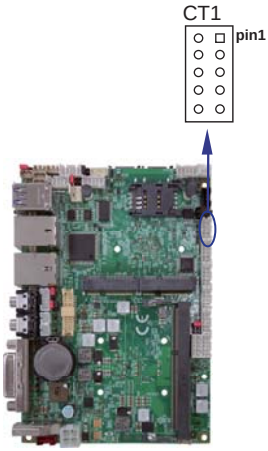
# 3-13 Touch screen device

- **CT1：Touch screen (2x5 pin 2.0mm wafer)**
  **Default use USB interface, can change COM interface By OEM BOM.**

- **For 8- wire type pin define**

| PIN NO. | Description | PIN NO. | Description |
|---|---|---|---|
| 1 | Bottom | 2 | Bottom Sense |
| 3 | Top Sense | 4 | Top |
| 5 | Right | 6 | Right Sense |
| 7 | Left | 8 | Left Sense |
| 9 | GND | 10 | KEY |

Note：1. For eight wire type cable Pin 3 and Pin4 need short.
2. Touch controller use USB port 8




- **For 4- wire type pin define**

| PIN NO. | Description | PIN NO. | Description |
|---|---|---|---|
| 1 | Bottom | 2 | N/A |
| 3 | N/A | 4 | Top |
| 5 | Right | 6 | N/A |
| 7 | Left | 8 | N/A |
| 9 | GND | 10 | KEY |

Note：1. For four wire type cable Pin 3 and Pin4 need short.
2. Touch controller use USB port 8

- **For 5- wire type pin define**

| PIN NO. | Description | PIN NO. | Description |
|---|---|---|---|
| 1 | UR(H) | 2 | N/A |
| 3 | Sense | 4 | UL(Y) |
| 5 | LR(X) | 6 | N/A |
| 7 | LL(L) | 8 | N/A |
| 9 | GND | 10 | KEY |

Note：1. Touch controller use USB port 8

## 3-14 DC power input

- **CPI1：DC-IN Internal Connector**

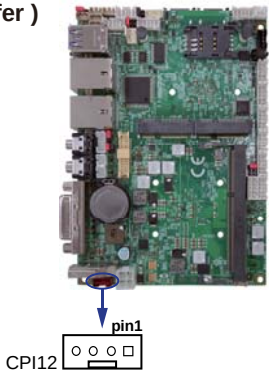
| PIN NO. | Description | PIN NO. | Description |
|---|---|---|---|
| 1 | GND | 2 | GND |
| 3 | NC / CAR_IN_ACC | 4 | DC-IN |

Note：1. DC in from adapter plug in
2. CPI11 Pin 3 for CPC function use for OEM option

- **CPI12：DC-IN Internal Connector (1 X 4 pin 2.0mm Red Wafer )**

| PIN NO. | Description |
|---|---|
| 1 | GND |
| 2 | DC-IN |
| 3 | DC-IN |
| 4 | GND |

Note：DC in from adapter plug in




- **CPI13：DC-IN Internal Connector ( Option )**
  **(1 X 5 pin 2.0mm Wafer )**

| PIN NO. | Description |
|---|---|
| 1 | GND |
| 2 | DC-IN |
| 3 | DC-IN |
| 4 | GND |
| 5 | CAR_IN_ACC |

Note：1. DC in from adapter plug in
2. share CPI12 Connector


## 3-15 DVI-D Connector

- **DVI1：DVI-D connector**

| PIN NO. | Description | PIN NO. | Description | PIN NO. | Description |
|---|---|---|---|---|---|
| 1 | Data 2- | 9 | Data 1- | 17 | Data 0- |
| 2 | Data 2+ | 10 | Data 1+ | 18 | Data 0+ |
| 3 | GND | 11 | GND | 19 | GND |
| 4 | NC | 12 | NC | 20 | NC |
| 5 | NC | 13 | NC | 21 | NC |
| 6 | $I^2C$-CLK | 14 | +5V | 22 | GND |
| 7 | $I^2C$-DATA | 15 | GND | 23 | CLK+ |
| 8 | NC | 16 | DVI-DETECT | 24 | CLK- |

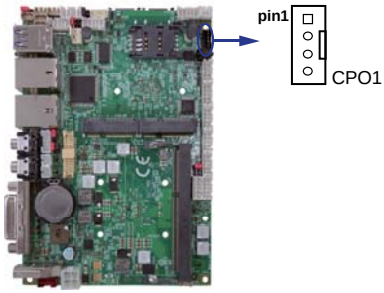
*Note：DVI support DVI-D 12Bit only

## 3-16 DC Power output

- **CPO1：+12V/+5V DC voltage output (4pin 2.00mm Black Wafer)**

| PIN NO. | Description |
|---|---|
| 1 | +5V |
| 2 | GND |
| 3 | GND |
| 4 | +12V * |

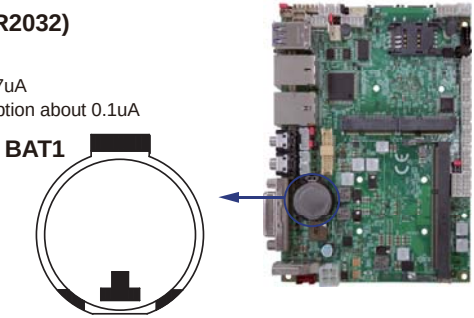
*Note：DC in +12V by switch to DC-out voltage +12V,
so DC in need stable +12V input




## 3-17 Battery Input

- **BAT1：3V Battery hold 2pin**
  **BAT1：Battery use Li 3V / 220mAh (CR2032)**

Note：1. When board without Adaptor plug in,
this board power RTC consumption about 2.7uA
2. If adaptor always plug in RTC power consumption about 0.1uA




## 3-18 HDMI Connector

- **HDMI1：HDMI Connector**

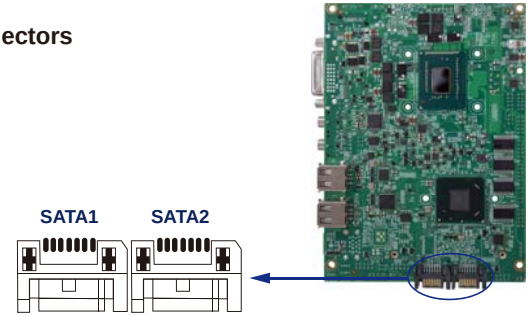
| PIN NO. | Description | PIN NO. | Description |
|---|---|---|---|
| 1 | TMDS DATA2+ | 2 | GND |
| 3 | TMDS DATA2- | 4 | TMDS DATA1+ |
| 5 | GND | 6 | TMDS DATA1- |
| 7 | TMDS DATA0+ | 8 | GND |
| 9 | TMDS DATA0- | 10 | TMDS CLK+ |
| 11 | GND | 12 | TMDS CLK- |
| 13 | NC | 14 | NC |
| 15 | DDC CLK | 16 | DDC DATA |
| 17 | GND | 18 | +5V |
| 19 | H.P. Detect | | |

*Note：HDMI support 1.3a Spec

## 3-19 SATA interface

- **SATA1/SATA2：The two SATA connectors**

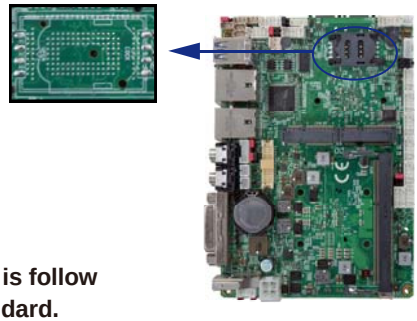
| PIN NO. | Description |
|---|---|
| 1 | GND |
| 2 | DATA TX+ |
| 3 | DATA TX- |
| 4 | GND |
| 5 | DATA RX- |
| 6 | DATA RX+ |
| 7 | GND |




Note：1. SATA1 support SATA 3.0 spec update 6Gb/sec .
2. SATA2 support SATA 2.0 spec update 3Gb/sec .
3. CPO1 provide SATA HDD power +12V,GND ,+5V

## 3-20 SSD use at SATA3 channel

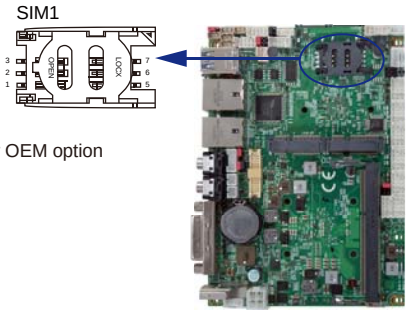
Note：1. On board SSD for OEM option



## 3-21 SIM Socket

- **SIM1：SIM card socket pin define is follow ISO 7816-2 smart card standard.**

| PIN NO. | Description | PIN NO. | Description |
|---|---|---|---|
| 1 | Vcc | 5 | GND |
| 2 | RST | 6 | Vpp |
| 3 | CLK | 7 | DATA |
| 4 | RUF | 8 | RUF |

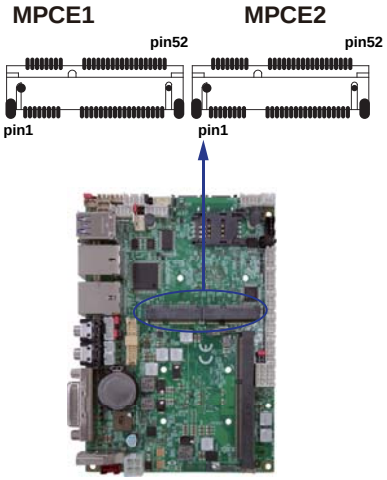



Note：1. MPCE1 Pin 8, 10,12,14,16 for SIM1 card reader use.
2. MPCE2 Pin 8, 10,12,14,16 for SIM1 card reader use for OEM option

## 3-22 Mini card & SIM card

- **MPCE1/MPCE2：Support USB and PCIe by one Interface (Mini card socket 52pin)**

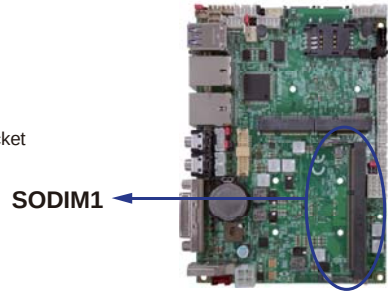
| PIN NO. | Description | PIN NO. | Description |
|---|---|---|---|
| 1 | NC | 2 | +3.3V |
| 3 | NC | 4 | GND |
| 5 | NC | 6 | +1.5V |
| 7 | NC | 8 | SIM Power |
| 9 | GND | 10 | SIM Data |
| 11 | PCIe-CLK- | 12 | SIM CLK |
| 13 | PCIe-CLK+ | 14 | SIM Reset |
| 15 | GND | 16 | SIM RFU |
| KEY | KEY | KEY | KEY |
| 17 | NC | 18 | GND |
| 19 | NC | 20 | NC |
| 21 | GND | 22 | RST- |
| 23 | PCIe-RX-/mSATA-RX+ | 24 | +3.3V |
| 25 | PCIe-RX+/mSATA-RX- | 26 | GND |
| 27 | GND | 28 | +1.5V |
| 29 | GND | 30 | SMB-CLK |
| 31 | PCIe-TX-/mSATA-TX- | 32 | SMB-DATA |
| 33 | PCIe-TX+/mSATA-TX+ | 34 | GND |
| 35 | GND | 36 | USB-DATA- |
| 37 | GND | 38 | USB-DATA+ |
| 39 | +3.3V | 40 | GND |
| 41 | +3.3V | 42 | NC |
| 43 | NC | 44 | NC |
| 45 | NC | 46 | NC |
| 47 | NC | 48 | +1.5V |
| 49 | NC | 50 | GND |
| 51 | mSATA-Detect | 52 | +3.3V |




Note: 1. MPCE 1 used USB port 9, MPCE2 used USB port 10
2. MPCE1 Pin 8, 10,12,14,16 for SIM1 card reader use.
3. MPCE2 Pin 8, 10,12,14,16 for SIM1 card reader use for OEM option.
4. Just only MPCE2 pin23, 25, 31, 33 supported mSATA device and PCIe device alternatively.
5. Pin51 mSATA / PCIe auto detect function
6. mSATA use system SATA port 1

## 3-23 SODIMM socket

Note：1.SODIM1：SO-DIM DDR3 1.5V DRAM Socket
2. Support un-buffer type module



# Chapter 4

## Introduction of BIOS

The BIOS is a program located in the Flash Memory on the motherboard.
This program is a bridge between motherboard and operating system.
When you start the computer, the BIOS program gains control.
The BIOS first operates an auto-diagnostic test called POST (Power on Self Test) for all the necessary hardware, it detects the entire hardware devices and configures the parameters of the hardware synchronization. After these tasks are completed, BIOS will give control of the computer back to operating system (OS). Since the BIOS is the only channel for hardware and software to communicate with, it is the key factor of system stability and of ensuring your system performance at best.

In the BIOS Setup main menu, you can see several options. We will explain these options in the following pages. First, let us see the function keys you may use here:

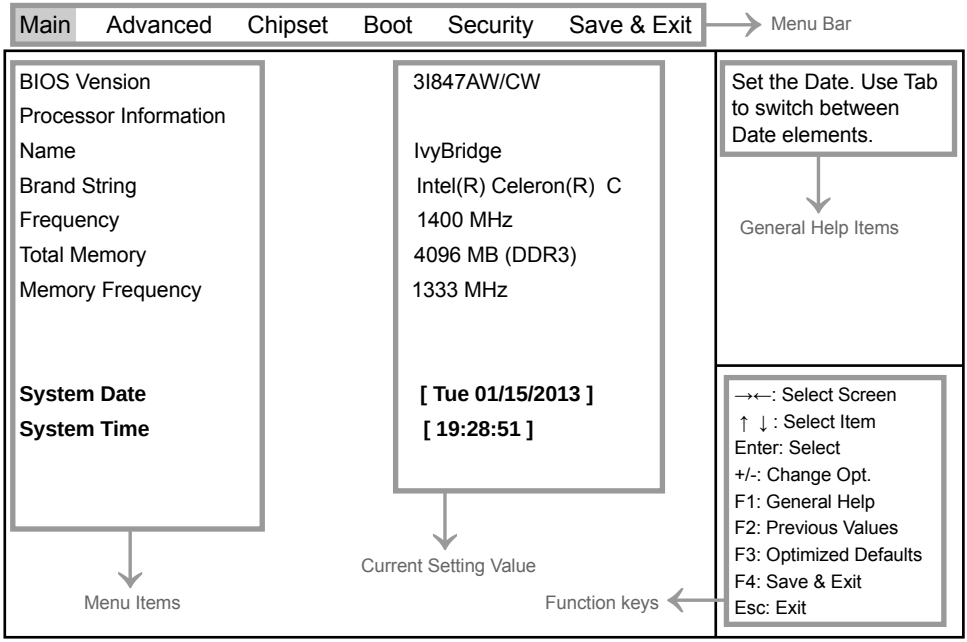
Press <Esc> to quit the BIOS Setup.
Press ↑↓←→(up, down, left, right) to choose the option you want to confirm or modify.
Press <F10> to save these parameters and to exit the BIOS Setup menu after you complete the setup of BIOS parameters.
Press Page Up/Page Down or +/- keys to modify the BIOS parameters for the active option.

## 4-1 Enter Setup

Power on the computer and press <Del> key immediately to enter Setup.
If the message disappears before your respond but you still wish to enter Setup, restart the system by turning it OFF then ON or pressing the "RESET" button on the system case. You may also restart the system by simultaneously pressing <Ctrl>, <Alt> and <Delete> keys.

## 4-2 BIOS Menu Screen

**The following diagram show a general BIOS menu screen**

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## 4-3 Function Keys

In the above BIOS Setup main menu of, you can see several options.
We will explain these options step by step in the following pages of this chapter,
but let us first see a short description of the function keys you may use here:

- Press ←→ (left, right) to select screen;
- Press ↑↓ (up, down) to choose, in the main menu, the option you want to confirm or to modify.
- Press <Enter> to select.
- Press <+>/<–> keys when you want to modify the BIOS parameters for the active option.
- [F1]: General help.
- [F2]: Previous value.
- [F3]: Optimized defaults.
- [F4]: Save & Exit.
- Press <Esc> to quit the BIOS Setup.

## 4-4 Getting Help

**Main Menu**

The on-line description of the highlighted setup function is displayed at the top right corner the screen.

**Status Page Setup Menu/ Option Page Setup Menu**

Press F1 to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window, press <Esc>.

## 4-5 Menu Bars

**There are six menu bars on top of BIOS screen:**

**Main** To change system basic configuration
**Advanced** To change system advanced configuration
**Chipset** To change chipset configuration
**Boot** To change boot settings
**Security** Password settings
**Save & Exit** Save setting, loading and exit options.

User can press the right or left arrow key on the keyboard to switch from menu bar.
The selected one is highlighted.

## 4-6 Main

Main Advanced Chipset Boot Security Save & Exit

| | | |
|---|---|---|
| BIOS Versio | 3I847AW/CW | Set the Date. Use Tab to switch between Date elements. |
| Processor Information | | |
| Name | IvyBridge | |
| Brand String | Intel(R) Celeron(R) C | |
| Frequency | 1400 MHz | |
| Total Memory | 4096 MB (DDR3) | |
| Memory Frequency | 1600 MHz | →←: Select Screen<br>↑ ↓ : Select Item<br>Enter: Select<br>+/-: Change Opt.<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Defaults<br>F4: Save & Exit<br>Esc: Exit |
| **System Date** | **[ Tue 01/15/2013 ]** | |
| **System Time** | **[ 19:28:51 ]** | |

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Main menu screen includes some basic system information. Highlight the item and then use the <+> or <-> and numerical keyboard keys to select the value you want in each item.

**System Date**
Set the Date. Please use [Tab] to switch between data elements.

**System Time**
Set the Time. Please use [Tab] to switch between data elements.

## 4-7 Advanced

Main | Advanced | Chipset | Boot | Security | Save & Exit

| | |
|---|---|
| ► PCI Subsystem Settings<br>► ACPI Settings<br>► S5 RTC Wake Settings<br>► CPU Configuration<br>► SATA Configuration<br>► USB Configuration<br>► SMART Settings<br>► F71869 Super IO Configuration<br>► F71869 H/W Monitor<br>► F81216 Second Super IO Configuration<br>► Serial Port Console Redirection<br>► Network Stack | PCI, PCI-X and PCI Express Settings.<br><br>→←: Select Screen<br>↑ ↓ : Select Item<br>Enter: Select<br>+/-: Change Opt.<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Defaults<br>F4: Save & Exit<br>Esc: Exit |

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**PCI Subsystem Settings**
Please refer section 4-7-1

**ACPI Settings**
Please refer section 4-7-2

**S5 RTC Wake Settings**
Please refer section 4-7-3

**CPU Configuration**
Please refer section 4-7-4

**SATA Configuration**
Please refer section 4-7-5

**USB Configuration**
Please refer section 4-7-6

**SMART Settings**
Please refer section 4-7-7

**F71869 Super IO Configuration**
Please refer section 4-7-8

**F71869 H/W Monitor**
Please refer section 4-7-9

**F81216 Second Super IO Configuration**
Please refer section 4-7-10

**Serial Port Console Redirection**
Please refer section 4-7-11

**Network Stack**
Please refer section 4-7-12

## 4-7-1 PCI Subsystem Settings

Main | Advanced | Chipset | Boot | Security | Save & Exit

| | |
|---|---|
| PCI Common Settings<br>PCI Latency Timer **[32 PCI Bus Clocks]** | Value to be programmed into PCI Latency Timer Register. |
| | →←: Select Screen<br>↑ ↓ : Select Item<br>Enter: Select<br>+/-: Change Opt.<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Defaults<br>F4: Save & Exit<br>Esc: Exit |

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**PCI Latency Timer**
Use this item to set value to be programmed into PCI latency timer register.
The optional settings are:
32 PCI Bus Clocks,64 PCI Bus Clocks,96 PCI Bus Clocks,128 PCI Bus Clocks,
160 PCI Bus Clocks,192 PCI Bus Clocks,224 PCI Bus Clocks,248 PCI Bus Clocks.

## 4-7-2 ACPI Settings

Main | Advanced | Chipset | Boot | Security | Save & Exit

| | | |
|---|---|---|
| ACPI Settings | | Enables or Disables BIOS ACPI Auto Configuration. |
| Enable ACPI AUTO Configuration | **[ Disabled ]** | |
| Enable Hibernation | **[ Enabled ]** | →←: Select Screen<br>↑ ↓ : Select Item<br>Enter: Select<br>+/-: Change Opt.<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Defaults<br>F4: Save & Exit<br>Esc: Exit |
| ACPI Sleep State | **[ S1 only(CPU Stop C..) ]** | |

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**Enable ACPI Auto Configuration**

This item allows you to Enabled/Disabled the Advanced Configuration and Power Management (ACPI).

**Enable Hibernation**

This item allows you to Enabled/Disabled the Hibernate feature.

**ACPI Sleep State**

Select ACPI sleep state the system will enter when the SUSPEND button is pressed. The optional settings: Suspend Disabled / S1 only(CPU Stop Clock) / S3 only (Suspend to RAM) / Both S1 and S3 available for OS choose from.

## 4-7-3 S5 RTC Wake Settings

Main | Advanced | Chipset | Boot | Security | Save & Exit

| | | |
|---|---|---|
| Wake system with Fixed Time | **[ Disabled ]** | Enable or disable System wake on alarm event. When enable, System will wake on the hr :: min :: sec specified |
| Wake system with Dynamic Time | **[ Disabled ]** | |
| | | →←: Select Screen<br>↑ ↓ : Select Item<br>Enter: Select<br>+/-: Change Opt.<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Defaults<br>F4: Save & Exit<br>Esc: Exit |

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**Wake system with Fixed Time**
Use this item to Enable or Disable system wake on alarm event. When set as Enabled, system will wake on the hour/min/sec specified.

**Wake system with Dynamic Time**
Use this item to Enable or Disable system wake on alarm event. When set as Enabled, system will wake on the current time + Increase minute(s).

## 4-7-4 CPU Configuration

Main | Advanced | Chipset | Boot | Security | Save & Exit

| | | |
|---|---|---|
| CPU Configuration | | Number of cores to enable in each processor package. |
| Intel(R) Celeron(R) CPU 1047UE @ 1.40GHz | | |
| CPU Signature | 306a9 | |
| Microcode Path | 10 | |
| Max CPU Speed | 1400 MHz | |
| Min CPU Speed | 800 MHZ | |
| CPU Speed | 1400 MHZ | |
| Processor Cores | 2 | |
| Intel HT Technology | Supported | |
| Intel VT-x Technology | Supported | |
| Intel SMX Technology | Supported | |
| 64-bit | Supported | |
| L1 Data Cache | 32 KB x 2 | →←: Select Screen |
| L1 Code Cache | 32 KB x 2 | ↑ ↓ : Select Item |
| L2 Cache | 256 KB x 2 | Enter: Select |
| L3 Cache | 2048 KB | +/-: Change Opt. |
| Active Processor Cores | **[ All ]** | F1: General Help |
| Execute Disable Bit | **[ Enabled ]** | F2: Previous Values |
| Intel Virtualization Technology | **[ Disabled ]** | F3: Optimized Defaults |
| | | F4: Save & Exit |
| | | Esc: Exit |

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**Active Processor Cores**
Use this item to select number of cores to enable in each processor package.

**Execute Disable Bit**
XD can prevent certain classes of malicious buffer overflow attacks when combined with a supporting OS (Windows Server 2003 SP1, Windows XP SP2, SuSE Linux 9.2, RedHat Enterprise 3 Update 3.)
The optional settings are: Disabled, Enabled.

**Intel Virtualization Technology**
When set as Enabled, a VHM can utilize the additional hardware capabilities provided by Vanderpool Technology.
The optional settings: Enabled, Disabled.

## 4-7-5 SATA Configuration

Main | Advanced | Chipset | Boot | Security | Save & Exit

| | | |
|---|---|---|
| SATA Controller(s) | **[ Enabled ]** | Enable or disable SATA Device. |
| SATA Mode Selection | **[ IDE ]** | |
| | | →←: Select Screen<br>↑ ↓ : Select Item<br>Enter: Select<br>+/-: Change Opt.<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Defaults<br>F4: Save & Exit<br>Esc: Exit |

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**SATA Controller(s)**
Use this item to Enable or Disable SATA Device.

**SATA Mode Selection**
Determine how SATA controller(s) operate.
The optional settings are: IDE Mode, AHCI Mode.

## 4-7-5-1 SATA Mode Selection - AHCI Mode

Main | Advanced | Chipset | Boot | Security | Save & Exit

| | | |
|---|---|---|
| SATA Controller(s) | **[ Enabled ]** | Enable or disable SATA Device. |
| SATA Mode Selection | **[ AHCI ]** | |
| SATA Controller Speed | **[ Gen3 ]** | |
| | | →←: Select Screen<br>↑ ↓ : Select Item<br>Enter: Select<br>+/-: Change Opt.<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Defaults<br>F4: Save & Exit<br>Esc: Exit |

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**SATA Controller Speed**
Indicates the maximum speed the SATA controller can support.
The optional settings: Gen1, Gen2, Gen3.

## 4-7-6 USB Configuration

Main | Advanced | Chipset | Boot | Security | Save & Exit

| | | |
|---|---|---|
| USB Configuration | | Enables Legacy USB support AUTO option disables legacy support if no USB devices are connected. Disable option will keep USB devices available only for EFI applications. |
| USB Devices:<br>1 Keyboard, 2 Mice, 2 Hubs | | |
| Legacy USB Support | **[ Enabled ]** | |
| USB3.0 Support | **[ Enabled ]** | |
| XHCI Hand-off | **[ Enabled ]** | →←: Select Screen<br>↑ ↓: Select Item<br>Enter: Select<br>+/-: Change Opt.<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Defaults<br>F4: Save & Exit<br>Esc: Exit |
| EHCI Hand-off | **[ Disabled ]** | |

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**Legacy USB Support**
Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected. Disable option will keep USB devices available only for EFI applications.

**USB3.0 Support**
Use this item to turn on/off USB3.0 Controller support.
The optional settings are: Enabled, Disabled.

**XHCI Hand-off**
This is a workaround for OSes without XHCI handoff support. The XHCI ownership change should be claimed by XHCI driver.
The optional settings are: Enabled, Disabled..

**EHCI Hand-off**
This is a workaround for OSes without EHCI handoff support. The EHCI ownership change should be claimed by EHCI driver.
The optional settings are: Enabled, Disabled.

## 4-7-7 SMART Settings

Main | Advanced | Chipset | Boot | Security | Save & Exit

| | | |
|---|---|---|
| Smart Settings | | Run SMART Self Test on all HDDs during POST. |
| Smart Self Test | **[ Disabled ]** | →←: Select Screen<br>↑ ↓ : Select Item<br>Enter: Select<br>+/-: Change Opt.<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Defaults<br>F4: Save & Exit<br>Esc: Exit |

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**SMART Self Test**
Run Smart Self Test on all HDDs during POST.
The optional settings are: Disabled, Enabled.

## 4-7-8 F71869 Super IO Configuration

Main | Advanced | Chipset | Boot | Security | Save & Exit

| | | |
|---|---|---|
| F71869 Super IO Configuration | | Set Parameters of Serial Port 0(COMA) |
| F71869 Super IO Chip | F71869 | |
| ►Serial Port 1 Configuration | | →←: Select Screen<br>↑ ↓ : Select Item<br>Enter: Select<br>+/-: Change Opt.<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Defaults<br>F4: Save & Exit<br>Esc: Exit |
| ►Serial Port 2 Configuration | | |
| Power Failure | **[ Keep last state ]** | |

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**Serial Port 1 Configuration**
Please refer section 4-7-8-1

**Serial Port 2 Configuration**
Please refer section 4-7-8-1

**Power Failure**
This item specifies whether your system will reboot after a power failure or interrupt occurs.
[Keep last state] Restores the system to the status before power failure or interrupt occurred.
[Bypass mode] Restores the system to the bypass mode.
[Always on] Leaves the computer in the power on state.
[Always off] Leaves the computer in the power off state.

## 4-7-8-1 ►Serial Port 1 Configuration & Serial Port 2 Configuration

Main | Advanced | Chipset | Boot | Security | Save & Exit

| Serial Port 1~2 Configuration | | Enable or Disable Serial Port (COM) |
|---|---|---|
| Serial Port | **[ Enabled ]** | →←: Select Screen<br>↑ ↓ : Select Item<br>Enter: Select<br>+/-: Change Opt.<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Defaults<br>F4: Save & Exit<br>Esc: Exit |
| Device Settings | IO=3F8h; IRQ=4; | |
| Change Settings | **[ AUTO ]** | |
| COM1 422/485 control flow | **[Disabled]** | |

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**Serial Port**
Use this item to enable or disable serial port (COM).
The optional settings are: Enabled, Disabled.

**Change Settings**
Use this item to select an optimal setting for super IO device.
The optional settings are:
AUTO
IO=3F8h; IRQ=4;
IO=3F8h; IRQ=3,4,5,6,7,10,11,12;
IO=2F8h; IRQ=3,4,5,6,7,10,11,12;
IO=3E8h; IRQ=3,4,5,6,7,10,11,12;
IO=2E8h; IRQ=3,4,5,6,7,10,11,12;

**COM 422/485 control flow**
Use this item to enable or disable serial port Auto flow (COM).
The optional settings are: Enabled, Disabled.

## 4-7-9 F17869 H/W Monitor

**F17869 H/W Monitor**

Press [Enter] to view PC health status.
This section shows the status of your CPU, Fan, and overall system.
This is only available when there is Hardware Monitor function onboard.

## 4-7-10 F81216 Second Super IO Configuration

Main | Advanced | Chipset | Boot | Security | Save & Exit

| | |
|---|---|
| F81216 Second Super IO Configuration | Set Parameters of Serial Port 3(COMC) |
| F81216 Second Super IO Chip F81216 SecondIO<br>►Serial Port 3 Configuration<br>►Serial Port 4 Configuration<br>►Serial Port 5 Configuration<br>►Serial Port 6 Configuration | →←: Select Screen<br>↑ ↓ : Select Item<br>Enter: Select<br>+/-: Change Opt.<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Defaults<br>F4: Save & Exit<br>Esc: Exit |

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**Serial Port 3 Configuration**
Please refer section 4-7-10-1

**Serial Port 4 Configuration**
Please refer section 4-7-10-1

**Serial Port 5 Configuration**
Please refer section 4-7-10-1

**Serial Port 6 Configuration**
Please refer section 4-7-10-1

## 4-7-10-1 Serial Port 3~6 Configuration

Main | Advanced | Chipset | Boot | Security | Save & Exit

| | | |
|---|---|---|
| Serial Port 3~6 Configuration | | Enable or Disable Serial Port (COM) |
| Serial Port | **[ Enabled ]** | →←: Select Screen<br>↑ ↓ : Select Item<br>Enter: Select<br>+/-: Change Opt.<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Defaults<br>F4: Save & Exit<br>Esc: Exit |
| Device Settings | IO=260h; IRQ=11; | |
| Change Settings | **[ AUTO ]** | |
| COM1 422/485 control flow | **[Disabled]** | |



**Serial Port**
Use this item to enable or disable serial port (COM).
The optional settings are: Enabled, Disabled.

**Change Settings**
Use this item to select an optimal setting for super IO device.
The optional settings are:
AUTO
IO=260h; IRQ=11;
IO=260h; IRQ=10,11,12;
IO=268h; IRQ=10,11,12;
IO=270h; IRQ=10,11,12;
IO=278h; IRQ=10,11,12;

**COM 422/485 control flow**
Use this item to enable or disable serial port Auto flow (COM).
The optional settings are: Enabled, Disabled.

## 4-7-11 Serial Port Console Redirection

Main Advanced Chipset Boot Security Save & Exit

| | | |
|---|---|---|
| Console Redirection | **[ Disabled ]** | Console Redirection Enable or Disable. |
| ►Console Redirection Settings | | →←: Select Screen<br>↑ ↓ : Select Item<br>Enter: Select<br>+/-: Change Opt.<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Defaults<br>F4: Save & Exit<br>Esc: Exit |

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**Console Redirection**
Use this item to enable or disable Console Redirection.
The optional settings are: Enabled, Disabled.

## 4-7-12 Network Stack

Main Advanced Chipset Boot Security Save & Exit

| | | |
|---|---|---|
| Network stack | **[ Disabled Link ]** | Enable/Disable UEFI network stack. |
| | | →←: Select Screen<br>↑ ↓ : Select Item<br>Enter: Select<br>+/-: Change Opt.<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Defaults<br>F4: Save & Exit<br>Esc: Exit |

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**Network Stack**
Enable/Disable UEFI network stack.
The optional settings are: Disable Link, Enable.

## 4-8 Chipset

Main Advanced Chipset Boot Security Save & Exit

| | |
|---|---|
| ►PCH-IO Configuration<br>►System Agent (SA) Configuration | PCH Parameters<br><br>→←: Select Screen<br>↑ ↓ : Select Item<br>Enter: Select<br>+/-: Change Opt.<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Defaults<br>F4: Save & Exit<br>Esc: Exit |

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**PCH-IO Configuration**
Please refer section 4-8-1

**System Agent (SA) Configuration**
Please refer section 4-8-2

## 4-8-1 ►PCH-IO Configuration

Main Advanced Chipset Boot Security Save & Exit

| | | |
|---|---|---|
| Intel PCH SKU Name | HM76 | PCI Express Configuration settings |
| Intel PCH Rev ID | 04/C1 | |
| ►PCI Express Configuration | | →←: Select Screen |
| ►USB Configuration | | ↑ ↓ : Select Item |
| ►PCH Azalia Configuration | | Enter: Select |
| | | +/-: Change Opt. |
| Wake on LAN | **[ Disabled ]** | F1: General Help |
| | | F2: Previous Values |
| | | F3: Optimized Defaults |
| | | F4: Save & Exit |
| | | Esc: Exit |

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**PCI Express Configuration**
Please refer section 4-8-1-1

**USB Configuration**
Please refer section 4-8-1-2

**PCH Azalia Configuration**
Please refer section 4-8-1-3

**Wake on LAN**
Use this item to enable or disable integrated LAN to wake the system.

## 4-8-1-1 ► PCI Express Configuration

Main Advanced Chipset Boot Security Save & Exit

| | |
|---|---|
| PCI Express Configuration<br><br>►Mini PCIe 1<br>►Mini PCIe 2 | PCI Express Configuration settings<br><br>→←: Select Screen<br>↑ ↓ : Select Item<br>Enter: Select<br>+/-: Change Opt.<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Defaults<br>F4: Save & Exit<br>Esc: Exit |

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**Mini PCIe 1/2**

Please refer section 4-8-1-1-1

## 4-8-1-1-1 ► Mini PCIe 1/2

Main Advanced Chipset Boot Security Save & Exit

| | | |
|---|---|---|
| PCI Express Root Port 3/4 | **[ Enabled ]** | Enable or disable PCI Express Unsupported Request Reporting. |
| PCIe Speed | **[ Gen1 ]** | |
| | | →←: Select Screen<br>↑ ↓ : Select Item<br>Enter: Select<br>+/-: Change Opt.<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Defaults<br>F4: Save & Exit<br>Esc: Exit |

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**PCI Express Root Port 3/4**

Control the PCI Express Root Port.

The optional settings are: Enabled, Disabled.

**PCIe Speed**
Select PCI Express port speed.
The optional settings are: Auto, Gen1, Gen2.

## 4-8-1-2 ►USB Configuration

Main Advanced Chipset Boot Security Save & Exit

| | | |
|---|---|---|
| USB Configuration | | Enable or disable XHCI Pre-Boot Driver support. |
| XHCI Pre-Boot Driver | **[ Enabled ]** | |
| xHCI Mode | **[ Smart Auto ]** | |
| HS Port #1 Switchable | **[ Enabled ]** | |
| HS Port #2 Switchable | **[ Enabled ]** | |
| HS Port #3 Switchable | **[ Enabled ]** | |
| HS Port #4 Switchable | **[ Enabled ]** | |
| xHCI Streams | **[ Enabled ]** | →←: Select Screen<br>↑ ↓ : Select Item<br>Enter: Select<br>+/-: Change Opt.<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Defaults<br>F4: Save & Exit<br>Esc: Exit |
| EHCI1 | **[ Enabled ]** | |
| EHCI2 | **[ Enabled ]** | |
| USB Ports Per-Port Disable Control | **[ Disabled ]** | |

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**XHCI Pre-Boot Driver**
Use this item to enable or disable XHCI Pre-Boot Driver Support.

**xHCI Mode**
Mode of operation of xHCI controller.
The optional settings are: Smart Auto, Enabled, Disabled.

**HS Port #1 Switchable**
**HS Port #2 Switchable**
**HS Port #3 Switchable**
**HS Port #4 Switchable**
Always for HS port switching between xHCI and EHCI. If disabled, port is routed to EHCI.
If HS port is routed to xHCI, the corresponding SS port is enabled.
The optional settings are: Disabled, Enabled.

**xHCI Streams**
Use this item to enable or disable xHCI Maximum Primary Stream Array Size.
The optional settings are: Disabled, Enabled.

**EHCI1/ EHCI2**
Use this item to enable or disable USB EHCI (USB 2.0) support.
One EHCI controller must always be enabled.
The optional settings are: Enabled, Disabled.

**USB Port Pre-Port Disable Control**
Use this item to control each of the USB ports (0~13) disabling.
The optional settings are: Disabled, Enabled.

## 4-8-1-3 ►PCH Azalia Configuration

Main Advanced Chipset Boot Security Save & Exit

| | | |
|---|---|---|
| PCH Azalia Congiuration | | Control Detection of the Azalia device. |
| Azalia | **[ Auto ]** | |
| Azalia Internal HDMI Codec | **[ Enabled ]** | →←: Select Screen<br>↑ ↓ : Select Item<br>Enter: Select<br>+/-: Change Opt.<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Defaults<br>F4: Save & Exit<br>Esc: Exit |
| Azalia HDMI Codec | **[ Enabled ]** | |

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**Azalia**
Use this item to enable, disable or auto control detection of the Azalia device.

**Azalia Internal HDMI Codec**
Use this item to enable or disable internal HDMI codec for Azalia.

**Azalia HDMI Codec**
Use this item to enable or disable internal HDMI codec Port for Azalia.

## 4-8-2 ►System Agent (SA) Configuration

Main Advanced Chipset Boot Security Save & Exit

| | | |
|---|---|---|
| System Agent Bridge Name | IvyBridge | Config Graphics Settings. |
| System Agent RC Version | 1.2.0.0 | |
| ►Graphics Configuration | | →←: Select Screen<br>↑ ↓ : Select Item<br>Enter: Select<br>+/-: Change Opt.<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Defaults<br>F4: Save & Exit<br>Esc: Exit |

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**Graphics Configuration**
Please refer section 4-8-2-1

## 4-8-2-1 ►Graphics Configuration

Main Advanced Chipset Boot Security Save & Exit

| | | |
|---|---|---|
| Graphics Configuration | | Select the Aperture Size |
| IGFX VBIOS Version | 2170 | |
| IGfx Frequency | 350 MHz | |
| Aperture Size | **[ 256MB ]** | |
| DVMT Pre-Allocated | **[ 64M ]** | |
| DVMT Total Gfx Mem | **[ 256M ]** | |
| ►LCD Control | | →←: Select Screen<br>↑ ↓ : Select Item<br>Enter: Select<br>+/-: Change Opt.<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Defaults<br>F4: Save & Exit<br>Esc: Exit |

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**Aperture Size**
The optional settings are: 128MB, 256MB, 512MB.

**DVMT Pre-Allocated**
Use this item to select DVMT 5.0 pre-allocated (fixed) graphics memory size used by the internal graphics device.
The optional settings are:
32/64/96/128/160/192/224/256/288/320/352/384/416/448/480/512/1024M

**DVMT Total Gfx Mem**
Use this item to select DVMT 5.0 total graphics memory size used by the internal graphics device.
The optional settings are:128M, 256M, MAX

**LCD Control**
Please refer section 4-8-2-1-1

## 4-8-2-1-1 ►LCD Control

Main Advanced Chipset Boot Security Save & Exit

| | | |
|---|---|---|
| Graphics Configuration | | Select the Video Device which will be activated during POST. This has no effect if external graphics present. Secondary boot display selection will appear based on your selection. VGA modes will be supported only on primary display |
| Primary IGFX Boot Display | **[ DVI ]** | |
| Secondary IGFX Boot Display | **[ LVDS ]** | |
| LCD Panel Type | **[ 1024x768 LVDS1 ]** | |
| Panel Color Depth | **[ 18 Bit ]** | |
| | | →←: Select Screen<br>↑ ↓ : Select Item<br>Enter: Select<br>+/-: Change Opt.<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Defaults<br>F4: Save & Exit<br>Esc: Exit |

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**Primary IGFX Boot Display**
Select the Video Device which will be activated during POST. This has no effect if external graphics present. Secondary boot display selection will appear based on your selection. VGA modes will be supported only on primary display.
The optional settings are: VBIOS Default, CRT, HDMI, LVDS, DVI.

**Secondary IGFX Boot Display**
The optional settings are: Disabled, CRT, HDMI, LVDS, DVI.

**LCD Panel Type**
This item allows you to select the panel resolution

| | | |
|---|---|---|
| 1. | VBIOS Default | |
| 2. | 1024 X 600 | LVDS |
| 3. | 800 X 600 | LVDS |
| 4. | 1024 X 768 | LVDS1 |
| 5. | 1280 X 1024 | LVDS |
| 6. | 1440 X 1050 (RB) | LVDS1 |
| 7. | 1440 X 1050 | LVDS2 |
| 8. | 1600 X 1200 | LVDS |
| 9. | 1366 X 768 | LVDS |
| 10. | 1680 X 1050 | LVDS |
| 11. | 1920 X 1200 | LVDS |
| 12. | 1440 X 900 | LVDS |
| 13. | 1600 X 900 | LVDS |
| 14. | 1024 X 768 | LVDS2 |
| 15 | 1280 X 800 | LVDS |
| 16. | 1920 X 1080 | LVDS |
| 17. | 2048 X 1536 | LVDS |

**Panel Color Depth**
Use this item to select the LFP Panel Color Depth 18Bit or 24Bit.

## 4-9 Boot

Main Advanced Chipset Boot Security Save & Exit

| | | |
|---|---|---|
| Boot Configuration | | Select the keyboard NumLock state. |
| Bootup NumLock State | **[ On ]** | |
| Quiet Boot | **[ Enabled ]** | |
| CSM16 Module Version | 07.69 | |
| GateA20 Active | **[ Upon Request ]** | |
| Boot Option Priorities | | →←: Select Screen<br>↑ ↓: Select Item<br>Enter: Select<br>+/-: Change Opt.<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Defaults<br>F4: Save & Exit<br>Esc: Exit |
| ►CSM parameters | | |

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**Bootup NumLock State**
Use this item to select keyboard NumLock State.
The optional settings are: On, Off.

**Quiet Boot**
The optional settings are: Enabled, Disabled.

**Gate A20 Active**
UPON REQUEST- GA20 can be disabled using BIOS services.
ALWAYS- do not allow disabling GA20.

**CSM parameters**
Please refer section 4-9-1

## 4-9-1 CSM parameters

Main Advanced Chipset Boot Security Save & Exit

| | | |
|---|---|---|
| Launch CSM | **[ Always ]** | This option controls if CSM will be launched |
| Boot option filter | **[ Legacy only ]** | |
| Launch PXE OpROM policy | **[ Do not launch ]** | →←: Select Screen<br>↑ ↓ : Select Item<br>Enter: Select<br>+/-: Change Opt.<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Defaults<br>F4: Save & Exit<br>Esc: Exit |

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**Launch CSM**
This option controls if CSM will be launched.
The optional settings are: Always, Never.

**Boot option filter**
This option controls what devices system can boot to.
The optional settings are: UEFI and Legacy, legacy only, UEFI only.

**Launch PXE OpROM policy**
This option controls the execution of UEFI and Legacy PXE OpROM.
The optional settings are: Do not launch, UEFI only, Legacy only.

## 4-10 Security

Main Advanced Chipset Boot Security Save & Exit

| | |
|---|---|
| Password Description<br><br>If ONLY the Administrator's password is set, then this only limits access to Setup and is only asked for when entering Setup.<br>If ONLY the User's password is set, then this Is a power on password and must be entered to boot or enter Setup. In Setup the User will have Administrator right.<br>the password length must be in the following range:<br>Minimum length 3<br>Maximum length 20<br><br>Administrator Password<br>User Password | Set Administrator Password<br><br>→←: Select Screen<br>↑ ↓ : Select Item<br>Enter: Select<br>+/-: Change Opt.<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Defaults<br>F4: Save & Exit<br>Esc: Exit |

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**Administrator Password & User Password**

To set up an administrator / User password:

1. Select Administratorr / User Password.
   The screen then pops up an Create New Password dialog.
2. Enter your desired password that is no less than 3 characters and no more than 20 characters.
3. Hit [Enter] key to submit.

## 4-11 Save & Exit

Main Advanced Chipset Boot Security Save & Exit

| | |
|---|---|
| Save Changes and Reset<br>Restore Defaults<br><br>Boot Override | Reset the system after saving the changes.<br><br>→←: Select Screen<br>↑ ↓ : Select Item<br>Enter: Select<br>+/-: Change Opt.<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Defaults<br>F4: Save & Exit<br>Esc: Exit |

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**Save Changes and Reset**

This item allows user to reset the system after saving the changes.

**Restore Defaults**

Use this item to restore load default values for all the setup options.

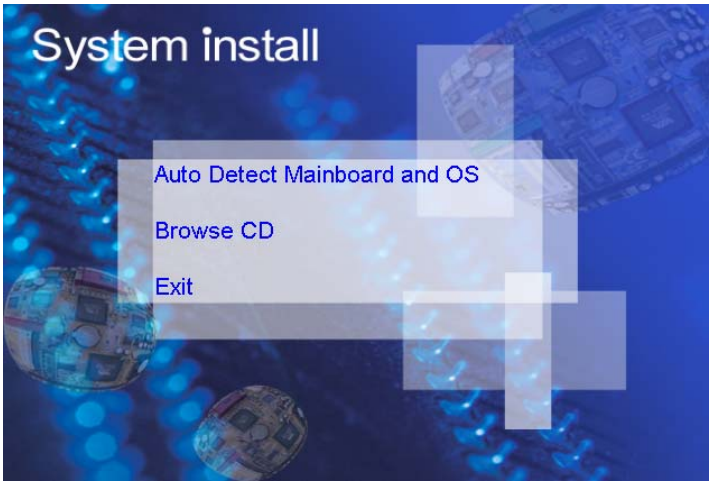
# Chapter 5

## DRIVER INSTALLATION

There is a system installation DVD in the package. This DVD does not only include all the drivers you need but also some other free application programs and utility programs.
In addition, this DVD also includes an auto detect software telling you which hardware is installed and which driver is needed so that your system can function properly. We call this auto detect software SYSTEM INSTALL.

## SYSTEM INSTALL Supports Windows XP/ Windows 7 / Windows 8 / 8.1

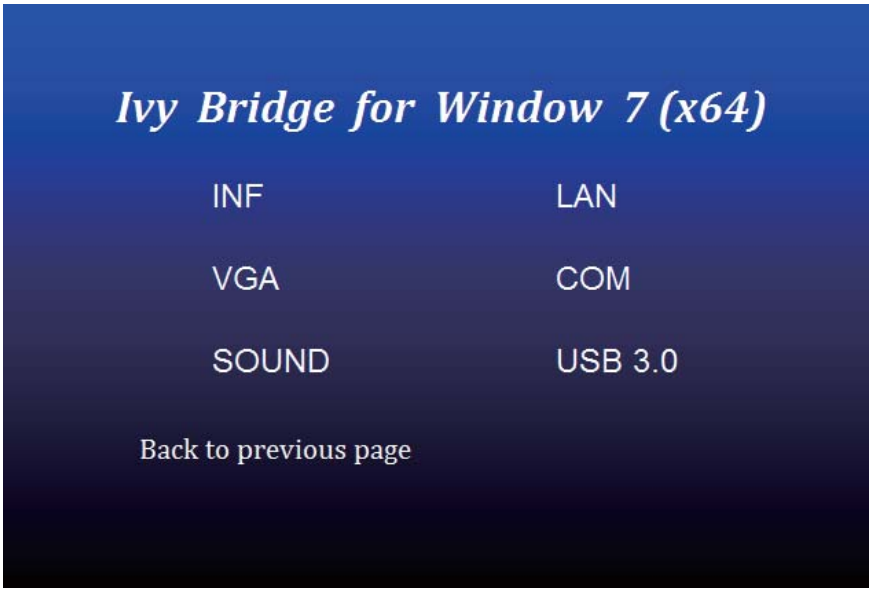
Insert the DVD into your DVD-ROM drive and the SYSTEM INSTALL menu should appear as below. If the menu does not appear, double-click MY COMPUTER and double-click DVD-ROM drive or click START, click RUN, and type X:\SETUP.EXE
(assuming your DVD-ROM drive is X).




**Make your selection from SYSTEM INSTALL menu:**

1. Auto Detect Main board and OS to AUTOMATIC DRIVER INSTALLATION menu
2. Browse DVD to view the contents of the DVD
3. Exit to exit SYSTEM INSTALL menu

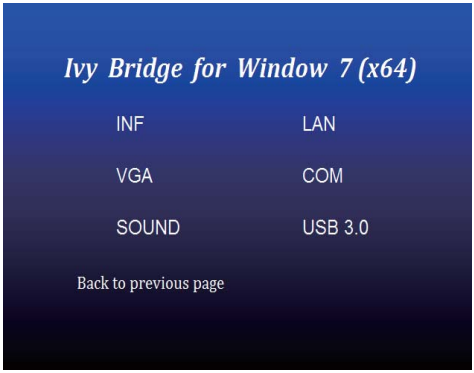
## AUTOMATIC DRIVER INSTALLATION menu




1. INF Install Intel Ivy Bridge chipset driver
2. VGA Install onboard VGA driver
3. SOUND Install VIA HD Audio Codec driver
4. LAN To the LAN driver Readme file
5. COM To the COM driver Readme file
6. USB 3.0 Install Intel USB 3.0 extensible Host Controller driver

Each selection is illustrated below:

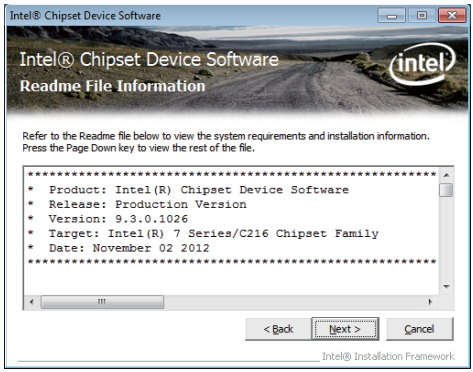
# 5-1 INF  Install Intel Ivy Bridge Chipset Driver



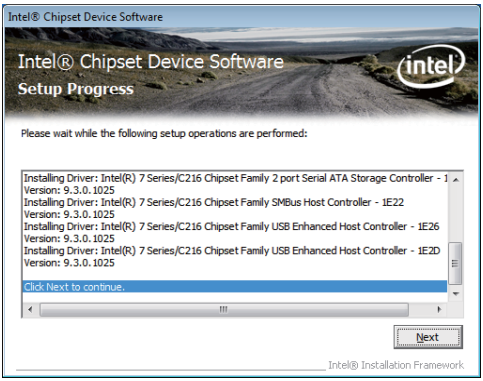

1. At the "AUTOMATIC DRIVER INSTALLATION menu" screen, click "INF".


2. At the "Intel® Chipset Device Software" screen, click "Next".

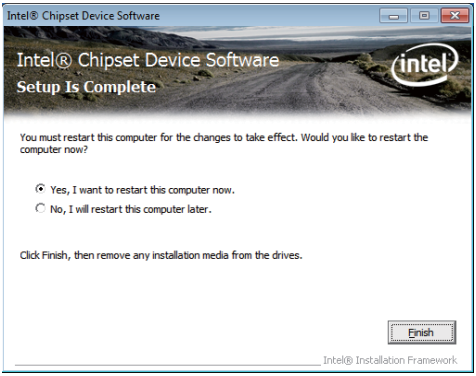

3. At the "License Agreement" screen, click "Yes".




4. At the "Readme File Information" screen, click "Next".




**5. Click "Next"**

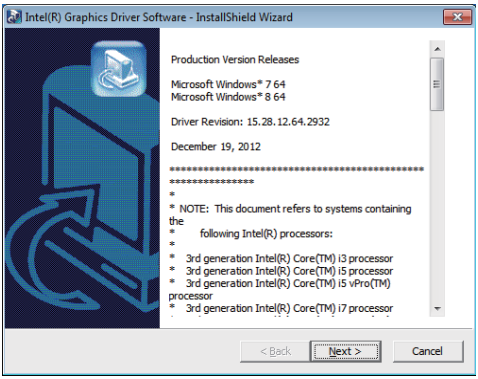



**6. Click "Finish" to restart computer.**

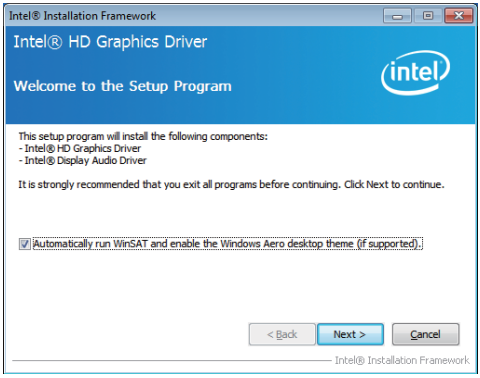
NOTE: SYSTEM INSTALL will auto detect file path
For Windows XP 64/32-bit, Windows 7 64/32-bit and windows 8 64/32-bit
X:\driver\INTEL\IVY_SAN\inf\infinst_autol.exe
For Windows 8.1 64/32-bit
X:\driver\INTEL\IVY_SAN\inf\WIN8.1\Setup.exe

# 5-2 VGA  Install Intel Ivy Bridge VGA Driver

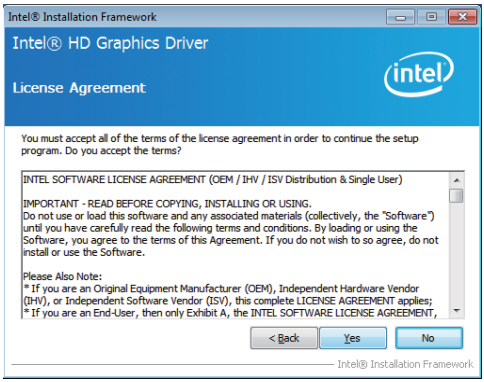

1. At the "AUTOMATIC DRIVER INSTALLATION menu" screen, click "VGA".



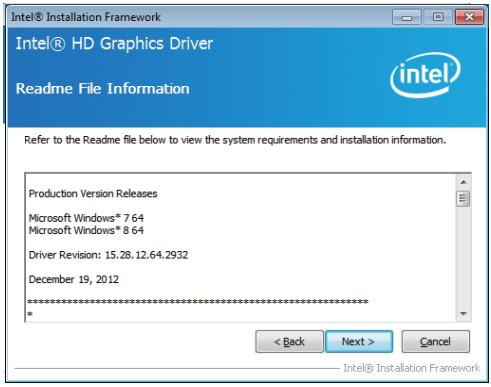

2. At the "Intel® HD Graphics Driver" screen, click "Next".

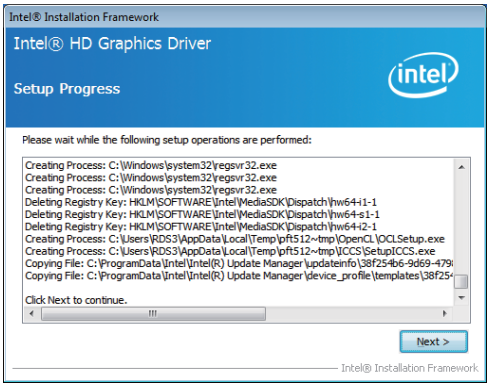



3. At the "Welcome to the Setup Program " screen, Click “Next”.



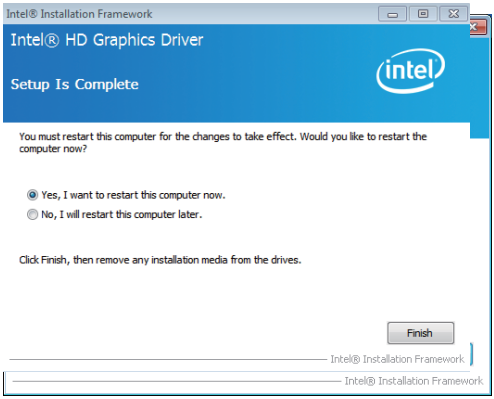

4. At the "License Agreement” screen, Click "Next"  .




**5. At the "Readme File Information" screen, Click "Next"**

**6. At the "Setup Progress" screen, Click "Next".**

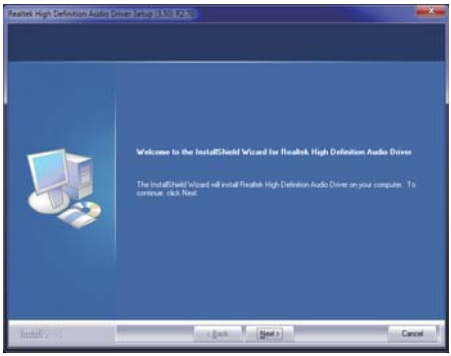



**7. Click "Finish" to restart computer**

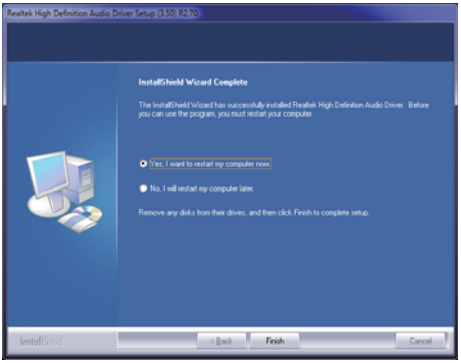
NOTE: SYSTEM INSTALL will auto detect file path
For Windows XP 64bit
X:\driver\INTEL\IVY_SAN\vga\winxp64\winxp64_145110.exe
For Windows XP 32bit
X:\driver\INTEL\IVY_SAN\vga\winxp\winxp_145110.exe
For Windows 7 64bit and Windows 8 64bit
X:\driver\INTEL\IVY_SAN\vga\ WIN_7_8_64\ win64_152812.exe
For Windows 7 32bit and Windows 8 32bit
X:\driver\INTEL\IVY_SAN\vga\ WIN_7_8_32\ win32_152812.exe
For Windows 8.1 64bit
X:\driver\INTEL\IVY_SAN\vga\WIN8.1\IVY\x64\ Setup.exe
For Windows 8.1 32bit
X:\driver\INTEL\IVY_SAN\vga\WIN8.1\IVY\x86\Setup.exe

## 5-3 SOUND  Install Realtek High Definition Audio Driver


1. At the "AUTOMATIC DRIVER INSTALLATION menu" screen, click "SOUND".




2. Click "Next".

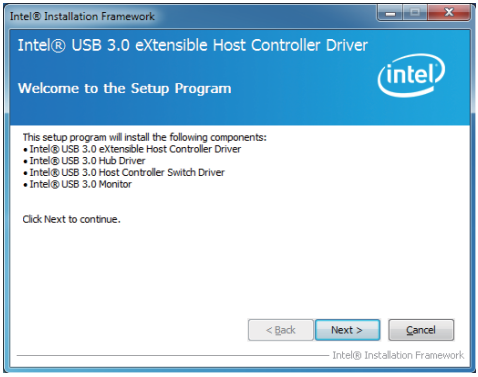



3. Click "Finish" to restart computer

NOTE: SYSTEM INSTALL will auto detect file path
For Windows XP 32/64 bit
X:\driver\INTEL\IVY_SAN\SOUND\WDM_R270.exe
For Windows 7 32/64 bit and Windows 8 32/64 bit
X:\driver\INTEL\IVY_SAN\SOUND\Vista_Win7_Win8_R270.exe
For Windows 8.1 32bit
X:\driver\INTEL\IVY_SAN\SOUND\Win8.1\32bit_Win7_Win8_Win81_R273.exe
For Windows 8.1 64bit
X:\driver\INTEL\IVY_SAN\SOUND\Win8.1\64bit_Win7_Win8_Win81_R273.exe

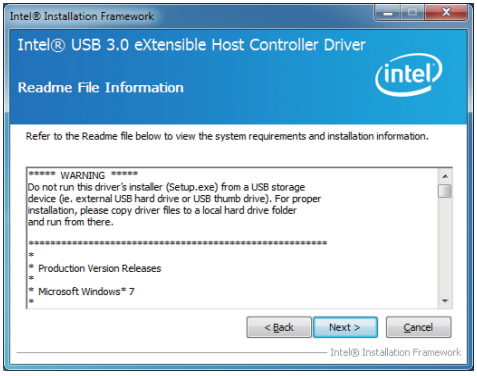
# 5-4 USB 3.0 Install Intel USB 3.0 extensible Host Controller Driver


1. At the "AUTOMATIC DRIVER INSTALLATION menu" screen, Click "USB 3.0".

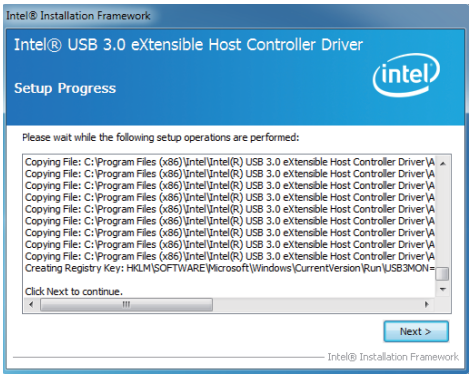



2. At the "Intel® USB 3.0 extensible Host Controller Driver" screen, Click" Next.


3. At the "License Agreement" screen, Click "Yes".




4. At the "Readme File Information" screen, Click "Next".



Intel® USB 3.0 eXtensible Host Controller Driver

Setup Progress

Please wait while the following setup operations are performed:

```
Copying File: C:\Program Files (x86)\Intel\Intel(R) USB 3.0 eXtensible Host Controller Driver\A
Copying File: C:\Program Files (x86)\Intel\Intel(R) USB 3.0 eXtensible Host Controller Driver\A
Copying File: C:\Program Files (x86)\Intel\Intel(R) USB 3.0 eXtensible Host Controller Driver\A
Copying File: C:\Program Files (x86)\Intel\Intel(R) USB 3.0 eXtensible Host Controller Driver\A
Copying File: C:\Program Files (x86)\Intel\Intel(R) USB 3.0 eXtensible Host Controller Driver\A
Copying File: C:\Program Files (x86)\Intel\Intel(R) USB 3.0 eXtensible Host Controller Driver\A
Copying File: C:\Program Files (x86)\Intel\Intel(R) USB 3.0 eXtensible Host Controller Driver\A
Copying File: C:\Program Files (x86)\Intel\Intel(R) USB 3.0 eXtensible Host Controller Driver\A
Copying File: C:\Program Files (x86)\Intel\Intel(R) USB 3.0 eXtensible Host Controller Driver\A
Creating Registry Key: HKLM\SOFTWARE\Microsoft\Windows\CurrentVersion\Run\USB3MON=

Click Next to continue.
```

Intel® USB 3.0 eXtensible Host Controller Driver

Setup Is Complete

You must restart this computer for the changes to take effect. Would you like to restart the computer now?

● Yes, I want to restart this computer now.

○ No, I will restart this computer later.

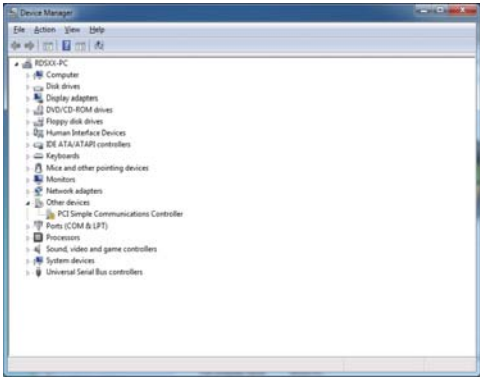
Click Finish, then remove any installation media from the drives.

**5. Click "Next"**

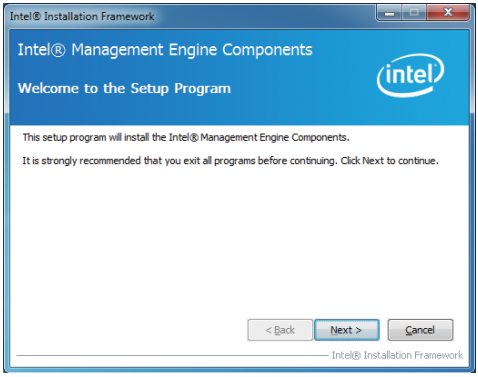
**6. Click "Finish" to restart computer**

NOTE: The path of the file
For Windows 7 32/64-bit
X:\driver\INTEL\IVY_SAN\USB3_0\INTEL\Setup.exe

# 5-5 ME Install Intel Management Engine Interface Driver



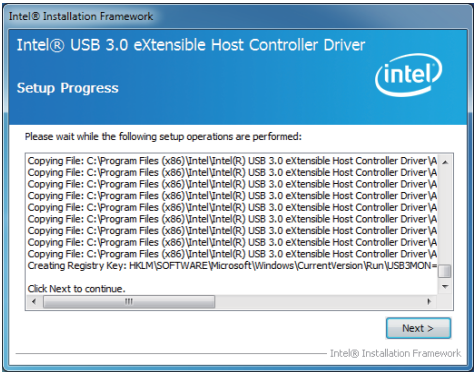
1. Plaese Check Device Manager
   ”PCI Simple Communications Controllers”



This setup program will install the Intel® Management Engine Components.

It is strongly recommended that you exit all programs before continuing. Click Next to continue.

2. At the "Intel® Management Engine Components” screen, Click” Next.

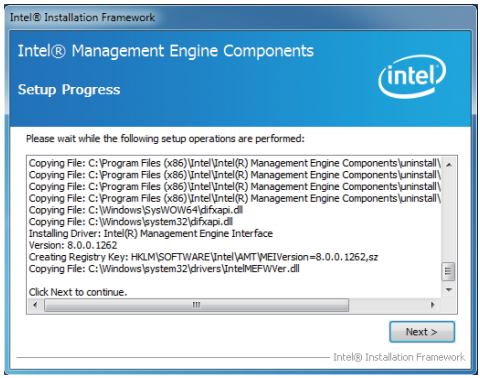


Please wait while the following setup operations are performed:

```
Copying File: C:\Program Files (x86)\Intel\Intel(R) USB 3.0 eXtensible Host Controller Driver\A
Copying File: C:\Program Files (x86)\Intel\Intel(R) USB 3.0 eXtensible Host Controller Driver\A
Copying File: C:\Program Files (x86)\Intel\Intel(R) USB 3.0 eXtensible Host Controller Driver\A
Copying File: C:\Program Files (x86)\Intel\Intel(R) USB 3.0 eXtensible Host Controller Driver\A
Copying File: C:\Program Files (x86)\Intel\Intel(R) USB 3.0 eXtensible Host Controller Driver\A
Copying File: C:\Program Files (x86)\Intel\Intel(R) USB 3.0 eXtensible Host Controller Driver\A
Copying File: C:\Program Files (x86)\Intel\Intel(R) USB 3.0 eXtensible Host Controller Driver\A
Copying File: C:\Program Files (x86)\Intel\Intel(R) USB 3.0 eXtensible Host Controller Driver\A
Copying File: C:\Program Files (x86)\Intel\Intel(R) USB 3.0 eXtensible Host Controller Driver\A
Creating Registry Key: HKLM\SOFTWARE\Microsoft\Windows\CurrentVersion\Run\USB3MON=

Click Next to continue.
```

3. At the "Setup Progress” screen, Click “Next”.

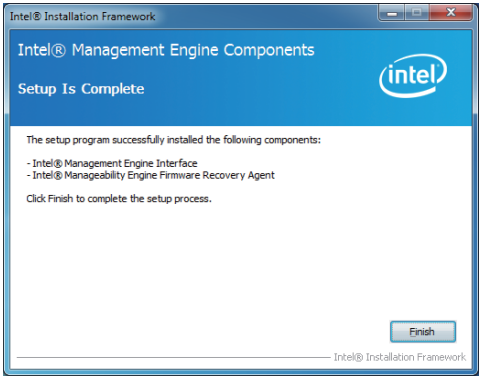


Please wait while the following setup operations are performed:

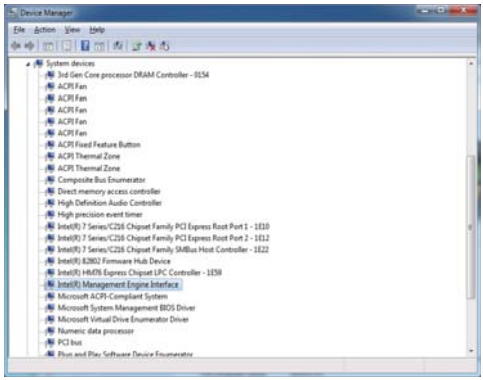
```
Copying File: C:\Program Files (x86)\Intel\Intel(R) Management Engine Components\uninstall\
Copying File: C:\Program Files (x86)\Intel\Intel(R) Management Engine Components\uninstall\
Copying File: C:\Program Files (x86)\Intel\Intel(R) Management Engine Components\uninstall\
Copying File: C:\Program Files (x86)\Intel\Intel(R) Management Engine Components\uninstall\
Copying File: C:\Windows\SysWOW64\difxapi.dll
Copying File: C:\Windows\system32\difxapi.dll
Installing Driver: Intel(R) Management Engine Interface
Version: 8.0.0.1262
Creating Registry Key: HKLM\SOFTWARE\Intel\AMT\MEIVersion=8.0.0.1262,sz
Copying File: C:\Windows\system32\drivers\IntelMEFWVer.dll

Click Next to continue.
```

4. Click “Next”.




**5. Click “Finish”.**

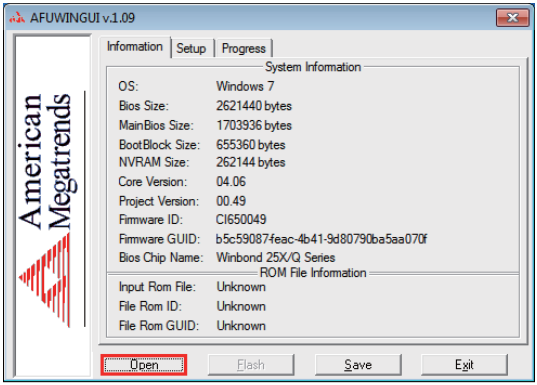



**6. Plaese Check Device Manager ”PCI Simple Communications Controllers”**

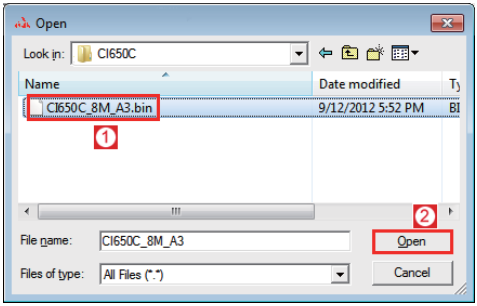
NOTE: The path of the file
For Windows XP 32/64 bit and Windows 7 32/64-bit
X:\driver\INTEL\ME TOOL\MEI-Only Installer\MEISetup.exe

# 5-6 How to update AMI BIOS

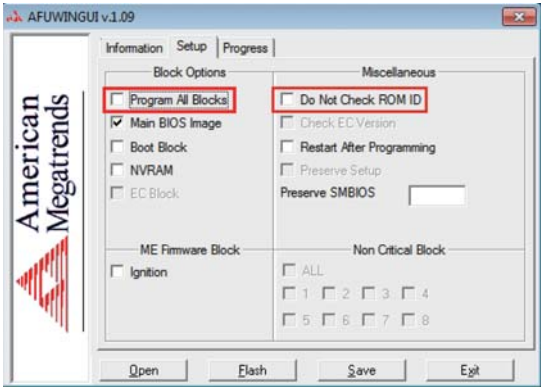
Step 1. To run afuwingui.exe then click "Open"



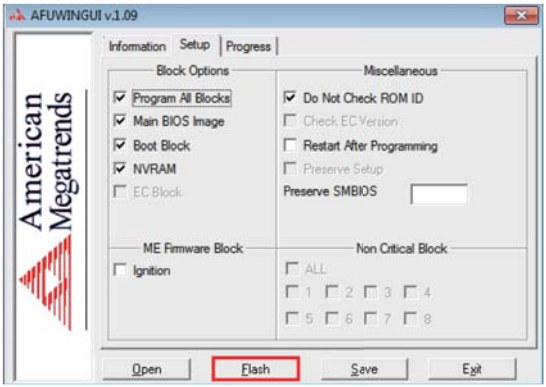

Step 2. Click the new version BIOS (download from the website)



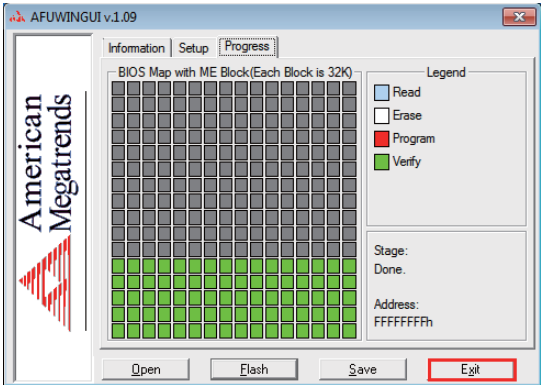
Step 3. Choose "ProgramAll Blocks" and "Do Not Check ROM ID"




Step 4. Click "Flash"




Step 5. Click "Exit" and restart computer.



# Appendix A: Power Consumption Test

**Condition**

| Item | Spec |
|---|---|
| CPU | Intel Ivy Bridge 1047UE 1.4 Ghz |
| SDRAM | DDR3 1333 / 1GB |
| Operating System | Windows 7 / SP1 |
| Test Program | 3D Mark Vantage |
| HDD 3.5" SATA | Standard HDD |
| HDD 2.5" SATA | Slim Type HDD |

**Test Result for reference !**

| Hard Disk | Power off | Start up | | Operation Maximum | Shut down Maximum | In Put Voltage |
|---|---|---|---|---|---|---|
| | | Maximum | Stable | | | |
| Standard HDD | 0.06A | 3.36A | 1.74A | 3.22A | 2.23A | 9V |
| | 0.06A | 2.38A | 1.29A | 2.25A | 1.68A | 12V |
| | 0.06A | 1.17A | 0.66A | 1.14A | 0.82A | 24V |
| | 0.06A | 0.9A | 0.51A | 0.86A | 0.63A | 32V |
| | 0.06A | 0.8A | 0.47A | 0.79A | 0.55A | 36V |
| Slim Type HDD | 0.06A | 2.17A | 1.22A | 2.67A | 1.67A | 9V |
| | 0.06A | 1.57A | 0.88A | 1.88A | 1.28A | 12V |
| | 0.06A | 0.78A | 0.58A | 0.94A | 0.65A | 24V |
| | 0.06A | 0.62A | 0.38A | 0.74A | 0.5A | 32V |
| | 0.06A | 0.52A | 0.34A | 0.66A | 0.43A | 36V |

**The power consumption depends on your device choice!**

# Appendix B: Resolution list

| |
|---|
| 640 x 480 x ( 256 / 16bit / 32bit ) |
| 800 x 600 x ( 256 / 16bit / 32bit ) |
| 1024 x 768 x ( 256 / 16bit / 32bit ) |
| 1152 x 864 x ( 256 / 16bit / 32bit ) |
| 1280 x 600 x ( 256 / 16bit / 32bit ) |
| 1280 x 720 x ( 256 / 16bit / 32bit ) |
| 1280 x 768 x ( 256 / 16bit / 32bit ) |
| 1280 x 800 x ( 256 / 16bit / 32bit ) |
| 1280 x 960 x ( 256 / 16bit / 32bit ) |
| 1280 x 1024 x ( 256 / 16bit / 32bit ) |
| 1400 x 1050 x ( 256 / 16bit / 32bit ) |
| 1440 x 900 x ( 256 / 16bit / 32bit ) |
| 1600 x 900 x ( 256 / 16bit / 32bit ) |
| 1600 x 1200 x ( 256 / 16bit / 32bit ) |
| 1680 x 1050 x ( 256 / 16bit / 32bit ) |
| 1920 x 1080 x ( 256 / 16bit / 32bit ) |
| 1920 x 1200 x ( 256 / 16bit / 32bit ) |