

# **3I770A / 3I770CW**

**Intel® Embedded Ivy Bridge Processor,  
DDR3 SODIMM 1333/1600MT/s ,  
2 x LAN / HDMI /Audio /USB / COM/LVDS/Touch Screen**

## **All-In-One**

**Intel® Embedded Ivy Bridge rPGA988B Processor,  
2 x Intel GbE LAN , 2 x PCIe mini card slots , VGA, HDMI, Audio, SATA,  
USB, 6 x COM ,Wide Range DC-IN, LVDS, Touch Screen**

**NO. 3I770A/CW\_V0.1**

**Release date: Mar. 4. 2015**

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User Manual edition 0.1, Mar. 4. 2015

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## Warning !

1. Battery  
Batteries on board are consumables.  
The life time of them are not guaranteed.
2. Fless solution with HDD  
The specification & limitation of HDD should be considered carefully when the fanless solution is implemented.
3. We will not give further notification in case of changes of product information and manual.
4. SATA interface does not support Hot SWAP function.
5. There might be a 20% inaccuracy of WDT at room temperature.
6. Please make sure the voltage specification meets the requirement of equipment before plugging in.
7. There are two types of SSD, commercial grade and industrial grade, which provide different read/write speed performance, operation temperature and life cycle. Please contact sales for further information before making orders.
8. Caution! Please notice that the heat dissipation problem could cause the MB system unstable. Please deal with heat dissipation properly when buying single MB set.
9. Please avoid approaching the heat sink area to prevent users from being scalded with fanless products.
10. If users repair, modify or destroy any component of product unauthorizedly, We will not take responsibility or provide warranty anymore.
11. DO NOT apply any other material which may reduce cooling performance onto the thermal pad.
12. It is important to install a system fan toward the CPU to decrease the possibility of overheating / system hanging up issues, or customer is suggested to have a fine cooling system to dissipate heat from CPU.

## \* Hardware Notice Guide

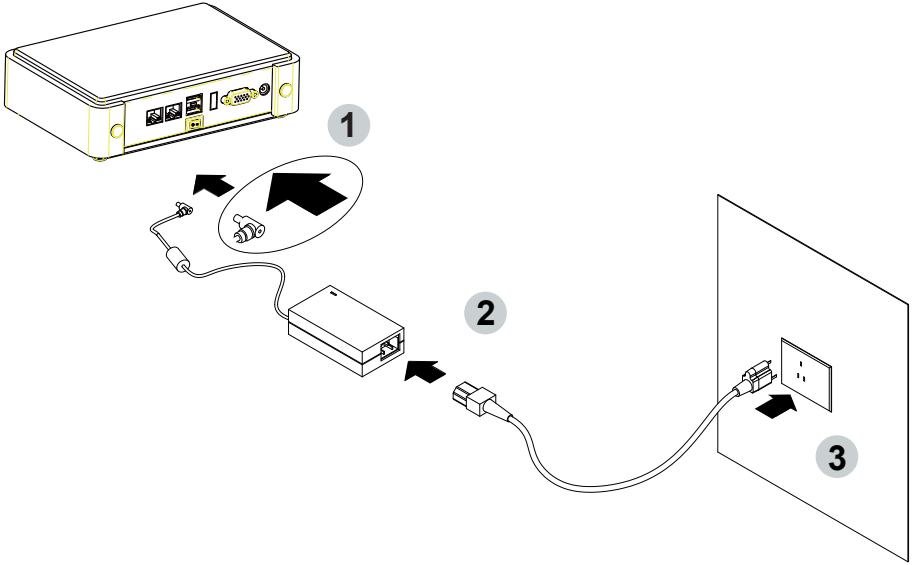
1. Before linking power supply with the motherboard, please attach DC-in adapter to the motherboard first. Then plug the adapter power to AC outlet.  
Always shut down the computer normally before you move the system unit or remove the power supply from the motherboard. Please unplug the DC-in adapter first and then unplug the adapter from the AC outlet.  
Please refer photo 1 as standard procedures.
2. In case of using DIRECT DC-in (without adapter), please check the allowed range for voltage & current of cables. And make sure you have the safety protection for outer issues such as short/broken circuit, overvoltage, surge, lightning strike.
3. In case of using DC-out to an external device, please make sure its voltage and current comply with the motherboard specification.
4. The total power consumption is determined by various conditions (CPU/motherboard type, device, application, etc.). Be cautious to the power cable you use for the system, one with UL standard will be highly recommended.
5. It's highly possible to burn out the CPU if you change/ modify any parts of the CPU cooler.
6. 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 which is ground connected or attached with metal surface if you don't have wrist strap.
7. Please be careful to handle & don't touch the sharp-pointed components on the bottom of PCBA.
8. Remove or change any components from the motherboard will VOID the warranty of the motherboard.
9. Before you install/remove any components or even make any jumper setting on the motherboard, please make sure to disconnect the power supply first.  
(follow the aforementioned instruction guide)
10. "POWERON after PWR-Fair" function must be used carefully as below:  
When the DC power adaptor runs out of power, unplug it from the DC current;  
Once power returns, plug it back after 5 seconds.  
If there is a power outage, unplug it from the AC current, once power returns, plug it back after 30 seconds. Otherwise it will cause system locked or made a severe damage.

**Remark 1:**

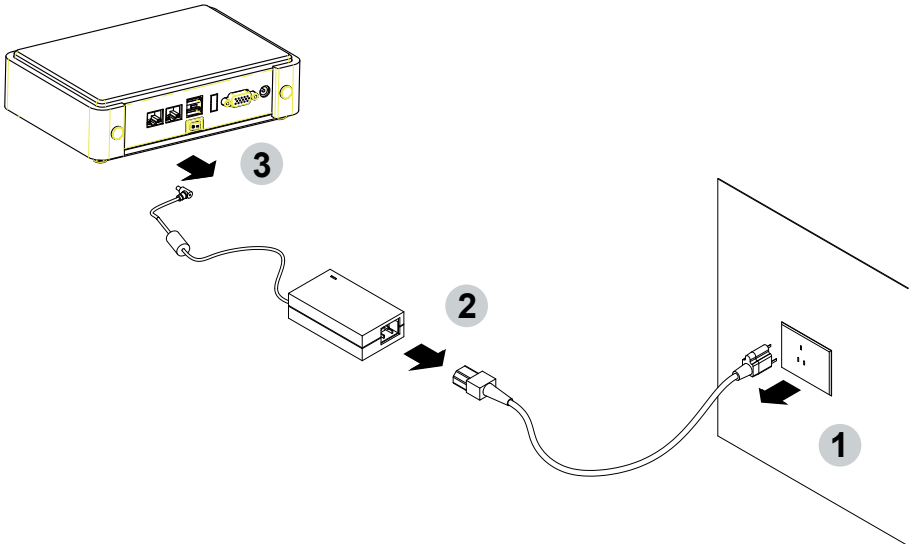
**Always insert/unplug the DC-in horizontally & directly to/from the motherboard. DO NOT twist, it is designed to fit snugly. Moreover, erratic pull / push action might cause an unpredictable damage to the component & system unit.**

# Photo 1

# Insert



# Unplug





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# Chapter-1

## General Information

The 3I770A/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.

High-performance and power-efficient communication platform, the embedded motherboard of 3I770A/CW is specially designed for advanced POS systems where the economical use of power is in high demand. Also, the high performing 3I770A/CW comes with a DDR3 1333/1600 MHz SO-DIMM slot with up to 8GB memory and five SATA ports which include PCIe mini card sockets. This motherboard will ensure the high performance levels required for today's most popular POS/Automation control applications including POS, ATM, and Panel PC applications.

3I770A/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

3I770A/CW also supports with six COM ports of RS232/422/485 (optional) to meet the needs of connectivity for multiple COM ports. In addition, there are multi-ports of Hi-Speed USB 3.0/2.0 to enhance the host controller interface which will ensure the high performance level and flexible expansion. A single Flash chip holds the system BIOS, so you can change the Flash BIOS by the Utility Update.

The supported display interfaces include VGA, LVDS touch screen and HDMI. With a small footprint of only 146 x 102 mm (3.5 inch) and advanced performance in both computing and graphics, this board meets the requirement of system developers in the gaming, POS, digital signage, and server market segment.

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## 1-1 Major Feature

1. The Mobile Ivy Bridge processor includes Integrated Display Engine, GPU and Integrated Memory Controller and is designed for mobile, the processor is designed for the Chief River platform and may be offered in a rPGA998B package
2. Intel Panther Point Platform Controller Hub (PCH) QM77 and Integrated Graphic Chip
3. Support 1 x DDR3 SO-DIMM socket (up to 8GB)
4. On board SSD flash memory 2/4/8/16/32/64 GB (option)
5. Support 2 x Intel GbE LAN
6. 18/24 bits dual channel LVDS Interface on Board
7. Support 2 x SATA connectors (1 x SATA 2.0 and 1 x SATA 3.0)
8. Support 2 x PCIe mini card, 1 x Half size PCIe Mini card for mSATA and USB interface, 1 x Full size PCIe Mini card for PCIe x1 or mSATA and USB interface
9. 1 x SIM card socket for 3G mini card use
10. Support 6 x Serial ports : COM3 for RS232/422/485, COM1,2,4,5,6 for RS232 or 422 or 485
11. Wide range DC input from +9V to +36V( $\pm 1V$ ) (3I770CW)
12. Compact PCB Dimension: 146 x 102 mm (3.5 inch)
13. USB interface (full speed sample rate maximum of 300 point per second)  
Touch screen controller, support 4-, 5-, 8- wire Analog Resistive touch screen, Resolution is up to 2048 x 2048 (3I770CW)
14. Support 2 x external USB 3.0/2.0 & 2 x external USB2.0 & 5 x internal USB 2.0 ports

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## 1-2 Specification

1. CPU: Intel Mobile Ivy Bridge processor in rPGA988B package
2. Chipset: Intel Panther Point Platform Controller Hub (PCH) QM77
3. Memory: 1 x DDR3 SO-DIMM socket (up to 8GB), data transfer rates of 1333 MT/s and 1600 MT/s
4. Graphics: Integrated with Intel Mobile Ivy Bridge Processor
5. SIO and UARTs: Fintek F71869A and F81216AD I/O chipset
6. On board SATA SSD 2/4/8/16/32/64 GB (Option)
7. SATA: 2 x SATA ports (1 x SATA 2.0 and 1 x SATA 3.0)
8. LAN Interface: One Intel 82579LM GbE LAN PHY and one Intel 82574L GbE LAN
9. Serial Port: 5 x RS232 or 422 or 485 + 1 x RS485/422/232
10. USB: 2 x external USB 3.0/2.0 & 2 x external USB 2.0 & 5 x internal USB2.0
11. Sound: Intel HD Audio Specification Two channel sound
12. LVDS: 18/24bits, 2ch
13. WDT / DIO: Hardware watch dog timer support, 0~255 sec programmable
14. Hardware digital Input & Output, 8 x DI / 8 x DO
15. Touch screen: C8051F321 USB interface touch screen controller, support 4-, 5-, 8- wire Analog resistive touch screen, Resolution is up to 2048 x 2048 (3I770CW)
16. Audio Amplifier: Ti TPA2011D1 Class D 2.5W Audio amplifier
17. Expansion interface: 1 x Half size PCIe Mini card for mSATA and USB interface, 1 x Full size PCIe Mini card for PCIe x1 or mSATA and USB interface
18. BIOS: AMI UEFI BIOS
19. Dimension: 146 x 102 mm (3.5 inch)
20. Power: Wide range DC input from +9V to +36V( $\pm 1V$ ) (3I770CW)  
Onboard DC-in Convert into system power +12VAD to +5V/ $\pm 5\%$  and +3.3V/ $\pm 5\%$  and +12V/ $\pm 5\%$
21. 1 x 3G SIM card socket

## 1-3 Installing the CPU / PCH Heatsink. (Socket Version)

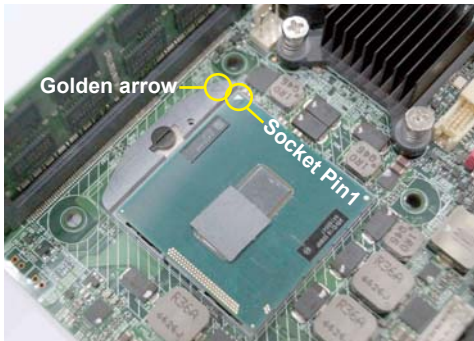
1. Remove the white wax paper from the double-sided-adhesive-tap of the CPU Bracket



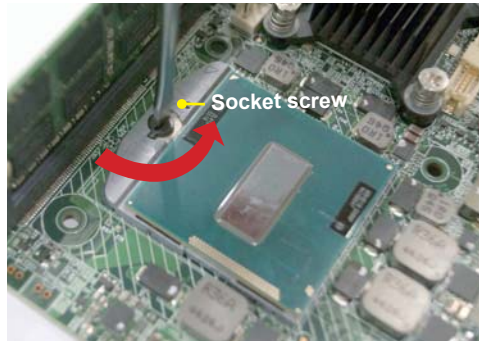
2. Install CPU bracket under the CPU first.



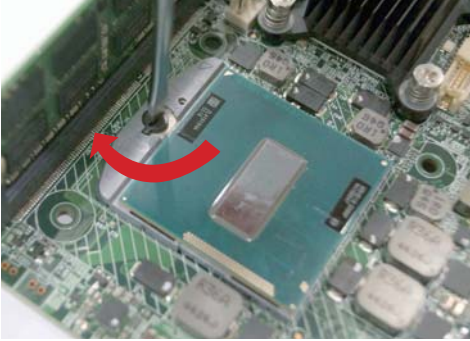
3.1. Locate Pin1 in the socket, look for a golden narrow.



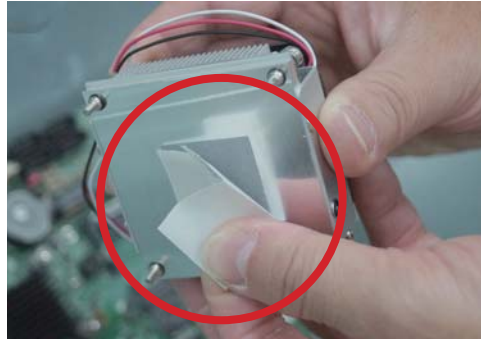
3.2. Use screw driver and screw the socket screw in anti-clockwise direction.



3.3. Lock the CPU socket by securing the screw in an anti-clockwise direction.



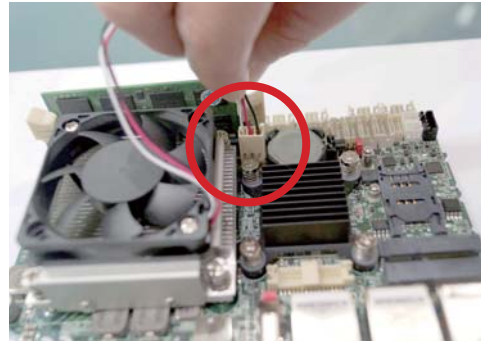
4. Peel-off the Elastic Silicone sticker under the Heat Sink.



4.1. Tighten the HEAT SINK on the motherboard. Pay attention to tighten the screws diagonally.



4.2. Insert the system fan power cable to the pin header (FAN1) on board.



## 1-4 Vertical SO-DIMM assembly guide

1. Install the memory into SODIMM.



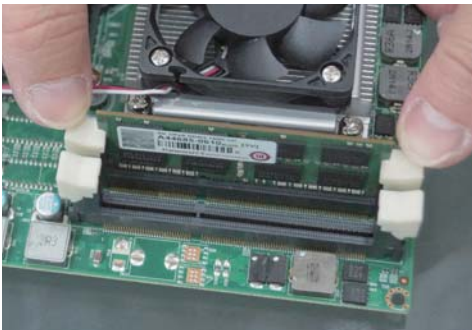
2. Press down firmly to ensure the memory is locked.



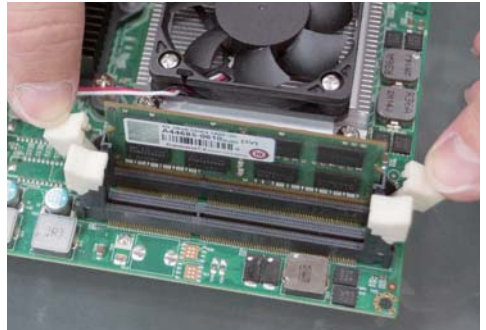
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## Uninstall

1. Pull open both sides of the memory slot.



2. Take out the memory.

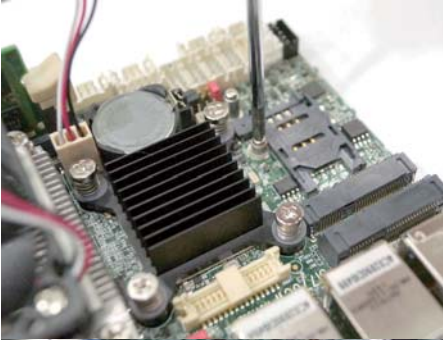




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## 1-5 Installing the Mini PCI-e Card

1. Unfasten the round-headed M2\*6 screw for half size Mini PCI-e.



2. Install a mSATA card at the angle of 45°. (The half size Mini PCI-e slot supports mSATA)



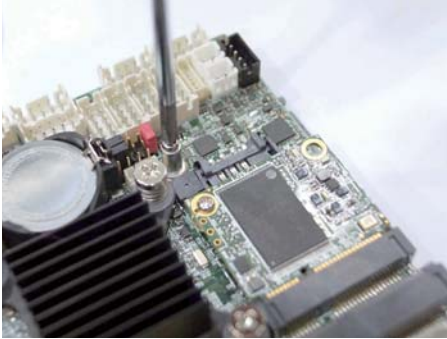
3. Fasten a round-headed M2\*6 screw.



---

## 1-6 Directions for installing the Mini Card

1. Unscrew the screw on the board



2. Plug in the Mini Card in a 45 angle

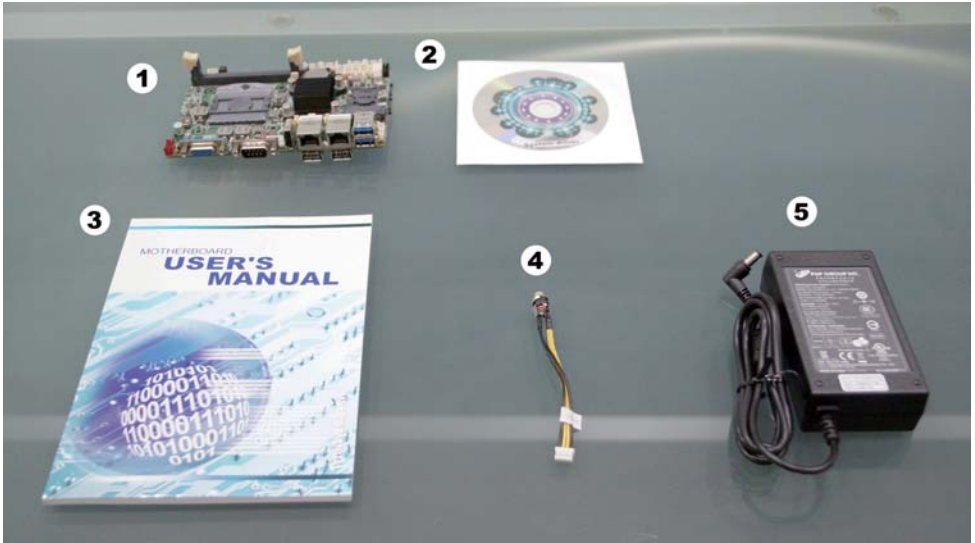


3. Gently push down the Mini Card and screw the screw back.





## 1-7 Packing List



	Material Code	Description	Detail Specification	Quantit
1	7G1901-1510001-0 7G1901-1520001-0	MB-3I770CW-6CXX-00-001 MB-3I770A-6CXX-00-001	LF,3I770CW-6CXX-00,Rev.:001 LF,3I770A-6CXX-00,Rev.:001	1
2	6G8006-2347-0100	LEX Product Driver DVD	LF, Intel Baytrail Driver	1
3	6G8001-2193-0400	Manual	LF,M/B,3I770A/CW	1
4	6G6003-7350-0100	Power Cable	LF, 2.0 2*4/DC JK,L=9cm	1
5	6G5212-0601-0200	84W Power Adapter,12V/5A,2.5	LF,L Type,FSP060-DBAE1,FSP	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

### 2-1 Unpacking Precaution

This chapter provides the information how to install the hardware of 3I770A/CW. Please follow section 1-7, 2-1 and 2-2 to check the delivery package and unpack carefully. Please follow the jumper setting procedure.

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 3I770A/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 3I770A/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.

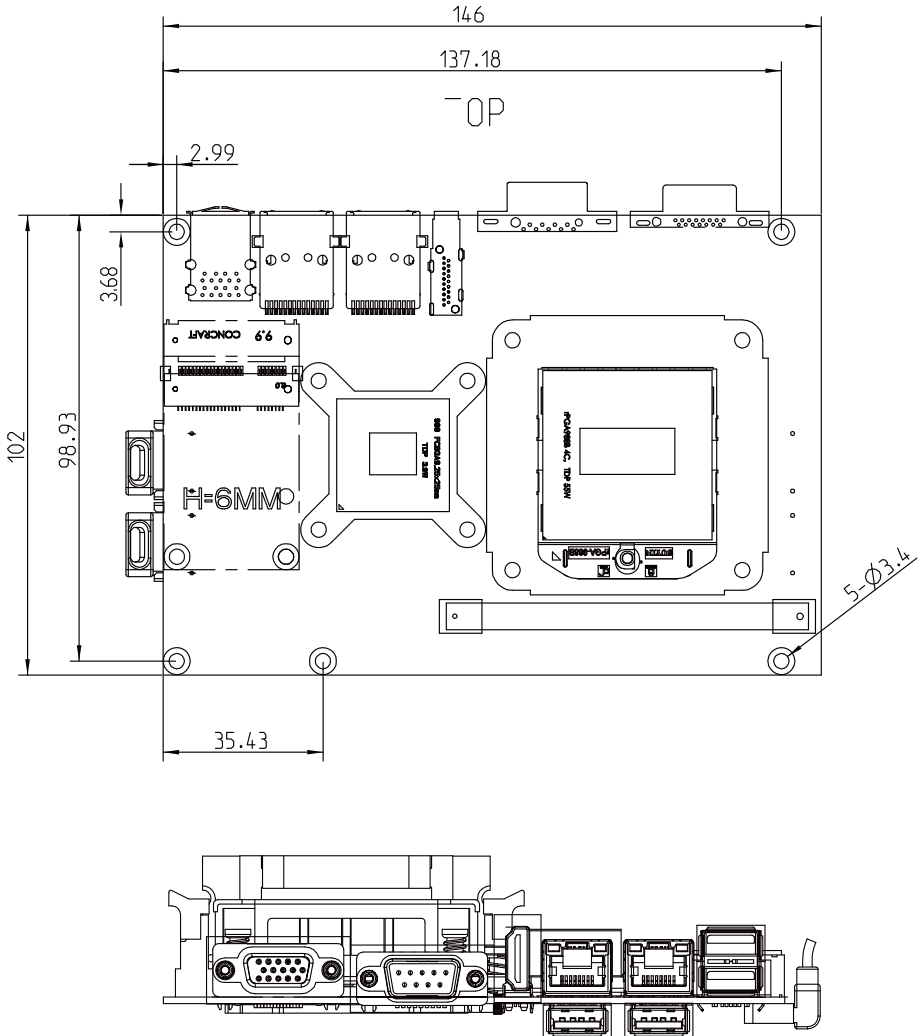
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## 2-2 Unpacking checkup

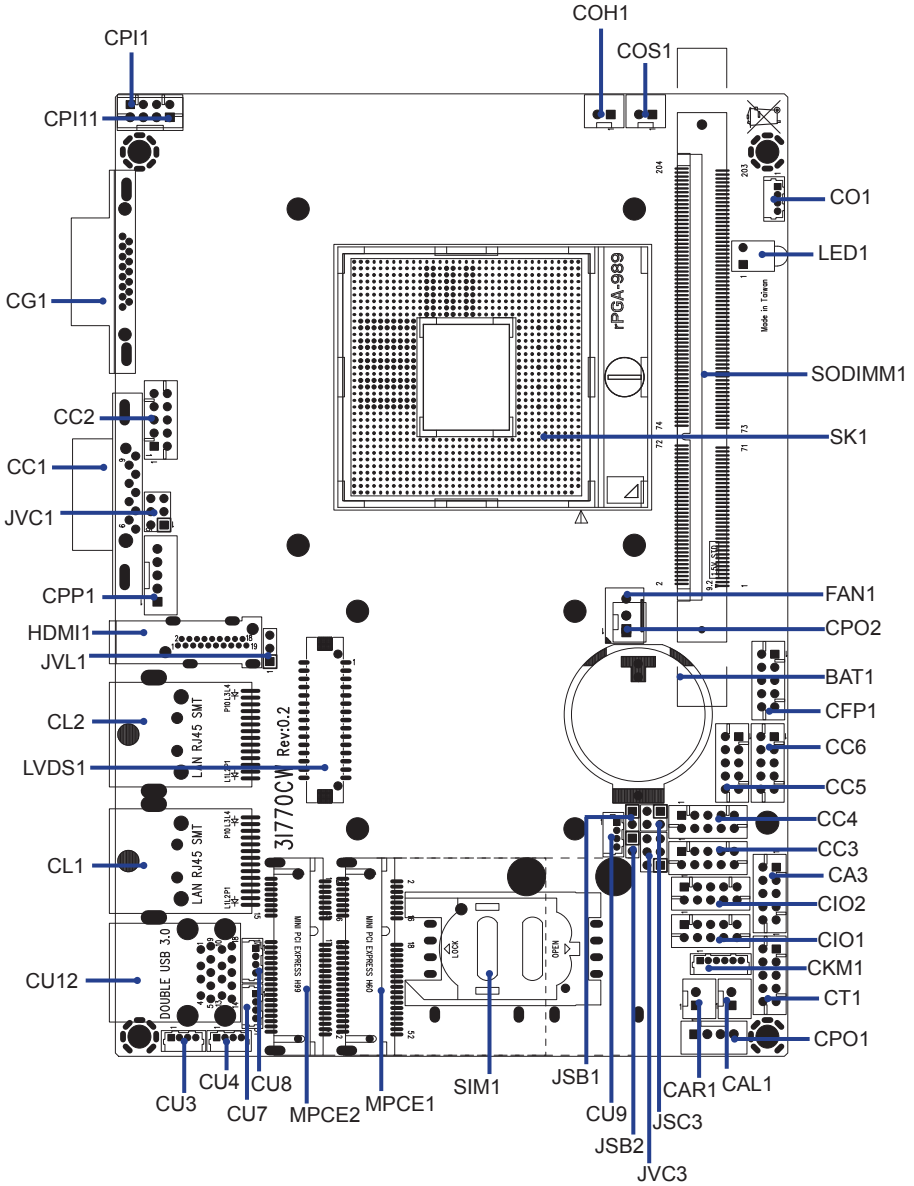
First of all, please follow all necessary steps of section 2-1 to protect 3I770A/CW from electricity discharge. With reference to section 1-7 please check the delivery package again with following steps:

1. Unpack the 3I770A/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.

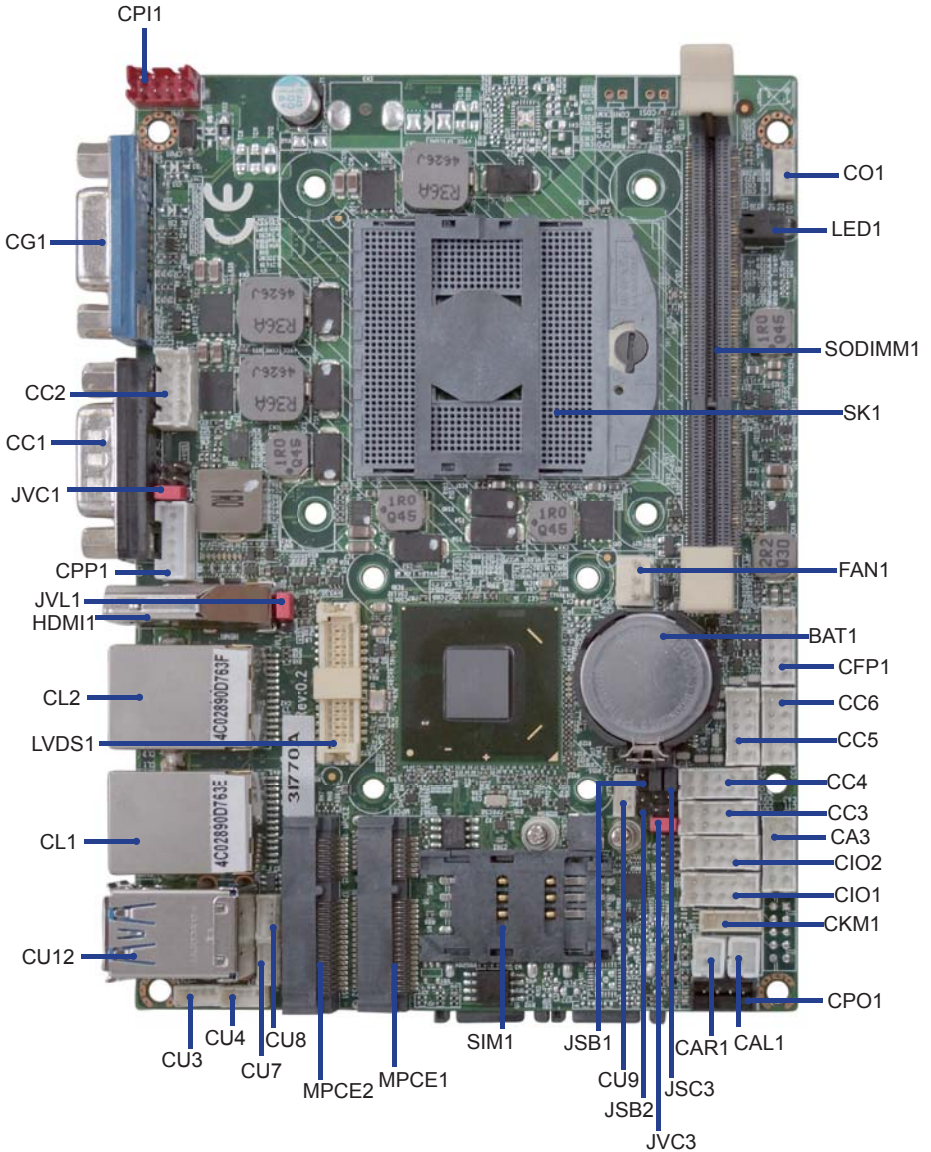
## 2-3 Dimension-3I770A/CW



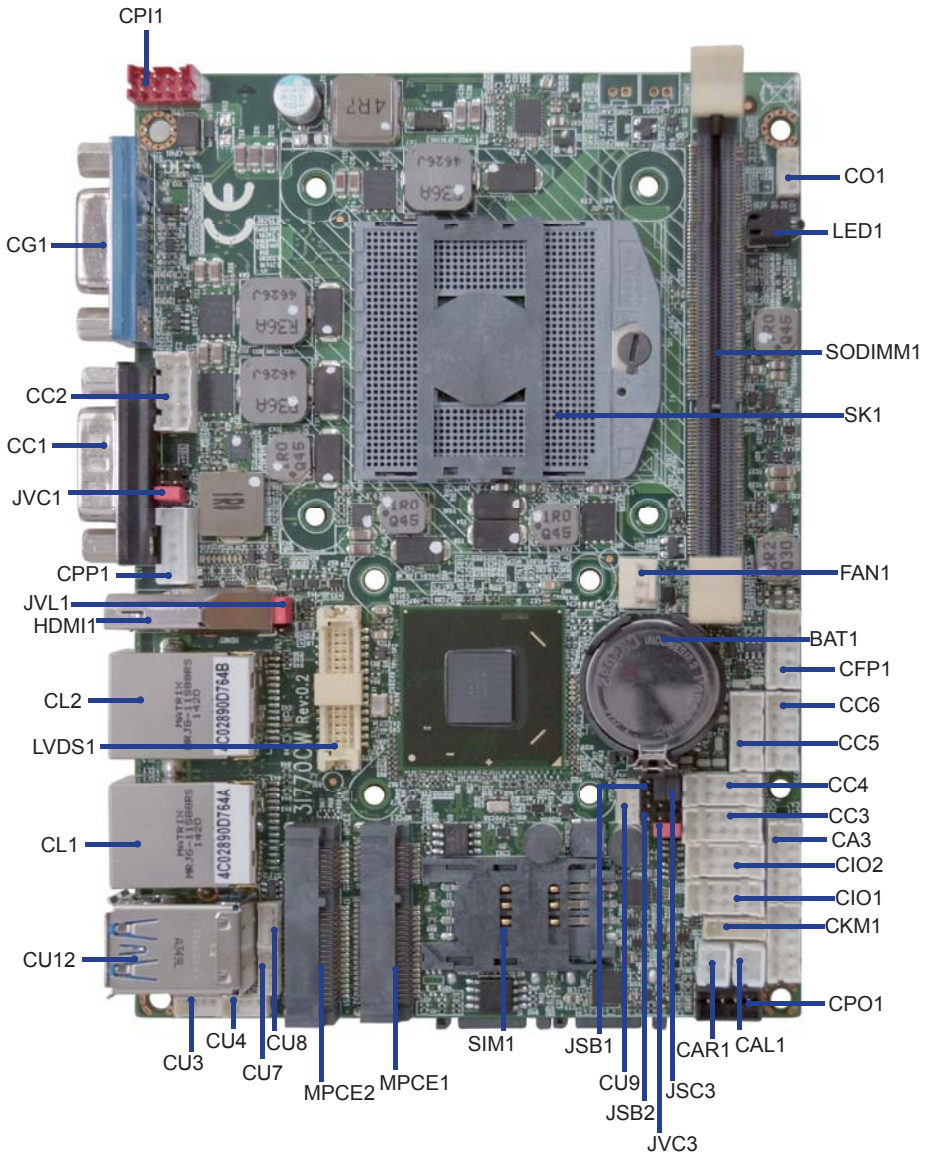
## 2-4 Layout-3I770A/CW



## 2-5 Diagram- 3I770A

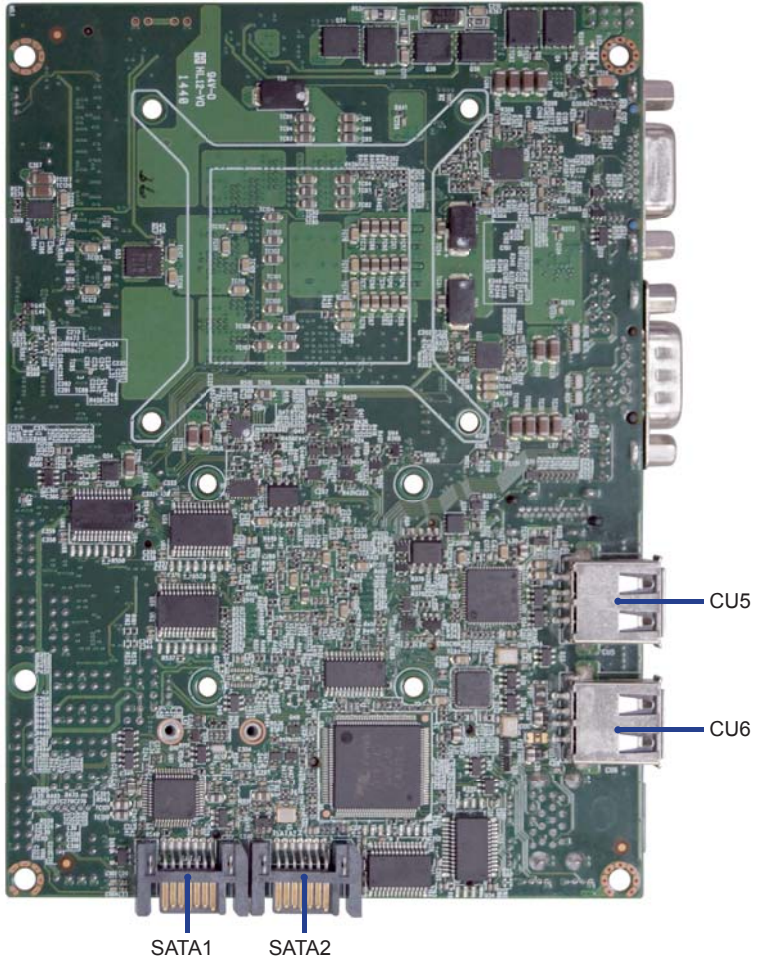


## 2-5-1 Diagram- 3I770CW



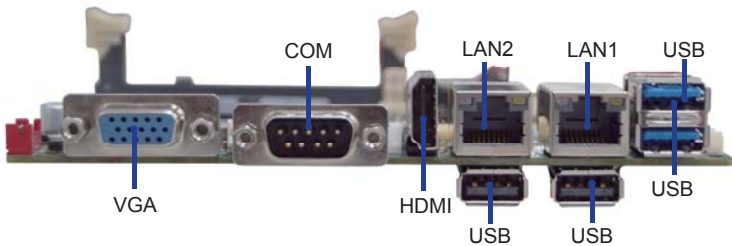


## 2-5-2 Bottom Side Diagram- 3I770A/CW



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## BACK Panel-3I770A/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.

---

## 2-7 List of Jumpers

JSB1: CMOS clear select

JSB2: ME RTC clear select

JSC3: COM3 RS232/RS422/RS485 select

JVC1: COM1 voltage select

JVC3: COM3 voltage select

JVL1: LCD Panel power 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.

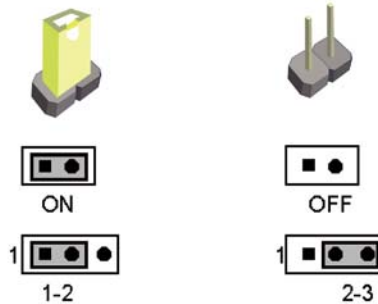


Figure 2.2

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 JSB1: CMOS DATA SET

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 the AC power
2. Remove DC IN power cable from DC IN power connector
3. Locate JSB1 and close pin 1-2 for few seconds
4. Return to default setting by opening pin 1-2
5. Connect DC IN power cable back to DC IN Power connector

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**

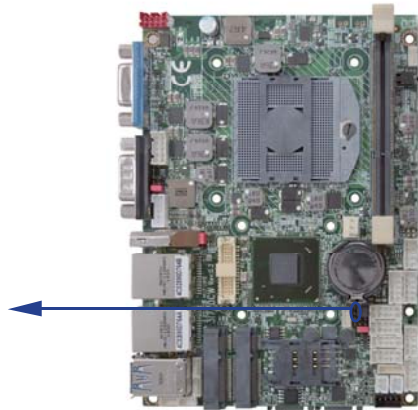
JSB1



\*Normal



short



## 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 the AC power
2. Remove DC IN power cable from DC IN 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 opening pin 1-2
6. Install Li battery to BAT1 connector
7. Connect DC IN power cable back to DC IN 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**

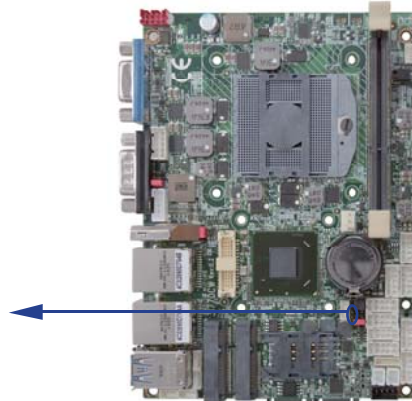
JSB2



\*Normal



short

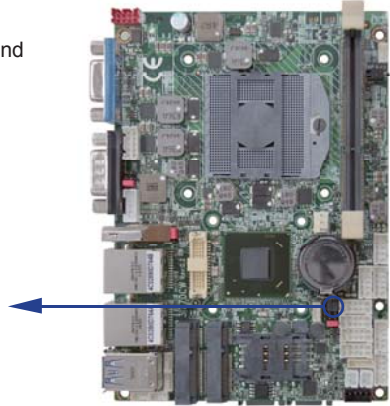
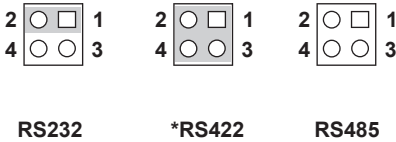


## 2-11 JSC3: COM3 RS232/RS422/RS485 select

JSC3	RS232	*RS422	RS485
1-2	Short	Short	Open
3-4	Open	Short	Open

Note: RS232/RS422/485 setting by both H/W jumper and BIOS setting

### JSC3



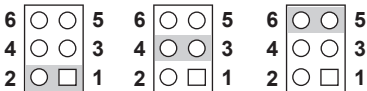
## 2-12 COM port pin9 select RI signal or Voltage source

JVC1: COM1 PIN9 select    JVC3: COM3 PIN9 select

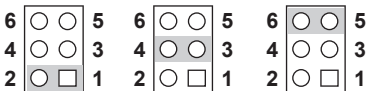
JVC1/3	Description
*1-2	COM port pin9 use RI signal
3-4	COM port pin9 use +5V voltage
5-6	COM port pin9 use +12V voltage

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

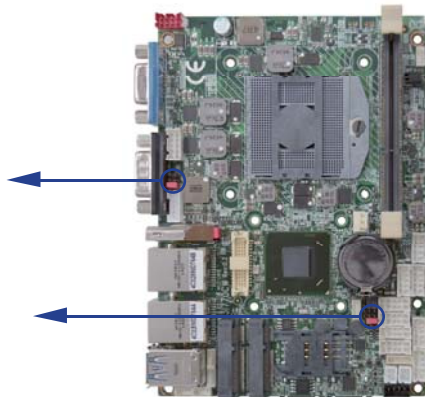
### JVC1



### JVC3



\*RI Signal                  +5V                  +12V



## 2-13 JVL1: LCD panel power select

JVL1	Description
1-2	+5V
*2-3	+3.3V

Note: Attention ! Check Device Power in spec

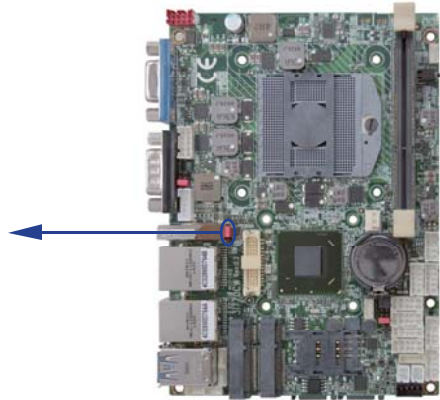
**JVL1**



**+5V**



**\*+3.3V**



---

# 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

CPI1: DC-in 2x4 pin (2.0mm) Red wafer connector  
CPI11: DC-in 1x4 pin (2.0mm) Red wafer connector ( Option )  
BAT1: Li 3V battery holder  
CPO1: DC +5/+12V output 1x4 pin(2.0mm) Black wafer connector  
CPO2: DC +12V output 1x2 pin(2.0mm) Black wafer connector ( Option )  
CFP1: Front panel port 2x5 pin (2.00mm) wafer  
FAN1: CPU fan 1x3 pin (2.54mm) wafer  
CG1: VGA port DB15 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  
CA3: Line-out/Line-in/Mic-in 2x5 pin (2.0mm) wafer.  
CAL1: Amplifier Line-out Left channel 2pin (2.0mm) wafer  
CAR1: Amplifier Line-out Right channel 2pin (2.0mm) wafer  
CC1: COM port DB15 Connector  
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<sup>2</sup>C 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  
CU3/CU4/CU7/CU8/CU9: USB port 2/3/12/11/13 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: Half size Mini card port 1 sockets 52pin  
MPCE2: Full size Mini card port 2 sockets 52pin  
SIM1: SIM port 1 card socket  
SODIM1: SO-DIM DDR3 1.5V DRAM Socket

## 3-2 DC power input

### ● CPI1: DC-IN Internal Connector (2 X 4 pin 2.0mm Red Wafer)

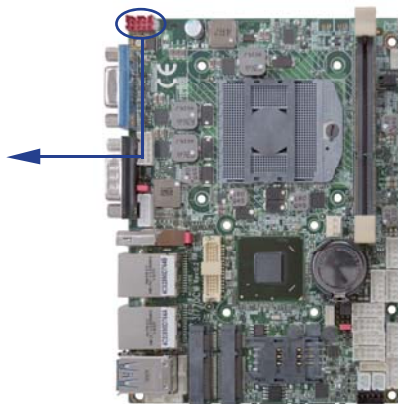
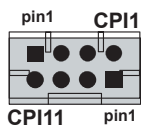
PIN NO.	Description	PIN NO.	Description
1	GND	2	GND
3	DC-IN	4	DC-IN
5	DC-IN	6	DC-IN
7	GND	8	GND

- Note: 1. DC in from adapter plug in  
2. Share CPI11 Connector  
3. Mating connector: JST B8B-PHDSS or compatible  
4. Cable housing: JST PHDR-08VS or compatible

### ● CPI11: DC-IN Internal Connector (Option) (1 X 4 pin 2.0mm Red wafer)

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

- Note: 1. DC in from adapter plug in  
2. Mating connector: JST B4B-PH-KL or compatible  
3. Cable housing: JST PHR-4 or compatible



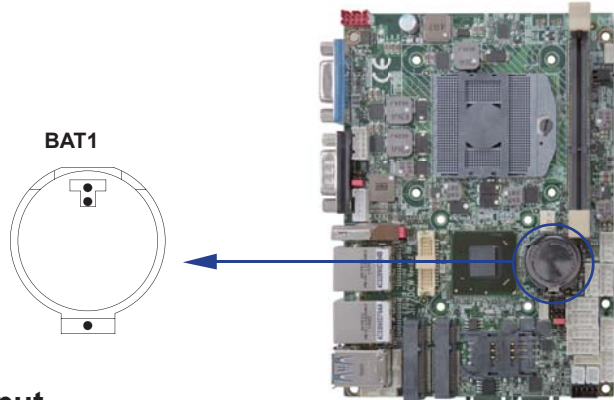


### 3-3 Battery Input

- **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



### 3-4 DC Power output

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

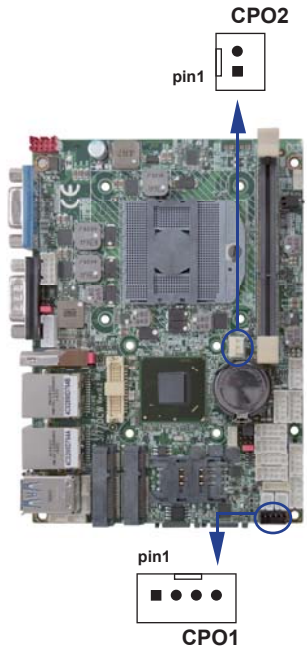
PIN NO.	Description
1	+5V
2	GND
3	GND
4	+12V*

- \*Note: 1. DC in +12V by switch to DC-out voltage +12V, so DC in need stable +12V input  
 2. Mating connector: JST B4B-PH-KL or compatible  
 3. Cable housing: JST PHR-4 or compatible

- **CPO1: +12V DC voltage output ( Option )  
 ( 1 X 2 pin 2.0mm Black wafer )**

PIN NO.	Description
1	GND
2	+12V*

- \*Note: 1. DC in +12V by switch to DC-out voltage +12V, so DC in need stable +12V input  
 2. Share FAN1 Connector  
 3. Mating connector: JST B2B-PH-KL or compatible  
 4. Cable housing: JST PHR-2 or compatible



## 3-5 Front panel & FAN

### • CFP1 Front panel connector (2 X 5 pin 2.0mm wafer)

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

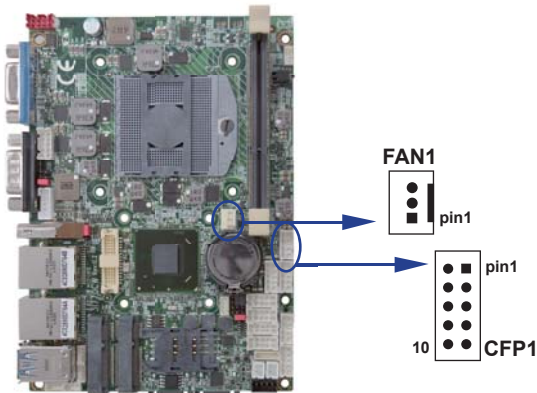
\*Note: 1. Mating connector: JST B10B-PHDSS or compatible  
 2. Cable housing: JST PHDR-10VS or compatible

### FAN connectors

#### • FAN1: CPU FAN connector (1 X 3 pin 2.5mm wafer)

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

Note: 1. DC in +12V by switch to FAN power +12V,  
 so DC in need stable +12V input  
 2. Mating connector: MOLEX 7879-3 or compatible  
 3. Cable housing: MOLEX 7880-3 or compatible



## 3-6 Display & Touch interface

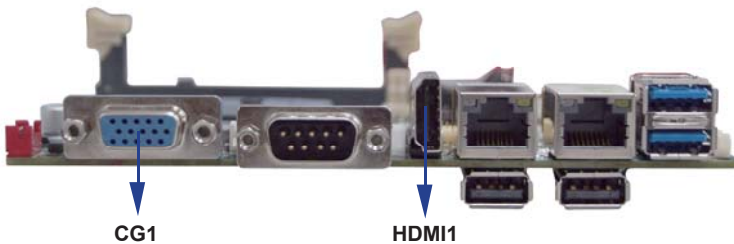
### ● CG1: VGA DB15 Connector

PIN NO.	Description	PIN NO.	Description
1	RED	2	GREEN
3	BLUE	4	NC
5	GND	6	GND
7	GND	8	GND
9	NC	10	GND
11	NC	12	DDC DATA
13	H-SYNC	14	V-SYNC
15	DDC CLOCK		

### ● HDMI1: HDMI Connector (Type A)

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		

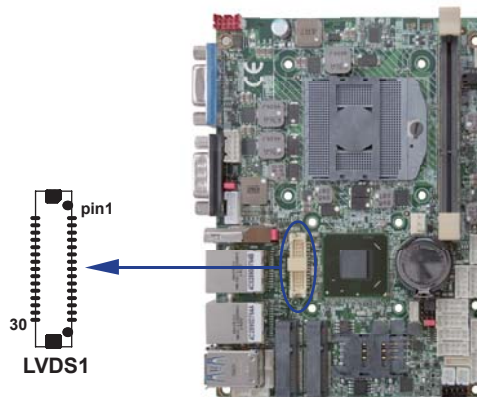
\*Note: HDMI support 1.3a Spec



● **LVDS1: LVDS interface (2 X 15 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-

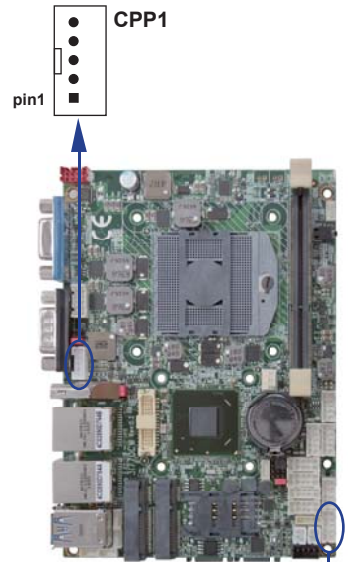
- Note:
1. LVDS interface support 18/24bits two channel
  2. JVL1: LVDS panel +5V/+3.3V Voltage select
  3. LVDS1 PIN 1 for panel backlight active, Default active setup by DPC Control  
And adjust PWM duty cycle by software program
  4. Pin 1 back light dimming control. Provided 200Hz / 275Hz / 380Hz / 20KHz / 25KHz
  5. Mating connector: HIROSE DF13-30DS-1.25C or compatible
  6. Cable housing: HIROSE DF13-30DP-1.25V or compatible



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

PIN NO.	Description
1	+12V
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 DPC Control  
 3. Pin 3 back light dimming Control.  
 Provided 200Hz / 275Hz / 380Hz / 20KHz / 25KHz  
 And adjust PWM duty cycle by software program.  
 4. Mating connector: JST B5B-PH-KL or compatible  
 5. Cable housing: JST PHR-5 or compatible

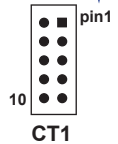


● **CT1: Touch screen (2x5 pin 2.0mm wafer) Default use USB interface**

● **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  
 3. Mating connector: JST B10B-PHDSS or compatible  
 4. Cable housing: JST PHDR-10VS or compatible



● **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  
 3. Mating connector: JST B10B-PHDSS or compatible  
 4. Cable housing: JST PHDR-10VS or compatible

● **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	N/A

- Note: 1. Touch controller use USB port 8  
 2. Mating connector: JST B10B-PHDSS or compatible  
 3. Cable housing: JST PHDR-10VS or compatible

### 3-7 Audio interface

● **CA3: Line-out/Line-in/Mic-in (2 X 4 pin 2.0mm wafer)**

PIN NO.	Description	PIN NO.	Description
1	Line-out-R	2	MIC-IN
3	Line-in-R	4	GND
5	GND	6	GND
7	Line-in-L	8	NC
9	Line-out-L	10	MIC-IN

- Note: 1. Mating connector: JST B10B-PHDSS or compatible  
 2. Cable housing: JST PHDR-10VS or compatible

● **Audio Amplifier class D Two channel**

2.57 W/Ch (Typ.) into a 4ΩLoad

1.46 W/Ch (Typ.) into a 8ΩLoad

● **CAR1: Audio Amplifier Line out Right (1 X 2 pin 2.0mm wafer)**

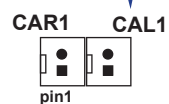
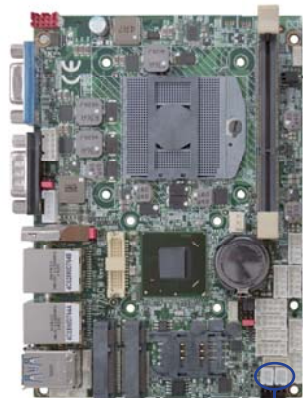
PIN NO.	Description
1	LINE-OUT_R+
2	LINE-OUT_R-

- Note: 1. Mating connector: JST B2B-PH-KL or compatible  
 2. Cable housing: JST PHR-2 or compatible

● **CAL1: Audio Amplifier Line out Left (1 X 2 pin 2.0mm wafer)**

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

- Note: 1. Mating connector: JST B2B-PH-KL or compatible  
 2. Cable housing: JST PHR-2 or compatible



## 3-8 I/O Interface

### •COM ports (COM1~COM6 from super I/O)

COM1/2/4/5/6 default support RS232 mode

COM3 default support RS232/RS422/RS485 mode

### •RS232 mode ports (D-SUB 9pin)

CC1: COM1

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		

Note: 1. The Pin 9 Voltage set by JVC1 for CC1

### •RS485 mode ports (D-SUB 9pin)

CC1: COM1

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		

Note: 1. CC1 connector RS485 function for OEM BOM request

2. BIOS need setting to RS485 mode

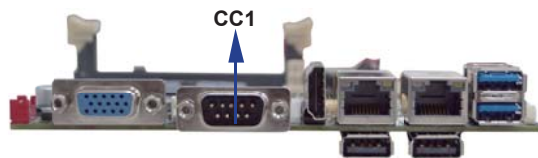
### •RS422 mode ports (D-SUB 9pin)

CC1: COM1

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		

Note: 1. CC1 connector RS422 function for OEM BOM request

2. BIOS need setting to RS485 mode



● **RS232 mode ports (2 X 5 pin 2.0mm wafer)**

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. The Pin 9 Voltage set by JVC3 for CC3  
 2. Mating connector: JST B10B-PHDS5 or compatible  
 3. Cable housing: JST PHDR-10VS or compatible

● **RS485 mode ports (2 X 5 pin 2.0mm wafer)**

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

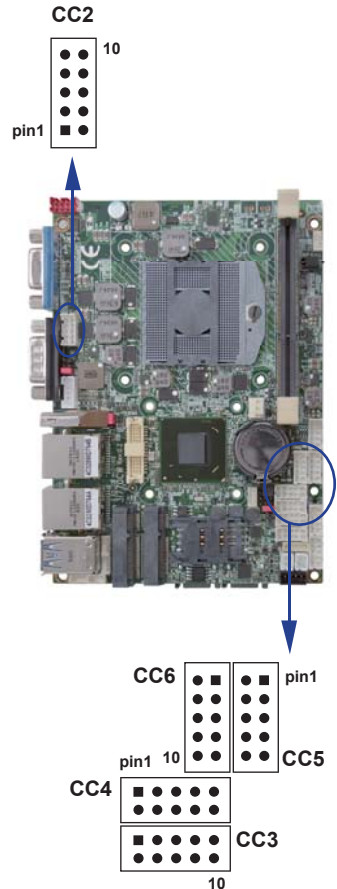
Note: 1. CC2/CC4/CC5/CC6 connector RS485 function for OEM BOM request  
 2. BIOS need setting to RS485 mode  
 3. Mating connector: JST B10B-PHDS5 or compatible  
 4. Cable housing: JST PHDR-10VS or compatible

● **RS422 mode ports (2 X 5 pin 2.0mm wafer)**

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

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. CC2/CC4/CC5/CC6 connector RS422 function for OEM BOM request  
 2. BIOS need setting to RS485 mode  
 3. Mating connector: JST B10B-PHDS5 or compatible  
 4. Cable housing: JST PHDR-10VS or compatible





## 3-9 Digital Input / Output

### •C1O1 DIO 0 ~ 3 (2x5pin 2.0mm wafer)

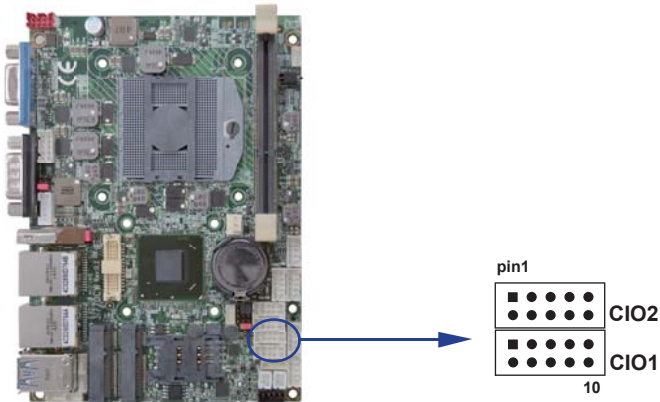
PIN NO.	Description	PIN NO.	Description
1	DI-0	2	DO-3
3	DI-1	4	DO-2
5	DI-2	6	DO-1
7	DI-3	8	DO-0
9	GND	10	+5V

- Note: 1. DI pin default pull up 10K $\Omega$  to +5V  
 2. If use need isolate circuit to control external device  
 3. F75111N-1 I<sup>2</sup>C bus address 0x9c  
 4. Mating connector: JST B10B-PHDSS or compatible  
 5. Cable housing: JST PHDR-10VS or compatible

### • C1O2 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 10K $\Omega$  to +5V  
 2. If use need isolate circuit to control external device  
 3. F75111N-1 I<sup>2</sup>C bus address 0x9c  
 4. Mating connector: JST B10B-PHDSS or compatible  
 5. Cable housing: JST PHDR-10VS or compatible



---

● **For F75111N I<sup>2</sup>C 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.

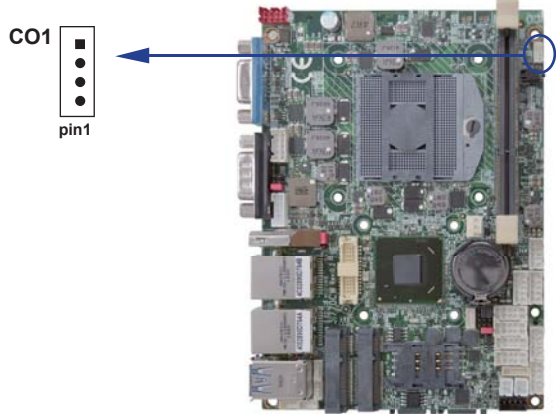
Please refer to page 82 for APPENDIX C: F75111N I<sup>2</sup>C DIO DECICE

### 3-10 I<sup>2</sup>C Bus Interface

• CO1: I<sup>2</sup>C (SM) bus connector (4 pin 1.25mm wafer)

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

Note: 1. Mating connector: MOLEX 53047-0410 or compatible  
2. Cable housing: MOLEX 51021-0400 or compatible

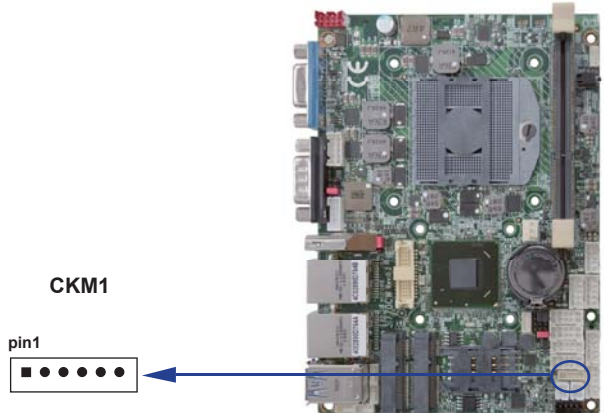


### 3-11 PS2 KB/MS

• CKM1: KB/MS port (1 X 6 pin 1.25mm wafer)

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

Note: 1. Mating connector: MOLEX 53047-0610 or compatible  
2. Cable housing: MOLEX 51021-0600 or compatible



## 3-12 LAN Interface

### • CL1 / CL2: LAN Giga/100Mb (RJ45 Jack)

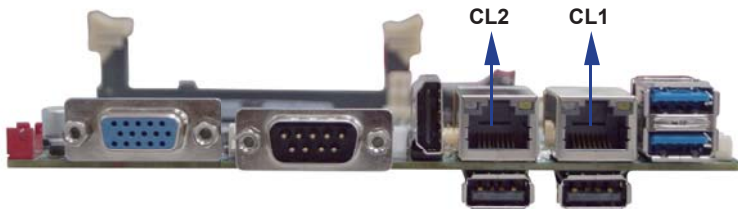
PIN NO.	Description	PIN NO.	Description
1	TD0-/TX+	5	TD2-/NC
2	TD0+/TX-	6	TD2+/RX-
3	TD1-/RX+	7	TD3-/NC
4	TD1+/NC	8	TD3+/NC

### • 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)

### • RJ45 LAN Connector--- LED define Giga/100/10MB Connector

SPEED		10 Mbps			100Mbps			1000 Mbps		
Indicate	Side	Back		Front	Back		Front	Back		Front
	LED	Link	ACT	ACT	Link	ACT	ACT	Link	ACT	ACT
LAN Light		Back	Orange	Orange	Green	Orange	Orange	Red	Orange	Orange



## 3-13 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

### ● CU3/CU4/CU7/CU8/CU9: USB 2/3/11/12/13 ports

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

Note: 1. Attention! Check Device Power in spec

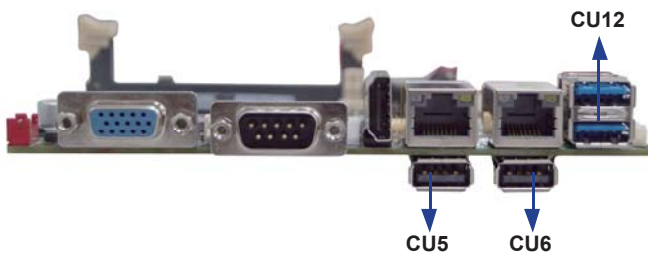
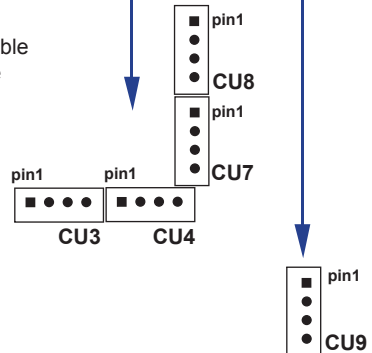
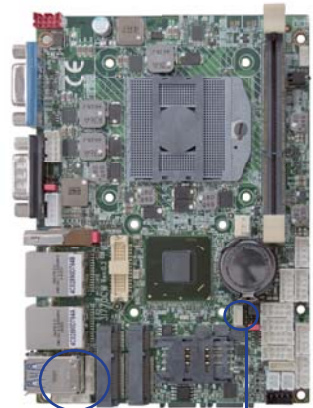
2. Mating connector: MOLEX 53047-0410 or compatible
3. Cable housing: MOLEX 51021-0400 or compatible

### ● 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

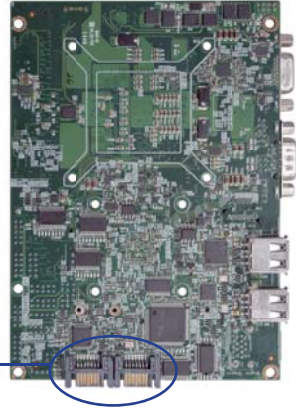
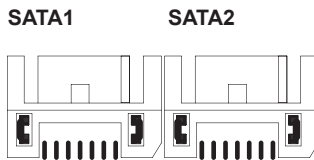


## 3-14 SATA interface

### • 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



### • SSD use at SATA3 channel

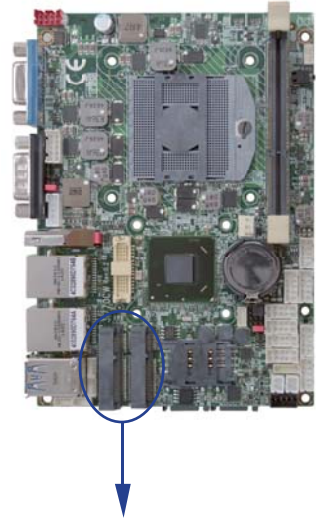
- Note: 1. On board SSD for OEM option

## 3-15 Module socket

### • Mini 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. MPCE1 Half size, MPCE2 Full size
  2. MPCE1 used USB port 9, MPCE2 used USB port 10
  3. MPCE1 Pin 8,10,12,14,16 for NC
  4. MPCE1 Pin 23,25,31,33 for mSATA device Only
  5. MPCE2 Pin 8, 10,12,14,16 for SIM1 card reader use
  6. MPCE2 Pin23, 25, 31, 33 supported mSATA device and PCIe device alternatively
  7. MPCE2 Pin51 mSATA / PCIe auto detect function

### 3-16 SIM Socket

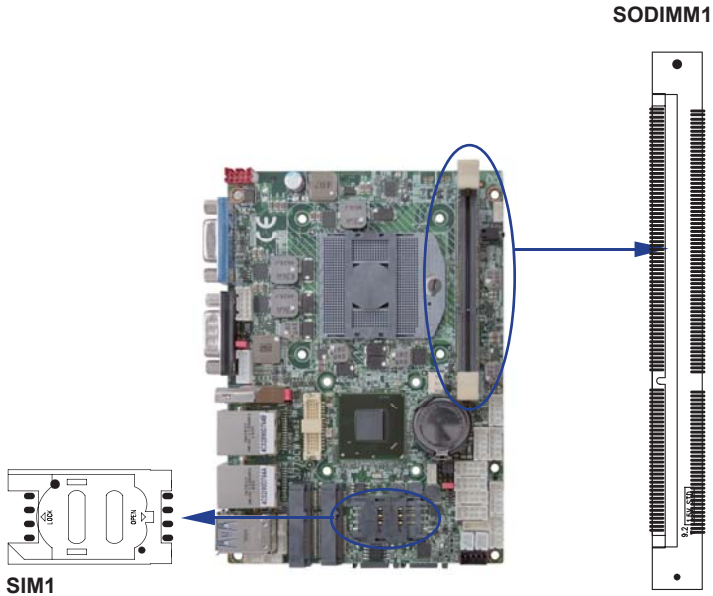
• SIM1: SIM card socket pin define is follow ISO 7816-2 smart card standard.

PIN NO.	Description	PIN NO.	Description
1	Vcc	1	GND
2	RST	2	Vpp
3	CLK	3	DATA
4	RUF	4	RUF

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

### 3-17 SODIMM socket

- 1.SODIMM1: SO-DIM DDR3 1.5V DRAM Socket
- 2. Support un-buffer type module





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# 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.

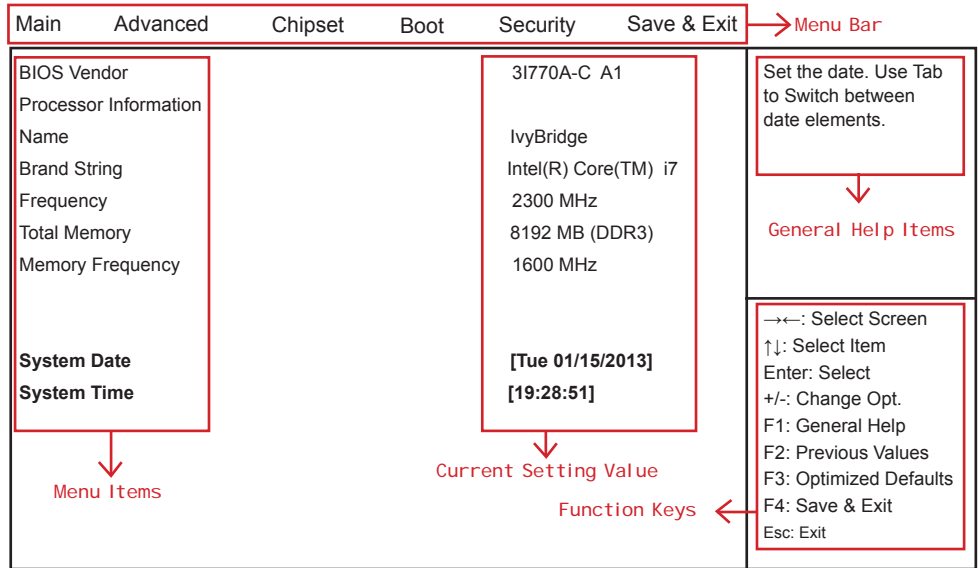
## 4-1 Enter Setup

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 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 & Reset.
- 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 Vendor				3I770A-C	A1
Processor Information					
Name				IvyBridge	
Brand String				Intel(R) Core(TM) i7	
Frequency				2300 MHz	
Total Memory				8192 MB (DDR3)	
Memory Frequency				1600 MHz	
<b>System Date</b>				<b>[Tue 01/15/2013]</b>	
<b>System Time</b>				<b>[19:28:51]</b>	

→←: Select Screen  
↑↓: Select Item  
Enter: Select  
+/-: Change Opt.  
F1: General Help  
F2: Previous Values  
F3: Optimized Defaults  
F4: Save & Exit  
Esc: Exit

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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

<ul style="list-style-type: none"><li>▶ ACPI Settings</li><li>▶ S5 RTC Wake Setting</li><li>▶ Trusted Computing</li><li>▶ CPU Configuration</li><li>▶ SATA Configuration</li><li>▶ SMART Setting</li><li>▶ F71869 Super IO Configuration</li><li>▶ F71869 H/W Monitor</li><li>▶ F81216 Second Super IO Configuration</li><li>▶ Serial Port Console Redirection</li><li>▶ Network Stack</li></ul>	<p>System ACPI Parameters.</p> <hr/> <p>→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit Esc: Exit</p>
--	--

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### ACPI Settings

Please refer section 4-7-1

### S5 RTC Wake Setting

Please refer section 4-7-2

### Trusted Computing ( For TPM OEM Function )

Please refer section 4-7-3

### CPU Configuration

Please refer section 4-7-4

### SATA Configuration

Please refer section 4-7-5

### SMART Settings

Please refer section 4-7-6

### F71869 Super IO Configuration

Please refer section 4-7-7

### F71869 H/W Monitor

Please refer section 4-7-8

### F81216 Second Super IO Configuration

Please refer section 4-7-9

### Serial Port Console Redirection

Please refer section 4-7-10

### Network Stack

Please refer section 4-7-11

## 4-7-1 ACPI Settings

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

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

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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.

## 4-7-2 S5 RTC Wake Settings

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

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

## 4-7-3 Trusted Computing ( For TPM OEM Function )

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

Configuration Security Device Support	<b>[Disabled]</b>	Enables or Disables BIOS support for security device.O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.
Current Status Information		→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit Esc: Exit

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### Security Device Support

Use this item to select Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.

\* The item for functions OEM.

## 4-7-4 CPU Configuration

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

CPU Configuration		Enabled for Windows XP and Linux (OS optimized for Hyper-threading Technology) and Disabled for other OS (OS not optimized for Hyper-threading Technology). When Disabled only one thread per enabled core is enabled.
Intel(R) Core(TM) i7-3610QE CPU @ 2.30GHz		
CPU Signature	306a9	
Microcode Path	10	
Max CPU Speed	2300 MHz	
Min CPU Speed	1200 MHz	
CPU Speed	2300 MHz	
Processor Cores	4	
Intel HT Technology	Supported	
Intel VT-x Technology	Supported	
Intel SMX Technology	Supported	
64-bit	Supported	
L1 Data Cache	32 KB x 4	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit Esc: Exit
L1 Code Cache	32 KB x 4	
L2 Cache	256 KB x 4	
L3 Cache	6144 KB	
Hyper-threading	<b>[Enabled]</b>	
Active Processor Cores	<b>[All]</b>	
Execute Disable Bit	<b>[Enabled]</b>	
Intel Virtualization Technology	<b>[Disabled]</b>	

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### Hyper-threading

Use this item to select Enabled for Windows XP and Linux (OS optimized for Hyper-threading Technology) and Disabled for other OS (OS not optimized for Hyper-threading Technology). When Disabled only one thread per enabled core is enabled.

### 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)	<b>[Enabled]</b>	Enable or disable SATA Device.
SATA Mode Selection	<b>[IDE]</b>	
		→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit 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)	<b>[Enabled]</b>	Enable or disable SATA Device.
SATA Mode Selection	<b>[AHCI]</b>	
SATA Controller Speed	<b>[Gen3]</b>	
▶ Software Feature Mask Configuration		
		→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit Esc: Exit

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### SATA Controller Speed

Indicates the maximum speed the SATA controller can support.

The optional settings: Gen1, Gen2, Gen3.

### Software Feature Mask Configuration

Please refer section 4-7-5-1-1



## 4-7-5-1-1 ► Software Feature Mask Configuration

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

RAID0	[Enabled]	Enable or disable RAID0 feature.
RAID1	[Enabled]	
		→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit Esc: Exit

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### RAID0,RAID1,RAID10,RAID5

Enable or disable RAID0, RAID1 feature.

The optional settings: Enabled, Disabled.

## 4-7-5-2 SATA Mode Selection - RAID Mode

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

SATA Controller(s)	[Enabled]	Enable or disable SATA Device.
SATA Mode Selection	[RAID]	
SATA Controller Speed	[Gen3]	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit Esc: Exit
► Software Feature Mask Configuration		
Alternate ID	[Disabled]	

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### SATA Controller(s)

### SATA Mode Selection

### SATA Controller Speed

### ► Software Feature Mask Configuration

Please refer section 4-7-5-1-1

### Alternate ID

Report alternate Device ID

The optional settings: Enabled, Disabled.

## 4-7-6 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 ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit Esc: Exit

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### SMART Self Test

Run Smart Self Test on all HDDs during POST.

The optional settings are: Disabled, Enabled.

## 4-7-7 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	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit Esc: Exit
▶ Serial Port 1 Configuration		
▶ Serial Port 2 Configuration		
Power Failure	[Keep last state]	

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### Serial Port 1 Configuration

Please refer section 4-7-7-1

### Serial Port 2 Configuration

Please refer section 4-7-7-1

### 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.

## 4-7-7-1 ► 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	<b>[Enabled]</b>	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit Esc: Exit
Device Settings	IO=3F8h; IRQ=4;	
Change Settings	<b>[AUTO]</b>	

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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;

## 4-7-8 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.

## 4-7-9 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	
<ul style="list-style-type: none"> <li>▶ Serial Port 3 Configuration</li> <li>▶ Serial Port 4 Configuration</li> <li>▶ Serial Port 5 Configuration</li> <li>▶ Serial Port 6 Configuration</li> </ul>		→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit Esc: Exit

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### Serial Port 3 Configuration

Please refer section 4-7-9-1

### Serial Port 4 Configuration

Please refer section 4-7-9-1

### Serial Port 5 Configuration

Please refer section 4-7-9-1

### Serial Port 6 Configuration

Please refer section 4-7-9-1

## 4-7-9-1 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	<b>[Enabled]</b>	
Device Settings	IO=260h; IRQ=11;	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit Esc: Exit
Change Settings	<b>[AUTO]</b>	
COM3 422/485 control flow	<b>[Disabled]</b>	

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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=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;

## COM3 422/485 control flow

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

## 4-7-10 Serial Port Console Redirection

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

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

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## Console Redirection

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

## 4-7-11 Network Stack

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

<p>Network stack <span style="float: right;">[Disabled Link]</span></p>	<p>Enable/Disable UEFI network stack.</p> <hr/> <p>→←: Select Screen          ↑↓: Select Item          Enter: Select          +/-: Change Opt.          F1: General Help          F2: Previous Values          F3: Optimized Defaults          F4: Save &amp; Exit          Esc: Exit</p>
---	---

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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

<ul style="list-style-type: none"> <li>▶ PCH-IO Configuration</li> <li>▶ System Agent (SA) Configuration</li> </ul>	<p>PCH Parameters</p> <hr/> <p>→←: Select Screen          ↑↓: Select Item          Enter: Select          +/-: Change Opt.          F1: General Help          F2: Previous Values          F3: Optimized Defaults          F4: Save &amp; Exit          Esc: Exit</p>
---	---

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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	QM77	PCI Express Configuration settings
Intel PCH Rev ID	04/C1	
► PCI Express Configuration		→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit Esc: Exit
► USB Configuration		
► PCH Azalia Configuration		
Wake on LAN	<b>[Disabled]</b>	

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

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### Mini PCIe 1

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

### Mini PCIe 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 PCIe Speed	<b>[Enabled]</b> <b>[Gen1]</b>	PCI Express Root Port 3 Setting.
		→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit 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	<b>[Enabled]</b>	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit Esc: Exit
xHCI Mode	<b>[Auto]</b>	
HS Port #1 Switchable	<b>[Enabled]</b>	
HS Port #2 Switchable	<b>[Enabled]</b>	
HS Port #3 Switchable	<b>[Enabled]</b>	
HS Port #4 Switchable	<b>[Enabled]</b>	
xHCI Streams	<b>[Enabled]</b>	
EHCI1	<b>[Enabled]</b>	
EHCI2	<b>[Enabled]</b>	

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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.

## 4-8-1-3 ► PCH Azalia Configuration

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

PCH Azalia Congiguration		Control Detection of the Azalia device. Disabled = Azalia Will be unconditionally disabled Enabled = Azalia Will be unconditionally Enabled Auto = Azalia Will be Enabled if present, disabled otherwise.
Azalia	<b>[Auto]</b>	
Azalia Internal HDMI Codec	<b>[Enabled]</b>	
Azalia HDMI Codec	<b>[Enabled]</b>	
		→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit Esc: Exit

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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 ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit 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		Graphics turbo IMON current values supported (14-31)
IGFX VBIOS Version	2170	
IGfx Frequency	350 MHz	
Graphics Turbo IMON Current	31	
Aperture Size	<b>[256MB]</b>	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit Esc: Exit
DVMT Pre-Allocated	<b>[64M]</b>	
DVMT Total Gfx Mem	<b>[256M]</b>	
► LCD Control		

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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		
Primary IGFX Boot Display	[CRT]	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
Secondary IGFX Boot Display	[HDMI]	
LCD Panel Type	[1024x768 LVDS1]	
Panel Color Depth	[18 Bit]	
		→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit 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.

#### Secondary IGFX Boot Display

The optional settings are: Disabled, CRT, HDMI, LVDS.

## 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		
Bootup NumLock State	[On]	Select the keyboard NumLock state.
Quiet Boot	[Enabled]	
GateA20 Active	[Upon Request]	
Boot Option Priorities		
▶ CSM parameters		
		→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit Esc: Exit

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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

Boot option filter	<b>[Legacy only]</b>	This option controls what devices system can boot to
Launch PXE OpROM policy	<b>[Do not launch]</b>	
		→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit Esc: Exit

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### 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

<p>Password Description</p> <p>If ONLY the Administrator's password is set, Then this only limits access to Setup and is only asked for when entering Setup.</p> <p>If ONLY the User's password is set, then this is a power on password and must be entered to</p>	<p>Set Administrator Password</p>				
<p>Boot or enter Setup. In Setup the User will Have Administrator right.</p> <p>The password length must be in the following range:</p> <table data-bbox="79 528 599 584"> <tr> <td>Minimum length</td> <td>3</td> </tr> <tr> <td>Maximum length</td> <td>20</td> </tr> </table> <p>Administrator Password</p> <p>User Password</p>	Minimum length	3	Maximum length	20	<p>→←: Select Screen          ↑↓: Select Item          Enter: Select          +/-: Change Opt.          F1: General Help          F2: Previous Values          F3: Optimized Defaults          F4: Save &amp; Exit          Esc: Exit</p>
Minimum length	3				
Maximum length	20				

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### Administrator Password & User Password

To set up an administrator password:

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

---

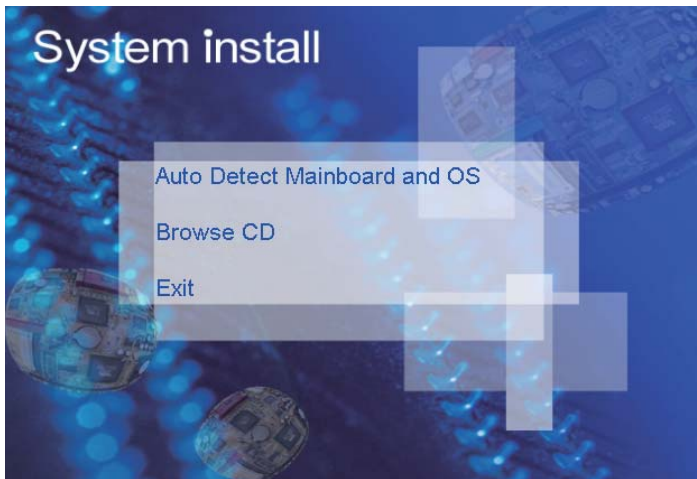
# Chapter-5

## 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

### *Ivy Bridge for Window 7 (x64)*

INF

LAN

VGA

COM

SOUND

USB 3.0

[Back to previous page](#)

1. INF      install Intel Ivy Bridge chipset driver
2. VGA      install Intel onboard VGA driver
3. SOUND    install 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 Baytrail Chipset Driver



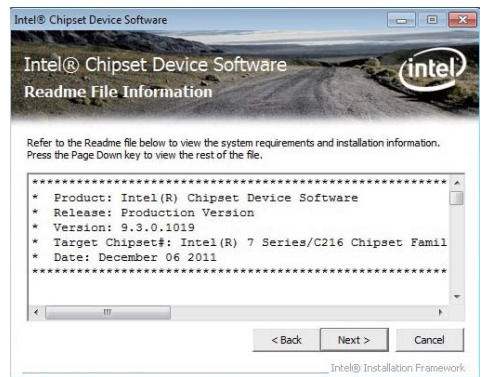
1. At the "AUTOMATIC DRIVER INSTALLATION menu" screen, click "INF".



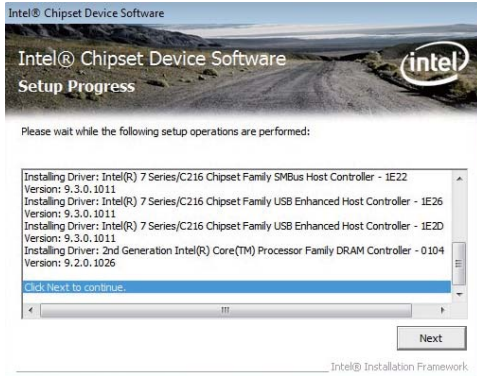
2. At the "Intel® Chipset Device Software" screen, click "Next".



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\inst\_autol.exe**

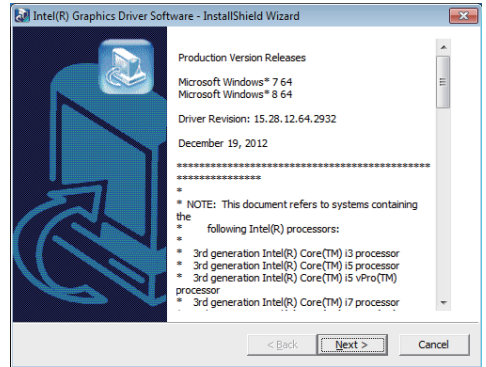
**For Windows 8.1 64/32-bit**

**X:\driver\INTEL\IVY\_SAN\inf\WIN8.1\Setup.exe**

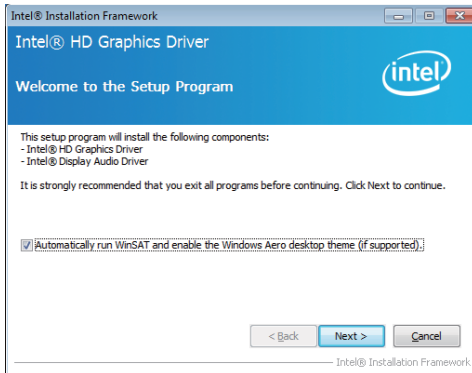
## 5-2 VGA Install Intel Ivy Bridge VGA Driver



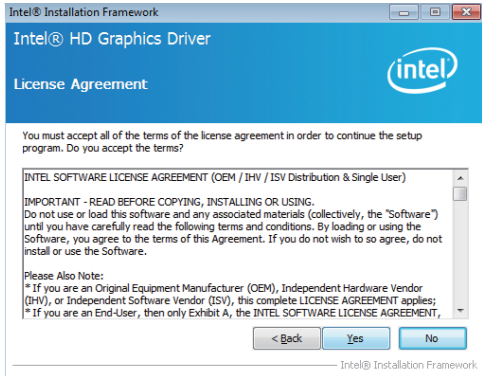
1. At the "AUTOMATIC DRIVER INSTALLATION menu" screen, click "VGA".



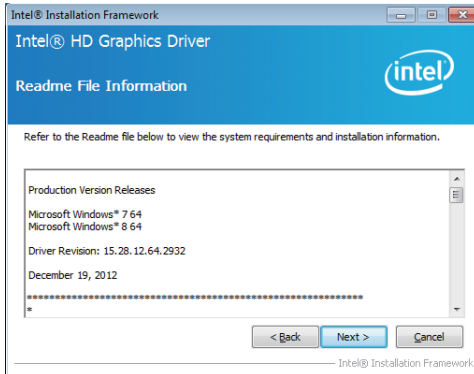
2. At the "Intel® HD Graphics Driver" screen, Click "Next".



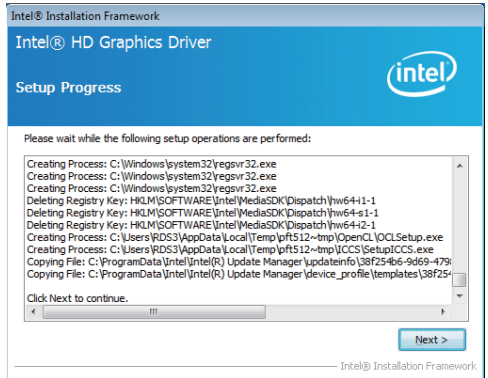
3. At the "Welcome to the Setup Program" screen, Click "Next".



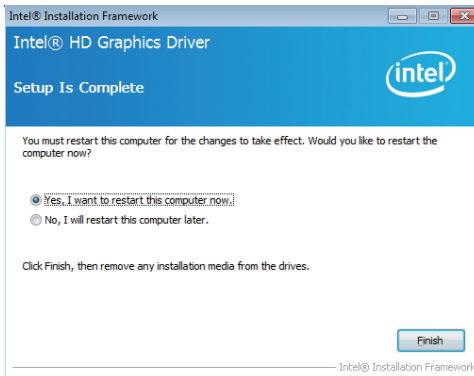
4. At the "License Agreement" screen, Click "Yes".



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**

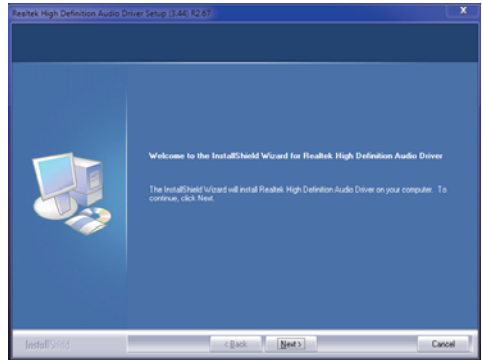
**For Windows 8.1 64bit**

**X:\driver\INTEL\IVY\_SAN\vga\WIN8.1\IVY\x64\Setup.exe**

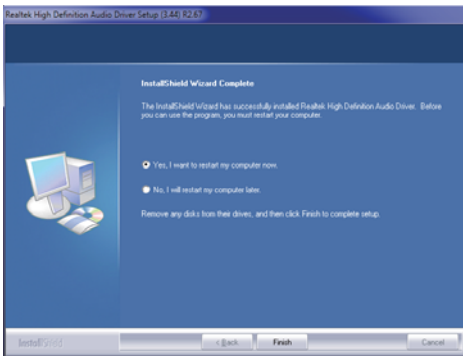
**For Windows 8.1 32bit**

**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**

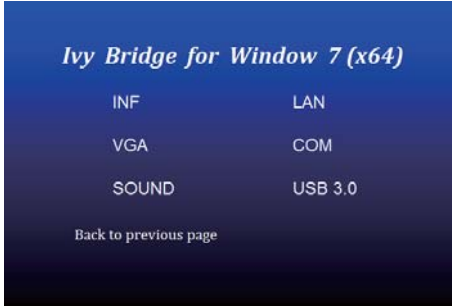
**For Windows 8.1 32bit**

**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



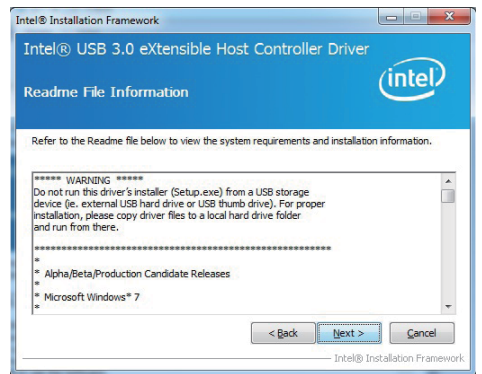
1. At the "AUTOMATIC DRIVER INSTALLATION" menu screen, Click "USB 3.0"



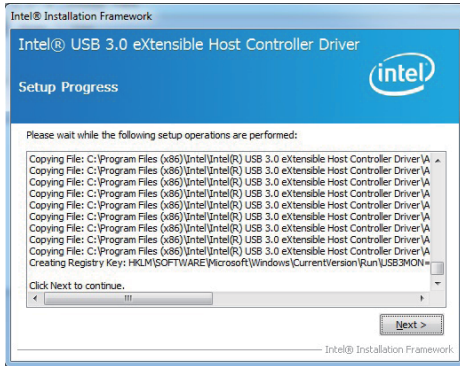
2. At the "Intel® USB 3.0 extensible Host Controller Driver" screen, Click "Next".



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



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



5. Click "Next".



6. Click "Finish" to restart computer

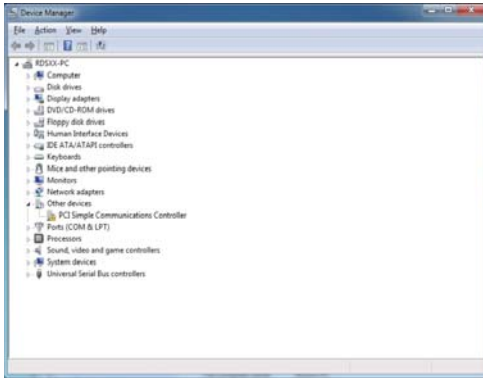
**NOTE:** The path of the file

**For Windows 7 32/64-bit**

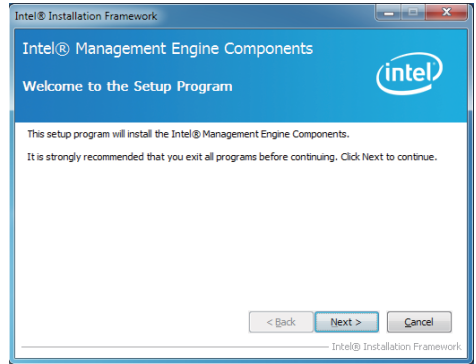
**X:\driver\INTEL\IVY\_SAN\USB3\_0\INTEL\Setup.exe**



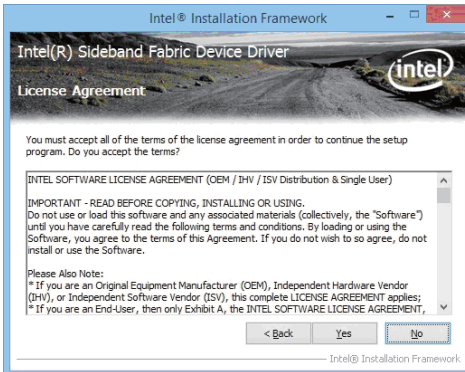
## 5-5 ME Install Intel Management Engine Interface Driver



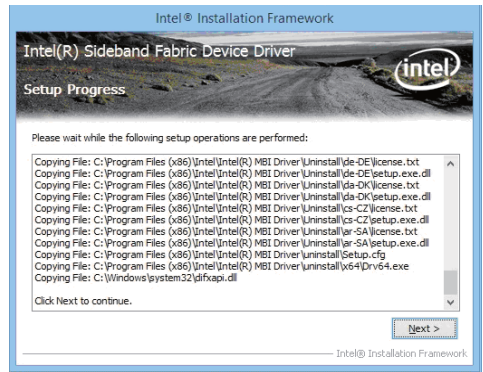
1. Please Check Device Manager "PCI Simple Communications Controllers"



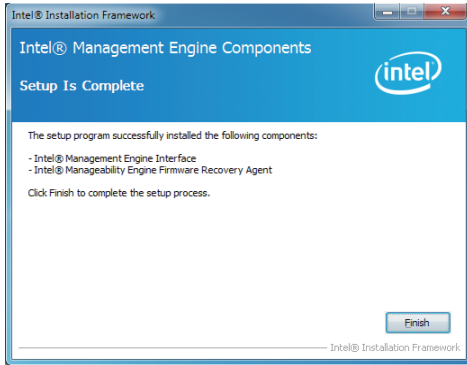
2. At the "Intel® Management Engine Components" screen, Click "Next".



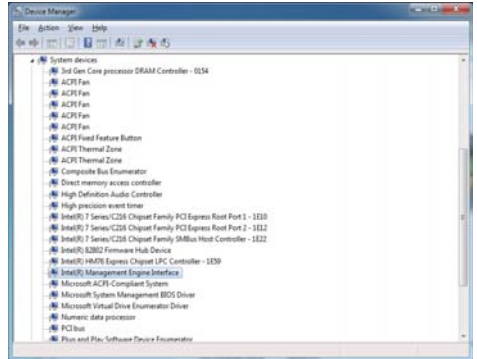
3. At the "Setup Progress" screen, Click "Next".



4. Click "Next".



5. Click "Finish"



6. Please Check Device Manager "PCI Simple Communications Controllers"

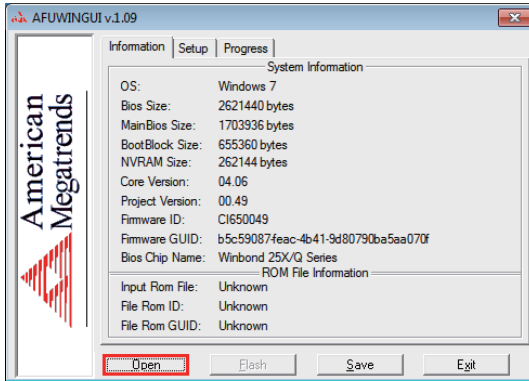
**NOTE:** The path of the file

For Windows XP 32/64 bit and Windows 7 32/64-bit

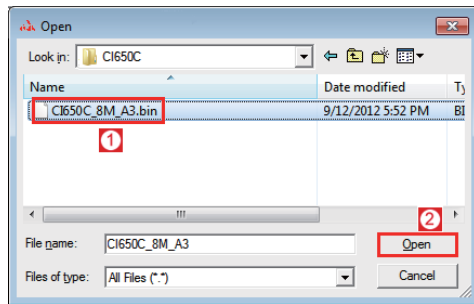
X:\driver\INTEL\ME TOOL\MEI-Only Installer\MEISetup.exe

## 5-6 How to update Insyde BIOS

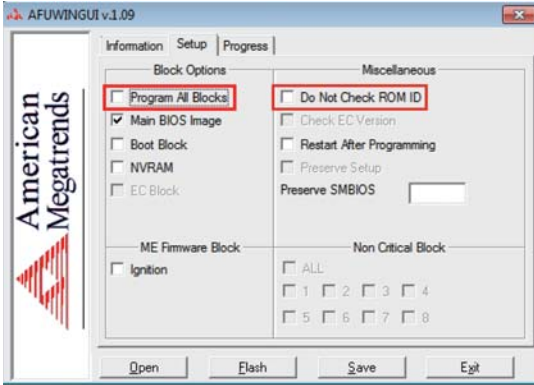
Step 1. To run afuwingui.exe then click "Open"



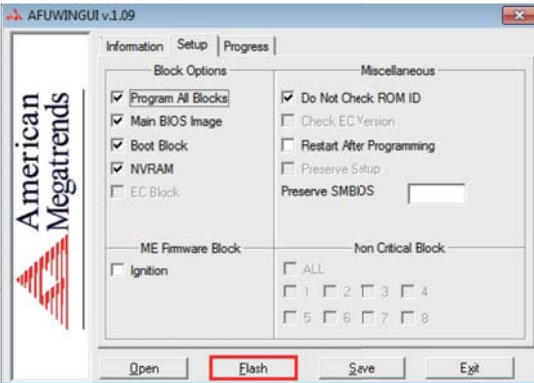
Step 2. Click the new version BIOS (download from the website)



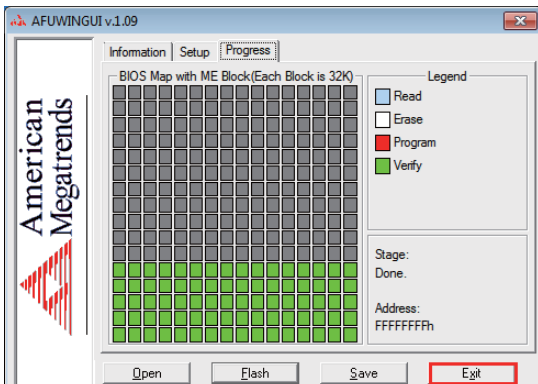
Step 3. Choose "Program All Blocks" and "Do Not Check ROM ID"



Step 4. Click "Flash"



Step 5. Click "Exit" and restart computer.



# Appendix A: Power Consumption Test

## Condition

Item	Spec
CPU	intel core i7, i5, i3, Celeron 1020E
Memory	DDR3 1600 4GB
Operating System	Windows 7 / SP1
Test Program	3D Mark Vantage
HDD 2.5" SATA	Slim Type HDD
mSATA	32GB

## Test Result for reference only !

Hard Disk	Processor	Power off	Start up		Operation Maximum	Shut down Maximum	In Put Voltage	
			Maximum	Stable				
Slim Type HDD	Core i7-3610QE	0.08A	2.36A	1.00A	5.04A	1.81A	12V	
		0.14A	1.23A	0.62A	2.60A	1.01A	24V	
	Core i5-3610ME	0.17A	2.19A	1.52A	3.58A	1.63A	12V	
		0.14A	1.16A	0.58A	1.70A	1.00A	24V	
	Core i3-3120ME	0.17A	1.90A	1.01A	2.94A	1.61A	12V	
		0.14A	1.02A	0.56A	1.45A	0.90A	24V	
	Celeron 1020E	0.17A	1.70A	0.97A	2.13A	1.46A	12V	
		0.14A	0.92A	0.55A	1.13A	0.85A	24V	
	mSATA	Core i7-3610QE	0.08A	2.55A	0.88A	4.99A	2.34A	12V
			0.14A	1.47A	0.54A	2.61A	1.19A	24V
Core i5-3610ME		0.17A	2.81A	1.01A	3.34A	1.94A	12V	
		0.14A	1.45A	0.55A	1.86A	0.93A	24V	
Core i3-3120ME		0.17A	2.07A	0.94A	2.60A	1.58A	12V	
		0.14A	1.07A	0.53A	1.29A	0.74A	24V	
Celeron 1020E		0.17A	1.69A	0.92A	2.08A	1.48A	12V	
		0.14A	0.91A	0.51A	1.10A	0.81A	24V	

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 )

## Appendix C: F7511N I<sup>2</sup>C DIO device

### 1-1 IO Device: F75111 under Windows

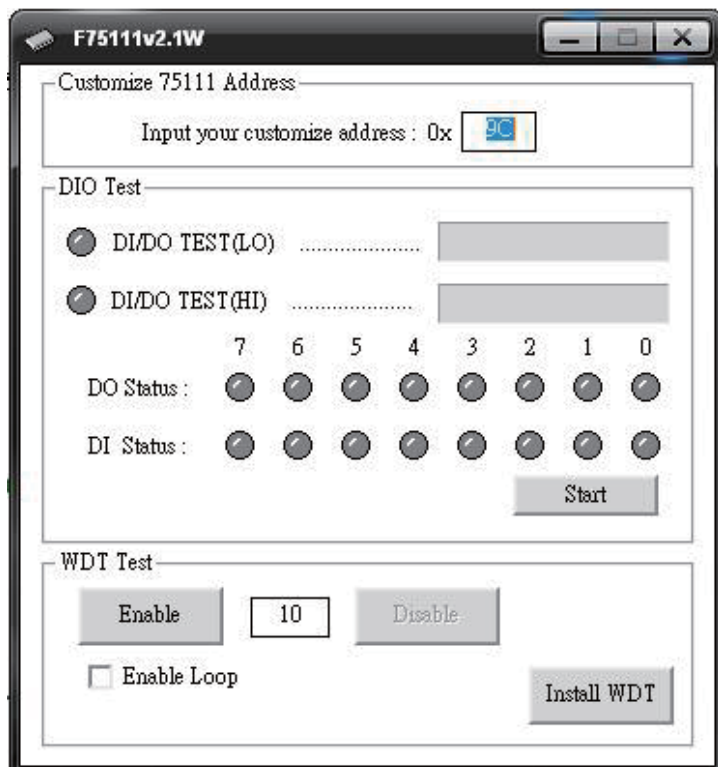
The Sample code source you can download from



Source file: F75111\_DIOSrc.rar [http://tprd.info/lexwiki/index.php/IO\\_Device:F75111](http://tprd.info/lexwiki/index.php/IO_Device:F75111)

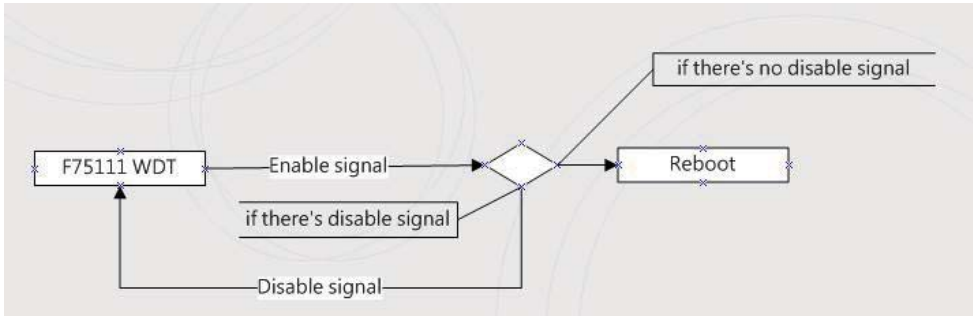
Binary file: F75111\_DemoBin.rar

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.
}
  
```

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

```

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 & 0x08 )? byteValue + 0x08 : byteValue;
    byteData = (byteData & 0x10 )? byteValue + 0x10 : byteValue;
    byteData = (byteData & 0x20 )? byteValue + 0x20 : byteValue;
    byteData = (byteData & 0x40 )? byteValue + 0x40 : byteValue;
    byteData = (byteData & 0x80 )? 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  
}
```

## 1-2 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](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

75111\_DEMO VB v1.0

Please key-in the timer by sec !!

**A** **B**

Enable WDT Disable WDT

Please key-in the DO Value by hex !! exp:0xFF = FF

Set DO Value **C**

Push the Button will show the DI 1X\_3X Value !!

**D**

Check DI Value 1X Value 2X Value

**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 Writel2CByte(&H3, &H3)
```

```
Call Writel2CByte(&H37, timer)
```

```
Call Writel2CByte(&H36, &H73)
```

```
End Function
```

### Function DisableWDT

```
Function DisableWDT()
```

```
Call Writel2CByte(&H36, &H0)
```

```
End Function
```

### Function SetDOValue

```
Function SetDOValue(dovalue As Integer)
```

```
Call Writel2CByte(&H23, &H0)
```

```
Call Writel2CByte(&H20, &HFF)
```

```
Call Writel2CByte(&H2B, &HFF)
```

```
Call Writel2CByte(&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 Readl2CByte(&H12, GPIO1X)
```

```
Call Readl2CByte(&H42, GPIO3X)
```

```
DI1Xhex = Hex(GPIO1X)
```

```
DI3Xhex = Hex(GPIO3X)
```

```
Text3.Text = "0x" + DI1Xhex
```

```
Text4.Text = "0x" + DI3Xhex
```

```
End Function
```

# 1-3 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](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

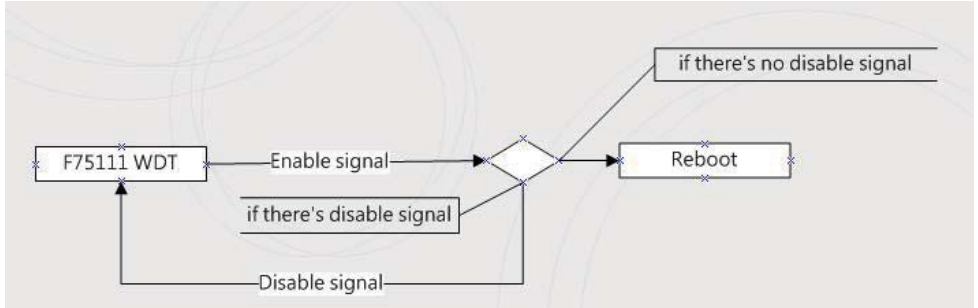
1.make

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 p.s.

## 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 & 0xFF);
}
  
```

### 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 & 0x08 )? byteValue + 0x08 : byteValue;
    byteData = (byteData & 0x10 )? byteValue + 0x10 : byteValue;
    byteData = (byteData & 0x20 )? byteValue + 0x20 : byteValue;
    byteData = (byteData & 0x40 )? byteValue + 0x40 : byteValue;
    byteData = (byteData & 0x80 )? 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
}
```