

MOTHERBOARD

USER'S MANUAL



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CI770A / CI770C

**Intel Mobile Ivy Bridge processor +
(PCH)QM77 / DDR3 1333 / 1600 MT/s /
LAN / DVI/ HDMI /Audio /USB / PCIe mini card**

All-In-One

**Intel Mobile Ivy Bridge CPU
VGA, DVI, HDMI, LVDS, PCIe mini card
Multi-COM Board, Audio, LAN, SATA, USB**

NO. CI770A/C_V0.2

Release date: Sep. 17. 2015

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User Manual edition 0.1, Sep. 17. 2015

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. 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.
8. Please avoid approaching the heat sink area to prevent users from being scalded with fanless products.
9. If users repair, modify or destroy any component of product unauthorizedly, We will not take responsibility or provide warranty anymore.
10. DO NOT apply any other material which may reduce cooling performance onto the thermal pad.
11. 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

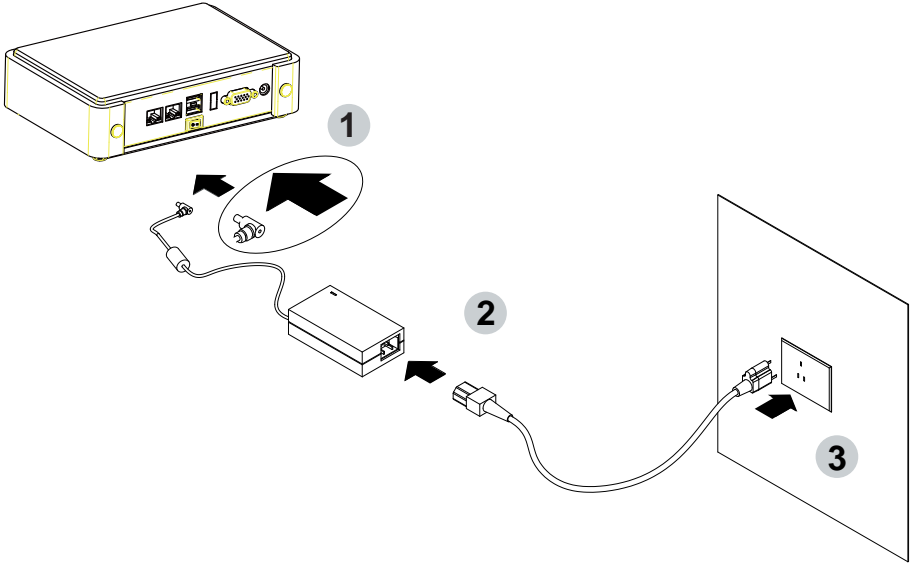
1. Before linking power supply with the motherboard, please attach DC-in adapter to the motherboard first. Then plug the adapter power to AC outlet.
Always shut down the computer normally before you move the system unit or remove the power supply from the motherboard. Please unplug the DC-in adapter 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:

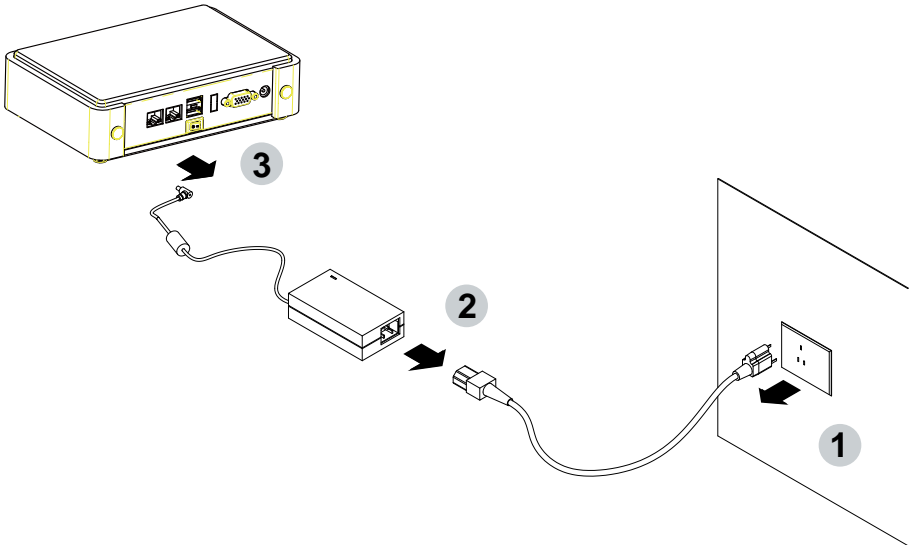
Always insert/unplug the DC-in horizontally & directly to/from the motherboard. DO NOT twist, it is designed to fit snugly. Moreover, erratic pull / push action might cause an unpredictable damage to the component & system unit.

Photo 1

Insert



Unplug



Chapter-1

General Information

The CI770A/C 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 CI770A/C is specially designed for advanced POS systems where the economical use of power is in high demand. Also, the high performing CI770A/C comes with two DDR3 1333 / 1600 MHz SO-DIMM slots with up to 16GB memory and four SATA ports. 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.

CI770A/C 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

CI770A/C also supports with multi-COM ports of five RS232 and one RS232/422/485 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. The CFast Card socket supports SATA interface 2.0. A single Flash chip holds the system BIOS, and you can change the Flash BIOS by the Utility Update.

The supported display interfaces include DVI-D, VGA, LVDS and HDMI. With a small footprint of only 200 x 150 mm 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.

1-1 Major Feature

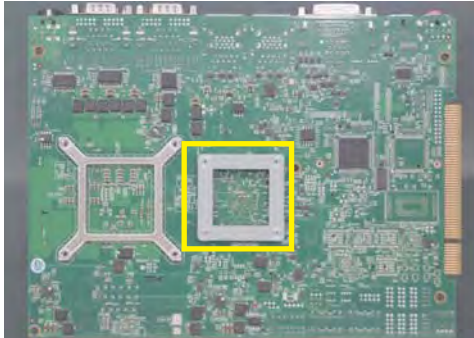
1. Intel Mobile Ivy Bridge processor in Socket G2 package (rPGA988B)
2. Intel Panther Point Platform Controller Hub (PCH) QM77 and Integrated Graphic Chip
3. Support 2 x DDR3 SO-DIMM socket (up to 16GB)
4. Support 2 x Intel GbE
5. 18/24 bits dual channel LVDS Interface on Board
6. Support 1 x CFAST Card Socket on Board (option)
7. Support 4 x SATA ports (2 x SATA 2.0 and 2 x SATA 3.0)
8. Support 2 x PCIe mini card for USB and PCIe interface
9. On board DC-IN +12V Power Supply
10. Compact PCB Dimension: 200 x 150 mm
11. 2 x SIM Card Socket (for 3G module use)
12. USB interface Touch screen controller, support 4-, 5-, 8- wire Analog Resistive touch screen, Resolution is up to 2048 x 2048 (option)
13. Support 4 x external USB 3.0/2.0 & 5 x internal USB2.0

1-2 Specification

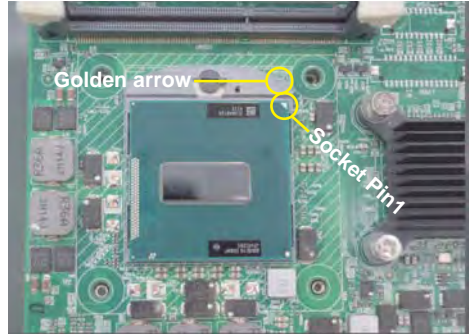
1. **CPU:** Intel Mobile Sandy Bridge processor in Socket G2 package (rPGA988B)
2. **Chipset:** Intel Panther Point Platform Controller Hub (PCH) QM77
3. **Memory:** 2 x DDR3 SO-DIMM socket (up to 16GB)
4. **Graphics:** Integrated with Intel Mobile Sandy Bridge Processor
5. **SIO and UARTs:** Fintek F71869A and F81216AD I/O chipset
6. **NAND flash memory:**
Support One CFast card socket type II for SATA interface
On board SATA SSD 2/4/8/16/32/64 GB (Option)
7. **SATA:** 4 x SATA ports (2 x SATA 2.0 and 2 x SATA 3.0)
8. **LAN Interface:** One Intel 82579LM GbE LAN PHY and one Intel 82574L GbE LAN
9. **Storage Device:** 1 x 24pin CFast card socket (option)
10. **Serial Port:** 5 x RS232 and 1 x RS485 / 422 / 232
11. **USB:** 4 x external USB 3.0/2.0 & 5 x internal USB2.0
12. **Sound:** Intel HD Audio Specification 1.0 Two channel sound
13. **LVDS:** support 24bits/2ch LVDS interface
14. **WDT / DIO:** Hardware watch dog timer support, 0~255 sec programmable
Hardware digital Input & Output, 8 x DI / 8 x DO
15. **Touch screen:** C8051F321 USB/COM interface touch screen controller,
support 4-, 5-, 8- wire Analog resistive touch screen (option)
16. **Audio Amplifier:** ANPEC APA4863 Class AB 2.2W Audio amplifier
17. **Expansion interface:** 1 x PCI Gold finger & 1 x PCIe Mini card for PCIe by one and
USB interface & 1 x PCIe Mini card for PCIe by one OR mSATA and USB interface
18. **BIOS:** AMI UEFI BIOS
19. **Dimension:** 200 x 150 mm
20. **Power:** On board DC-IN Convert into system power +12VAD/±5% to +5V/±5%
and +3.3V/±5%
21. Two 3G SIM card socket

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

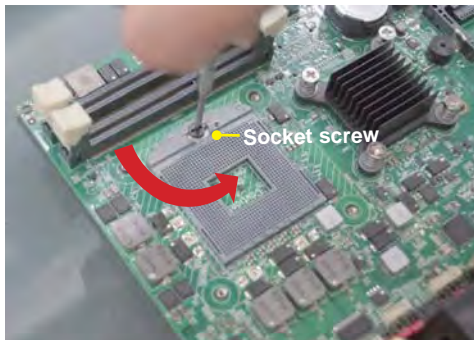
1. Install CPU bracket under the CPU first.



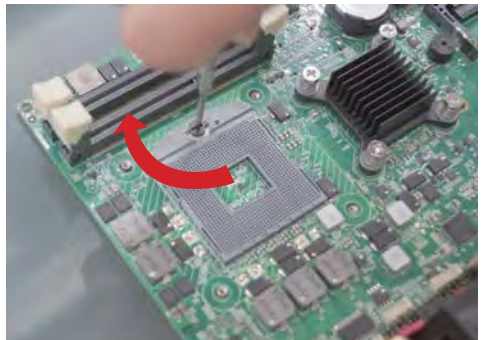
2.1. Locate Pin1 in the socket, look for a golden narrow.



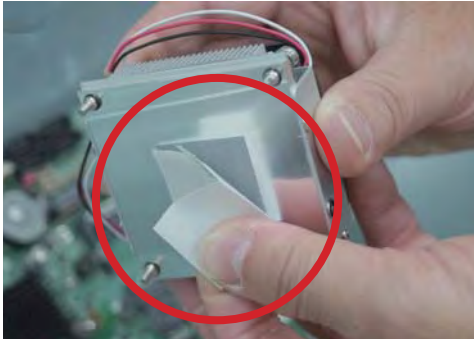
2. Use screw driver and screw the socket screw in anti-clockwise direction.



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



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



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



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



1-4 Vertical SO-DIMM assembly guide

1. Install the memory into SODIMM.

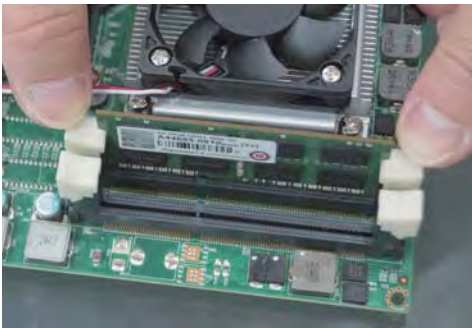


2. Press down firmly to ensure the memory is locked.

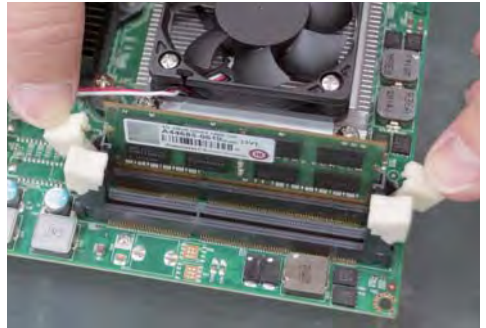


Uninstall

1. Pull open both sides of the memory slot.



2. Take out the memory.



1-5 Installing the CFast

1. Install the CFast card into the CFast socket.



1-6 Directions for installing the Mini Card

1. Unscrew the screw on the board



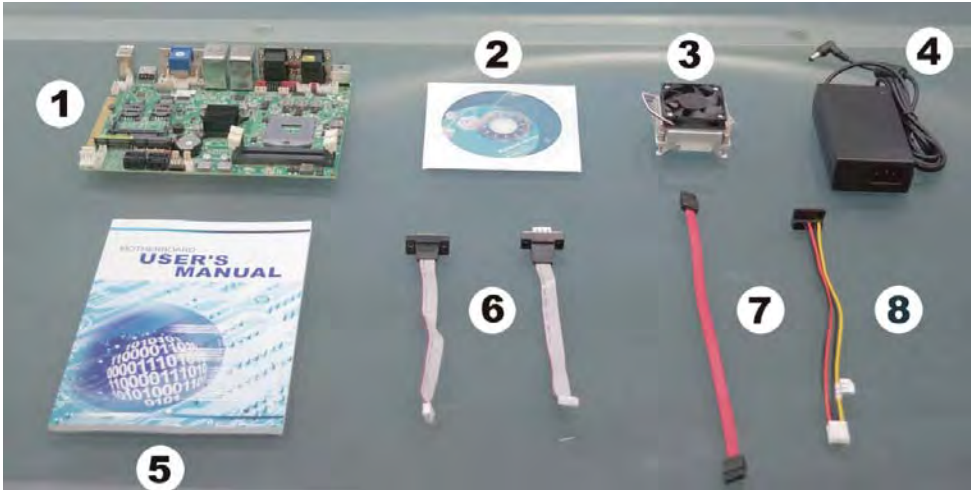
2. Plug in the Mini Card in a 45 angle



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



1-7 Packing List



	Material Code	Description	Detail Specification	Quantit
1	7G1901-1261001-0	MB-CI770A-6CXX-001	LF,CI770A-6CXX,Rev.:001	1
2	6G8006-2341-0100	DVD	LF,Intel Cedarview-D+ICH10R/NM10	1
3	6G7300-4526-0100	Cooler	LF,H=26.5mm,4.5Krpm,55W,CI770	1
4	6G5212-1203-0200	120W Power Adapter,12V	LF,M4p/Lock,FSP120-AHAN1,FSP	1
5	6G8001-2182-0400	Manual	LF,M/B,CI770A/C	1
6	6G6001-2005-0100	COM FK	LF,2.0 2*5P/DB9P,L=15cm	2
7	6G6001-2203-0100	SATA DATA Cable (Red)	LF,L=25cm	1
8	6G6003-1009-0100	SATA Power Cable	LF,L=25cm,1*5/2.0 to 180° SATA 15p	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 CI770A/C. 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:

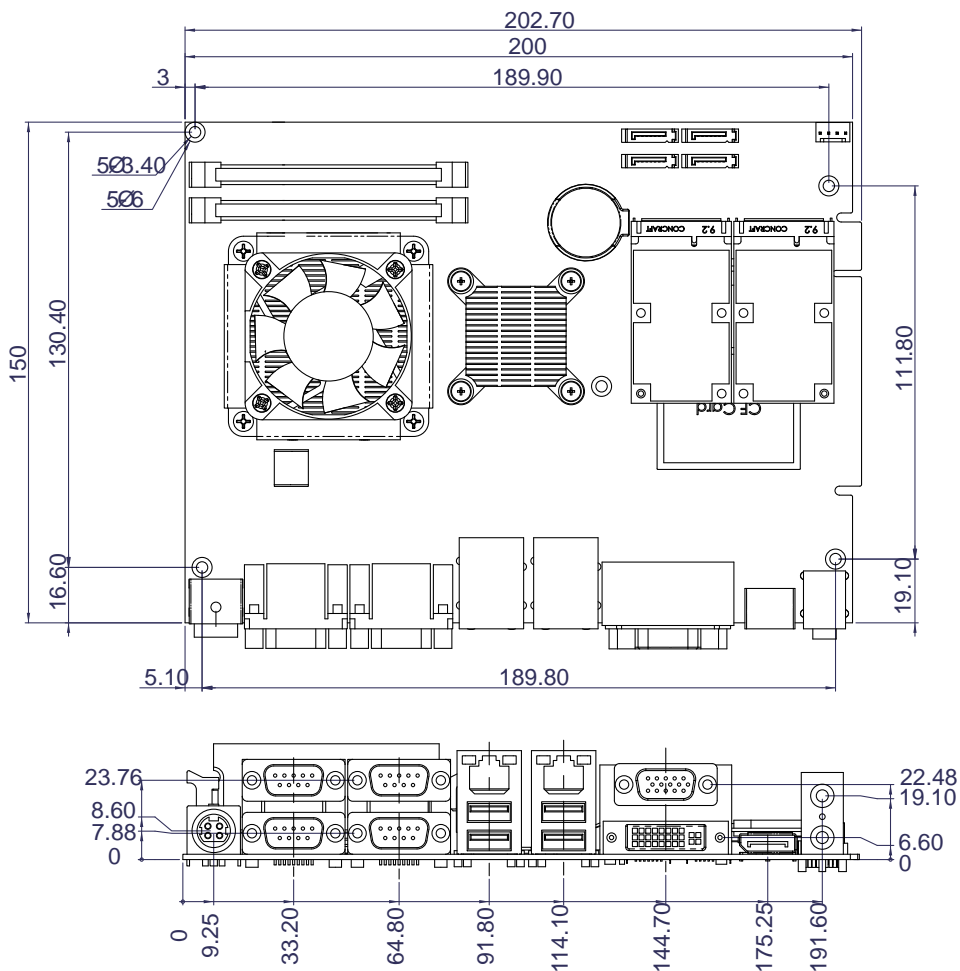
1. Ground yourself by a grounded wrist strap at all times when you handle the CI770A/C.
Well secure the ALLIGATOR clip of the strap to the end of the shielded wire lead from a grounded object. Please put on and connect the strap before handling the CI770A/C for harmlessly discharge any static electricity through the strap.
2. Please use anti-static pad to put any components, parts, or tools on the pad whenever you work on them outside the computer. You may also use the anti-static bag instead of the pad. Please ask your local supplier for necessary parts on anti-static requirement.
3. Do not plug any connector or set any jumper when the power is on.

2-2 Unpacking checkup

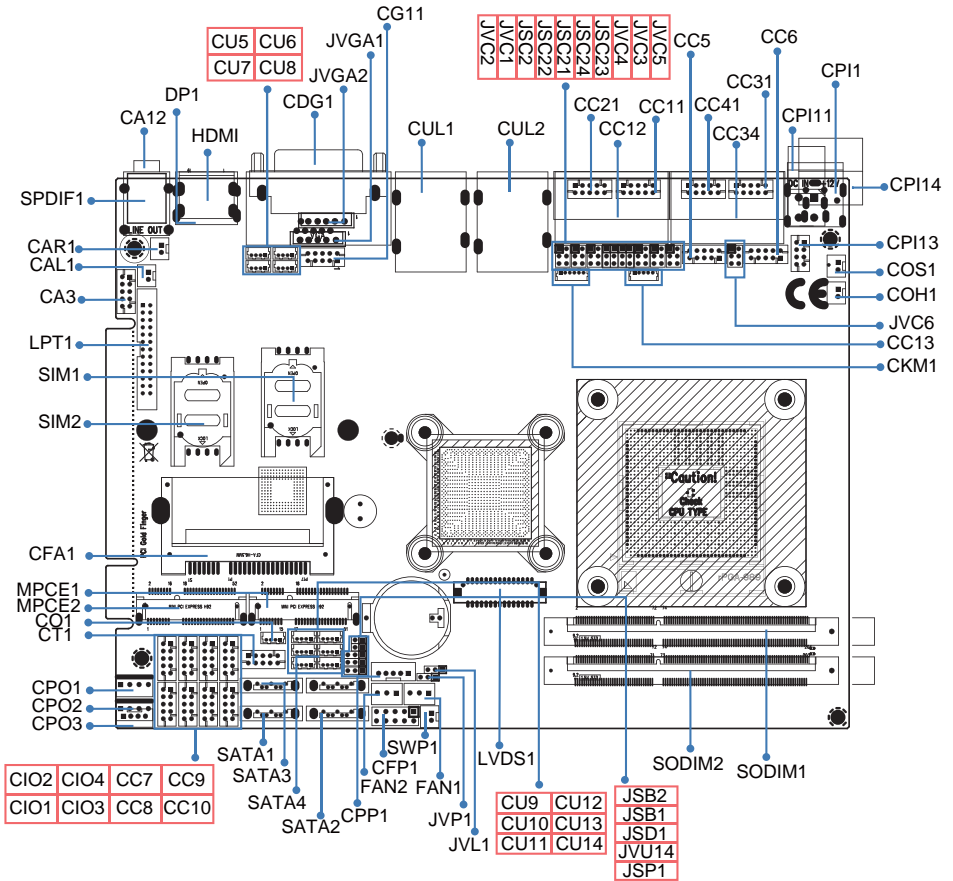
First of all, please follow all necessary steps of section 2-1 to protect CI770A/C from electricity discharge. With reference to section 1-7 please check the delivery package again with following steps:

1. Unpack the CI770A/C 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.

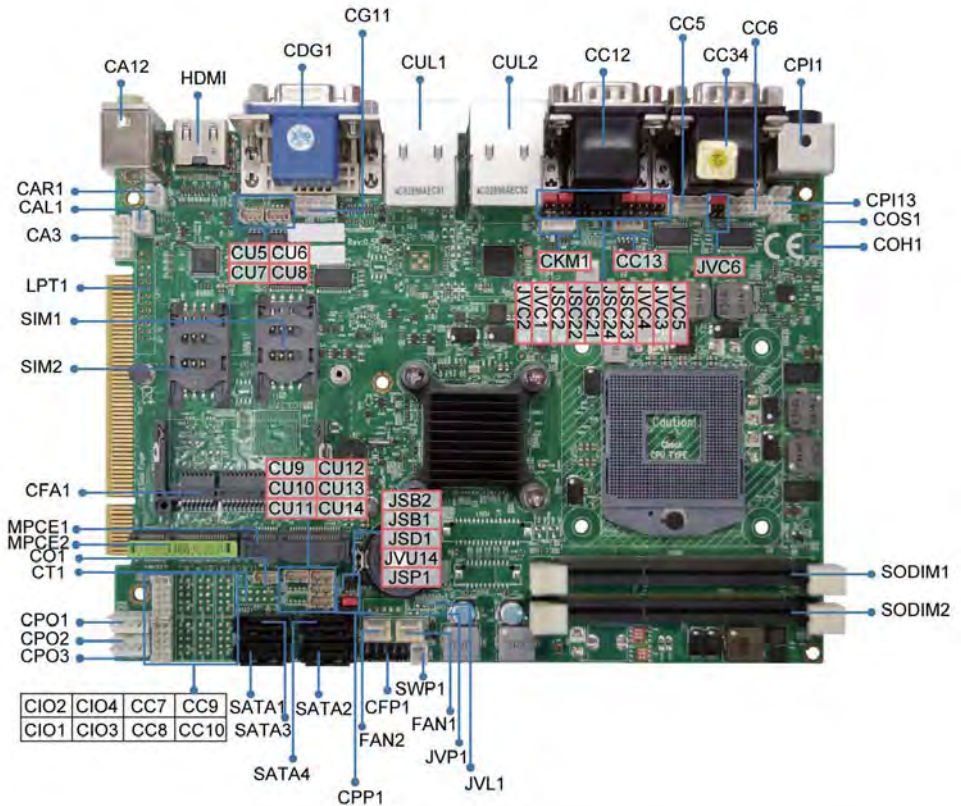
2-3 Dimension-CI770A/C



2-4 Layout-CI770A/C



2-5 Diagram- CI770A/C



Back Panel



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 / 2	System Accept or Not	Total Memory
		Max.
DS	Accept	16GB

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

JSC2,JSC21/22/23/24: COM2 RS232/422/485 select

JSP1: ATX / AT Power type select

JSD1: DPC Duty select

JVC1: COM1 voltage select

JVC2: COM2 voltage select

JVC3: COM3 voltage select

JVC4: COM4 voltage select

JVC5: COM5 voltage select

JVC6: COM6 voltage select

JVL1: LVDS Panel power select

JVP1: LVDS Panel Inverter power select

JVU14: USB14 voltage select

2-8 Jumper Setting Description

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

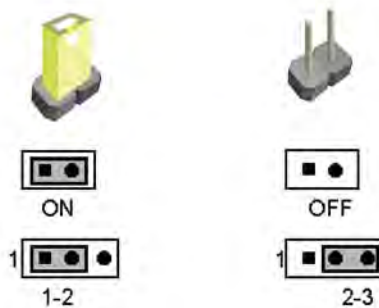


Figure 2.2

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

2-9 JSB1: CMOS Data Clear

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

To clear the CMOS, follow the procedures below:

1. Turn off the system and unplug 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
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**

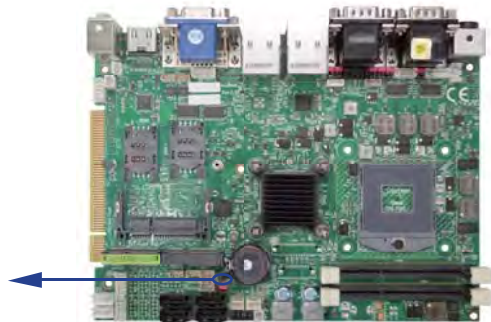
JSB1



*Open



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

JSB2



*Open



short



2-11 JSP1: AT/ATX Power select

JSP1	Description
*1-2	ATX power mode
2-3	AT power mode

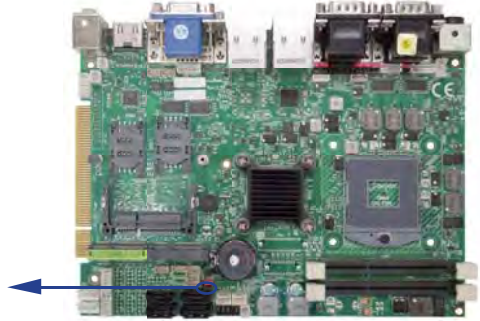
JSP1



ATX power*

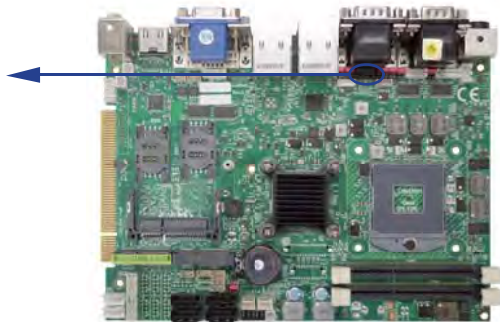
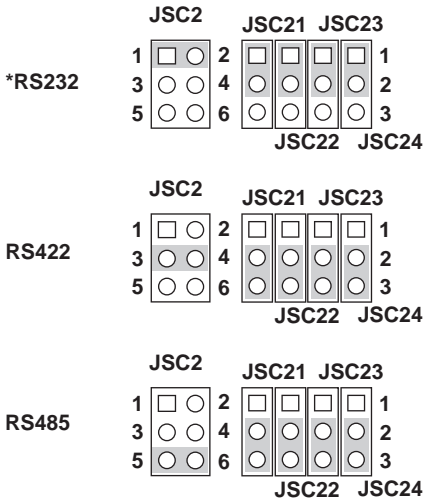


AT power



2-12 JSC2,JSC21/22/23/24: COM2 RS232/422/RS485 select

JSC2	JSC21	JSC22	JSC23	JSC24	Description
*1-2	*1-2	*1-2	*1-2	*1-2	RS232*
3-4	2-3	2-3	2-3	2-3	RS422
5-6	2-3	2-3	2-3	2-3	RS485



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

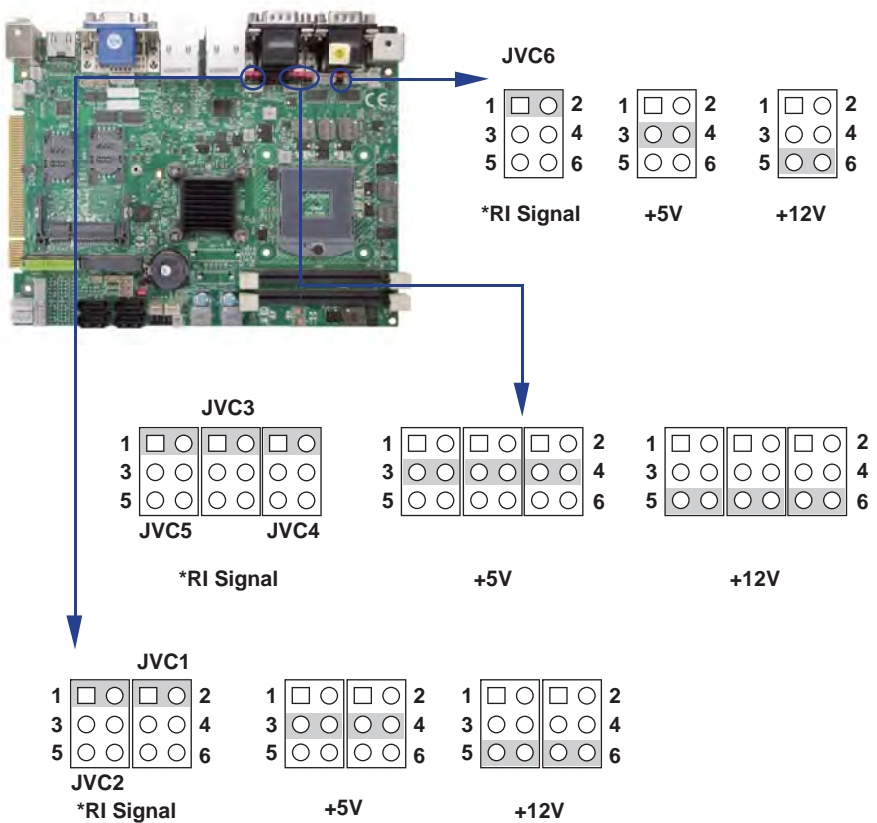
JVC1: COM1 PIN9 select JVC2: COM2 PIN9 select

JVC3: COM3 PIN9 select JVC4: COM4 PIN9 select

JVC5: COM5 PIN9 select JVC6: COM6 PIN9 select

JVC1/2/3/4/5/6	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

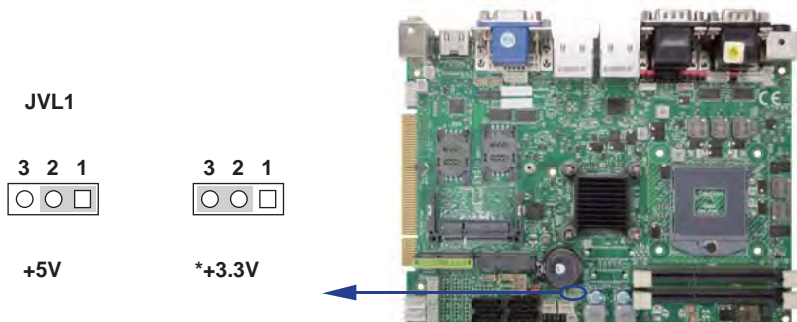
Note: 1. Note: Attention ! Check Device Power in spec
 2. If want to use +5V/+12V need check system power design spec.



2-13 JVL1: LVDS panel power select

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

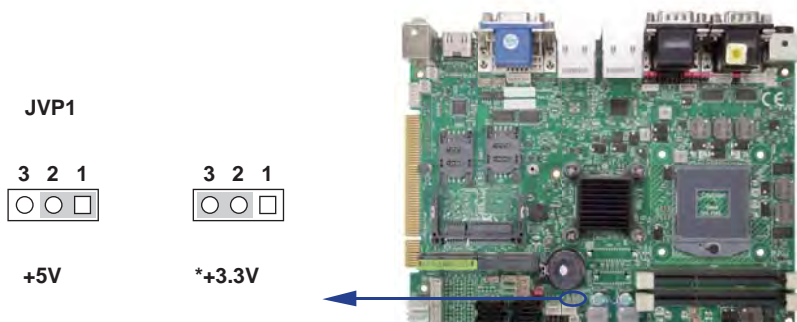
Note : Attention ! Check Device Power in spec.
JVL1 For eDP and LVDS panel power setting



2-14 JVP1: LVDS panel Inverter power select

JVP1	Description
1-2	+12V
*2-3	+5V

Note : Attention ! Check Device Power in spec.



2-15 JVU14: USB Port 14 Voltage select

JVU14	Description
*1-2	+5V
2-3	+3.3V

Note : Attention ! Check Device Power in spec.

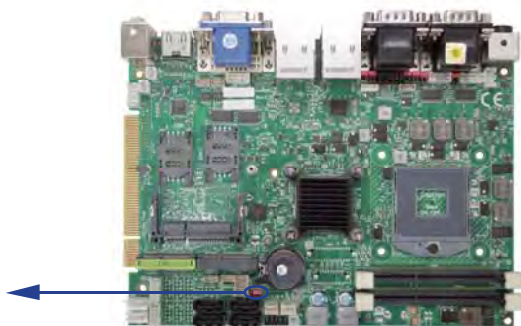
JVU14



*+5V



+3.3V



JDS1: DPC Duty set

2-16 JSD1: DPC Duty set

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

Note : for Panel backlight dimming default active set

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

- CA12: Mic-in (down side) / Line out (up side) phone jack.
- 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.
- SPDIF1: SPDIF audio output connector. (Option)
- CC12: COM1 (up side)/COM2 (down side) dual DB9p connector.
- CC11: COM1 2x5pin (2.0mm) wafer (The location share with CC12).
- CC13: COM1 1x5pin (1.25mm) wafer.
- CC2: COM2 DB9p connector (The location share with CC12).
- CC21: COM2 2x5pin (2.0mm) wafer (The location share with CC12).
- CC34: COM3 (up side)/COM4 (down side) dual DB9p connector.
- CC31: COM3 2x5pin (2.0mm) wafer (The location share with CC34).
- CC4: COM4 DB9p connector (The location share with CC34).
- CC41: COM4 2x5pin (2.0mm) wafer (The location share with CC34).
- CC5: COM5 2x5pin (2.0mm) wafer.
- CC6: COM6 2x5pin (2.0mm) wafer.
- CC7: COM7 2x5pin (2.0mm) wafer.
- CC8: COM8 2x5pin (2.0mm) wafer.
- CC9: COM9 2x5pin (2.0mm) wafer.
- CC10: COM10 2x5pin (2.0mm) wafer.
- CDG1: DVI-D (down side) / VGA (Up side) DB15p connector.
- CG11: VGA port 2x5 pin (2.0mm) wafer.
- 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.
- 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.
- CIO3: DI port 8 ~11, DO port 8 ~ 11 2x5 pin (2.0mm) wafer (option).
- CIO4: DI port 12 ~15, DO port 12 ~ 15 2x5 pin (2.0mm) wafer (option).
- CKM1: KB/MS port 1x6 pin (1.25mm) wafer connector.

CO1: I²C 4pin (1.25mm) wafer
LPT1: LPT 2x13 pin (2.0mm) wafer (option).
CPI1: DC 12V-in DIN external connector (4pin mini din connector)
CPI11: DC 12V-in internal connector (2x2pin 4.2mm ATX connector) (option).
CPI13: DC-in 2x4 pin (2.0mm) wafer connector.
CPO1: DC +5/+12V output connector (2.5mm) wafer.
CPO2: DC +5/+12V output connector (2.5mm) wafer.
CPO3: DC +5/+12V output 1x4 pin(2.0mm) wafer (option).
CU5: USB port 2 4pin(1.25mm) wafer (option).
CU6: USB port 3 4pin(1.25mm) wafer (option).
CU7: USB port 7 4pin(1.25mm) wafer.
CU8: USB port 8 4pin(1.25mm) wafer.
CU9: USB port 9 4pin(1.25mm) wafer. (The port share with touch device) (option).
CU10: USB port 10 4pin(1.25mm) wafer. (The port share with MPCE1) (option).
CU11: USB port 11 4pin(1.25mm) wafer. (The port share with MPCE2) (option).
CU12: USB port 12 4pin(1.25mm) wafer.
CU13: USB port 13 4pin(1.25mm) wafer.
CU14: USB port 14 4pin(1.25mm) wafer.
CUL1: USB port 3.0/2.0 3/4 and LAN1 RJ45 connector.
CUL2: USB port 3.0/2.0 1/2 and LAN2 RJ45 connector.
CFA1: CFast card socket 7+17pin (option).
SATA1: SATA port 1 (Gen III) connectors 7pin.
SATA2: SATA port 2 (Gen III) connectors 7pin.
SATA3: SATA port 3 connectors 7pin.
SATA4: SATA port 4 connectors 7pin.
MPCE1: Mini card port 1 sockets 52pin.
MPCE2: Mini card port 2 sockets 52pin.
SIM1: SIM port 1 card socket.
SIM2: SIM port 2 card socket.
CFP1: Front panel port 2x5 pin (2.54mm) wafer.
SWP1: Power On/Off switch wafer.
FAN1: CPU fan 1x3 pin (2.54mm) wafer.
FAN2: System fan 1x3 pin (2.54mm) wafer.
SODIM1/2: SO-DIM DDR3 1.5V DRAM Socket

3-2 DC 12V-IN external Connector

- **CPI1: DC 12V-IN external Connector (4pin mini din connector)**

PIN NO.	Description
1,2	+12V DC-IN
3,4	GND

Note: DC in from adapter plug in

- **CPI11: DC 12V-IN Internal Connector (2x2pin 4.2mm ATX connector)**

The location share with CPI1

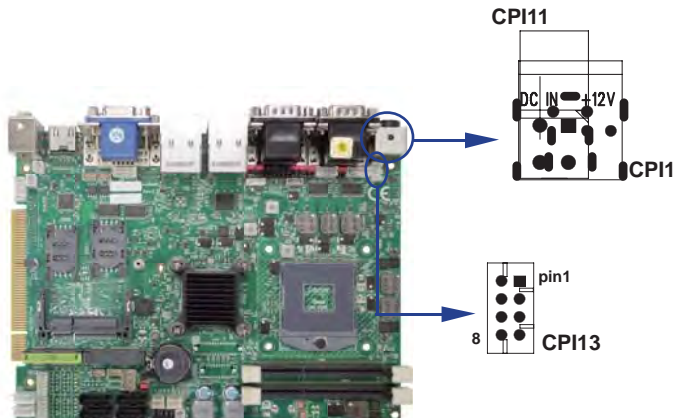
PIN NO.	Description
3,4	+12V DC-IN
1,2	GND

Note: This connector share with CPI1 for OEM

- **CPI13: DC 12V-IN Internal Connector (4pin 2.0mm wafer)**

PIN NO.	Description	PIN NO.	Description
1	+12V DC-IN	2	+12V DC-IN
3	+12V DC-IN	4	+12V DC-IN
5	NC	6	GND
7	GND	8	GND

Note: DC in from adapter plug in



3-3 DC +5/+12V Voltage output connector

● CPO1/CPO2: +12V/+5V DC voltage output (4pin 2.54mm Wafer)

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

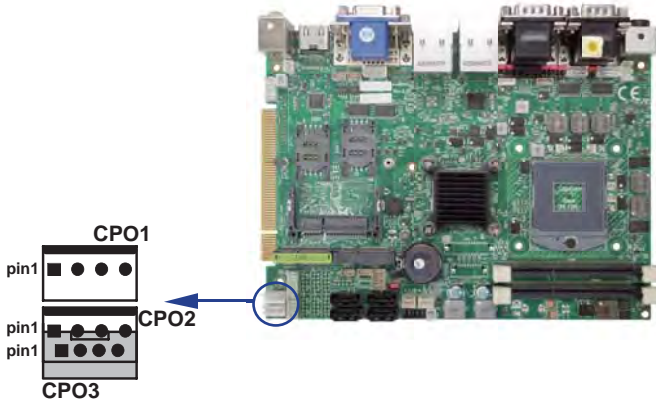
*Note: DC in +12V by switch to DC-out voltage +12V,
so DC in need stable +12V input

● CPO3: +12V/+5V DC voltage output (4pin 2.0mm Wafer)

The location share with CPO2

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. CPO3 connector share with CPO2 connector .



3-5 Front panel & FAN

• CFP1 Front panel connector (2 X 5 pin 2.54mm wafer)

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

• SWP1 PB connector (2pin 2.0mm wafer)

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

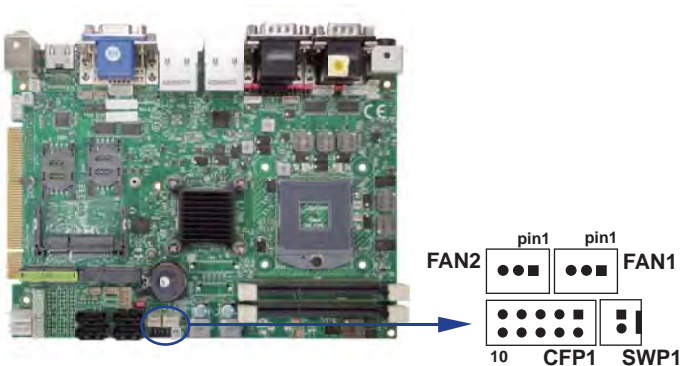
FAN connectors

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

• FAN2: System FAN connector (3pin 2.5mm wafer)

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

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



3-6 DVI-D / VGA

• CDG1: DVI 12bit connector down side (DB Connector)

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

• CDG1: VGA DB15 Connector Up side (D-SUB 15PIN)

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

• CG11: VGA 2x5pin 2.0mm wafer connector

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

*Note: VGA signal CG11 share with CDG1 VGA



3-7 HDMI interface

• HDMI1: HDMI Connector (Type A)

PIN NO.	Description	PIN NO.	Description	PIN NO.	Description	PIN NO.	Description
1	TMDS2(p)	2	GND	3	TMDS2(n)	4	TMDS1(p)
5	GND	6	TMDS1(n)	7	TMDS0(p)	8	GND
9	TMDS0(n)	10	TMDS CLK(p)	11	GND	12	TMDSCLK(n)
13	NC	14	NC	15	DDC CLK	16	DDC DATA
17	GND	18	+5V	19	HPD		

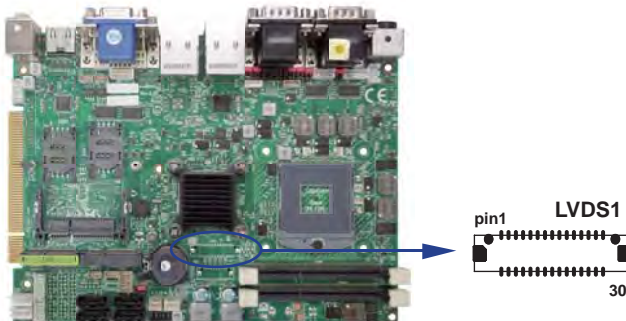


3-8 LVDS interface

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

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

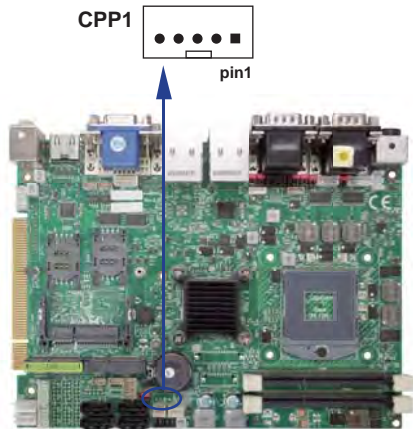
- Note:
1. LVDS interface support 18/24bits two channel
 2. JVL1: LVDS panel +5V/+3.3V Voltage select
 3. LVDS1 PIN 1 for panel backlight active, Default active setup by DPC Control
And adjust PWM duty cycle by software program
 4. Pin 1 back light dimming control. Provided 200Hz / 275Hz / 380Hz / 20KHz / 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 or +5V
2	GND
3	PWM dimming
4	ENBKL (3.3V)
5	ENBKL (5V)

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



3-9 Touch screen device

- **CT1: Touch screen (2x5 pin 2.0mm wafer)**

Default use USB interface, can change COM interface By OEM BOM.

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

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

Note: 1. For eight wire type cable Pin 3 and Pin4 need short.

2. Touch controller use USB port 9

- **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

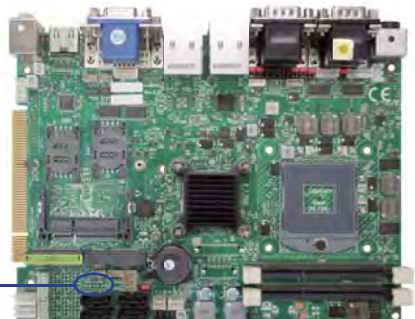
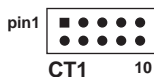
Note: 1. For four wire type cable Pin 3 and Pin4 need short.

2. Touch controller use USB port 9

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

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

Note:1. Touch controller use USB port 9



3-10 Audio interface

- CA12: Up side Line out (3.5mm phone jack)

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

- CA12: Down side Mic in (3.5mm phone jack)

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

- CA3: Line-out/Line-in/Mic-in 2x4 pin (2.0mm) Header

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



- Audio Amplifier class AB Two channel 2W/ch

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

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

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

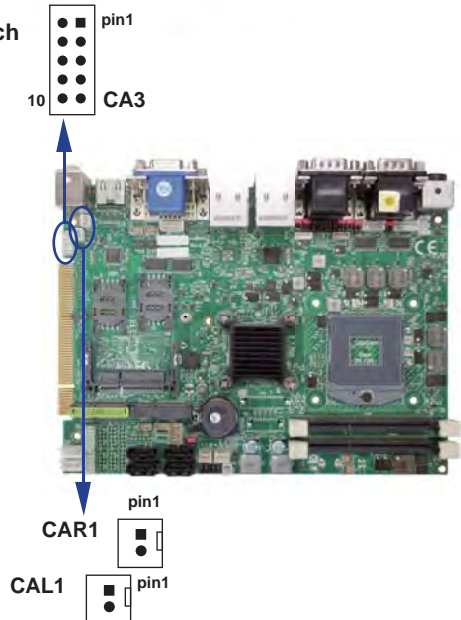
PIN NO.	Description
1	LINE-OUT_L+
2	LINE-OUT_L-

- SPDIF Digital Photo out connector

- SPDIF1: SPDIF audio output connector.

PIN NO.	1	2	3
Description	GND	+5V	Audio DATA

Note: Share CA12 location , by OEM



3-11 COM ports

- **COM2 default support RS232/RS422/RS485 mode**
COM1/3/4/5/6 default support RS232 mode
- **RS232 Mode connector (D-SUB 9pin)**

CC12: COM1 (up side) / COM2 (down side) port connector

CC34: COM3 (up side) / COM4 (down side) port connector

CC2: COM2 Single port connector. (The location share with CC12)

CC4: COM4 Single port connector. (The location share with CC34)

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

Note: 1. Pin 9 RI and Voltage setting only for COM 1/2/3/4/5/6 ports

JVC1 for COM1, JVC2 for COM2, JVC3 for COM3, JVC4 for COM4

2. COM2 default support RS232/RS422/RS485 by JSC2/21/22/23/24 selected.

- **RS485 Mode connector (D-SUB 9pin)**

CC12: COM1 (up side) / COM2 (down side) port connector

CC34: COM3 (up side) / COM4 (down side) port connector

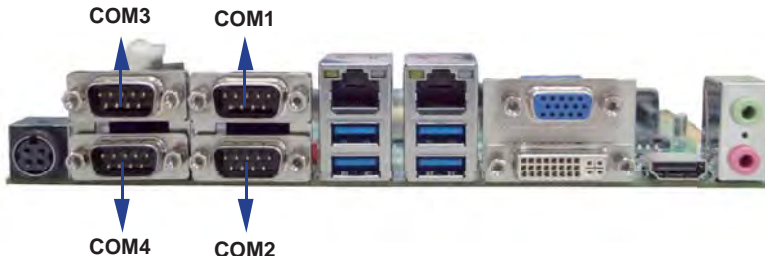
CC2: COM2 Single port connector. (The location share with CC12)

CC4: COM4 Single port connector. (The location share with CC34)

PIN NO.	Description	PIN NO.	Description
1	RS485 TX-	6	NC
2	RS485 TX+	7	NC
3	NC	8	NC
4	NC	9	RI / VOLTAGE
5	GND		

Note: 1. COM2 default support RS232/RS422/RS485 by JSC2/21/22/23/24 selected.

2. COM1/3/4/5/6 Default RS232, RS485 / 422 by OEM bom



● **RS422 Mode connector (D-SUB 9pin)**

CC12: COM1(up side)/COM2 (down side) port connector

CC34: COM3 (up side) / COM4 (down side) port connector

CC2: COM2 Single port connector. (The location share with CC12)

CC4: COM4 Single port connector. (The location share with CC34)

PIN NO.	Description	PIN NO.	Description
1	RS422 TX-	6	NC
2	RS422 TX+	7	NC
3	RS422 RX+	8	NC
4	RS422 RX-	9	RI/VOLTAGE
5	GND		

Note: 1. COM2 default support RS232/RS422/RS485 by JSC2/21/22/23/24 selected.

2. COM1/3/4/5/6 Default RS232 , RS485 / 422 by OEM bom

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

CC11: COM1 CC21 : COM2

CC31: COM3 CC41 : 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	NC

Note: 1. CC11, CC21 share with CC12 connector for OEM

2. CC31, CC41 share with CC34 connector for OEM

3. The Pin 9 Voltage set by JVC1/2/3/4/5/6

● **RS485 ports (2x5pin 2.0mm Wafer)**

CC11: COM1 CC21 : COM2

CC31: COM3 CC41 : COM4

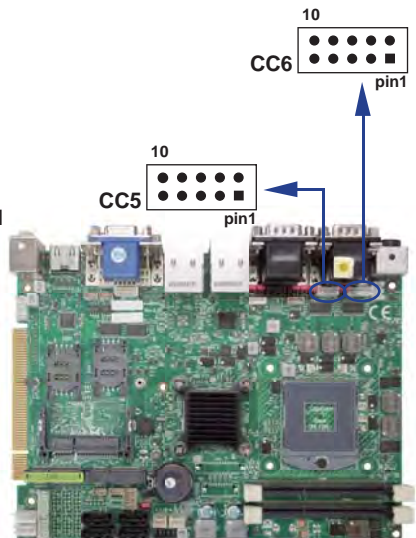
CC5: COM5 CC6 : COM6

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	RI/ Voltage	10	NC

Note: 1. CC11, CC21 share with CC12 connector for OEM

2. CC31, CC41 share with CC34 connector for OEM

3. The Pin 9 Voltage set by JVC1/2/3/4/5/6



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

CC11: COM1 CC21 : COM2
 CC31: COM3 CC41 : 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	RI / Voltage	10	NC

Note: 1. CC11, CC21 share with CC12 connector for OEM
 2. CC31, CC41 share with CC34 connector for OEM
 3. The Pin 9 Voltage set by JVC1/2/3/4/5/6

● **CC13: COM1 RS232 port (5pin 1.25mm Wafer)**

PIN NO.	1	2	3	4	5
Description	+5V	GND	RTS	TXD	RXD

Note: All signals are RS232 level.

● **COM ports from (PLX OXPICle954)**

COM7/8/9/10 default support RS232 mode
 COM7/8/9/10 is option for OEM.

● **RS232 ports (2x5pin 2.0mm Wafer)**

COM ports from (PLX OXPICle954)

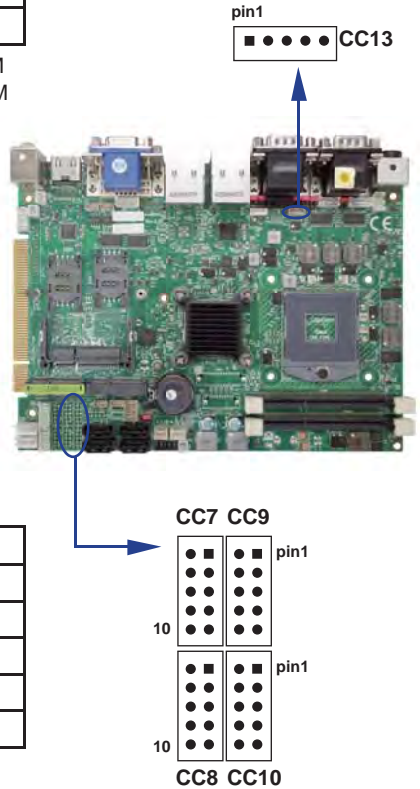
CC7: COM7 CC8 : COM8
 CC9: COM9 CC10 : COM10

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

● **RS485 ports (2x5pin 2.0mm Wafer)**

CC7: COM7 CC8 : COM8
 CC9: COM9 CC10 : COM10

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	RI / Voltage	10	+5V



3-12 Digital Input / Output

• CIO1 DIO 0 ~ 3 (2x5pin 2.0mm wafer)

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

- Note: 1. The system default 8DI and 8DO
 2. DI pin default pull up 10K Ω to +5V
 3. If use need isolate circuit to control external device
 4. F75111N-1 I²C bus address 0x9c

• CIO2 DIO 4 ~ 7 (2x5pin 2.0mm wafer)

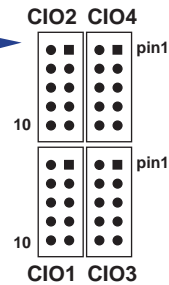
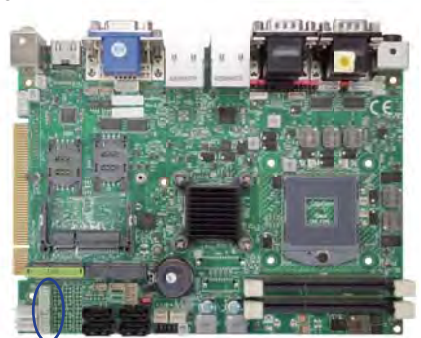
PIN NO.	Description	PIN NO.	Description
1	DI-4	2	DO-7
3	DI-5	4	DO-6
5	DI-6	6	DO-5
7	DI-7	8	DO-4
9	GND	10	+5V

- Note: 1. The system default 8DI and 8DO
 2. DI pin default pull up 10K Ω to +5V
 3. If use need isolate circuit to control external device
 4. F75111N-1 I²C bus address 0x9c

• CIO3 DIO 8 ~ 11 (2x5pin 2.0mm wafer) (option)

PIN NO.	Description	PIN NO.	Description
1	DI-8	2	DO-11
3	DI-9	4	DO-10
5	DI-10	6	DO-9
7	DI-11	8	DO-8
9	GND	10	+5V

- Note: 1. CIO3 is option function
 2. DI pin default pull up 10K Ω to +5V
 3. If use need isolate circuit to control external device
 4. F75111N-2 I²C bus address 0x6e



● **CIO4 DIO 12 ~ 15 (2x5pin 2.0mm wafer) (option)**

PIN NO.	Description	PIN NO.	Description
1	DI-12	2	DO-15
3	DI-13	4	DO-14
5	DI-14	6	DO-13
7	DI-15	8	DO-12
9	GND	10	+5V

Note: 1. CIO4 is option function
2. DI pin default pull up 10KΩ to +5V
3. If use need isolate circuit to control external device
4. F75111N-2 I²C bus address 0x6e

● **For F75111N I²C 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.

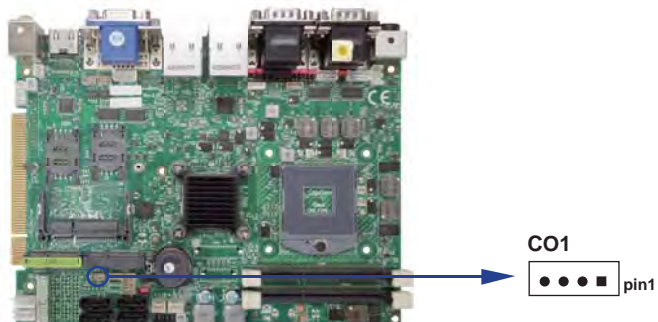
Note: If want to SDK support. Please contact to sales window.

Please refer to page 92 for APPENDIX C: F75111N I²C DIO DECICE

3-13 I²C Bus Interface

- CO1: I²C (SM) bus connector (4 pin 1.25mm wafer)

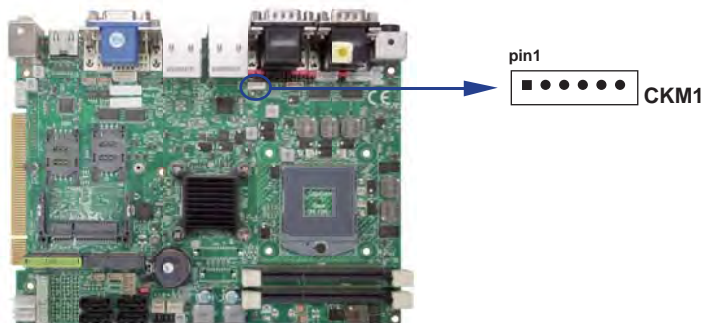
PIN NO.	1	2	3	4
Description	+3.3V	GND	SMB_CLK	SMB_DATA



3-14 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



3-15 LAN+USB Connrctor

● CUL1/CUL2 (Down side): USB3.0/2.0 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		

- Note: 1. USB 3.0 and USB 2.0 combo Type A Jack
 2.CUL1 USB 3.0 port 3 and 4 , USB2.0 port 5 and 4
 3.CUL2 USB3.0 port 1 and 2, USB2.0 port 1 and 2
 4.USB3.0/2.0 Keyboard and Mouse use CUL1 can pitch Some OS install
 And wake up Keyboard and Mouse can't work issue

● CUL1/CUL2 (Down side): USB3.0/2.0 Type A jack

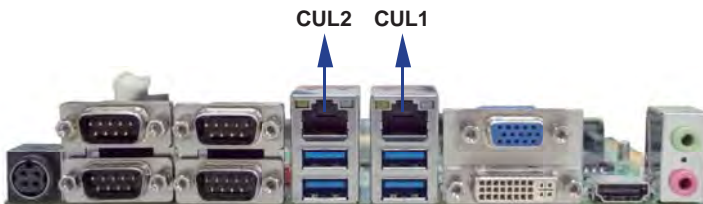
PIN NO.	Description	PIN NO.	Description
1	TD0-/TX+	5	TD2-/NC
2	TD0+/TX-	6	TD2+/RX-
3	TD1-/RX+	7	TD3-/NC
4	TD1+/NC	8	TD3+/NC

● 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		-	Orange	Orange	Green	Orange	Orange	Red	Orange	Orange



3-16 USB Interface

• CU5/6/7/8/9/10/11/12/13:

USB5/6/7/8/9/10/11/12/13 port (4pin 1.25mm Wafer)

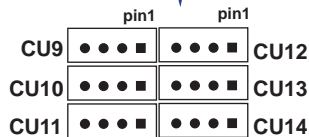
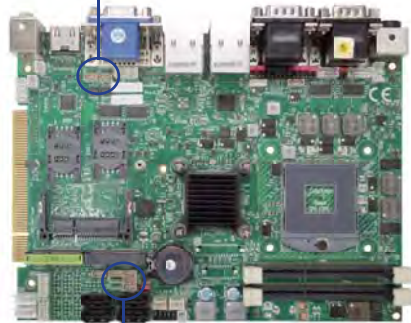
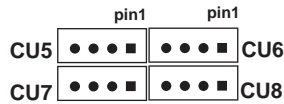
PIN NO.	Description
1	+5V
2	USB DATA -
3	USB DATA +
4	GND

- Note: 1. CU5 and CU6 no connector
 2. The CU10 share with MPCE1 (no connector).
 3. The CU11 share with MPCE2 (no connector).
 4. The CU9 share with touch device (no connector).
 5. CU10,CU11 pin can support +12V by OEM

• CU14: USB14 port (4pin 1.25mm Wafer)

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

- Note: 1. PIN 1 Voltage select from JSU14

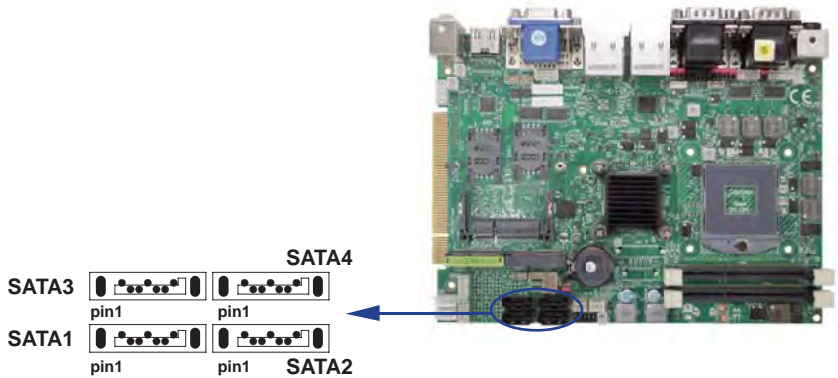


3-17 SATA interface

- **SATA1, SATA2:** The two SATA connectors (7pin wafer)
- **SATA3, SATA4:** The two SATA connectors (7pin wafer)

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

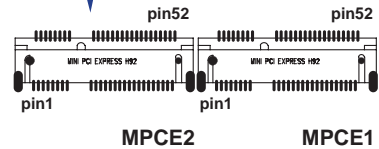
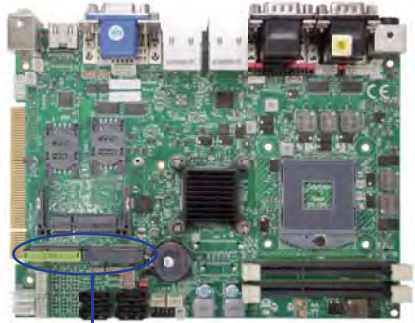
- Note: 1. SATA1 and SATA2 support SATA 3.0 spec update 6Gb/sec .
2. SATA3 and SATA4 support SATA 2.0 spec update 3Gb/sec .
3. COP1 and COP2 provide SATA HDD power +12V,GND ,+5V



3-18 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	GND	44	NC
45	NC	46	NC
47	NC	48	+1.5V
49	NC	50	GND
51	mSATA-Detect	52	+3.3V



- Note:
1. MPCE 1 used USB port 10, MPCE2 used USB port 11.
 2. MPCE1 Pin 8, 10,12,14,16 for SIM1 card reader use.
 3. MPCE2 Pin 8, 10,12,14,16 for SIM2 card reader use.
 4. Just only MPCE1 pin23, 25, 31, 33 supported mSATA device and PCIe device alternatively.
 5. Pin51 mSATA / PCIe auto detect function
 6. mSATA use system SATA port 6 , the port share with on board NANADrive
This port only choice one device can't work at same time.

3-19 SIM Socket

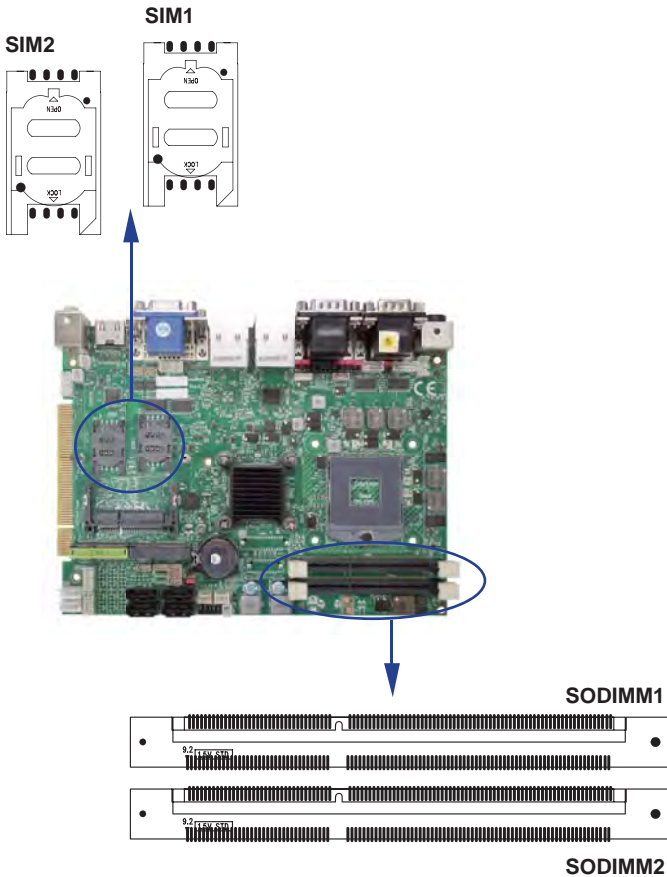
- SIM1, SIM2: SIM card socket pin define is follow ISO 7816-2 smart card

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.
 2. MPCE2 Pin 8, 10,12,14,16 for SIM2 card reader use.

3-20 SODIMM socket

- SODIMM1/2: SO-DIM DDR3 1.5V DRAM Socket

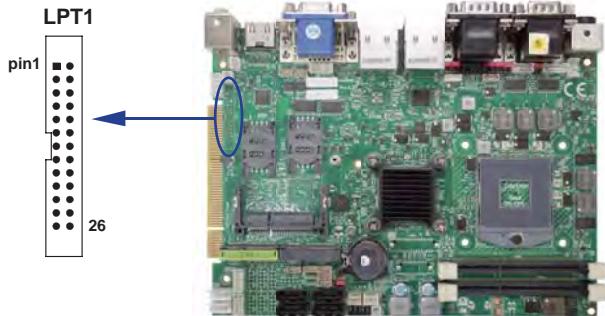


3-21 LPT interface (Line Print Terminal)

• LPT1: LPT 2x13 pin (2.0mm)wafe header

PIN NO.	Description	PIN NO.	Description
1	STROBE#	2	AUTO FROM FEED#
3	DATA0	4	ERROR#
5	DATA1	6	INITIALIZE
7	DATA2	8	PRINTER SELECT LN#
9	DATA3	10	GND
11	DATA4	12	GND
13	DATA5	14	GND
15	DATA6	16	GND
17	DATA7	18	GND
19	ACKNOWLEDGE	20	GND
21	BUSY	22	GND
23	PARER EMPTY	24	NC
25	PRINTER SELECT	26	NC

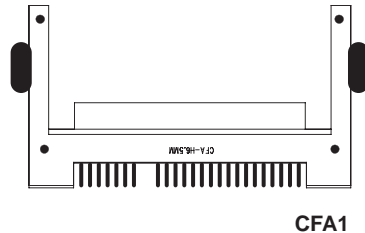
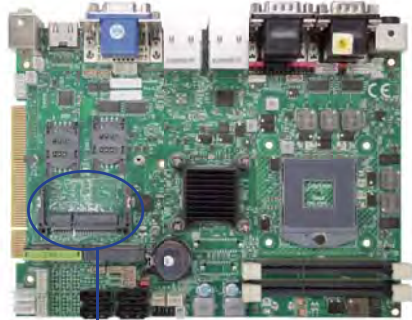
Note: BOM default haven't this function by OEM



3-22 CFast card Reader and SATA

● CFA1: CFA Socket For SATA Interface (24pin CFA Socket)

PIN NO.	Description
S1	GND
S2	SATA TX+
S3	SATA TX-
S4	GND
S5	SATA RX-
S6	SATA RX+
S7	GND
PC1	GND(Card Detect In)
PC2	GND
PC3	NC
PC4	NC
PC5	NC
PC6	NC
PC7	GND
PC8	NC(LED Out)
PC9	NC(LED Out)
PC10	NC
PC11	NC
PC12	NC
PC13	+3.3V
PC14	+3.3V
PC15	GND
PC16	GND
PC17	GND(Card Detect In)



Note: CFA1 use SATA port 5

3-23 PCI Gold Finger PIN Define

PIN NO.		PIN NO.	
A1	NC	B1	NC
A2	+12V	B2	NC
A3	+5V	B3	GND
A4	+5V	B4	NC
A5	+5V	B5	+5V
A6	NC	B6	+5V
A7	NC	B7	NC
A8	+5V	B8	NC
A9	BUF_PLT_RST#	B9	CLK_PCIE_AP
A10	+5V	B10	CLK_PCIE_AN
A11	PCIE_RXP_A	B11	PCIE_RXN_A
A12	GND	B12	PCIE_TXN_A
A13	GND	B13	PCIE_TXP_A
A14	+3.3V	B14	PCIE_WAKE#
A15	NC	B15	GND
A16	+5V	B16	NC
A17	NC	B17	GND
A18	GND	B18	NC
A19	P_PME#	B19	+5V
A20	NC	B20	NC
A21	+3.3V	B21	NC
A22	CLK_PCIE_BP	B22	GND
A23	CLK_PCIE_BN	B23	PCIE_TXN_B
A24	GND	B24	PCIE_TXP_B
A25	NC	B25	+3.3V
A26	NC	B26	NC
A27	+3.3V	B27	NC
A28	PCIE_RXP_B	B28	GND
A29	PCIE_RXN_B	B29	PCIE_TXP_C
A30	GND	B30	PCIE_TXN_C
A31	PCIE_RXP_C	B31	+3.3V
A32	PCIE_RXN_C	B32	NC

PIN NO.		PIN NO.	
A33	STROBE#	B33	NC
A34	NC	B34	GND
A35	GND	B35	NC
A36	NC	B36	+3.3V
A37	GND	B37	NC
A38	NC	B38	GND
A39	+3.3V	B39	NC
A40	DATA6	B40	NC
A41	DATA7	B41	+3.3V
A42	GND	B42	NC
A43	NC	B43	+3.3V
A44	NC	B44	CLK_PCIE_CP
A45	+3.3V	B45	CLK_PCIE_CN
A46	PCIE_RXP_D	B46	GND
A47	PCIE_RXN_D	B47	NC
A48	GND	B48	NC
A49	NC	B49	GND
A52	NC	B52	PCIE_TXP_D
A53	+3.3V	B53	PCIE_TXN_D
A54	CLK_PCIE_DP	B54	+3.3V
A55	CLK_PCIE_DN	B55	NC
A56	GND	B56	NC
A57	NC	B57	GND
A58	NC	B58	NC
A59	+5V	B59	+5V
A60	+5V	B60	+5V
A61	+5V	B61	+5V
A62	+5V	B62	+5V

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.

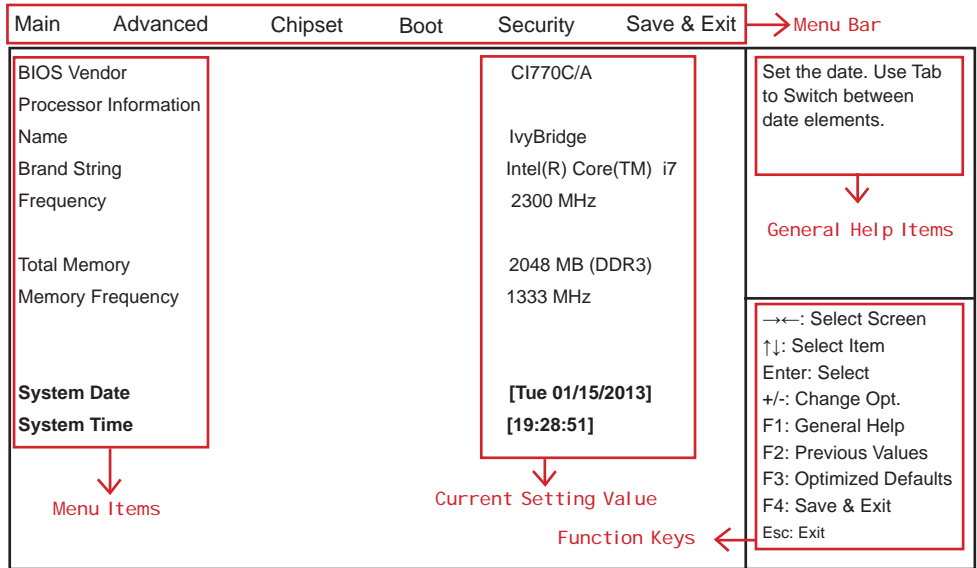
4-1 Enter Setup

Power on the computer and press 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				CI770C/A	Set the date. Use Tab to Switch between date elements.
Processor Information					
Name				IvyBridge	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit Esc: Exit
Brand String				Intel(R) Core(TM) i7	
Frequency				2300 MHz	
Total Memory				2048 MB (DDR3)	
Memory Frequency				1333 MHz	
System Date				[Tue 01/15/2013]	
System Time				[19:28:51]	

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

System Date

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

System Time

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

4-7 Advanced

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

<ul style="list-style-type: none">▶ ACPI Settings▶ S5 RTC Wake Setting▶ CPU Configuration▶ SATA Configuration▶ USB Configuration▶ SMART Setting▶ F71869 Super IO Configuration▶ F71869 H/W Monitor▶ F81216 Second Super IO Configuration▶ Serial Port Console Redirection▶ Network Stack	System ACPI 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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ACPI Settings

Please refer section 4-7-1

S5 RTC Wake Setting

Please refer section 4-7-2

CPU Configuration

Please refer section 4-7-3

SATA Configuration

Please refer section 4-7-4

USB Computing

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	[Disabled]	
Enable Hibernation	[Enabled]	
ACPI Sleep State	[S1 only(CPU Stop C..)]	→←: 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	[Disabled]	Enable or disable System wake on alarm event when enabled. System will wake on the hr : min : sec specified
Wake system with Dynamic Time	[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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Wake system with Fixed Time

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

Wake system with Dynamic Time

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

4-7-3 CPU Configuration

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

CPU Configuration		Number of cores to enable in each processor package.
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	[Enabled]	
Active Processor Cores	[All]	
Execute Disable Bit	[Enabled]	
Intel Virtualization Technology	[Disabled]	

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Hyper-threading

Use this item to 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.

4-7-4 SATA Configuration

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

SATA Controller(s)	[Enabled]	Enable or disable SATA Device.
SATA Mode Selection	[IDE]	
		→←: 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.

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

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

SATA Controller(s)	[Enabled]	Enable or disable SATA Device.
SATA Mode Selection	[AHCI]	
SATA Controller Speed	[Gen3]	
▶ 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 4-7-4-1-1

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

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

RAID0	[Enabled]	Enable or disable RAID0 feature.
RAID1	[Enabled]	
RAID10	[Enabled]	
RAID5	[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, RAID10, RAID5 feature.

The optional settings: Enabled, Disabled.

4-7-4-2 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 4-7-4-1-1

Alternate ID

Report alternate Device ID

The optional settings: Enabled, Disabled.

4-7-5 USB Configuration

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

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

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Legacy USB Support

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

USB3.0 Support

Use this item to turn on/off USB3.0 Controller support.

The optional settings are: Enabled, Disabled.

XHCI Hand-off

This is a workaround for OSES without XHCI handoff support.

The XHCI ownership change should be claimed by XHCI driver.

The optional settings are: Enabled, Disabled..

EHCI Hand-off

This is a workaround for OSES without EHCI handoff support.

The EHCI ownership change should be claimed by EHCI driver.

The optional settings are: Enabled, Disabled.

4-7-6 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	[Enabled]	→←: 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	[AUTO]	
COM1 422/485 control flow	[Disabled]	
COM2 422/485 control flow	[Disabled]	

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Serial Port

Use this item to enable or disable serial port (COM).

The optional settings are: Enabled, Disabled.

Change Settings

Use this item to select an optimal setting for super IO device.

The optional settings are:

AUTO

IO=3F8h; IRQ=4;

IO=3F8h; IRQ=3,4,5,6,7,10,11,12;

IO=2F8h; IRQ=3,4,5,6,7,10,11,12;

IO=3E8h; IRQ=3,4,5,6,7,10,11,12;

IO=2E8h; IRQ=3,4,5,6,7,10,11,12;

COM1 422/485 control flow

Use this item to enable or disable serial port (COM) Autoflow

The optional settings are: Enabled, Disabled.

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"> ▶ Serial Port 3 Configuration ▶ Serial Port 4 Configuration ▶ Serial Port 5 Configuration ▶ Serial Port 6 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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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	[Enabled]	
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	[AUTO]	
COM3 422/485 control flow	[Disabled]	

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Serial Port

Use this item to enable or disable serial port (COM).

The optional settings are: Enabled, Disabled.

Change Settings

Use this item to select an optimal setting for super IO device.

The optional settings are:

AUTO

IO=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	[Disabled]	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

Network stack	[Disable Link]	Enable/Disable UEFI network stack.
		→←: 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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Network Stack

Enable/Disable UEFI network stack.

The optional settings are: Disable Link, Enable.

4-8 Chipset

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

▶ PCH-IO Configuration ▶ System Agent (SA) Configuration	PCH 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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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	[Disabled]	

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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		→←: Select Screen ↑↓: Select Item Enter: Select +/: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit Esc: Exit
► Mini PCIe 2		
► PCI Express x1		
► PCI Express x1		

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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

PCI Express x1

Please refer section 4-8-1-1-2

PCI Express x1

Please refer section 4-8-1-1-2

4-8-1-1-1 ► Mini PCIe 1/2

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

PCI Express Root Port 3/4 PCIe Speed	[Enabled] [Gen1]	Control the PCI Express Root Port.
		→←: 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.

4-8-1-1-2 ► PCI Express x 1

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

PCI Express Root Port 7/8 PCIe Speed	[Enabled] [Gen1]	Control the PCI Express Root Port.
		→←: 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 7/8

Control the PCI Express Root Port.

The optional settings are: Enabled, Disabled.

PCIe Speed

Select PCI Express port speed.

The optional settings are: Auto, Gen1, Gen2.

4-8-1-2 ► USB Configuration

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

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

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XHCI Pre-Boot Driver

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

xHCI Mode

Mode of operation of xHCI controller.

The optional settings are: Smart Auto, Enabled, Disabled.

HS Port #1 Switchable

HS Port #2 Switchable

HS Port #3 Switchable

HS Port #4 Switchable

Always for HS port switching between xHCI and EHCI. If disabled, port is routed to EHCI. If HS port is routed to xHCI, the corresponding SS port is enabled.

The optional settings are: Disabled, Enabled.

xHCI Streams

Use this item to enable or disable xHCI Maximum Primary Stream Array Size.

The optional settings are: Disabled, Enabled.

EHCI1/ EHCI2

Use this item to enable or disable USB EHCI (USB 2.0) support.

One EHCI controller must always be enabled.

The optional settings are: Enabled, Disabled.

USB Port Pre-Port Disable Control

Use this item to control each of the USB ports (0~13) disabling.

The optional settings are: Disabled, Enabled.

4-8-1-3 ► PCH Azalia Configuration

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

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

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Azalia

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

Azalia Internal HDMI Codec

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

Azalia HDMI Codec

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

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

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

System Agent Bridge Name	IvyBridge	Config Graphics Settings.
System Agent RC Version	1.2.0.0	
► Graphics Configuration		→←: Select Screen ↑↓: 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	[256MB]	→←: Select Screen
DVMT Pre-Allocated	[64M]	↑↓: Select Item
DVMT Total Gfx Mem	[256M]	Enter: Select
► LCD Control		+/-: Change Opt.
		F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit
		Esc: Exit

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Aperture Size

The optional settings are: 128MB,256MB,512MB.

DVMT Pre-Allocated

Use this item to select DVMT 5.0 pre-allocated (fixed) graphics memory size used by the internal graphics device.

The optional settings are: 32/64/96/128/160/192/224/256/288/320/352/384/416/448/480/512/1024M

DVMT Total Gfx Mem

Use this item to select DVMT 5.0 total graphics memory size used by the internal graphics device.

The optional settings are:128M, 256M, MAX.

LCD Control

Please refer section 4-8-2-1-1

4-8-2-1-1 ► LCD Control

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

Graphics Configuration		Select the Video Device which will be activated during POST. This has no effect if external graphics present. Secondary boot display selection will appear based on your selection. VGA modes will be supported only on primary display
Primary IGFX Boot Display	[CRT]	
Secondary IGFX Boot Display	[LVDS]	
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, DVI.

Secondary IGFX Boot Display

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

LCD Panel Type

This item allows you to select the panel resolution

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

Panel Color Depth

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

4-9 Boot

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

Boot Configuration			
Bootup NumLock State	[On]		Select the keyboard NumLock state.
Quiet Boot	[Enabled]		
CSM16 Module Version	07.69		→←: Select Screen
GateA20 Active	[Upon Request]		↑↓: Select Item
Boot Option Priorities			Enter: Select
► CSM parameters			+/-: 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	[Legacy only]	This option controls what devices system can boot to
Launch PXE OpROM policy	[Do not launch]	
		→←: 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

Password Description	This option controls if CSM will be launched
If ONLY the Administrator's password is set, Then this only limits access to Setup and is only asked for when entering Setup. If ONLY the User's password is set, then this is a power on password and must be entered to Boot or enter Setup. In Setup the User will Have Administrator right. The password length must be in the following range:	
Minimum length	3
Maximum length	20
Administrator Password	
User Password	
	→←: 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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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.

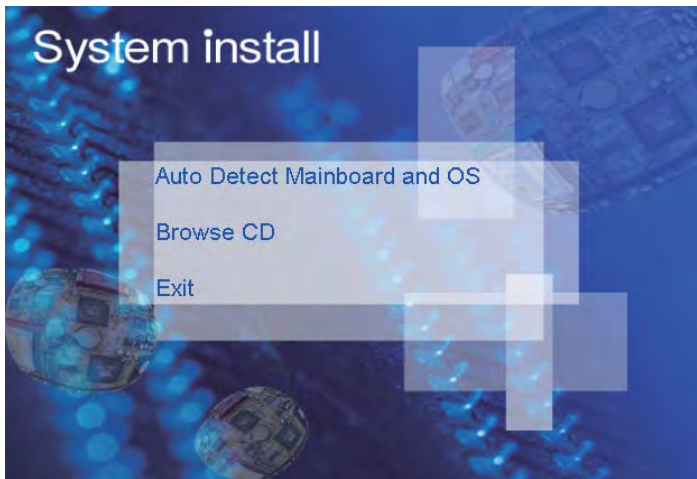
Chapter-5

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

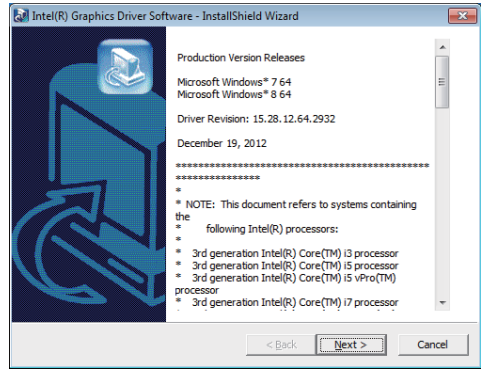
X:\driver\INTEL\IVY_SAN\inf\inst_autol.exe

For Windows 8.1 64/32-bit

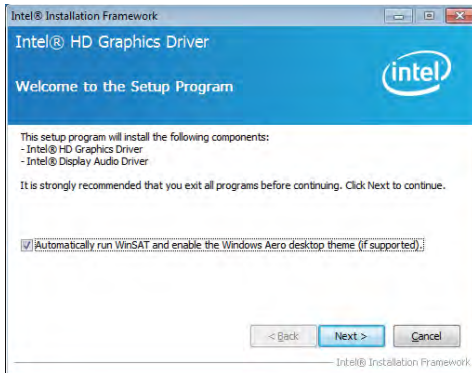
5-2 VGA Install Intel Ivy Bridge VGA Driver



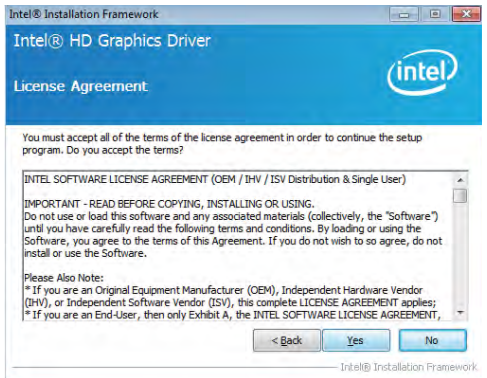
1. At the "AUTOMATIC DRIVER INSTALLATION menu" screen, click "VGA".



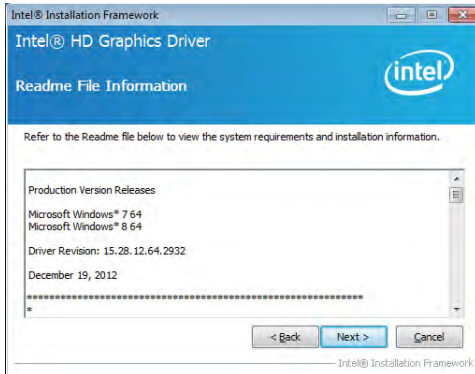
2. At the "Intel® HD Graphics Driver" screen, Click "Next".



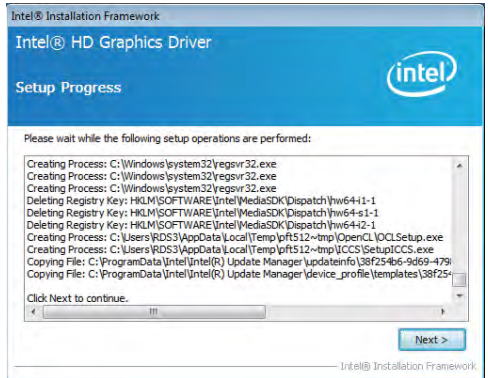
3. At the "Welcome to the Setup Program" screen, Click "Next".



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

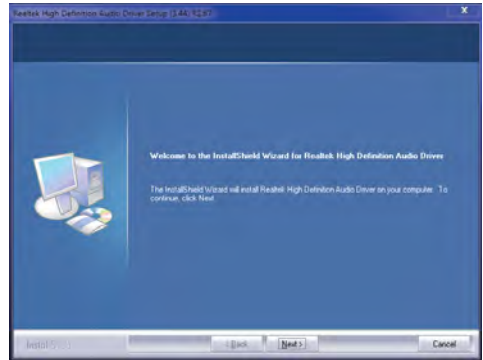
For Windows 8.1 64bit

X:\driver\INTEL\IVY_SAN\vga\WIN8.1\SAN\x64\ Setup.exe

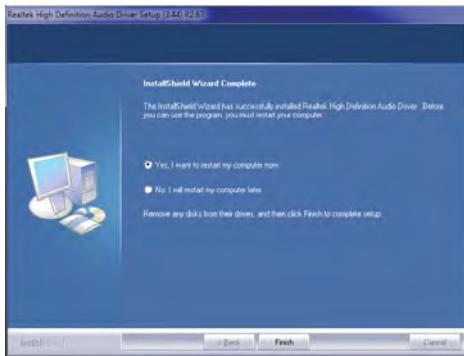
For Windows 8.1 32bit

X:\driver\INTEL\IVY_SAN\vga\WIN8.1\SAN\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



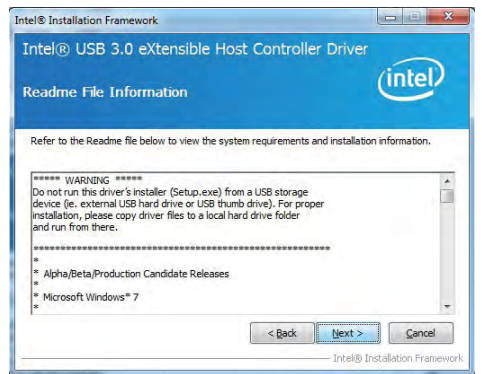
1. At the "AUTOMATIC DRIVER INSTALLATION" menu screen, Click "USB 3.0"



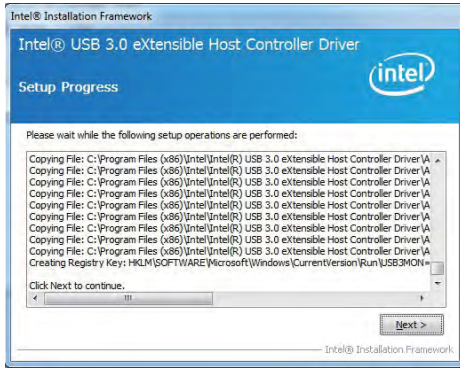
2. At the "Intel® USB 3.0 extensible Host Controller Driver" screen, Click "Next."



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



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



5. Click "Next".



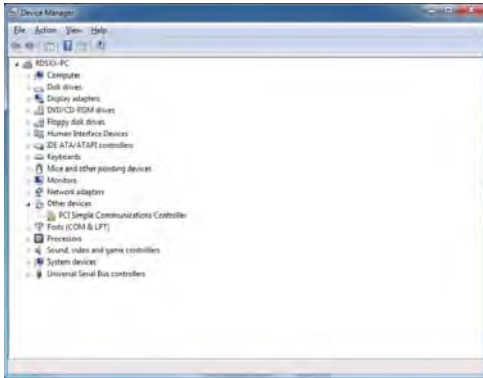
6. Click "Finish" to restart computer

NOTE: The path of the file

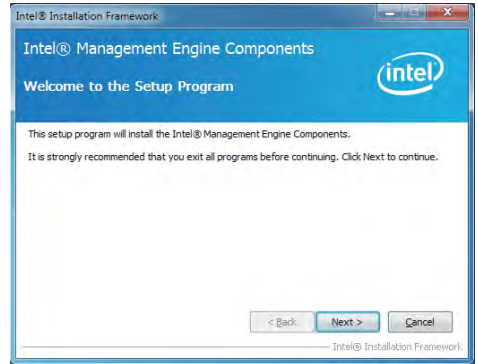
For Windows 7 32/64-bit

X:\driver\INTEL\IVY_SAN\USB3_0\INTEL\Setup.exe

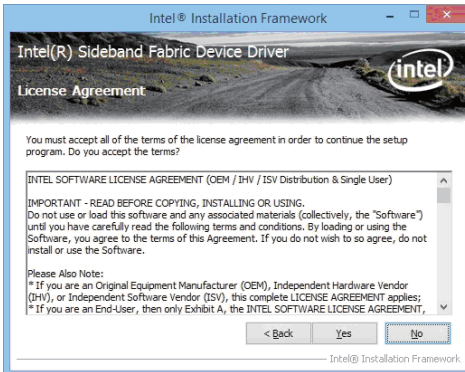
5-5 ME Install Intel Management Engine Interface Driver



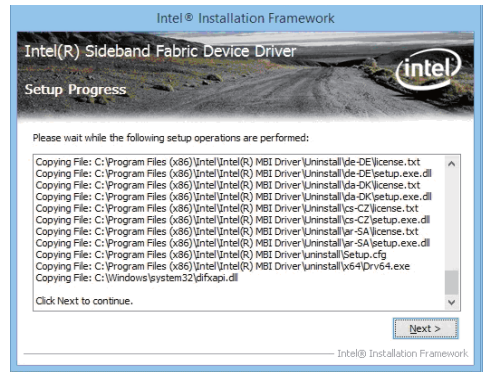
1. Please Check Device Manager "PCI Simple Communications Controllers"



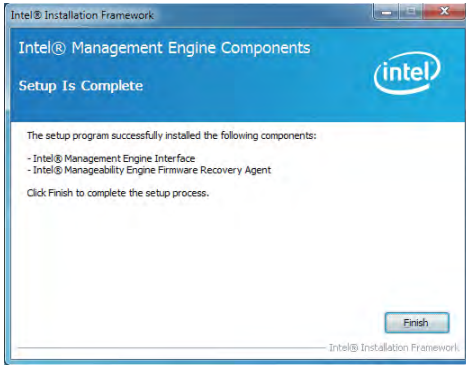
2. At the "Intel® Management Engine Components" screen, Click "Next".



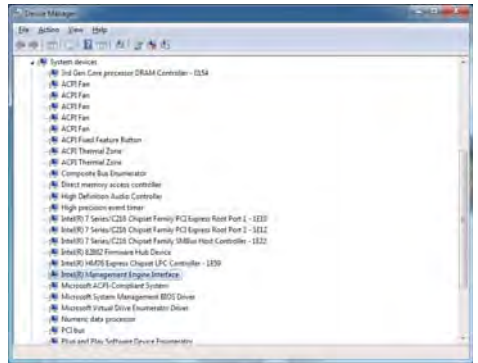
3. At the "Setup Progress" screen, Click "Next".



4. Click "Next".



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



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

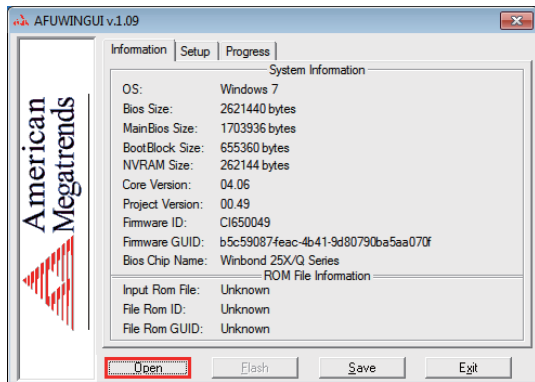
NOTE: The path of the file

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

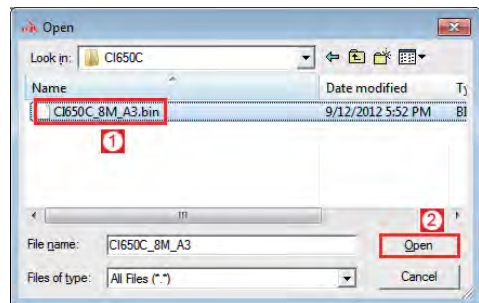
X:\driver\INTEL\ME TOOL\MEI-Only Installer\MEISetup.exe

5-6 How to update Insyde BIOS

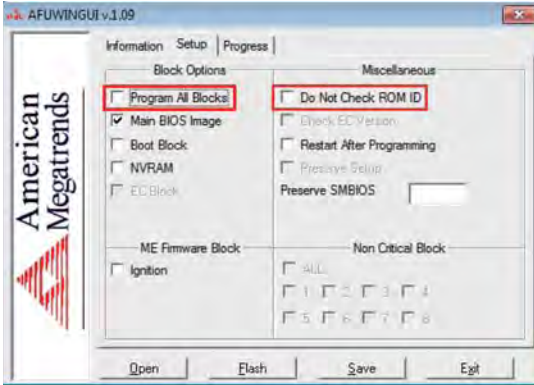
Step 1. To run afuwingui.exe then click "Open"



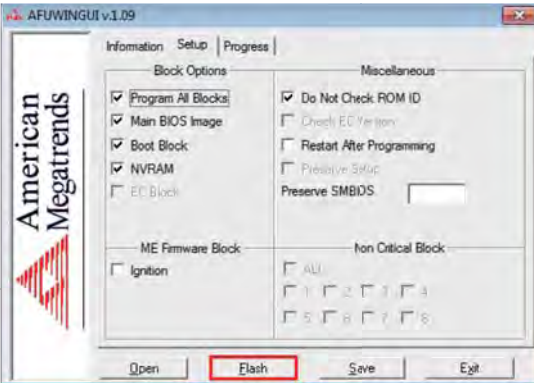
Step 2. Click the new version BIOS (download from the website)



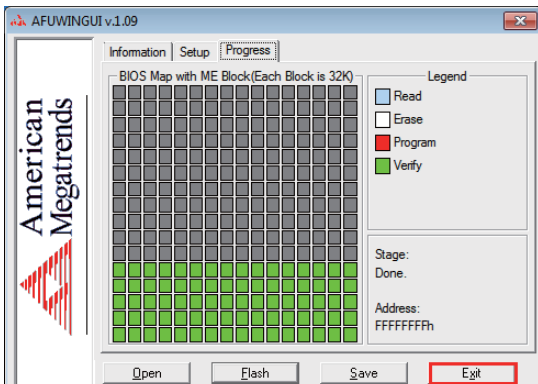
Step 3. Choose "Program All Blocks" and "Do Not Check ROM ID"



Step 4. Click "Flash"



Step 5. Click "Exit" and restart computer.



Appendix A: Power Consumption Test

Condition

Item	Spec
CPU	i7-3610QE, i5-3610ME
Memory	DDR3 1600 / 16GB
Operating System	Windows 7
Test Program	3D Mark 11 Advanced Edition
HDD 3.5" SATA	Standard HDD
HDD 2.5" SATA	Slim Type HDD

Test Result for reference only !

Hard Disk	Processor	Power off	Start up		Operation Maximum	Shut down Maximum
			Maximum	Stable		
Standard HDD	i7-3610QE	0.1A	3.35A	1.52A	4.99A	2.33A
	i5-3610ME	0.1A	2.89A	1.45A	4.04A	2.36A
Slim Type HDD	i7-3610QE	0.1A	2.98A	1.16A	4.81A	1.99A
	i5-3610ME	0.1A	2.54A	1.1A	3.75A	1.72A

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: F75111N I²C DIO device

1-1 IO Device:F75111 under DOS

The Sample code source you can download from

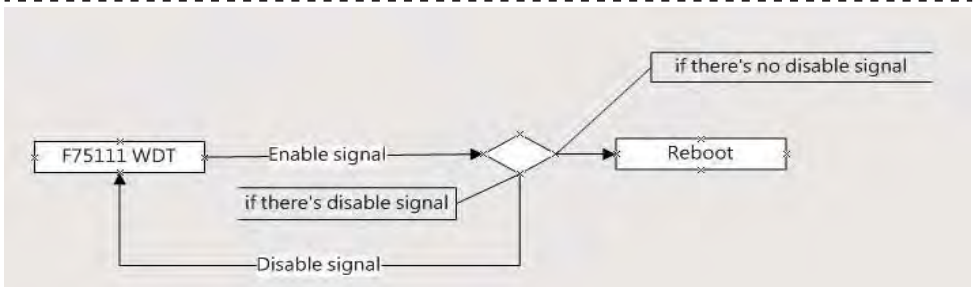
Source file: F75111_Dos_Src.rar http://tprd.info/lexwiki/index.php/IO_Device:F75111_under_DOS

Binary file: F75111_Dos_Bin.rar

USERNAME & PASSWORD: sf

How to use this Demo Application

- 1.Boot Ms-Dos Operating System
- 2.execute "75WDT.EXE" binary file
- 3.Input 1 to Enable WDT timer or input 0 to Disable it.
- 4.input numbers of second for chip countdown and Reset Computer



Introduction

How to use this Demo Application

```
Writel2CByte(I2CADDR, CONFIG, 0x03);//Set Watch Dog Timer function
Writel2CByte(I2CADDR, WDT_TIMER, timer);//Set Watch Dog Timer range from 0-255.
Writel2CByte(I2CADDR, WDT_TIMER_CTL, 0x73);//Enable Watch Dog Timer in second and pulse mode
```

How to use this Demo Application

```
Writel2CByte(I2CADDR, WDT_TIMER_CTL, 0x00);
```

How to use this Demo Application

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

1-2 IO Device: F75111 under Windows

The Sample code source you can download from

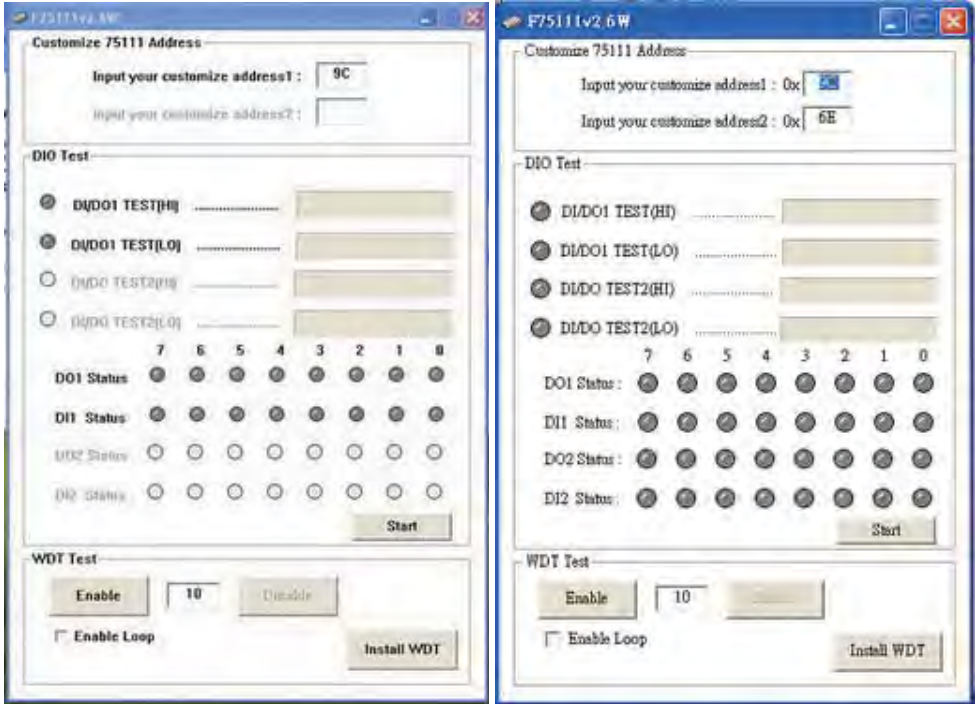
Source file:F75111_DIO_Src_v2.7W.zip



http://tprd.info/lexwiki/index.php/IO_Device:F75111

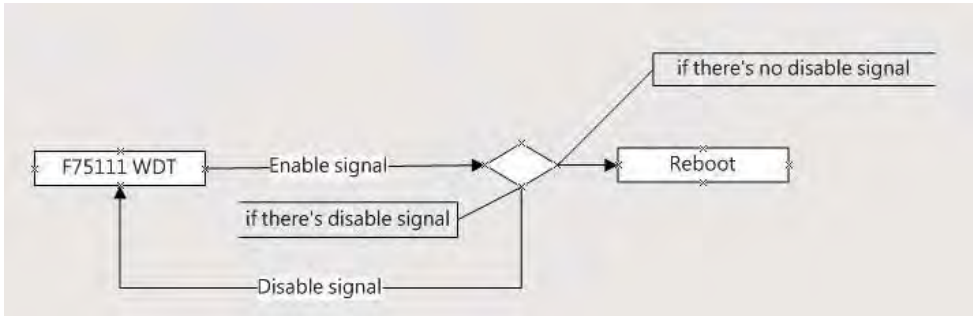
Binary file:F75111_DIO_Bin_v2.7W.zip

USERNAME & PASSWORD: sf

How to use this Demo Application



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



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

Introduction

Initial Internal F75111 port address (0x9c)

```

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

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

```

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

Enable/Disable WDT

```

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

PULSE mode

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

```

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

Initial internal F75111

```

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

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

Set output value

```
void F75111::InterDigitalOutput(BYTE byteValue)
{
    BYTE byteData = 0;
    byteData = (byteData & 0x01 )? byteValue + 0x01 : byteValue;
    byteData = (byteData & 0x02 )? byteValue + 0x02 : byteValue;
    byteData = (byteData & 0x04 )? byteValue + 0x04 : byteValue;
    byteData = (byteData & 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
}
}
```

define F75111 pin in F75111.h

```
//-----
#define F75111_INTERNAL_ADDR      0x9C // OnBoard F75111 Chipset
#define F75111_EXTERNAL_ADDR     0x6E // External F75111 Chipset
//-----
#define F75111_CONFIGURATION     0x03 // Configure GPIO13 to WDT2 Function
//-----
#define GPIO1X_CONTROL_MODE      0x10 // Select Output Mode or Input Mode
#define GPIO2X_CONTROL_MODE      0x20 // Select GPIO2X Output Mode or Input Mode
#define GPIO3X_CONTROL_MODE      0x40 // Select GPIO3X Output Mode or Input Mode
//-----
#define GPIO1X_INPUT_DATA        0x12 // GPIO1X Input
#define GPIO3X_INPUT_DATA        0x42 // GPIO3X Input
//-----
#define GPIO2X_OUTPUT_DATA       0x21 // GPIO2X Output
//-----
#define GPIO1X_PULSE_CONTROL     0x13 // GPIO1x Level/Pulse Control Register
                                    // 0:Level Mode
                                    // 1:Pulse Mode
#define GPIO1X_PULSE_WIDTH_CONTROL 0x14 // GPIO1x Pulse Width Control Register
#define GP1_PSWIDTH_500US        0x00 // When select Pulse mode:      500    us.
#define GP1_PSWIDTH_1MS          0x01 // When select Pulse mode:      1      ms.
#define GP1_PSWIDTH_20MS        0x02 // When select Pulse mode:     20     ms.
#define GP1_PSWIDTH_100MS       0x03 // When select Pulse mode:    100    ms.
//-----
#define GPIO2X_PULSE_CONTROL     0x23 // GPIO2x Level/Pulse Control Register
                                    // 0:Level Mode
                                    // 1:Pulse Mode
#define GPIO2X_PULSE_WIDTH_CONTROL 0x24 // GPIO2x Pulse Width Control Register
#define GP2_PSWIDTH_500US        0x00 // When select Pulse mode:      500    us.
#define GP2_PSWIDTH_1MS          0x01 // When select Pulse mode:      1      ms.
#define GP2_PSWIDTH_20MS        0x02 // When select Pulse mode:     20     ms.
#define GP2_PSWIDTH_100MS       0x03 // When select Pulse mode:    100    ms.
//-----
#define GPIO3X_PULSE_CONTROL     0x43 // GPIO3x Level/Pulse Control Register
```

```

// 0:Level Mode
// 1:Pulse Mode
#define GPIO3X_Output_Data          0x41 // GPIO3x Output Data Register
#define GPIO3X_PULSE_WIDTH_CONTROL 0x44 // GPIO3x Pulse Width Control Register
#define GP3_PSWIDTH_500US          0x00 // When select Pulse mode:      500      us.
#define GP3_PSWIDTH_1MS            0x01 // When select Pulse mode:      1        ms.
#define GP3_PSWIDTH_20MS           0x02 // When select Pulse mode:      20       ms.
#define GP3_PSWIDTH_100MS          0x03 // When select Pulse mode:      100      ms.
//-----
#define WDT_TIMER_RANGE             0x37 // 0-255 (second or minute program by WDT_UNIT)
#define WDT_CONFIGURATION           0x36 // Configure WDT Function
#define WDT_TIMEOUT_FLAG           0x40 // When watchdog timeout,this bit will be set to 1.
#define WDT_ENABLE                 0x20 // Enable watchdog timer
#define WDT_PULSE                   0x10 // Configure WDT output mode
// 0:Level Mode
// 1:Pulse Mode
#define WDT_UNIT                    0x08 // Watchdog unit select.
// 0:Select second.
// 1:Select minute.
#define WDT_LEVEL                   0x04 // When select level output mode:
// 0:Level low
// 1:Level high
#define WDT_PSWIDTH_1MS             0x00 // When select Pulse mode:      1        ms.
#define WDT_PSWIDTH_20MS           0x01 // When select Pulse mode:      20       ms.
#define WDT_PSWIDTH_100MS          0x02 // When select Pulse mode:      100      ms.
#define WDT_PSWIDTH_4000MS         0x03 // When select Pulse mode:      4         s.

```

1-3 IO Device: F75111 VB6 under Windows

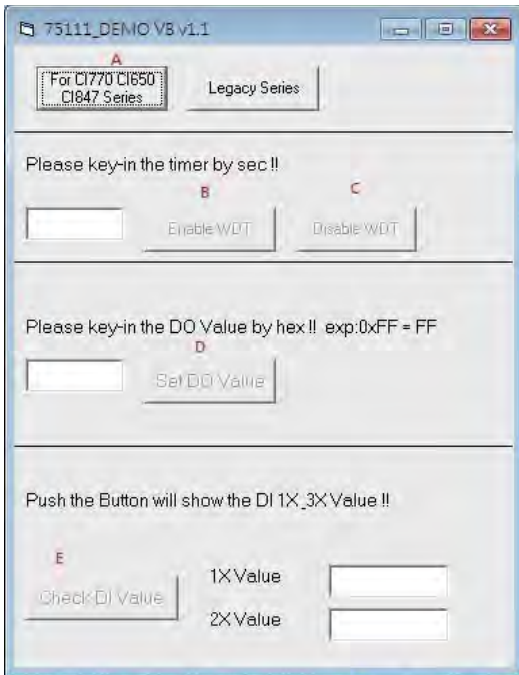
The Sample code source you can download from

Source file: 75111_VB_v1.1.rar http://tprd.info/lexwiki/index.php/IO_Device:F75111_VB6

Binary file: 75111_VB_Src1.1.rar

USERNAME & PASSWORD: sf

How to use this Demo Application



A Function - Choose your motherboard model

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

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

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

E 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
```

1-4 IO Device: F75111 under linux

The Sample code source you can download from

Source file:F75111v2.3L_SRC.tar.gz http://tprd.info/lexwiki/index.php/IO_Device:F75111_under_linux

Binary file:F75111v2.3L_BIN.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

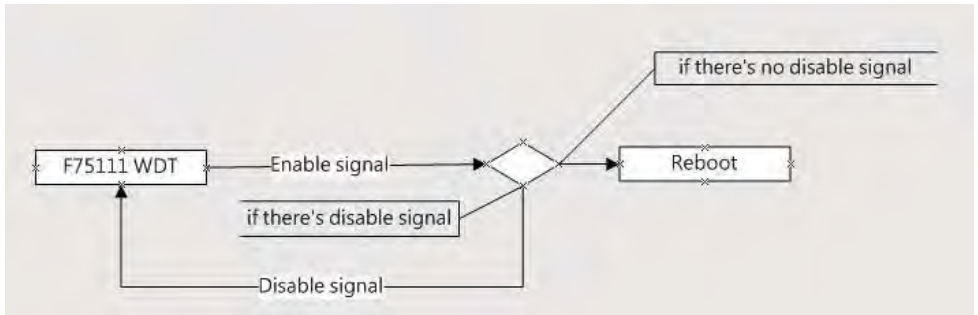
1.make

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 SMBusWrite(BYTE byteOffset,BYTE byteData)
{
  outb( byteData , m_SMBusMapIoAddr + byteOffset);
}

BYTE SMBusRead(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 & 0x80 )? byteValue + 0x08 : byteValue;
}
  
```

```

byteData = (byteData & 0x40 )? byteValue + 0x10 : byteValue;
byteData = (byteData & 0x20 )? byteValue + 0x20 : byteValue;
byteData = (byteData & 0x10 )? byteValue + 0x40 : byteValue;
byteData = (byteData & 0x08 )? byteValue + 0x80 : byteValue;           // get value bit by bit

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

```

Get Input value

```

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

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

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

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

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

    return byteData;
}

```

Enable WatchDog

```

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

```

Disable WatchDog

```

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

```

```

//-----
#define F75111_INTERNAL_ADDR    0x9C //      OnBoard F75111 Chipset
#define F75111_EXTERNAL_ADDR    0x6E //      External F75111 Chipset
//-----
#define F75111_CONFIGURATION    0x03 // Configure GPIO13 to WDT2 Function
//-----
#define GPIO1X_CONTROL_MODE     0x10 // Select Output Mode or Input Mode
#define GPIO2X_CONTROL_MODE     0x20 // Select GPIO2X Output Mode or Input Mode
#define GPIO3X_CONTROL_MODE     0x40 // Select GPIO3X Output Mode or Input Mode
//-----
#define GPIO1X_INPUT_DATA       0x12 // GPIO1X Input
#define GPIO3X_INPUT_DATA       0x42 // GPIO3X Input
//-----
#define GPIO2X_OUTPUT_DATA      0x21 // GPIO2X Output
//-----
#define GPIO2X_OUTPUT_DRIVING   0x2B // Select GPIO2X Output Mode or Input Mode
//-----
#define WDT_TIMER_RANGE         0x37 // 0-255 (second or minute program by WDT_UNIT)
//-----
#define WDT_CONFIGURATION       0x36 // Configure WDT Function
#define WDT_TIMEOUT_FLAG        0x40 //      When watchdog timeout.this bit will be set to 1.
#define WDT_ENABLE              0x20 //      Enable watchdog timer
#define WDT_PULSE                0x10 //      Configure WDT output mode
//                                //      0:Level Mode
//                                //      1:Pulse   Mode
#define WDT_UNIT                 0x08 //      Watchdog unit select.
//                                //      0:Select second.
//                                //      1:Select minute.
#define WDT_LEVEL                0x04 //      When select level output mode:
//                                //      0:Level low
//                                //      1:Level high
#define WDT_PSWIDTH_1MS         0x00 //      When select Pulse mode:      1      ms.
#define WDT_PSWIDTH_20MS        0x01 //      When select Pulse mode:      20     ms.
#define WDT_PSWIDTH_100MS       0x02 //      When select Pulse mode:     100    ms.
#define WDT_PSWIDTH_4000MS      0x03 //      When select Pulse mode:      4      s.
//-----
typedef struct F75111_Address
{
    BYTE bAddress;
}F75111_Address;
F75111_Address m_F75111;
bool    F75111_Init();
BYTE    F75111_GetDigitalInput ();
void    F75111_SetDigitalOutput(BYTE byteValue);

BYTE    F75111_GetWDTMode();
void    F75111_SetWDTMode(BYTE dwvalue);

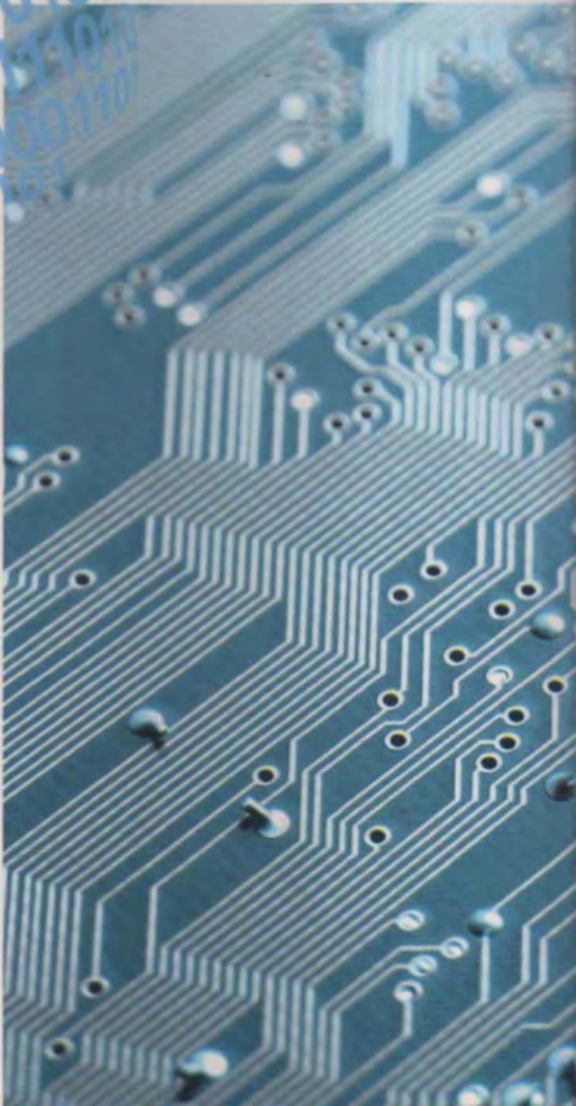
void    F75111_SetWDTEnable (BYTE byteTimer);
void    F75111_SetWDTDisable ();

```

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MOTHERBOARD

USER'S MANUAL



6G8001-2197-0400