

# **3I380NX**

**Intel Bay Trail-I E3845 (Quad Core ) /  
On Board / Socket DDR3L, 4 x Intel I210IT LAN /  
USB / VGA / HDMI**

## **All-In-One**

**Intel Bay Trail-I E3845 1.91 GHZ /  
VGA, HDMI, COM, PCIe mini card  
Multi-LAN Board, SATA, USB**

**NO. 3I380NX\_V0.1**

**Release date: May. 08. 2015**

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User Manual edition 0.1, May. 08. 2015

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## Warning !

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

## \* Hardware Notice Guide

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

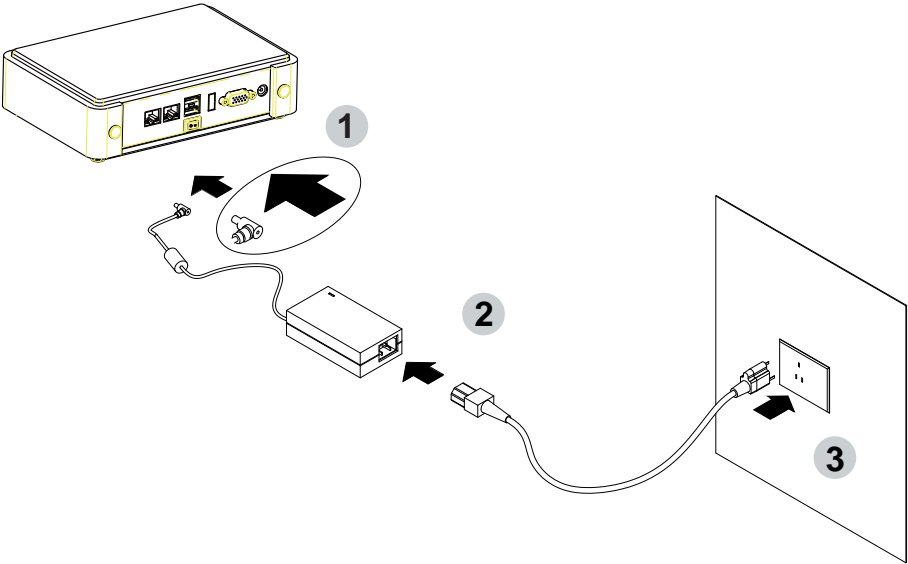
### **Remark 1:**

**Always insert/unplug the DC-in horizontally & directly to/from the motherboard. DO NOT twist, it is designed to fit snugly.**

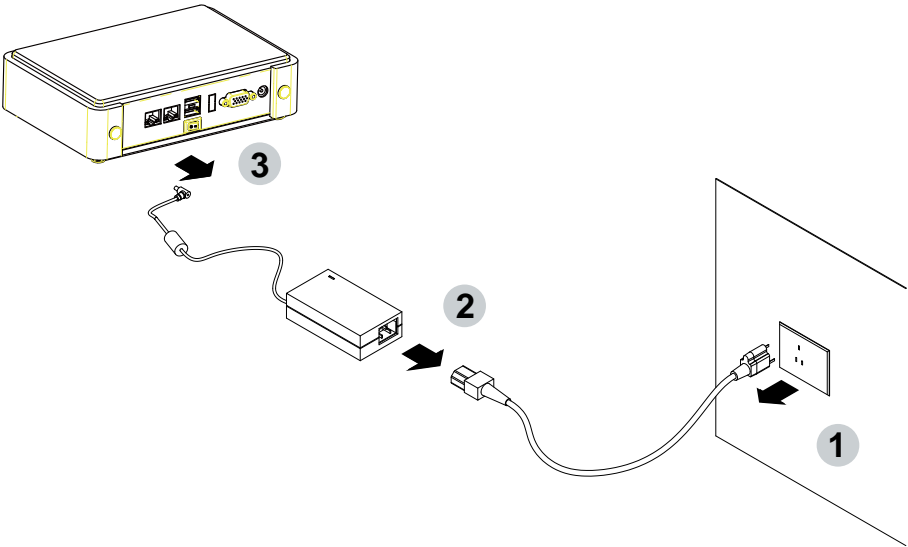
**Moreover, erratic pull / push action might cause an unpredictable damage to the component & system unit.**

**Photo 1**

**Insert**



**Unplug**





---

# Chapter-1

## General Information

The 3I380NX is a 3.5-inch compact embedded system board that features Intel® Bay Trail SoC to support one super speed USB 3.0 port, and one onboard memory up to 4GB SDRAM 1333MHz.

High-performance and power-efficient communication platform, the embedded motherboard of 3I380NX is specially designed for advanced embedded car PC or networking applications where the economical use of power is in high demand. Also, there is a sizable on board DDR3L memory from 3I380NX motherboards which will provide more stability to the system.

This motherboard will ensure the high performance levels required for today's most popular Networking/Automation control and IP Surveillance applications including Embedded Car PC and Panel PC applications.

The 3I380NX integrates with Intel's 7th generation (Gen 7) graphics and media encode/decode engine, dual displays of CRT resolution up to 2560 x 1600. Besides, 3I380NX have 4 industrial PoE gigabit LAN which follows the IEEE 802.3af standard to supply the necessary power to PoE device such as IP camera and IP phone working well in extreme temperature environment. It is also with Wake-On LAN function and the PXE function in BIOS, these are perfect control board for networking purpose.

3I380NX also supports multiple COM ports of five RS232 and one RS422/485 to meet the needs of connectivity for multiple COM ports. It supports up to four serial ports (RS232 or RS485), and 7 ports of USB

(1 port of USB3.0 and 2 ports of USB 2.0 in rear side & 4 internal ports of USB 2.0 with 2 ports share with PCIe Mini Card). The expandable interfaces include 2 PCIe Mini card for mSATA (auto-detection) and USB interface. 1 SIM card socket and 1 TF card socket.

In addition, there are multi-ports of Hi-Speed USB 3.0 and USB 2.0 to enhance the host controller interface which will ensure the high performance level and flexible expansion. A single Flash chip holds the system BIOS, and you can change the Flash BIOS by the Utility Update. The 3I380NX 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. 3I380NX is the perfect platform for a whole range of small form factor.

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## 1-1 Major Feature

1. INTEL Atom Processor Baytrail-I E3845
2. Onboard DDR3L 4GB; data transfer rates of 1333 MT/s
3. Support 4 x PoE LAN follows IEEE 802.3af standard
4. Support extended 2 x Mini PCIe card
5. Support up to 2 SATA ports (shared with mSATA)
6. Hardware digital Input & Output, 8 x DI / 8 x DO  
Hardware Watch Dog Timer, 0~255 sec programmable
7. Wide range DC input from +9V to +36V( $\pm 1V$ )
8. PCB Dimension: 145 x 102 mm
10. Support One Micro-SD socket and One SIM card socket
11. On board SSD 4/8/16/32/64 GBytes (Option)

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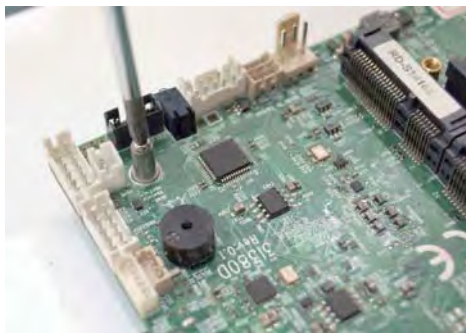
## 1-2 Specification

1. **SoC:** INTEL Atom Processor Baytrail-I E3845
2. **Memory:** Onboard DDR3L 4GB, data transfer rates of 1333 MT/s
3. **Graphic / Video:**  
Intel's 7th generation (Gen 7) graphics and media encode/decode engine.
4. **SATA:** Integrated Serial ATA Host Controller Up to 2  
SATA ports: All ports support 2.0 Data transfer rates up to 3.0 Gb/s (600 MB/s).
5. **LAN:** Intel I210IT PCIe LAN NIC
6. **Serial Port:** 3 x RS232 (Internal); 1 x RS232/422/485 form BIOS select (Internal)
7. **USB:** 1 x USB 3.0/2.0 (external) + 2 x USB 2.0 (external) onboard;  
4 x USB 2.0 (internal) (2 x share with Mini card)
8. **Micro SD:** Support SD Card 3.0 interface
9. **Sound:** Intel High Definition Audio Interface
10. **WDT/DIO:** Hardware digital Input & Output, 8 x DI / 8 x DO  
Hardware Watch Dog Timer, 0~255 sec programmable
11. **Expansion interface:**  
1 PCIe Mini card for mSATA auto detect and SIM & USB interface,  
1 PCIe Mini card for mSATA auto detect and USB interface
12. **BIOS:** Insyde BIOS
13. **Dimension:** 145 x 102 mm
14. **Power:** Wide range DC input from +9V to +36V(±1V)
15. **3G Wireless:** on board 3G SIM card reader socket

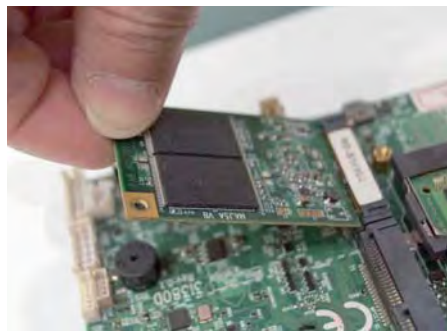
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## 1-3 Directions for installing the Mini Card

1. Unscrew the screw on the board



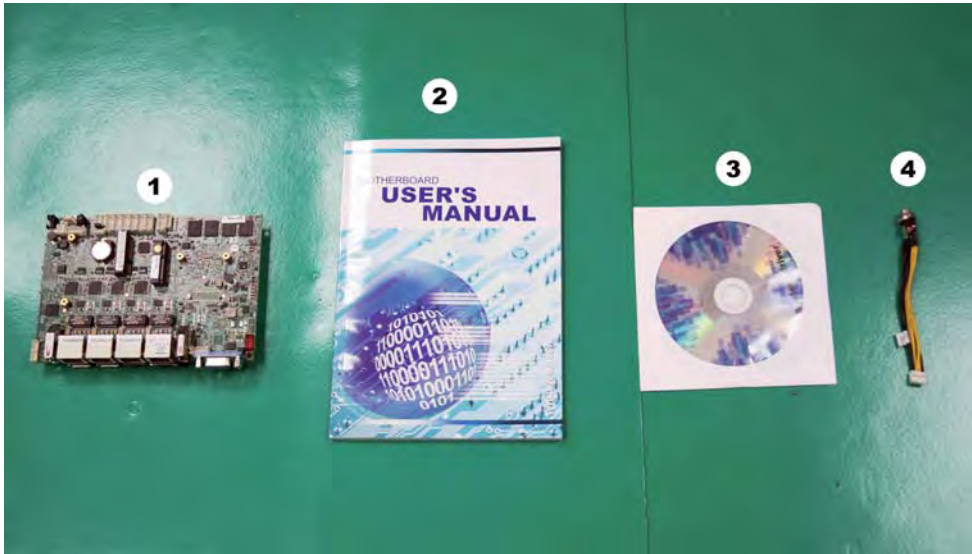
2. Plug in the Mini Card in a 45 angle



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



# 1-4 Packing List



	Material Code	Description	Detail Specification	Quantit
1	7G1901-1561002-0	MB-3I380NX-I44-00-002	LF,3I380NX-I44-00,Rev.:002	1
2	6G8001-2195-0400	Manual	LF,M/B,3I380NX	1
3	6G8006-2349-0100	LEX Product Driver DVD	LF, Intel Baytrail Driver,Windows 7/8.1 32/64	1
4	6G6003-7350-0100	Power Cable	LF, 2.0 2*4/DC JK,L=9cm	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.

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# Chapter-2

## Hardware Installation

### 2-1 Unpacking Precaution

This chapter provides the information how to install the hardware of 3I380NX. Please follow section 1-4, 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 3I380NX.  
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 3I380NX for harmlessly discharge any static electricity through the strap.
2. Please use anti-static pad to put any components, parts, or tools on the pad whenever you work on them outside the computer. You may also use the anti-static bag instead of the pad. Please ask your local supplier for necessary parts on anti-static requirement.
3. Do not plug any connector or set any jumper when the power is on.

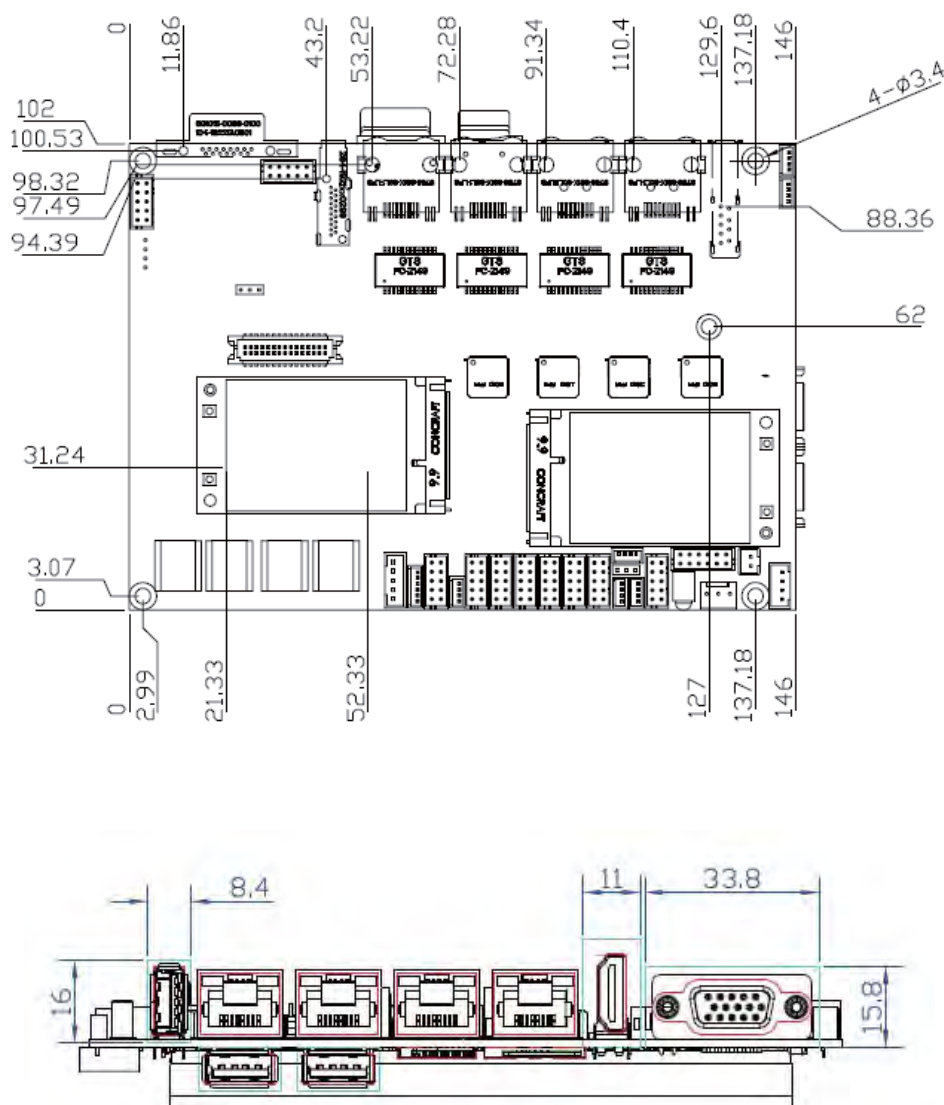
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## 2-2 Unpacking checkup

First of all, please follow all necessary steps of section 2-1 to protect 3I380NX from electricity discharge. With reference to section 1-4 please check the delivery package again with following steps:

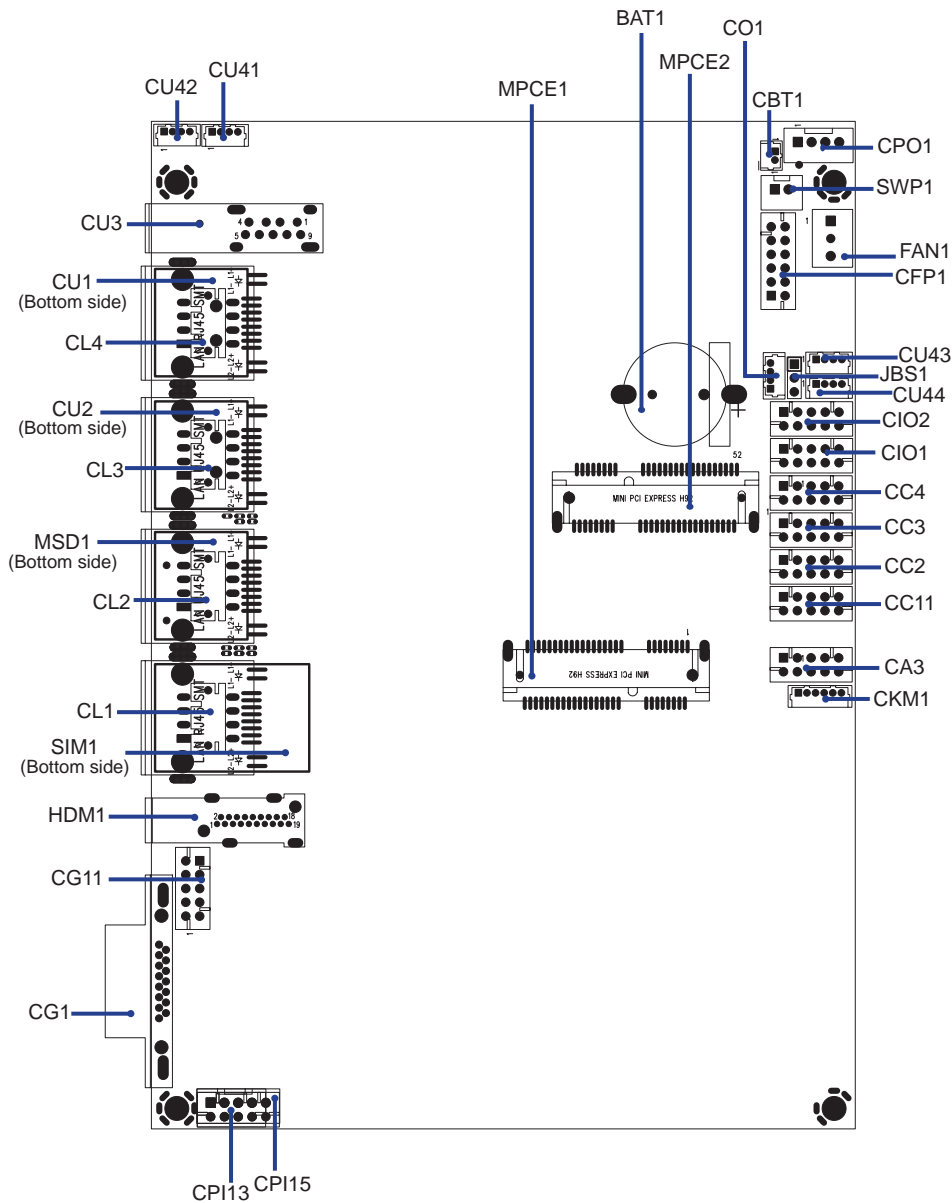
1. Unpack the 3I380NX board and keep all packing material, manual and driver disc etc, do not dispose !
2. Is there any components lose or drops from the board?  
DO NOT CONTINUE TO INSTALL THIS BOARD!  
CONTACT THE DEALER YOU PURCHASED THIS BOARD FROM, IMMEDIATELY.
3. Is there any visible damage on 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-3I380NX

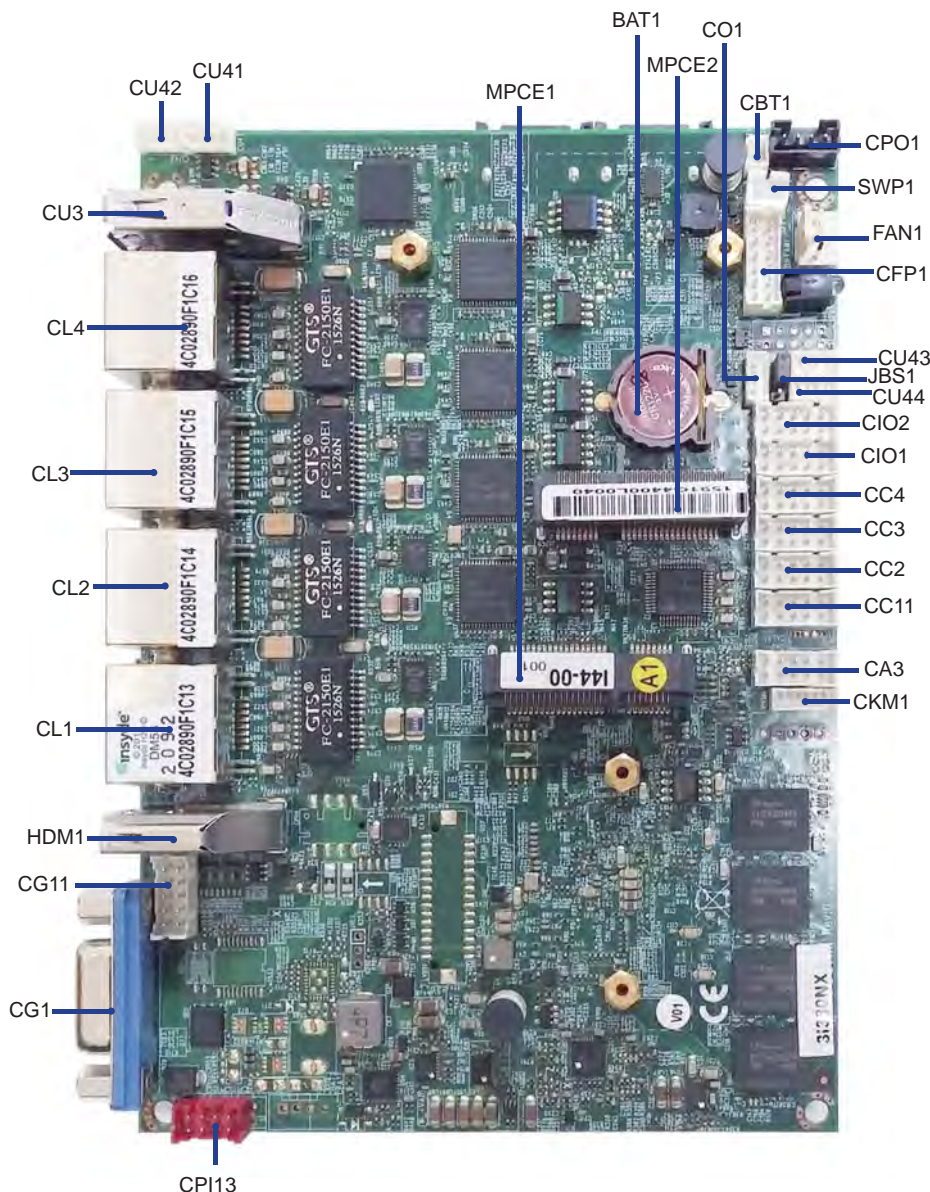




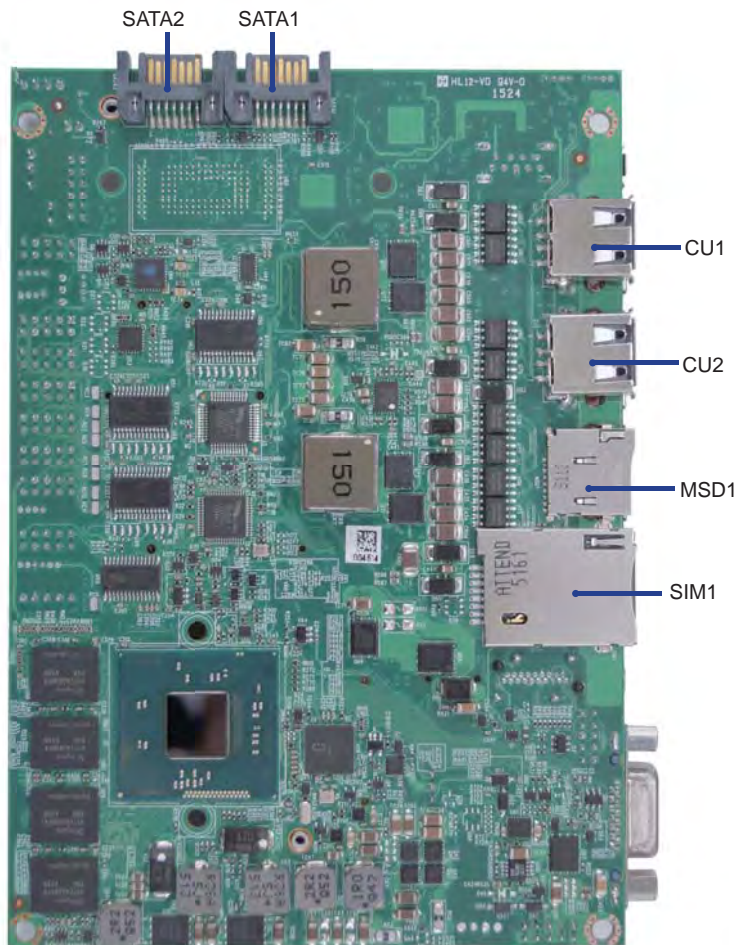
2-4 Layout-3I380NX



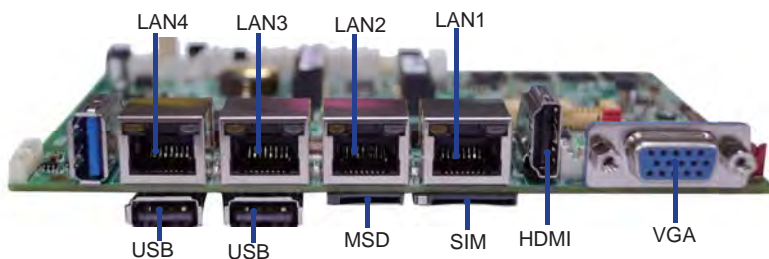
2-5 Diagram- 3I380NX



## 2-5-1 Bottom Side Diagram- 3I380NX



## BACK Panel-3I380NX



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## 2-6 List of Jumpers

JSB1: CMOS clear select

JVL1: LCD panel power select (Option)

SC1: CPC default setting ( 1-2 ON ) (Option)

## 2-7 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.

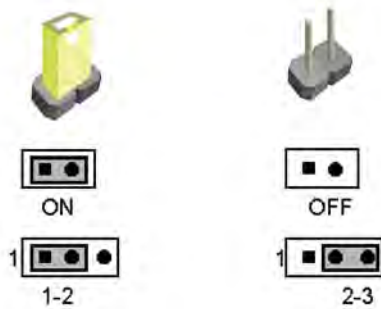


Figure 2.2

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 .

## 2-8 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 12V power cable from DC 12V power connector
- 3. Locate JSB1 and close pin 1-2 for few seconds
- 4. Return to default setting by close pin 1-2
- 5. Connect DC 12V power cable back to DC 12V Power connector

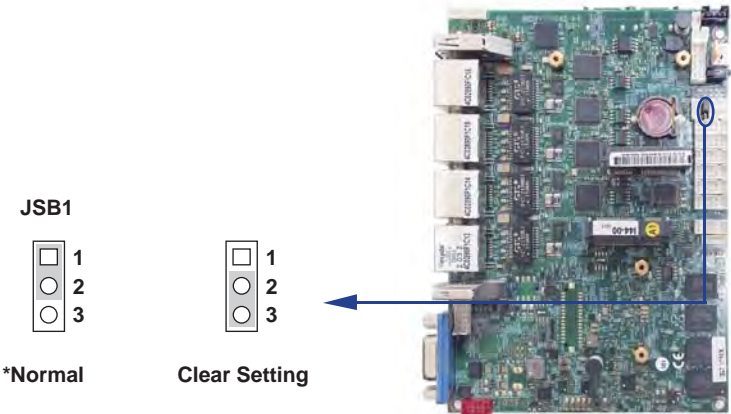
### JSB1: CMOS Data Clear

JSB1	Description
1-2	Normal set
2-3	CMOS data clear

Note: Normal work is open jumper

Note: Do not clear CMOS unless

- 1. *Troubleshooting*
- 2. *Forget password*
- 3. *You fail over-clocking system*



## 2-9 JVL1: LCD panel power select (Option)

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

Note: Attention ! Check Device Power in spec

JVL1 (Option)



## 2-10 SC1: CPC default setting ( 1-2 ON ) (Option)



1		2	
CPC function		Mode select	
Up	CPC Enabled	Up	Auto
Down	CPC Disabled	Down	Manual

SC1 (Option)





---

# 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

CPI13: DC-In 2x4 pin (2.0mm) Red Wafer connector  
CPI15: DC-In 2x5 pin (2.0mm) Red Wafer connector (Option)  
BAT1: Li 3V battery holder  
CBT1: Ext. Battery 1x2pin (1.25mm) Wafer connector  
CPO1: DC +5/+12V output 1x4 pin(2.0mm) Black wafer connector  
CFP1: Front panel port 2x6 pin(2.00mm) wafer for LED  
SWP1: Power Button 1x2 pin(2.0mm) wafer  
FAN1: CPU fan 1x3 pin(2.54mm) wafer  
CG1: DSUB VGA connector  
CG11: VGA 2x5 pin (2.0mm) Wafer  
HDMI1: HDMI Type A 90° connector  
LVDS1: LVDS 2x15 pin (1.25mm) connector (Option)  
CPP1: Panel inverter power connector 1x5 pin (2.0mm) wafer (Option)  
CT1: Touch screen device 2x5 pin (2.0mm) Wafer (Option)  
CA3: Mic-in/Line out/Line in 2x5 pin(2.0mm) wafer connector  
CALR1: 1x4pin(1.25mm) wafer (Option)  
CC11/CC2~CC4: COM1~4 2x5pin(2.0mm) wafer  
CIO1: DI port 0 ~ 3 , DO port 0 ~ 3 2x5 pin (2.0mm) wafer  
CIO2: DI port 4 ~ 7 , DO port 4 ~ 7 2x5 pin (2.0mm) wafer  
CO1: I<sup>2</sup>C 4pin (1.25mm) wafer  
CKM1: KB/MS port 1x6 pin (1.25mm) wafer connector  
CL1/CL2/CL3/CL4: LAN RJ45 connector  
CL11/CL21/CL31/CL41: LAN port 2x4 pin(2.0mm) wafer connector(Option)  
CU1/CU2: USB port 1/2/3 Type A connector  
CU3: USB port 3.0/2.0 90° Type A connector  
CU41: USB2.0 port 4pin(1.25mm) wafer (share with Touch signal)  
CU42: USB2.0 port 4pin(1.25mm) wafer  
CU43/CU44: USB2.0 port 4pin(1.25mm) wafer (share with Mini card USB signal)  
SATA1/SATA2: SATA port 0 (Gen III) connectors 7pin  
MPCE1/MPCE2: Mini card port 1/2 sockets 52pin  
SIM1: SIM port 1 card socket(push-push)  
MSD1: MicroSD port socket(push-push)

## 3-2 DC power input

### ● CPI13: DC-IN Internal Connector (2x4 pin 2.0mm Wafer )

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

Note: 1. Very important check DC-in Voltage type for 12V or 9~36V model spec

\*2. Because the system support PSE function, Check the total power consumption of the system used to select safe power cables, please refer to UL1007 specifications

### ● CPI15: DC-IN Internal Connector (2x5 pin 2.0mm Wafer ) (Option)

PIN NO.	Description	PIN NO.	Description
1	GND	2	GND
3	DC-IN(12V)	4	DC-IN(12V)
5	DC-IN(12V)	6	DC-IN(12V)
7	GND	8	GND
9	CAR_IN_ACC	10	GND

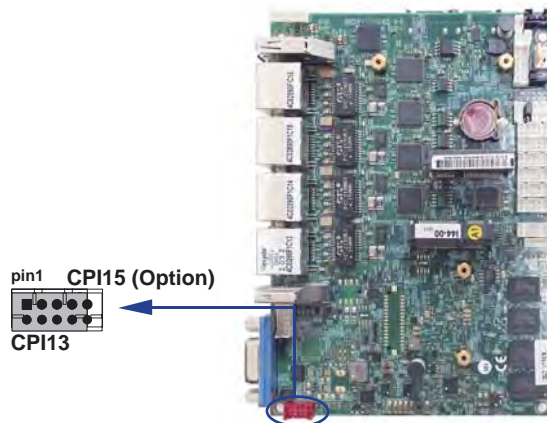
Note: 1. Very important check DC-in Voltage type for 12V or 9~36V model spec

\*2. Because the system support PSE function, Check the total power consumption of the system used to select safe power cables, please refer to UL1007 specifications

3. Pin9 for card ignition control “Low=off “ , “Hi=On”

4. Refer CPC description

Appendix A: CPC-Car Power Control





### 3-3 Battery Input

- **BAT1: 3V Battery hold 2pin**

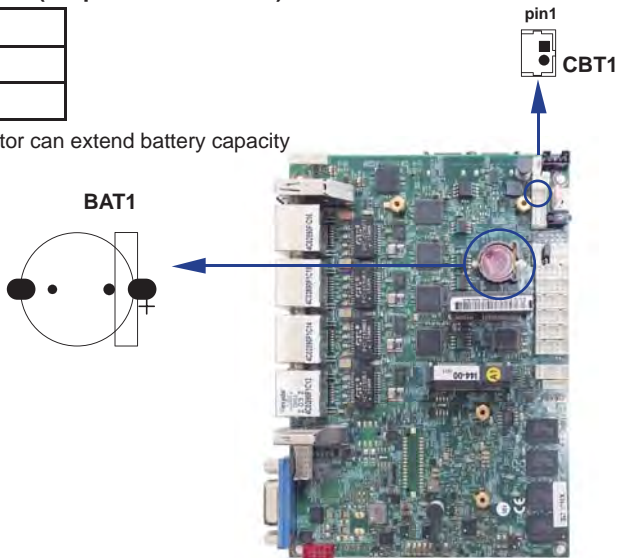
**BAT1: Battery use Li 3V / 48mAh (BR1225)**

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

- **CBT1 Ext. Battery connector (1x2pin 1.25mm wafer)**

PIN NO.	Description
1	Battery in (GND)
2	Battery in (+3V)

Note: CBT1 for external connector can extend battery capacity

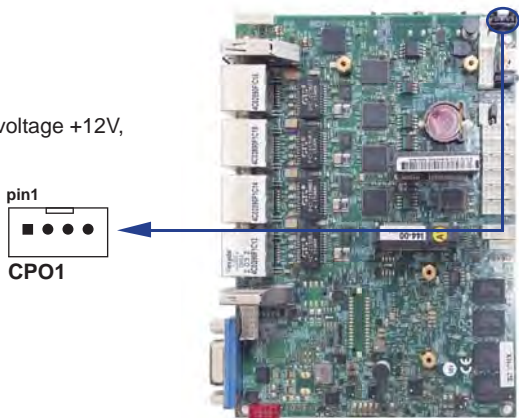


### 3-4 DC Power output

- **CPO1: +12V/+5V DC voltage output (1x4pin 2.00mm Black wafer)**

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

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



### 3-5 Front panel & FAN

● CFP1 Front panel LED connector (2x6pin 2.00mm wafer)

PIN NO.	Description	PIN NO.	Description
2	GND	1	Power LED+
4	HD_LED-	3	HDD LED+
6	LAN1 LED-	5	LAN1 LED+
8	LAN2 LED-	7	LAN2 LED+
10	LAN3 LED-	9	LAN3 LED+
12	LAN4 LED-	11	LAN4 LED+

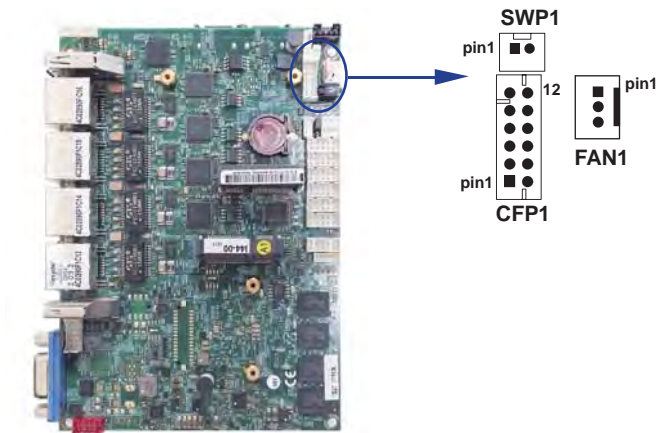
● SWP1 Power button connector (1x2pin 2.0mm wafer)

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

● FAN1: CPU FAN connector (1x3pin 2.54mm 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 Display interface

### • CG1: DSUB VGA connector (DB15 pin)

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 wafer connector (2x5pin 2.0mm)

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

### • HDMI1: HDMI Connector (Type A)

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

\*Note: HDMI support 1.3a Spec



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

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:

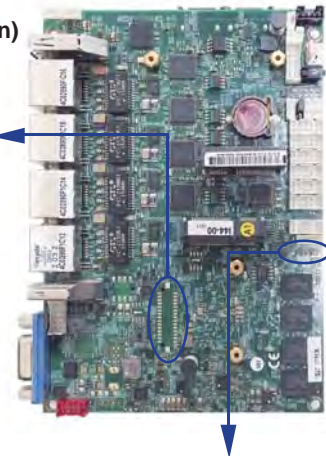
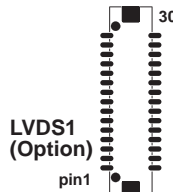
1. LVDS interface support 18/24bits two channel .
2. JVL1: LVDS panel +5V/+3.3V(default) Voltage select.
3. LVDS1 PIN 1 for panel backlight active.
4. Pin 1 back light dimming control. Provided 200Hz / 275Hz / 380Hz / 20KHz / 25KHz and adjust PWM duty cycle by software program.
5. For 3I380NM, please disable the LVDS function from BIOS setting if you don't need to use it. (Advanced->Video Configuration->Configure DDI1 as -> (select to No Device) )

### • CPP1: Panel Inverter power (5pin 2.0mm wafer) (Option)

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

Note: 1. JVP1 Inverter Voltage select

2. CPP1 PIN 3 and LVDS1 PIN1 is same signal.
3. Pin 3 back light dimming control, Provided 200Hz / 275Hz / 380Hz / 20KHz / 25KHz and adjust PWM duty cycle by software program.



### 3-7 Touch screen device (Option)

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

● **For 8- wire type pin define**

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

Note: 1. For eight wire type cable Pin 3 and Pin4 need short.  
2. Touch controller use USB port 4

● **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 4

● **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 4



### 3-8 Audio interface

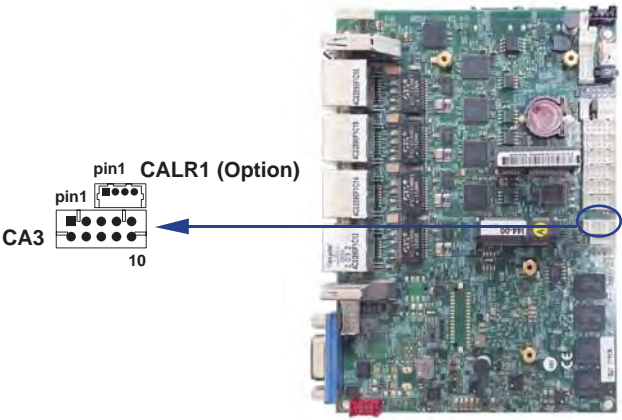
● CA3: Mic in/Line in/Line out wafer connector (2x5pin 2.00mm wafer)

PIN NO.	Description	PIN NO.	Description
1	LINEOUT_R	2	MIC_IN
3	LINE_IN_R	4	GND
5	GND	6	SPDIF_O
7	LINE_IN_L	8	+5V
9	LINEOUT_L	10	MIC_IN

### 3-9 Audio Amplifier (Option)

● CALR1: Amplifier Line-out Right/Left channel (1x4pin 1.25mm wafer)

PIN NO.	Description
1	Left+
2	Left-
3	Right-
4	Right+



### 3-10 I/O Interface

●COM ports (COM1~COM4 from super I/O)

COM1~4 default support RS232 mode  
COM1 RS232 or RS485 or RS422 form BIOS select

●RS232 mode ports (2x5pin 2.0mm Wafer)

CC11: COM1    CC2: COM2  
CC3: COM3    CC4: COM4

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

●RS485 mode ports (2x5pin 2.0mm wafer)

CC11: COM1    CC2: COM2  
CC3: COM3    CC4: COM4

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

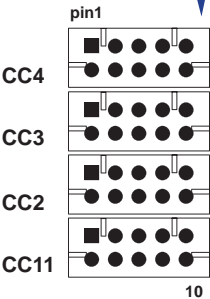
Note: 1. CC2 / CC3 / CC4 wafer connector RS485  
function for OEM BOM request  
2. BIOS need setting to RS485 mode

●RS422 mode ports (2x5pin 2.0mm wafer)

CC11: COM1    CC2: COM2  
CC3: COM3    CC4: COM4

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

Note: 1. CC2 / CC3 /CC4 wafer connector RS422  
function for OEM BOM request  
2. BIOS need setting to RS422 mode



### 3-11 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. DI pin default pull up 10KΩ to +5V  
2. If use need isolate circuit to control external device  
3. F75111N-1 I<sup>2</sup>C bus address 0x9c

● CIO2 DIO 4 ~ 7 (2x5pin 2.0mm wafer)

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

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

● For F75111N I<sup>2</sup>C DIO 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

Hardware watch Dog Timer support use F81801U

Watch Dog Time value 0~255sec

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 81 for APPENDIX C: F75111N I<sup>2</sup>C DIO DECICE





### 3-12 I<sup>2</sup>C Bus Interface

- CO1: I<sup>2</sup>C (SM) bus connector (1x4pin 1.25mm wafer)

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

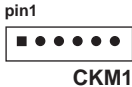
CO1



### 3-13 PS2 KB/MS

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

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



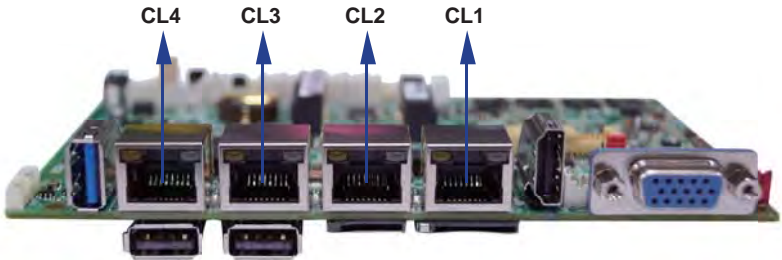
### 3-14 LAN Interface

- CL1 / CL2 / CL3 / CL4: LAN Giga/100Mb (RJ45 Jack)

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

- LAN LED

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



● **CL11/CL21/CL31/CL41: LAN port Giga /100Mb( 2x4pin 2.0mm wafer) (Option)**

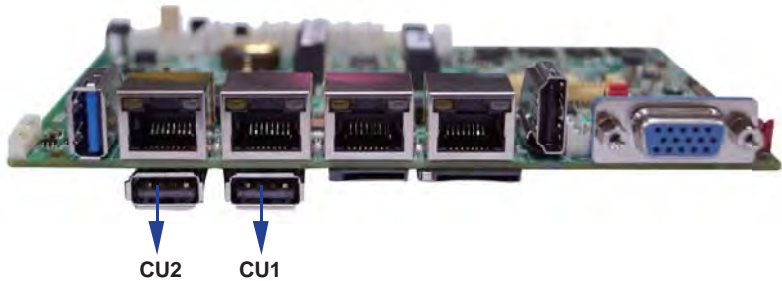
PIN NO.	Description	PIN NO.	Description
1	TR0- / TX-	2	TR0+ / TX+
3	TR2+ / NC	4	TR1+ / RX+
5	TR1- / RX-	6	TR2- / NC
7	TR3- / NC	8	TR3+ / NC

**3-15 USB Interface**

● **CU1 / CU2: USB1/2 ports ( USB Type A connector )**

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

Note: 1. Attention ! Check Device Power in spec



● **CU3: Signal USB3.0/2.0 port (USB Type A 90° connector)**

PIN NO.	Description	PIN NO.	Description
1	+5V	5	USB3.0 RX-
2	USB 2.0 D-	6	USB3.0 RX+
		7	GND
3	USB 2.0 D+	8	USB3.0 TX-
4	GND	9	USB3.0 TX+

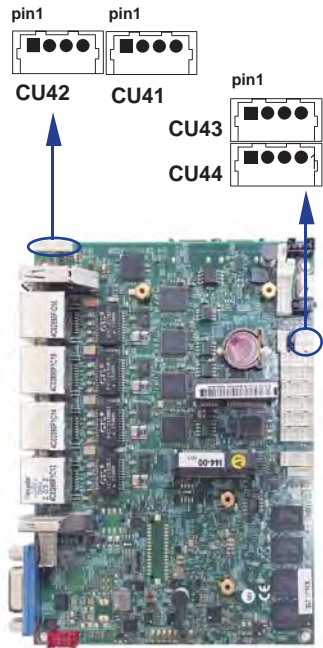
Note: 1. USB 3.0 and USB 2.0 signal connector



● **CU41 / CU42 / CU43 / CU44: Internal USB ports (1x4pin 1.25mm wafer)**

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

- Note: 1. Attention ! Check Device Power in spec  
2. CU42 share with Touch USB signal.  
3. CU43 / CU44 share with Mini card USB signal.



### 3-16 SATA interface

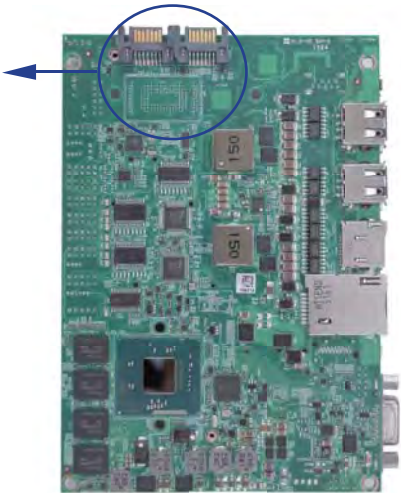
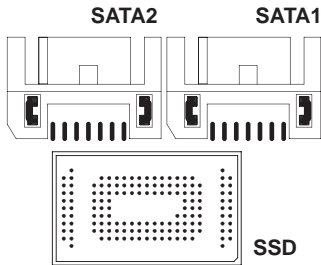
• **SATA1: SATA1 / SATA2 connector**

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

Note: 1. SATA1 support SATA 2.0 spec update 3Gb/sec.  
2. CPO1 provide SATA HDD power +12V, GND, +5V  
3. SATA1 / SATA2 share with mini card mSATA signal.

• **SSD use SATA port 2 channel**

Note: 1. On board SSD for OEM option

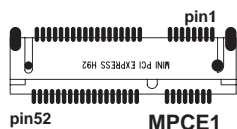
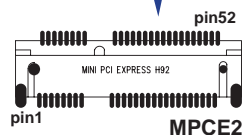


### 3-17 Module & SIM socket

#### • Mini card & SIM card

MPCE1/MPCE2: Support USB , mSATA interface (Mini card socket 52pin)

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

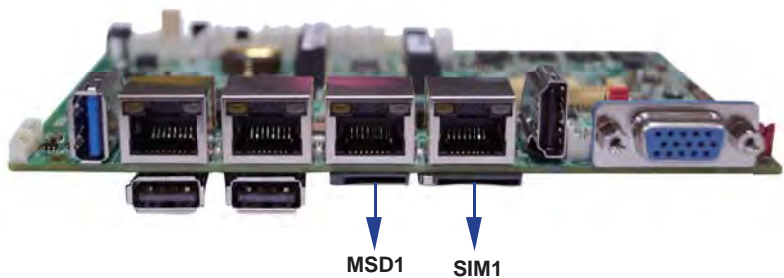


- Note:
1. MPCE1 used SOC-USB port 3(share with CU43)
  2. MPCE2 used HUB-USB port 1(share with CU42)
  3. MPCE1 Pin 8, 10,12,14,16 for SIM1 card reader use.
  4. MPCE1 support PCIe signal (LAN4 will be remove)
  5. MPCE1 mSATA1 share with SATA1 connector signal
  6. MPCE2 mSATA2 share with SATA2 connector signal

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

PIN NO.	Description	PIN NO.	Description
1	VCC	1	GND
2	RST	2	VPP
3	CLK	3	DATA
4	RUF	4	GND

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



**3-18 MicroSD Card interface (Socket Push-Push)**

PIN NO.	Description	PIN NO.	Description
1	SDMMC3_D2	2	SDMMC3_D3
3	SDMMC3_CMD	4	+VSDIO
5	SDMMC3_CLK	6	GND
7	SDMMC3_D0	8	SDMMC3_D1
9	SDMMC3_CD_N	10	GND

Note: 1. Only support WIN8 / WIN8.1

### 3-19 Connector wafer of Compatible Brand and part number list

Location	CKTS	PITCH	Brand Name	Mating connector	Cable housing
CA3	2x5 10Pin	2.0mm	JST	B10B-PHDSS	PHDR-10VS
CALR1	1x4 4Pin	1.25mm	MOLEX	53047-0410	51021-0400
CG11	2x5 10Pin	2.0mm	JST	B10B-PHDSS	PHDR-10VS
CC11	2x5 10Pin	2.0mm	JST	B10B-PHDSS	PHDR-10VS
CC2	2x5 10Pin	2.0mm	JST	B10B-PHDSS	PHDR-10VS
CC3	2x5 10Pin	2.0mm	JST	B10B-PHDSS	PHDR-10VS
CC4	2x5 10Pin	2.0mm	JST	B10B-PHDSS	PHDR-10VS
CFP1	2x6 12Pin	2.0mm	JST	B12B-PHDSS	PHDR-12VS
CIO1	2x5 10Pin	2.0mm	JST	B10B-PHDSS	PHDR-10VS
CIO2	2x5 10Pin	2.0mm	JST	B10B-PHDSS	PHDR-10VS
CL11	2x4 8Pin	2.0mm	JST	B8B-PHDSS	PHDR-08VS
CL21	2x4 8Pin	2.0mm	JST	B8B-PHDSS	PHDR-08VS
CL31	2x4 8Pin	2.0mm	JST	B8B-PHDSS	PHDR-08VS
CL41	2x4 8Pin	2.0mm	JST	B8B-PHDSS	PHDR-08VS
CO1	1x4 4Pin	1.25mm	MOLEX	53047-0410	51021-0400
CPI11	1x4 4Pin	2.0mm	JST	B4B-PH-KL	PHR-4
CPI12	1x5 5Pin	2.0mm	JST	B5B-PH-KL	PHR-5
CPI14	2x4 8Pin	2.0mm	JST	B8B-PHDSS	PHDR-08VS
CPI15	2x5 10Pin	2.0mm	JST	B10B-PFDSS	PHDR-10VS
CPO1	1x4 4Pin	2.0mm	JST	B4B-PH-KL	PHR-4
SWP1	1x2 2Pin	2.0mm	JST	B2B-PH-KL	PHR-2
FAN1	1x3 3Pin	2.54mm	MOLEX	7879-3	7880-3
CKM1	1x6 6Pin	1.25mm	MOLEX	53047-0610	51021-0600
CU41	1x4 4Pin	1.25mm	MOLEX	53047-0410	51021-0400
CU42	1x4 4Pin	1.25mm	MOLEX	53047-0410	51021-0400
CU43	1x4 4Pin	1.25mm	MOLEX	53047-0410	51021-0400
CU44	1x4 4Pin	1.25mm	MOLEX	53047-0410	51021-0400

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# Chapter-4

## Introduction of BIOS

The BIOS is a program located in the Flash Memory on the motherboard.

This program is a bridge between motherboard and operating system.

When you start the computer, the BIOS program gains control.

The BIOS first operates an auto-diagnostic test called POST

(Power on Self Test) for all the necessary hardware, it detects the entire hardware devices and configures the parameters of the hardware synchronization. After these tasks are completed, BIOS will give control of the computer back to operating system (OS).

Since the BIOS is the only channel for

hardware and software to communicate with, it is the key factor of system stability and of ensuring your system performance at best.

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

Press <Esc> to quit the BIOS Setup.

Press ↑↓←→(up, down, left, right) to choose the option you want to confirm or modify.

Press <F10> to save these parameters and to exit the

BIOS Setup menu after you complete the setup of BIOS parameters.

Press Page Up/Page Down or +/- keys to modify the

BIOS parameters for the active option.

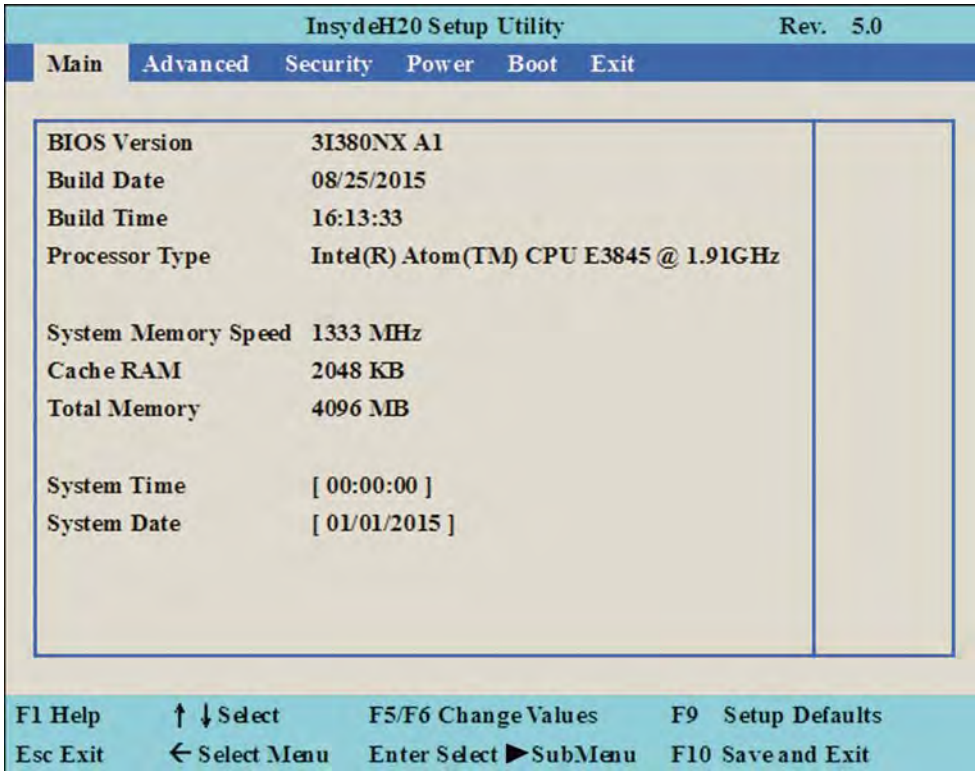
## 4-1 Enter Setup

Power on the computer and press <Del> key immediately to enter Setup.

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



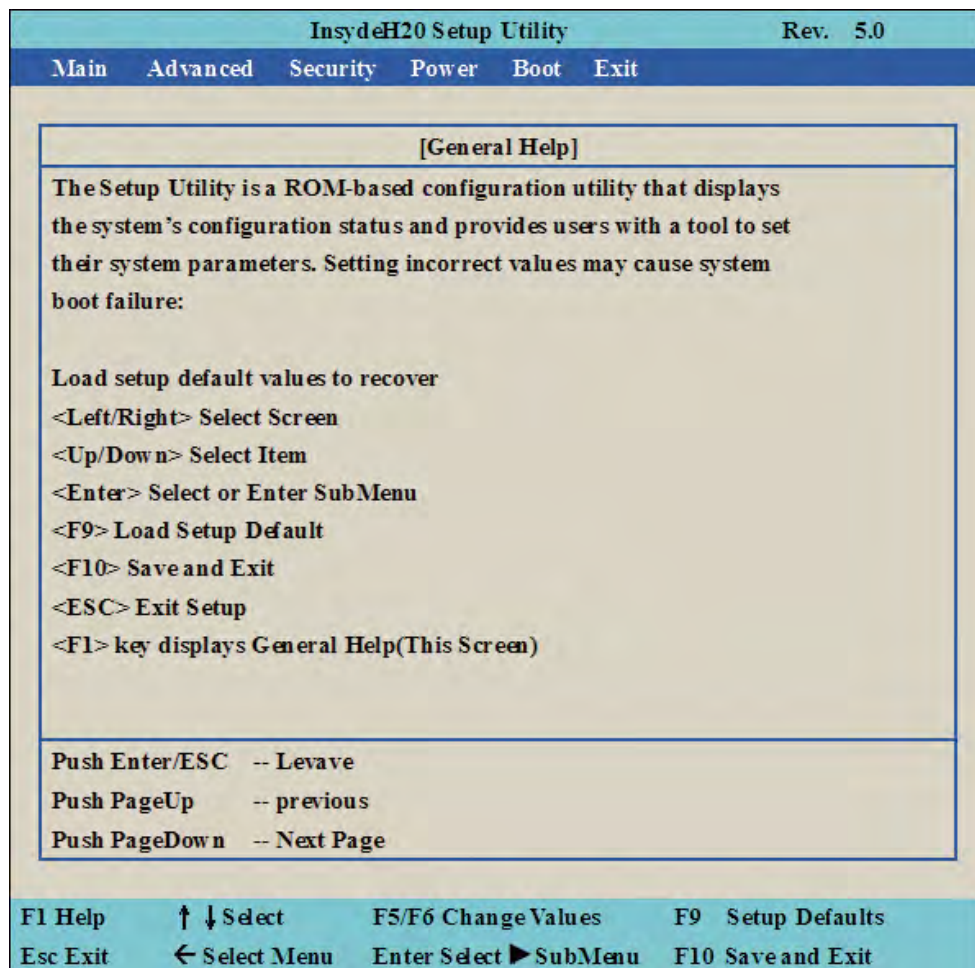
## 4-2 BIOS Menu Screen & Function Keys



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 <+>/<-> or <F5>/<F6> keys when you want to modify the BIOS parameters for the active option.
- [F1]: General help.
- [F9]: Optimized defaults.
- [F10]: Save & Exit.
- Press <Esc> to quit the BIOS Setup.

## 4-3 General Help



### Status Page Setup Menu/ Option Page Setup Menu

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

## 4-4 Menu Bars

There are six menu bars on top of BIOS screen:

<b>Main</b>	To change system basic configuration
<b>Advanced</b>	To change system advanced configuration
<b>Security</b>	Password settings
<b>Power</b>	PME & Power button settings
<b>Boot Exit</b>	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.

## 4-5 Main

InsydeH20 Setup Utility		Rev. 5.0																						
Main	Advanced	Security Power Boot Exit																						
<table><tr><td>BIOS Version</td><td>3I380NX A1</td></tr><tr><td>Build Date</td><td>08/25/2015</td></tr><tr><td>Build Time</td><td>16:13:33</td></tr><tr><td>Processor Type</td><td>Intel(R) Atom(TM) CPU E3845 @ 1.91GHz</td></tr><tr><td colspan="2"> </td></tr><tr><td>System Memory Speed</td><td>1333 MHz</td></tr><tr><td>Cache RAM</td><td>2048 KB</td></tr><tr><td>Total Memory</td><td>4096 MB</td></tr><tr><td colspan="2"> </td></tr><tr><td>System Time</td><td>[ 00:00:00 ]</td></tr><tr><td>System Date</td><td>[ 01/01/2015 ]</td></tr></table>			BIOS Version	3I380NX A1	Build Date	08/25/2015	Build Time	16:13:33	Processor Type	Intel(R) Atom(TM) CPU E3845 @ 1.91GHz			System Memory Speed	1333 MHz	Cache RAM	2048 KB	Total Memory	4096 MB			System Time	[ 00:00:00 ]	System Date	[ 01/01/2015 ]
BIOS Version	3I380NX A1																							
Build Date	08/25/2015																							
Build Time	16:13:33																							
Processor Type	Intel(R) Atom(TM) CPU E3845 @ 1.91GHz																							
System Memory Speed	1333 MHz																							
Cache RAM	2048 KB																							
Total Memory	4096 MB																							
System Time	[ 00:00:00 ]																							
System Date	[ 01/01/2015 ]																							
F1 Help	↑ ↓ Select	F5/F6 Change Values F9 Setup Defaults																						
Esc Exit	← Select Menu	Enter Select ► SubMenu F10 Save and Exit																						

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.

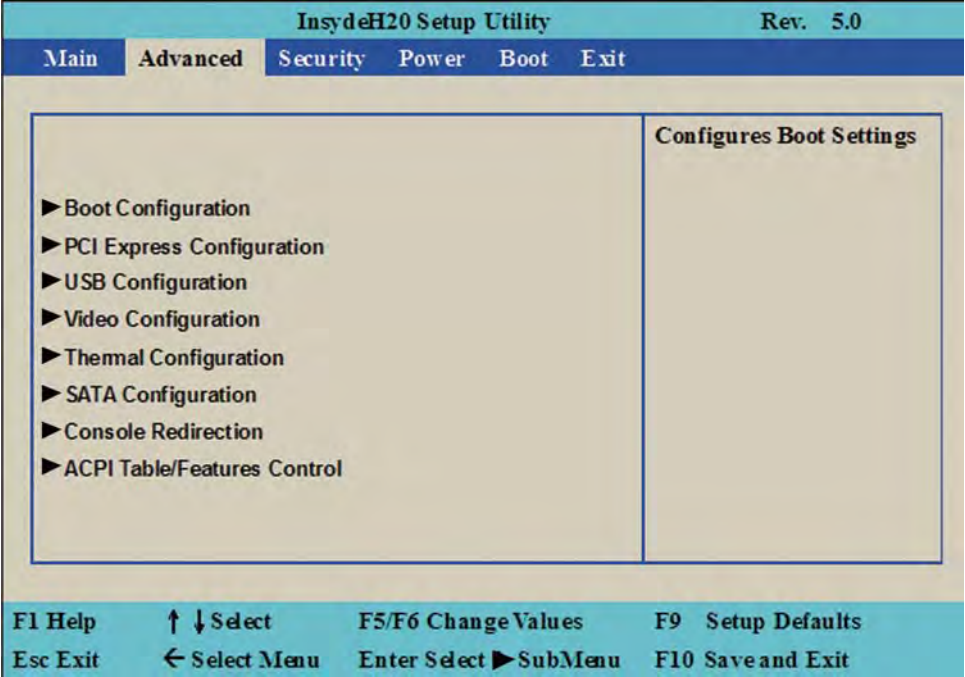
### System Date

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

### System Time

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

## 4-6 Advanced



### Boot Configuration

Please refer section 4-6-1

### PCI Express Configuration

Please refer section 4-6-2

### USB Configuration

Please refer section 4-6-3

### Video Configuration

Please refer section 4-6-4

### Thermal Configuration

Please refer section 4-6-5

### SATA Configuration

Please refer section 4-6-6

### Console Redirection

Please refer section 4-6-7

### ACPI Table/Fetures Control (Option)

Please refer section 4-6-8

## 4-6-1 Boot Configuration

InsydeH20 Setup Utility		Rev. 5.0
Advanced		
<b>Boot Configuration</b>		<b>Selects Power-on state For Numlock</b>
Numlock <On>		
F1 Help	↑ ↓ Select	F5/F6 Change Values
Esc Exit	← Select Menu	Enter Select ► SubMenu
		F9 Setup Defaults
		F10 Save and Exit

### Numlock

Select Power-on state for Numlock, default is <ON>

## 4-6-2 PCI Express Configuration

InsydeH20 Setup Utility		Rev. 5.0
Advanced		
<b>PCI Express Configuration</b>		<b>Control the PCI Express Root Port.</b>
► PCE Express Root Port 1		
► PCE Express Root Port 2		
► PCE Express Root Port 3		
► PCE Express Root Port 4		
F1 Help	↑ ↓ Select	F5/F6 Change Values
Esc Exit	← Select Menu	Enter Select ► SubMenu
		F9 Setup Defaults
		F10 Save and Exit

PCIe 1/2/3/4 configuration settings

## 4-6-2-1 ► PCI Express Root Port 1/2/3/4

InsydeH20 Setup Utility		Rev. 5.0
Advanced		
<b>PCI Express Root Port 1</b>		<b>Control the PCI Express Root Port.</b>
PCE Express Root Port 1	<Enable>	
PCIE Port 1 Speed	<Gen1>	
PCIE Port 1 Option ROM	<Disabled>	
F1 Help    ↑ ↓ Select    F5/F6 Change Values    F9 Setup Defaults		
Esc Exit    ← Select Menu    Enter Select ► SubMenu    F10 Save and Exit		

### Control the PCI Express Root Port.

The optional settings are: Enabled(default), Disabled.

### Select PCI Express port speed.

The optional settings are: Gen1(default), Gen2

### Select PCIE TXE ROM support

The optional settings are: Disabled(default), Enabled



## 4-6-3 USB Configuration

InsydeH20 Setup Utility		Rev. 5.0
Advanced		
<b>USB Configuration</b>		<b>Control the PCI Express Root Port.</b>
xHCI Mode	<Best Auto>	
XHCI Controller	<Enabled>	
EHCI Controller	<Enabled>	
F1 Help    ↑ ↓ Select    F5/F6 Change Values    F9 Setup Defaults		
Esc Exit    ← Select Menu    Enter Select ► SubMenu    F10 Save and Exit		

### XHCI Mode

Mode of operation of xHCI controller.

The optional settings are: Best Auto(default), Enabled, Disabled.

## 4-6-4 Video Configuration

InsydeH20 Setup Utility		Rev. 5.0
Advanced		
<b>Vedio Configuration</b>		<b>Select Hardware CRT Configuration.</b>
Configure CRT as	<CRT>	
Configure DDI0 as	<HDMI/DVI>	
Aperture Size	<256MB>	
IGD – DVMT Pre-Allocated	<64M>	
IGD – DVMT Total Gfx Mem	<256M>	

F1 Help	↑ ↓ Select	F5/F6 Change Values	F9 Setup Defaults
Esc Exit	← Select Menu	Enter Select ► SubMenu	F10 Save and Exit

### Configure CRT as

Enable or disable CRT function.

The optional settings are: CRT(default) or Default

### Configure DDI0 as

Enable or disable HDMI function.

The optional settings are: HDMI(default) or disabled.

### Aperture Size

The optional settings are: 128MB, 256MB(default), 512MB.

### IGD - 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: 64(default)/96/128/160/192/224/256/288/320/352/384/416/448/480/512MB

### IGD - 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(default), MAX



## 4-6-5 Thermal Configuration

InsydeH2O Setup Utility		Rev. 5.0
Advanced		
<b>Thermal Configuration Parameters</b>		<b>This value controls the temperature of The ACPI Critical Trip Point – the point in Which the OS will Shut the system off.</b>  <b>NOTE: 100C is the Plan of Record (POR)</b>  <b>For all Intel mobile procesors.</b>
Critical Trip Point	<110 °C>	
Passive Trip Point	<105 °C>	

F1 Help	↑ ↓ Select	F5/F6 Change Values	F9 Setup Defaults
Esc Exit	← Select Menu	Enter Select ► SubMenu	F10 Save and Exit

### Thermal Configuration Parameters

This Value controls the temperature of the ACPI Critical Trip Point, the point in which the OS will shutdown the system.

Critical Trip point is the shutdown temperature, the default value is 110°

The CPU frequency will auto reduce when cpu temperature arrived to passive Trip point.

The default of the passive trip point is 105°

## 4-6-6 SATA Configuration

InsydeH20 Setup Utility		Rev. 5.0
Advanced		
<b>SATA Configuration</b>		<b>DISABLED: Disables SATA Controller.</b>
SATA Controller	<Enabled>	<b>ENABLED: Enables SATA Controller.</b>
Chipset SATA Mode	<IDE>	
SATA Speed	<Gen 1>	
IDE Mode	<Native IDE>	
SATA Port 0 Connected to an ODD	<Enabled>	
SATA Port 1 Connected to an ODD	<Enabled>	
▶ Serial ATA Port 0 [Not Installed]		
▶ Serial ATA Port 1 [Not Installed]		
F1 Help	↑ ↓ Select	F5/F6 Change Values
Esc Exit	← Select Menu	Enter Select ▶ SubMenu
		F9 Setup Defaults
		F10 Save and Exit

### SATA Controller

Use this item to Enable or Disable SATA Device.

The optional settings are: Enabled(default) or Disabled

### Chipset SATA Mode

Determine how SATA controller(s) operate.

The optional settings are: IDE Mode(default), AHCI Mode.

### SATA Speed

Indicates the maximum speed the SATA controller can support.

The optional settings: Gen1, Gen2(default).

### IDE Mode

Legacy IDE or Native IDE MODE,

The optional settings: Legacy IDE or Native IDE(default)

## SATA Port 0 Connected to an ODD

Use this item to Enable or Disable SATA Port0 ODD function

The optional settings are: Enabled(default) or Disable

## SATA Port 1 Connected to an ODD

Use this item to Enable or Disable SATA Port1 ODD function

The optional settings are: Enabled(default) or Disable

## 4-6-7 Console Redirection

InsydeH2O Setup Utility		Rev. 5.0
Advanced		
<b>Console Redirection Setup</b>		
Console Serial Redirect	<Enabled>	
Text Mode Resolution	<Force 80x24 (DEL LAST ROW)>	
Terminal Type	<VT_100>	
Baud Rate	<115200>	
Data Bits	<8 Bits>	
Parity	<None>	
Stop Bits	<1 Bits>	
Flow control	<None>	
F1 Help    ↑ ↓ Select    F5/F6 Change Values    F9 Setup Defaults Esc Exit    ← Select Menu    Enter Select ► SubMenu    F10 Save and Exit		

### Console Serial Redirect

Use this item to enable or disable Console Redirection.

The optional settings are: Enabled, Disabled(default).

### Text Mode Resolution

The optional settings are: Force 80x25

Force 80x24(DEL FIRST ROW)

Force 80x24(DEL LAST ROW)

### Baud Rate

The optional settings are: 115200(default) , 57600 , 38400 , 19200 , 9600 , 4800 , 2400 , 1200

**Data Bits**

The optional settings are: 8 Bits(default) , 7 Bits

**Parity**

The optional settings are: None(default) , Even , Odd

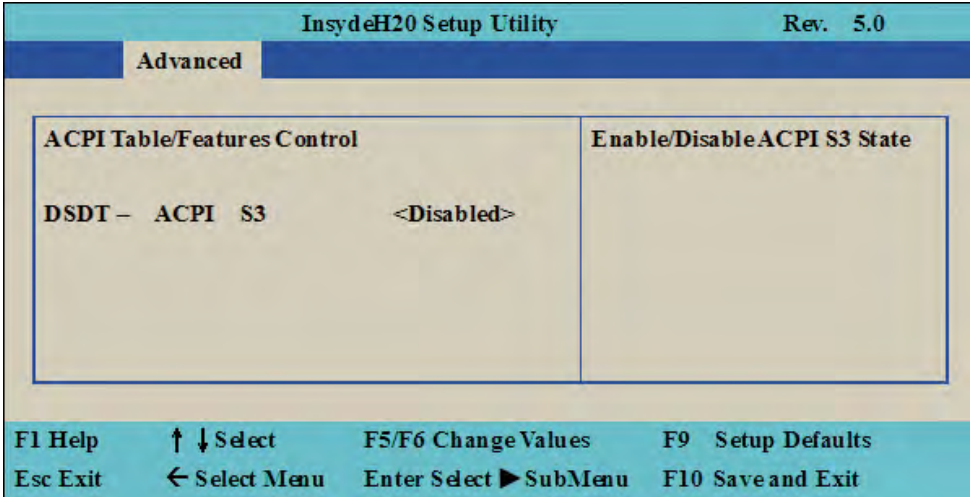
**Stop Bits**

The optional settings are: 1 Bit(default) , 2 Bits

**Flow Control**

The optional settings are: None(default) , RTS/CTS , XON/XOFF

**4-6-8 ACPI Table/Fetures Control**



**ACPI Table/Features Control**

Select ACPI sleep state the system will enter when the SUSPEND button is pressed.

The optional settings: DSDT - ACPI S3 (Suspend to RAM), Enabled or Disabled(default)

## 4-7 Security

InsydeH20 Setup Utility				Rev. 5.0	
Main	Advanced	Security	Power	Boot	Exit
Supervisor Password		Not Install		Install or Change the password and the length of password must be greater than one character.	
Set Supervisor Password					
F1 Help	↑ ↓ Select	F5/F6 Change Values		F9 Setup Defaults	
Esc Exit	← Select Menu	Enter Select ► SubMenu		F10 Save and Exit	

### Supervisor Password

To set up an Supervisor password

1. Select Supervisor 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 10 characters.
3. Hit [Enter] key to submit.

## 4-8 Power

InsydeH20 Setup Utility		Rev. 5.0			
Main	Advanced	Security	Power	Boot	Exit
Wake on PME		<Disabled>		<b>Determines the action take when the system power is off and a PCI Power Management Enable wake up event occurs.</b>	
Power Button		<Instant OFF>			
F1 Help	↑ ↓ Select	F5/F6 Change Values		F9 Setup Defaults	
Esc Exit	← Select Menu	Enter Select ► SubMenu		F10 Save and Exit	

### Wake on PME

Determines the action taken when the system power is off and the PCI power management Enable wake up event occurs.

The optional settings: Enabled, Disabled(default)

### Wake on Touch (Option)

The optional settings: Enabled, Disabled(default)

Note.wake on Touch panel , only support S3 mode.

### Power Button

Instant OFF(default) : The system will be turn off directly when push the power button.

Delay 4 sec : The system will be turn off when push the power button for 4 sec.

## 4-9 Boot

InsydeH20 Setup Utility		Rev. 5.0
<b>Main   Advanced   Security   Power   <u>Boot</u>   Exit</b>		
<b>Boot Type</b> <Dual Boot Type>		Select boot type to Dual type, Legacy type or UEFI type.
<b>Quiet Boot</b> <Enabled>		
<b>EFI/Legacy Device Order</b> <Legacy device first>		
▶EFI ▶Legacy		
<b>F1 Help            ↑ ↓ Select            F5/F6 Change Values            F9 Setup Defaults</b>		
<b>Esc Exit           ← Select Menu      Enter Select ▶ SubMenu      F10 Save and Exit</b>		

### Boot type

Select boot type for Dual type ,Legacy boot type or UEFI boot type, default is Dual boot type

### Quiet Boot

The optional settings are: Enabled(default), Disabled.

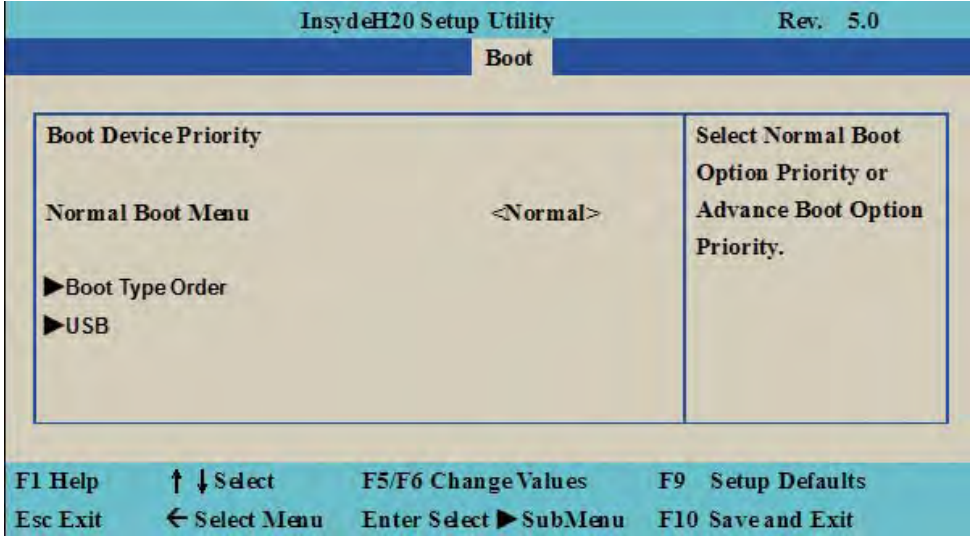
### EFI / Legacy Device order

Determine EFI device first or legacy device first.

The optional settings: EFI device first, Legacy device first(default), smart mode



## 4-9-1 Legacy

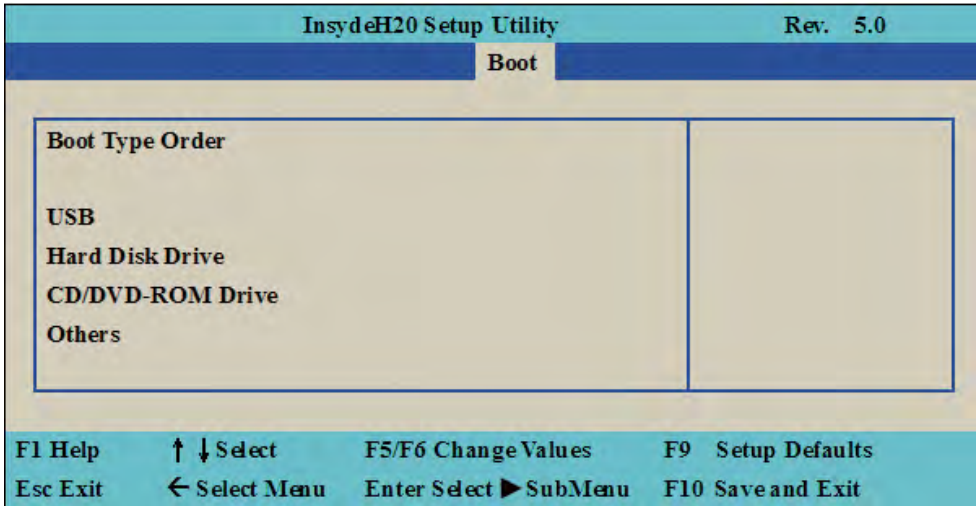


### Normal Boot Menu

Select Normal Boot option priority or Advance Boot option priority.

The optional settings: Normal(default), Advance

## 4-9-2 Boot Type Order



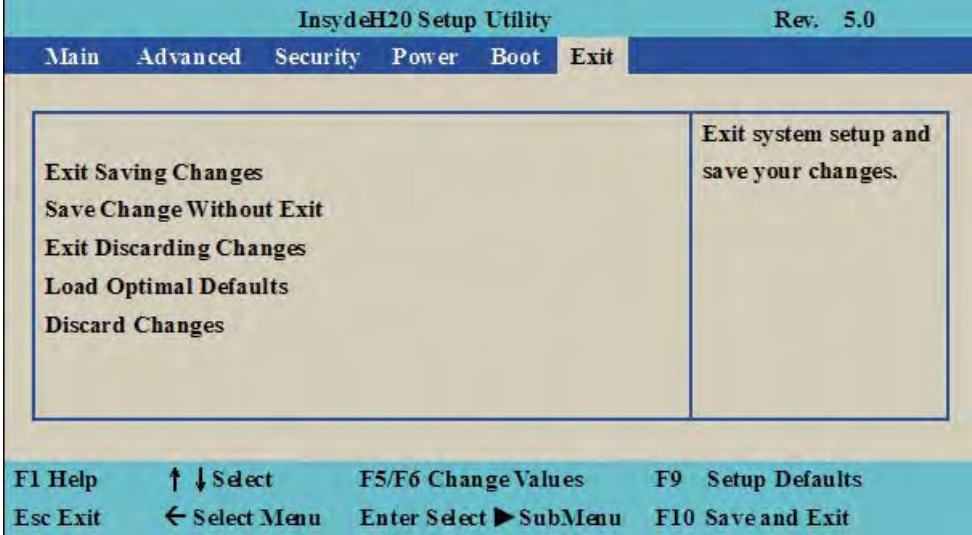
### Boot Type Order

Setting the boot type priority.

The default settings is 1.USB drive 2.Hard Disk Drive 3.CD/DVD ROM drive 4.Others



## 4-10 EXIT



### Exit Saving Changes

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

### Save Change Without Exit

This item allows user to saving the changes but doesn't restart.

### Exit Discard Changes

This item allows user restart the system but no saving the changes

### Load Optimal Default

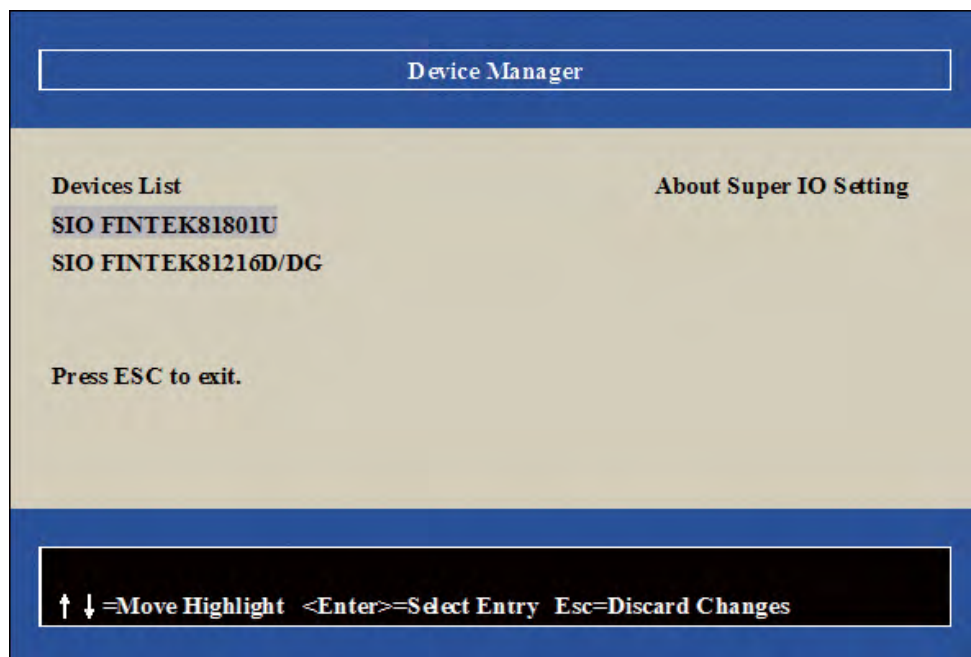
Use this item to restore the optimal default for all the setup options.

### Discare Changes

Use this item to cancel all the setup options.

## 4-11 Device Manager

Please press the key F10 when bootup to go into the Device Manager menu



### Serial Port 1/2 Configuration

Please refer section 4-11-1

### Serial Port 3/4/5/6 Configuration

Please refer section 4-11-2

## 4-11-1 SIO FINTEK81801U

SIO FINTEK81801U		
Serial Port 1	<Enable>	Configure Serial port using options : Disable No configuration [Enable] User configuration [Auto] EFI/OS chooses configuration
Base I/O Address	<3F8>	
Interrupt	<IRQ4>	
Serial Mode	<RS232 >	
Serial Port 2	<Enable>	
Base I/O Address	<2F8>	
Interrupt	<IRQ3>	
Serial Mode	<RS232 driver>	
Power Fail	<Keep State>	
Hardware Monitor		

**F9=Reset to Defaults**  
↑ ↓ =Move Highlight <Enter>=Select Entry Esc=Discard Changes

### Serial Port 1/2

Use this item to enable or disable serial port (COM1,COM2)

The optional settings are: Enabled(default), Disabled.

### Serial Port 1 Base IO Address / Interrupt / Serial Mode

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

The optional settings are:

IO=3F8h; IRQ=4 (default)

IO=3E8h; IRQ=3,4

IO=2E8h; IRQ=3,4

IO=2F8h; IRQ=3,4

---

## **Serial Port 2 Base IO Address / Interrupt / Serial Mode**

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

The optional settings are:

IO=2F8h; IRQ=3(default)

IO=2E8h; IRQ=3,4

IO=3E8h; IRQ=3,4

IO=3F8h; IRQ=3,4

## **Serial Mode**

RS232 driver(default) : When hardware select to RS232 or RS422 mode, please enter to RS232 driver. RS485 driver : When hardware select to RS485 mode, please enter to RS485 driver. It is the auto flow function for RS485.

Note.COM1 RS232/RS485/RS422 mode by BIOS select auto flow.

## **Power Failure**

This item specifies whether your system will reboot after a power failure or interrupt occurs.

[Keep state] Restores the system to the status before power failure or interrupt occurred. (default)

[Always on] Leaves the computer in the power on state.

[Always off] Leaves the computer in the power off state.

## 4-11-2 Hardware 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.

## 4-11-3 SIO FINTEK81216D/DG

SIO FINTEK81801U		
Serial Port 3	<Enable>	Configure Serial port using options : Disable No configuration [Enable] User configuration [Auto] EFI/OS chooses configuration
Base I/O Address	<3E8>	
Interrupt	<IRQ10>	
Serial Mode	<RS232 driver>	
Sharing Mode	<PCI>	
Serial Port 4	<Enable>	
Base I/O Address	<2E8>	
Interrupt	<IRQ10>	
Serial Mode	<RS232 driver>	
Sharing Mode	<PCI>	
Serial Port 6 for Touch	<Enable>	
Base I/O Address	<4E8>	
Interrupt	<IRQ10>	
Sharing Mode	<PCI>	

F9=Reset to Defaults

↑ ↓ =Move Highlight <Enter>=Select Entry Esc=Discard Changes

### Serial Port 3/4

Use this item to enable or disable serial port (COM3, COM4, COM6 for Touch).

The optional settings are: Enabled(default), Disabled.

### Serial Port 3 Base IO Address / Interrupt

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

The optional settings are:

IO=3E8h; IRQ=10 (default)

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

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

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

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

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

---

### Serial Port 4 Base IO Address / Interrupt

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

The optional settings are:

IO=2E8h; IRQ=10(default)

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

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

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

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

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

### Serial Mode

RS232 driver(default) : When hardware select to RS232 or RS422 mode, please enter to RS232 driver. RS485 driver : When hardware select to RS485 mode, please enter to RS485 driver. It is the auto flow function for RS485.

### Serial Port 6 for Touch Base IO Address / Interrupt

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

The optional settings are:

IO=4E8h; IRQ=10(default)

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

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

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

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

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

### Sharing Mode

This item is OS serial port with sharing mode issue.

If use Linux OS this item should be ISA mode

If use Windows OS this item should be PCI mode

**Note: Windows don't set to ISA mode.**

---

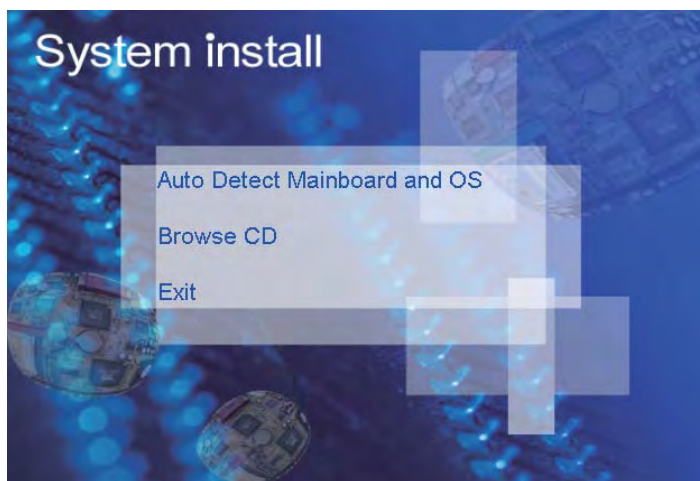
# Chapter-5

## 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 7(32bit/64bit) / Windows 8/8.1(32bit/64bit)**

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

### *Bay Trail for Windows 8.1 (x64)*

1. INF

4. LAN

2. VGA

5. TXE

3. HD Audio

6. MBI

Back to previous page

## *Bay Trail for Windows 7 (x64)*

- |              |              |
|--------------|--------------|
| 1. INF       | 5. HD Audio  |
| 2. VGA       | 6. LAN       |
| 3. Serial IO | 7. TXE Patch |
| 4. xHCI      | 8. TXE       |

[Back to previous page](#)

- |              |  |
|--------------|--|
| 1. INF       | Install Intel Baytrail chipset driver              |
| 2. VGA       | Install onboard VGA driver                         |
| 3. Serial IO | Install Serial IO driver (FOR Win 7 only)          |
| 4. xHCI      | Install Intel USB 3.0 xHCI driver (FOR Win 7 only) |
| 5. HD Audio  | Install HD Audio Codec driver                      |
| 6. MBI       | Install MBI driver (FOR Win 8/8.1 only)            |
| 7. LAN       | To the LAN driver Readme file                      |
| 8. TXE Patch | Install Intel TXE patch (FOR Win 7 only)           |
| 9. TXE       | Install Intel TXE driver                           |

Each selection is illustrated below:

# 5-1 INF Install Intel Baytrail Chipset Driver (example for WIN8 64bit)



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" & restart computer.

**NOTE: SYSTEM INSTALL will auto detect file path**

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

**X:\driver\INTEL\BAY\INFWIN7\infinst\_autol.exe**

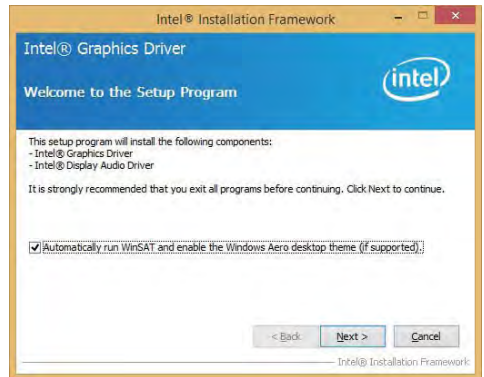
**For Windows 8 / 8.1 32/64-bit**

**X:\driver\INTEL\BAY\INFWIN\_8\_64\infinst\_autol.exe**

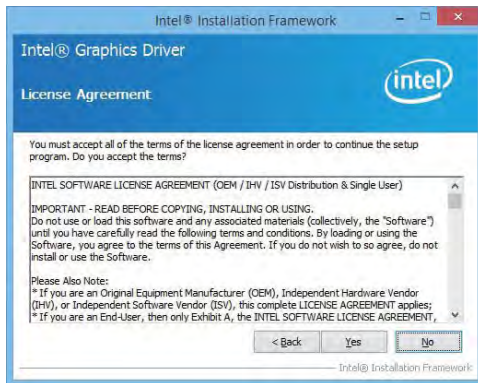
## 5-2 VGA Install Intel Baytrail VGA Driver (example for WIN8 64bit)



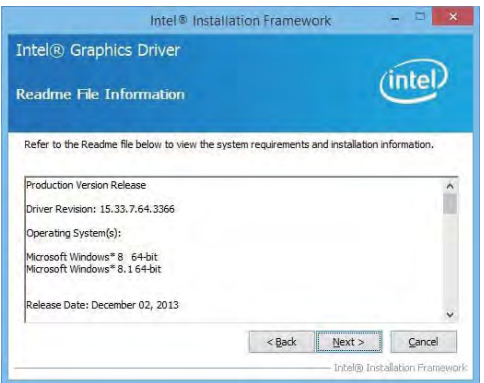
1. At the "AUTOMATIC DRIVER INSTALLATION menu" screen, click "VGA".



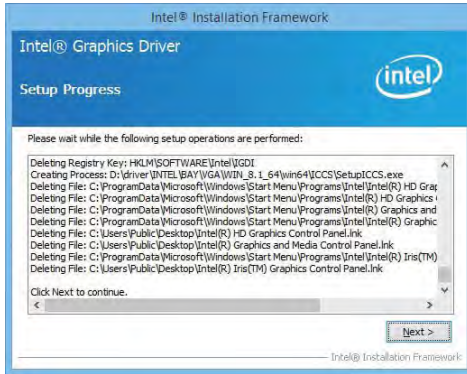
2. At the "Welcome to the Setup Program screen, Click "Next".



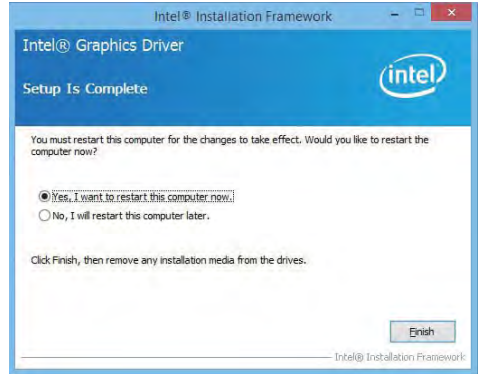
3. At the "License Agreement" screen, Click "Yes"



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



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



6. Click "Finish" to restart computer

**NOTE: SYSTEM INSTALL will auto detect file path**

**For Windows 7 32-bit,**

**X:\driver\INTEL\BAY\VGA\WIN\_7\_32\Setup.exe**

**For Windows 7 64-bit**

**X:\driver\INTEL\BAY\VGA\WIN\_7\_64\Setup.exe**

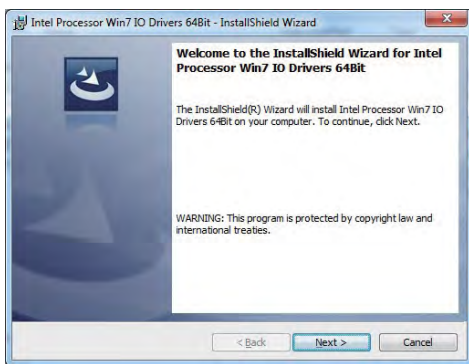
**For Windows 8 / Windows 8.1 32-bit**

**X:\driver\INTEL\BAY\VGA\WIN\_8\_32\Setup.exe**

**For Windows 8 / Windows 8.1 64-bit**

**X:\driver\INTEL\BAY\VGA\WIN\_8\_64\Setup.exe**

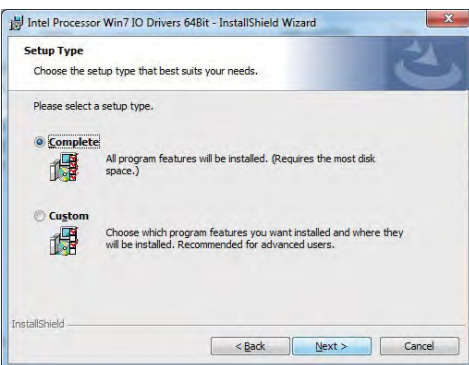
## 5-3 Serial IO Install Driver Baytrail Serial IO Driver (FOR Windows 7 only)



1. At the "AUTOMATIC DRIVER INSTALLATION menu" screen, click "Serial IO".
2. At the "Welcome to the Setup Program screen, Click "Next".

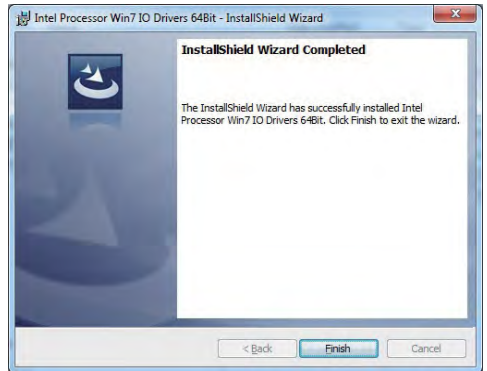
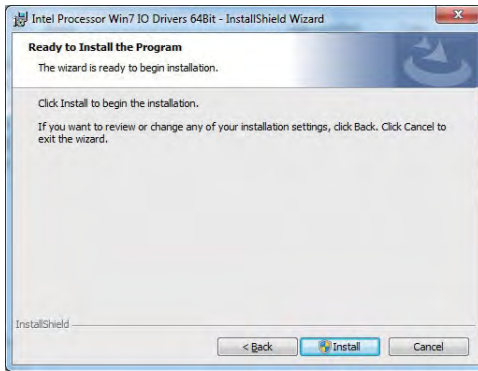


3. At the "License Agreement" screen, Click "Yes"



4. At the "Setup type" screen, select "complete" and Click "Next".





5. At the "Ready to install the program" screen, Click "Install"
6. Click "Finish" and restart computer

**NOTE: SYSTEM INSTALL will auto detect file path**

**For Windows 7 32-bit,**

**X:\driver\INTEL\BAY\SERIALIO\WIN7\_32Bit.msi**

**For Windows 7 64-bit**

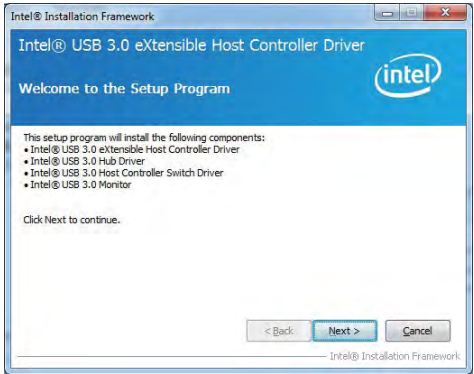
**X:\driver\INTEL\BAY\SERIALIO\Win7\_64Bit.msi**



## 5-4 xHCI Install Intel USB 3.0 xHCI Driver (FOR Windows 7 only)



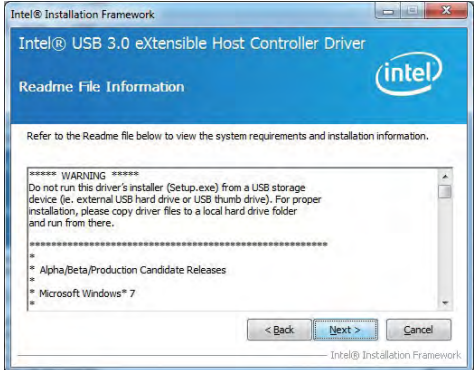
1. At the "AUTOMATIC DRIVER INSTALLATION menu" screen, click "xHCI".



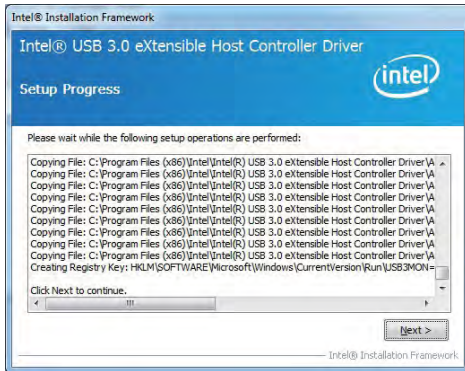
2. At the "Welcome to the Setup Program screen, Click "Next".



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



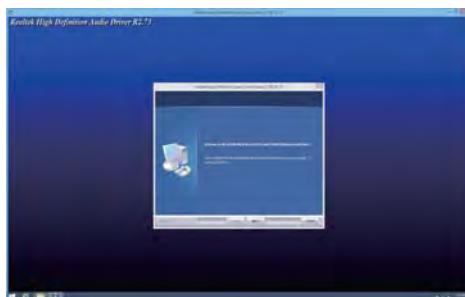
4. At the "Readme File Information" screen, Click "Next".



5. At the "Setup Progress" screen, Click "Next". 6. Click "Finish" to restart computer

**NOTE: SYSTEM INSTALL will auto detect file path**  
**For Windows 7 32 / 64-bit,**  
**X:\driver\INTEL\BAY\XHC\Driver\_Installer\Setup.exe**

## 5-5 HD Audio Install High Definition Audio Driver (example for WIN8 64bit)



1. At the "AUTOMATIC DRIVER INSTALLATION menu", click "HD Audio"
2. Click" Next".



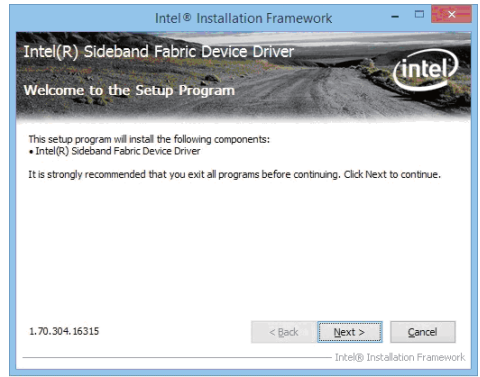
3. Click "Finish" to restart computer

**NOTE: SYSTEM INSTALL** will auto detect file path  
For Windows 7 32 / 64-bit, Windows 8/8.1 32 / 64-bit  
X:\driver\INTEL\BAY\SOUND\Win7\_Win8\_Win81\_R273.exe

## 5-6 MBI Install Intel MBI Driver (FOR Win 8/8.1 only)



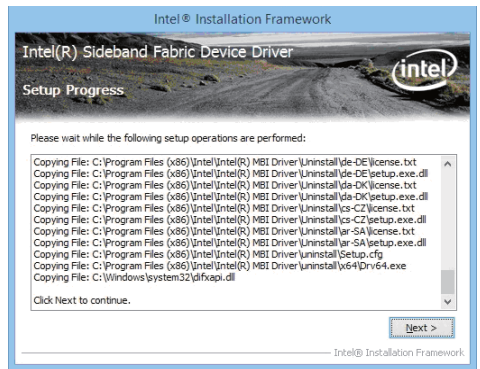
1. At the "AUTOMATIC DRIVER INSTALLATION menu", click "HD Audio".



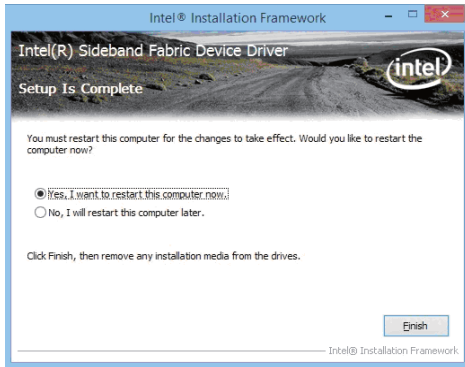
2. At the "Welcome to the Setup Program screen, Click "Next".



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



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



5. Click "Finish" to restart computer

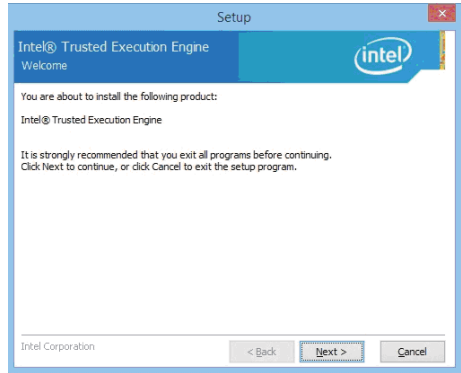
**NOTE: SYSTEM INSTALL will auto detect file path**

**For Windows 8/8.1 32 / 64-bit,**

**X:\driver\INTEL\BAY\MBI\Setup.exe**

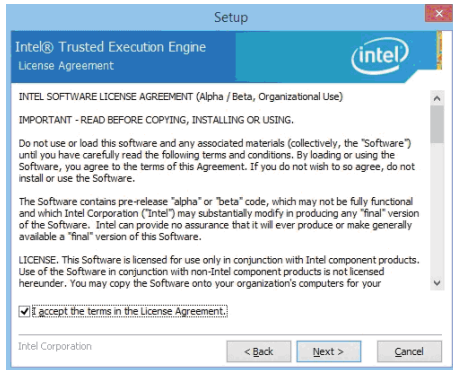
## 5-7 TXE Install Intel TXE driver

### 5-7-1 TXE Install for WIN8/WIN8.1

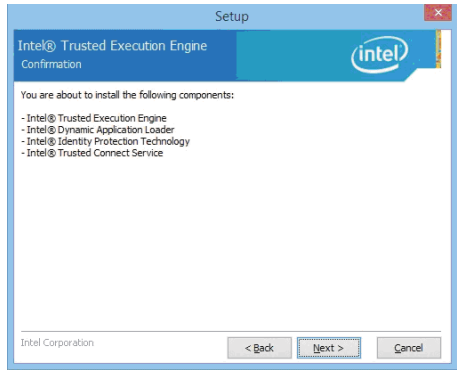


1. At the "AUTOMATIC DRIVER INSTALLATION menu", click "TXE".

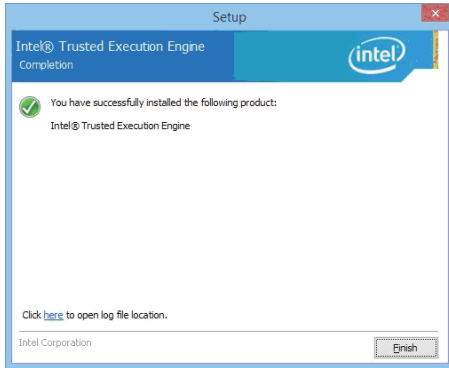
2. At the "Setup" screen, Click "Next".



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



4. Click "Next".



5. Click "Finish" & restart computer

**NOTE: SYSTEM INSTALL will auto detect file path**

**For Windows 8 32 / 64-bit,**

**X:\driver\INTEL\BAY\TXE\WIN\_8\SetupTXE.exe**

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

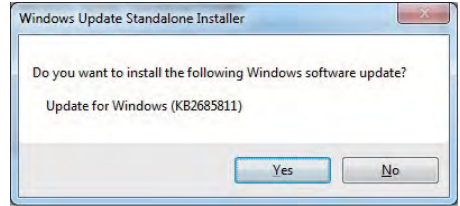
**X:\driver\INTEL\BAY\TXE\WIN\_8.1\SetupTXE.exe**

## 5-7-2 TXE Install for WIN7

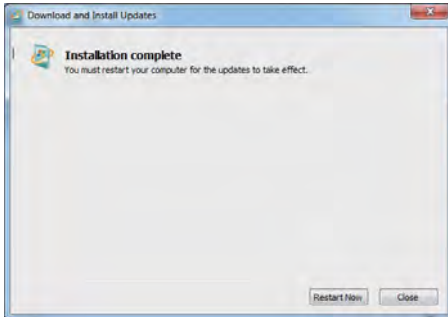
Please install PXE Patch first.



1. At the "AUTOMATIC DRIVER INSTALLATION menu", click "TXE Patch".



2. At the "Windows Update" screen, Click "Yes".

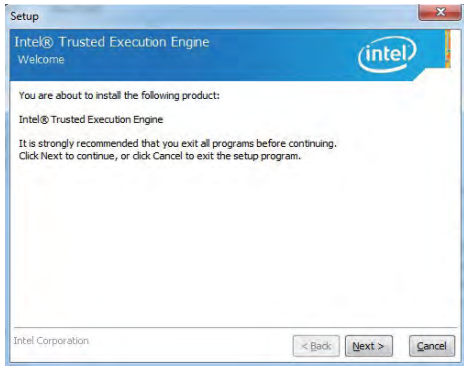


3. Click "Finish" & restart computer

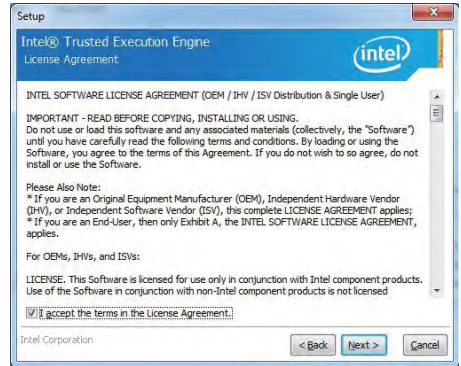


4. At the "AUTOMATIC DRIVER INSTALLATION menu", click "TXE "

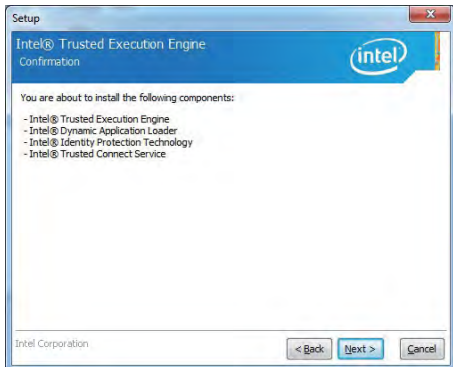




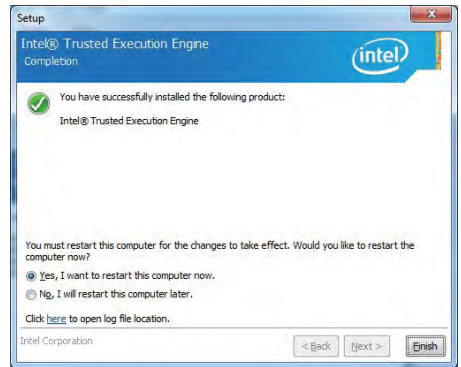
5. At the "TXE Setup" screen, Click "Next".



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



7. Click "Next".



8. Click "Finish" & restart computer

**NOTE: SYSTEM INSTALL will auto detect file path**

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

**TXE Patch**

**X:\driver\INTEL\BAY\TXE\WIN\_7\kmdf-1.11-Win-6.1-x86.msu**

**X:\driver\INTEL\BAY\TXE\WIN\_7\kmdf-1.11-Win-6.1-x64.msu**

**TXE**

**X:\driver\INTEL\BAY\TXE\WIN\_7\SetupTXE.exe**

**X:\driver\INTEL\BAY\TXE\WIN\_7\SetupTXE.exe**

---

## 5-8 How to update Insyde BIOS

Under DOS Mode

STEP 1. Prepare a bootable disc.

(Storage device could be USB FDD or USB pen drive.)

STEP 2. Copy utility program to your bootable disc. You may download it from our website.

STEP 3. Copy the latest BIOS for your LEX motherboard from our website to your bootable disc.

STEP 4. (Here take 3I380NX as an example, please enter your motherboard's name)

Insert your bootable disc into X: (X could be C:, A: or others.

It depends on which type of storage device you use. )

Start the computer and type

X:\> H2OFFT-D.EXE 3380NXA2.BIN -BIOS -ALL

3380NXA2.BIN is the file name of the latest BIOS.

It may be 3380NXA1.BIN or 3380NXA2.BIN, etc.

Please leave one space between .ROM & -BIOS -ALL

By Bay Trail series mainboard, please type

X:\> H2OFFT-D.EXE 3380NXA2.BIN -BIOS -ALL

-BIOS : Flash BIOS region

-ALL : Flash all

STEP 5. Press ENTER and the BIOS will be updated,  
Computer will restart automatically.

## Appendix A: Power Consumption Test

### Condition

Item	Spec
CPU	Atom E3845 1.91 Ghz
Memory	DDR3L 1333 4GB
Operating System	Windows 7 / SP1
Test Program	3D Mark 06
HDD 2.5" SATA	Slim Type HDD
mSATA	32GB
HDD 3.5" SATA	Standard HDD

### Test Result for reference only !

Storage	Power off	Start up		Operation Maximum	Shut down Maximum	In Put Voltage
		Maximum	Stable			
Standard Type HDD	0.15A	2.56A	1.57A	2.25A	1.30A	12V
	0.1A	1.46A	0.95A	1.29A	1.09A	24V
Slim Type HDD	0.14A	1.54A	1.22A	1.9A	1.51A	12V
	0.1A	0.97A	0.77A	1.13A	0.91A	24V
mSATA	0.15A	1.52A	1.18A	1.82A	1.44A	12V
	0.1A	0.9A	0.75A	1.07A	0.88A	24V

The power consumption depends on your device choice!

### Condition ( with 4IP Camera )

Item	Spec
CPU	Atom E3845 1.91 Ghz
Memory	DDR3L 1333 4GB
Operating System	Windows 7 / SP1
Test Program	3D Mark 06
HDD 2.5" SATA	Slim Type HDD
mSATA	32GB
HDD 3.5" SATA	Standard HDD
Camera	IP Camera *4 pieces

### Test Result for reference only !

Storage	Power off	Start up		Operation Maximum	Shut down Maximum	In Put Voltage
		Maximum	Stable			
Standard Type HDD	0.13A	3.42A	2.92A	3.65A	3.2A	12V
	0.1A	1.86A	1.62A	1.96A	1.77A	24V
Slim Type HDD	0.13A	2.95A	2.63A	3.33A	2.91A	12V
	0.1A	1.62A	1.46A	1.82A	1.6A	24V
mSATA	0.13A	2.89A	2.53A	3.15A	2.79A	12V
	0.1A	1.58A	1.43A	1.74A	1.55A	24V

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

## Appendix B: Resolution list

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

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

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

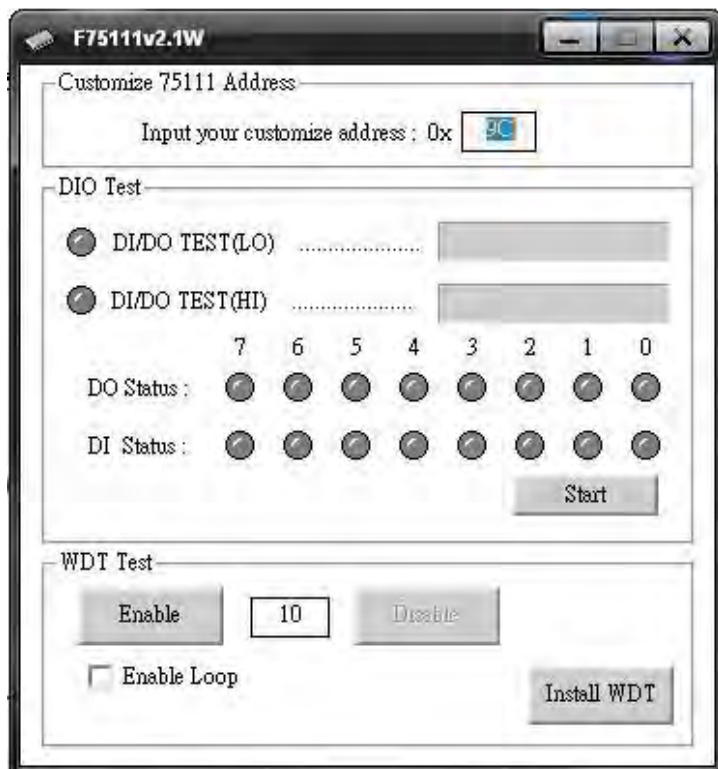
The Sample code source you can download from



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

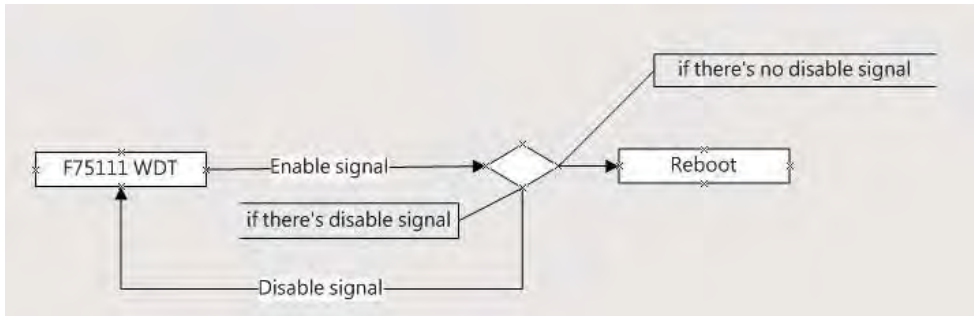
Binary file: F75111\_DemoBin.rar

USERNAME & PASSWORD: sf

How to use this Demo Application



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



p.s.  
 f75111 send "F75111\_SetWDTEnable(BYTE byteTimer)" including a parameter "timer",  
 if there's no disable signal (F75111\_SetWDTDisable()) to stop it before timer countdown to 0, System will reboot.  
 if there's disable signal received, resent Enable WDT signal, for a loop to prevent from reboot

## Introduction

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

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

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

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

### Enable/Disable WDT

Enable : F75111\_SetWDTEnable (BYTE byteTimer)  
 Disable: F75111\_SetWDTDisable ()

## PULSE mode

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

```

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

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

```

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

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

## Set output value

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

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

## Get Input value

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

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

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

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

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

    return byteData;
}
```

## Enable WatchDog

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



## Disable WatchDog

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

## 1-2 IO Device: F75111 VB6 under Windows

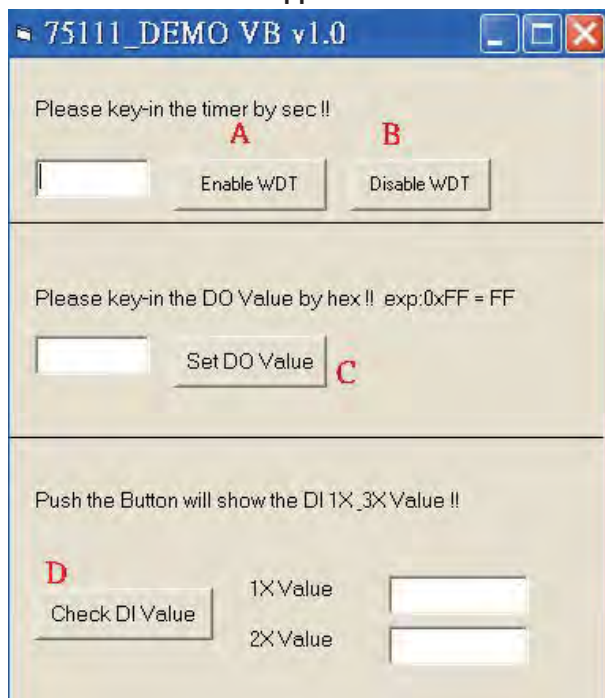
### The Sample code source you can download from

Source file: 75111\_VB\_v10.rar [http://tprd.info/lexwiki/index.php/IO\\_Device:F75111\\_VB6](http://tprd.info/lexwiki/index.php/IO_Device:F75111_VB6)

Binary file: 75111\_VB\_Src.rar

USERNAME & PASSWORD: sf

### How to use this Demo Application



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

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

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

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

## SDK Function Introduction

### Function EnableWDT

Function EnableWDT(timer As Integer)

Call Writel2CByte(&H3, &H3)

Call Writel2CByte(&H37, timer)

Call Writel2CByte(&H36, &H73)

End Function

### Function DisableWDT

Function DisableWDT()

Call Writel2CByte(&H36, &H0)

End Function

### Function SetDOValue

Function SetDOValue(dovalue As Integer)

Call Writel2CByte(&H23, &H0)

Call Writel2CByte(&H20, &HFF)

Call Writel2CByte(&H2B, &HFF)

Call Writel2CByte(&H21, dovalue)

End Function

### Function CheckDIValue

Function CheckDIValue()

Dim GPIO1X As Integer

Dim GPIO3X As Integer

Dim DI1Xhex As String

Dim DI3Xhex As String

Call Readl2CByte(&H12, GPIO1X)

Call Readl2CByte(&H42, GPIO3X)

DI1Xhex = Hex(GPIO1X)

DI3Xhex = Hex(GPIO3X)

Text3.Text = "0x" + DI1Xhex

Text4.Text = "0x" + DI3Xhex

End Function

## 1-3 IO Device: F75111 under linux

### The Sample code source you can download from

Source file: F75111v2.0L.tar.gz [http://tprd.info/lexwiki/index.php/IO\\_Device:F75111\\_under\\_linux](http://tprd.info/lexwiki/index.php/IO_Device:F75111_under_linux)

Binary file: F75111v2.0LBin.tar.gz

USERNAME & PASSWORD: sf

### How to compile source code

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

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

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

( add an option 'pkg-config --libs gtk+-2.0 gthread-2.0' in "Project->Build Option->Linker Setting->Other linker option")

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

```
1.cd F75111
```

```
1.make
```

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

### How to use this Demo Application

Customize F75111 Address : 0x

DIO Test

DI / DO Test ( Low ) .....

DI / DO Test ( High ) .....

7 6 5 4 3 2 1 0

DO Status ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

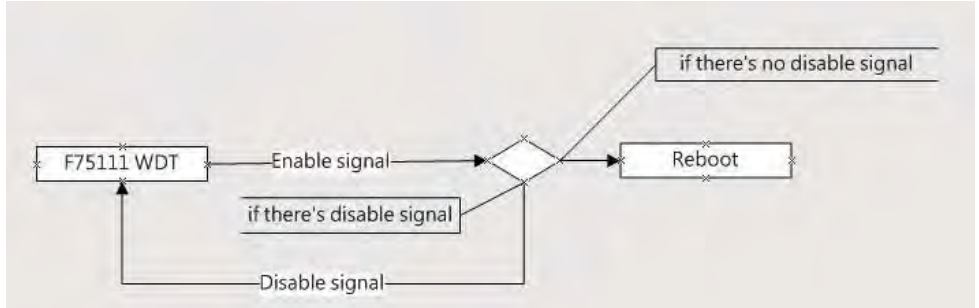
DI Status ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

WDT Test

☐ Enable Loop Test

WDT Stand by .....

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



p.s.  
 f75111 send "F75111\_SetWDTEnable(BYTE byteTimer)" including a parameter "timer",  
 if there's no disable signal (F75111\_SetWDTDisable()) to stop it before timer countdown to 0, System will reboot.  
 if there's disable signal received, resent Enable WDT signal, for a loop to prevent from reboot p.s.

## Introduction

### IO function In file SMBus.c

```

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

BYTE SMBusIoRead(BYTE byteOffset)
{
    DWORD dwAddrVal;

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

### Initial internal F75111

```

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

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

## Set output value

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

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

## Get Input value

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

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

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

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

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

    return byteData;
}
```

## Enable WatchDog

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

## Disable WatchDog

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

# Appendix D: CPC-Car Power Control (Option)

## Introduction:

CPC is designed specifically for the car, with the over-current protection. Acceptable input 9V ~ 36V wide voltage input, and can prevent momentary surge caused by excessive input voltage causes damage to the motherboard parts protection mechanisms, and there are, input power protection device to prevent reverse the negative. CPC can be set when the output power or when to turn off the power when the car is started and shut down time, and when the car out of battery power will be automatically cut off the output power to protect the battery. When not in use the current consumption of approximately <2mA to protect the vehicle battery will not be too much load current of the battery is dead

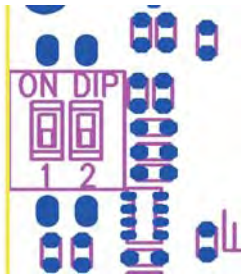
## Operation


There are two modes operating: Auto Mode and Manual Mode. The default setting is "Auto Mode"

## For OEM CPC function only

### CPC-Car Power Control

SC1 CPC & Control mode switch.  
SC1: Board Top view



ON		1		2	
		CPC function		Mode select	
Up		CPC Enabled		Auto	
Down		CPC Disabled		Manual	

- Note: 1.If CPC was disabled which have not under low voltage protection and timing delay function and power output continually until the out of car battery.
2. In Auto Mode. Can't setting OS Delay off timer.
3. Default, CPC function enabled, Mode is Auto
4. It need reset power when switch setting finish.
5. default setting 1 - 2 ON

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## Auto Mode

### Provides power:

When Key is inserted into the ACC stalls, CPC default through (Delay Main Power On setting within) delay 20 seconds before providing power to the motherboard

### Boot-Up :

CPC provides power to the motherboard, the power will be executed.

### The shutdown :

When Key switch back to the OFF position, CPC default (set value of the OS Delay Off) at 5 minutes after the motherboard through the shutdown.

**Note:** Do When using CPC OS Delay off, use the system to do OS update!

### Turn off the main power supply:

After the motherboard shutdown, CPC default ( set value of the Main Power Off delay ) by five seconds after the main power board off!

### Power saving mode:

If you close more than 10 minutes, CPC will enter power-saving mode.

Then the total current consumption <2mA, in order to protect the car battery .

### When the battery voltage is low :

When the battery does not have enough electricity for 10 minutes,

CPC will immediately turn off the power to the motherboard, To protect the battery.

By default, When CPC will wait Key switch back to the OFF position, the battery will start to detect, and in factory mode, low battery detection protection is not turned on!

## Manual mode:

### When you start :

When Key is inserted into the ACC stalls, CPC default through ( Delay Main Power On setting within ) delay 20 seconds before providing power to the motherboard!

### Boot-Up :

CPC provides power to the motherboard, the then need to manually press the PW switch to start the M / B.

### The shutdown :

When Key switch back to OFF position, the need to manually press the PW switch to close the M / B, under normal circumstances, CPC does not automatically turn off M / B, unless there is a detected low battery voltage conditions.

### Turn off the main power supply:

After the M / B shutdown, CPC default ( set value of the Main Power Off delay ) by 5 seconds after the main power supply / B off !



### **Power saving mode:**

If you close more than 10 minutes, CPC will enter power-saving mode.  
Then the total current consumption <2mA, in order to protect the car battery.

### **When the battery voltage is low :**

When the battery does not have enough electricity for 10 minutes, CPC will immediately turn off the power to the motherboard, To protect the battery.

By default , When CPC will wait Key switch back to the OFF position, the battery will start to detect, and in factory mode, low battery detection protection is not turned on!

**Note:** Manual mode is not OS Delay off the set !

## **Delay Time and Under Voltage Level setting explain**

### **Delay Main Power On:**

When plug-in the key and turn to ACC mode, CPC will delay few seconds then output +12V!

There are 14 options for this delay time setting: 0sec, 5sec, 10sec, 15sec, 20sec, 30sec, 45sec, 1min, 3min, 5min, 10min, 15min, 30min, 45min Default setting is "20 sec"

**Note:** Recommends user to ignite /start the car during this delay time.

**Please turn the ignition back to OFF mode, when the users are not able to start the car in the delay time or not able to ignite it properly.**

**System will offer next run delay time (default 20 seconds) again.**

### **OS Delay Off:**

When ignition is at OFF mode, CPC will turn off the MB via PW cable in the setting time.

There are 18 options as OS delay off setting: 0sec, 5sec, 10sec, 15sec, 20sec, 30sec, 45sec, 1min, 3min, 5min, 10min, 15min, 30min, 45min, 1hour, 2hour, 3hour, ∞.

The default setting is 5 minutes.

**Note:** 1. This delay time is only workable under "AUTO mode"

2. The recommend delay time should be longer than the MB turn off time.

If the MB is not able to shut down properly within 10 minutes, PW201 will auto switch off the MB after 10 minutes.

3. "∞" setting is only available after user starts the "Under voltage" function.

4. Please avoid updating the OS when you turn off the MB. This could cause OS not able to boot the system next time.

### **Main Power Off delay:**

When the MB is shutdown, CPC will cut off power output after a few seconds.

There are 17 options for the delay time: 0sec, 5sec, 10sec, 15sec, 20sec, 30sec, 45sec, 1min, 3min, 5min, 10min, 15min, 30min, 45min, 1hour, 2hour, and 3hour.

The default setting is 5 sec.

**Note:** We recommend 5 seconds delay time here if users don't have to need to execute other functions after shut down the MB.

### Battery Low Voltage Level setting:

When the battery voltage is lower than the setting voltage, the system will define it as "Under voltage".

The below list with the options of battery levels user may choose depend on its 12V or 24V battery.

Level	12V Battery	24V Battery
1	11.75V	23.75V
2	11.50V	23.50V
3	11.25V	23.25V
4	11.00V	23.00V
5	10.75V	22.75V
6	10.50V	22.50V
7	10.25V	22.25V
8	10.00V	22.00V
9	9.75V	21.75V
10	9.50V	21.50V
11	9.25V	21.25V
12	9.00V	21.00V

**Note:** 1. "Under voltage"function is not active under the default setting.

2. "Under voltage"function could be active when the ignition is at ACC or key plug-out.

3. When the battery is "Under voltage"-CPC constantly monitors the setting low voltage of battery 10 times / 10 minutes; CPC will set out the alarm via CPC AP. After 10 minutes, CPC will turn off the MB & cut off the power output and hold the status.CPC will only output +12V power when the Key is back to ignition at ACC mode.

4. Please check if your car battery is 12V or 24 before starting the "Under Voltage" feature. Otherwise, "Under voltage" function is not workable at wrong battery setting.

5. The default "Under voltage" is 10.5V for +12V battery; 22.5V for +24V battery

### Auto mode:

Simply speaking, Auto Mode means CPC will decide when to turn on / off the MB; there is no need of additional power switch.

### Manual mode:

Simply speaking, manual Mode means User can decide when to turn on / off the MB; the additional power switch is necessary.

### Car Power Control (CPC) LED behavior.

CPC provides an on-board LED to show the current situation.

LED	Function	Active
Green	CPC Status indicator	
	Delay Main Power On	ON:0.3sec,OFF:1sec
	OS Delay Off	ON:0.3sec x2, OFF:1sec
	Main Power Off delay	ON:1sec, OFF:1sec
	Battery Low Voltage	ON:0.3sec, OFF:0.3sec

CPC LED, is being implemented various stages of delay,  
LED will be action! When finished LED would not operate!

## Car Power Control (CPC) application Introduction

### About CPC info on LEX WiKi:

Users can download the CPC AP form LEX WiKi- CPC AP can set the delay time and start the "Under Voltage" protection.

The CPC AP introduction from LEX WiKi:

[http://tprd.info/lexwiki/index.php/CPC\\_Utility\\_under\\_Windows](http://tprd.info/lexwiki/index.php/CPC_Utility_under_Windows)

### Main Page:

CPC Utility v1.0

General Information

1 Setting 2 Battery Setting

Battery Information

3 Recent Voltage 12.52 V

4 Period Voltage 12.52 V

5 Operation Mode Automatic

6 Battery Type 12 V

7 Start

Number 1: Delay time setting & interval setting of checking battery capacity.

Number 2: Options about battery "Under voltage" setting.

Number 3: Show the recent /current battery voltage according to the interval time you set under the previous "Setting" option.

Number 4: This item is only workable after setting the "Under Voltage" protection. The voltage value here is the voltage that MCU detects very minute.

Number 5: The operating Mode you used.

Number 6: The battery type currently you used with: 12V or 24V.

Number 7: To "Start" monitoring the battery capacity!

## Setting Page:

### I<sup>2</sup>C Address Default is "B6".

Press the submit button when finish selecting I<sup>2</sup>C address, then CPC Basic Setting section and CPC Monitor Setting section will be enable to set.

### 3. Delay Main Power On

Set the delay time which CPC turn on the computer. There are 14 options for this delay time setting: 0sec, 5sec, 10sec, 15sec, 20sec, 30sec, 45sec, 1min, 3min, 5min, 10min, 15min, 30min, 45min. default setting is "20 sec"

### 4. OS Delay Off

Set delay time which CPC turn off the computer. There are 18 options as OS delay off setting: 0sec, 5sec, 10sec, 15sec, 20sec, 30sec, 45sec, 1min, 3min, 5min, 10min, 15min, 30min, 45min, 1hour, 2hour, 3hour, ∞. The default setting is 5 minutes.

#### NOTE:

1. This delay time is only workable under "AUTO mode"
2. "∞" setting is only available after user starts the "Under voltage" function.

## 5. Main Power Delay

Set delay time of cutting off the power output after computer is turned off.

There are 17 options as OS delay off setting: 0sec, 5sec, 10sec, 15sec, 20sec, 30sec, 45sec, 1min, 3min, 5min, 10min, 15min, 30min, 45min, 1hour, 2hour and 3hour. default setting is "5 sec"

### Load Default Button

Press this button will load default value of CPC basic setting section.

\* In CPC basic setting section, the initial value is read from users.

### Read Register Button

Press this button will read the current value set from user.

### Set Button

Press this button to set when finish selecting what you want to set in CPC basic setting section.

### Recent Battery Value Check Frequency:

Set the time interval of checking the battery capacity ( from 5 sec to 60 sec )

**Note:** User "MUST" set this checking interval in advance. Otherwise, it will pop up the error message while pressing the "Start" button in Main Page.

### Start On Boot:

Monitor the battery capacity when user boot the system!

### Battery Setting Page:

**Battery Under Voltage Setting**

☐ Disable Battery Low Voltage Detect

Battery Type 12 V Change

Battery Low Voltage 11.75 V 4

ACC Active Key-In 5 Triggered

Under Voltage Warning Disable 6

Read Register Confirm Cancel

7 8 9

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### **Disable Battery Low Voltage Detect:**

This button is to close the battery low voltage protection function.

The default setting is to click this item (Disable ULV)

If select this option, you don't have to set other things in the battery setting window. Besides, Period Voltage and Battery Type are also be hidden in main window when starting to monitor.

### **Battery Low Voltage:**

Set a voltage value as low voltage criteria. If the period voltage value CPC detected is smaller than this criteria ten times, computer will be turned off.

#### **For 12V Battery:**

11.75V, 11.50V, 11.25V, 11.00V, 10.75V, 10.50V, 10.25V, 10.00V, 9.75V, 9.50V, 9.25V, 9.00V. Default setting: 10.50V

#### **For 24V Battery:**

23.75V, 23.50V, 23.25V, 23.00V, 22.75V, 22.50V, 22.25V, 22.00V, 21.75V, 21.50V, 21.25V, 21.00V. Default setting: 22.50V

**ACC Active Triggered:** To start the under voltage protection, set the under voltage value & monitor the under voltage status.

Key-In: To start monitoring the battery under voltage while Key-in

Key-out: To start monitoring the battery under voltage while Key-out

**Under Voltage Warning:** Choose if it pop-up the alarm window when the battery is under voltage.

**Read Register:** Read the setting of battery under voltage protection in MCU.

**Confirm:** Write the above setting into MCU.