2I385HW

Intel Bay Trail-I E3815 / E3845
(Single Core / Quad Core)CPU,
DDR3L 1066 / 1333 MT/s,
2 x LAN / LVDS / Touch Screen / USB / COM

All-In-One

Intel Bay Trail-I E3815/E3845

(Single Core 1.46 GHz / Quad Core 1.91 GHZ)CPU,

2 x Intel GbE LAN , 2 x PCIe mini card slots ,

VGA, Audio, SATA, USB, COM , LVDS, Touch Screen

NO. 2I385HW_V0.4
Release date: JUN. 30. 2017

Contents

2I385HW

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User Manual edition 0.1, Dec. 30. 2014

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.

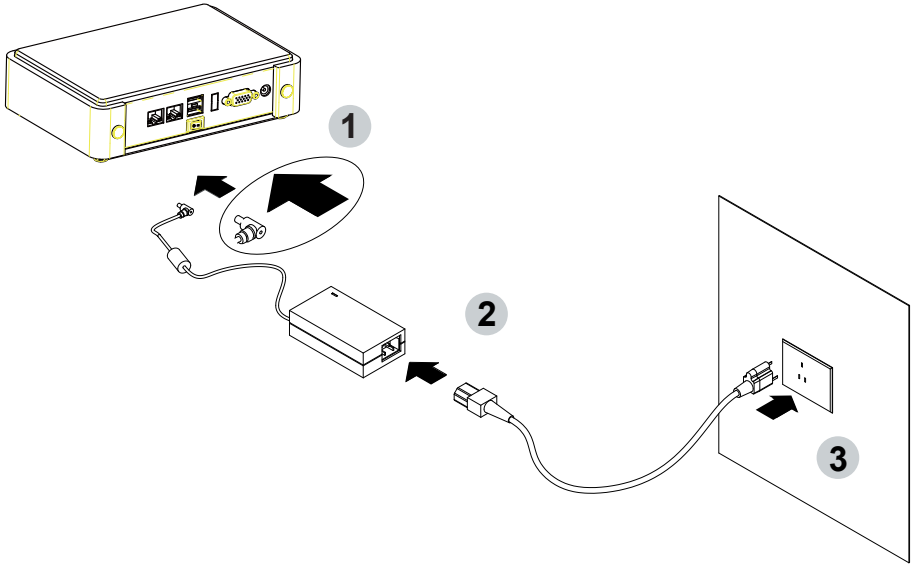
✱ Hardware Notice Guide

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 form 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.

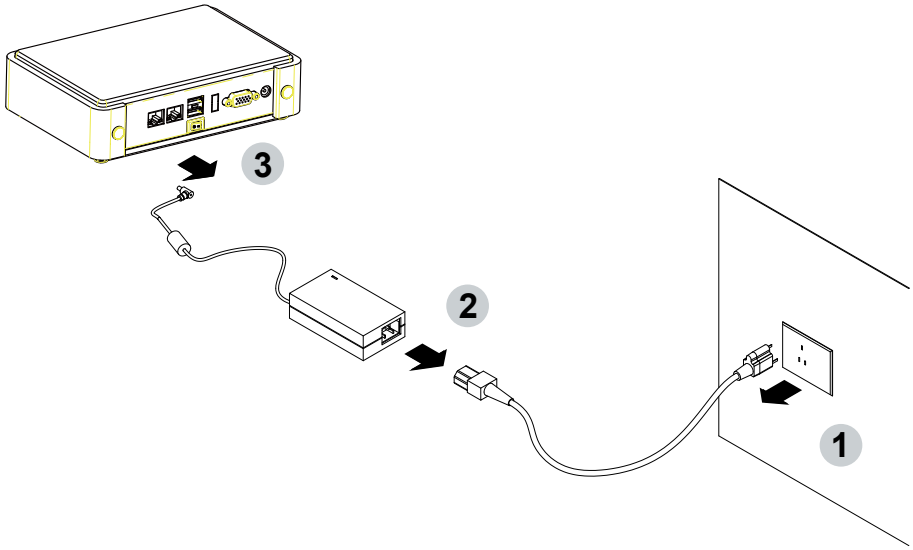
Remark 1:
Always insert/unplug the DC-in horizontally & directly to/from the motherboard. DO NOT twist, it is designed to fit snugly.
Moreover, erratic pull / push action might cause an unpredictable damage to the component & system unit.

Photo 1

Insert



Unplug



Chapter-1

General Information

2I385HW is designed to provide the needs of variety of housing for industrial customers with all I/O Wafer design board. Unlike LEX's usual motherboard design, 2I385HW has converted all the onboard I/Os to Wafer connectors in order collocate industrial customer's needs. 2I385HW is the perfect platform for whole range of small form factor and low-power devices.

The 2I385HW All-In-One motherboard is with Intel Intel BayTrail-I E3815 1.46GHz Single core / E3845 1.91GHz Quad core CPU + Intel BayTrail-I E3815/E3845 chipset and BayTrail-I Integrated Graphics chipset.
This integrated BayTrail-I platform offers superb performance and PC specification in the industry. Despite the limited space of 2I385HW, it supports four COM ports and five ports of USB 2.0 to enhance the host controller interface
which will ensure the high performance level and flexible expansion.

2I385HW is supported with two 10/100/1G Ethernet for seamless broadband connectivity. With Wake-On LAN function and the PXE function in BIOS, these are perfect control boards for networking devices.
The built-in LAN is Intel I211-AT or I210-IT (optional) PCIE LAN chipset, integrated 10/100/1000 transceiver.

The 2I385HW motherboard is built in onboard 2G / 4G DDR3L SDRAM , with data transfer rate of 1066MT/s / 1333MT/s. The expendable interfaces include one full size PCIe Mini card for PCIe by one & mSATA (auto-detection) and USB interfaces, one half size PCIe Mini card for mSATA and USB interfaces.

The All-In-One motherboard 2I385HW is fully compatible with industry standards, plus technical enhancements and thousands of software applications developed for IBM PC/AT compatible computers. These control logic provides high-speed performance for the most advanced multi user and multitasking applications available today.

1-1 Major Feature

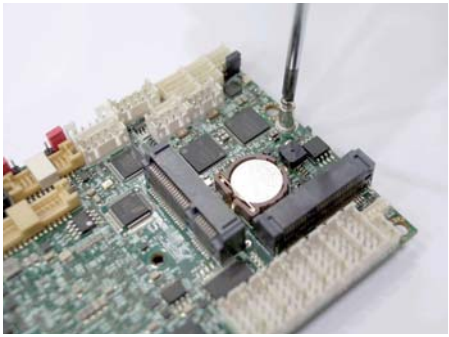
1. Intel BayTrail-I E3815 1.46GHz Single core / E3845 1.91GHz Quad core SOC
2. Intel BayTrail-I Integrated Graphics chipset, E3815 400 MHz / E3845 542 MHz render clock frequency
3. On board DDR3L SDRAM 2GB / 4GB Memory, data transfer rate of 1066MT/s / 1333MT/s
4. Support 2 x 10/100/1000 Mbps Intel LAN ports
5. Support extended 2 x Mini PCIe card (full size & half size)
6. Support 4 x COM ports and 5 x USB 2.0
7. Support one SATA port with independent DMA operation supported
8. Hardware digital Input & Output, 4 x DI / 4 x DO
   Hardware Watch Dog Timer, 0~255 sec programmable
9. On board DC +9V to +36V Wide range power supply
10. PCB Dimension: 102 x 73 mm (2.5 inch)
11. Display interfaces include VGA & LVDS (24/48 bits)
12. COM interface Touch screen controller, support 4-, 5-, 8-wire Analog Resistive touch screen. Resolution is up to 2048 x 2048

1-2 Specification

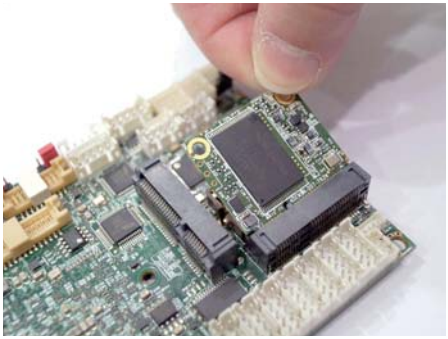
1. **SOC**: Intel BayTrail-I E3815 1.46GHz / E3845 1.91GHz (Single / Quad core)
2. **Memory**: DDR3L SDRAM 2GB / 4GB Memory,
   data transfer rate of 1066MT/s / 1333MT/s
3. **Graphics**: Intel BayTrail-I Integrated Graphics chipset,
   E3815 400 MHz / E3845 542 MHz render clock frequency
4. **SATA**: One SATA connector with independent DMA operation supported
5. **LAN**: LAN: 2 x INTEL I211-AT / I210-IT (option) PCIE LAN of 10 / 100 / 1000 Mbps
6. **Serial Port**: 4 x COM ports (1 x RS232/422/485 + 3 x RS232/485)
7. **USB**: 5 x USB 2.0
8. **Sound**: ALC886 HD Audio Specification 1.0 Two channel sound chipset
9. **Audio Amplifier**: TPA2011D1 Class-D 2.5W/4Ω or 1.5W/8Ω chipset
10. **WDT/DIO**: Hardware digital Input & Output, 4 x DI / 4 x DO
    Hardware Watch Dog Timer, 0~255 sec programmable
11. **Expansion interface**: one full size PCIe Mini card for PCIe/mSATA (auto detection)
    and USB interface, one half size PCIe Mini card for mSATA and USB interface
12. **BIOS**: Insyde UEFI BIOS
13. **Dimension**: 102 x 73 mm (2.5 inch)
14. **Power**: On board DC +9V to +36V Wide range power supply
15. **LVDS**: 24/48 bits
16. **Touch function**: C8051F321 COM interface Touch screen controller,
    support 4-, 5-, 8- wire Analog Resistive touch screen. Resolution is up to 2048 x 2048

1-3 Installing the Mini PCI-e Card

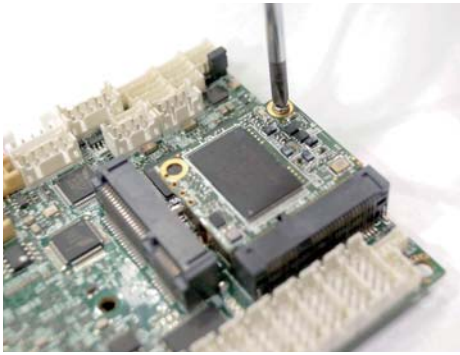
1. Unfasten the round-headed M2*6 screw for half size Mini PCI-e.



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

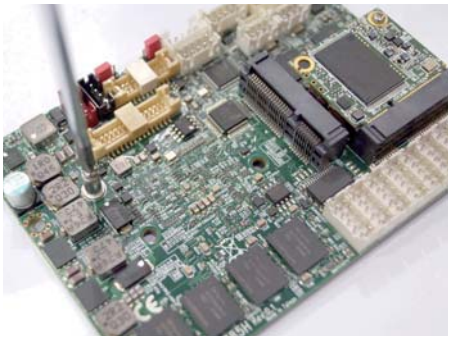


3. Fasten a round-headed M2*6 screw.

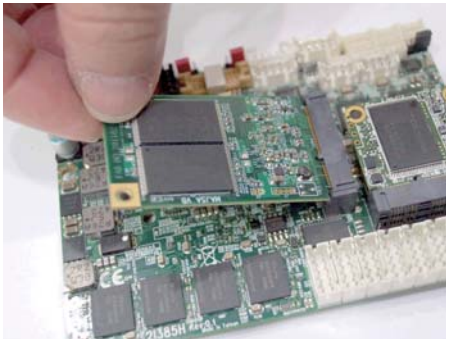


1-4 Directions for installing the Mini Card

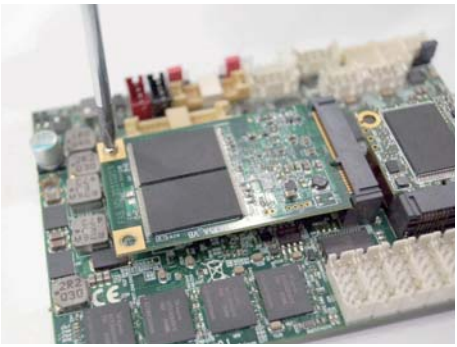
1. Unscrew the screw on the board



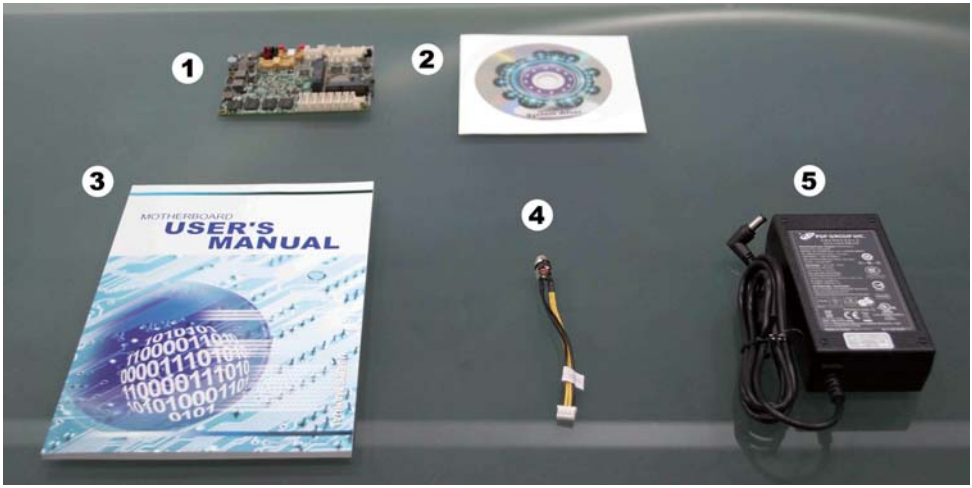
2. Plug in the Mini Card in a 45 angle



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



1-5 Packing List



	Material Code	Description	Detail Specification	Quantit
1	7G1901-1530001-0 7G1901-1531001-0	MB-2I385HW-I44-001 MB-2I385HW-I12-001	LF,2I385HW-I44,Rev.:001 LF,2I385HW-I12,Rev.:001	1
2	6G8006-2347-0100	LEX Product Driver DVD	LF, Intel Baytrail Driver	1
3	6G8001-2192-0400	Manual	LF,M/B,2I385HW	1
4	6G6003-7330-0100	Power Cable	LF,L=9cm,2.0 1*4/DC JK	1
5	6G5212-0301-0300	30W Power Adapter,12V/2.5A	LF,L Type,EA10301-M06,EDAC	1

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

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

Chapter-2

Hardware Installation

2-1 Unpacking Precaution

This chapter provides the information how to install the hardware of 2I385HW.
Please follow section 1-5, 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 2I385HW.
   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 2I385HW for harmlessly discharge any static electricity through the strap.

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

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

2-2 Unpacking checkup

First of all, please follow all necessary steps of section 2-1 to protect 2I385HW from electricity discharge. With reference to section 1-5 please check the delivery package again with following steps:

1. Unpack the 2I385HW 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.

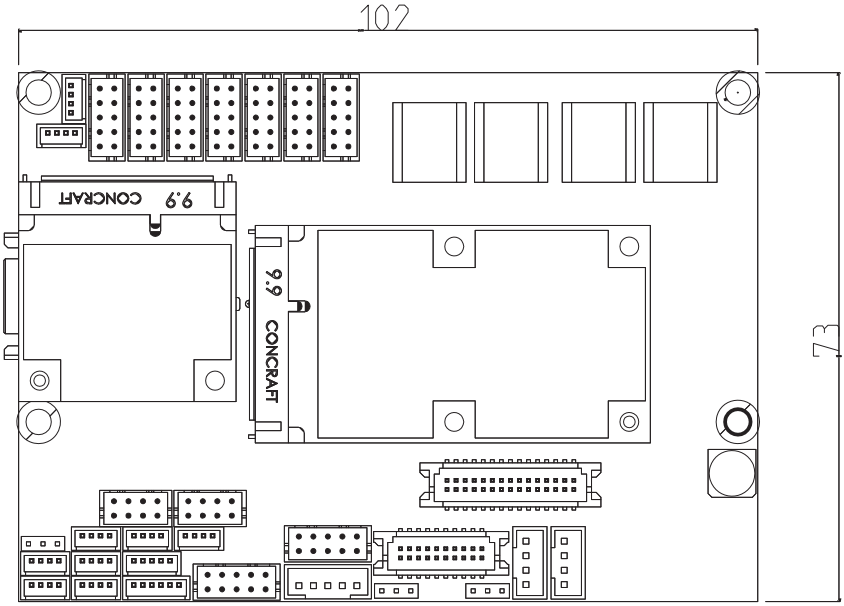
3. Is there any visible damage on the board?
   DO NOT CONTINUE TO INSTALL THIS BOARD!CONTACT
   THE DEALER YOU PURCHASED THIS BOARD FROM, IMMEDIATELY.

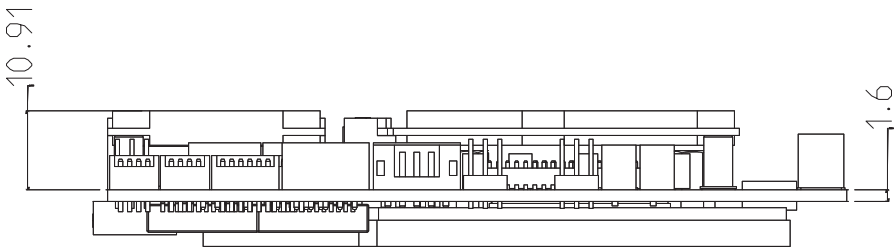
4. Check your optional parts (i.e. DDR, CF etc.), all necessary jumpers setting to jumper pin-set, and CMOS setup correctly.
   Please also refer to all information of jumper settings in this manual.

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.

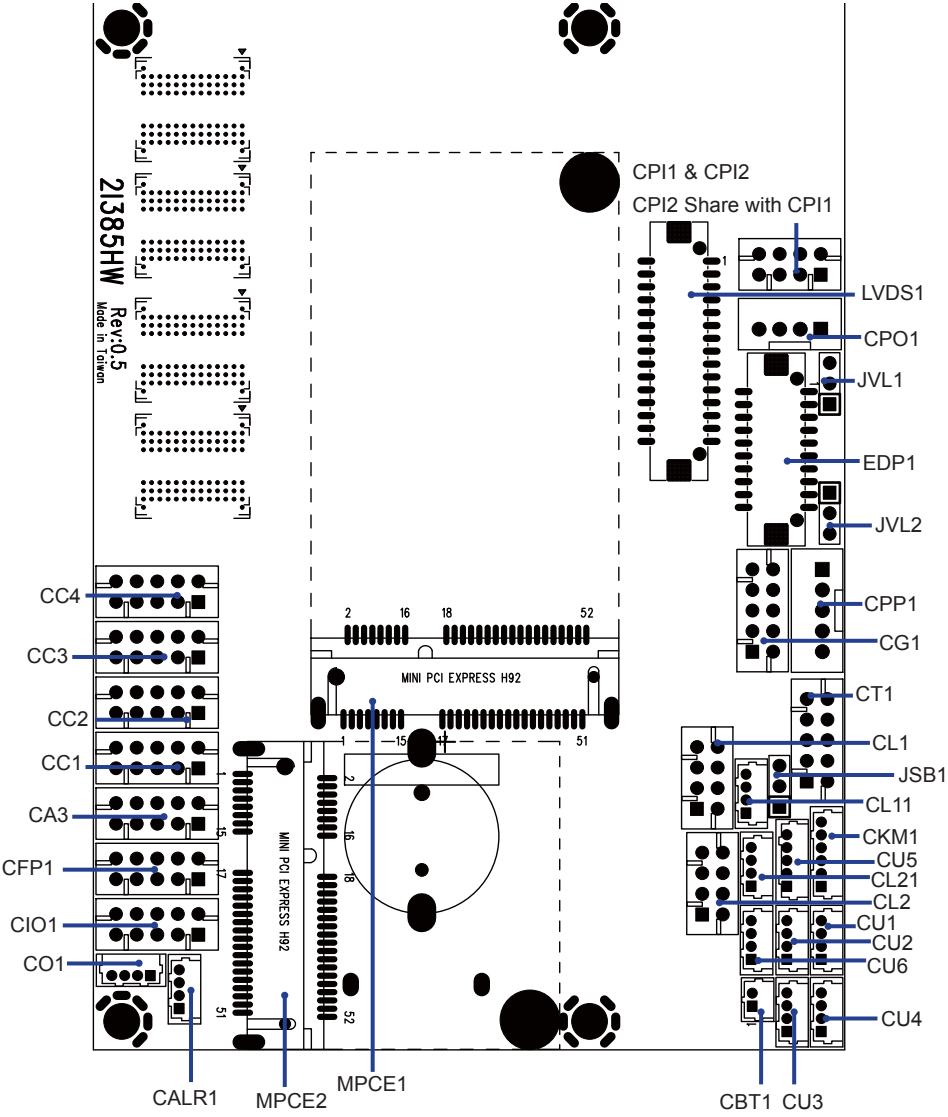
6. Please keep all necessary manual and driver disc in a good condition for future re-installation if you change your Operating System.

2-3 Dimension-2I385HW

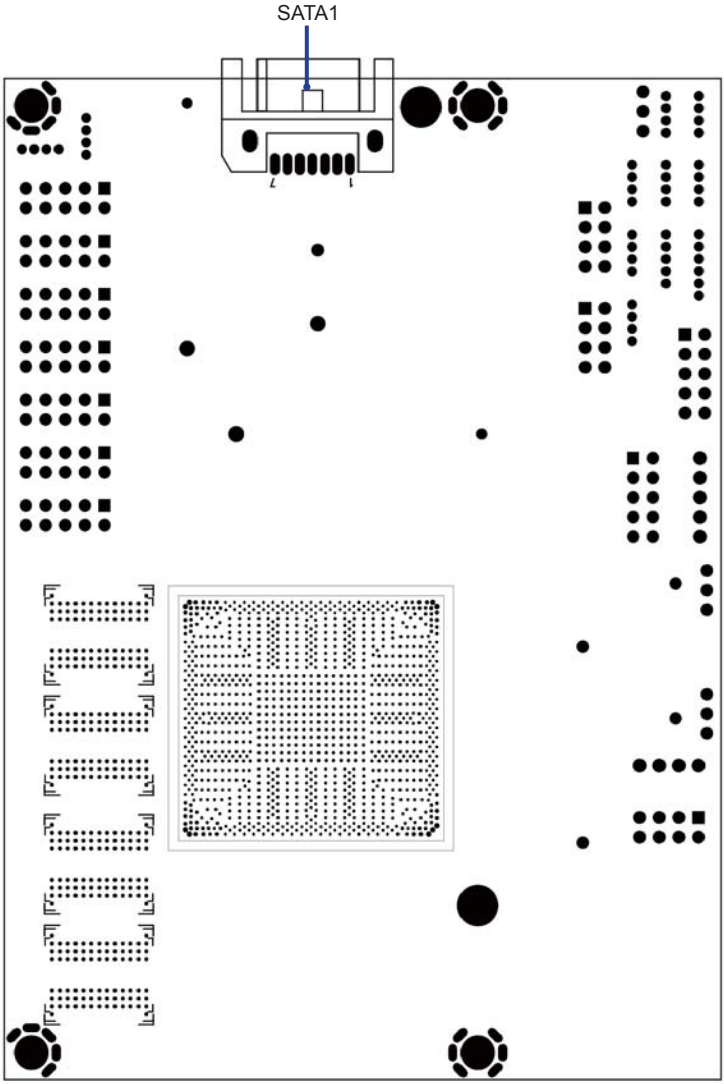




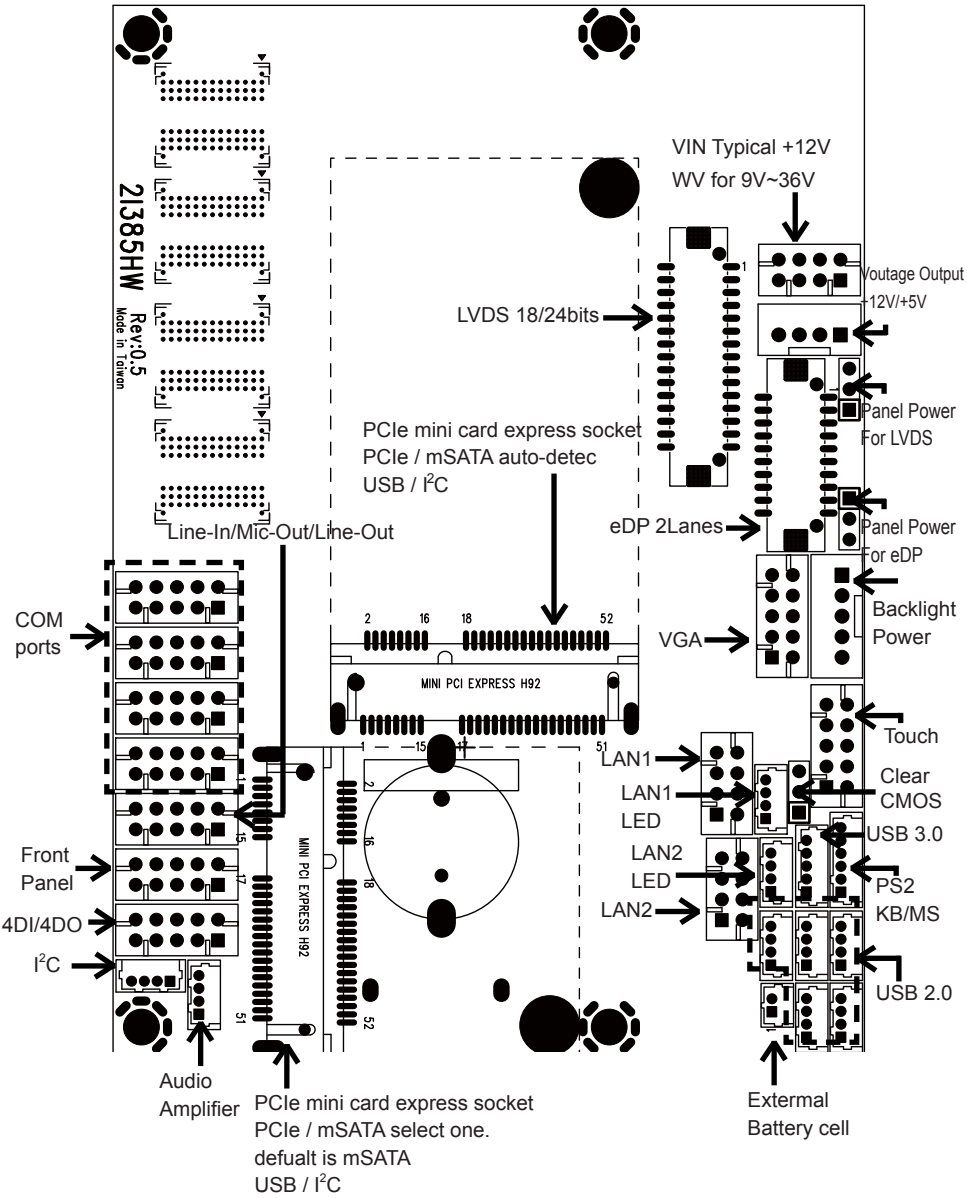
2-4 Layout-2I385HW-Connector and Jumper



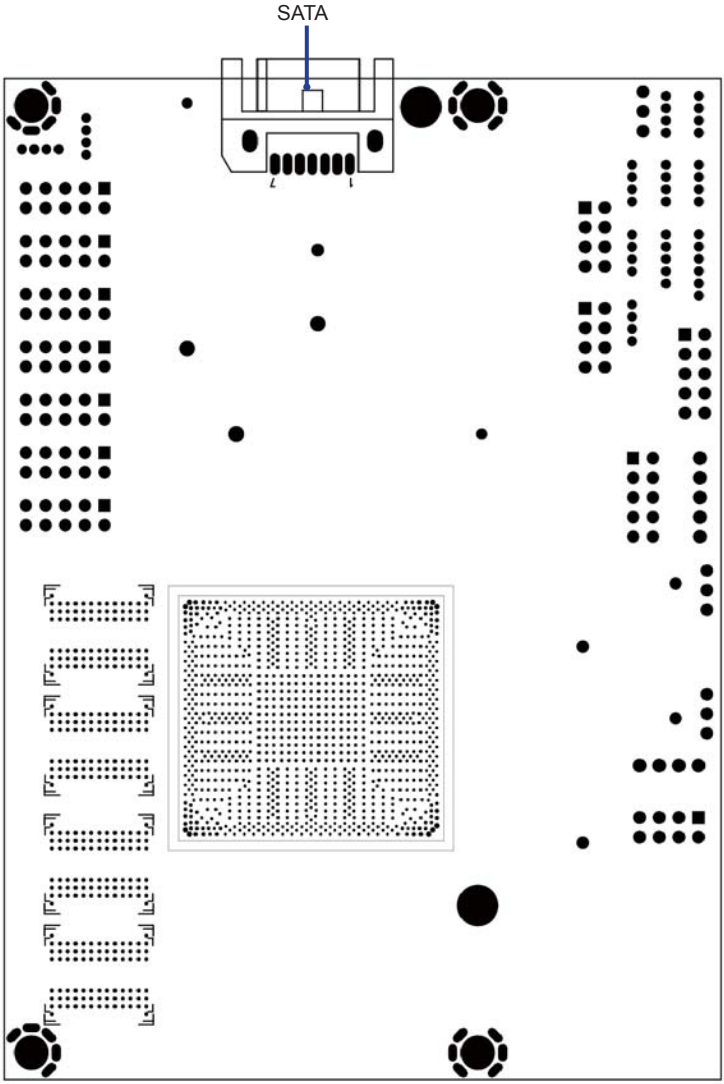
2-4-1 Layout-2I385HW-Connector and Jumper Bottom



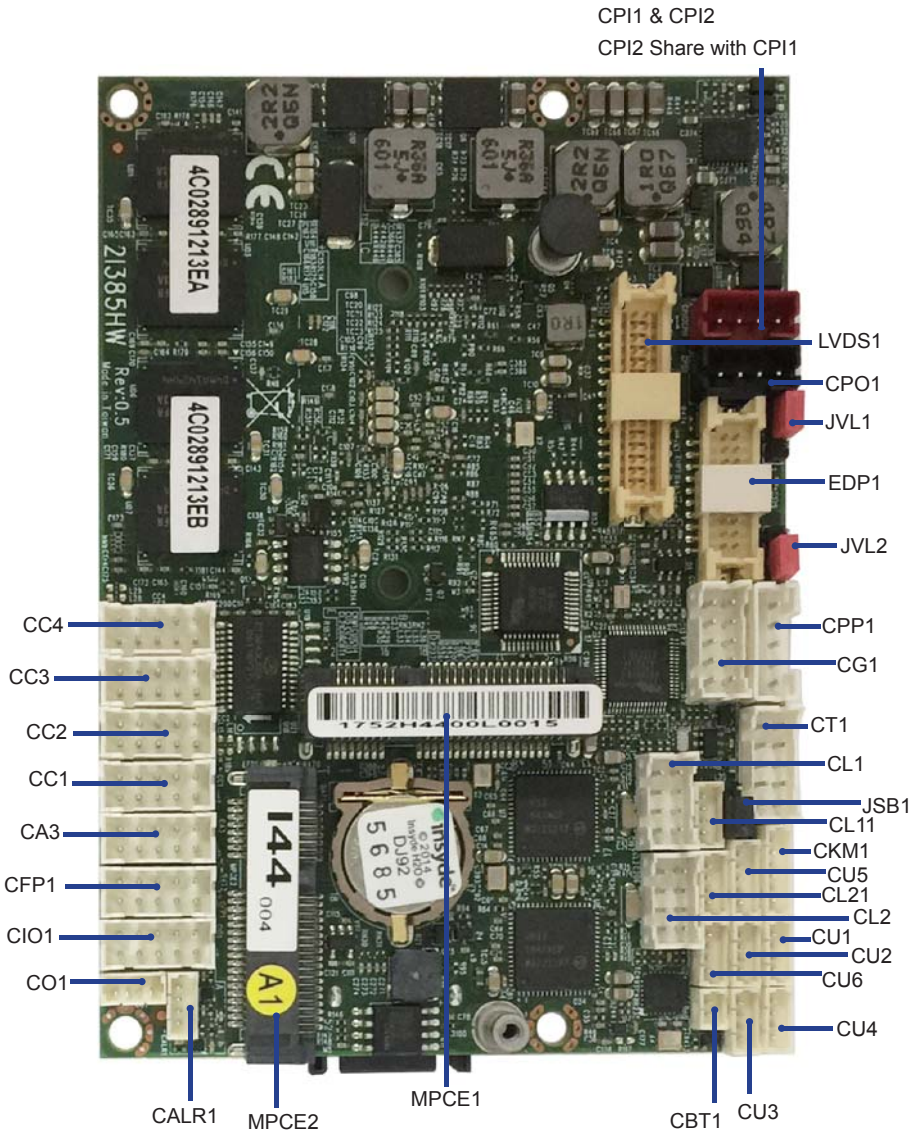
2-4-2 Layout-2I385HW-Function MAP



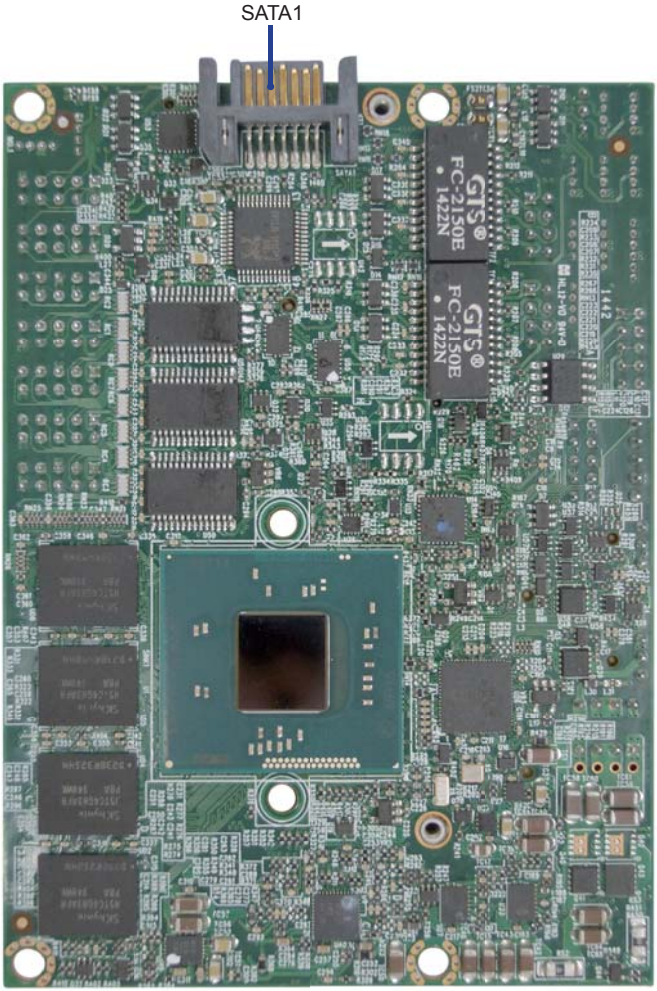
2-4-3 Layout-2I385HW-Function MAP Bottom



2-5 Diagram- 2I385HW



2-5-1 Bottom Side Diagram- 2I385HW



2-6 List of Jumpers

JSB1: CMOS DATA Clear
JVL1: LVDS panel power select
JVL2: eDP panel power select

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.

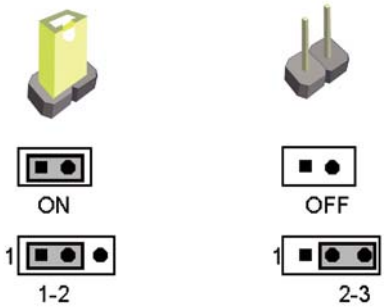


Figure 2.2

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 .

JSB1: CMOS Data Clear

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

To clear the CMOS,follow the procedures below:

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

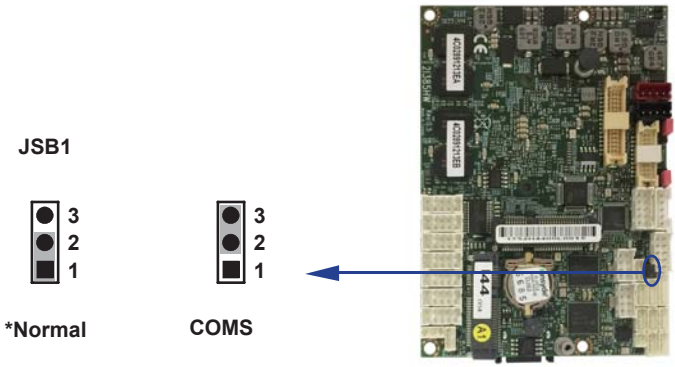
JSB1	Description
*1-2	Normal set
2-3	CMOS data clear

Note: Do not clear CMOS unless

1. Troubleshooting

2. Forget password

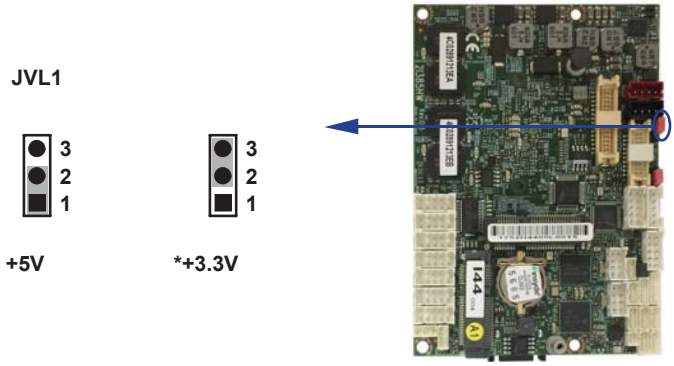
3. You fail over-clocking system



2-8 JVL1: LCD panel power select

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

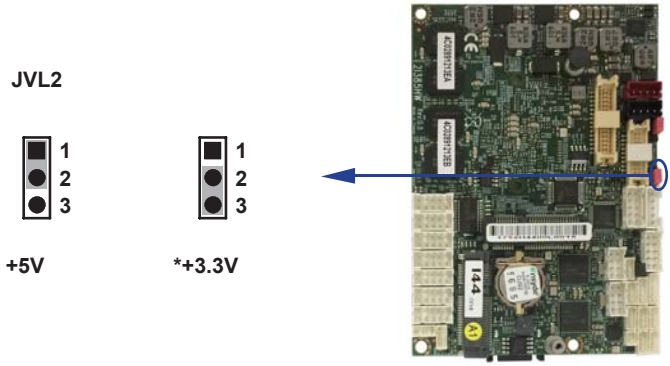
Note: Attention! Check Device Power in spec.



2-9 JVL2: eDP panel power select

JVL2	Description
1-2	+5V
*2-3	+3.3V

Note: Attention! Check Device Power in spec.



Chapter-3

Connection

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

3-1 List of Connectors

BAT1: Li 3V battery holder

CA3: Line-out/Line-in/Mic-in/SPDIF-out 2x5 pin (2.0mm) Wafer

CALR1: Amplifier Line-out Right/Left channel 4pin (1.25mm) wafer

CBT1: External Battery 1x2pin (1.25mm) wafer

CC1 : COM 2x5pin (2.0mm) wafer

CC2 : COM 2x5pin (2.0mm) wafer

CC3 : COM 2x5pin (2.0mm) wafer

CC4 : COM 2x5pin (2.0mm) wafer

CFP1: Front Panel connector 2x5pin (2.0mm) wafer

CG1: VGA 2x5pin (2.0mm) wafer

CIO1: DIO 2x5 pin (2.0mm) Wafer

CKM1: PS2 KB/MS 1x6 pin (1.25mm) wafer

CL1: LAN port 1 RJ45 2x4 pin (2.0mm) wafer

CL2 : LAN port 2 RJ45 2x4 pin (2.0mm) wafer

CL11: LAN port 1 LED 1x4 pin (1.25mm) wafer

CL21: LAN port 2 LED 1x4 pin (1.25mm) wafer

CO1: I^2C 4pin (1.25mm) Wafer

CPI1: DC 12V-IN 1x4 pin (2.0mm) Red wafer connector

CPI12: DC 12V-IN 2x4 pin (2.0mm) wafer connector (Option)

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

CPO1: +12V/+5V power output 4 pin (2.0mm) Black wafer connector

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

CU1: USB 2.0 port 4pin (1.25mm) Wafer

CU2: USB 2.0 port 4pin (1.25mm) Wafer

CU3: USB 2.0 port 4pin (1.25mm) Wafer

CU4: USB 2.0 port 4pin (1.25mm) Wafer

CU5: USB 3.0 port 5pin (1.25mm) Wafer

CU6: USB 2.0 port 4pin (1.25mm) Wafer

eDP1: eDP 2x10 pin (1.25mm) connector

LVDS1: LVDS 2x15 pin (1.25mm) connector

SATA1: One SATA connector 7pin

MPCE1: Full size mini card port 1 sockets 52pin

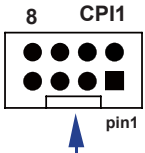
MPCE2: Half size mini card port 2 sockets 52pin

3-2 DC Power Input

- **CPI1: DC -in 1x4 (2.0mm)Wafer Internal connector (Red)**

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

Note: Very important check DC-in Voltage



- **CPI12: DC -in 2x4 (2.0mm)Wafer Internal connector**

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

Note: Very important check DC-in Voltage

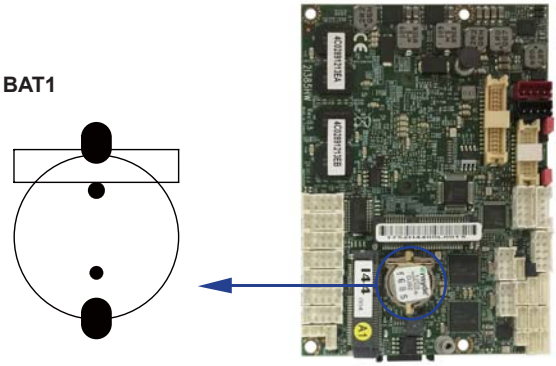
3-3 CMOS Battery connector

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

  BAT1: Battery use Li 3V / 40mAh (CR1220)

Note : 1.When board without Adaptor plug in, this board power RTC consumption 2.7uA

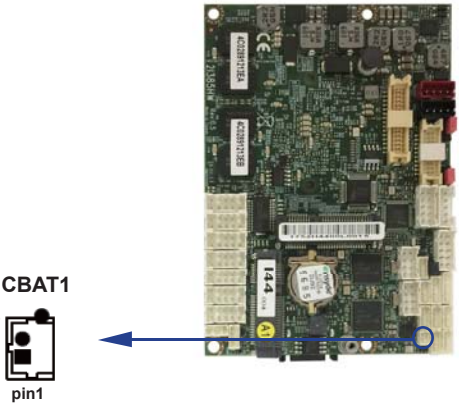
2.If adaptor always plug in RTC power consumption 0.1uA



3-4 External Battery Cell Power-in

- **CBT1: External Battery 1x2pin (1.25mm) wafer**

PIN NO.	DESCRIPTION
1	GND
2	+3V

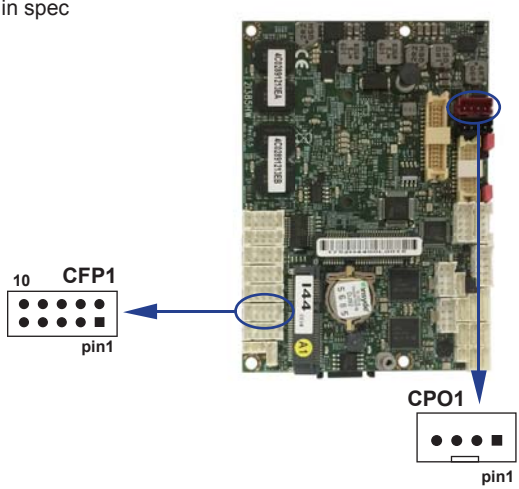


3-5 DC+12V /+5 Voltge Power output (4pin 2.0mm Wafer)(Black)

● **CPO1: +12V/+5V DC voltage output**

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

* Note: Attention! Check Device Power in spec



3-6 Front Panel Pin Header

● **CFP1 Front Panel connector 2x5pin (2.0mm) wafer**

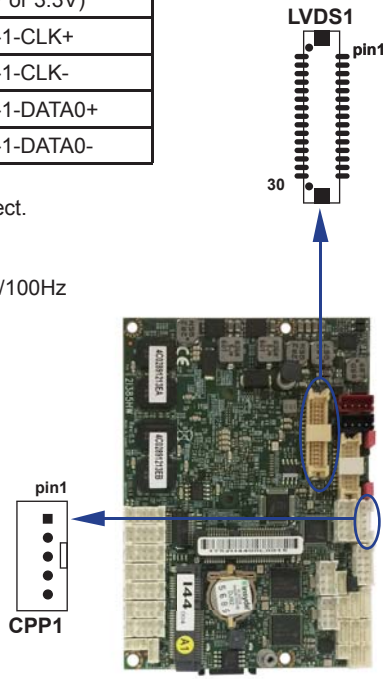
PIN NO.	Description	PIN NO.	Description
1	Power button pin	2	Power button GND
3	Reset pin	4	Reset GND
5	Power LED -	6	Power LED +
7	HDD LED-	8	HDD LED+
9	LAN LED-	10	LAN LED+

3-7 LVDS Connector

● **LVDS1: LVDS interface (2x15pin 1.25mm wafer)**

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

Note: 1. LVDS interface support 18/24bits two channel.
2. JVL1: LVDS panel +5V/+3.3V (default) Voltage select.
3. LVDS1 PIN 1 for panel backlight dimming control.
4. Pin 1 back light dimming control.
Provided 200Hz / 275Hz / 380 Hz/ 20KHz / 25KHz /100Hz and adjust PWM duty cycle by software program.



3-8 Panel Inverter power

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

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

Note: 1. CPP1 PIN 3 and LVDS1 PIN1 is same signal.
2. Pin 3 back light dimming controls,
provided 200Hz / 275Hz / 380Hz / 20KHz / 25KHz /100Hz and adjust PWM duty cycle by software program.

3-9 Touch screen device

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

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

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

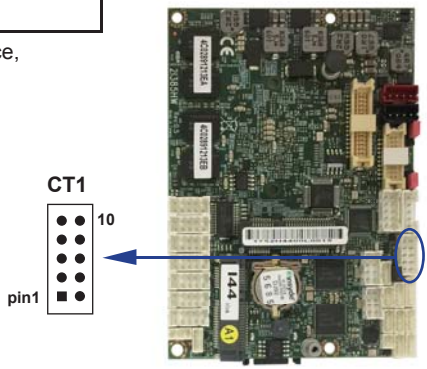
PIN NO.	Description	PIN NO.	Description
1	Bottom	2	N/A
3	N/A	4	Top
5	Right	6	N/A
7	Left	8	N/A
9	GND	10	NC

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

- **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	NC

The Touch upstream can be changed to USB interface,
but CU6 will be removed.



3-10 Audio interface

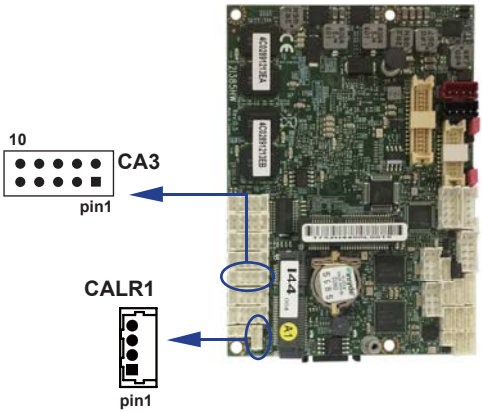
● **CA3: Line-out/Line-in/Mic-in/SPDIF-out 2x5 pin (2.0mm) Wafer**

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

3-11 Audio Amplifier

● **CALR1: Amplifier Line-out Right/Left channel 4pin (1.25mm) wafer**

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



3-12 COM interface

● CC1/2/3/4 COM1/2/3/4 2x5pin (2.0mm) wafer (RS232 Mode)

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

Note: 1. COM1/4 pin9 can be set as +12V or +5V. this setting is OEM.

● CC1/2/3/4 COM2/3/4 2x5pin (2.0mm) wafer (RS485 Mode)

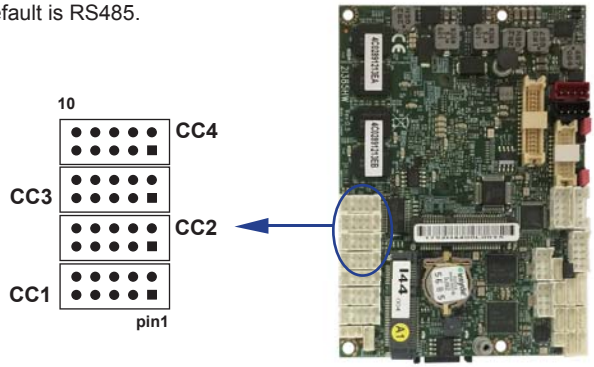
PIN NO.	Description	PIN NO.	Description
1	RS485 Data+	2	RS485 Data+
3	NC	4	NC
5	GND	6	NC
7	NC	8	NC
9	NC	10	+5V

Note: 1. CC1/CC2/CC3/CC4 connector RS485 function for OEM BOM request
2. BIOS need setting to RS485 mode

● CC1 COM1 2x5pin (2.0mm) wafer (RS422 Mode)

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

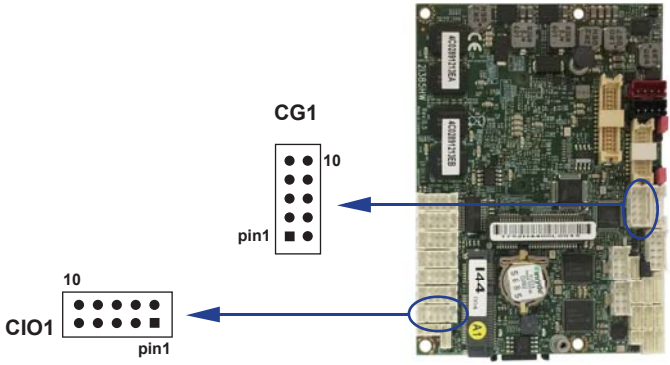
Note: 1. COM1 can be set RS422/RS485 by BIOS Setup Item select.
2. If use RS422/RS485 default is RS485.
3. This Function is OEM.



3-13 VGA Display interface

● **CG1: VGA 2x5pin (2.0mm) wafer**

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



3-14 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^2C bus address 0x9c

- **WDT For F75111N I²C watch dog timer device:**

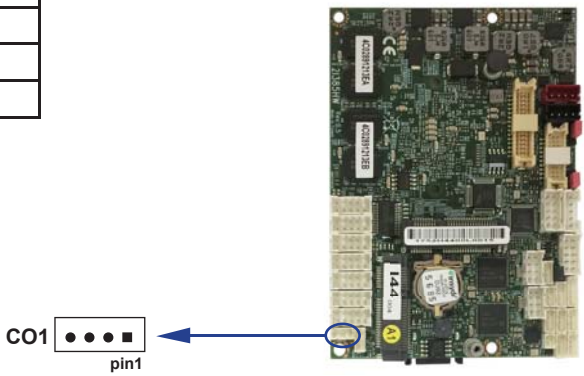
DC spec :
Input low Voltage (VIL):+0.8 Max ,
Input High Voltage(VIH) : +2V Min
Output low Current (IOL):10mA (Min) VOL=0.4V
Output High Current (IOH):-10mA (Min) VOH=2.4V
Watch Dog Time value 0~255 sec
The system will be issued reset. When WDT is enable the hardware start down counter to zero.
The reset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

Please refer to page 83 for APPENDIX C: F75111N I²C DIO DECICE

3-15 I²C Interface

- **CO1: I²C 4pin (1.25mm)Wafer**

PIN NO.	Description
1	+3.3V
2	GND
3	I²C Clock
4	I²C DATA



3-16 LAN Interface

- **CL1/CL2 : LAN port Giga /100Mb 2x4pin (2.0mm) wafer**

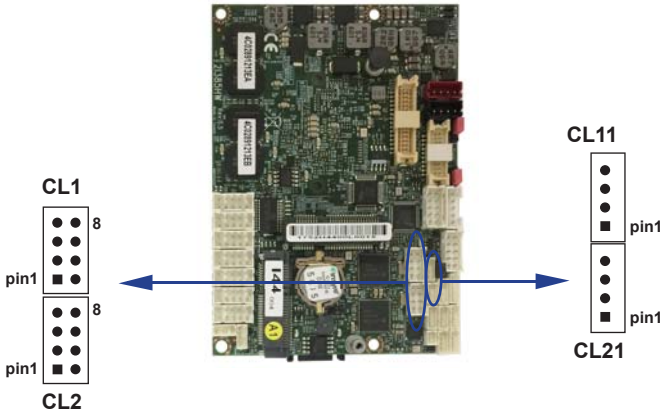
PIN NO.	Description	PIN NO.	Description
1	TR0-/TX-	5	TR1-/RX+
2	TR0+/TX+	6	TR2-/NC-
3	TR2+/NC	7	TR3-/NC
4	TR1+/RX-	8	TR3+/NC

- **CL11/CL21: LAN1 LED indicator (1x4pin 1.25mm wafer)**

PIN NO.	Description
1	VCC
2	Speed 10M
3	Speed 100M
4	Speed 1000M

- **RJ45 LAN Connector--- LED define Giga/100/10MB Connector**

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



3-17 USB Interface

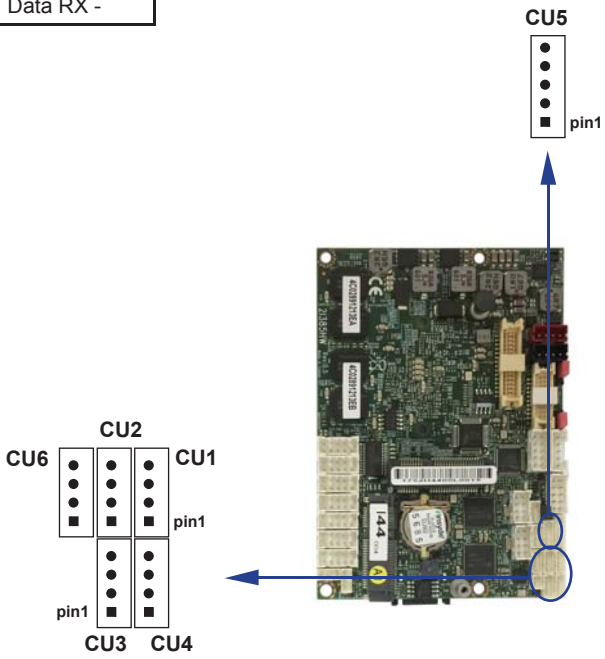
● CU1/CU2/CU3/CU4/CU6: USB2.0 port (1x4pin 1.25mm Wafer)

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

Note: 1. CU6 Signal share with Touch if Touch upstream use USB interface.

● CU5 USB3.0 port (1x5pin 1.25mm Wafer)

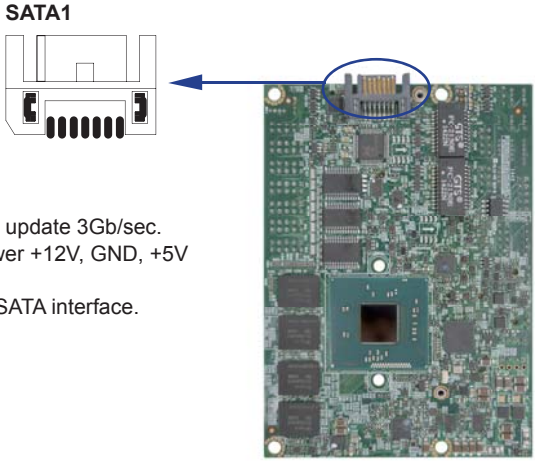
PIN NO.	Description
1	Data TX +
2	Data TX -
3	GND
4	Data RX +
5	Data RX -



3-18 SATA Interface

● **SATA1: SATA Port 1x7pin connector**

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

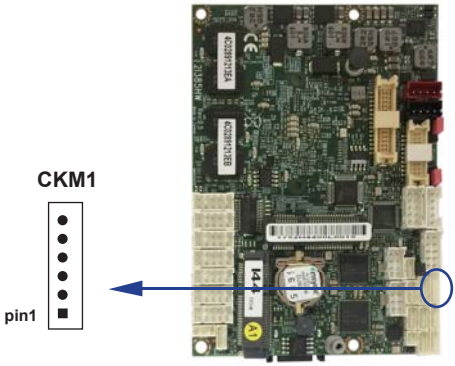


Note: 1. SATA1 support SATA 2.0 spec update 3Gb/sec.
2. CPO1 provide SATA HDD power +12V, GND, +5V
3. if SATA device use on SATA1,
the MPCE1 should not use mSATA interface.

3-19 PS2 Keyboard/Mouse

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

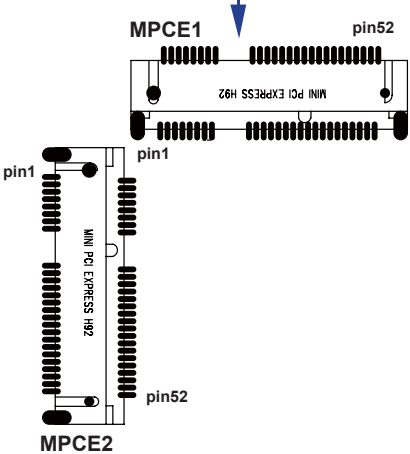
PIN NO.	Description
1	+5V
2	Keyboard Data
3	Keyboard Clock
4	GND
5	Mouse DATA
6	Mouse Clock



3-20 PCI Express Mini card

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

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



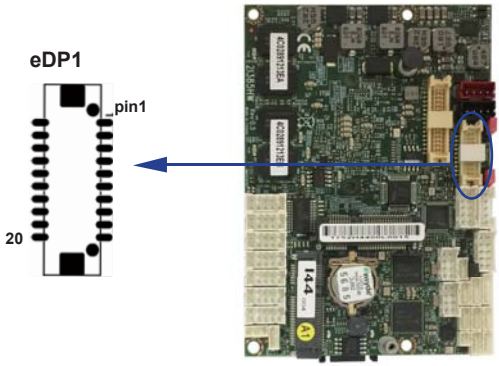
Note: MPCE1 Pin51 mSATA / PCIe auto detect function
mSATA of MPCE1 and SATA1 both signal is same source.
So, If SATA device use on SATA1, the MPCE1 should not use mSATA interface.
MPCE2 can be set PCIe interface for option. mSATA is default.

3-21 eDP interface

- **eDP1: eDP interface (2x10 pin 1.25mm wafer)**

PIN NO.	Description	PIN NO.	Description
1	Lane-0-DATA-	2	+12V or +5V
3	Lane-0-DATA+	4	+12V or +5V
5	Lane-1-DATA-	6	GND
7	Lane-1-DATA+	8	GND
9	Backlight Enable	10	GND
11	PWM dimming for eDP	12	GND
13	I^2C Data	14	+LCD(5V or 3.3V)
15	I^2C Clock	16	+LCD(5V or 3.3V)
17	eDP Aux+	18	+LCD(5V or 3.3V)
19	eDP Aux-	20	GND

Note: 1. eDP interface support 2 lanes.
2. JVL2: eDP panel +5V/+3.3V (default) Voltage select.
3. eDP1 PIN 9 for panel backlight enable. +5V Level
4. eDP1 PIN 11 for panel backlight dimming control
5. Pin 11 back light dimming control.
Provided 200Hz / 275Hz / 380 Hz/ 20KHz / 25KHz /100Hz
and adjust PWM duty cycle by software program.
6. eDP and LVDS backlight dimming control just select one at same time.
Which can be setting in BIOS Setup Menu.



3-22 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
CC1	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	2x5 10Pin	2.0mm	JST	B10B-PHDSS	PHDR-10VS
CG1	2x5 10Pin	2.0mm	JST	B10B-PHDSS	PHDR-10VS
CIO1	2x5 10Pin	2.0mm	JST	B10B-PHDSS	PHDR-10VS
CKM1	1x6 6Pin	1.25mm	MOLEX	53047-0610	51021-0600
CL1	2x4 8Pin	2.0mm	JST	B8B-PHDSS	PHDR-08VS
CL2	2x4 8Pin	2.0mm	JST	B8B-PHDSS	PHDR-08VS
CL11	1x4 4Pin	1.25mm	MOLEX	53047-0410	51021-0400
CL21	1x4 4Pin	1.25mm	MOLEX	53047-0410	51021-0400
CO1	1x4 4Pin	1.25mm	MOLEX	53047-0410	51021-0400
CPI1	1x4 4Pin	2.0mm	JST	B4B-PH-KL	PHR-4
CPI12	2x4 8Pin	2.0mm	JST	B8B-PHDSS	PHDR-08VS
CPP1	1x5 5Pin	2.0mm	JST	B5B-PH-KL	PHR-5
CPO1	1x4 4Pin	2.0mm	JST	B4B-PH-KL	PHR-4
CT1	2x5 10Pin	2.0mm	JST	B10B-PHDSS	PHDR-10VS
CU1	1x4 4Pin	1.25mm	MOLEX	53047-0410	51021-0400
CU2	1x4 4Pin	1.25mm	MOLEX	53047-0410	51021-0400
CU3	1x4 4Pin	1.25mm	MOLEX	53047-0410	51021-0400
CU3	1x4 4Pin	1.25mm	MOLEX	53047-0410	51021-0400

Chapter-4

Introduction of BIOS

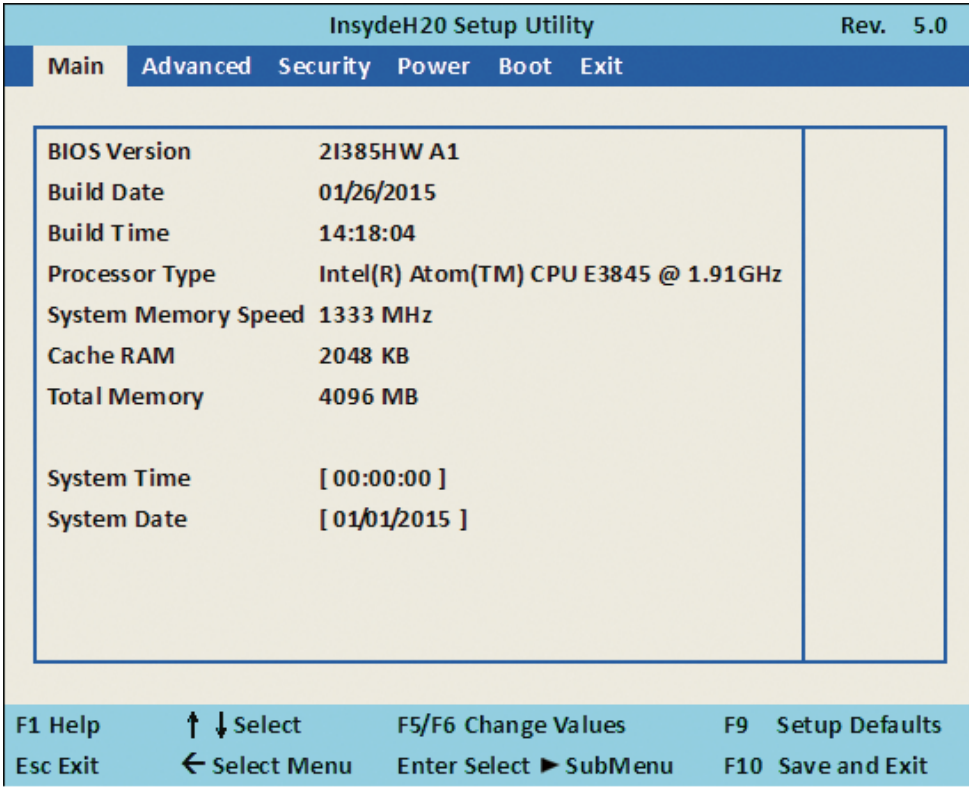
The BIOS is a program located in the Flash Memory on the motherboard.
This program is a bridge between motherboard and operating system.
When you start the computer, the BIOS program gains control.
The BIOS first operates an auto-diagnostic test called POST (Power on Self Test) for all the necessary 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. You may also restart the system by simultaneously pressing <Ctrl>, <Alt> and <Delete> keys.

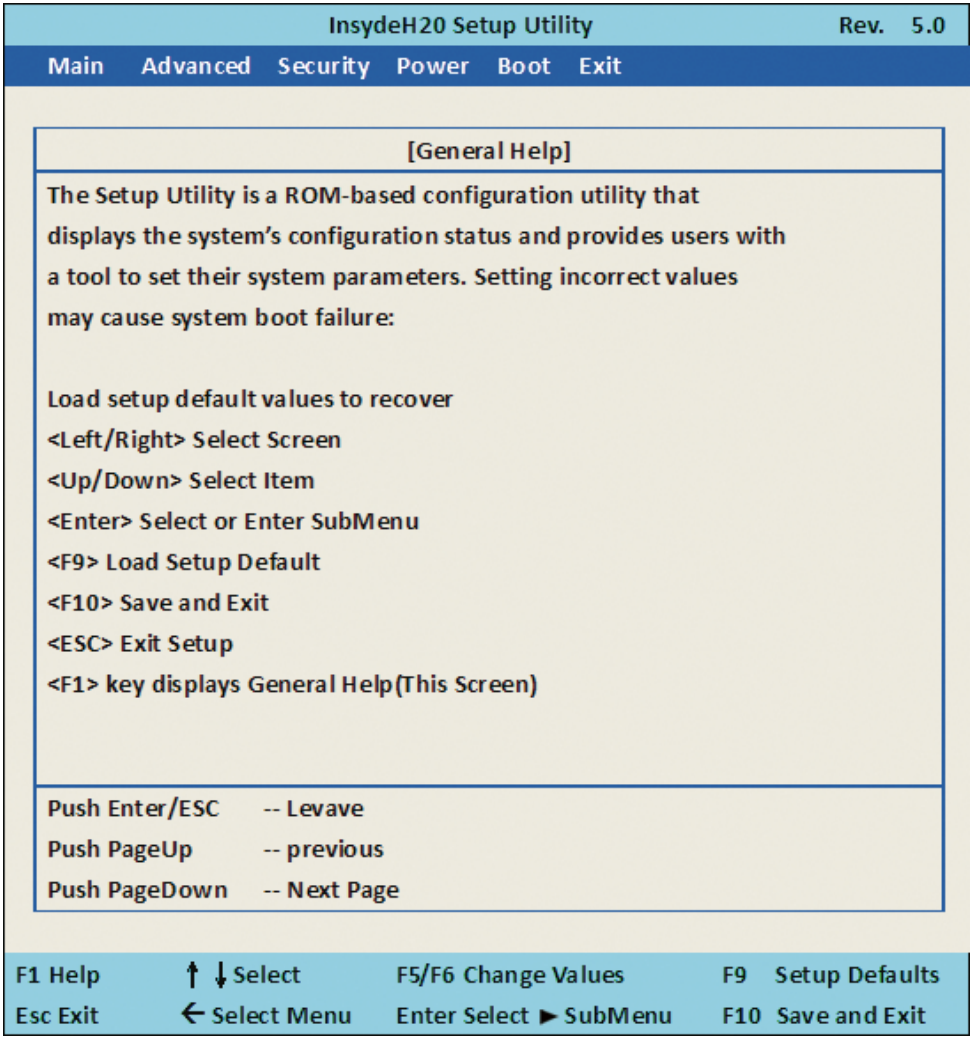
4-2 BIOS Menu Screen & Function Keys



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 <+>/<–> keys when you want to modify the BIOS parameters for the active option.
- [F1]: General help.
- [F2]: Previous value.
- [F3]: Optimized defaults.
- [F4]: Save & Reset.
- Press <Esc> to quit the BIOS Setup.

4-3 Getting 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:

Main To change system basic configuration

Advanced To change system advanced configuration

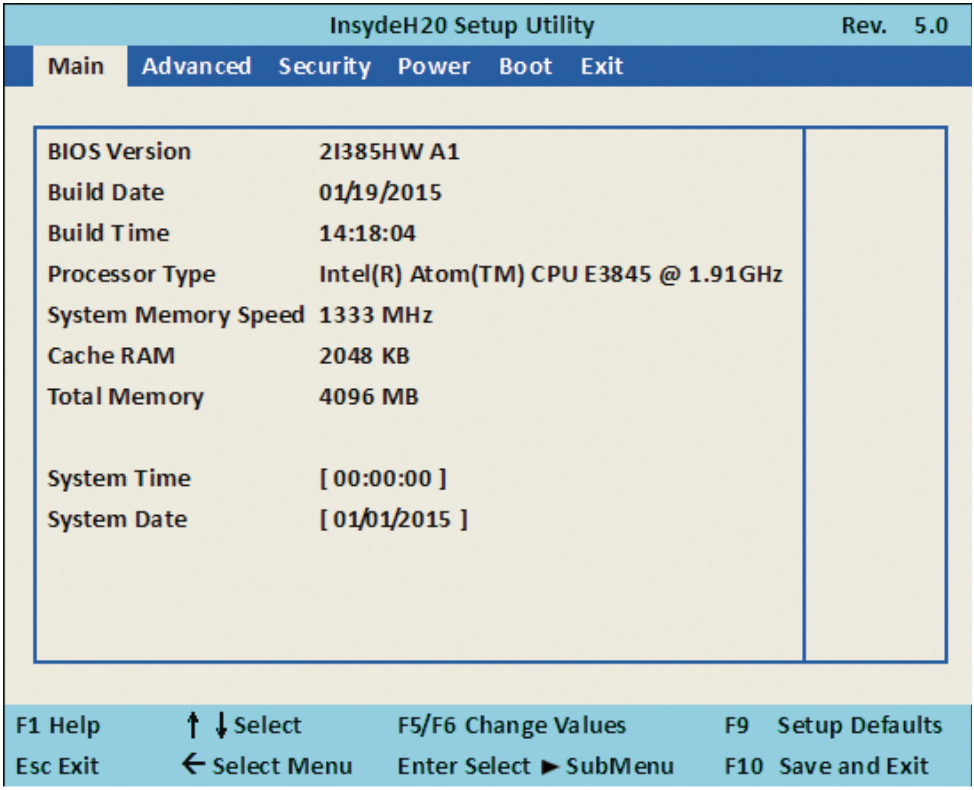
Security Password settings

Power PME & Power button settings

Boot Exit Save setting, loading and exit options.

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

4-5 Main



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.

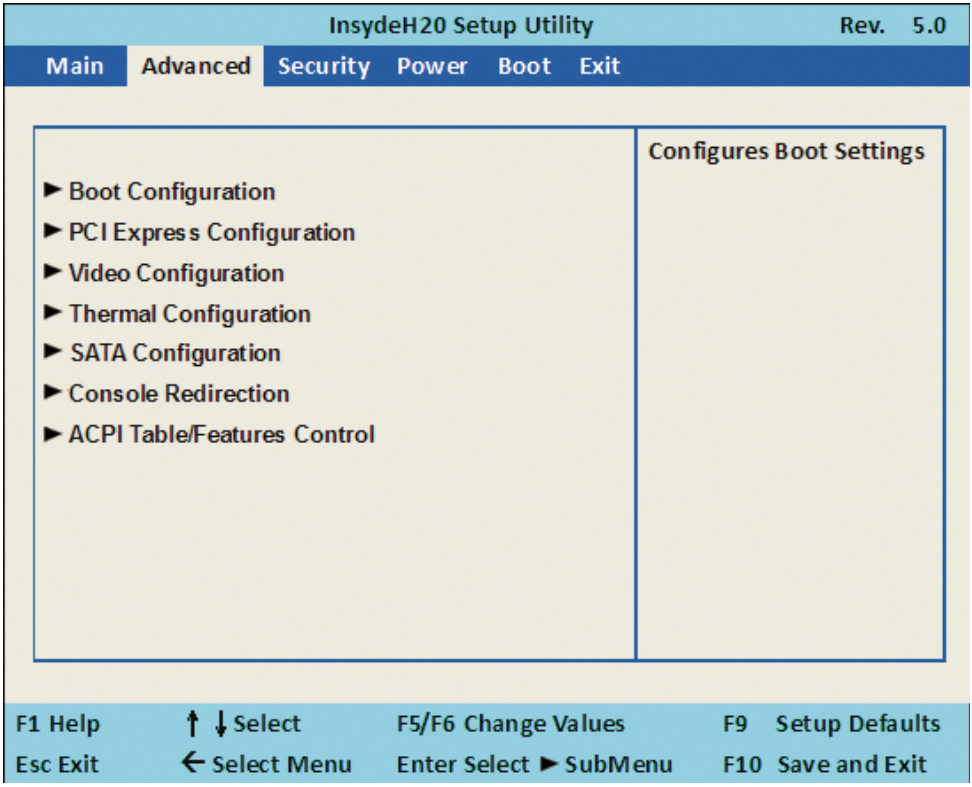
System Date

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

Video Configuration

Please refer section 4-6-3

Thermal Configuration

Please refer section 4-6-4

SATA Configuration

Please refer section 4-6-5

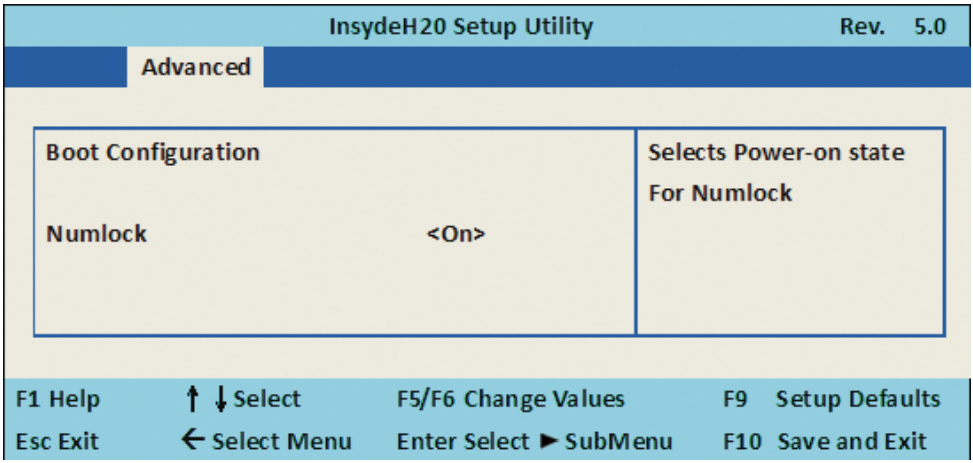
Console Redirection

Please refer section 4-6-6

ACPI Table/Features Control

Please refer section 4-6-7

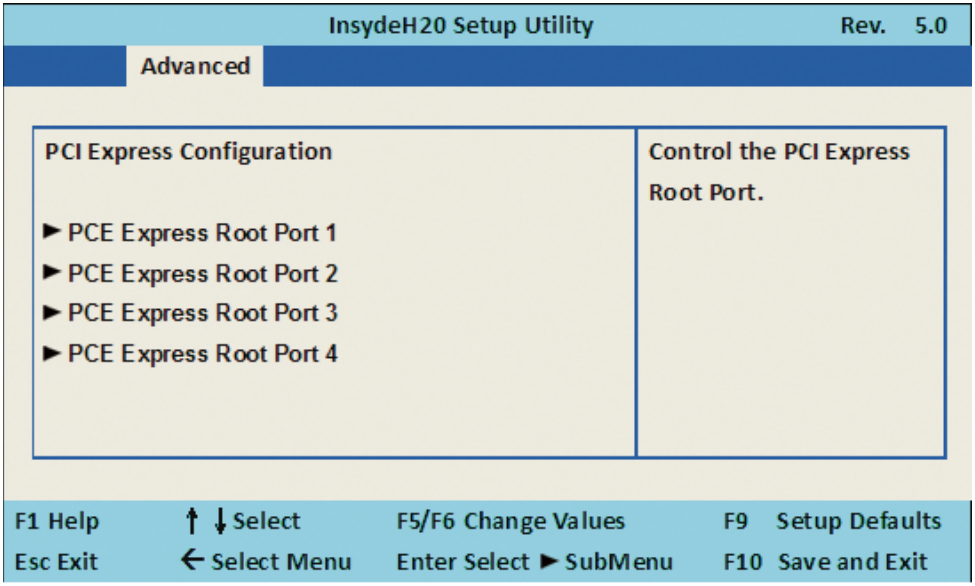
4-6-1 Boot Configuration



Numlock

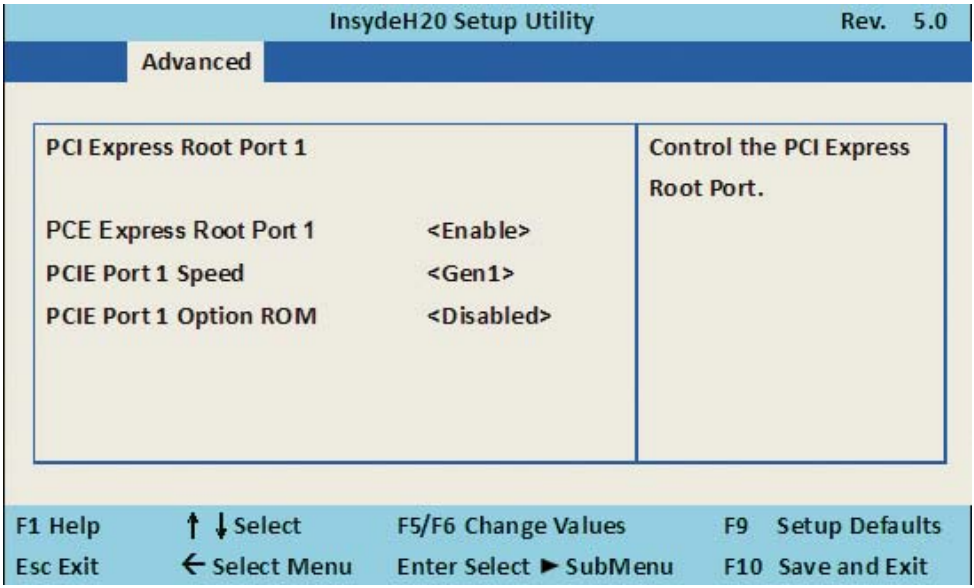
Select Power-on state for Numlock, default is <ON>

4-6-2 PCI Express Configuration



PCIe 1/2/3/4 configuration settings

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



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 Video Configuration

InsydeH20 Setup Utility		Rev. 5.0
Advanced		
Vedio Configuration		Select Hardware CRT Configuration.
Configure CRT as	<CRT>	
Display Panel type	<LVDS>	
Dimming Frequency	<200 Hz>	
Dimming Invert	<Positive>	
Dimming Ration	<100>	
Dimming Save Mode	<Disabled>	
Configure LVDS Panel Number as	<1024 x 768 18bit>	
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

Display Panel type

Select panel type on the M/B, the value are below:

LVDS (default), eDP.

Dimming Frequency

Select panel frequency for dimming to control backlight.

Please refer panel spec to select valid frequency

<200Hz>(Default), <275 Hz>, <380 Hz>, <20K Hz>, <25K Hz>, <100 Hz>

Dimming Invert

Please confirm dimming trigged level in panel spec.

<Positive>(Default>, <Negative>

Dimming Ratio

Change panel brightness it have 10 stage, every stage is
10% from 10% to 100% to increase progressively.

Dimming Save Mode

Disable: When Power off dimming will restore to 100%(default)
Enable: When Power off dimming will not restore to 100%

Configure LVDS Panel Number as

The Panel resolution supported are below:
640 x 480 18bit
800 x 600 18bit
1024 x 768 18bit (default)
800 x 480 18bit
1024 x 600 18bit
1280 x 800 18bit
1366 x 768 18bit
800 x 600 24bit
1024 x 768 24bit
1280 x 800 24bit
1366 x 768 24bit
1280 x 1024 48bit
1440 x 900 48bit
1600 x 1200 48bit
1920 x 1080 48bit
Note: this item for LVDS, if Display type item as eDP, this item will inactive.

Aperture Size

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

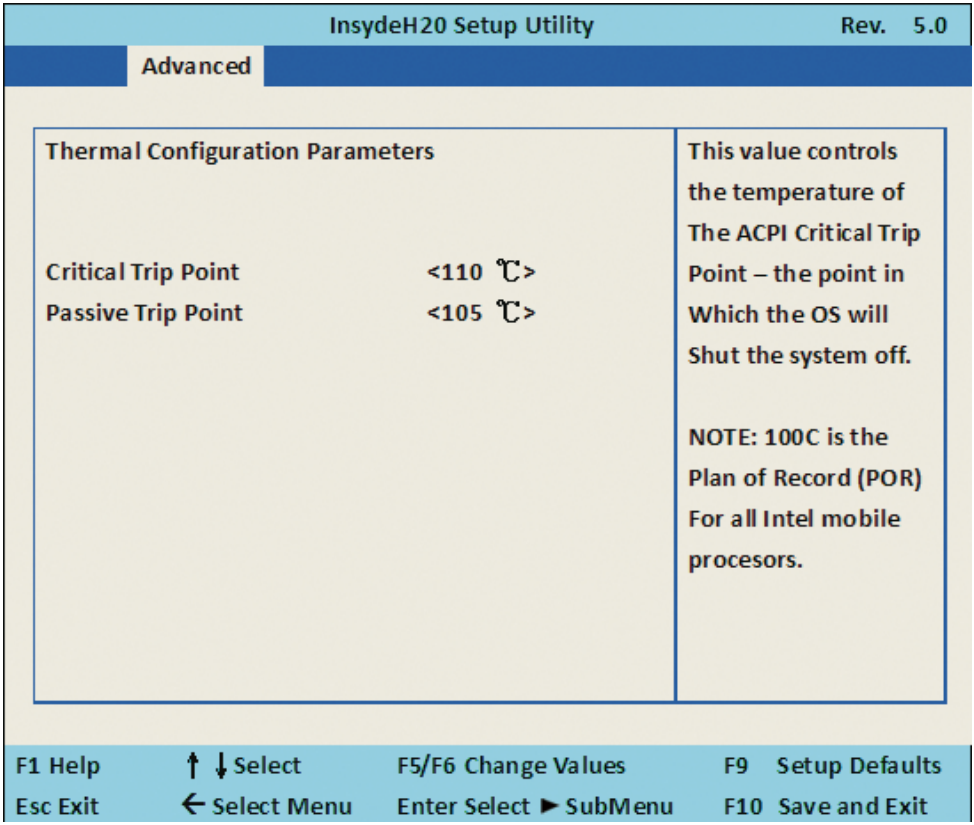
IGD - DVMT Pre-Allocated

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

4-6-4 Thermal Configuration



Thermal Configuration Parameters

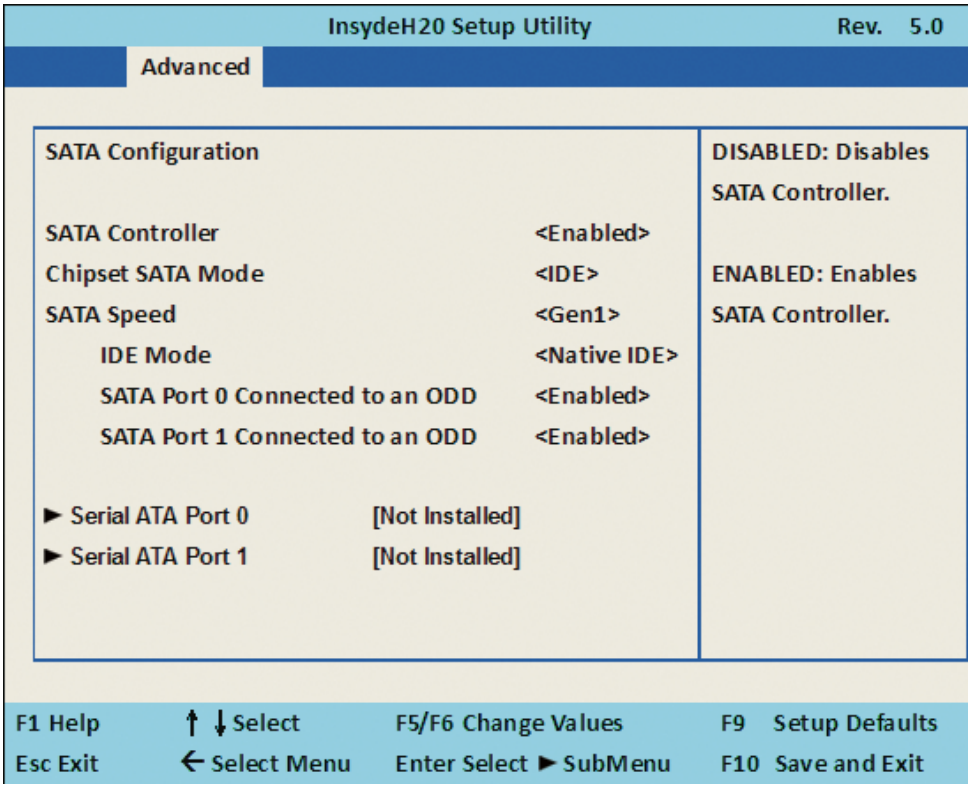
This Value controls the temperature of the ACPI Critical Trip Point, the point in which the OS will shutdown the system.

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˚

4-6-5 SATA Configuration



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

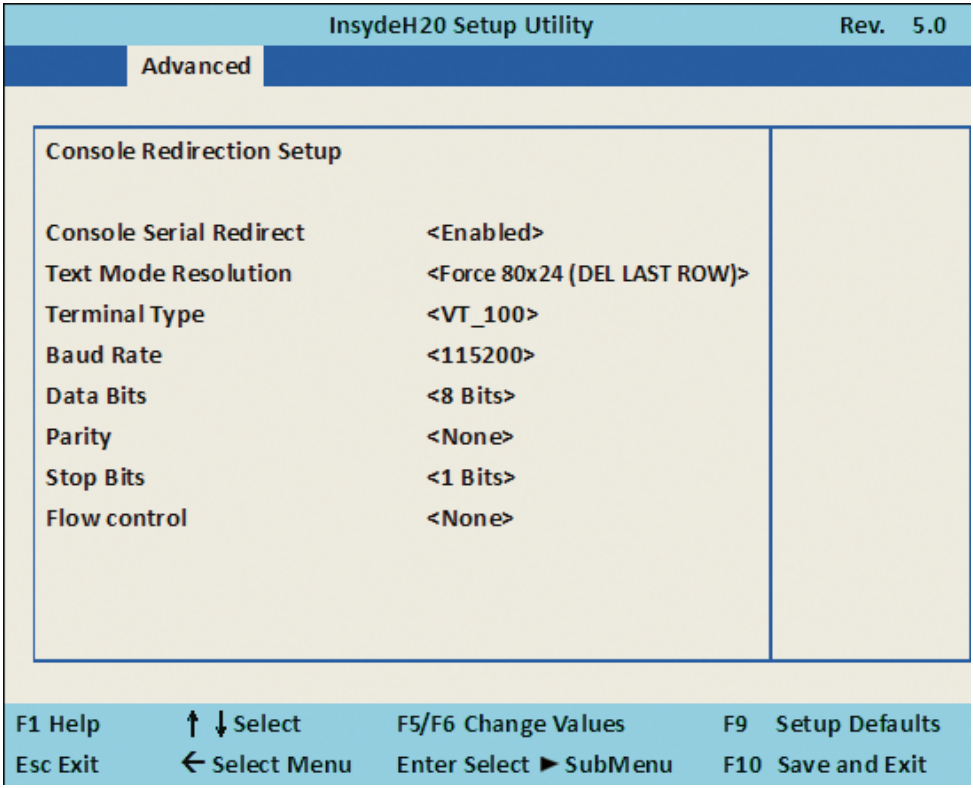
The optional settings are: Enabled(default) or Disable

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

4-6-6Console Redirection



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

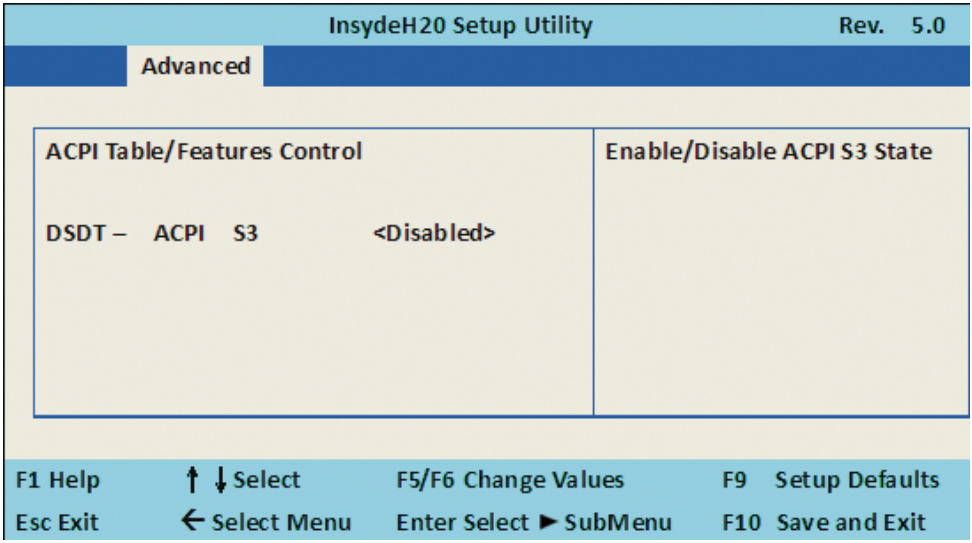
Stop Bits

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

Flow Control

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

4-6-7 ACPI Table/Features Control

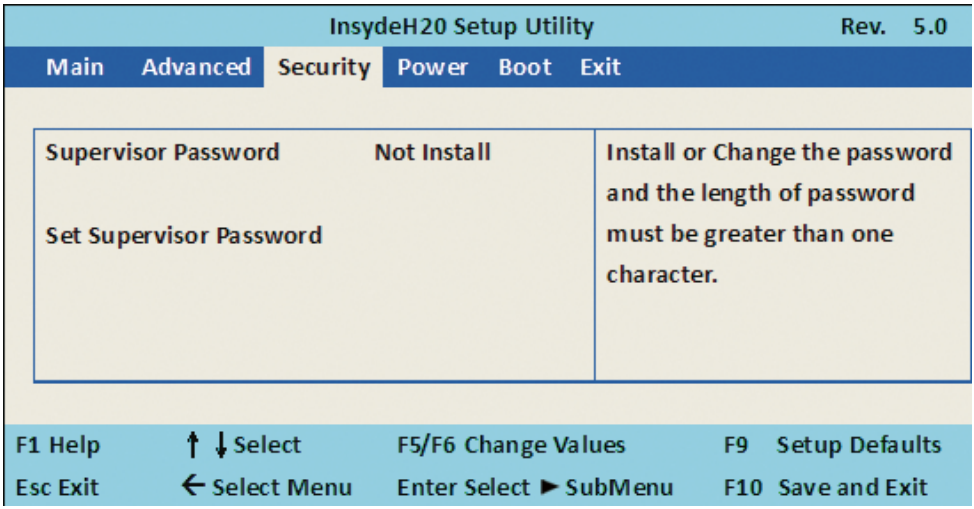


ACPI Table/Features Control

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

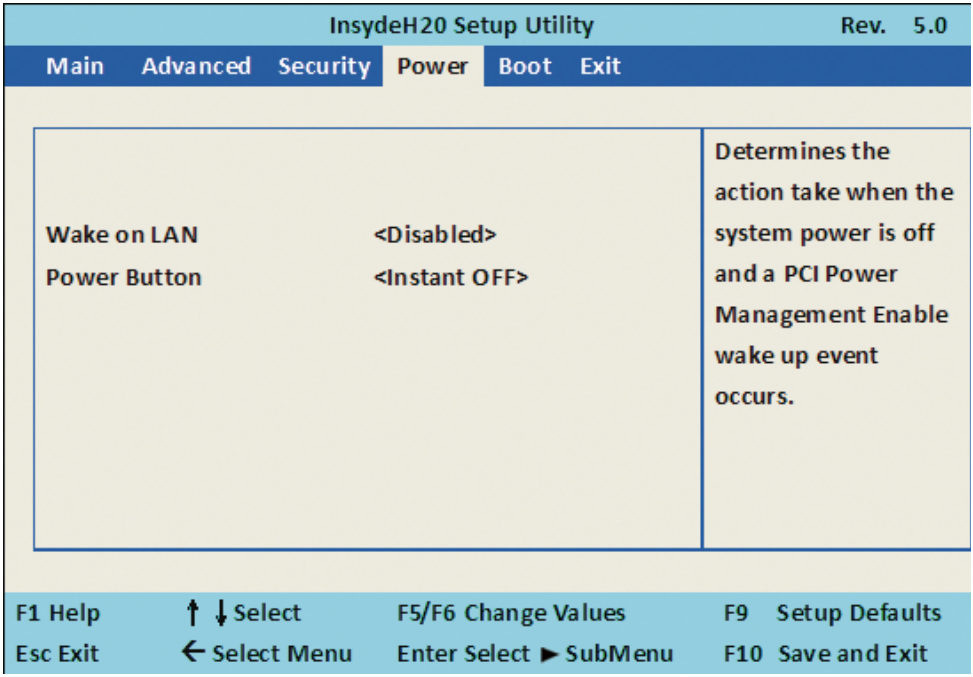


Supervisor Password

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



Wake on LAN

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

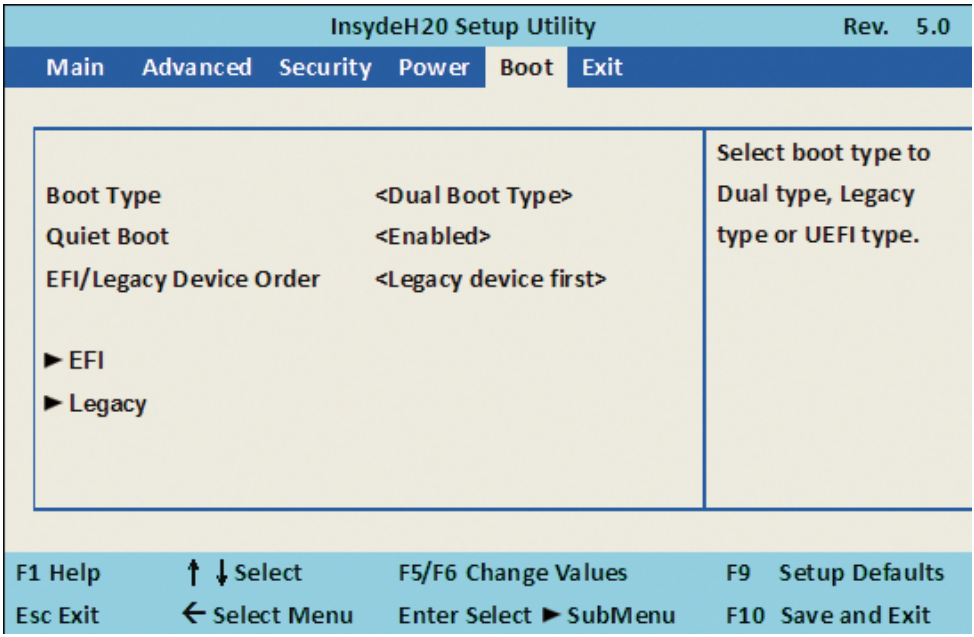
The optional settings: Enabled, Disabled(default)

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



Boot type

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

Quiet Boot

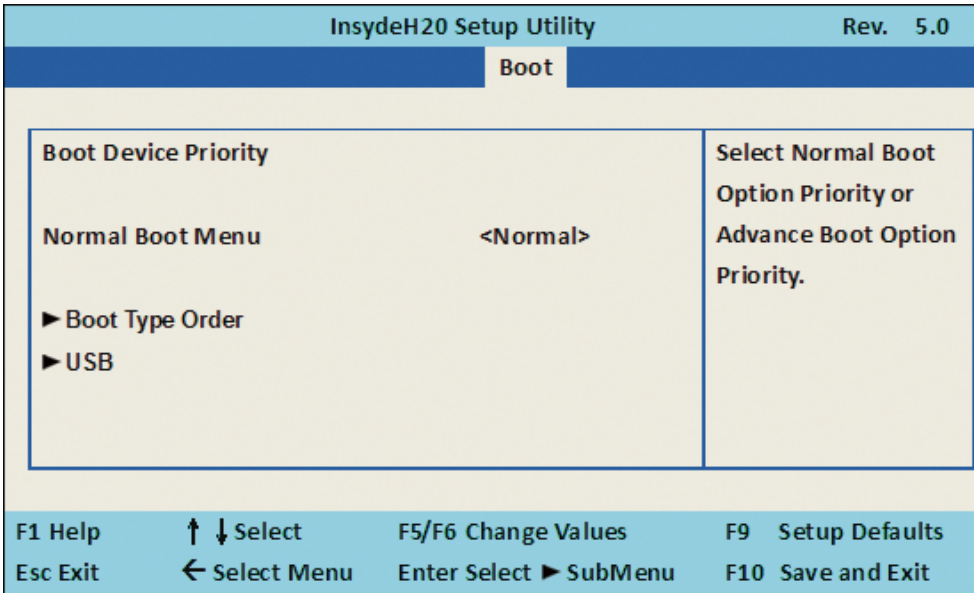
The optional settings are: Enabled(default), Disabled.

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

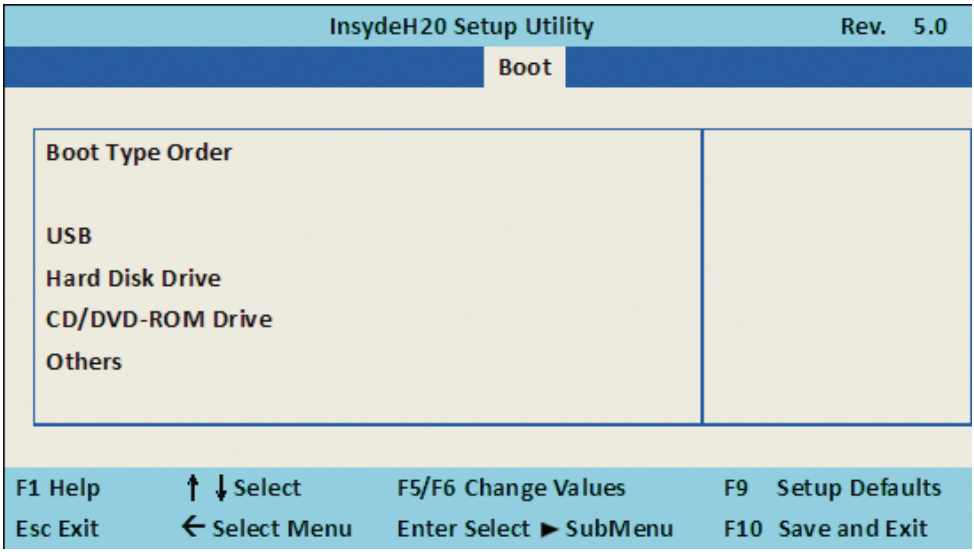


Normal Boot Menu

Select Normal Boot option priority or Advance Boot option priority.

The optional settings: Normal(default), Advance

4-9-2 Boot Type Order

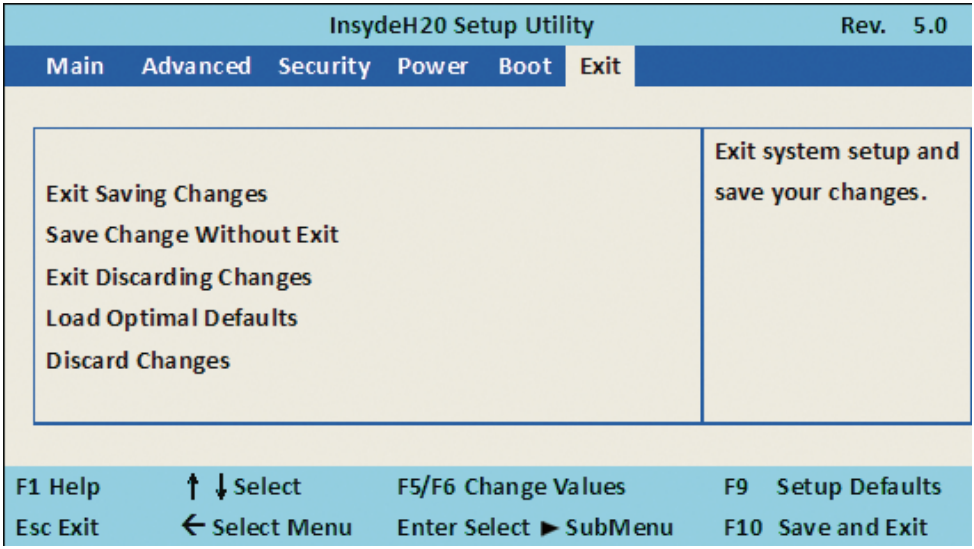


Boot Type Order

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

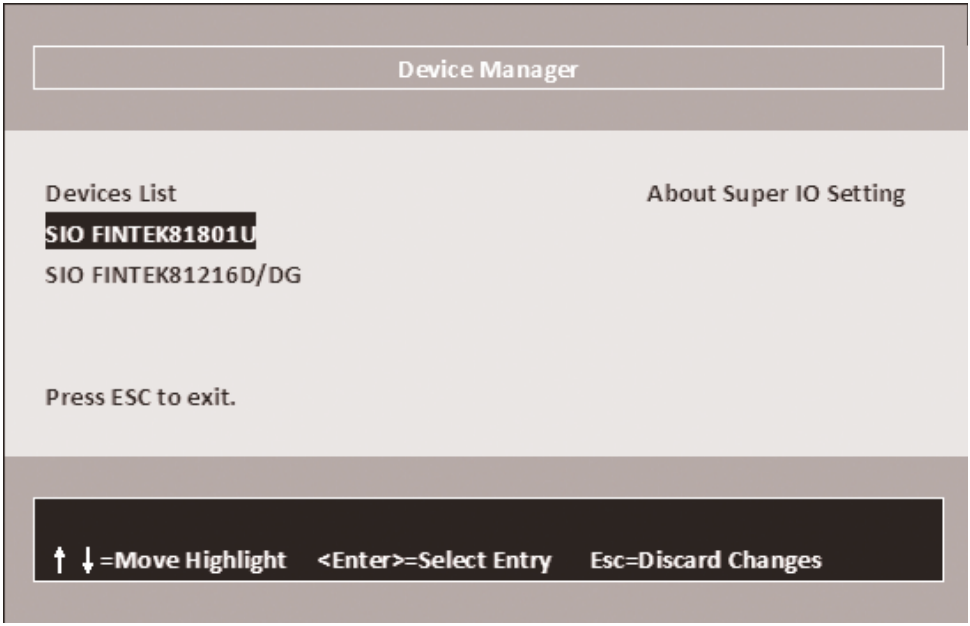
Use this item to restore the optimal default for all the setup options.

Discard Changes

Use this item to cancel all the setup options.

4-11 Device Manager

Please press the key F10 when boot up 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 driver>	
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 or 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.

Power Failure

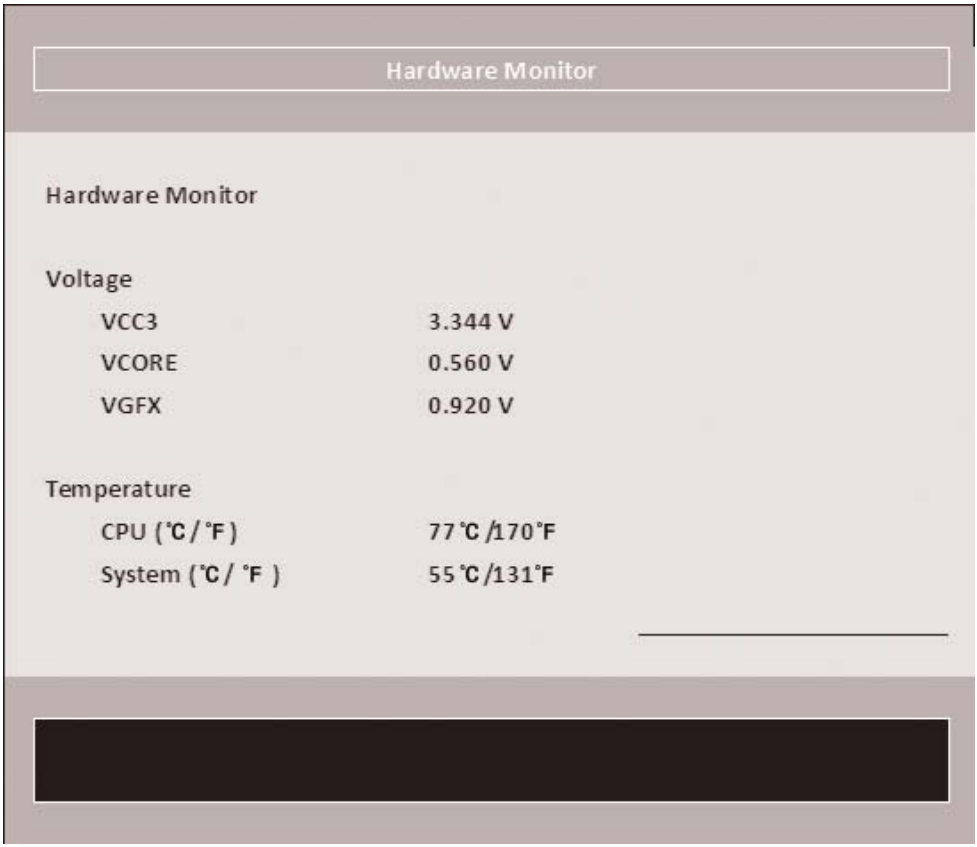
This item specifies whether your system will reboot after a power failure or interrupt occurs.

[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

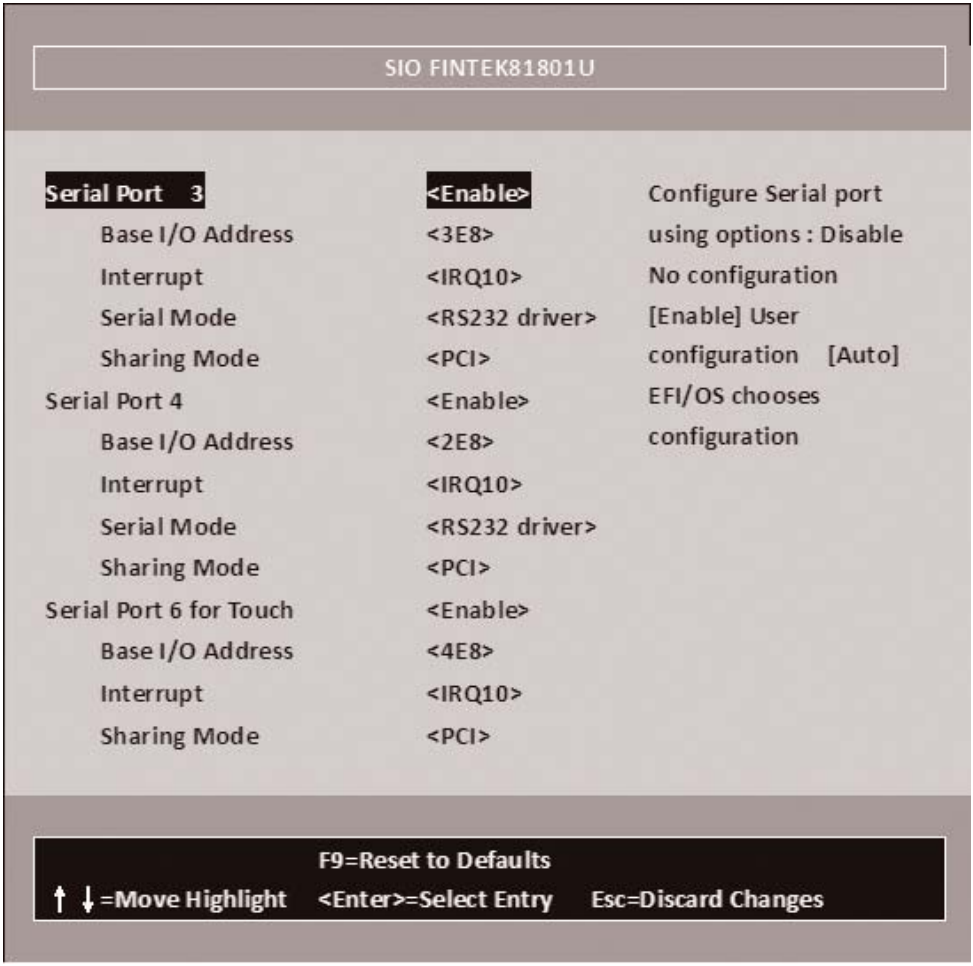


Press [Enter] to view PC health status.

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



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:

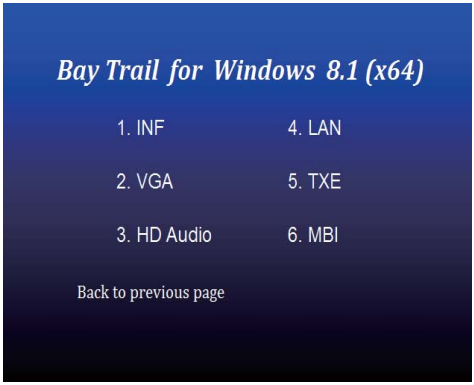
1. Auto Detect Main board and OS to AUTOMATIC DRIVER INSTALLATION menu
2. Browse DVD to view the contents of the DVD
3. Exit to exit SYSTEM INSTALL menu

AUTOMATIC DRIVER INSTALLATION menu

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:

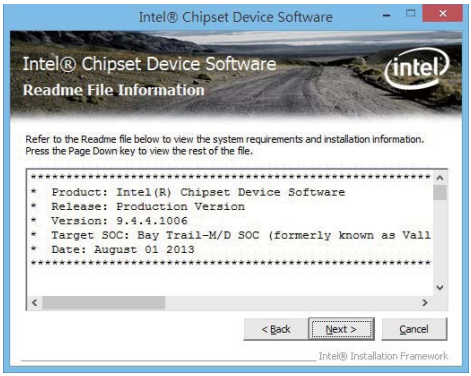
5-1 INF Install Intel Baytrail Chipset Driver (example for WIN8 64bit)



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,

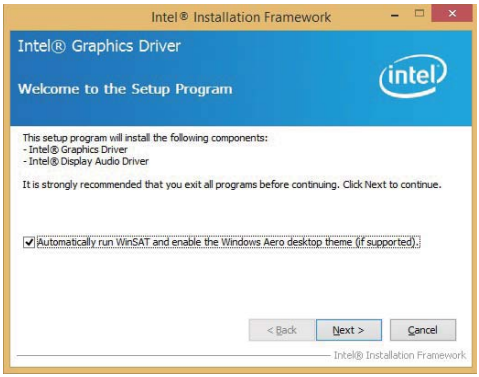
X:\driver\INTEL\BAY\INF\WIN7\infinst_autol.exe

For Windows 8 / 8.1 32/64-bit

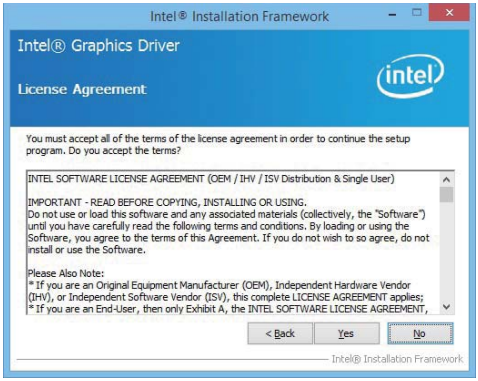
X:\driver\INTEL\BAY\INF\WIN_8_64\infinst_autol.exe

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

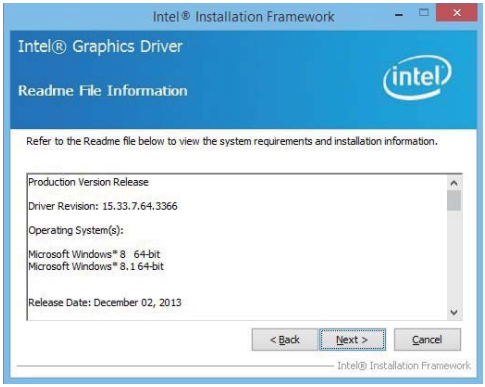
1. At the"AUTOMATIC DRIVER INSTALLATION menu"screen, click "VGA".



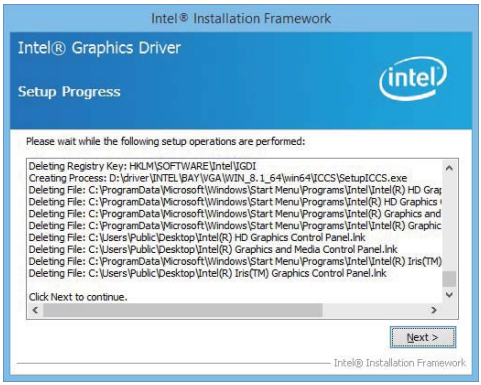
2. At the "Welcome to the Setup Program screen, Click "Next".

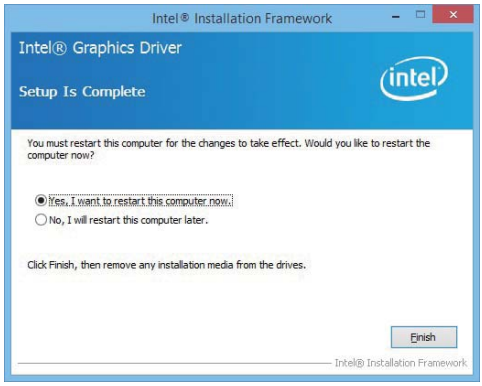


3. At the "License Agreement" screen, Click "Yes"



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





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

6. Click "Finish" to restart computer

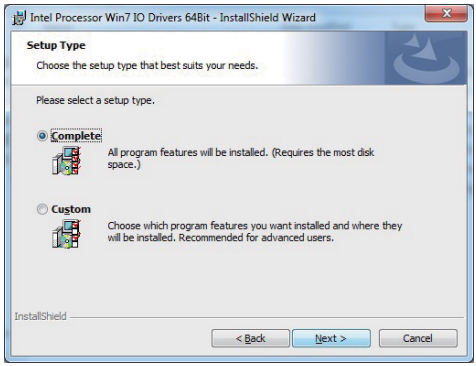
NOTE: SYSTEM INSTALL will auto detect file path
For Windows 7 32-bit,
X:\driver\INTEL\BAY\VGA\WIN_7_32\Setup.exe
For Windows 7 64-bit
X:\driver\INTEL\BAY\VGA\WIN_7_64\Setup.exe
For Windows 8 / Windows 8.1 32-bit
X:\ \driver\INTEL\BAY\VGA\WIN_8_32\Setup.exe
For Windows 8 / Windows 8.1 64-bit
X:\driver\INTEL\BAY\VGA\WIN_8_64\Setup.exe

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

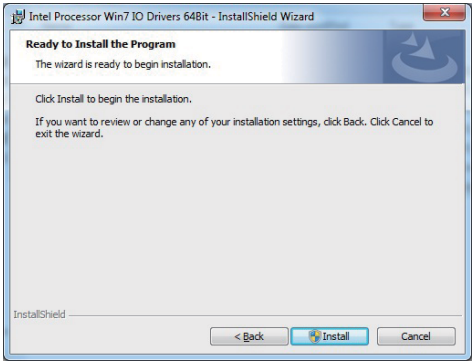
1. At the "AUTOMATIC DRIVER INSTALLATION menu" screen, click "Serial IO".

2. At the "Welcome to the Setup Programscreen, Click "Next".

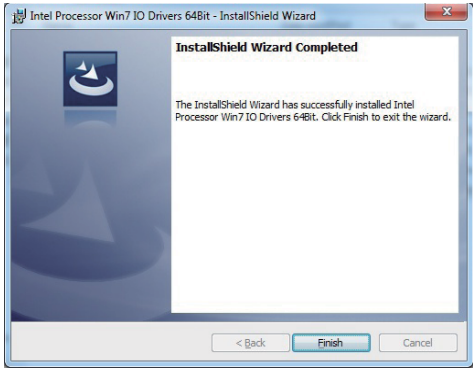
3. At the "License Agreement" screen, Click "Yes"



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



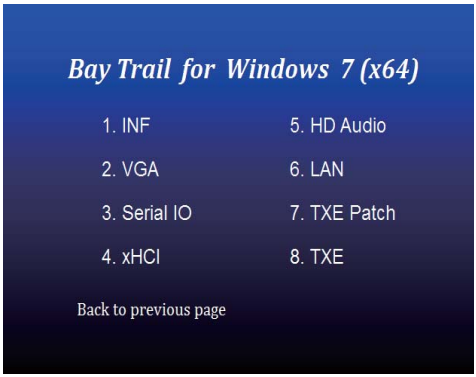
5. At the "Ready to install the program" screen, Click "Install"



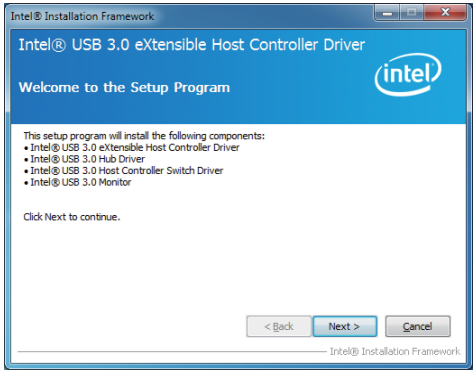
6. Click "Finish" and restart computer

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

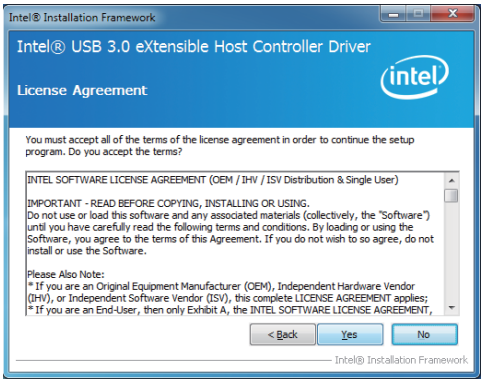
5-4 xHCI Install Intel USB 3.0 xHCI Driver (FOR Windows 7 only)



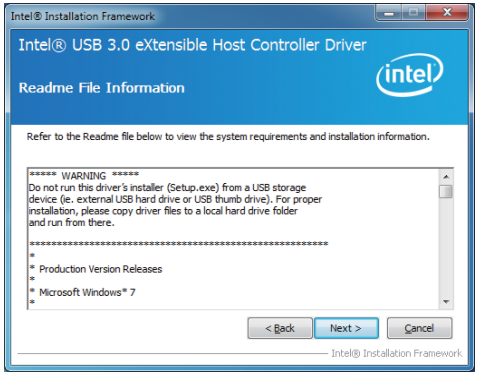
1. At the"AUTOMATIC DRIVER INSTALLATION menu" screen, click " xHCI".



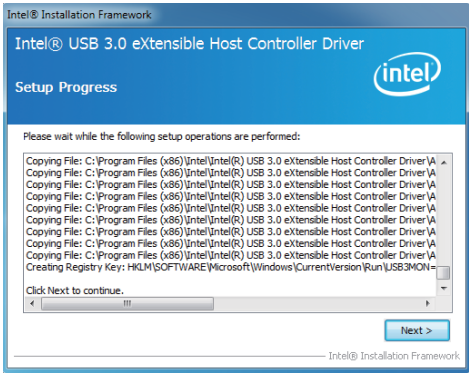
2. At the "Welcome to the Setup Programscreen, Click "Next".



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



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



Intel® USB 3.0 eXtensible Host Controller Driver

Setup Progress

Please wait while the following setup operations are performed:

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

Click Next to continue.
```

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

Intel® USB 3.0 eXtensible Host Controller Driver

Setup Is Complete

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

● Yes, I want to restart this computer now.

○ No, I will restart this computer later.

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

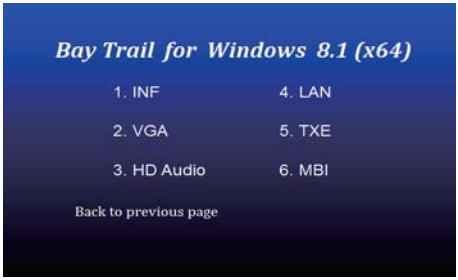
6. Click "Finish" to restart computer

NOTE: SYSTEM INSTALL will auto detect file path

For Windows 7 32 / 64-bit,

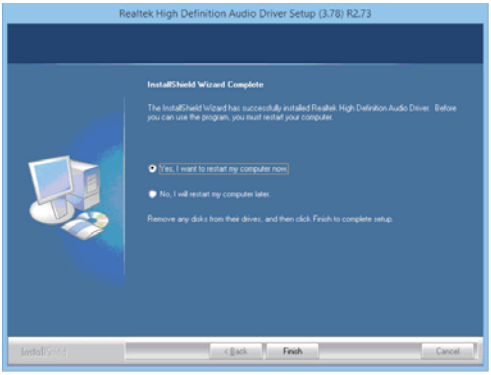
X:\driver\INTEL\BAY\XHCI\Driver_Installer\Setup.exe

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



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

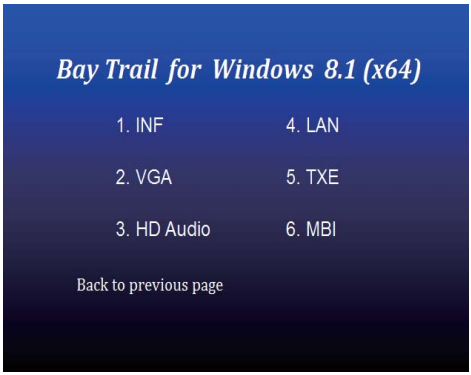
2. Click "Next".



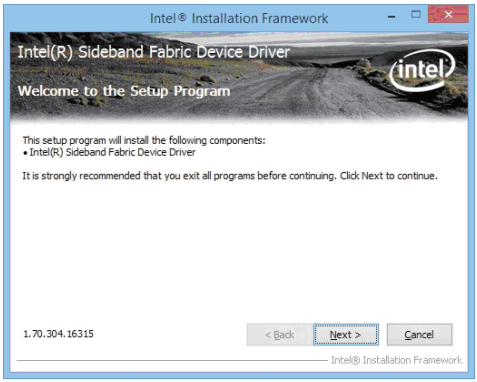
3. Click "Finish" to restart computer

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

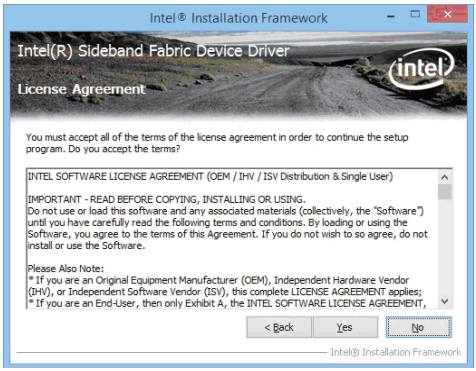
5-6 MBI Install Intel MBI Driver (FOR Win 8/8.1 only)



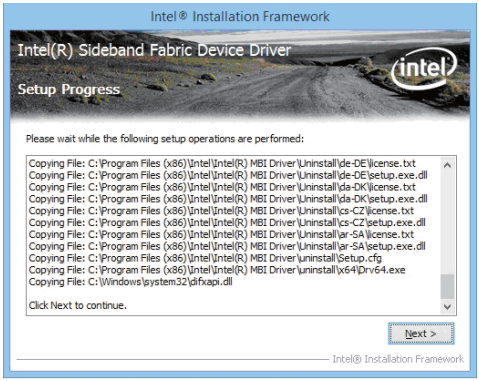
1. At the "AUTOMATIC DRIVER INSTALLATION menu", click "HD Audio"



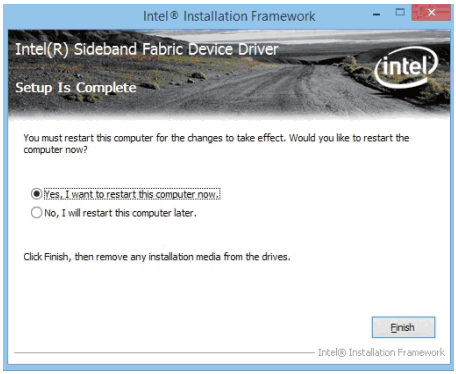
2. At the "Welcome to the Setup Program screen, Click "Next".



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

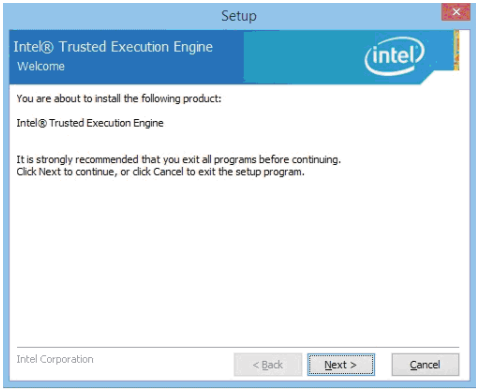
For Windows 8/8.1 32 / 64-bit,

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

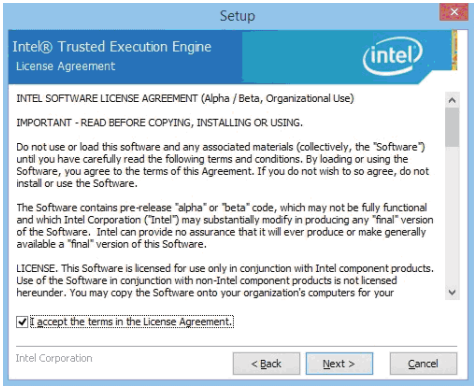
5-7 TXE Install Intel TXE driver

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

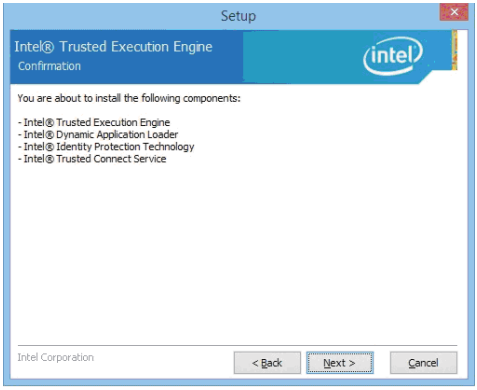
1. At the "AUTOMATIC DRIVER INSTALLATION menu", click "TXE"



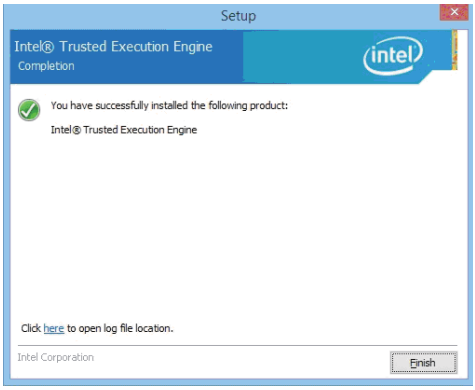
2. At the "Setup" screen, Click "Next".



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

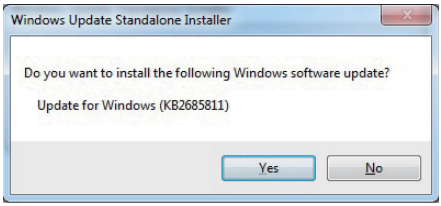
For Windows 8.1 32 / 64-bit,

X:\driver\INTEL\BAY\TXE\WIN_8.1\SetupTXE.exe

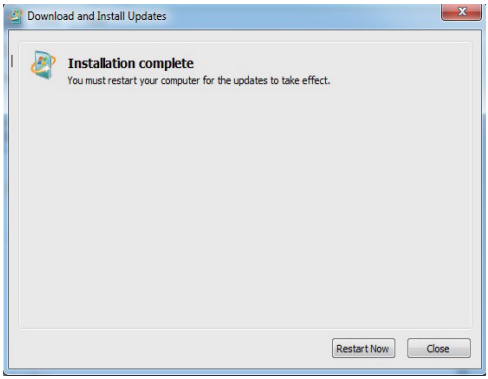
5-7-2 TXE Install for WIN7

Please install PXE Patch first.

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

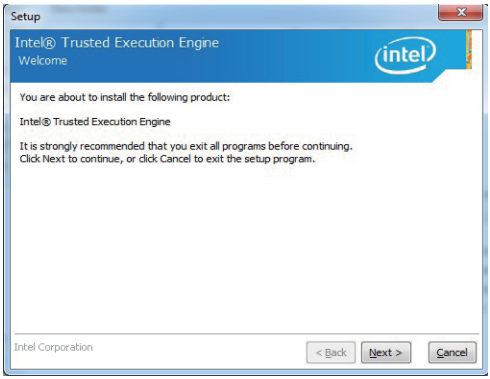


2. At the "Windows Update" screen, Click "Yes".



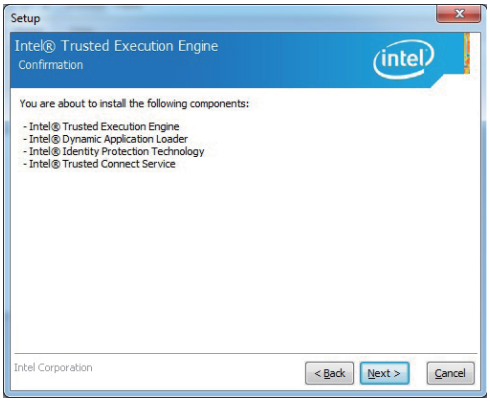
3. Click "Finish" & restart computer

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

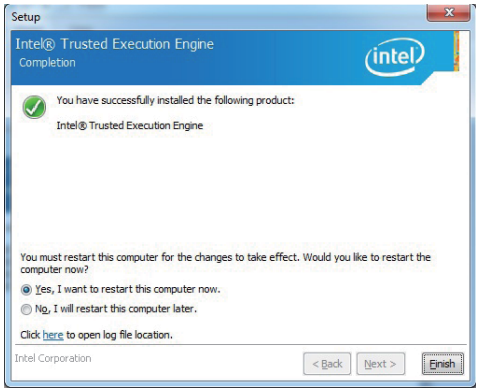


5. At the "TXE Setup" screen, Click "Next".

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 2I385H 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 2I385HA2.ROM –BIOS -ALL

2I385HA2.ROM is the file name of the latest BIOS.

It may be 2I385HA1.ROM or 2I385HA2.ROM, etc.

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

By Bay Trail series mainboard, please type

X:\: H2OFFT-D.EXE 2I385HA2.ROM –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 E3815 1.46 Ghz / E3845 1.91 Ghz
SDRAM	DDR3L 1066 2GB / DDR3L 1333 4GB
Operating System	Windows 7 / SP1
Test Program	3D Mark 06
HDD 2.5" SATA	Slim Type HDD
mSATA	32GB

Test Result for reference only !

Hard Disk	Processor	Power off	Start up		Operation Maximum	Shut down Maximum	In Put Voltage
			Maximum	Stable			
Slim Type HDD	E3845	0.13A	1.02A	0.64A	1.25A	0.94A	12V
		0.09A	0.54A	0.35A	0.67A	0.49A	24V
	E3815	0.16A	0.90A	0.62A	0.96A	0.76A	12V
		0.10A	0.44A	0.33A	0.52A	0.42A	24V
mSATA	E3845	0.18A	0.97A	0.63A	1.15A	0.85A	12V
		0.09A	0.50A	0.33A	0.64A	0.46A	24V
	E3815	0.17A	0.71A	0.53A	0.82A	0.65A	12V
		0.10A	0.40A	0.31A	0.45A	0.36A	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: F75111N I²C DIO device

1-1 IO Device:F75111 under DOS

The Sample code source you can download from

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

Binary file: F75111_Dos_Bin.rar

USERNAME & PASSWORD: sf

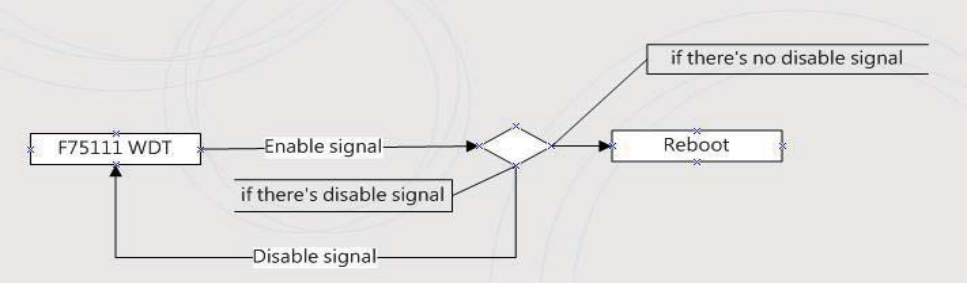
How to use this Demo Application

1.Boot Ms-Dos Operating System

2.execute "75WDT.EXE" binary file

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

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



Introduction

How to use this Demo Application

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

How to use this Demo Application

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

How to use this Demo Application

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

1-2 IO Device: F75111 under Windows

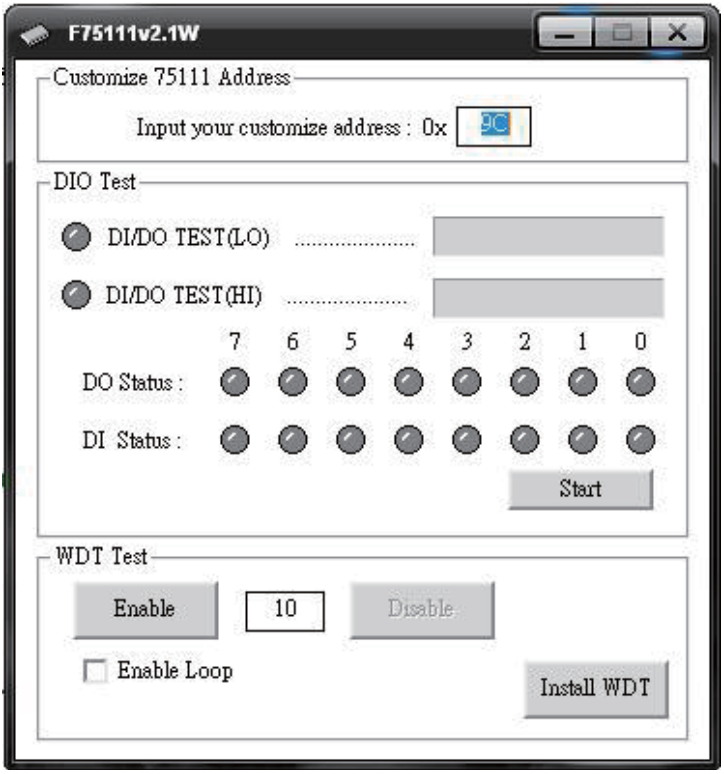
The Sample code source you can download from

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

Binary file: F75111_DemoBin.rar

USERNAME & PASSWORD: sf

How to use this Demo Application



1. Press the "Start" button to test DIO function

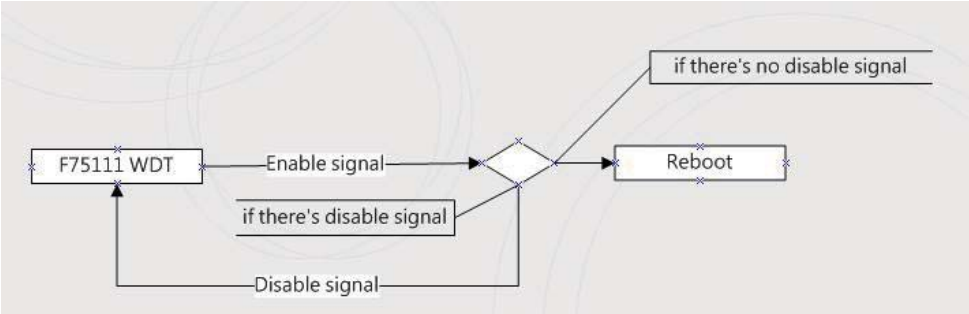
2. Press the "Enable" button to test WDT function

3. Press the "Disable" button to disable WDT

4. Check the "Enable Loop" box and press "Enable" to do WDT loop test

5. Press "Install WDT" to set the system to autorun this application when booting, press again to remove this application when booting.

**6. If WDT enable, system icon will be  . if disable, system icon will be  **



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

Introduction

Initial Internal F75111 port address (0x9c)

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

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

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

Enable/Disable WDT

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

PULSE mode

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

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

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

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

Get Input value

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

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

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

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

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

    return byteData;
}
```

Enable WatchDog

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

Disable WatchDog

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

1-3 IO Device: F75111 VB6 under Windows

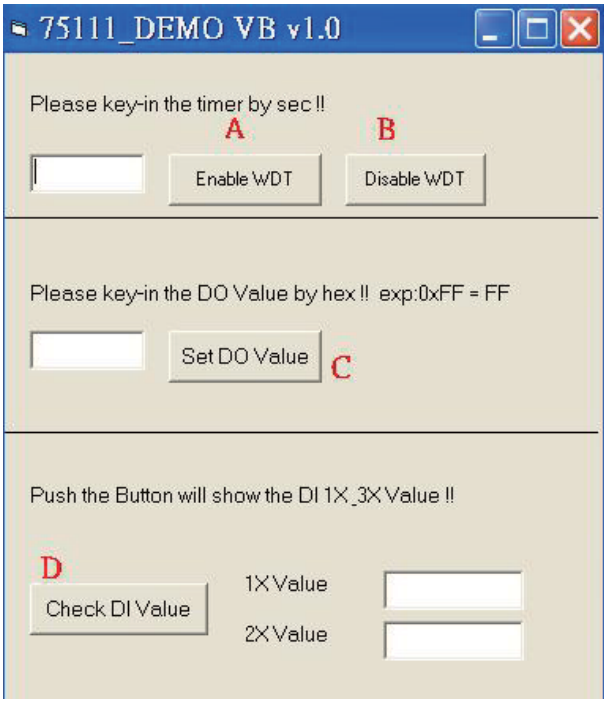
The Sample code source you can download from

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

Binary file: 75111_VB_Src.rar

USERNAME & PASSWORD: sf

How to use this Demo Application



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

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

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

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

SDK Function Introduction

Function EnableWDT

```
Function EnableWDT(timer As Integer)

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

  End Function
```

Function DisableWDT

```
Function DisableWDT()

Call WriteI2CByte(&H36, &H0)

  End Function
```

Function SetDOValue

```
Function SetDOValue(dovalue As Integer)

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

End Function
```

Function CheckDIValue

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

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

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

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

End Function
```

1-4 IO Device: F75111 under linux

The Sample code source you can download from

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

Binary file: F75111v2.0LBin.tar.gz

USERNAME & PASSWORD: sf

How to compile source code

1. Compile source code with Code::Blocks

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

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

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

Linker Setting->Other linker option")

2. Compile source code with "make"

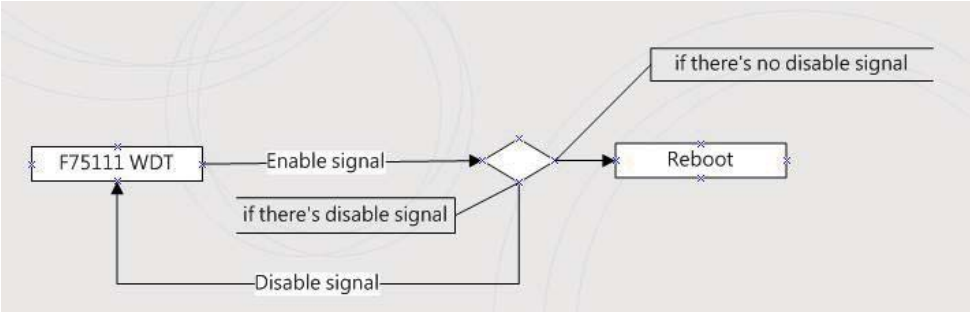
1.cd F75111

1.make

1.src/f75111 // execute the binary file

How to use this Demo Application

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



p.s.
f75111 send "F75111_SetWDTEnable(BYTE byteTimer)" including a parameter "timer",
if there's no disable signal (F75111_SetWDTDisable()) to stop it before timer countdown to 0, System will reboot.
if there's disable signal received, resent Enable WDT signal, for a loop to prevent from reboot 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 & 0x0FF);
}
```

Initial internal F75111

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

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

Set output value

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

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

Get Input value

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

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

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

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

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

   return byteData;
}
```

Enable WatchDog

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

Disable WatchDog

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