

3I610BW/HW

**Intel Skylake-U / Kaby Lake-U Core i CPU,
DDR4 2133 MT/s SODIMM, 3 x LAN / HDMI / USB /
COM / PCIe mini card**

All wafer IO

**Intel Skylake-U / Kaby Lake-U Core i CPU,
3 x Intel GbE LAN, 2 x PCIe mini card slots, HDMI, LVDS, Touch Screen
7 x USB, 6 x COM, Wide Range DC-IN, Battery Charger function**

NO. 3I610BW/HW

Release date: Aug. 01. 2018

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User Manual edition 0.1, AUG. 01. 2018

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

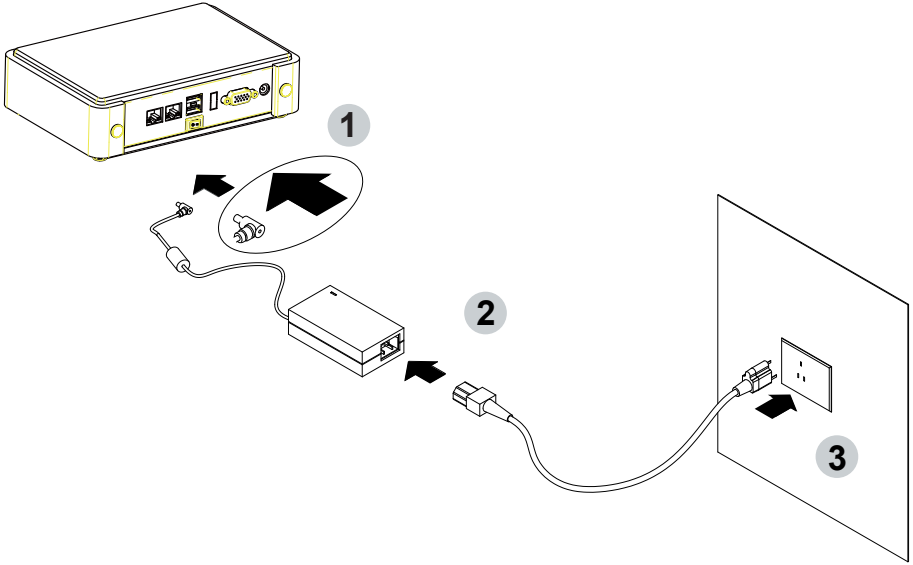
1. Before linking power supply with the motherboard, please attach DC-in adapter to the motherboard first. Then plug the adapter power to AC outlet.
Always shut down the computer normally before you move the system unit or remove the power supply from the motherboard. Please unplug the DC-in adapter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

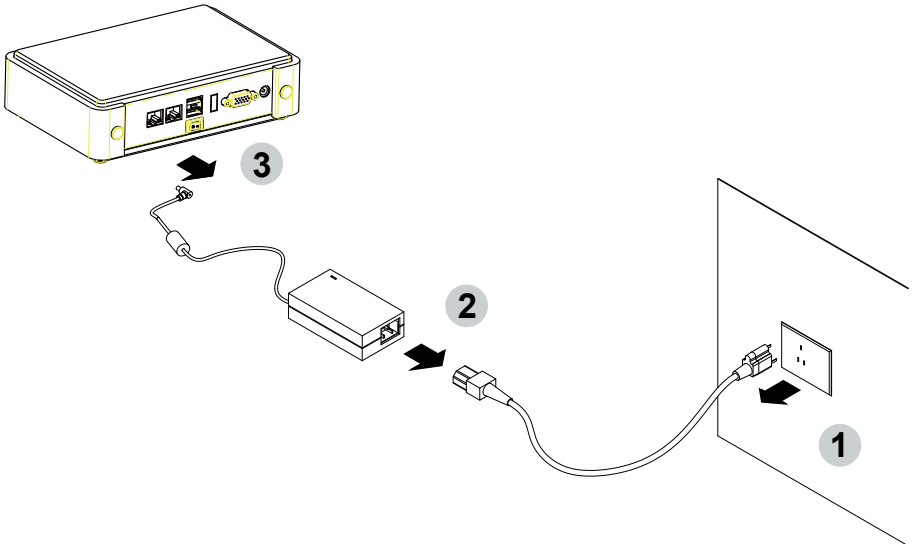
Always insert / unplug the DC-in horizontally & directly to / from the motherboard. DO NOT twist, it is designed to fit snugly. Moreover, erratic pull / push action might cause an unpredictable damage to the component & system unit.

Photo 1

Insert



Unplug



Chapter-1

General Information

The 3I610HW/BW is a 3.5" (146 x 102 mm) motherboard with Intel® Skylake-U SoC processor to give users fast, convenient and simplified solutions for industrial and embedded applications. This platform with all wafer IO design delivers high flexibility toward expanded functions and also provides user hassle-free solution of integrating the SBC board at various mechanical chassis. 3I610HW/BW's all wafer IO design delivers high flexibility toward expanded functions and also provides user hassle-free solution of integrating the SBC board within various mechanical enclosures. The battery charger feature makes this platform well suited for many reliability and mobility constrained embedded applications, such as Automation Control, Transportation, ATM machines, medical / hospital station and warehouse solution.

The 3I610HW/BW supports high-speed data transfer interfaces such as PCIe gen3, USB 3.0, and SATA 6 Gb/s (SATA III), with two-channels DDR4 2133 MHz memory up to 32 GB SODIMM slot and supports six serial ports RS232 / RS485 / RS422 jumper free auto switch by BIOS and +5V/12V selectable by jumper. It supports 4 ports of USB 3.0, 3 ports of USB 2.0. The expandable interfaces include 1 full-size PCIe Mini card for PCIe x 1 or mSATA (auto-detection) and USB interface, and 1 full-size PCIe Mini card for PCIe x 1 and USB interface and two SATA III ports, as well as graphics interface for HDMI & VGA displays. There is one SIM socket onboard for the mini card (mini card 2) to get the 3G/4G communication easier and quickly

The embedded motherboard 3I610HW/BW is specially designed with wide-Range Voltage DC in (9~36V) for widely varying input voltage requirement. It supports with three 10/100/1000 Mbps Ethernet for seamless broadband connectivity. With Wake-On LAN function and the PXE function in BIOS, these are perfect control boards for networking devices. It also supports 1 LVDS interface for LCD Panel with touch function and 1 panel inverter power for Panel dimming control. It suitable for ALL-IN ONE Panel PC, POS Kiosk and automation control systems. All wafer IO design offers superb performance and PC specification in the industry using the specific housing.

Please kindly contact LEX (info@lex.com.tw) if you have any further query or want to get the detail information.

1-1 Major Feature

1. Intel® Celeron 3955U Processor 2.0GHz, (Dual core), Intel® Core i5-6200U Processor 2.3GHz / 2.8GHz (Dual core), Intel® Core i7-6600U Processor 2.6GHz / 3.4GHz (Dual core)
2. Intel 9th generation (Gen 9) LP graphics and media encode/decode engine, Intel® Celeron 3955U 300MHz / 900MHz, Intel® Core i5-6200U 300MHz / 1GHz, Intel® Core i7-6600U 300MHz / 1.05GHz
3. Support LVDS 2 Channels 48bits, Max up to 1920 x 1080 resolution, HDMI 1.4b up to 3840 x 2160, VGA up to 1920 x 1200
4. DDR4 SODIMM slot x 2, up to 32GB
5. Support 3 x 10 / 100 / 1000 Mbps Intel LAN ports.
6. Support 6 x RS232 auto switch to RS485 / RS422 by BIOS
7. 2 x USB 3.0 and 4 x USB 2.0
8. ALC886 HD Audio Specification 1.0, Two channel Class D Audio Amplifier
9. Support extended 1 x full-size Mini PCIe card for PCIe x 1 / mSATA (auto-detect) and USB interface, 1 x full-size Mini PCIe card for PCIe x 1 and USB interface.
10. 1 SIM card socket pair with MPCE2
11. Support 2 SATA port
12. Support PS2 Keyboard Mouse
13. Hardware digital Input & Output, 16 x DI / 16 x DO, Hardware Watch Dog Timer, 0~255 sec programmable
14. On board charger for 2S(7.4~8.7V) battery pack (BW only)
15. Support TPM 2.0 (Optional)
16. Wide Range DC IN +9V~36V
17. PCB Dimension: 146 x 102 mm

1-2 Specification

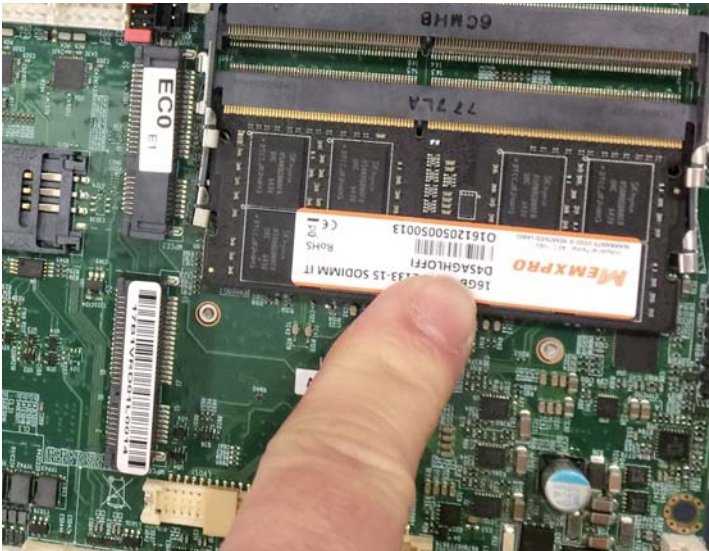
1. **SOC:** Intel® Celeron 3955U Processor 2.0GHz, (Dual core), Intel® Core i5-6200U Processor 2.3GHz / 2.8GHz (Dual core), Intel® Core i7-6600U Processor 2.6GHz / 3.4GHz (Dual core)
2. **Memory:** DDR4 SODIMM slot x 2, up to 32GB
3. **Graphics:** Intel 9th generation (Gen 9) LP graphics and media encode/decode engine, Intel® Celeron 3955U 300MHz / 900MHz, Intel® Core i5-6200U 300MHz / 1GHz, Intel® Core i7-6600U 300MHz / 1.05GHz. Support LVDS 2 Channels 48bits, Max up to 1920 x 1080 resolution, HDMI 1.4b up to 3840 x 2160, VGA up to 1920 x 1200
4. **SATA:** Integrated Serial ATA Host Controller 2 SATA port, SATA Gen3 Data transfer rates up to 6.0 Gb/s (600 MB/s).
5. **LAN:** 1 Intel I219LM Giga Phy & 2 Intel I210-IT LAN chipset with 10 / 100 / 1000 Mbps for PCIe x 1 V2.1
6. **I/O Chip:** F81966D I/O chipset for 6 ports RS232/RS422/RS485 auto switch by BIOS
7. **USB:** 4 type A USB 3.0, 3 USB 2.0
8. **Sound:** Support line in, line out and MIC in, Two channel Class D Audio Amplifier
9. **Charger:** BW has on board charger design for 2S(7.4V~8.7V) battery pack.
10. **WDT/DIO:** Hardware digital Input & Output, 16 x DI / 16 x DO (Option) / Hardware Watch Dog Timer, 0~255 sec programmable
11. **Expansion interface:** one full-size PCIe Mini card for PCIe x 1 / mSATA (auto-detect) and USB interface, one full-size Mini PCIe card for PCIe x 1 and USB interface
12. **SIM:** 1 SIM socket pair with MPCE2
13. **TPM:** SLB 9665 TT 2.0 Trusted Platform Module (Optional)
14. **BIOS:** Insyde UEFI BIOS
15. **Dimension:** 146 x 102 mm (3.5 inch)
16. **Power:** On board DC +9~36V

1-3 Installing the SO-DIMM

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

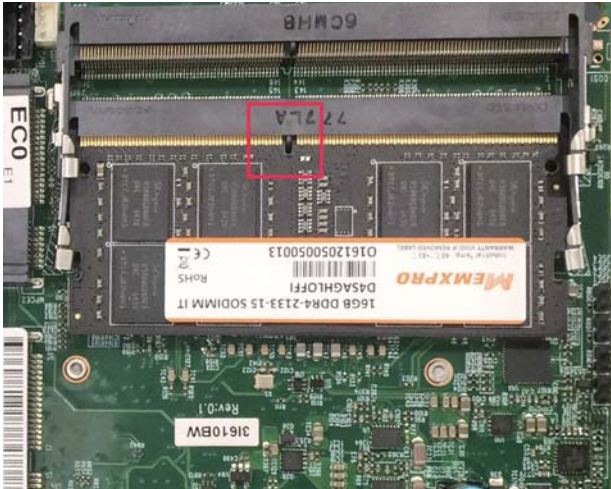


2. Press the SO-DIMM into the connector until you hear a click.

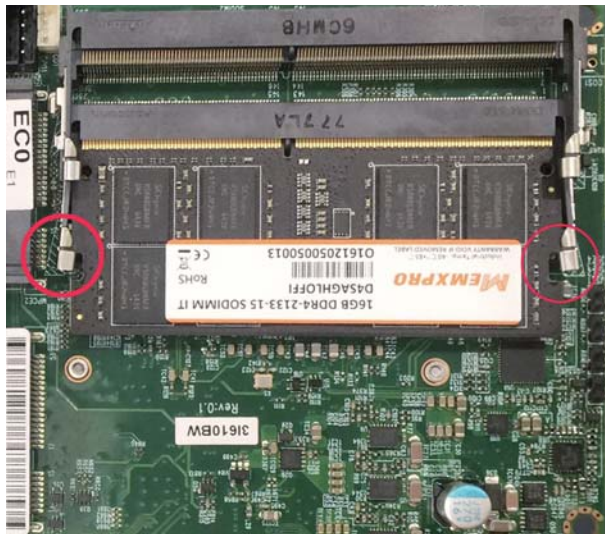


Notices:

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



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



1-3-1-1 Removing the SO-DIMM

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

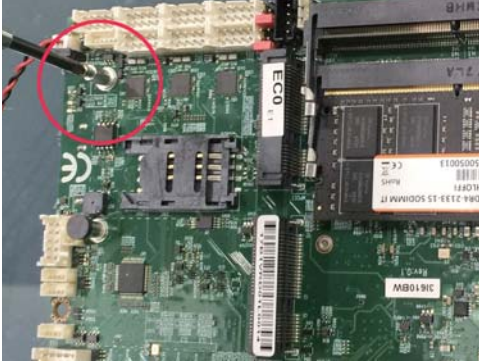


2. Lift the SO-DIMM out of its connector carefully.



1-4 Installing the Mini PCI-e Card (Full Size)

1. Unscrew the screw on the board



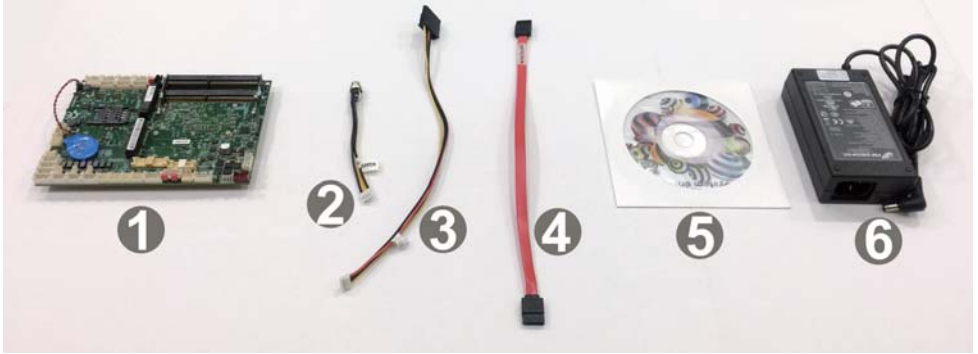
2. Plug in the Mini Card in a 45 angle



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



1-5 Packing List



	Material Code	Description	Detail Specification	Quantit
1	6G6003-7350-0100	Power Cable	LF, 2.0 2*4/DC JK,L=9cm	1
2	6G6003-1009-0100	SATA Power Cable	LF,L=25cm,1*4/2.0 to 180° SATA 15p	1
3	6G6001-2203-0100	SATA DATA Cable (Red)	LF,L=25cm	1
4	6G8006-2350-0100	DVD	LF, Support Apollo Lake/Skylake	1
5	6G5212-0620-0100	■60W Power Adapter,12V/5A,2.5Ø	LF,L Type,FSP060-DIBAN2,FSP	1

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

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

Chapter-2

Hardware Installation

2-1 Unpacking Precaution

This chapter provides the information how to install the hardware of 3I610BW/HW. 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-IN12V 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:

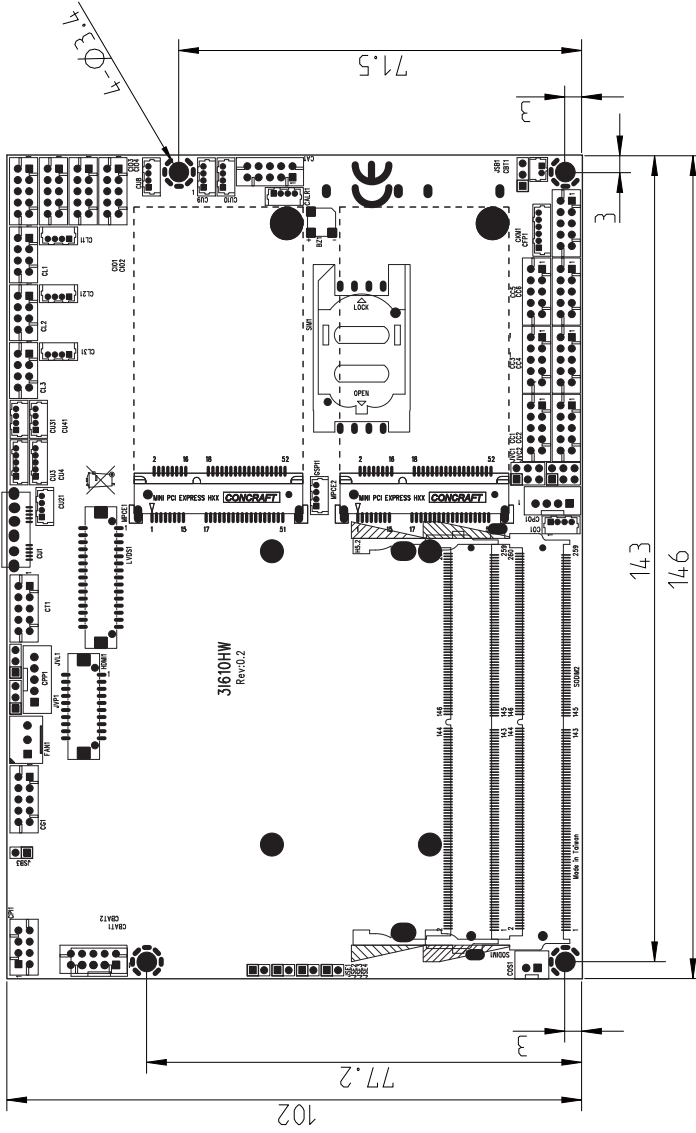
1. Ground yourself by a grounded wrist strap at all times when you handle the 3I610BW/HW.
Well secure the ALLIGATOR clip of the strap to the end of the shielded wire lead from a grounded object. Please put on and connect the strap before handling the 3I610BW/HW for harmlessly discharge any static electricity 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 3I610BW/HW from electricity discharge. With reference to section 1-5 please check the delivery package again with following steps:

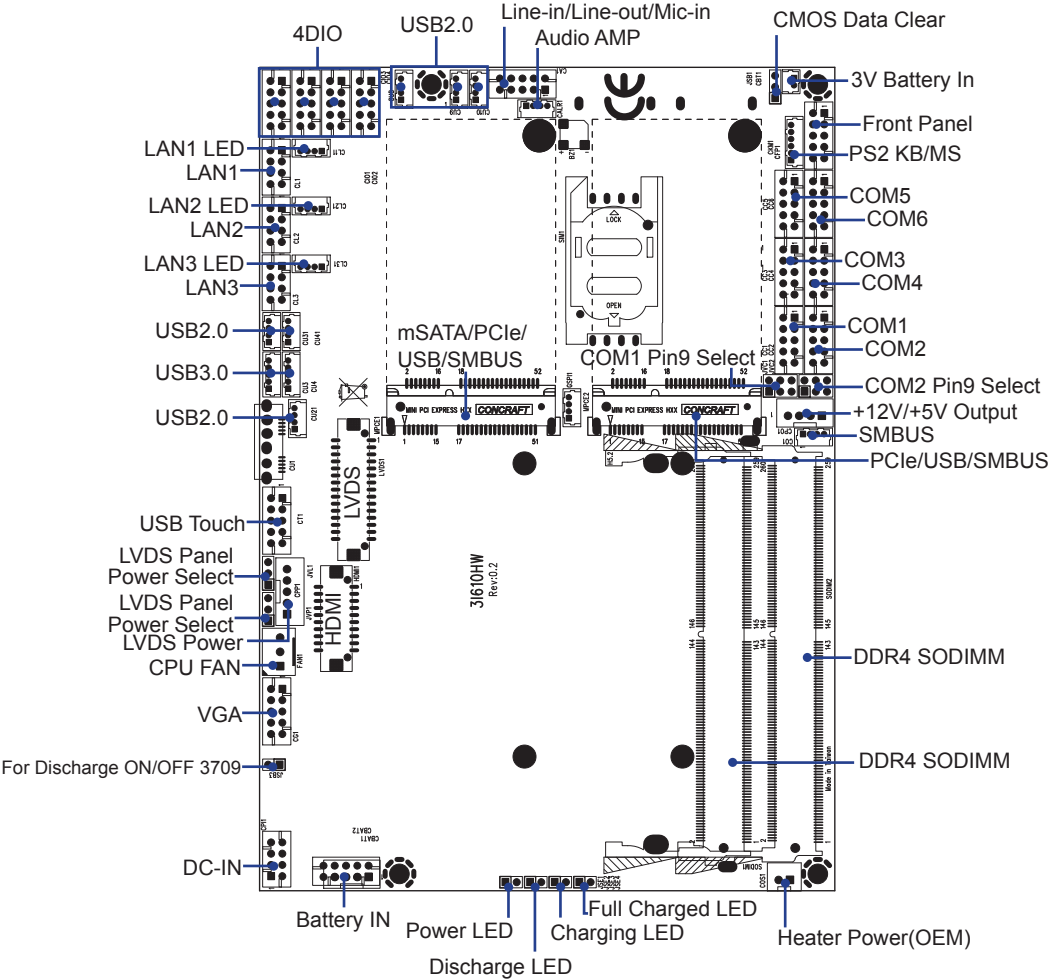
1. Unpack the 3I610BW/HW board and keep all packing material, manual and driver disc etc, do not dispose !
2. Is there any components lose or drops from the board?
DO NOT CONTINUE TO INSTALL THIS BOARD!
CONTACT THE DEALER YOU PURCHASED THIS BOARD FROM, IMMEDIATELY.
3. Is there any visible damage on the 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-3I610BW/HW



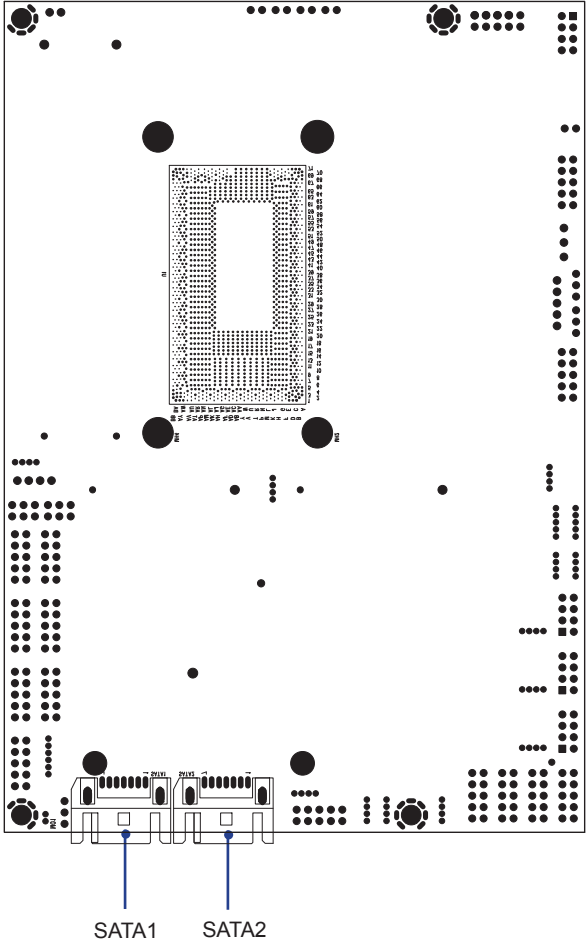
2-4-1 Layout-3I610BW/HW-Function Map

TOP

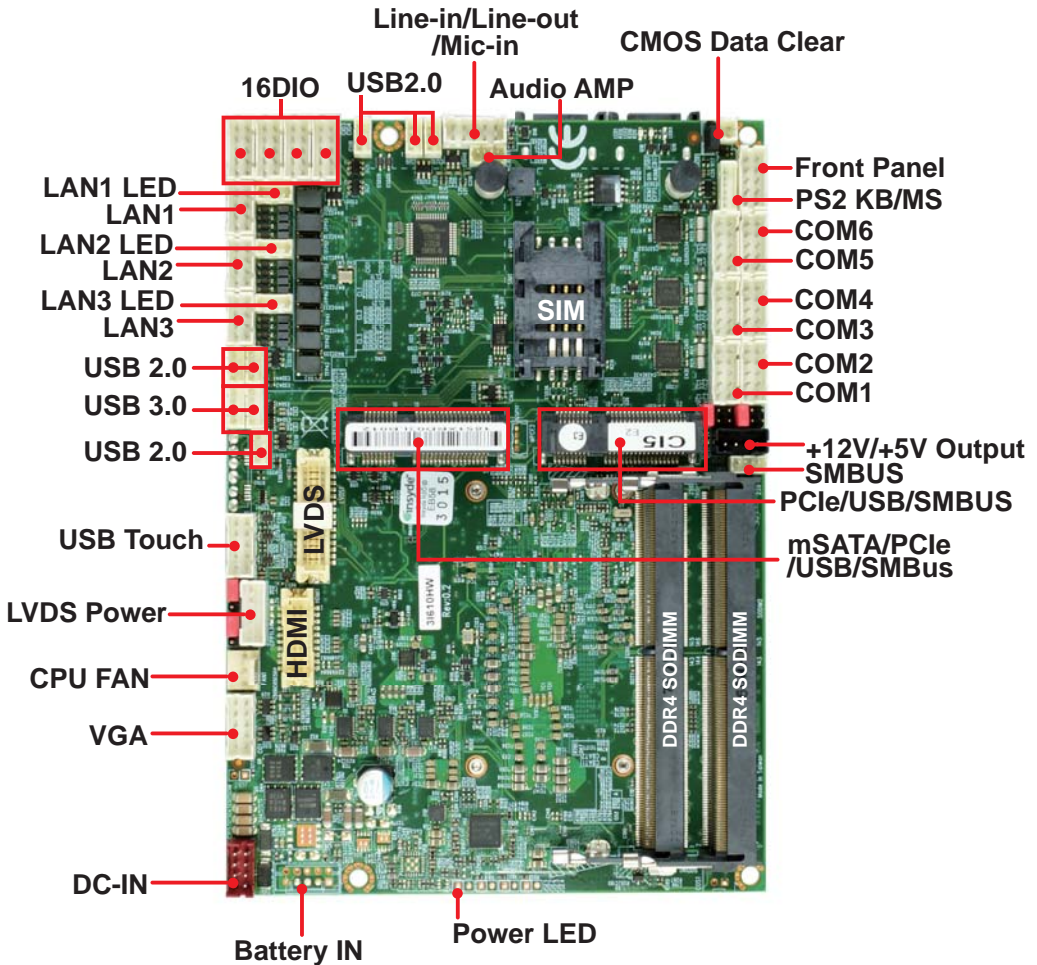


2-4-2 Layout-3I610BW/HW-Function Map

BOT

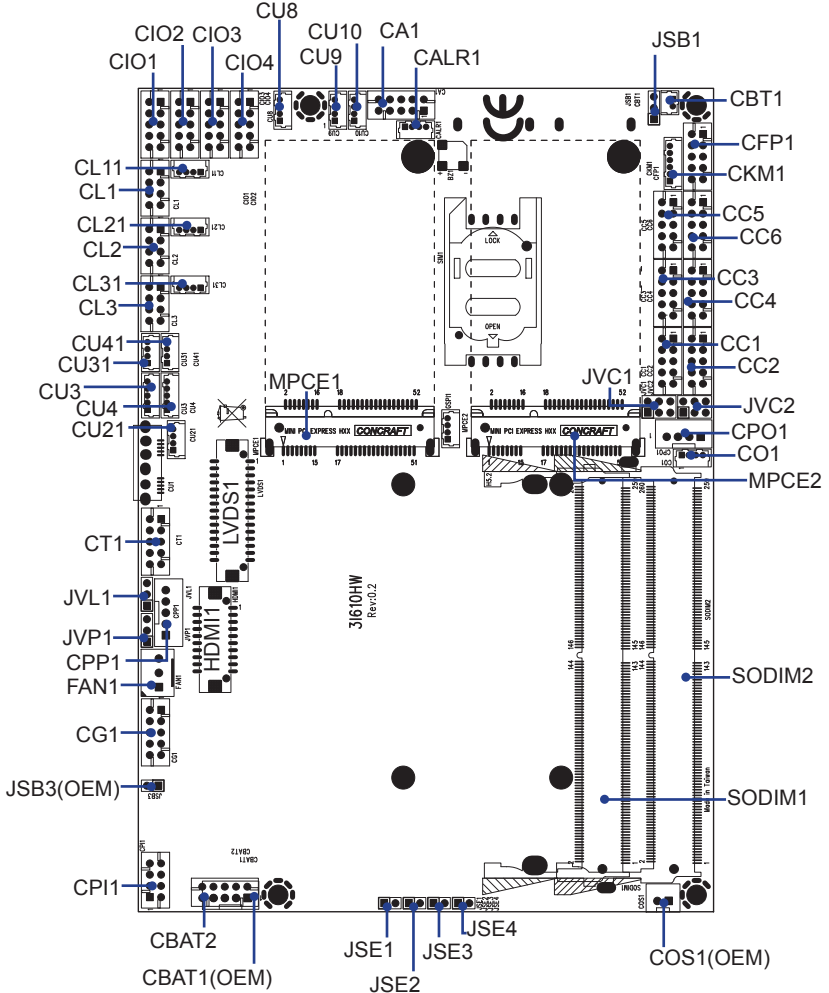


2-5 Function Map-3I610BW/HW



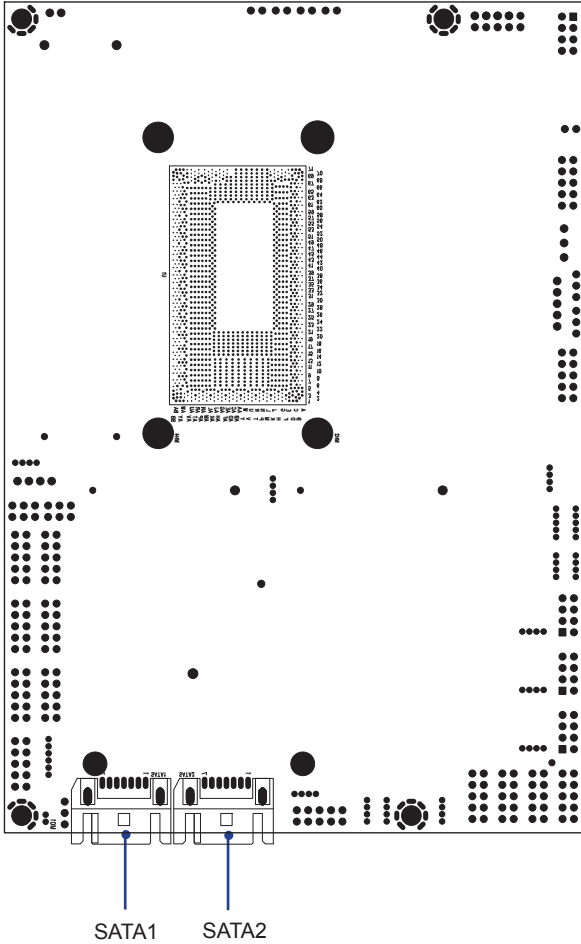
2-6-1 Connector MAP-31610BW/HW

TOP



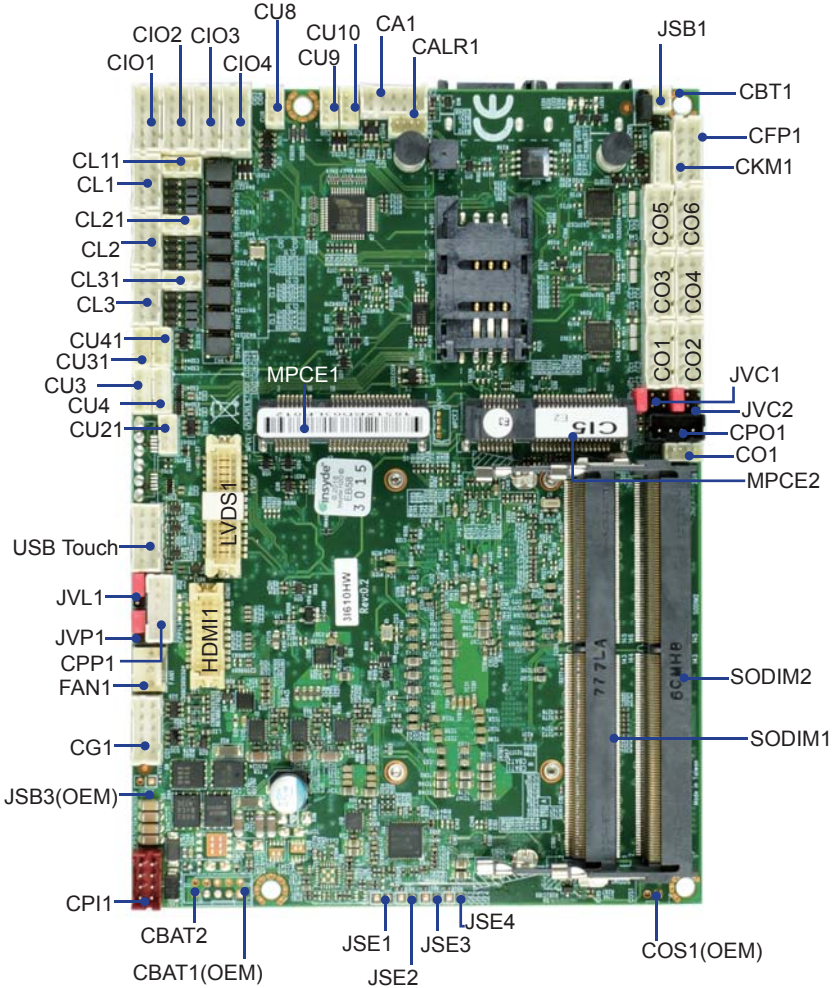
2-6-2 Connector MAP-3I610BW/HW

BOT



2-7-1 Diagram-31610BW/HW

TOP



2-7-2 Diagram-31610BW/HW

BOT



2-8 List of Jumpers

JSB1: CMOS DATA Clear

JVL1: LCD panel power select

JVP1: LVDS panel Inverter power select

JVC1/2: COM1/2 PIN9 RI/+12V/+5V Select

2-9 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.

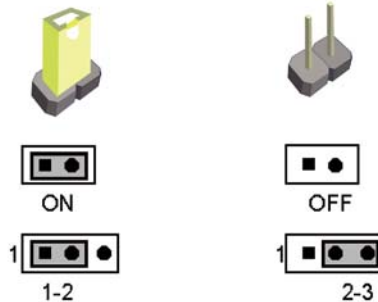


Figure 2.2

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.

2-10 JSB1: CMOS DATA Clear

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

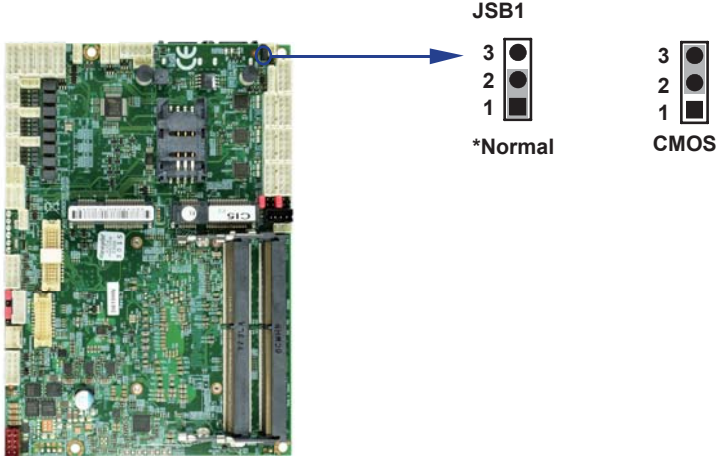
To clear the CMOS, follow the procedures below:

1. Turn off the system and unplug teh AC power
2. Remove DC IN power cable from DC IN power connector
3. Locate JSB2 and close pin 1-2 for few seconds
4. Return to default setting by Close pin 1-2
5. Connect DC IN power cable back to DC IN Power connector

JSB1	DESCRIPTION
*1-2	DESCRIPTION
2-3	CMOS/ME data clear

Note: Do not clear CMOS unless

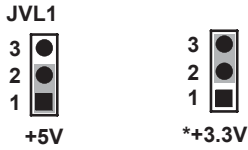
1. **Troubleshooting**
2. **Forget password**
3. **You fail over-clocking system**



2-11 JVL1: LCD panel power select

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

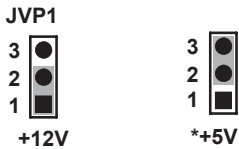
Note: Attention ! Check Device Power in spec



2-12 JVP1: LVDS panel Inverter power select

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

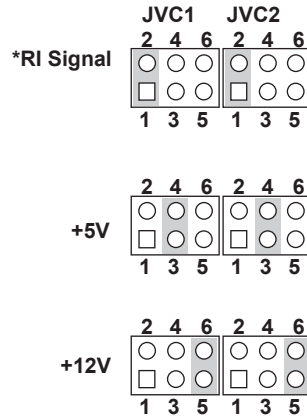
Note: Attention ! Check Device Power in spec



2-13 JVC1/JVC2: COM1/2 PIN9 RI/+12V/+5V Select

JVC1/JVC2	DESCRIPTION
*1-2	COM port pin9 use RI signal
3-4	COM port pin9 use +5V voltage
5-6	COM port pin9 use +12V voltage

Note: 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.

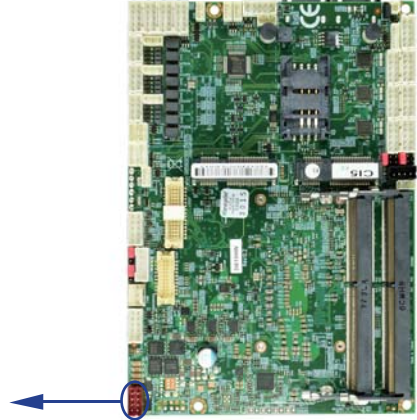
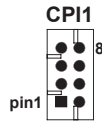
3-1 List of Connectors

CPI1:	DC 12V-IN 2x4 pin (2.00mm) Red wafer
CBAT2:	Battery charge In 2x5 pin (2.00mm) wafer
JSE1:	Battery Output LED 1x2 pin (2.00mm) Pin Header
JSE2:	Battery Discharge LED 1x2 pin (2.00mm) Pin Header
JSE3:	Battery charge LED 1x2 pin (2.00mm) Pin Header
JSE4:	Battery Full charged LED 1x2 pin (2.00mm) Pin Header
CG1:	VGA 2x5 pin (2.00mm) Wafer
FAN1:	CPU Fan 1x3 pin (2.54mm) wafer connector
HDMI1:	HDMI 2x10 pin (1.25mm) wafer connector
LVDS1:	LVDS 2x15 pin (1.25mm) wafer connector
CPP1:	Panel inverter power connector 1x5 pin (2.00mm) wafer connector
CT1:	USB Touch screen device 2x5 pin (2.00mm) Wafer connector
CU21/CU3/CU31/CU4/CU41:	USB 3.0/2.0 1x5pin + 1x4pin (1.25mm) wafer connector
CL1/CL2/CL3:	LAN 2x4 pin (2.00mm) wafer connector
CL11/CL21/CL31:	LAN LED 1x4 pin (1.25mm) wafer connector
CIO1/CIO2/CIO3/CIO4:	4DI/4DO 2x5 pin (2.00mm) Wafer
CU8/CU9/CU10:	USB 2.0 port 4pin (1.25mm) wafer
CA1:	Line-out/Line-in/Mic-in 2x5 pin (2.00mm) Wafer
CALR1:	Amplifier Line-out Right/Left channel 1x4pin (1.25mm) wafer
CKM1:	PS2 KB/MS 1x6 pin (1.25mm) wafer
CFP1:	Front Panel connector 2x5pin (2.00mm) wafer
CC1/CC2/CC3/CC4/CC5/CC6:	COM 2x5pin (2.00mm) wafer
CPO1:	DC +5/+12V output 1x4 pin (2.00mm) Black wafer connector
CO1:	I ² C 4pin (1.25mm) wafer connector
SODIMM1:	DDR4 Channel 0 SODIMM H: 5.2mm
SODIMM2:	DDR4 Channel 1 SODIMM H: 9.2mm
MPCE1/MPCE2:	Mini card port 1/2 sockets 52pin
SIM1:	SIM port 1 card socket
SATA1/SATA2:	SATA port connectors 7pin
CBT1:	COMS battery 1x2 pin (1.25mm) wafer (OEM)

3-2 CPI1: DC Power input (2x4pin 2.00mm Wafer) (Red)

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

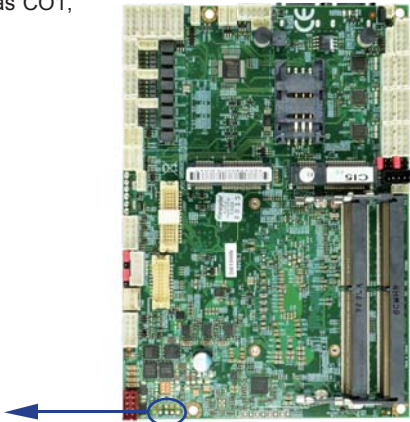
Note: Very important check DC-in Voltage



3-3 CBAT2: Battery charge In 2x5 pin (2.00mm) wafer

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	BAT VCC	2	BAT VCC
3	GND	4	BAT VCC
5	SMB_CLK	6	BAT VCC
7	SMB_DATA	8	GND
9	GND	10	GND

Note: Please check Battery pin description is same as CO1, if your battery got from another vendor.



3-4 JSE1: Battery Output LED 1x2 pin (2.00mm) Pin Header

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	LED +	2	LED -

3-5 JSE2: Battery Discharge LED 1x2 pin (2.00mm) Pin Header

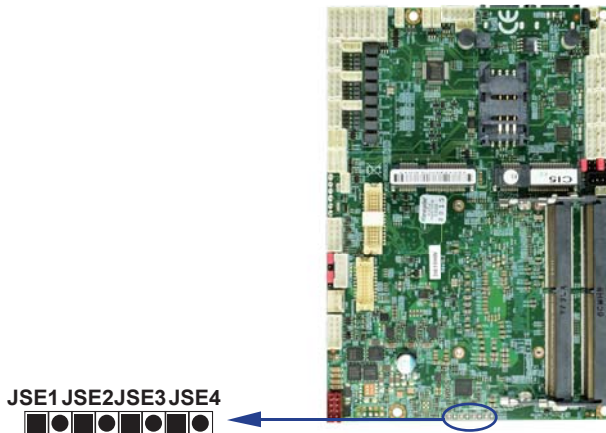
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	LED +	2	LED -

3-6 JSE3: Battery charged LED 1x2 pin (2.00mm) Pin Header

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	LED +	2	LED -

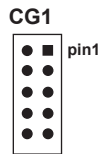
3-7 JSE4: Battery Full charged LED 1x2 pin (2.00mm) Pin Header

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	LED +	2	LED -



3-8 CG1: VGA 2x5 pin (2.00mm) Wafer

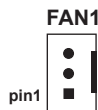
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	BULE	2	GND
3	GND	4	DDC CLOCK
5	GREEN	6	V-SYNC
7	GND	8	H-SYNC
9	RED	10	DDC DATA



3-9 FAN1: CPU Fan 1x3 pin (2.54mm) wafer connector

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

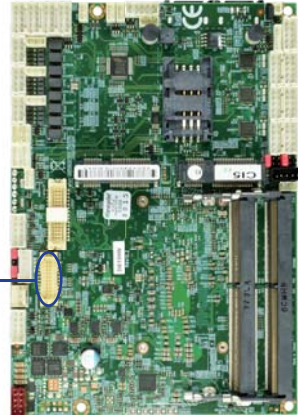
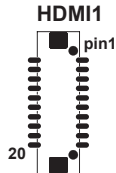
Note: DC in +12V by switch to FAN power +12V, so DC in need stable +12V input



3-10 HDMI1: HDMI 2x10 pin (1.25mm) wafer connector

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	TMDS_D2_N	2	NC
3	TMDS_D2_P	4	NC
5	TMDS_D1_N	6	GND
7	TMDS_D1_P	8	GND
9	TMDS_D0_N	10	GND
11	TMDS_D0_P	12	GND
13	TMDS_CLK_N	14	+5V
15	TMDS_CLK_P	16	+5V
17	CLOCK	18	+5V
19	DATA	20	Hot Plug Detect

Note: 1. Can use CN040 connector Board to HDMI Type A

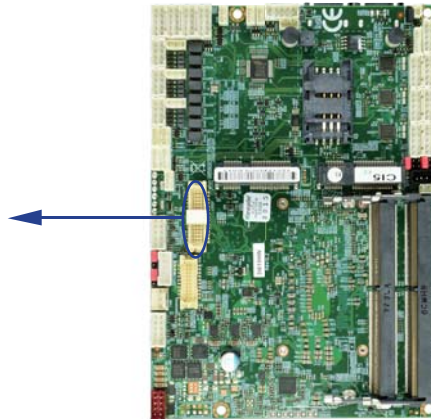
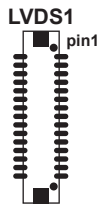


3-11 LVDS1: LVDS 2x15 pin (1.25mm) wafer connector

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:

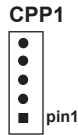
1. LVDS interface supports 18/24bits two channel.
2. JVL1: LVDS panel +5V/+3.3V (default) Voltage select.
3. LVDS1 PIN 1 for panel backlight dimming control.



3-12 CPP1: Panel inverter power connector 1x5 pin (2.00mm) wafer connector

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.



3-13 CT1: USB Touch screen device 2x5 pin (2.00mm) Wafer connector

• 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.

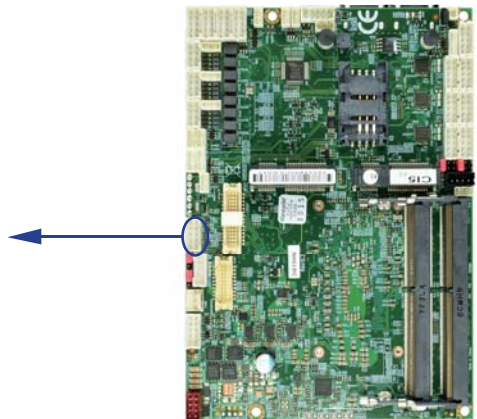
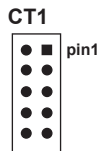
• For 4-wire type pin define

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

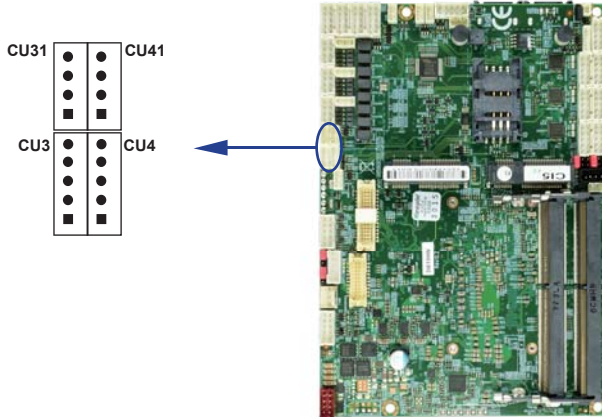
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	UR(H)	2	N/A
3	Sense	4	UL(Y)
5	LR(X)	6	N/A
7	LL(L)	8	N/A
9	GND	10	NC



3-14 CU3/CU31/CU4/CU41: USB 3.0/2.0 1x5pin + 1x4pin (1.25mm) wafer connector

PIN NO.	CU31/CU41(1x4pin 1.25mm)	PIN NO.	CU3/CU4(1x4pin 1.25mm)
1	+5V	6	USB3.0 TX+
2	USB 2.0 D-	7	USB3.0 TX-
3	USB 2.0 D+	8	GND
4	GND	9	USB3.0 RX+
		10	USB3.0 RX-

Note: 1. Can use UB004 connector Board to USB 3.0 Type A

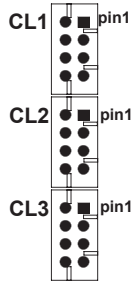


3-15 LAN Interface

- **CL1/CL2/CL3: LAN 2x4 pin (2.00mm) wafer connector**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	MDI0-	2	MDI0+
3	MDI2+	4	MDI1+
5	MDI1-	6	MDI2-
7	MDI3-	8	MDI3+

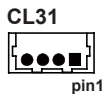
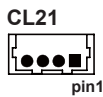
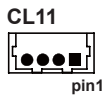
Note: Can use CL001 connector Board to RJ45



- **CL11/CL21/CL31: LAN LED 1x4 pin (1.25mm) wafer connector**

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

Note: Can use CL001 connector Board to RJ45A



3-16 DIO Interface

● CIO1: 4DI/4DO 2x5 pin (2.00mm) 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

● CIO2: 4DI/4DO 2x5 pin (2.00mm) 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

● CIO3: 4DI/4DO 2x5 pin (2.00mm) 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

● CIO4: 4DI/4DO 2x5 pin (2.00mm) 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

● For F75111N I²C watch dog timer device:

DC spec:

Input low Voltage (VIL) \ +0.8 Max

Input High Voltage (VIH): +2V Min

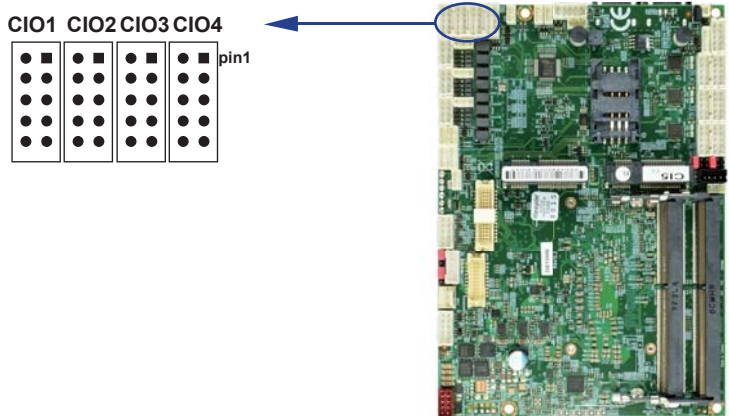
Output low Current (IOL): 10mA (Min) VOL=0.4V

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.



3-16-1 IO Device: F75111 under DOS

The Sample code source you can download from

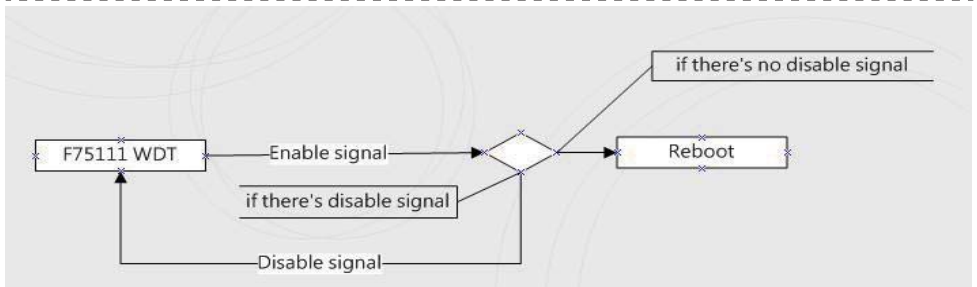
Source file: F75111_Dos_Src.rar http://tprd.info/lexwiki/index.php/IO_Device:F75111_under_DOS

Binary file: F75111_Dos_Bin.rar

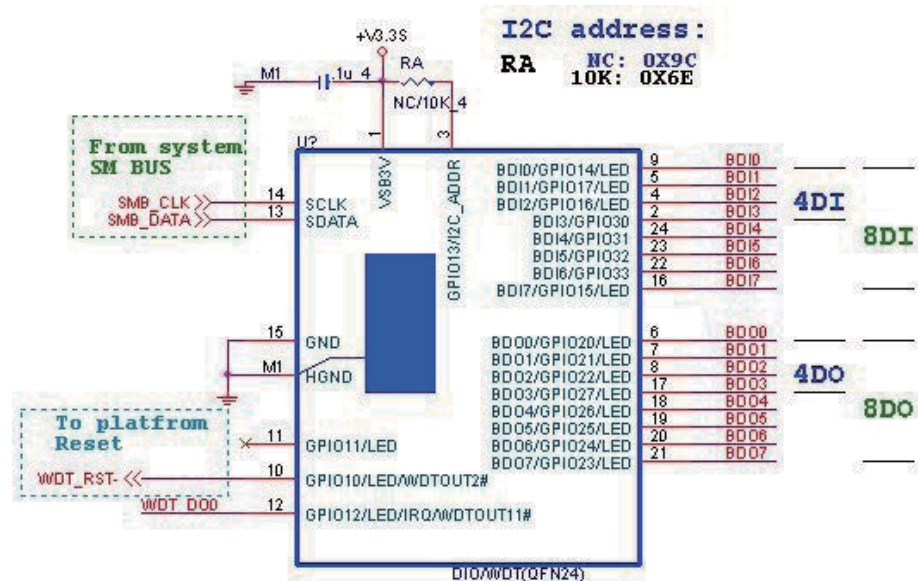
USERNAME & PASSWORD: sf

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



F75111 Layout Picture



Introduction

How to use this Demo Application

```
Write12CByte(I2CADDR, CONFIG, 0x03);//Set Watch Dog Timer function
Write12CByte(I2CADDR, WDT_TIMER, timer);//Set Watch Dog Timer range from 0-255.
Write12CByte(I2CADDR, WDT_TIMER_CTL, 0x73);//Enable Watch Dog Timer in second and pulse mode
```

How to use this Demo Application

```
Write12CByte(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;
}
```

3-16-2 IO Device: F75111 under Windows

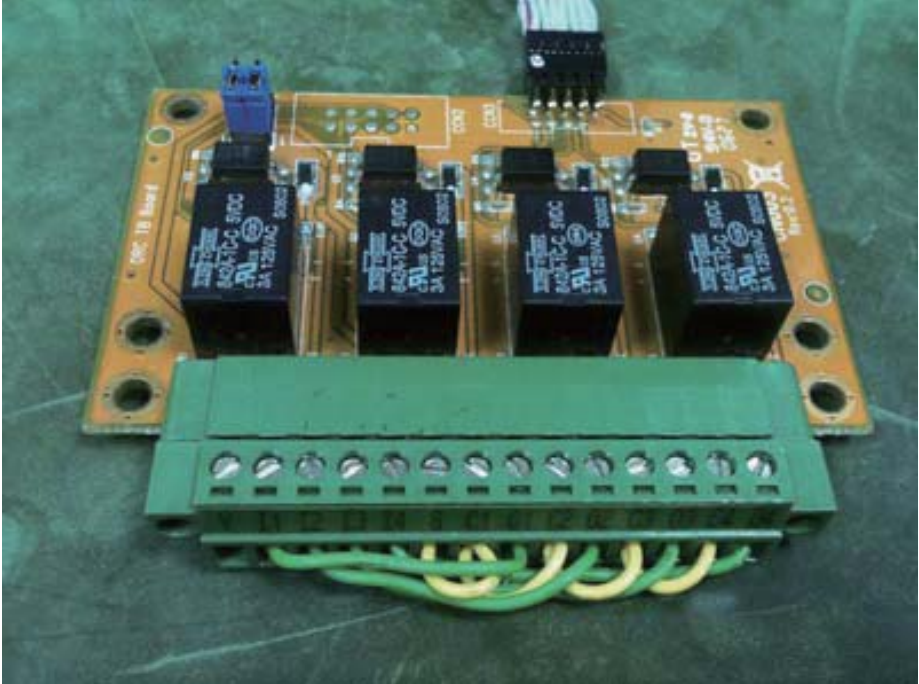
The Sample code source you can download from

Source file: F75111_DIO_Src_v2.8W(32bit).zip http://tprd.info/lexwiki/index.php/IO_Device:F75111

Binary file: F75111_DIO_Bin_v2.8W(32bit).zip

USERNAME & PASSWORD: sf

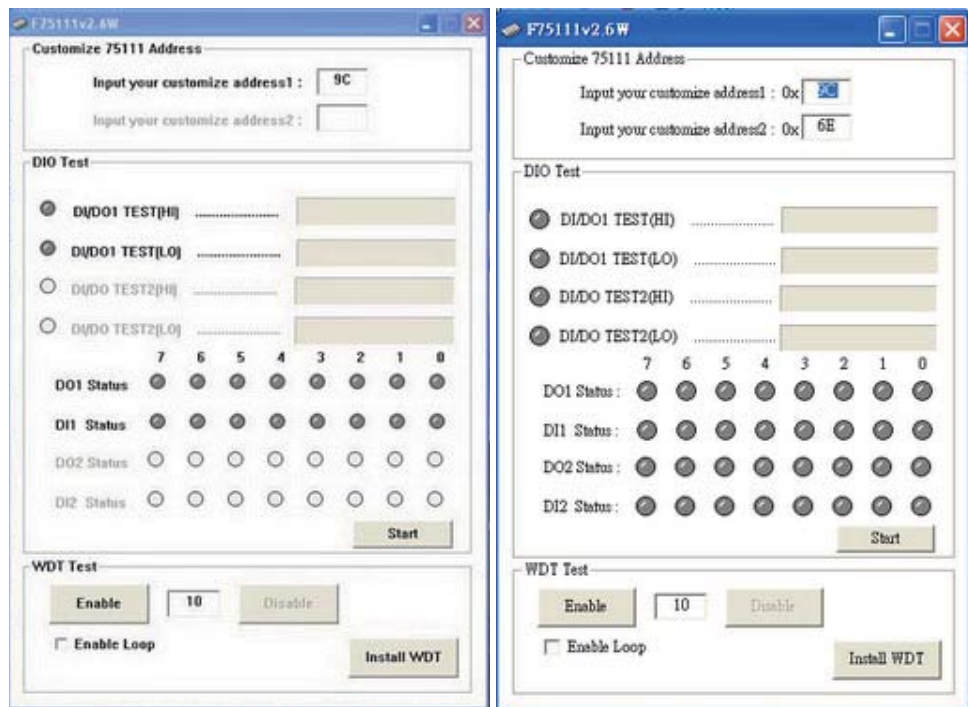
We do the demo test with a test tool which Dlx connect to DOx with Relay.



How to use this Demo Application



one F75111

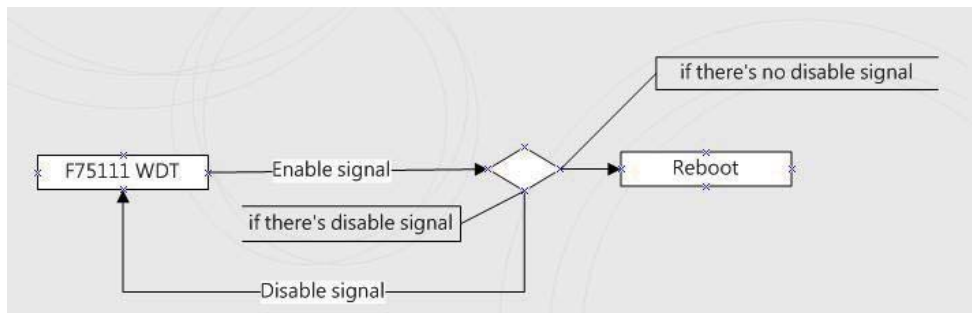
two F75111



Attention Please: You must be install vcredist_x86.exe when first time you run the F75111_DIO.exe DEMO AP,The vcredist_x86.exe include all required DLL file.

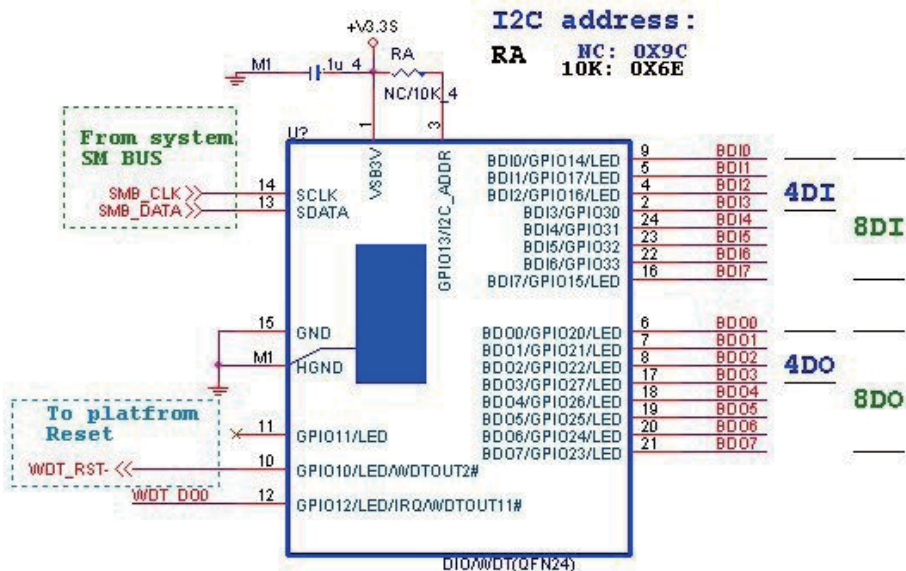
WARNING: win7 system architecture, use the system administrator to open DIO utility

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

F75111 Layout Picture



Introduction

Initial Internal F75111 port address (0x9c)

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

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

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

Enable/Disable WDT

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

PULSE mode

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

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

Initial internal F75111

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

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

Set output value

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

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


Get Input value

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

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

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

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

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

    return byteData;
}
```

Enable WatchDog

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

Disable WatchDog

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

define F75111 pin in F75111.h

```
//-----
#define F75111_INTERNAL_ADDR 0x9C // OnBoard F75111 Chipset
#define F75111_EXTERNAL_ADDR 0x6E // External F75111 Chipset
//-----
#define F75111_CONFIGURATION 0x03 // Configure GPIO13 to WDT2 Function
//-----
#define GPIO1X_CONTROL_MODE 0x10 // Select Output Mode or Input Mode
#define GPIO2X_CONTROL_MODE 0x20 // Select GPIO2X Output Mode or Input Mode
#define GPIO3X_CONTROL_MODE 0x40 // Select GPIO3X Output Mode or Input Mode
```

```

//-----
#define GPIO1X_INPUT_DATA          0x12 // GPIO1X Input
#define GPIO3X_INPUT_DATA          0x42 // GPIO3X Input
//-----
#define GPIO2X_OUTPUT_DATA         0x21 // GPIO2X Output
//-----
#define GPIO1X_PULSE_CONTROL       0x13 // GPIO1x Level/Pulse Control Register
// 0:Level Mode
// 1:Pulse Mode
#define GPIO1X_PULSE_WIDTH_CONTROL 0x14 // GPIO1x Pulse Width Control Register
#define GP1_PSWIDTH_500US         0x00 // When select Pulse mode: 500 us.
#define GP1_PSWIDTH_1MS           0x01 // When select Pulse mode: 1 ms.
#define GP1_PSWIDTH_20MS          0x02 // When select Pulse mode: 20 ms.
#define GP1_PSWIDTH_100MS         0x03 // When select Pulse mode: 100 ms.
//-----
#define GPIO2X_PULSE_CONTROL       0x23 // GPIO2x Level/Pulse Control Register
// 0:Level Mode
// 1:Pulse Mode
#define GPIO2X_PULSE_WIDTH_CONTROL 0x24 // GPIO2x Pulse Width Control Register
#define GP2_PSWIDTH_500US         0x00 // When select Pulse mode: 500 us.
#define GP2_PSWIDTH_1MS           0x01 // When select Pulse mode: 1 ms.
#define GP2_PSWIDTH_20MS          0x02 // When select Pulse mode: 20 ms.
#define GP2_PSWIDTH_100MS         0x03 // When select Pulse mode: 100 ms.
//-----
#define GPIO3X_PULSE_CONTROL       0x43 // GPIO3x Level/Pulse Control Register
// 0:Level Mode
// 1:Pulse Mode
#define GPIO3X_Output_Data         0x41 // GPIO3x Output Data Register
#define GPIO3X_PULSE_WIDTH_CONTROL 0x44 // GPIO3x Pulse Width Control Register
#define GP3_PSWIDTH_500US         0x00 // When select Pulse mode: 500 us.
#define GP3_PSWIDTH_1MS           0x01 // When select Pulse mode: 1 ms.
#define GP3_PSWIDTH_20MS          0x02 // When select Pulse mode: 20 ms.
#define GP3_PSWIDTH_100MS         0x03 // When select Pulse mode: 100 ms.
//-----
#define WDT_TIMER_RANGE            0x37 // 0-255 (second or minute program by WDT_UNIT)
#define WDT_CONFIGURATION          0x36 // Configure WDT Function
#define WDT_TIMEOUT_FLAG           0x40 // When watchdog timeout.this bit will be set to 1.
#define WDT_ENABLE                 0x20 // Enable watchdog timer
#define WDT_PULSE                  0x10 // Configure WDT output mode
// 0:Level Mode
// 1:Pulse Mode
#define WDT_UNIT                   0x08 // Watchdog unit select.
// 0:Select second.
// 1:Select minute.
#define WDT_LEVEL                  0x04 // When select level output mode:
// 0:Level low
// 1:Level high
#define WDT_PSWIDTH_1MS            0x00 // When select Pulse mode: 1 ms.
#define WDT_PSWIDTH_20MS          0x01 // When select Pulse mode: 20 ms.
#define WDT_PSWIDTH_100MS         0x02 // When select Pulse mode: 100 ms.
#define WDT_PSWIDTH_4000MS        0x03 // When select Pulse mode: 4 s.

```

3-16-3 IO Device: F75111 VB6 under Windows

The Sample code source you can download from

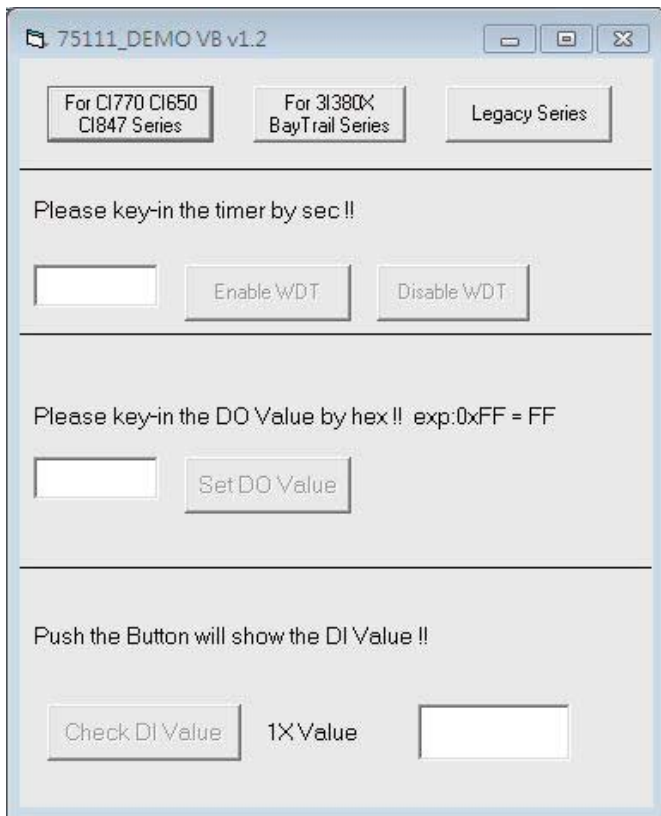
Source file: 75111_VB_v1.2.rar

http://tprd.info/lexwiki/index.php/IO_Device:F75111_VB6

Binary file: 75111_VB_Src1.2.rar

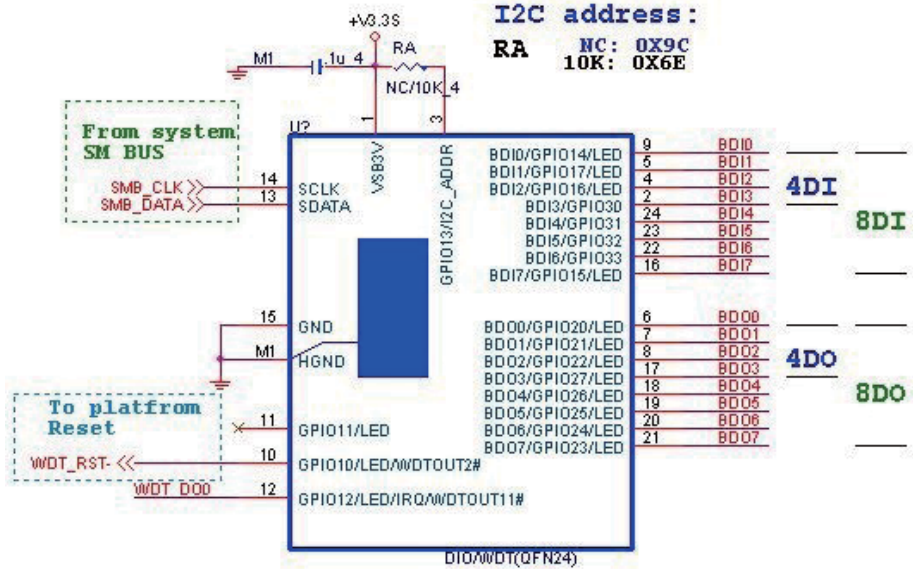
USERNAME & PASSWORD: sf

How to use this Demo Application



- A Function - Choose your motherboard model
- B Function - Enable WDT timer ,Key-in the value by seconds then system will reboot after value which you key-in in left text box !!
- C Function - Disable WDT timer ,Push down the button then WDT timer value will be clear !!
- D Function - Set DO Value ,Key-in the DO value by hex then push the button !!
- E Function - Check DI Value ,The right side two text box will display DI 1X & 2X Value when you push down the button!!

F75111 Layout Picture



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)
```

```
Dim Data As Integer
```

```
Dim Value As Integer
```

```
Data = 0
```

```
Value = dovalue
```

```
If (Value And &H1) <> 0 Then
```

```
    Data = Data + &H1
```

```
End If
```

```
If (Value And &H2) <> 0 Then
```

```
    Data = Data + &H2
```

```
End If
```

```
If (Value And &H4) <> 0 Then
```

```
    Data = Data + &H4
```

```
End If
```

```
If (Value And &H80) <> 0 Then
```

```
    Data = Data + &H8
```

```
End If
```

```
If (Value And &H40) <> 0 Then
```

```
    Data = Data + &H10
```

```
End If
```

```
If (Value And &H20) <> 0 Then
```

```
    Data = Data + &H20
```

```
End If
```

```
If (Value And &H10) <> 0 Then
```

```
    Data = Data + &H40
```

```
End If
```

```
If (Value And &H8) <> 0 Then
```

```
    Data = Data + &H80
```

```
End If
```

```
Call Write12CByte(&H23, &H0)
```

```
Call Write12CByte(&H20, &HFF)
```

```
Call Write12CByte(&H2B, &HFF)
```

```
Call Write12CByte(&H21, Data)
```

```
End Function
```

Function CheckDIValue

```
Function CheckDIValue()  
Dim GPIO1X As Integer  
Dim GPIO3X As Integer  
Dim DI1Xhex As String  
Dim DI3Xhex As String  
  
Dim Data As Long  
  
Data = 0  
  
Call ReadI2CByte(&H12, GPIO1X)  
Call ReadI2CByte(&H42, GPIO3X)  
  
GPIO1X = GPIO1X And &HF0  
GPIO3X = GPIO3X And &HF  
  
If (GPIO1X And &H10) <> 0 Then  
    Data = Data + &H1  
End If  
  
If (GPIO1X And &H80) <> 0 Then  
    Data = Data + &H2  
End If  
  
If (GPIO1X And &H40) <> 0 Then  
    Data = Data + &H4  
End If  
  
If (GPIO3X And &H1) <> 0 Then  
    Data = Data + &H8  
End If  
  
If (GPIO3X And &H2) <> 0 Then  
    Data = Data + &H10  
End If  
  
If (GPIO3X And &H4) <> 0 Then  
    Data = Data + &H20  
End If  
  
If (GPIO3X And &H8) <> 0 Then  
    Data = Data + &H40  
End If  
  
If (GPIO1X And &H20) <> 0 Then  
    Data = Data + &H80  
End If  
  
DI1Xhex = Hex(Data)  
  
Text3.Text = "0x" + DI1Xhex  
  
End Function
```

3-16-4 IO Device: F75111 under linux

The Sample code source you can download from

Source file: F75111v2.4L_SRC.tar.gz http://tprd.info/lexwiki/index.php/IO_Device:F75111_under_linux

Binary file: F75111v2.4L_BIN.tar.gz

USERNAME & PASSWORD: sf

How to compile source code

1. Compile source code with Code::Blocks

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

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

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

2. Compile source code with "make"

1. cd F75111

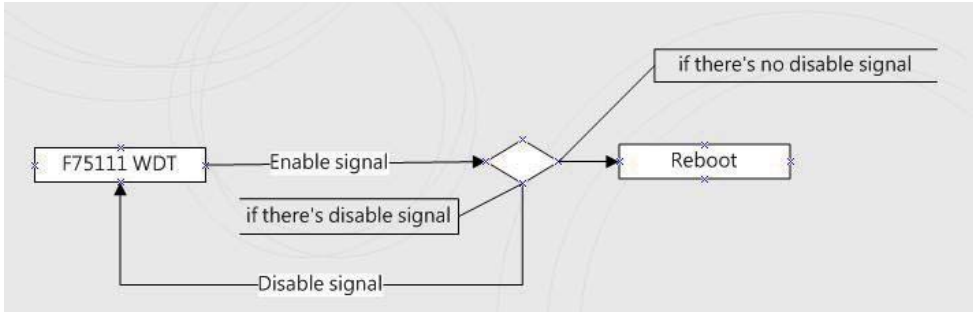
1. make

1. src/f75111 // execute the binary file

How to use this Demo Application

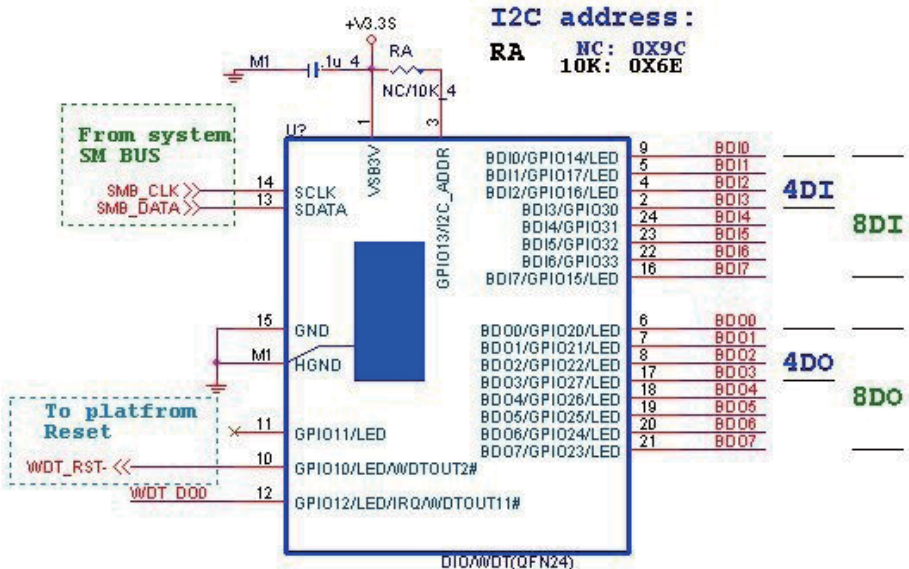


1. Press the "Start" button to test DIO function
2. Press the "Enable" button to test WDT function
3. Press the "Disable" button to disable WDT
4. Check the "Enable Loop" box and press "Enable" to do WDT loop test
5. Press "Install" to set the system to autorun this application when booting, press "Uninstall"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



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

F75111 Layout Picture



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
}
```

```

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

bool F75111_Init();
BYTE F75111_GetDigitalInput ();
void F75111_SetDigitalOutput(BYTE byteValue);

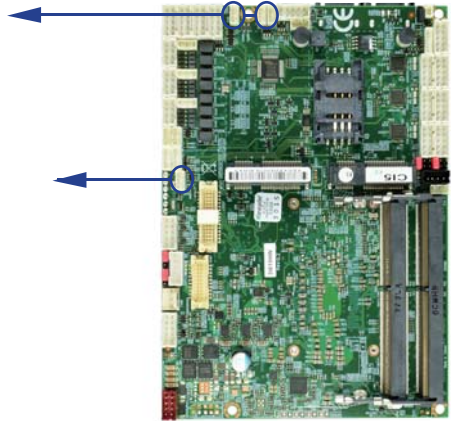
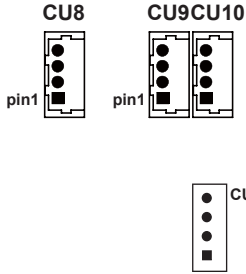
BYTE F75111_GetWDTMode();
void F75111_SetWDTMode(BYTE dwvalue);

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

```

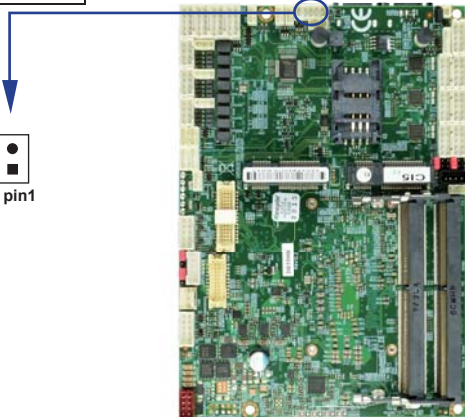
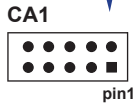
3-17 CU21/CU8/CU9/CU10: USB 2.0 port 4pin (1.25mm) wafer

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



3-18 CA1: Line-out/Line-in/Mic-in 2x5 pin (2.00mm) Wafer

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



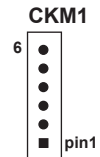
3-19 CALR1: Amplifier Line-out Right/Left channel 1x4pin (1.25mm) wafer

PIN NO	DESCRIPTION
1	Left +
2	Left -
3	Right -
4	Right +



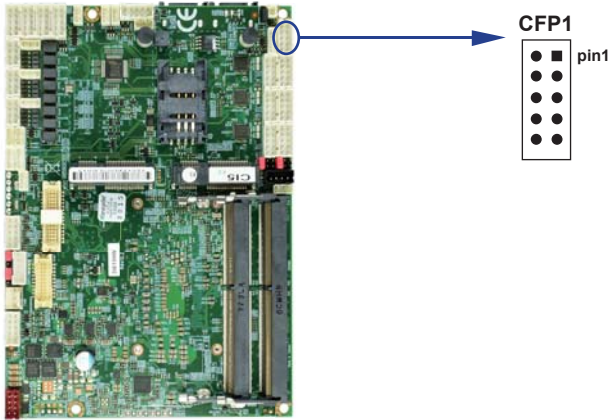
3-20 CKM1: PS2 KB/MS 1x6 pin (1.25mm) wafer

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



3-21 CFP1: Front Panel connector 2x5pin (2.00mm) wafer

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



3-22 CC1/CC2/CC3/CC4/CC5/CC6: COM 2x5pin (2.00mm) wafer

• (RS232 Mode)

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

• (RS485 Mode)

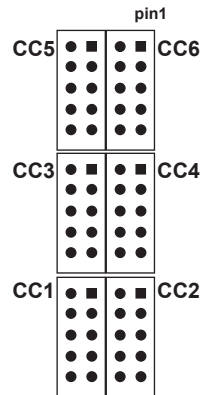
PIN NO	DESCRIPTION	PIN NO	DESCRIPTION
1	Data -	2	NC
3	Data +	4	NC
5	NC	6	NC
7	NC	8	NC
9	GND	10	+5V

• (RS422 Mode)

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

Note:

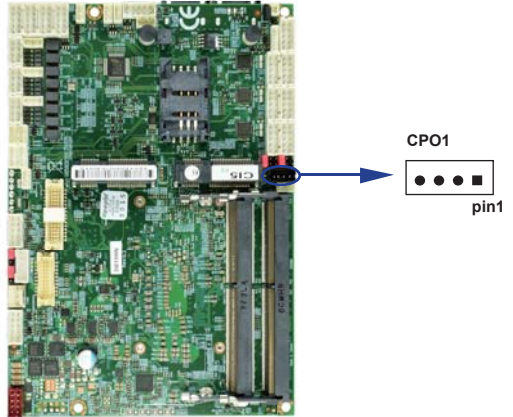
1. Pin 9 RI and Voltage setting only for COM 1/2 ports, JVC1 for COM1, JVC2 for COM2
2. Default supports RS232 and RS422 / RS485 by BIOS selected



3-23 CPO1: DC +5/+12V output 1x4 pin(2.00mm) Black wafer connector

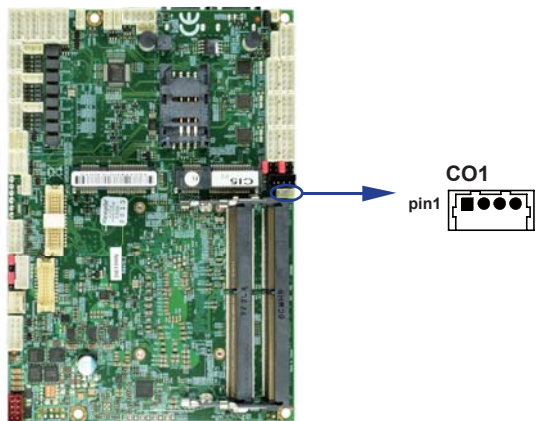
PIN NO.	DESCRIPTION
1	+5V
2	GND
3	GND
4	+12V

* Note: Attention! Check Device Power in spec



3-24 CO1: I²C 4pin (1.25mm) wafer connector

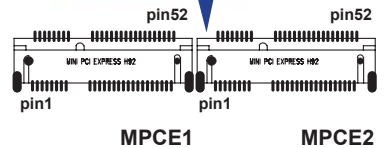
PIN NO.	DESCRIPTION
1	+3.3V
2	GND
3	I ² C Clock
4	I ² C DATA



3-25 Module socket

● MPCE1/MPCE2: Mini card port 1/2 sockets 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			
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



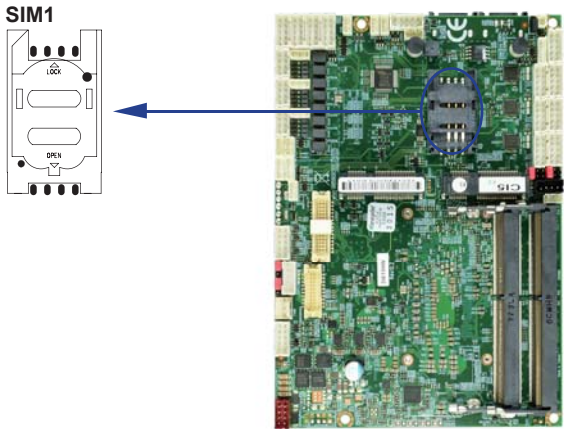
Note:

1. MPCE1 Pin51 mSATA / PCIe auto detect function, but MPCE2 PCIe only.
2. MPCE1 USB uses as port 6 and MPCE2 as port 7.

3-26 SIM1: SIM port 1 card socket

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VCC	5	GND
2	RST	6	Vpp
3	CLK	7	DATA
4	RUF	8	RUF

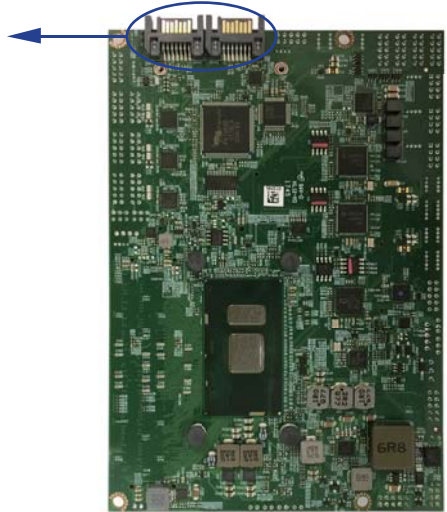
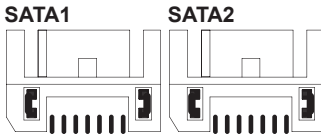
Note: 1. MPCE2 Pin 8,10,12,14,16 for SIM1 card reader use.



3-27 SATA1/SATA2: SATA port connectors 7pin

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

Note: 1. CPO1 provides SATA HDD power +12V, GND, +5V

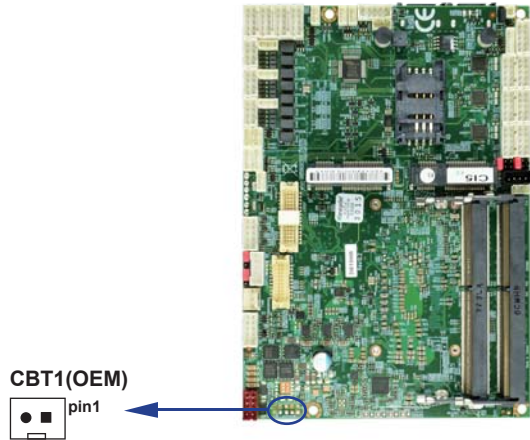


3-28 CBT1: COMS battery 1x2 pin (1.25mm) wafer (OEM)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	+3V

Note:

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



3-29 Connector wafer of Compatible Brand and part number list

Location	CKTS	PITCH	Brand Name	Mating connector	Cable housing
CA1	2x5 10Pin	2.00mm	JST	B10B-PHDSS	PHDR-10VS
CALR1	1x4 4Pin	1.25mm	MOLEX	53047-0410	51021-0400
CC1	2x5 10Pin	2.00mm	JST	B10B-PHDSS	PHDR-10VS
CC2	2x5 10Pin	2.00mm	JST	B10B-PHDSS	PHDR-10VS
CC3	2x5 10Pin	2.00mm	JST	B10B-PHDSS	PHDR-10VS
CC4	2x5 10Pin	2.00mm	JST	B10B-PHDSS	PHDR-10VS
CC5	2x5 10Pin	2.00mm	JST	B10B-PHDSS	PHDR-10VS
CC6	2x5 10Pin	2.00mm	JST	B10B-PHDSS	PHDR-10VS
CFP1	2x5 10Pin	2.00mm	JST	B10B-PHDSS	PHDR-10VS
CIO1	2x5 10Pin	2.00mm	JST	B10B-PHDSS	PHDR-10VS
CIO2	2x5 10Pin	2.00mm	JST	B10B-PHDSS	PHDR-10VS
CIO3	2x5 10Pin	2.00mm	JST	B10B-PHDSS	PHDR-10VS
CIO4	2x5 10Pin	2.00mm	JST	B10B-PHDSS	PHDR-10VS
CKM1	1x6 6Pin	1.25mm	MOLEX	53047-0610	51021-0600
CO1	1x4 4Pin	1.25mm	MOLEX	53047-0410	51021-0400
CPI1	2x4 8Pin	2.00mm	JST	B8B-PHDSS	PHDR-08VS
CPO1	1x4 4Pin	2.00mm	JST	B4B-PH-KL	PHR-4
CU8	1x4 4Pin	1.25mm	MOLEX	53047-0410	51021-0400
CU9	1x4 4Pin	1.25mm	MOLEX	53047-0410	51021-0400
CU10	1x4 4Pin	1.25mm	MOLEX	53047-0410	51021-0400
CT1	2x5 10Pin	2.00mm	JST	B10B-PHDSS	PHDR-10VS
LVDS1	2x15 30Pin	1.25mm	HIROSE	DF13-30DS-1.25C	DF13-30DP-1.25V
HDMI1	2x10 20Pin	1.25mm	HIROSE	DF13-20DS-1.25C	DF13-20DP-1.25V

Chapter-4

Introduction of BIOS

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

This program is a bridge between motherboard and operating system.

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

The BIOS first operates an auto-diagnostic test called POST (Power on Self Test) for all the

necessary hardware, it detects the entire hardware devices and configures the parameters of the hardware synchronization. After these tasks are completed, BIOS will give control of the computer back to operating system (OS). Since the BIOS is the only channel for hardware and software to communicate with, it is the key factor of system stability and of ensuring your system performance at best.

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

Press <Esc> to quit the BIOS Setup.

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

Press <F10> to save these parameters and to exit the BIOS Setup menu after you complete

the setup of BIOS parameters.

Press Page Up/Page Down or +/- keys to modify the BIOS parameters for the active option.

4-1 Enter Setup

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

If the message disappears before your respond but you still wish to enter Setup, restart the system by turning it OFF then ON or 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

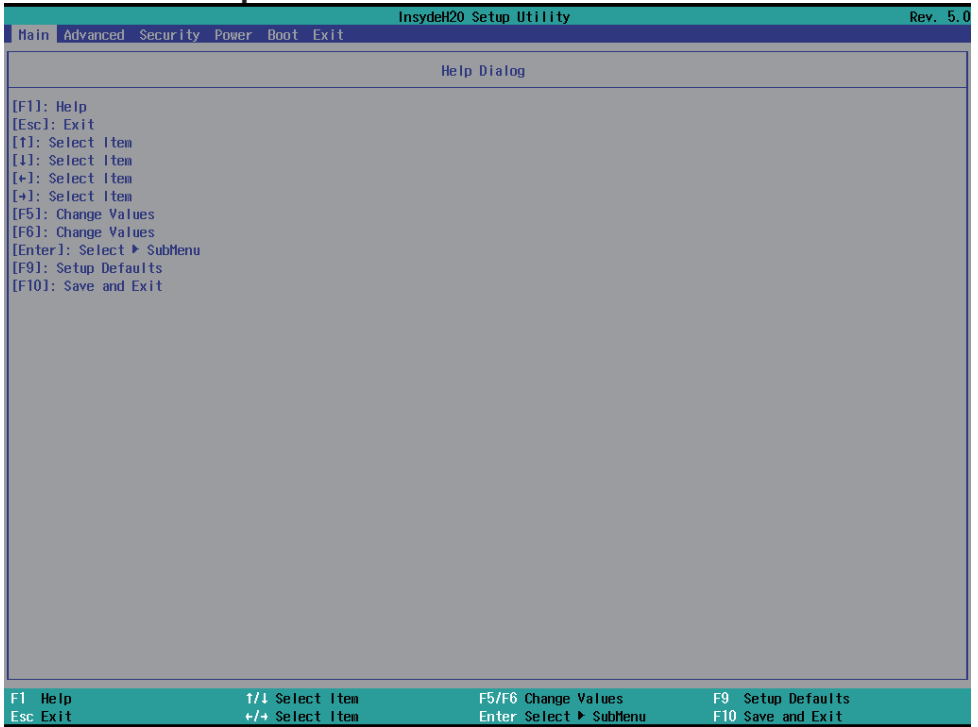
InsydeH20 Setup Utility		Rev. 5.0			
Main	Advanced	Security	Power	Boot	Exit
BIOS Version	31610HW/BW A1	This is the help for the hour, minute, second field. Valid range is from 0 to 23, 0 to 59, 0 to 59. INCREASE/REDUCE : +/-.			
Build Date	01/29/2018				
Build Time	11:11:54				
Processor Type	Intel(R) Celeron(R) CPU 3955U @ 2.00GHz				
System Bus Speed	100 MHz				
System Memory Speed	2133 MHz				
Total Memory	8192 MB				
Channel A					
SODIMM 0	[Not Installed]				
Channel B					
SODIMM 0	8192 MB				
Platform Configuration					
CPUID:	0x406E3 (SKYLAKE ULT ULX)				
CPU Speed:	2000 MHz				
CPU Stepping:	03 (D0/K0 Stepping)				
L1 Data Cache:	32 KB				
L1 Instruction Cache:	32 KB				
L2 Cache:	256 KB				
L3 Cache:	2048 KB				
PCH Rev / SKU	21 (C1 Stepping) / SKL PCH-LP (U) Premium SKU				
System Time	[17:06:06]				
System Date	[07/19/2018]				
F1 Help	↑/↓ Select Item	F5/F6 Change Values	F9 Setup Defaults		
Esc Exit	+/- Select Item	Enter Select ▶ SubMenu	F10 Save and Exit		

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:

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

InsydeH20 Setup Utility Rev. 5.0

Main Advanced Security Power Boot Exit

BIOS Version	3I610HW/BW A1	This is the help for the hour, minute, second field. Valid range is from 0 to 23, 0 to 59, 0 to 59. INCREASE/REDUCE : +/-.
Build Date	01/29/2018	
Build Time	11:11:54	
Processor Type	Intel(R) Celeron(R) CPU 3955U @ 2.00GHz	
System Bus Speed	100 MHz	
System Memory Speed	2133 MHz	
Total Memory	8192 MB	
Channel A		
SODIMM 0	[Not Installed]	
Channel B		
SODIMM 0	8192 MB	
Platform Configuration		
CPUID:	0x406E3 (SKYLAKE ULT ULX)	
CPU Speed:	2000 MHz	
CPU Stepping:	03 (D0/K0 Stepping)	
L1 Data Cache:	32 KB	
L1 Instruction Cache:	32 KB	
L2 Cache:	256 KB	
L3 Cache:	2048 KB	
PCH Rev / SKU	21 (C1 Stepping) / SKL PCH-LP (U) Premium SKU	
System Time	[17:06:06]	
System Date	[07/19/2018]	

F1 Help t/1 Select Item F5/F6 Change Values F9 Setup Defaults
Esc Exit +/- Select Item 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.

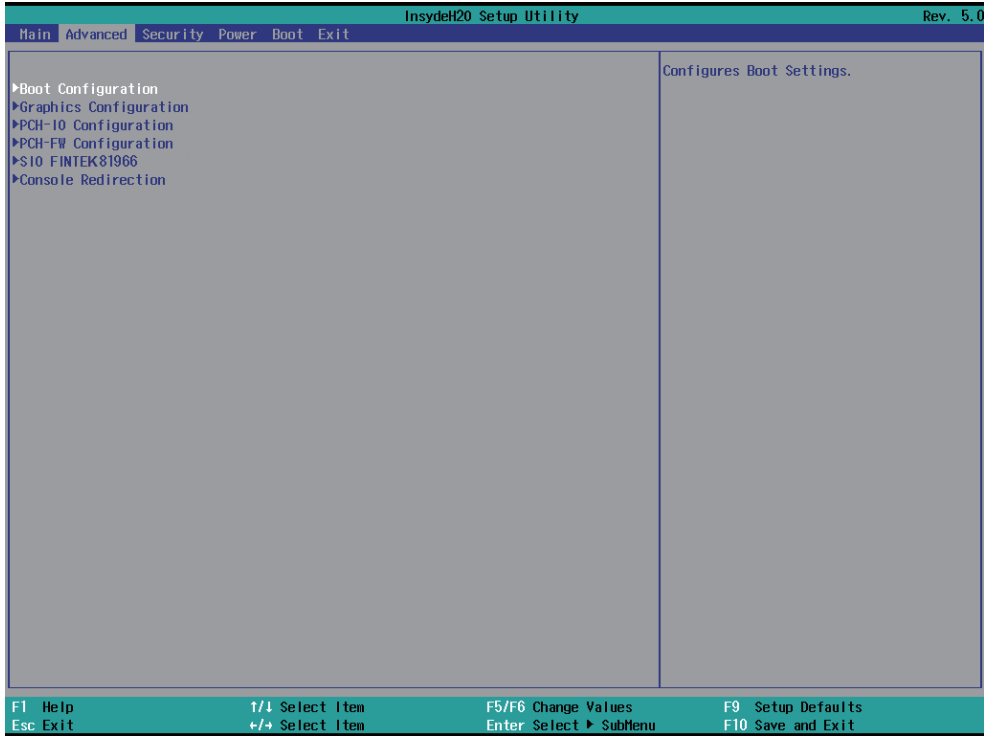
System Date

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

Graphics Configuration

Please refer section 4-6-2

PCH-IO Configuration

Please refer section 4-6-3

PCH-FW Configuration

Please refer section 4-6-4

SIO FINTEK81966

Please refer section 4-6-5

Console Redirection

Please refer section 4-6-6

4-6-1 Boot Configuration

Advanced InsydeH20 Setup Utility Rev. 5.0

Boot Configuration

Num lock <Off>

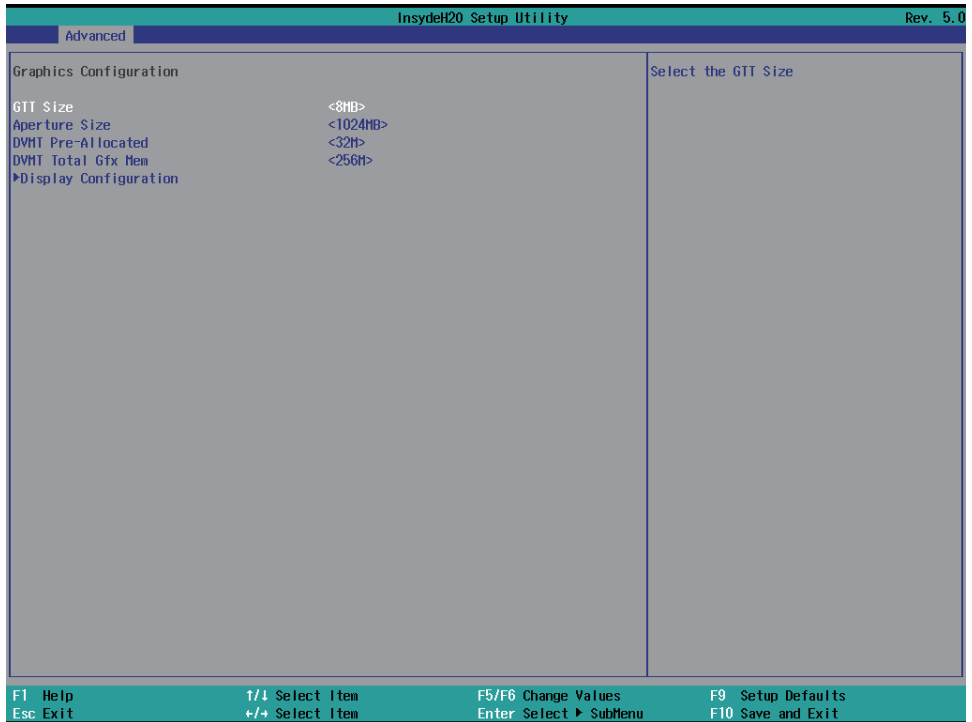
Selects Power-on state for Numlock

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

Numlock

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

4-6-2 Graphics Configuration



GTT Size

Graphics Translation Table Size. The optional settings are: 2MB, 4MB, 8MB(default)

Aperture Size

The optional settings are: 128MB, 256MB, 512MB, 1024MB(default), 2048MB

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: 16MB, 32MB(default), 64MB

DVMT Total Gfx Mem

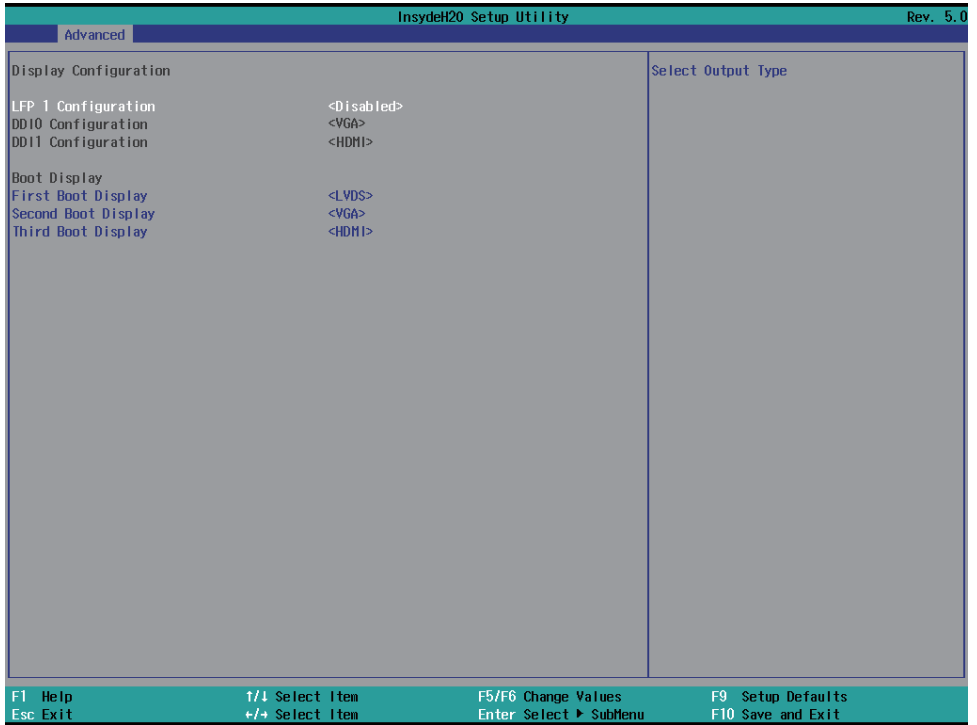
Use this item to select DVMT 5.0 total graphics memory size used by the internal graphics device

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

Display Configuration

Please refer section 4-6-2-1

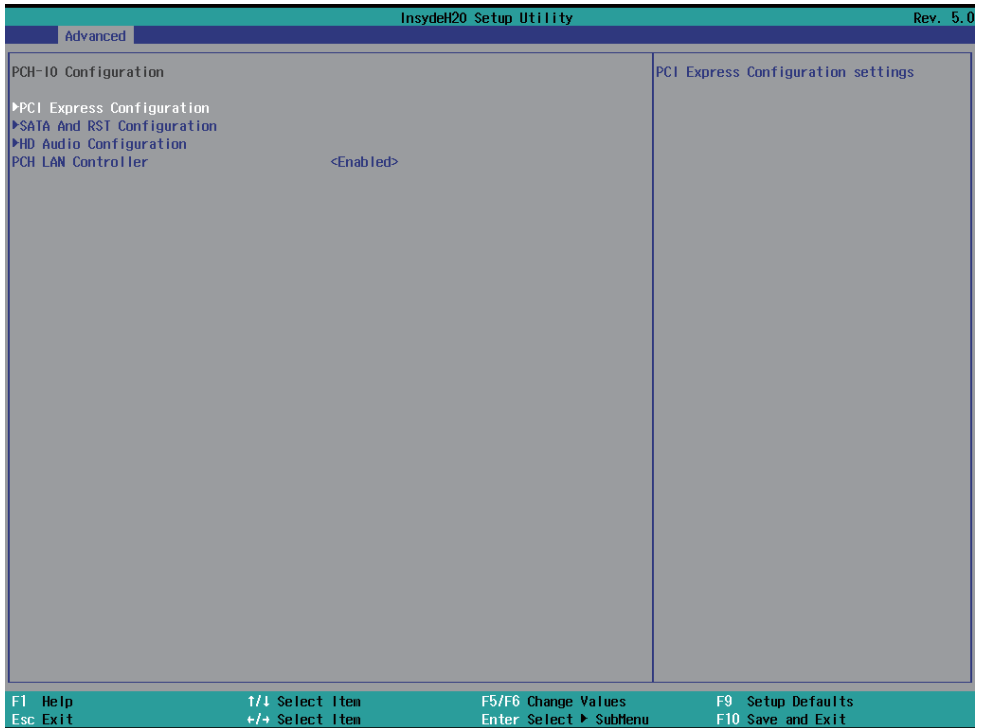
4-6-2-1 ► Display Configuration



Boot Display

To select the displays priority to LVDS, VGA or HDMI

4-6-3 PCH-IO Configuration



PCI Express Configuration

Please refer section 4-6-3-1

SATA And RST Configuration

Please refer section 4-6-3-2

HD Audio Configuration

Please refer section 4-6-3-3

PCH LAN Controller

To enable/disable onboard NICs.

4-6-3-1 ► PCI Express Configuration

Advanced InsydeH20 Setup Utility Rev. 5.0

PCI Express Configuration

PCIE Port assigned to PHY 5

►PCI Express Root Port 01 for MPCE1
►PCI Express Root Port 02 for MPCE2
►PCI Express Root Port 03 for Lan1
►PCI Express Root Port 04 for Lan2

PCI Express Root Port 09 Settings.

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

PCI Express Root Port 01 for MPCE1

Please refer section 4-6-3-1-1

PCI Express Root Port 01 for MPCE2

Please refer section 4-6-3-1-2

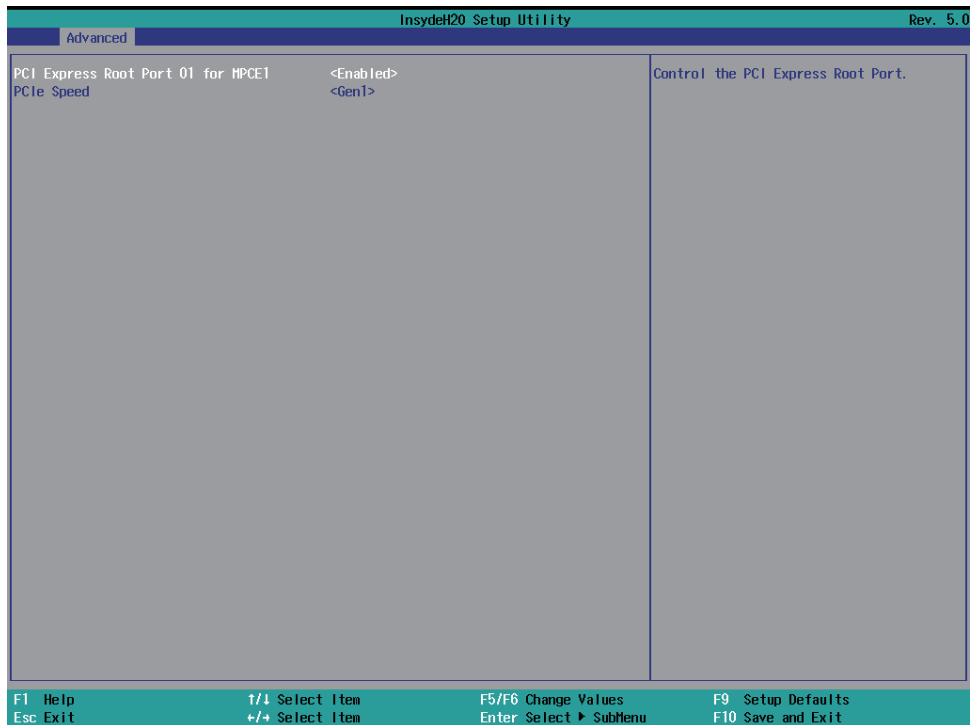
PCI Express Root Port 03 for Lan 1

Please refer section 4-6-3-1-3

PCI Express Root Port 04 for Lan 2

Please refer section 4-6-3-1-4

4-6-3-1-1 ► PCI Express Root Port 01 for MPCE1



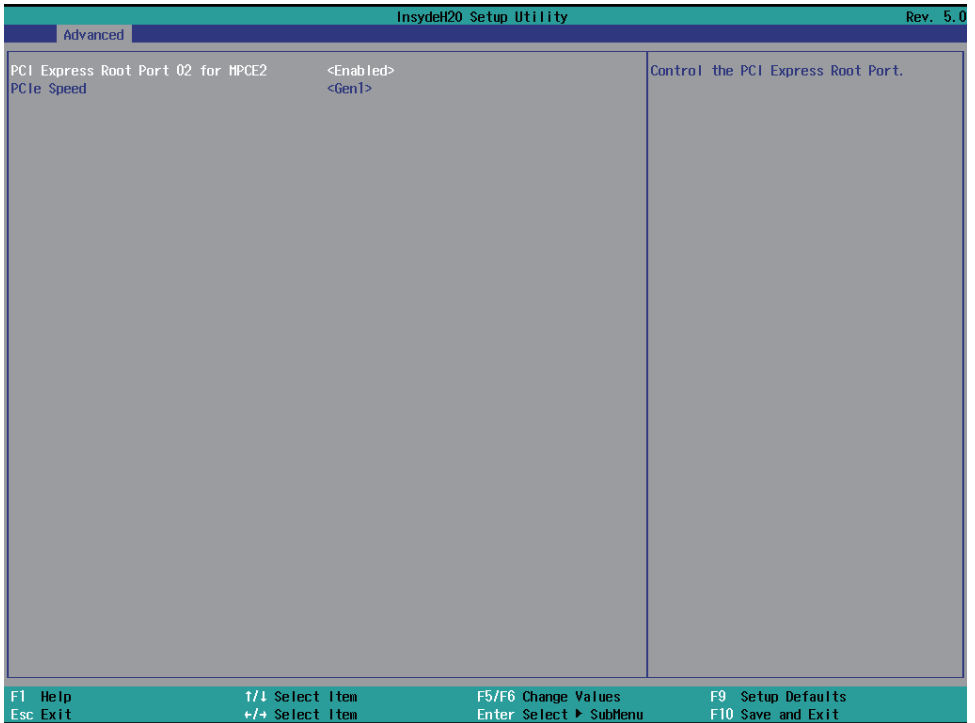
PCI Express Root Port 01 for MPCE1

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

Select PCI Express port speed.

The optional settings are: Auto, Gen1(default), Gen2, Gen3

4-6-3-1-2 ► PCI Express Root Port 02 for MPCE2



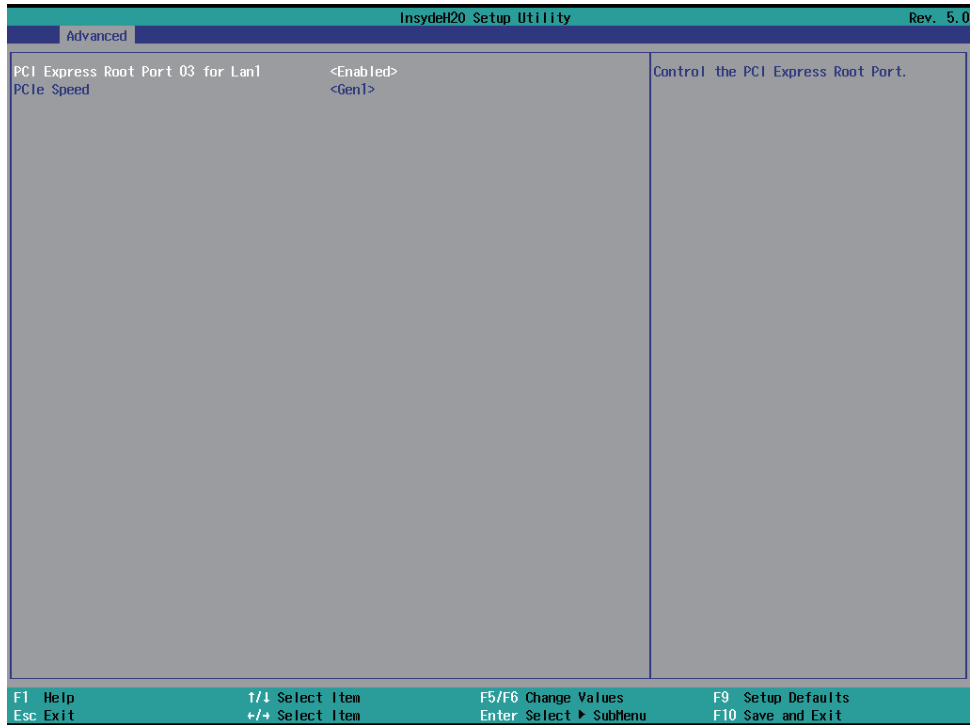
PCI Express Root Port 02 for MPCE2

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

Select PCI Express port speed.

The optional settings are: Auto, Gen1(default), Gen2, Gen3

4-6-3-1-3 ► PCI Express Root Port 03 for Lan 1



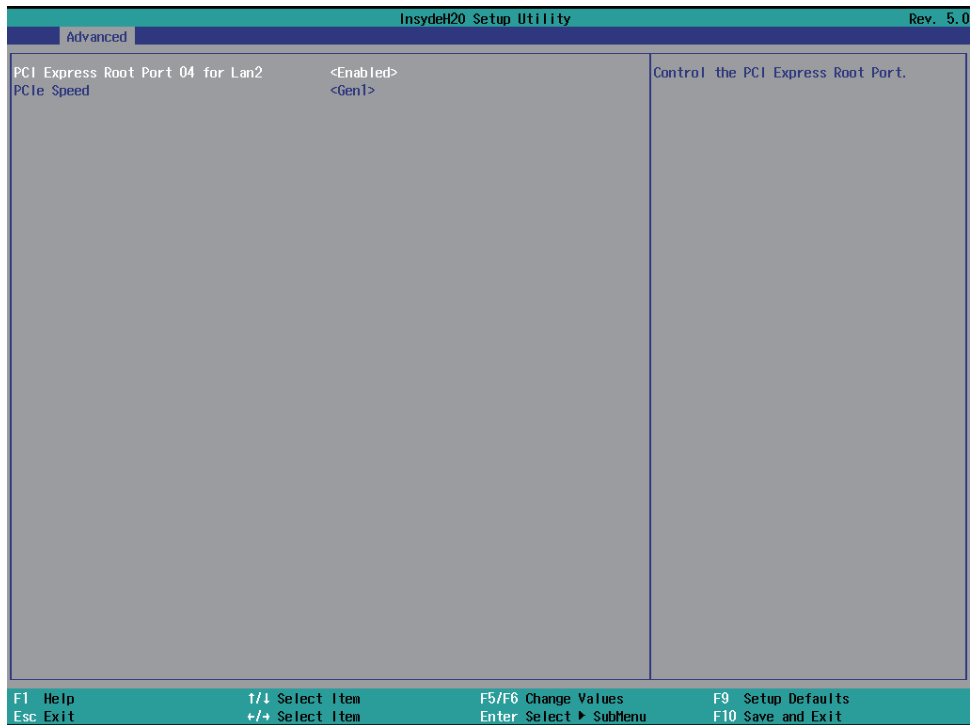
PCI Express Root Port 03 for Lan 1

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

Select PCI Express port speed.

The optional settings are: Auto, Gen1(default), Gen2, Gen3

4-6-3-1-4 ► PCI Express Root Port 04 for Lan 2



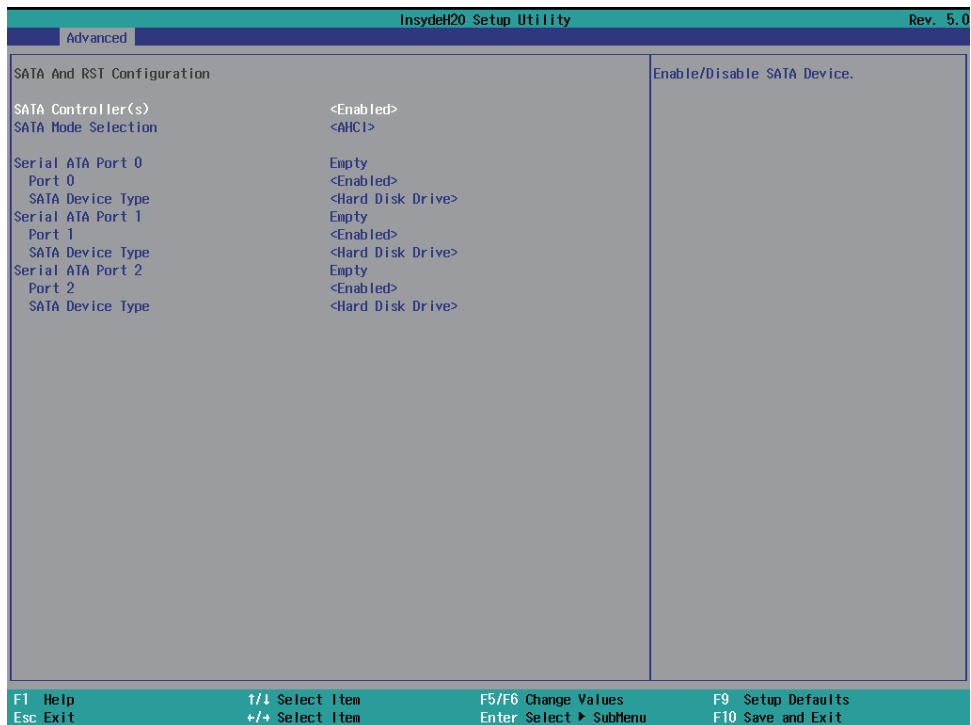
PCI Express Root Port 04 for Lan 2

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

Select PCI Express port speed.

The optional settings are: Auto, Gen1(default), Gen2, Gen3

4-6-3-2 ► SATA And RST Configuration



SATA Controller

Use this item to Enable or Disable SATA Device.

The optional settings are: Enabled(default) or Disabled

SATA Mode Selection

Support AHCI Mode only.

4-6-3-3 ► HD Audio Configuration

InsydeH20 Setup Utility		Rev. 5.0	
Advanced			
HD Audio Subsystem Configuration Settings	Control Detection of the HD-Audio device.		
HD Audio <Enabled>	Disabled = HDA will be unconditionally disabled		
	Enabled = HDA will be unconditionally enabled		
	Auto = HDA will be enabled if present, disabled otherwise.		
F1 Help	t/l Select Item	F5/F6 Change Values	F9 Setup Defaults
Esc Exit	+/- Select Item	Enter Select ► SubMenu	F10 Save and Exit

HD-Audio Supported.

The optional settings are: Enabled(default) or Disabled

4-6-4 PCH-FW Configuration

InsydeH20 Setup Utility Rev. 5.0

Advanced

ME Firmware Version	11.8.50.3425	When Disabled ME will be put into ME Temporarily Disabled Mode.
ME Firmware Mode	Normal Mode	
ME Firmware SKU	Corporate SKU	
ME File System Integrity Value	2	
ME Firmware Status 1	0x90000255	
ME Firmware Status 2	0x89108106	
ME State	<Enabled>	
Manageability Features State	<Disabled>	

F1 Help F5/F6 Change Values F9 Setup Defaults
Esc Exit +/- Select Item Enter Select ▸ SubMenu F10 Save and Exit

ME State
The optional settings are: Enabled(default) or Disabled

Manageability Features State
The optional settings are: Enabled or Disabled(default)

4-6-5 SIO FINTEK81966

InsydeH20 Setup Utility		Rev. 5.0	
Advanced			
Serial Port A	<Enable>	Configure Serial port using options : [Disable] No Configuration [Enable] User Configuration [Auto] EFI/OS chooses configuration	
Base I/O Address	<3F8>		
Interrupt	<IRQ4>		
Mode	<RS232>		
Serial Port B	<Enable>		
Base I/O Address	<2F8>		
Interrupt	<IRQ3>		
Mode	<RS232>		
Serial Port C	<Enable>		
Base I/O Address	<3E8>		
Interrupt	<IRQ10>		
Mode	<RS232>		
Serial Port D	<Enable>		
Base I/O Address	<2E8>		
Interrupt	<IRQ10>		
Mode	<RS232>		
Serial Port E	<Enable>		
Base I/O Address	<4F8>		
Interrupt	<IRQ10>		
Mode	<RS232>		
Serial Port F	<Enable>		
Base I/O Address	<4E8>		
Interrupt	<IRQ10>		
Mode	<RS232>		
Power loss setting	<Keep Last State>		
Hardware Monitor			
F1 Help	t/l Select Item	F5/F6 Change Values	F9 Setup Defaults
Esc Exit	+/- Select Item	Enter Select ▶ SubMenu	F10 Save and Exit

Serial Port 1/2/3/4/5/6

Use this item to enable or disable serial port.

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

Serial Port A 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 B 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 Port C 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=3,4,5,6,7,9,10,11
IO=2E8h; IRQ=3,4,5,6,7,9,10,11
IO=3F8h; IRQ=3,4,5,6,7,9,10,11
IO=4F8h; IRQ=3,4,5,6,7,9,10,11
IO=4E8h; IRQ=3,4,5,6,7,9,10,11

Serial Port D 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 Port E Base IO Address / Interrupt

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

The optional settings are:

IO=4F8h; IRQ=10(default)
IO=2E8h; IRQ=3,4,5,6,7,10,11
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=4E8h; IRQ=3,4,5,6,7,10,11

Serial Port F 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=2E8h; IRQ=3,4,5,6,7,10,11
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

Mode

RS232(default)/RS485/RS422

Power Loss setting

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

[Keep Last state] Restores the system to the status before power failure or interrupt occurred.
[Always on] Leaves the computer in the power on state.
[Always off] Leaves the computer in the power off state.

Hardware Monitor

Please refer section 4-6-5-1

4-6-5-1 ► Hardware Monitor

Advanced InsydeH20 Setup Utility Rev. 5.0

Hardware Monitor

Voltage	
VCC3	3.344 V
VCC_CORE	0.760 V
VDDQ	1.200 V
VCC10	0.976 V
VCC5	5.003 V
VASB3	3.360 V
VBAT	3.424 V
VASB5	4.872 V
Temperature	
CPU (°C/°F)	77.0°C/ 170.6°F
System (°C/°F)	57.0°C/ 134.6°F
Fan Speed	
FAN1	0 RPH

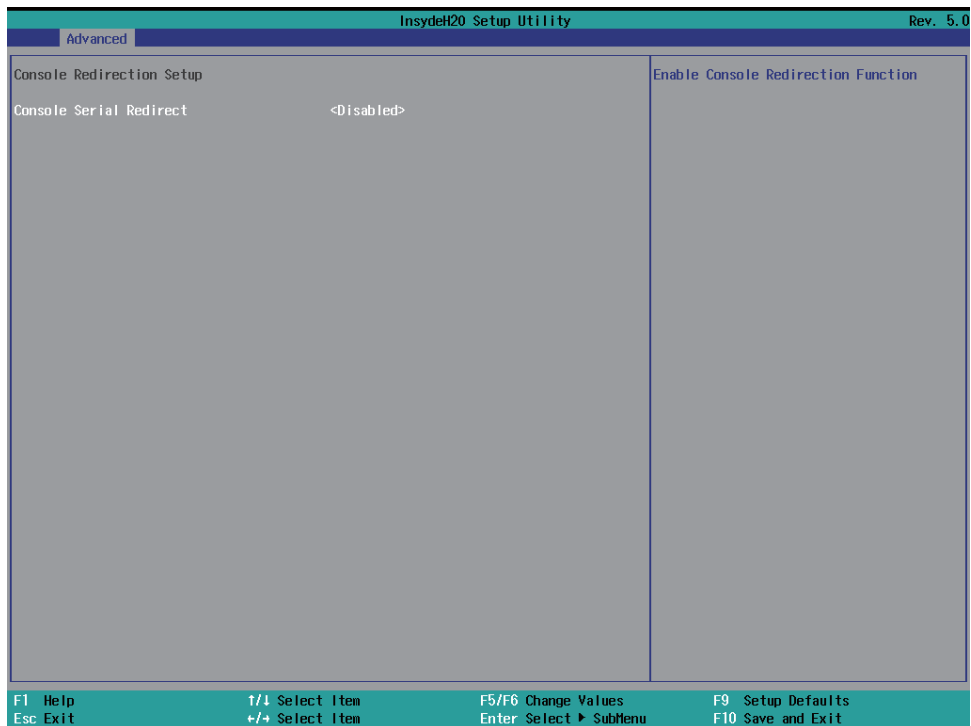
F1 Help ↑/↓ Select Item F5/F6 Change Values F9 Setup Defaults
Esc Exit ←/→ Select Item Enter Select ► Submenu F10 Save and Exit

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.

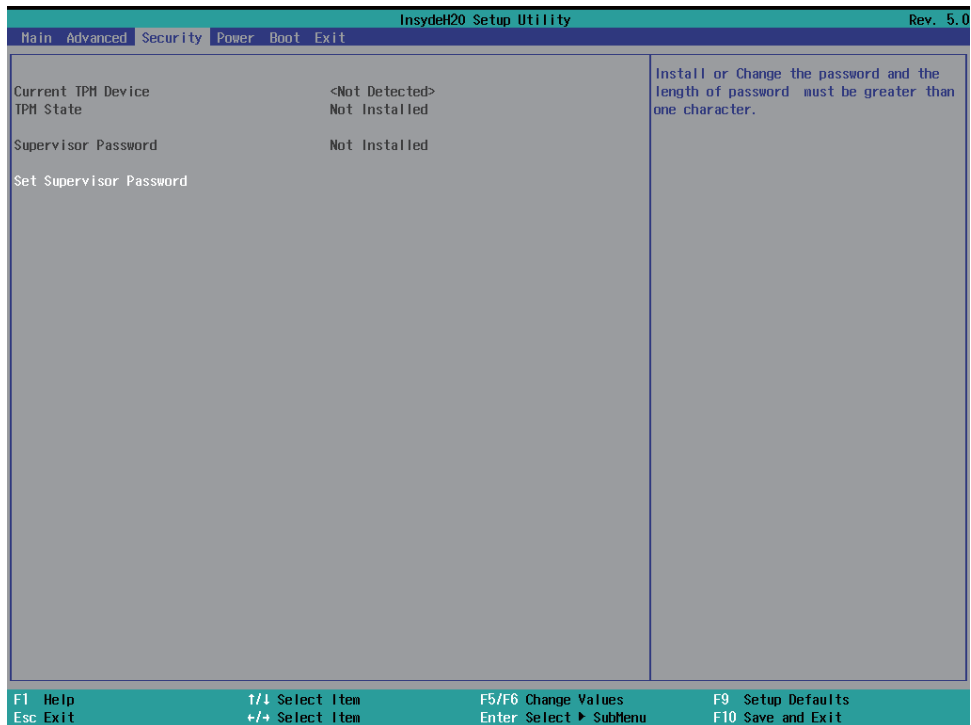
4-6-6 Console Redirection



Console Serial Redirect

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

4-7 Security



Supervisor Password

To set up an Supervisor password

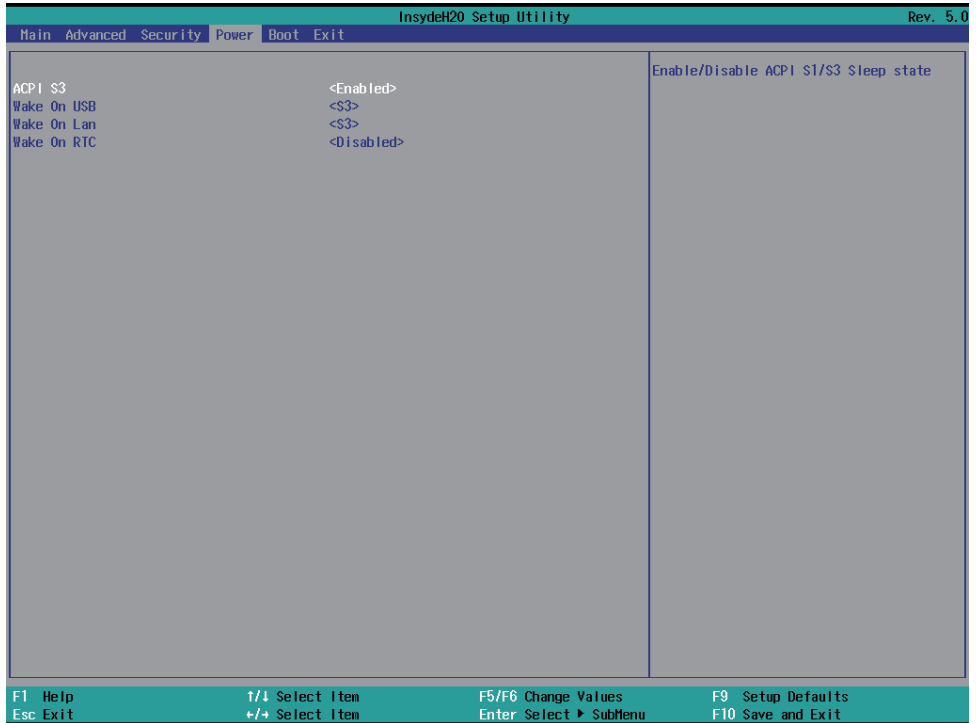
1. Select Supervisor Password.

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



ACPI S3

Select ACPI sleep state (S3) supported
The optional settings: Enabled, Disabled(default)

Wake On USB

Wake on USB from Mouse or Keyboard interrupt signal when system in S3 state
The optional settings: S3(default), Disabled

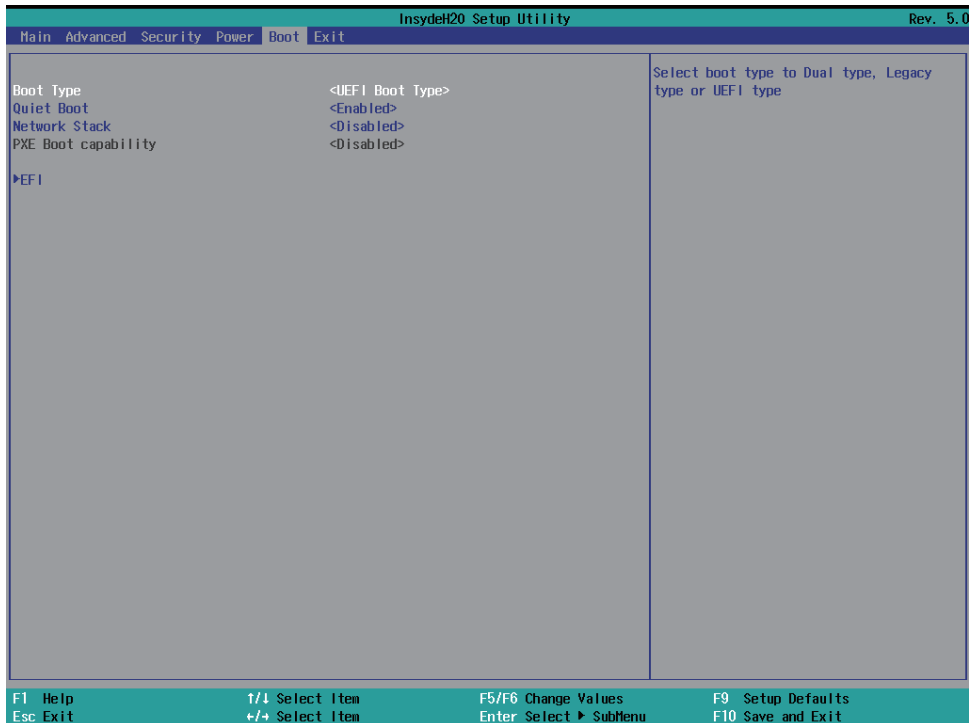
Wake On LAN

Wake on LAN from LAN1 when system in S3 S5, or both of them state
The optional settings: S3(default), S5, S3/S5, Disabled

Wake On RTC

To select an alarm event to wake on a specific day/hour/min./sec.
The optional settings: Disabled(default), By Every Day, By Day of Month

4-9 Boot



Boot type

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

Quiet Boot

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

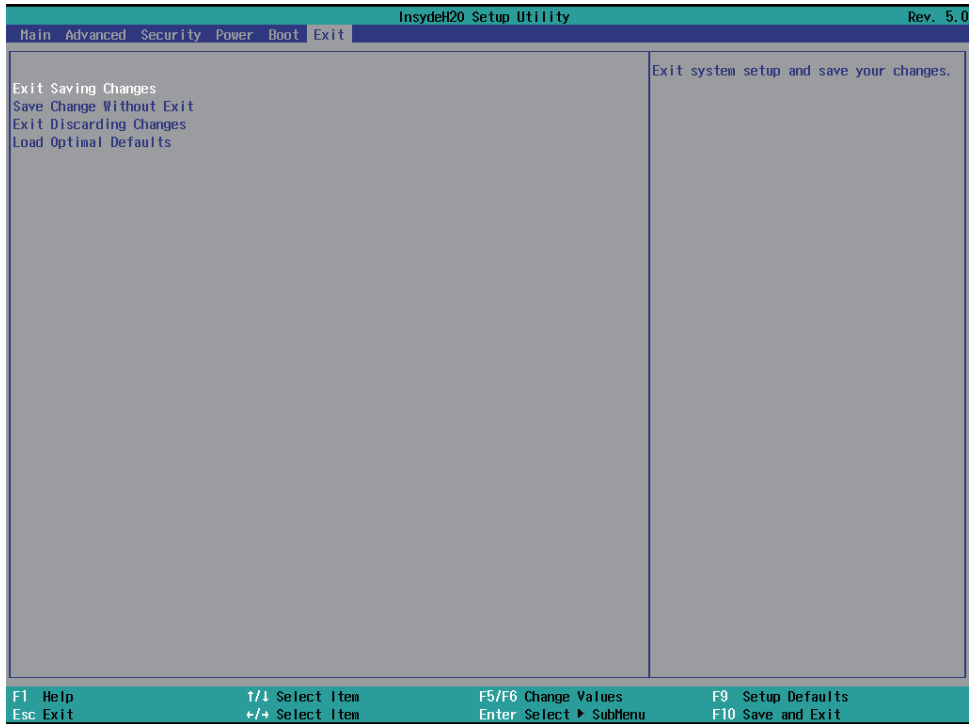
Network Stack

Enabled for PXE function, default is disabled.

EFI

Determine which EFI storage device for booting, this item will not show on this page if there is no any storage device found.

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.

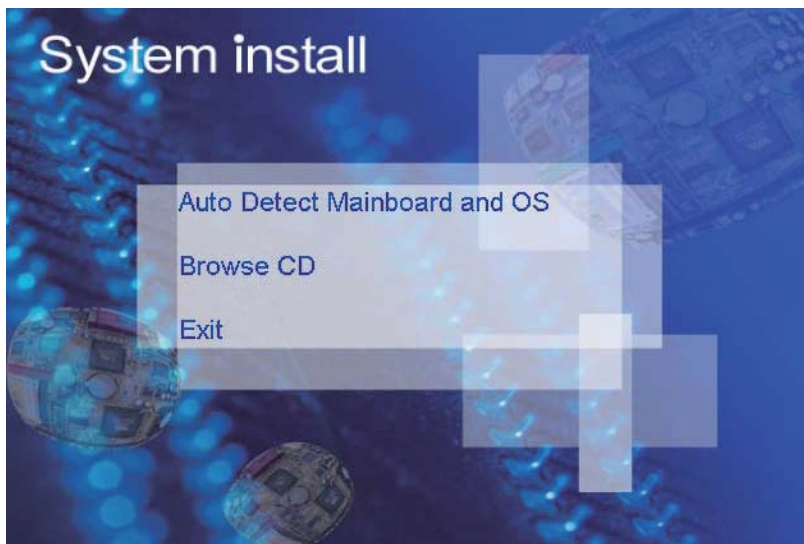
Chapter-5

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 10(32bit/64bit) / Windows 8/8.1(32bit/64bit) / Windows 7(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

Skylake & Kaby Lake for Windows 10 (x64)

Compatible on Windows 8.1 x64

INF	ME Tool
VGA	LAN
HD Audio	

[Back to previous page](#)

Skylake & Kaby Lake for Windows 7 (x64)

INF	KMDF
VGA	ME Tool
HD Audio	USB 3.0
LAN	TPM 2.0

[Back to previous page](#)

1. INF Install Intel Skylake or Kaby Lake chipset driver
2. VGA Install onboard VGA driver
3. HD Audio Install HD Audio Codec driver
4. ME Tool Install Intel Management Engine driver
5. LAN To the LAN driver Readme file
6. Items for Windows 7
- 6-1. KMDF Install windows update package (FOR Win 7 only)
- 6-2. ME Tool Install Intel Management Engine driver
- 6-3. USB 3.0 Install Intel USB 3.0 driver (FOR Win 7 only)
- 6-4. TPM 2.0 Install Intel TPM 2.0 driver (FOR Win 7 only) note 1

note 1: For Windows 7 Ultimate and i7 CPU only

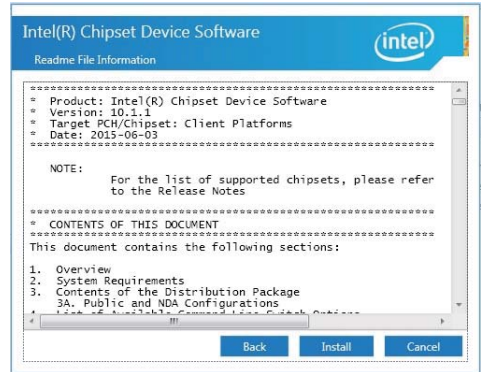
Each selection is illustrated below:

5-1 INF Install Intel Skylake Kaby Lake Chipset Driver (example for WIN10 64bit)



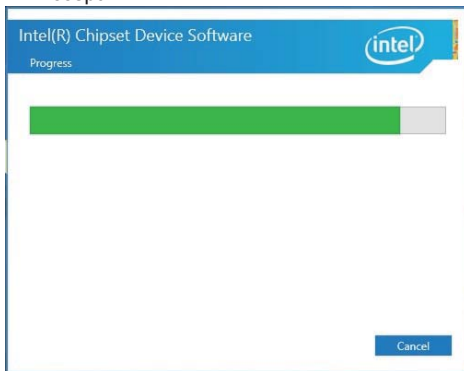
1. At the "AUTOMATIC DRIVER INSTALLATION menu"screen, click "INF".

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



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

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



5. Progressing

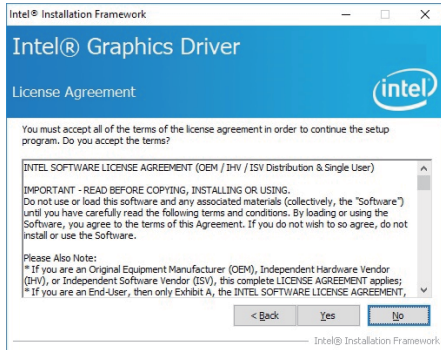
6. Click "Restart Now" then to restart the computer.

NOTE: SYSTEM INSTALL will auto detect file path
X:\driver\skylake\INF\SetupChipset.exe

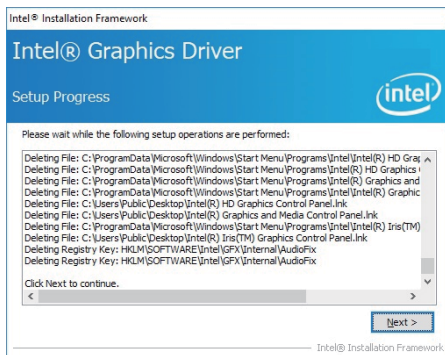
5-2 VGA Install Intel Skylake & Kaby Lake VGA Driver (example for WIN10 64bit)



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

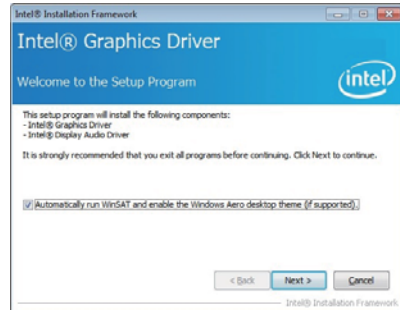


3. At the "License Agreement" screen, Click "Yes"

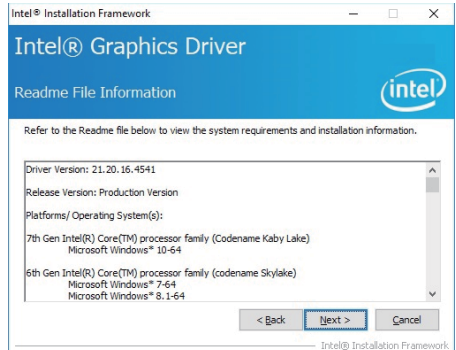


5. At the "Setup Progress" screen, Click "Next".

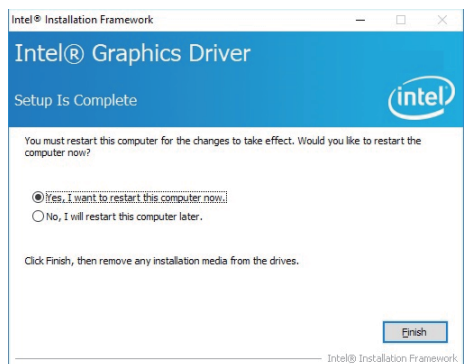
NOTE: SYSTEM INSTALL will auto detect file path
For Windows 64-bit
X:\driver\sky_lake\VGA\X64\Setup.exe
For Windows 32-bit
X:\driver\sky_lake\VGA\X86\Setup.exe



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



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

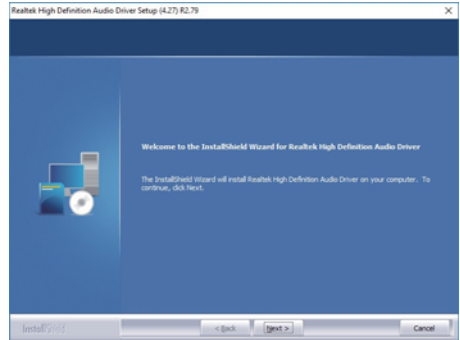


6. Click "Finish" to restart the computer

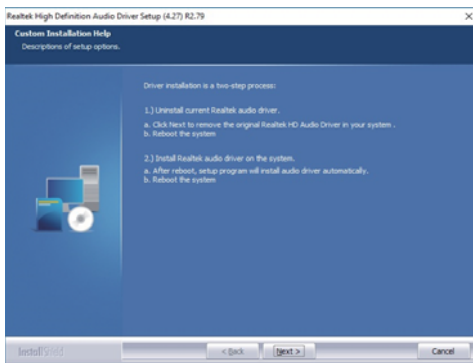
5-3 HD Audio Install High Definition Audio Driver (example for WIN10 64bit)



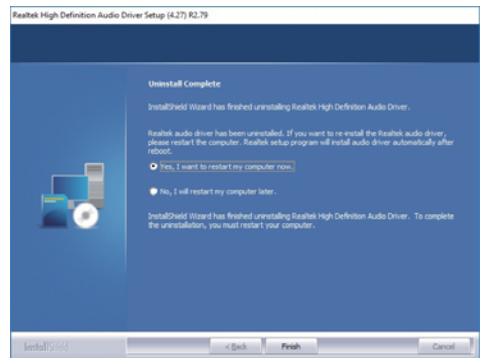
1. At the "AUTOMATIC DRIVER INSTALLATION menu" screen, click "HD Audio".



2. Click "Next".



3. Click "Next"



4. Click "Finish" then to restart the computer.

NOTE: SYSTEM INSTALL will auto detect file path
For Windows 64-bit,
X:\driver\sky_lake\Audio\0006-64bit_Win7_Win8_Win81_Win10_R279
For Windows 32-bit
X: \driver\sky_lake\Audio\Win7_Win8_Win81_R273

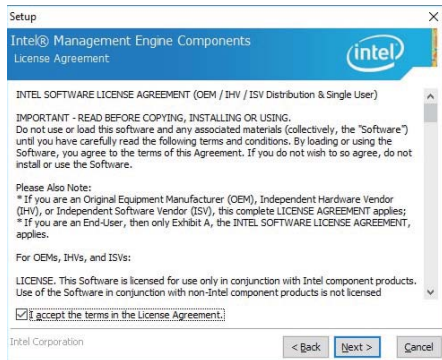
5-4 ME Tool Install Intel USB 3.0 ME Driver (example for WIN10 64bit)



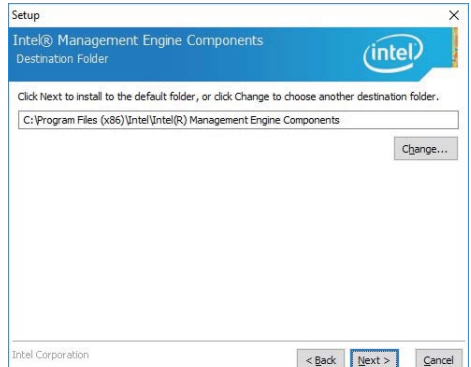
1. At the "AUTOMATIC DRIVER INSTALLATION menu" screen, click "ME Tool".



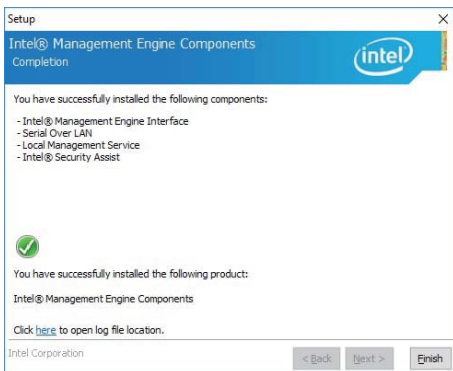
2. At the "Welcome to the Setup Program screen, Click "Next".



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



4. At the "Destination Folder" screen, Click "Next"



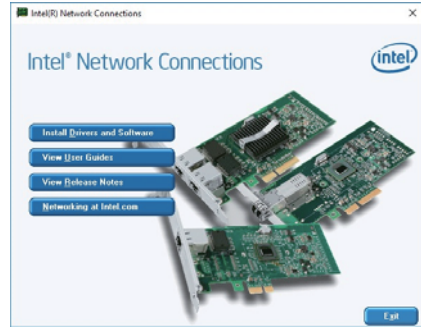
5. Click "Finish" to finish the setup

NOTE: SYSTEM INSTALL will auto detect file path
X: \driver\sky_lake\ME\SetupME

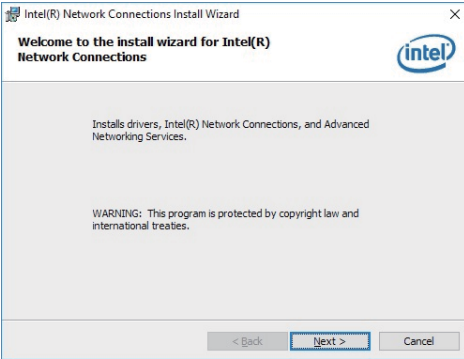
5-5 LAN Install LAN Driver (example for WIN10 64bit)



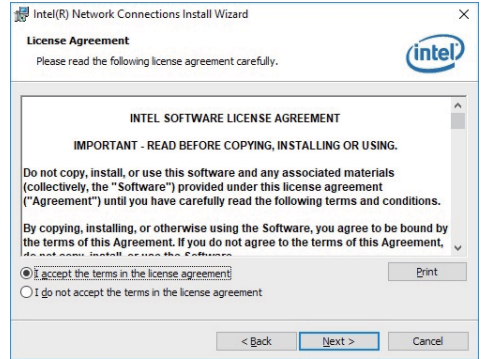
1. At the "AUTOMATIC DRIVER INSTALLATION" menu screen, click "LAN".



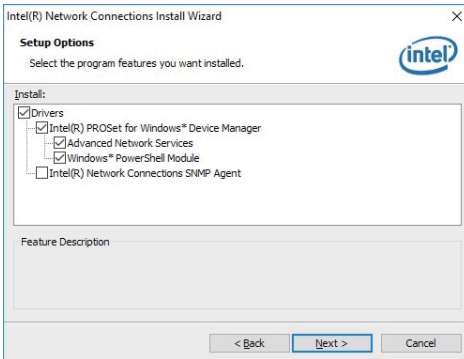
2. At the "Intel Network Connections" screen, Click "Install Drivers and Software".



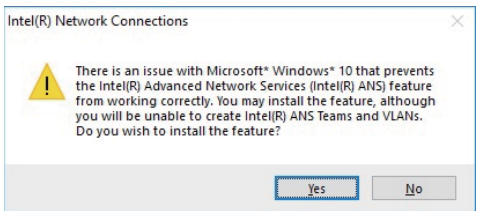
3. Click "Next"



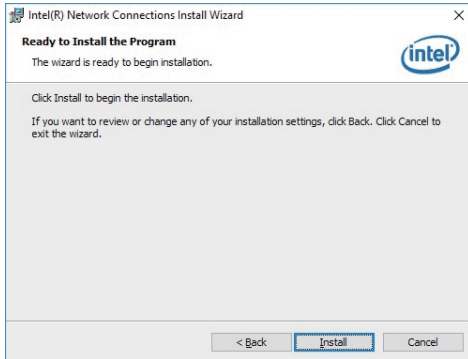
4. At the "License Agreement" screen, Click "I accept the terms in the license agreement" and "Next"



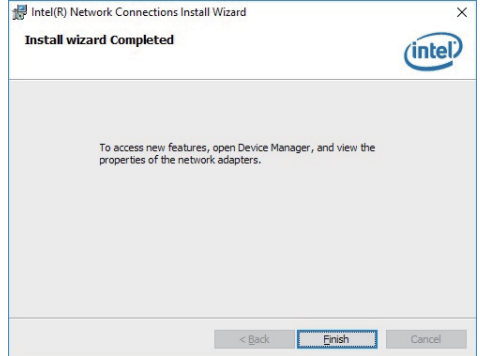
5. Click "Next"



6. Click



7. Click "Install"



6. Click "Finish" to finish the setup.

3. Click "Finish" to restart computer

NOTE: SYSTEM INSTALL will auto detect file path

X:\driver\sky_lake\LAN\Autorun.exe

5-6 Items for Windows 7 installation

Note : Before Windows 7 installation, USB 3.0 Driver MUST rebuild in a new DVD or in a pen-drive. Please following the steps as below

step1 Create a folder X:/win7/boot & X:/win7/install X:/win7/image

step2 unzip usb3.0 driver to X:/win7/usb3.0

step3 Copy the files on the disc D:\sources\install.wim D:\sources\boot.wim to X:/win7/image

step4 Open cmd as your system administrator

step5 Perform the following steps

```

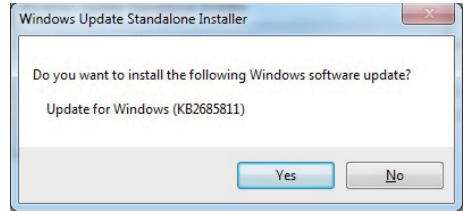
=====
dism /Mount-Wim /Wimfile:C:\win7\image\boot.wim /index:2 /Mountdir:C:\win7\boot
dism /image:C:\win7\boot /add-driver /driver:C:\win7\usb3.0 /Recurse /ForceUnsigned
dism /unmount-wim /mountdir:C:\win7\boot /commit
dism /Mount-Wim /Wimfile:C:\win7\image\boot.wim /index:1 /Mountdir:C:\win7\boot
dism /image:C:\win7\boot /add-driver /driver:C:\win7\usb3.0 /Recurse /ForceUnsigned
dism /unmount-wim /mountdir:C:\win7\boot /commit
dism /Mount-Wim /Wimfile:C:\win7\image\install.wim /index:1 /Mountdir:C:\win7\install
dism /image:C:\win7\boot /add-driver /driver:C:\win7\usb3.0 /Recurse /ForceUnsigned
dism /unmount-wim /mountdir:C:\win7\install /commit
=====

```

step6 copy X:/win7/image/install.wim X:/win7/image/boot.wim D:\sources\

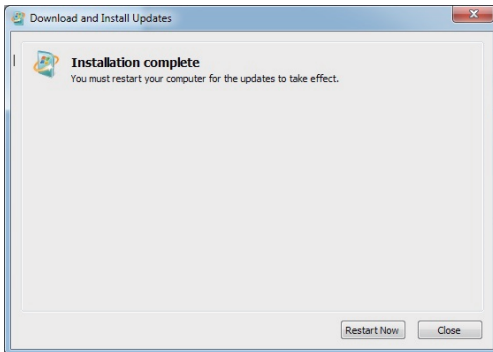
step7 Return the disc

5-6-1 KMDF Install Windows Update package (FOR Win 7 only)



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

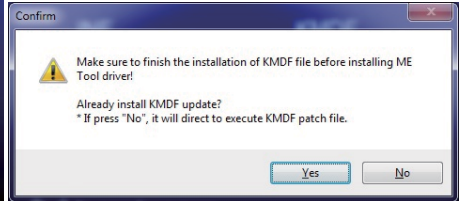
2. Click "Yes"



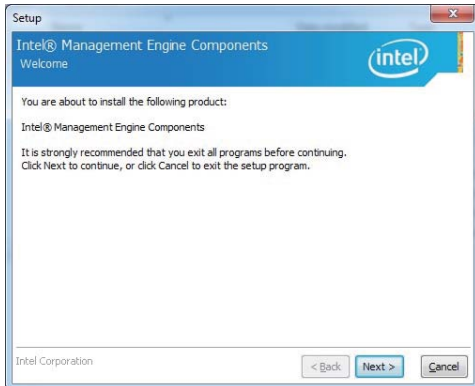
3. Click "Restart Now" to restart the computer

NOTE: SYSTEM INSTALL will auto detect file path
For Windows 7 64-bit,
X:\driver\sky_lake\ME\KMDf_Win7\kmdf-1.11-Win-6.1-x64
For Windows 7 32-bit,
X:\driver\sky_lake\ME\KMDf_Win7\kmdf-1.11-Win-6.1-x86

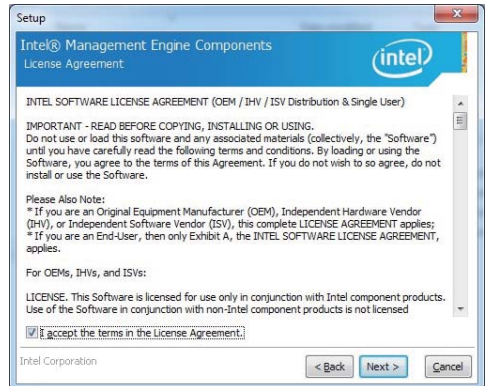
5-6-2 ME Tool Install Intel ME Tool driver for WIN7 Please install KMDf file first.



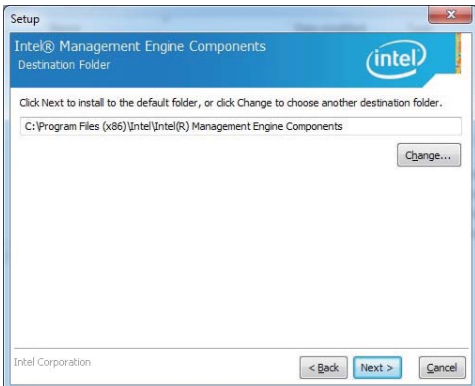
1. At the "AUTOMATIC DRIVER INSTALLATION menu", click "ME Tool"



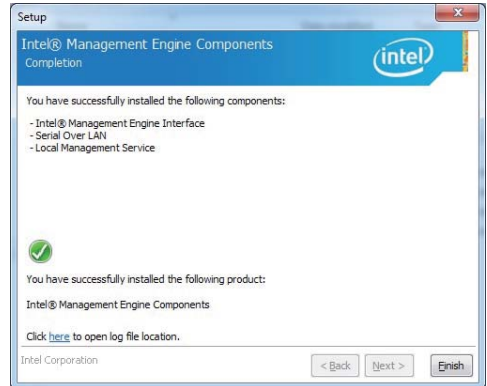
2. Click "Yes". KMDf file must be installed before ME Tool installation.



3. Click "Next".



4. Accept the terms and Click "Next".

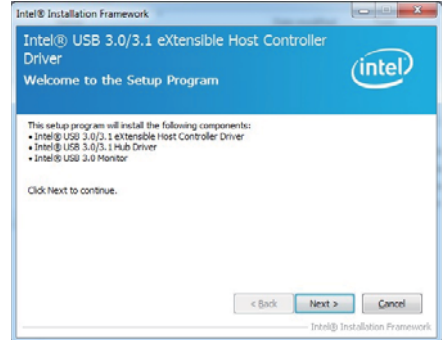


5. Click "Next".

6. Click "Finish" to finish the setup.

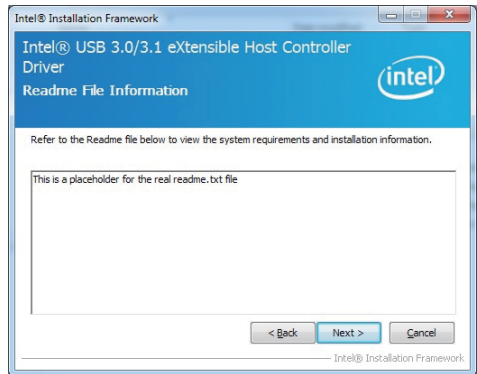
NOTE: SYSTEM INSTALL will auto detect file path
X: \driver\sky_lake\ME\SetupME

5-6-3 USB 3.0 Install for WIN7



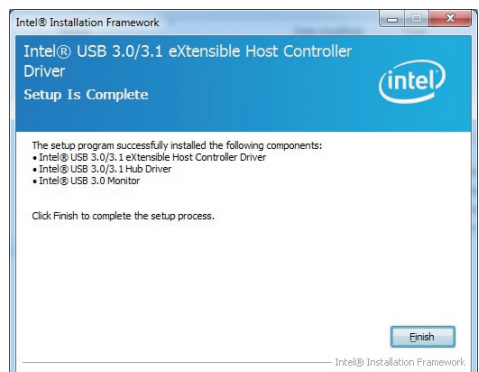
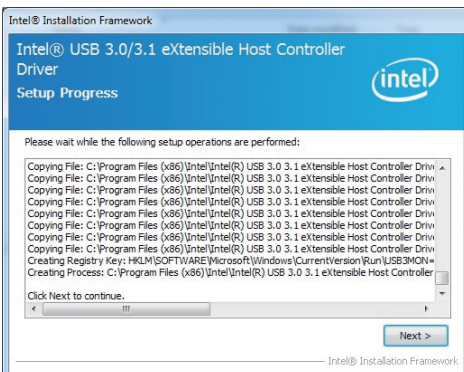
1. At the "AUTOMATIC DRIVER INSTALLATION menu", click "USB 3.0".

2. Click "Next".



3. Click "Yes".

4. Click "Next".



5. Click "Next".

6. Click "Finish" to finish the setup.

NOTE: SYSTEM INSTALL will auto detect file path
For Windows 7 32 / 64-bit,
X:\driver\sky_lake\USB 3.0\Setup.exe

5-6-4 TPM 2.0

For Windows 7 Ultimate and i7 CPU only

Skylake & Kaby Lake for Windows 7 (x64)

INF

KMDF

VGA

ME Tool

HD Audio

USB 3.0

LAN

TPM 2.0

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5-7 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 3I610BW/HW 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 3I610BW/HW.ROM -BIOS -ALL
```

3I610BW/HW.ROM is the file name of the latest BIOS.

It may be 3I610BW/HW.ROM or 3I610BW/HW.ROM, etc.

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

By Bay Trail series mainboard, please type

```
X:\: H2OFFT-D.EXE 3I610BW/HW.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 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)