

2I610DW

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

All-In-One

**Intel Skylake-U / Kaby Lake-U Core i CPU,
3 x Intel GbE LAN, 2 x PCIe mini card slots, VGA,
3 x USB 3.0, 3 x USB 2.0, 2 x COM, Wide Range DC-IN**

CAUTION

**RISK OF EXPLOSION IF BATTERY IS REPLACED
BY AN INCORRECT TYPE.**

**DISPOSE OF USED BATTERIES ACCORDING
TO THE INSTRUCTIONS**

NO. 2I610DW

Release date: May. 15. 2018

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User Manual edition 0.1, May. 15. 2018

Warning !

1. Battery
Batteries on board are consumables.
The life time of them are not guaranteed.
2. Fanless 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-Fail" 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.

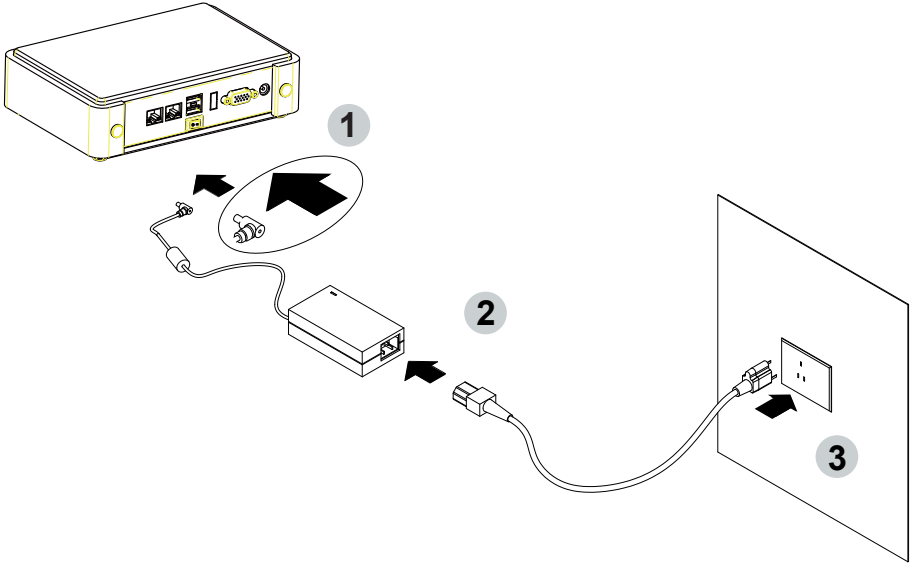
Remark 1:

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

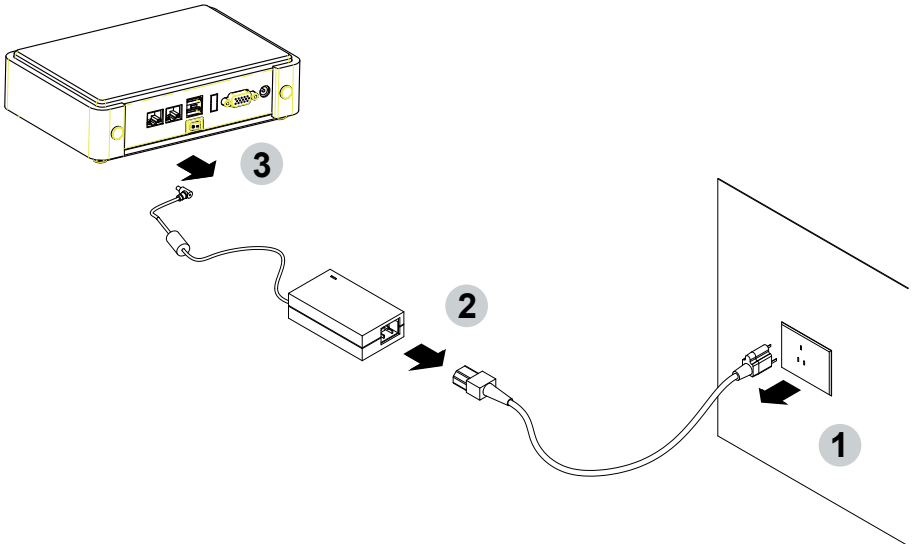
Moreover, erratic pull / push action might cause an unpredictable damage to the component & system unit.

Photo 1

Insert



Unplug



Chapter-1

General Information

The 2I610DW is a 2.5" (102 x 83 mm) motherboard powered with Intel® Skylake-U processor & offered the ideal platform for high performance applications. The ultra compact (102 x 83 mm) motherboard with wide range 9~36V DC power input & embeds multiple Intel GbE LAN, USBs, COM Ports and VGA display interface that offer the ideal platforms for high performance applications in Networking, Smart Automation, Machine Vision, In-vehicle, Industry 4.0 and any compact high-performance Internet of Things (IoT) applications.

The 2I610DW supports high-speed data transfer interfaces such as PCIe gen3, USB 3.0, and SATA 6 Gb/s (SATA III), with one-channel DDR4 2133 MHz memory up to 16GB SODIMM slot and supports two serial ports RS232 / RS485 / RS422 jumper free auto switch by BIOS and +5V / 12V selectable by jumper. It supports 3 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 one SATA III ports, as well as graphics interface for VGA displays.

The embedded motherboard 2I610DW is specially designed with Wide-Range Voltage DC in (9~36V) for widely varying input voltage requirement. All wafer IO design offers superb performance and PC specification in the industry using the specific housing. 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.

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. DDR4 SODIMM slot x 1, up to 16GB
4. Support 3 x 10 / 100 / 1000 Mbps Intel LAN ports.
5. Support 2 x RS232 selectable to RS485 / RS422 by BIOS
6. 3 x USB 3.0 and 3 x USB 2.0
7. 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.
8. Support 1 SATA port
9. Hardware digital Input & Output, 4 x DI / 4 x DO, Hardware Watch Dog Timer,
0~255 sec programmable
10. Wide Range DC IN +9V~36V

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 1, up to 16GB
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.
4. **SATA:** Integrated Serial ATA Host Controller 1 SATA port,
SATA Gen3 Data transfer rates up to 6.0 Gb/s (600 MB/s).
5. **LAN:** 3 Intel I211-AT LAN chipset with 10 / 100 / 1000 Mbps for PCIe x 1 V2.1
6. **I/O Chip:** Switch chipset for 2 ports RS232 / RS422 / RS485 selected by BIOS
7. **USB:** 3 type A USB 3.0, 3 USB 2.0
8. **WDT / DIO:** Hardware digital Input & Output, 4 x DI / 4 x DO (Option) /
Hardware Watch Dog Timer, 0~255 sec programmable
9. **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
10. **BIOS:** Insyde UEFI BIOS
11. **Dimension:** 102 x 83 mm (2.5 inch)
12. **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.

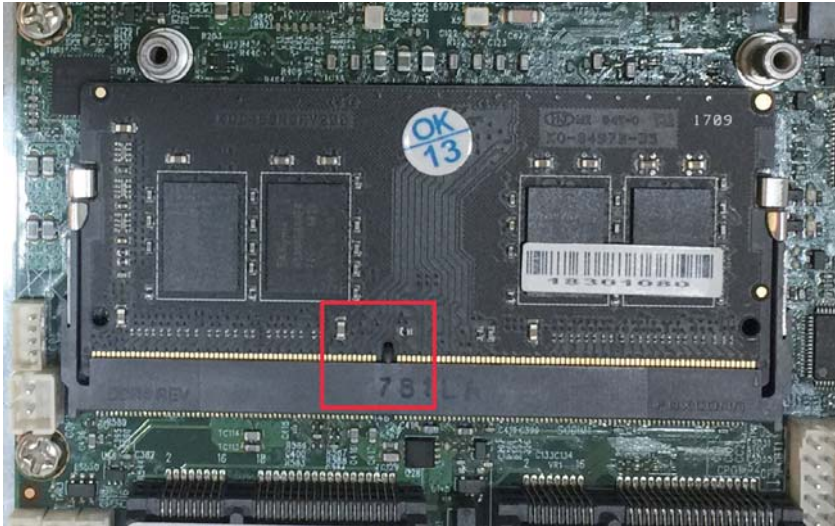


2. Press the SO-DIMM into the connector until you hear a click.

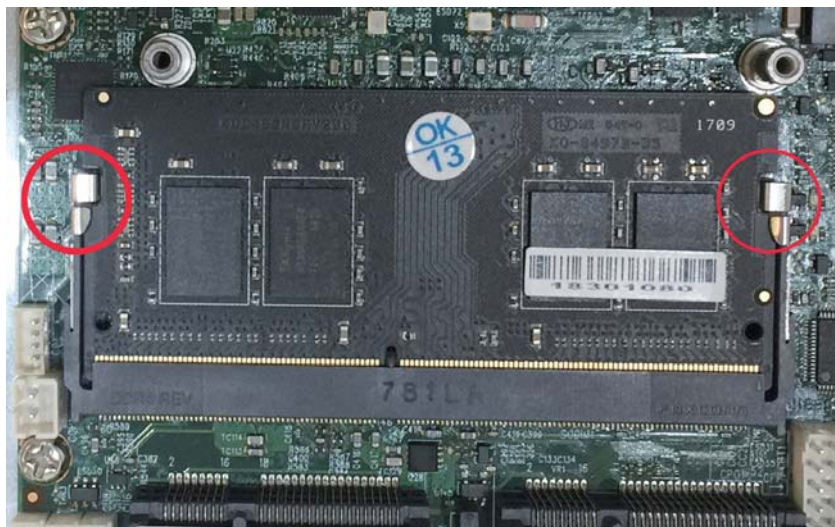


Notices:

- 1.The connectors are designed to ensure the correct insertion. If you feel resistance, check the 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.

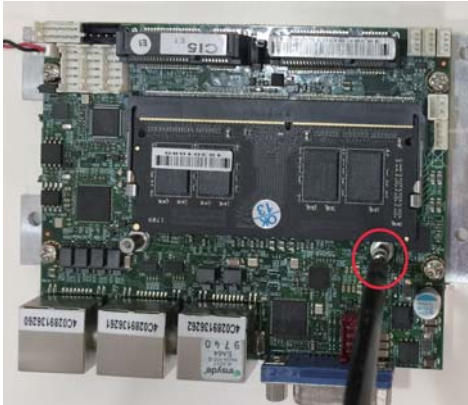


2. Lift the SO-DIMM out of its connector carefully.



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

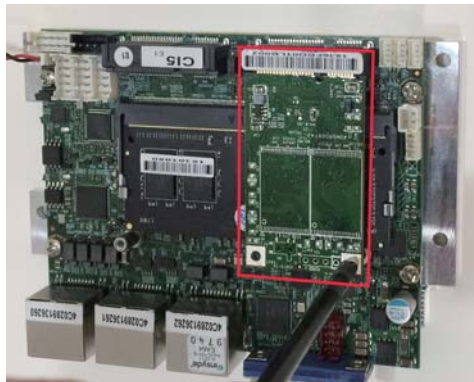
1. Unscrew the screw on the board



2. Plug in the Mini Card in a 45 angle

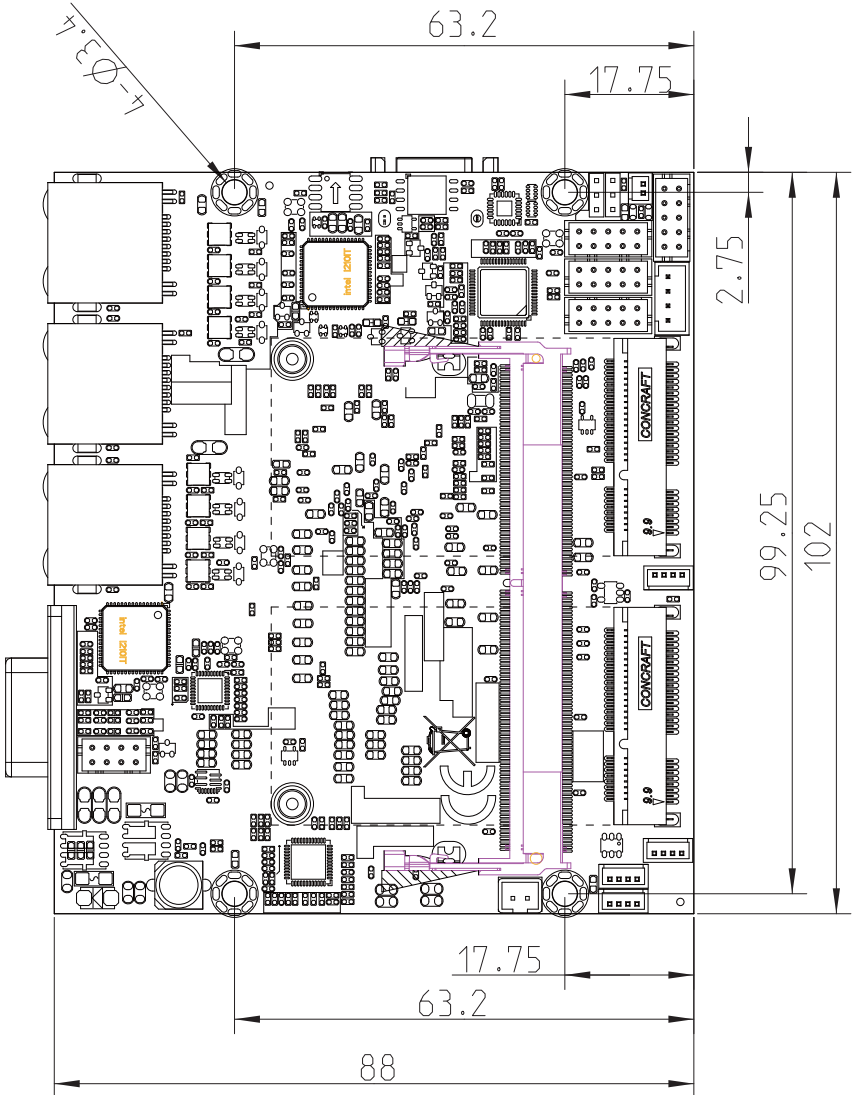


3. Gently push down the Mini Card and screw the screw back.



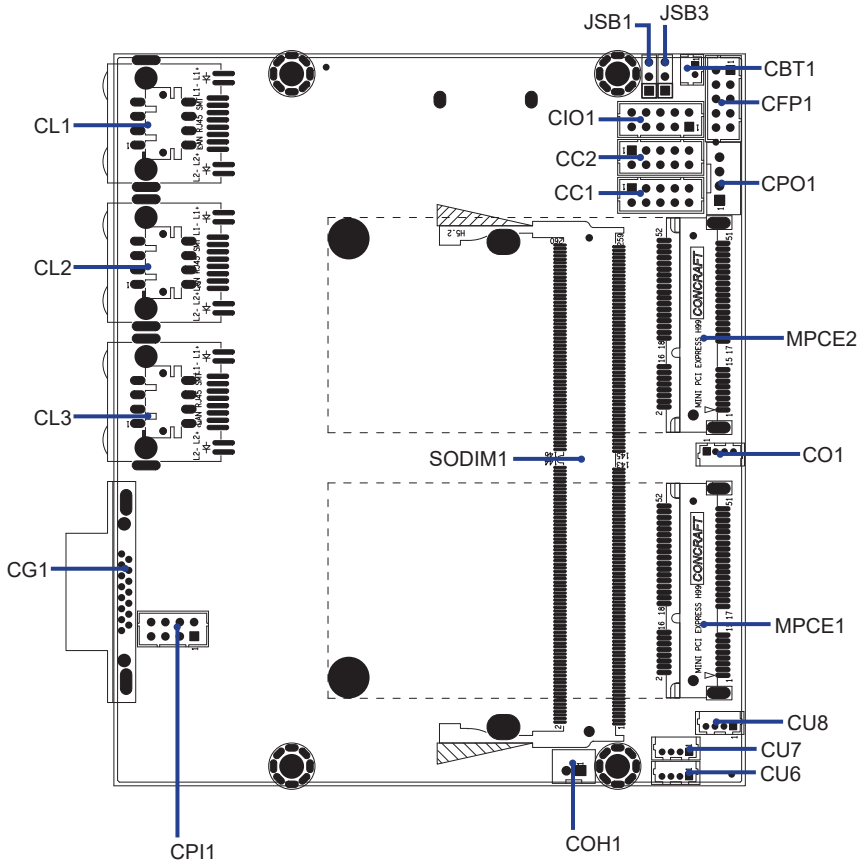
Chapter-2

2-1 Dimension-2I610DW

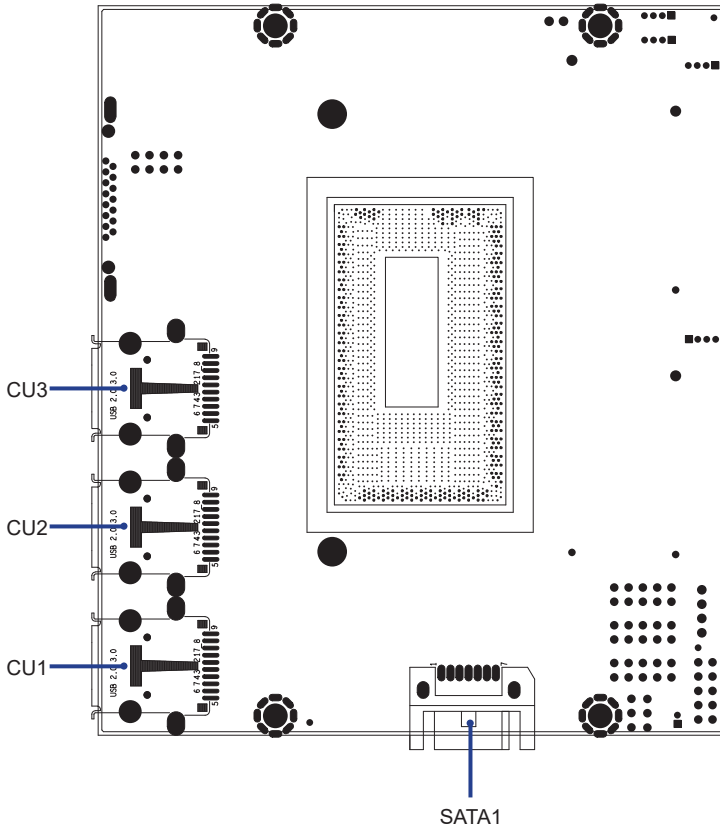


2-2 Layout-2I610DW-Connector and Jumper

TOP

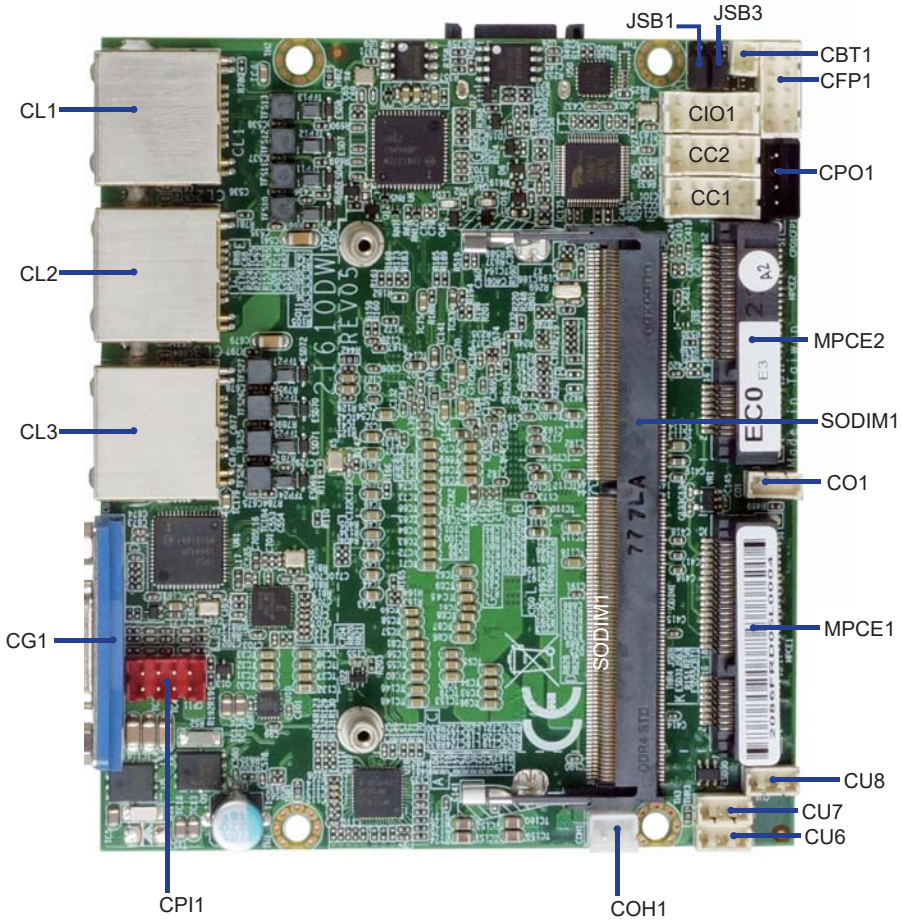


2-2-1 Layout-2I610DW-Connector and Jumper BOT



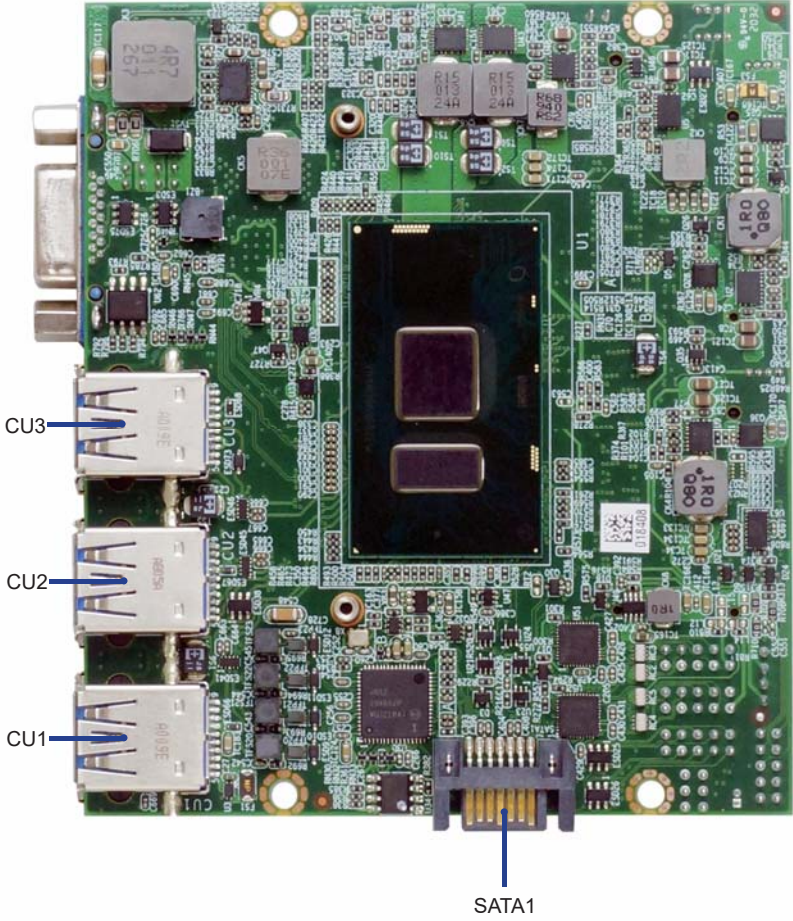
2-2-2 Diagram- 2I610DW

TOP



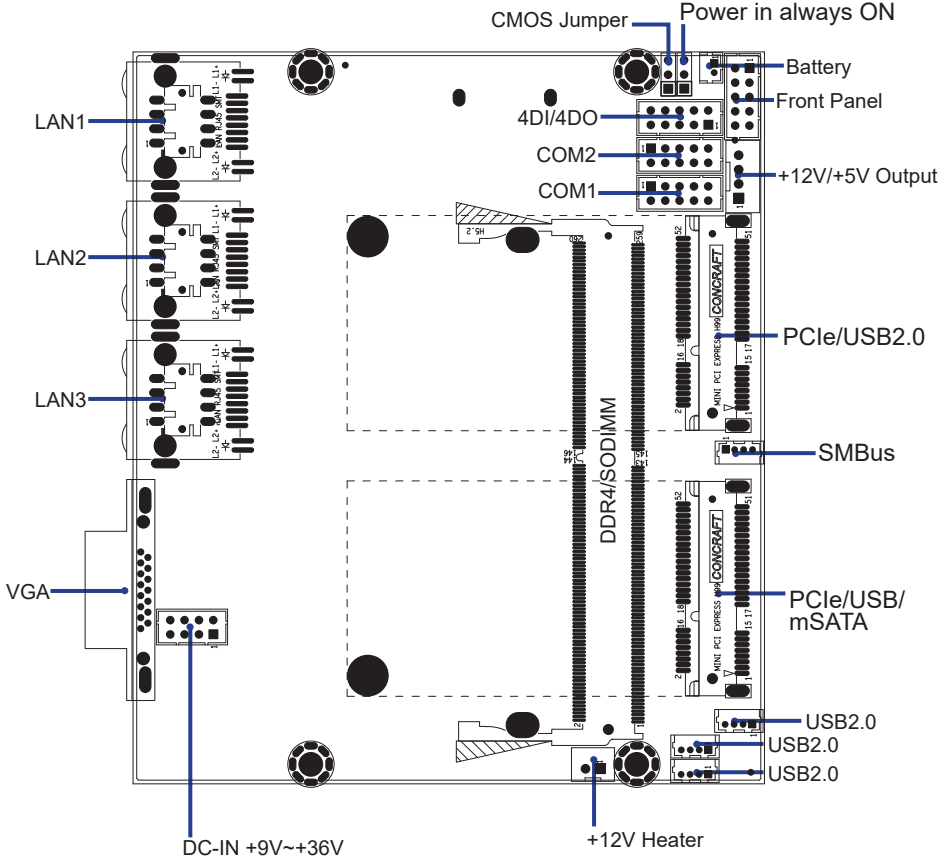
2-2-3 Diagram- 2I610DW

BOT



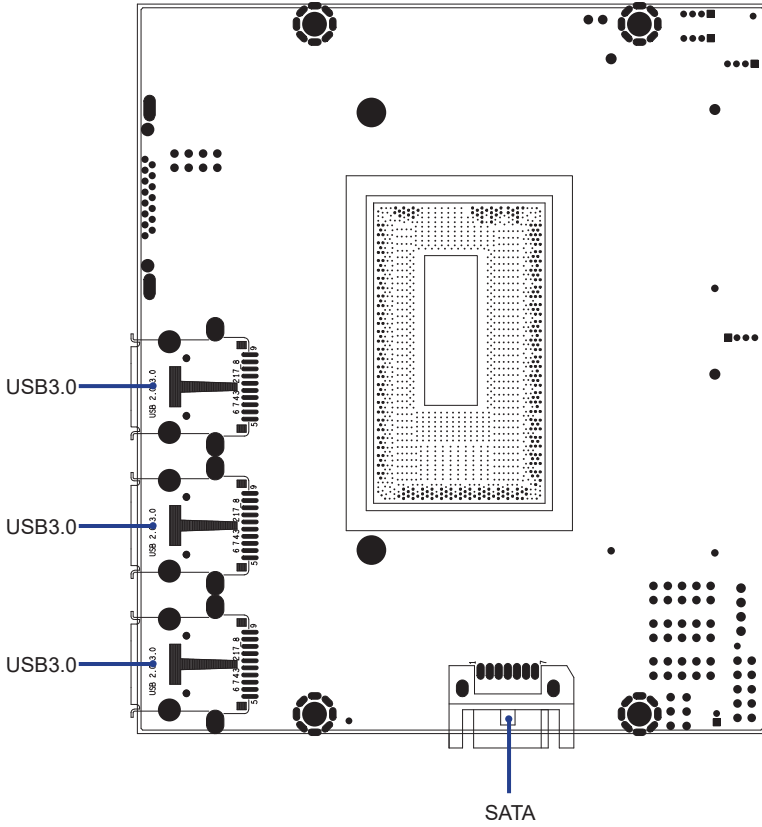
2-3 LAYOUT-2I610DW-FUNCTION MAP

TOP

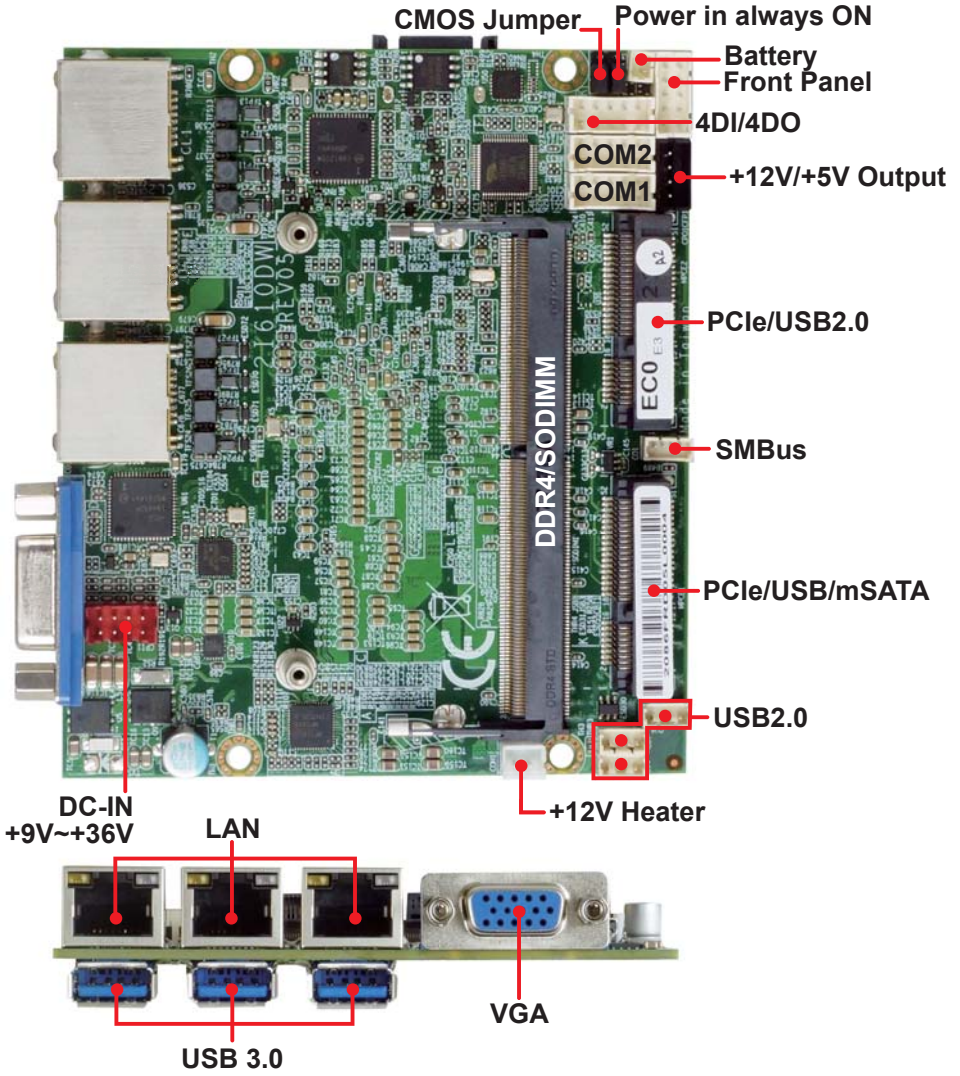


2-3-1 LAYOUT-2I610DW-FUNCTION MAP

BOT



2-3-2 Function MAP- 2I610DW



2-4 List of Jumpers

JSB1: CMOS DATA Clear

JSB3: Power in always ON function

2-5 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.

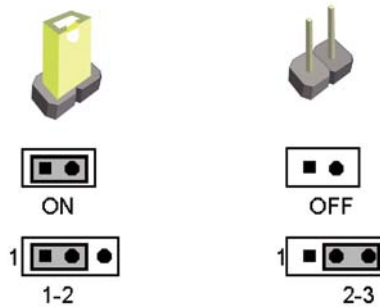


Figure 2.2

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 .

2-6 JSB1: CMOS DATA Clear

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

To clear the CMOS, follow the procedures below:

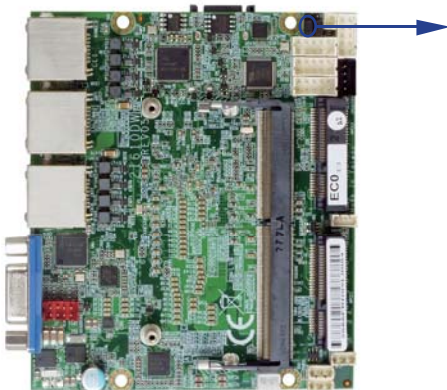
1. Turn off the system and unplug the AC power.
2. Make sure there is no AC & DC power connect to the system or MB.
3. Close pin 2-3 of JSB1 for a few seconds.
4. Return to default setting by close pin 1-2
5. Connect DC IN power cable back to DC IN Power connector

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

Note: Normal work is open jumper

Note: Do not clear CMOS unless

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



JSB1



*Normal

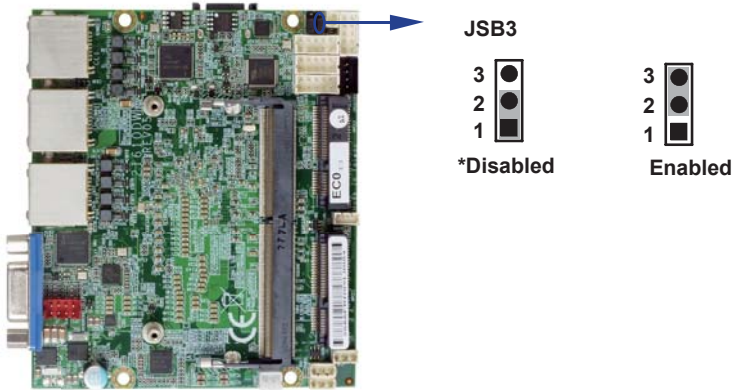


CMOS

2-7 JSB3: Power in always ON function

JSB3	DESCRIPTION
*1-2	Disabled
2-3	Enabled

NOTE: Power always on function default is disabled.



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

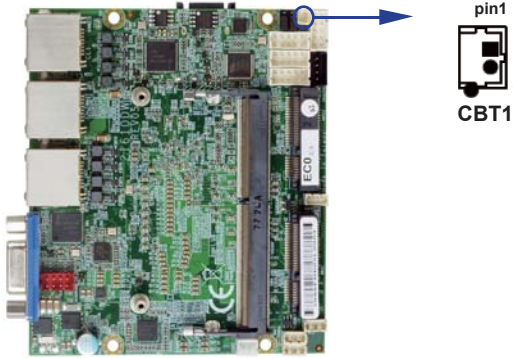
CBT1:	CMOS Battery in 1x2 pin (1.25mm) wafer
CU1:	USB 3.0 Type A connector
CU2:	USB 3.0 Type A connector
CU3:	USB 3.0 Type A connector
CU6:	USB 2.0 port 1x4 pin (1.25mm) wafer
CU7:	USB 2.0 port 1x4 pin (1.25mm) wafer
CU8:	USB 2.0 port 1x4 pin (1.25mm) wafer
CL1 :	RJ45 LAN connector
CL2 :	RJ45 LAN connector
CL3 :	RJ45 LAN connector
CL11:	LAN port 2x4 pin (2.0mm) wafer (option)
CL21:	LAN port 2x4 pin (2.0mm) wafer (option)
CL31:	LAN port 2x4 pin (2.0mm) wafer (option)
CG1:	D-SUB VGA Connector
CC1:	COM1 2x5 pin (2.0mm) wafer
CC2:	COM2 2x5 pin (2.0mm) wafer
COH1:	+12V Heater 1x2 pin (2.00mm) wafer
CFP1:	Front Panel connector 2x5 pin (2.0mm) wafer
CIO1:	4DI/4DO 2x5 pin (2.0mm) wafer
CO1:	SMBus 1x4 pin (1.25mm) wafer
CPI1:	DC 12V-IN 2x4 pin (2.0mm) Red wafer
CPO1:	+12V/+5V power output 1x4 pin (2.0mm) Black wafer
SATA1:	SATA connector 7pin.
SODIM1:	DDR4 Channel 0 SODIMM H: 5.2mm
MPCE1:	Full size mini card port 1 sockets 52pin
MPCE2:	Full size mini card port 2 sockets 52pin

3-2 CMOS battery connector

- CBT1: CMOS Battery in 1x2pin (1.25mm) wafer

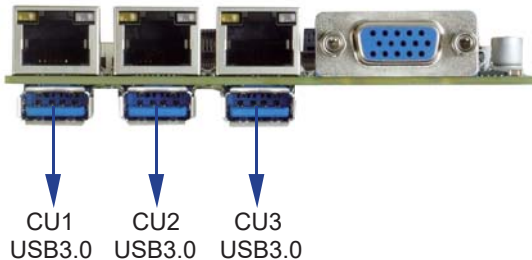
PIN NO.	DESCRIPTION
1	Battery in (GND)
2	Battery in (+3V)

NOTE: CBT1 for external connector can extend battery capacity.



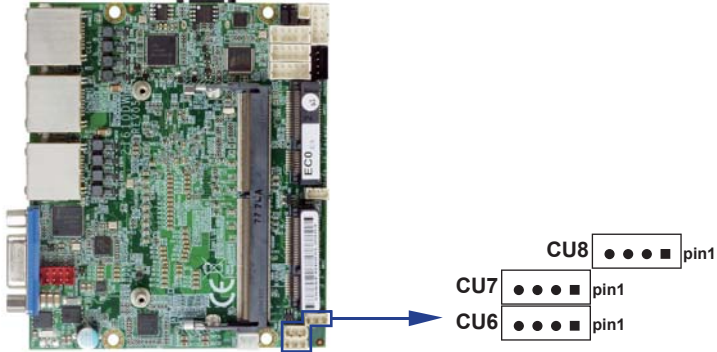
3-3 CU1.CU2.CU3: USB 3.0/2.0 Type A connector 1/2/3

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
		1	USB 3.0 TX+
1	+5V		
2	USB 2.0 D-	2	USB 3.0 TX-
		3	GND
3	USB 2.0 D+	4	USB 3.0 RX+
4	GND		
		5	USB 3.0 RX-



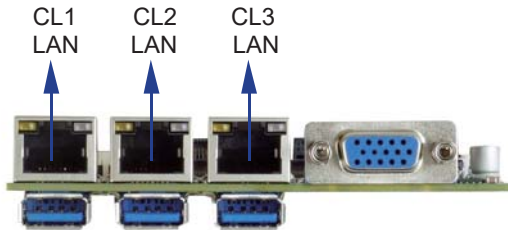
3-4 CU6.CU7.CU8: USB 2.0 1x4 pin (1.25mm) wafer

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



3-5 CL1.CL2.CL3: RJ45 LAN Connector

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



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

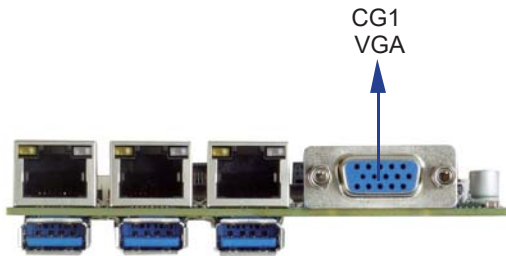
Speed	10 Mbps		100 Mbps		1000 Mbps	
	Link LED	Active LED	Link LED	Active LED	Link LED	Active LED
Light						

3-6 CL11.CL21.CL31: LAN signal out 2x4 pin (2.0mm) wafer (option)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	TR0-	2	TR0+
3	TR2+	4	TR1+
5	TR1-	6	TR2+
7	TR3-	8	TR3+

3-7 CG1: D-SUB VGA Connector (D-SUB 15PIN)

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



3-8 CC1.CC2: COM1 / COM2 2x5 pin (2.0mm) wafer

• RS232 Mode

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

Note:

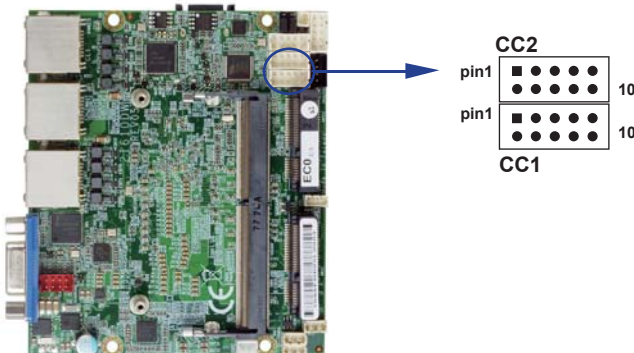
1. COM 1/2 Default RS232, RS485 / RS422 by BIOS control.
2. The pin9 RI can be modify to Power to supply device. The power voltage can be set +12V or +5V. The RI change Voltage function set by BOM control. Default is RI signal.
3. Pin 10 provides +5V for external device.

• RS485 Mode

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

• RS422 Mode

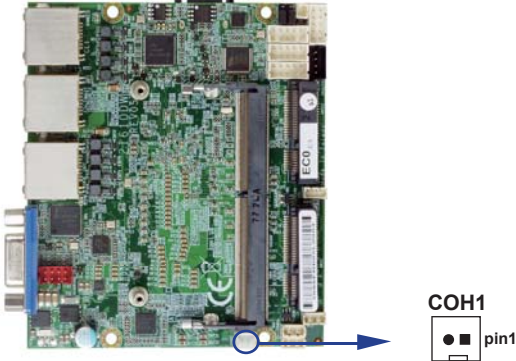
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	TX-	2	TX+
3	RX+	4	RX-
5	GND	6	NC
7	NC	8	NC
9	NC	10	+5V



3-9 COH1: +12V Heater 1x2 pin (2.0mm) wafer

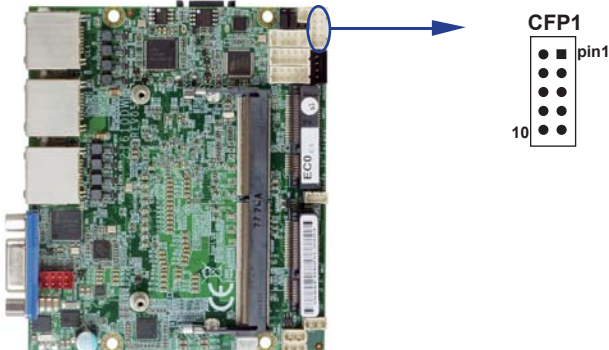
PIN NO.	DESCRIPTION
1	+12V
2	GND

Note: Then +12V will powered when adapter plug-in.



3-10 CFP1: Front Panel 2x5 pin (2.0mm) wafer

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

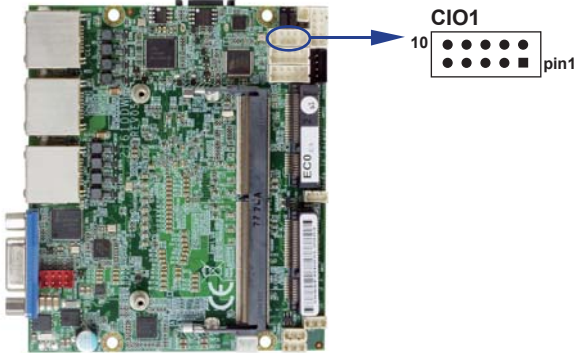


3-11 CIO1: DIO 0~3 2x5 pin (2.0mm) wafer

- CIO1: DIO 0 - 3 2x5pin (2.0mm) wafer

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

- Note: 1. DI pin default pull up 10KΩ to +5V
2. If use need isolate circuit to control external device
3. F75111N-1 I²C bus address 0x9c



• WDT For F75111N SMBus 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.

3-11-1 IO Device: F75111 under DOS

The Sample code source you can download from

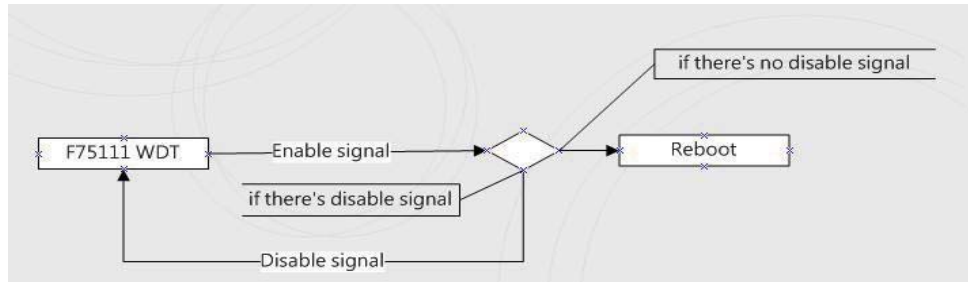
Source file: F75111_Dos_Src.rar http://tprd.info/lexwiki/index.php/IO_Device:F75111_under_DOS

Binary file: F75111_Dos_Bin.rar

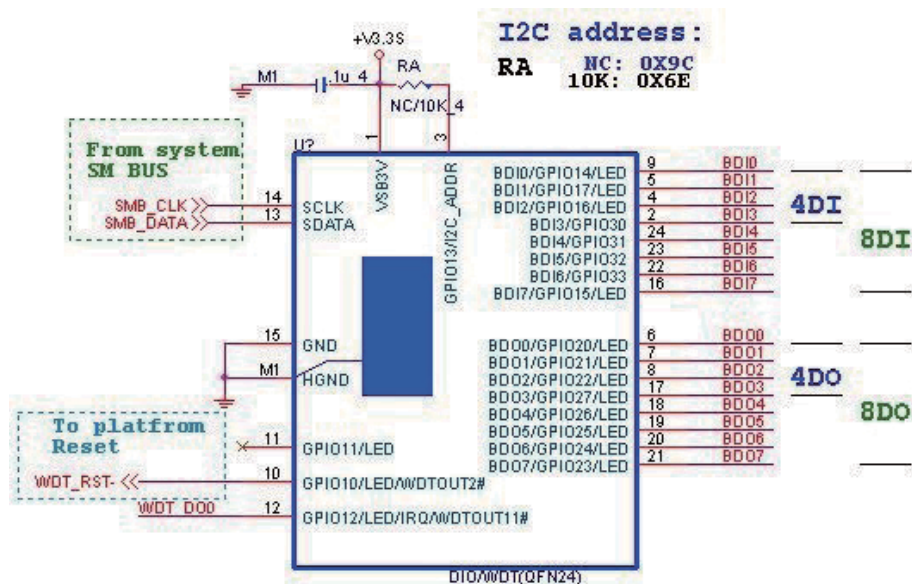
USERNAME & PASSWORD: sf

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;
}
```

3-11-2 IO Device: F75111 under Windows

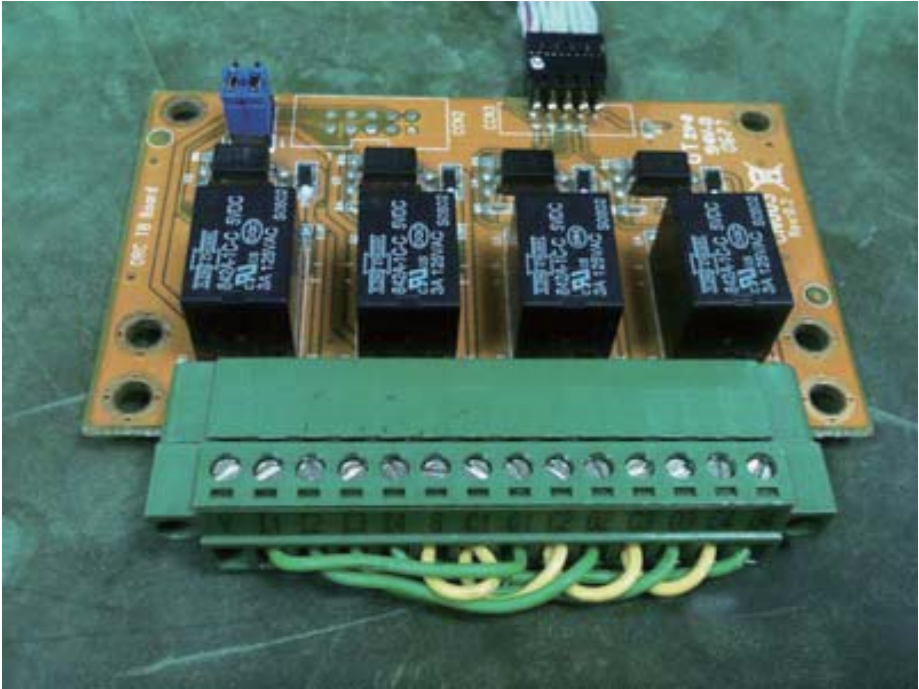
The Sample code source you can download from

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

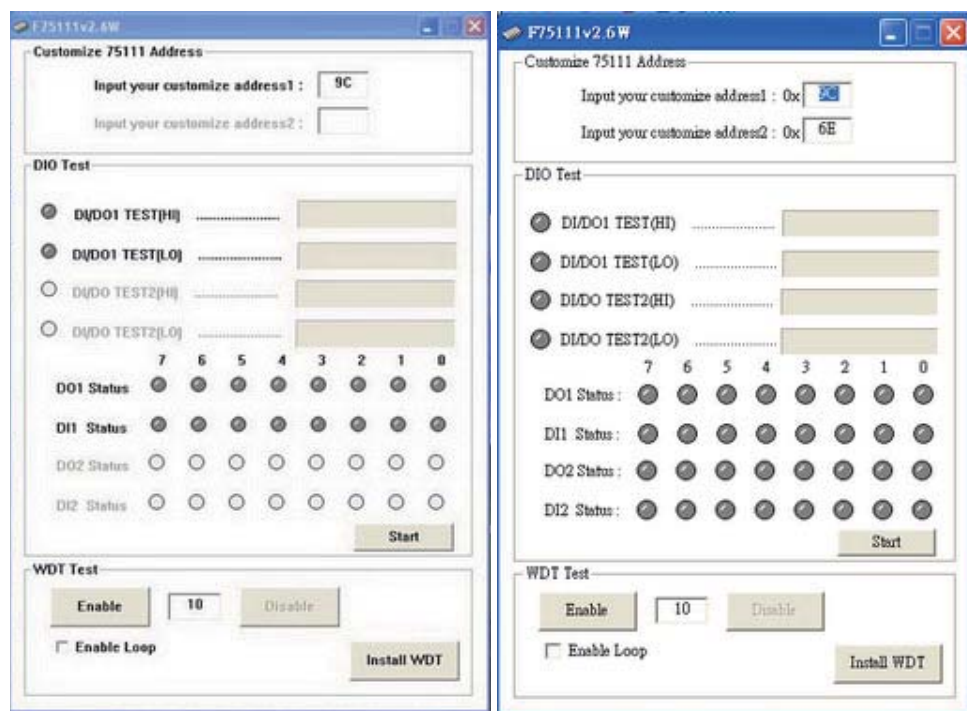
We do the demo test with a test tool which Dlx connect to DOx with Relay.



How to use this Demo Application



one F75111

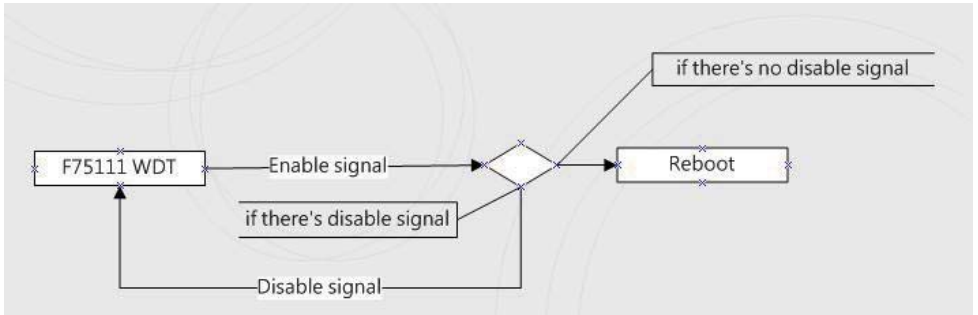
two F75111



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.

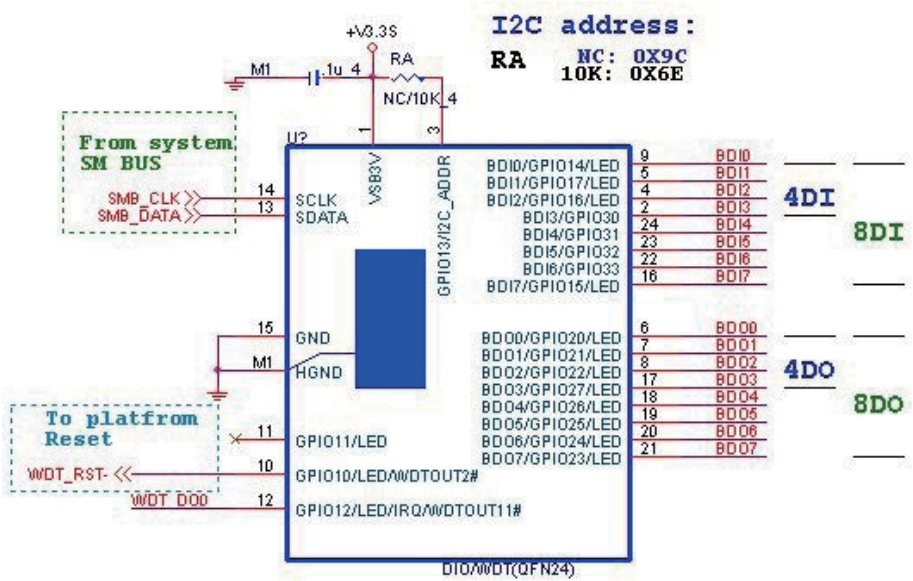
WARNING: win7 system architecture, use the system administrator to open DIO utility

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 to input or output
 and Enable WDT function pin

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

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

Enable/Disable WDT

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

PULSE mode

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

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

Initial internal F75111

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

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

Set output value

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

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

Get Input value

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

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

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

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

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

    return byteData;
}
```

Enable WatchDog

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

Disable WatchDog

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

define F75111 pin in F75111.h

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

```

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

```


3-11-3 IO Device: F75111 VB6 under Windows

The Sample code source you can download from

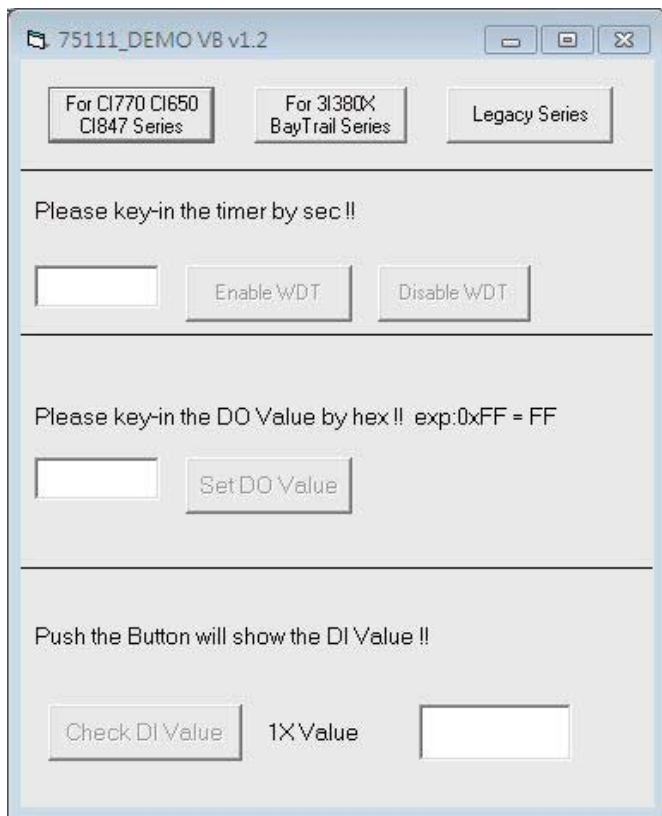
Source file: 75111_VB_v1.2.rar

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

Binary file: 75111_VB_Src1.2.rar

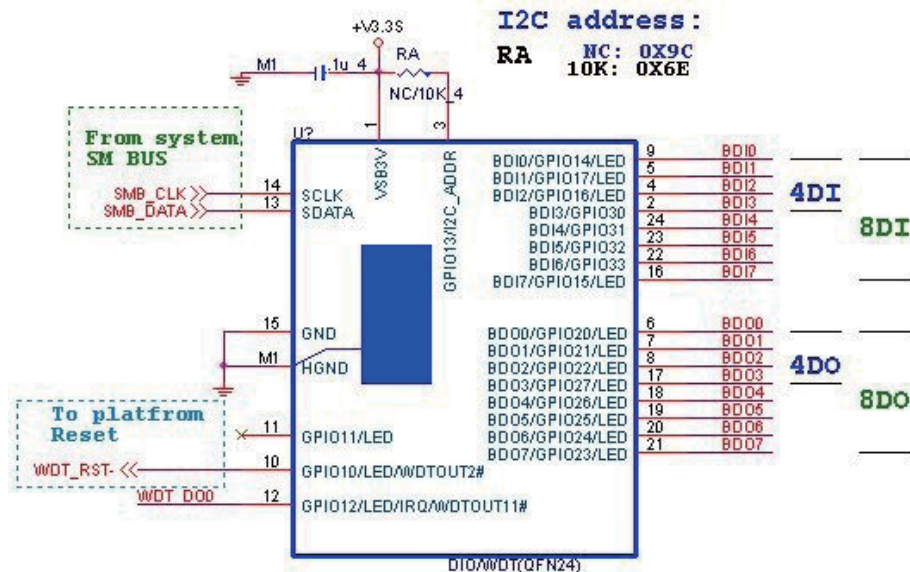
USERNAME & PASSWORD: sf

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
```

3-11-4 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

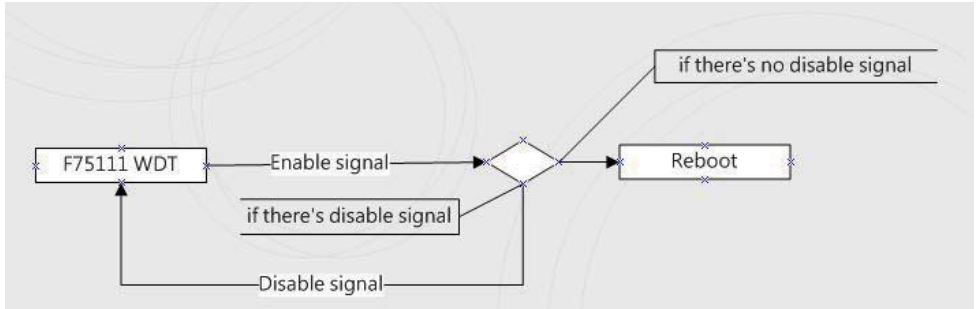
1. make

1. src/f75111 // execute the binary file

How to use this Demo Application

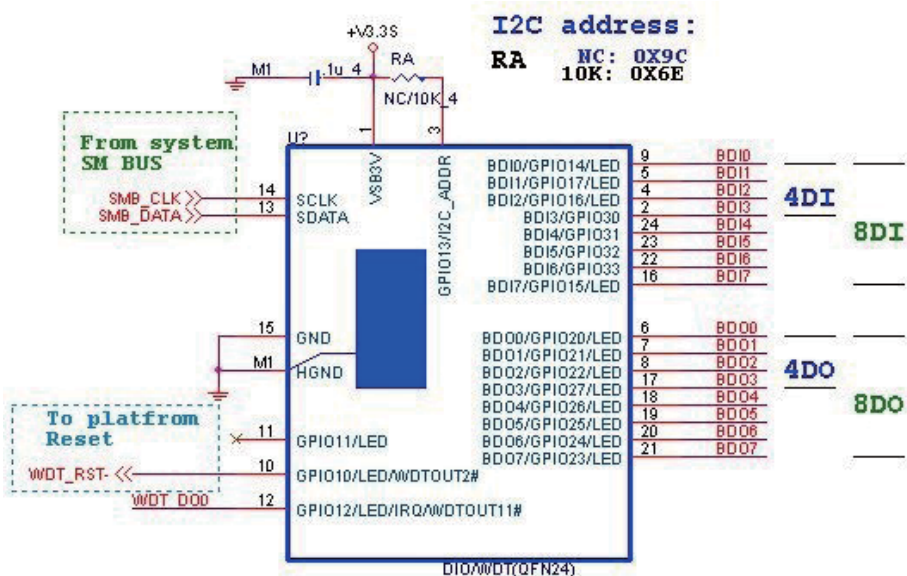


1. Press the "Start" button to test DIO function
2. Press the "Enable" button to test WDT function
3. Press the "Disable" button to disable WDT
4. Check the "Enable Loop" box and press "Enable" to do WDT loop test
5. Press "Install" to set the system to autorun this application when booting, press "Uninstall" 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 & 0x08 )? 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);

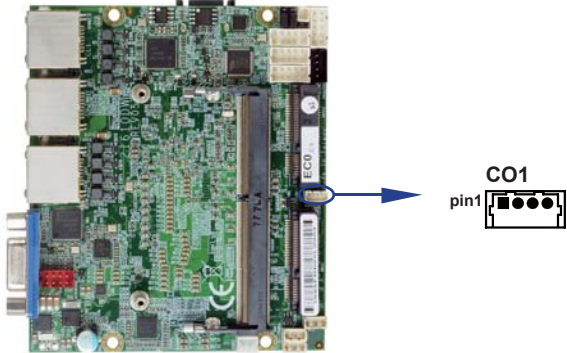
BYTE          F75111_GetWDTMode();
void          F75111_SetWDTMode(BYTE dwvalue);

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

```

3-12 CO1: SMBus 1x4 pin (1.25mm) wafer

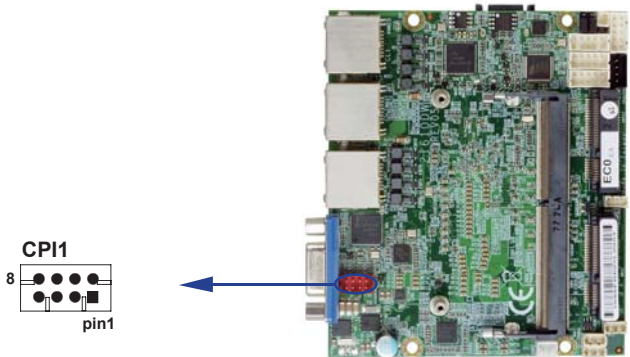
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	+3.3V	2	GND
3	SMB-Clock	4	SMB-Data



3-13 CPI1: DC Power input 2x4 pin (2.0mm) wafer (RED)

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

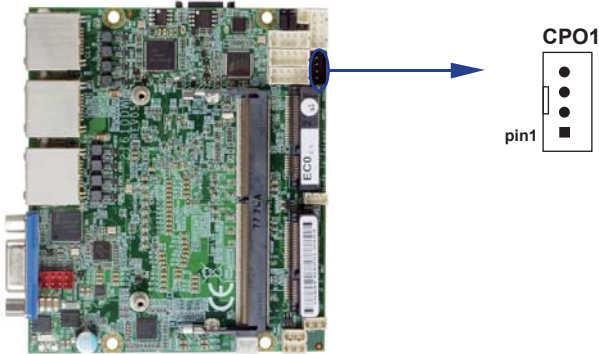
Note: Very important check DC-in Voltage.



3-14 CPO1: +12V/+5V DC voltage output 1x4 pin (2.0mm) wafer (Black)

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

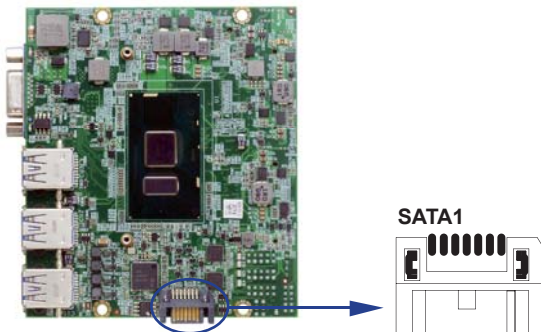
Note: Attention! Check Device Power in spec.



3-15 SATA1: SATA port 1x7 pin connector

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

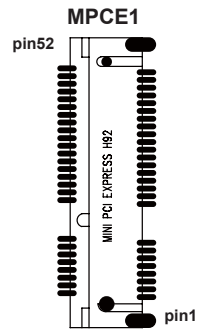
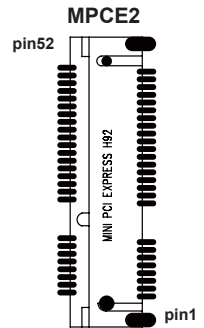
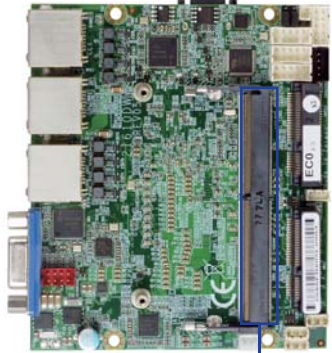
Note: CPO1 provide SATA HDD power +12V, GND, +5V.



3-16 MPCE1 PCI Express mini card

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

Note: MPCE1 Pin51 mSATA / PCIe auto detect function.



3-17 MPCE2 PCI Express mini card

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

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.

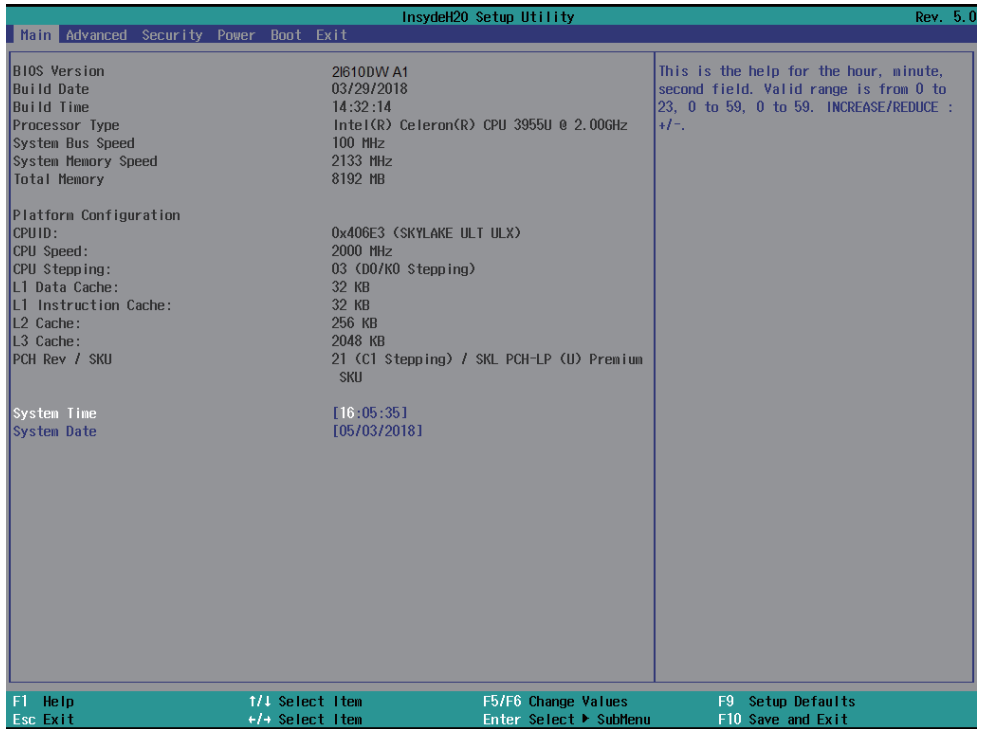
4-1 Enter Setup

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



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 ACPI and wake device settings

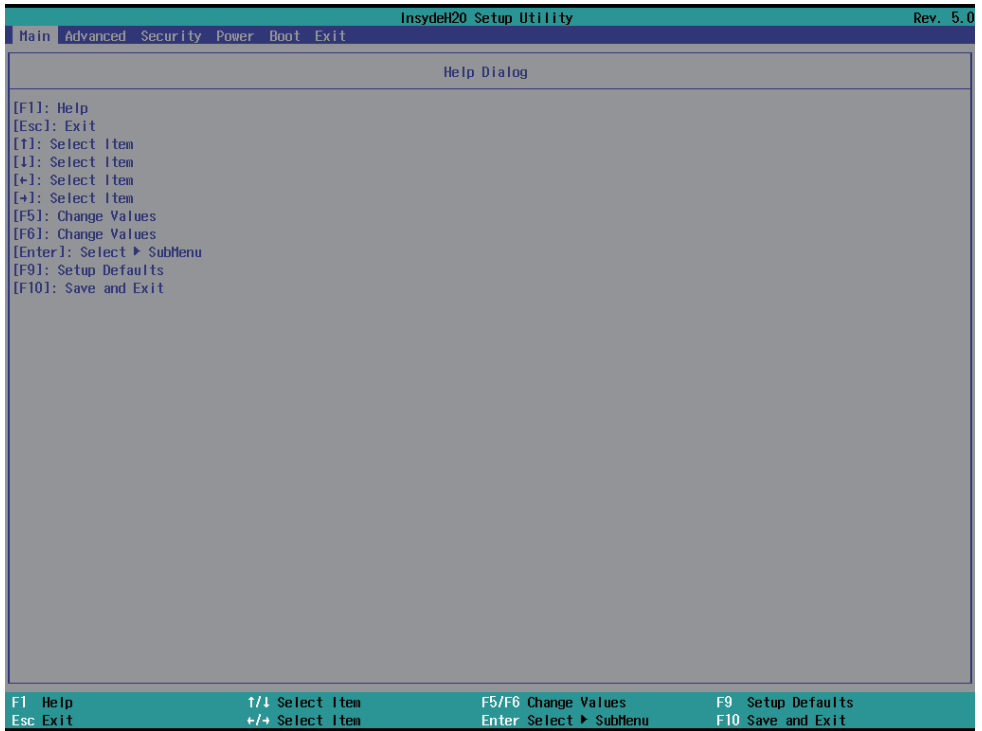
Boot To change system boot configuration

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.

4-3 Getting Help



Status Page Setup Menu / Option Page Setup Menu

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

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.

4-4 Main

InsydeH20 Setup Utility		Rev. 5.0			
Main	Advanced	Security	Power	Boot	Exit
BIOS Version	2I610DWA1	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	03/29/2018				
Build Time	14:32:14				
Processor Type	Intel(R) Celeron(R) CPU 3955U @ 2.00GHz				
System Bus Speed	100 MHz				
System Memory Speed	2133 MHz				
Total Memory	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	[16:05:35]				
System Date	[05/03/2018]				
F1 Help	F5/F6 Change Values	F9 Setup Defaults			
Esc. Exit	Enter Select SubMenu	F10 Save and Exit			
	F7 Select Item				
	F8 Select Item				

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.

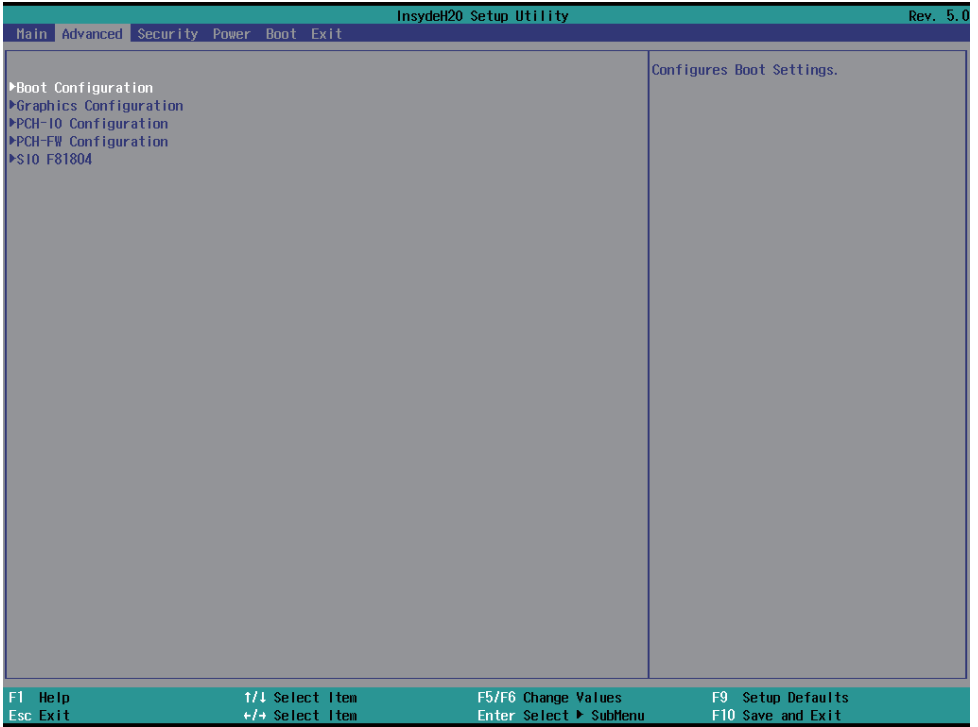
System Date

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

System Time

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

4-5 Advanced



Boot Configuration

Please refer section 4-5-1

Graphics Configuration

Please refer section 4-5-2

PCH-IO Configuration

Please refer section 4-5-3

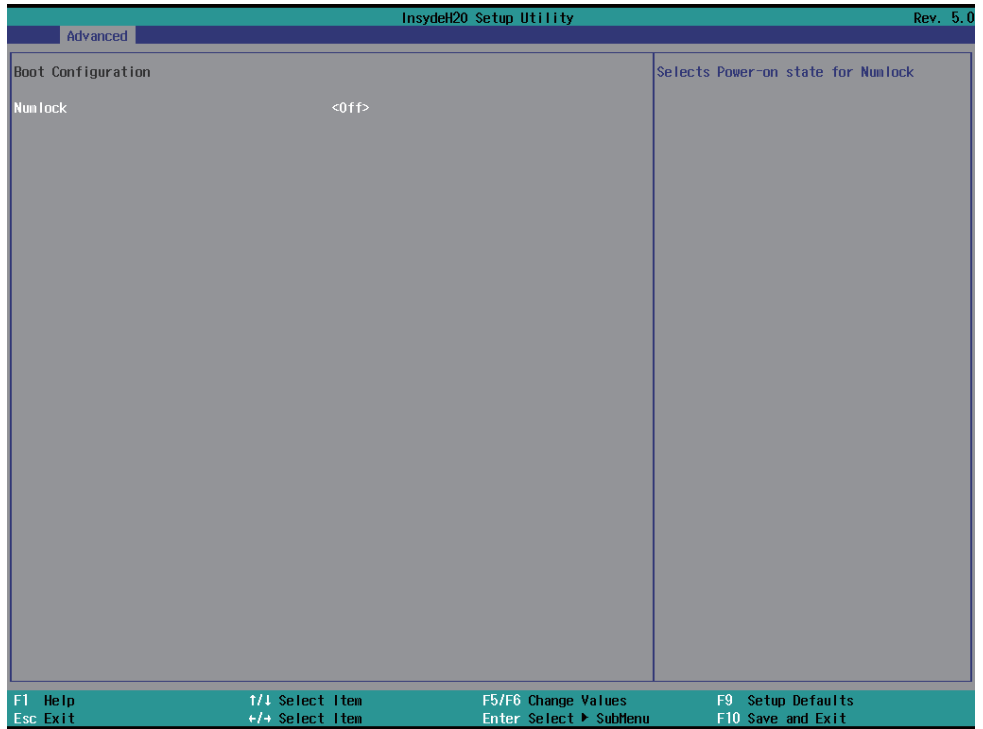
PCH-FW Configuration

Please refer section 4-5-4

SIO FINTEK81804

Please refer section 4-5-5

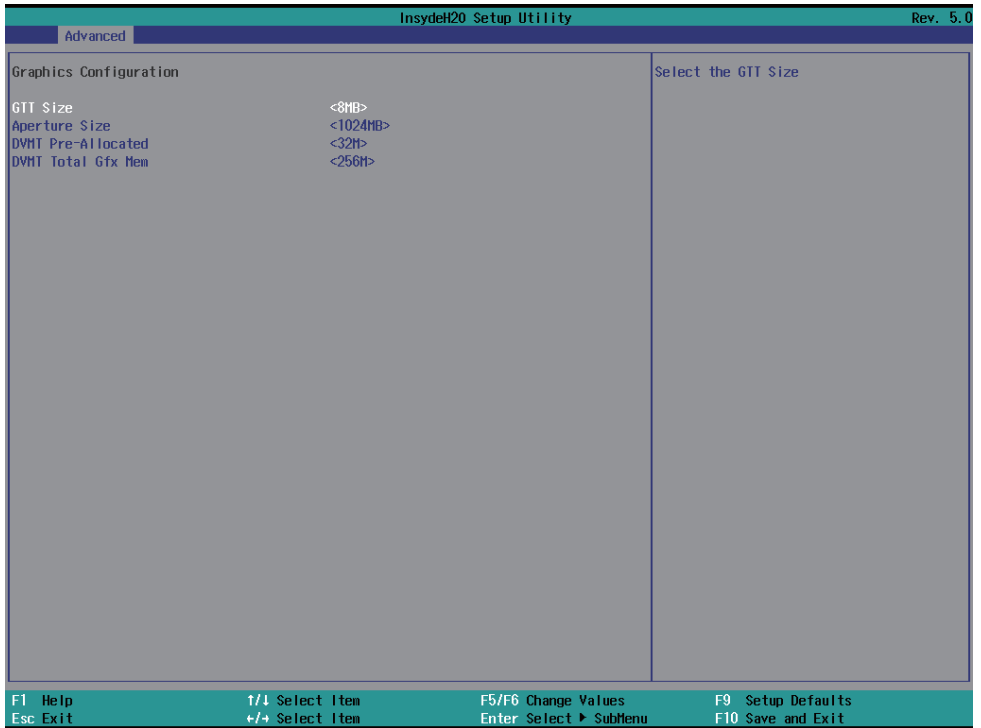
4-5-1 Boot Configuration



Numlock

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

4-5-2 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.

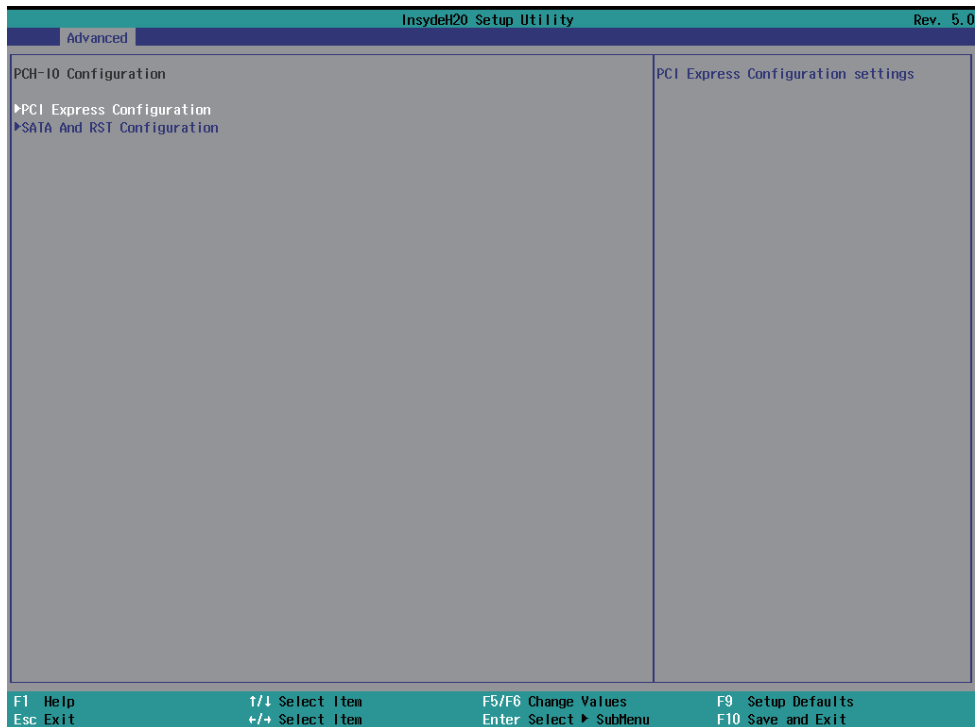
The optional settings are: 16MB, 32MB (default), 64MB

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.

4-5-3 PCH-IO Configuration



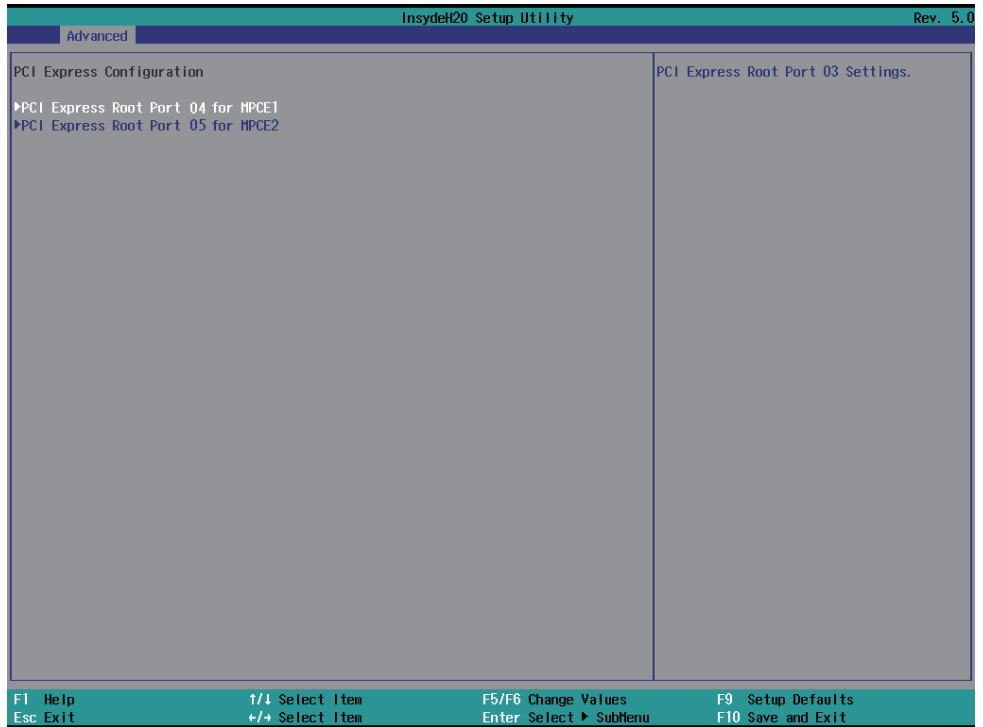
PCI Express Configuration

Please refer section 4-5-3-1

SATA And RST Configuration

Please refer section 4-5-3-2

4-5-3-1 ► PCI Express Configuration



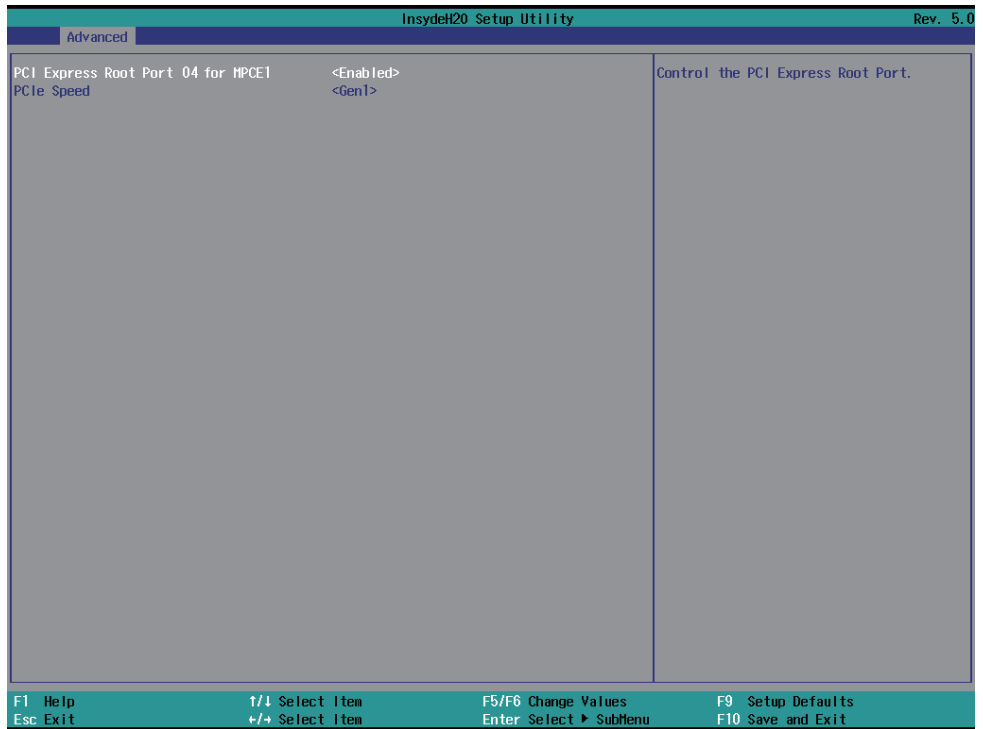
PCI Express Root Port 04 for MPCE1

Please refer section 4-5-3-1-1

PCI Express Root Port 05 for MPCE2

Please refer section 4-5-3-1-2

4-5-3-1-1 ► PCI Express Root Port 04 for MPCE1



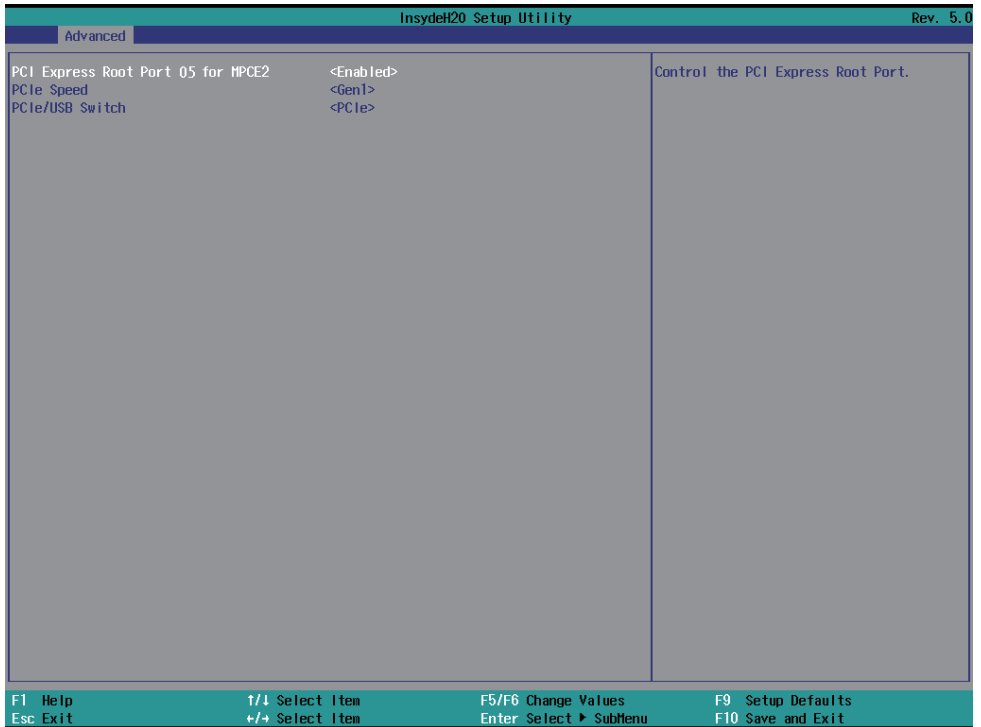
PCI Express Root Port 04 for MPCE1

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

Select PCI Express port speed.

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

4-5-3-1-2 ► PCI Express Root Port 05 for MPCE2



PCI Express Root Port 05 for MPCE2

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

Select PCI Express port speed

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

PCIe / USB Switch

The optional settings are: USB3 / PCIe (default)

4-5-3-2 ► SATA And RST Configuration

InsydeH20 Setup Utility		Rev. 5.0
Advanced		
SATA And RST Configuration		Enable/Disable SATA Device.
SATA Controller(s)	<Enabled>	
SATA Mode Selection	<AHCI>	
Serial ATA Port 0	Empty	
Port 0	<Enabled>	
SATA Device Type	<Hard Disk Drive>	
Serial ATA Port 1	Empty	
Port 1	<Enabled>	
SATA Device Type	<Hard Disk Drive>	

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

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.

4-5-4 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	Consumer SKU	
ME File System Integrity Value	2	
ME Firmware Status 1	0x90000255	
ME Firmware Status 2	0x86100306	
ME State	<Enabled>	

F1 Help T/↓ Select Item 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)

4-5-5 SIO FINTEK81804

Advanced		InsydeH20 Setup Utility	Rev. 5.0
Serial Port A	<Enable>	Configure Serial port using options : [Disable] No Configuration [Enable] User Configuration [Auto] EF1/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>		
Power loss setting	<Last State>		
▶Hardware Monitor			
F1 Help	↑/↓ Select Item	F5/F6 Change Values	F9 Setup Defaults
Esc. Exit	+/- Select Item	Enter Select ▶ SubMenu	F10 Save and Exit

Serial Port 1/2

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

Mode

RS232 (default) / RS485 / RS422

Power Loss setting

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

[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 4-5-5-1

4-5-5-1 ► Hardware Monitor

Advanced InsydeH20 Setup Utility Rev. 5.0

Hardware Monitor

Voltage

+V3.3S	3.264 V
VCORE	0.832 V
VDDQ	1.198 V
+V3.3A	3.296 V
VBAT	3.216 V
+V5A	5.064 V

Temperature

System (°C/°F)	41.0°C / 105.8°F
----------------	------------------

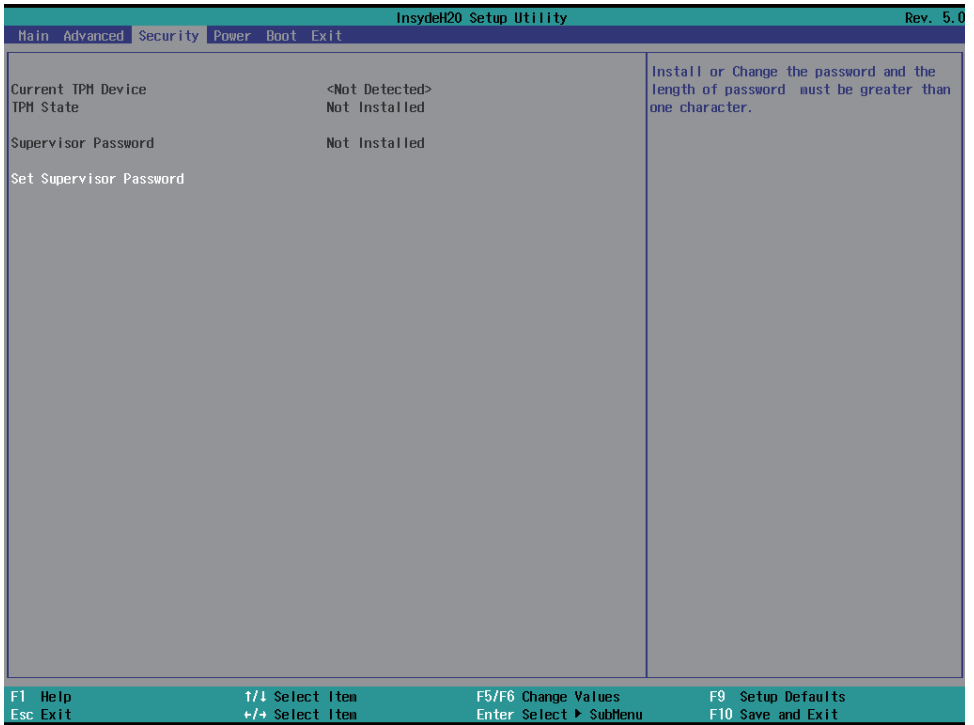
F1 Help ↑/↓ Select Item F5/F6 Change Values F9 Setup Defaults
Esc Exit ←/→ Select Item Enter Select ► SubMenu F10 Save and Exit

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 Security



Supervisor Password

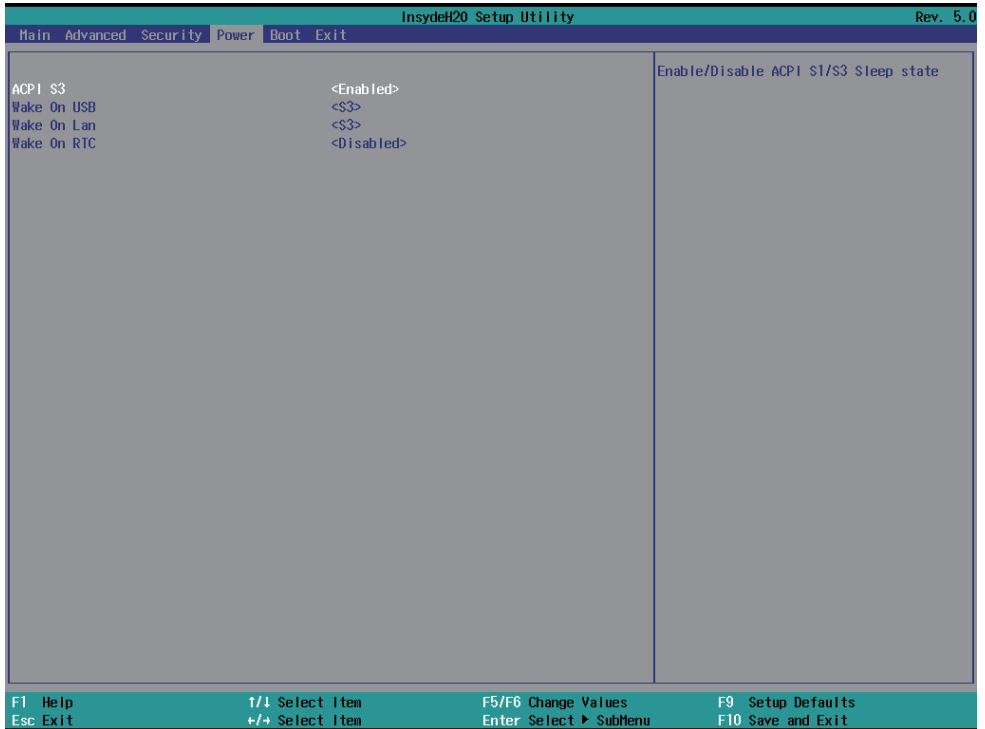
To set up an Supervisor password

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.

4-7 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

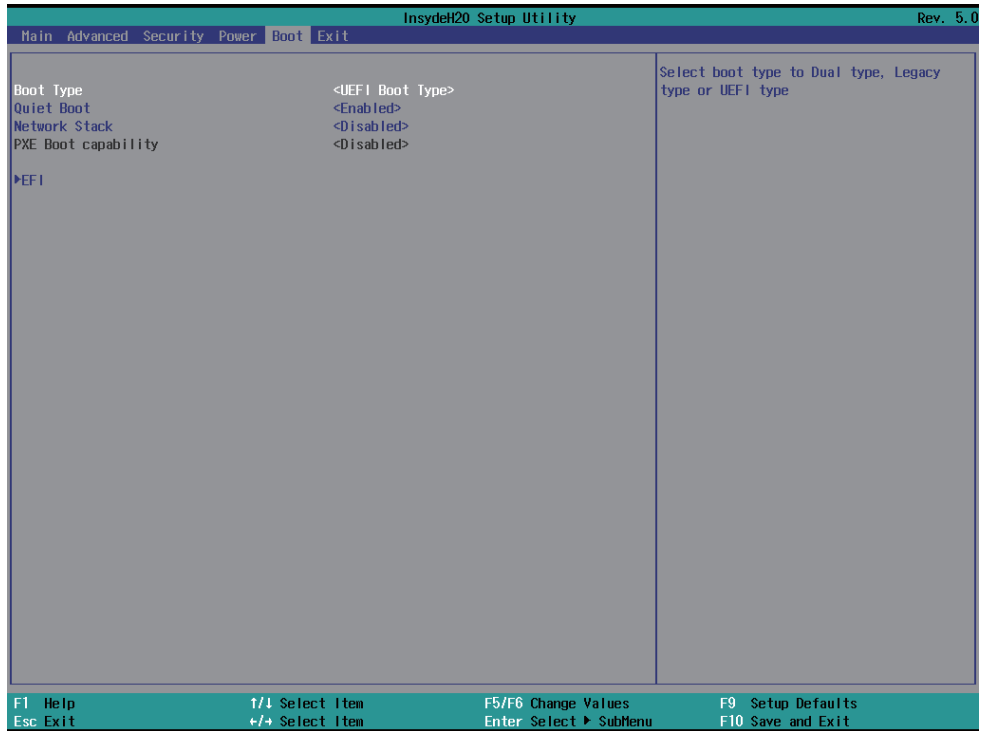
The optional settings: S3 (default), S5, S3 / S5, Disabled

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

4-8 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.

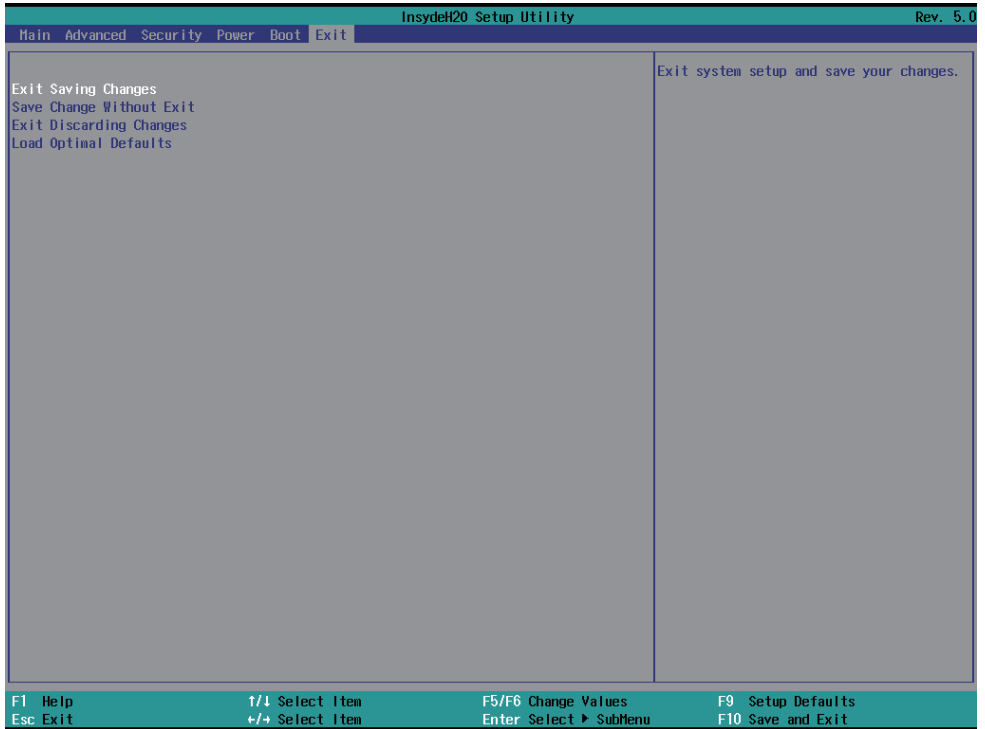
Network Stack

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.

4-9 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)



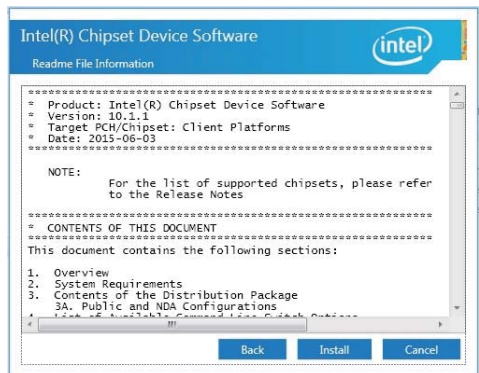
1. At the "AUTOMATIC DRIVER INSTALLATION menu" screen, click "INF".



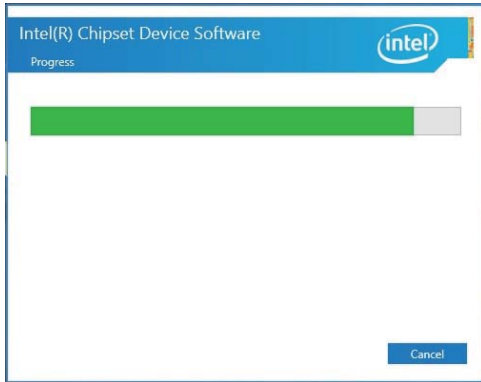
2. At the "Intel® Chipset Device Software" screen, click "Next".



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



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



5. Progressing.



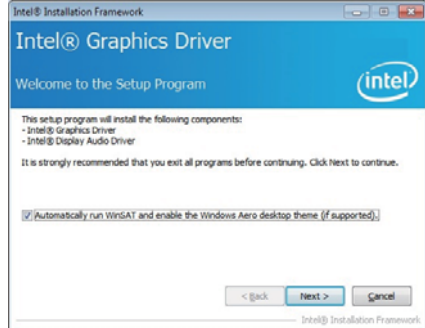
6. Click "Restart Now" then to restart the computer.

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

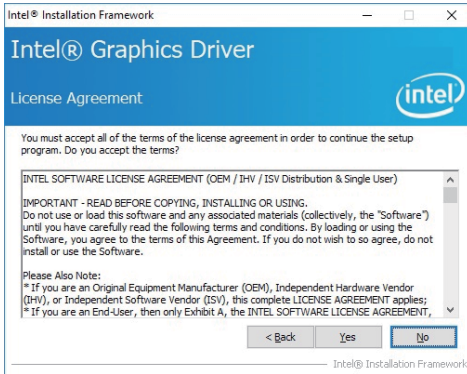
5-2 VGA Install Intel Skylake & Kaby Lake VGA Driver (example for WIN10 64bit)



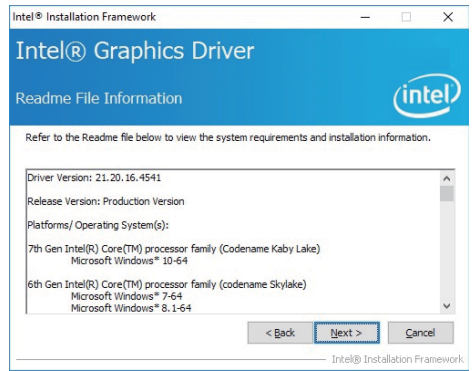
1. At the "AUTOMATIC DRIVER INSTALLATION menu" screen, click "VGA".



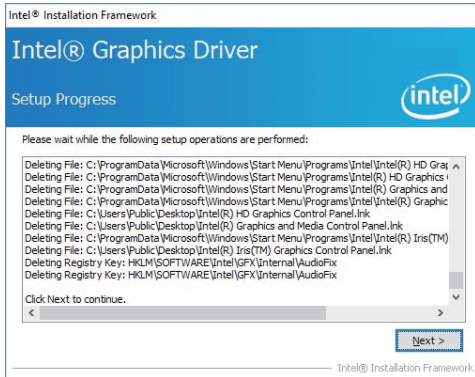
2. At the "Welcome to the Setup Program screen, Click "Next".



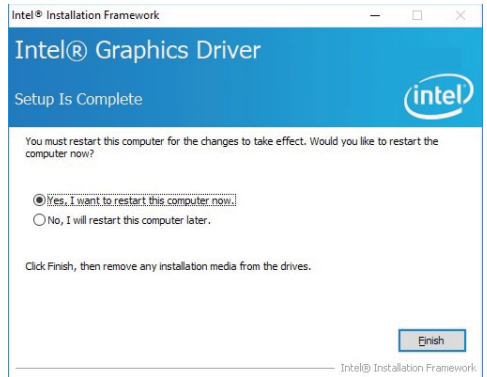
3. At the "License Agreement" screen, Click "Yes".



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



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



6. Click "Finish" to restart computer.

NOTE: SYSTEM INSTALL will auto detect file path

For Windows 64-bit

X: \driver\sky_lake\VGA\X64\Setup.exe

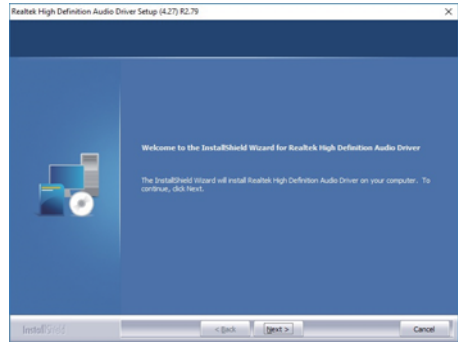
For Windows 32-bit

X:\driver\sky_lake\VGA\X86\Setup.exe

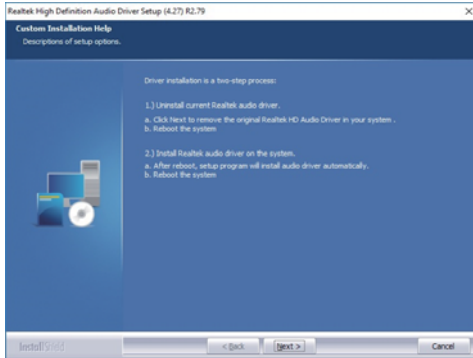
5-3 HD Audio Install High Definition Audio Driver (example for WIN10 64bit)



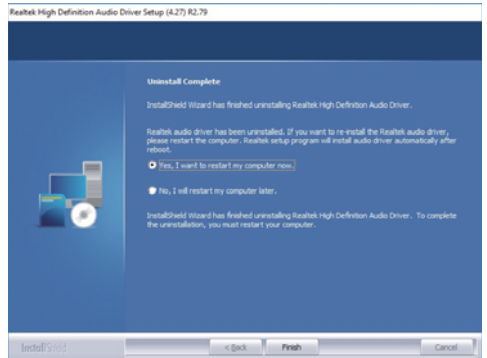
1. At the "AUTOMATIC DRIVER INSTALLATION menu" screen, click "HD Audio".



2. Click "Next".



3. Click "Yes".



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

NOTE: SYSTEM INSTALL will auto detect file path

For Windows 64-bit,

X:\driver\skylake\Audio\0006-64bit_Win7_Win8_Win81_Win10_R279

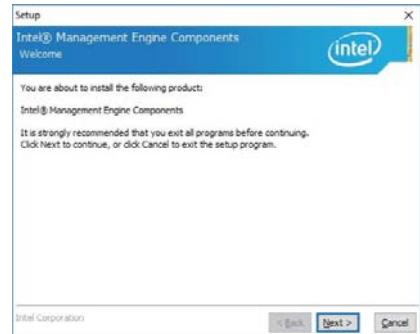
For Windows 32-bit

X:\driver\skylake\Audio\Win7_Win8_Win81_R273

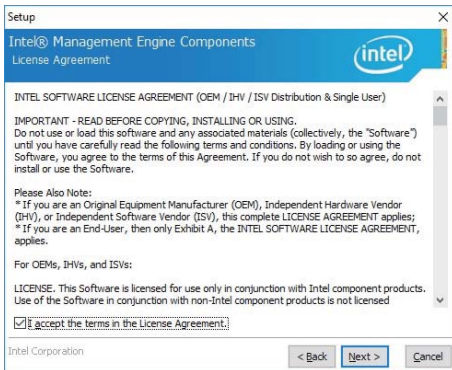
5-4 ME Tool Install Intel USB 3.0 ME Driver (example for WIN10 64bit)



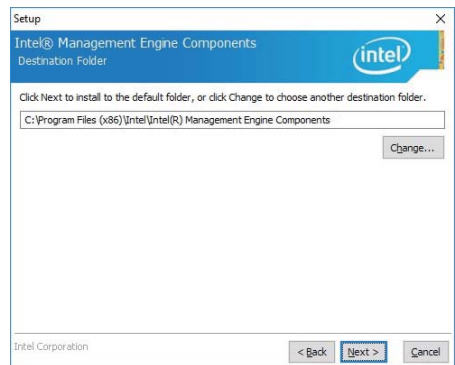
1. At the "AUTOMATIC DRIVER INSTALLATION menu" screen, click "ME Tool".



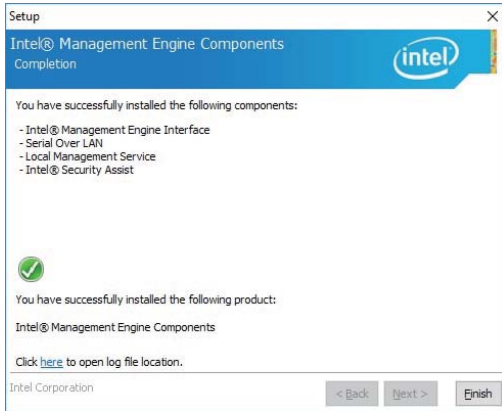
2. At the "Welcome to the Setup Program screen, Click "Next".



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



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



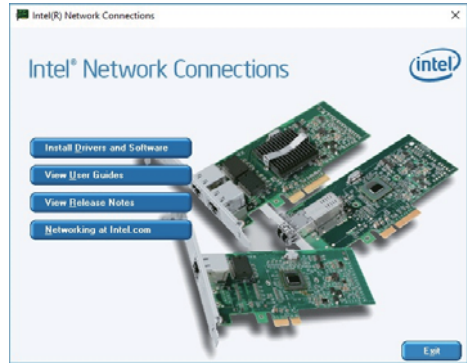
5. Click "Finish" to finish the setup.

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

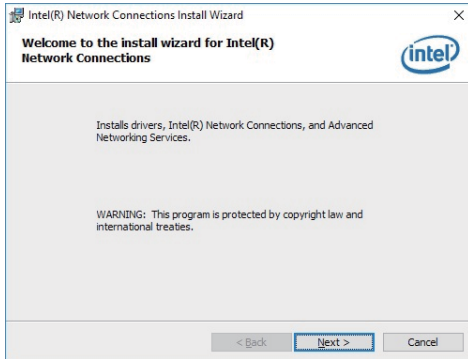
5-5 LAN Install LAN Driver (example for WIN10 64bit)



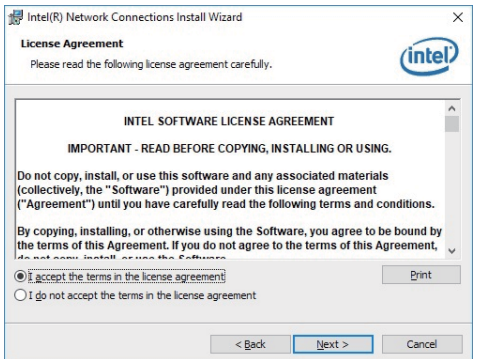
1. At the "AUTOMATIC DRIVER INSTALLATION" menu" screen, click "LAN".



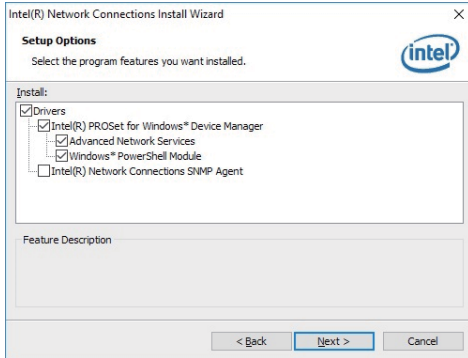
2. At the "Intel Network Connections" screen, Click "Install Drivers and Software".



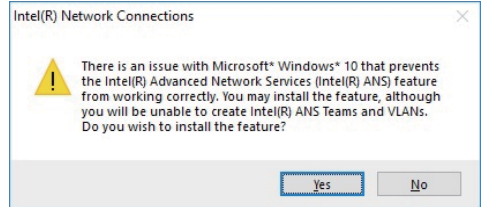
3. Click "Next".



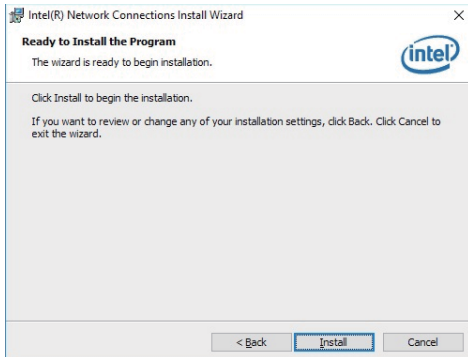
4. At the "License Agreement" screen, Click " "Next".



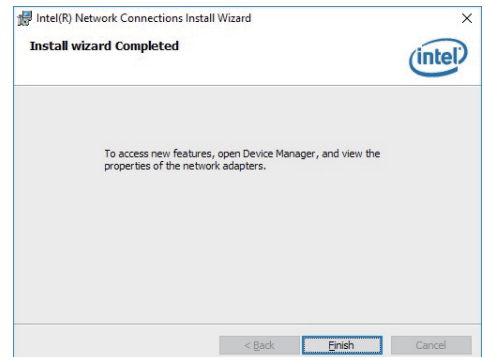
5. Click "Next".



6. Click "Yes".



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

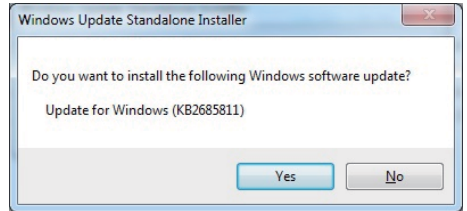
step5 Perform the following steps

```
=====
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\

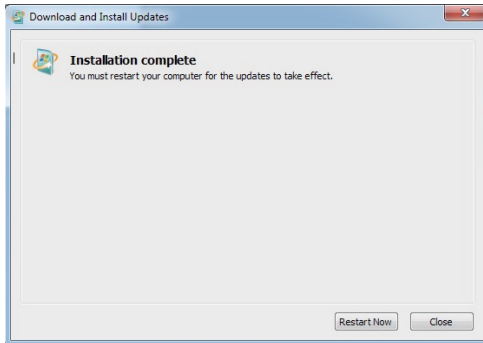
step7 Reburn the disc

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

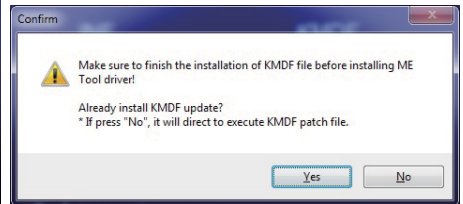
For Windows 7 64-bit,

X:\driver\skylake\ME\KMDF_Win7\kmdf-1.11-Win-6.1-x64

For Windows 7 32-bit,

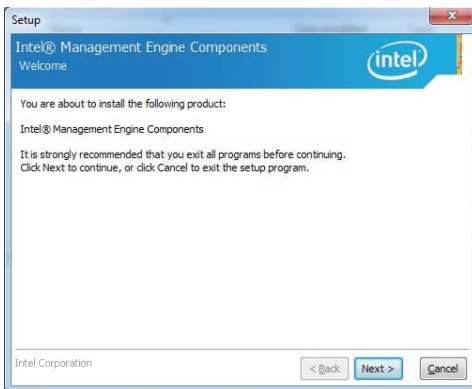
X:\driver\skylake\ME\KMDF_Win7\kmdf-1.11-Win-6.1-x86

5-6-2 ME Tool Install Intel ME Tool driver for WIN7

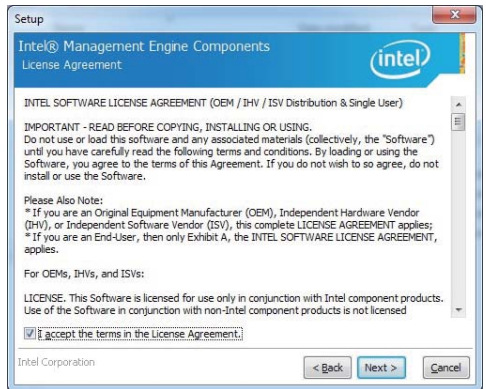


1. At the "AUTOMATIC DRIVER INSTALLATION menu", click "ME Tool".

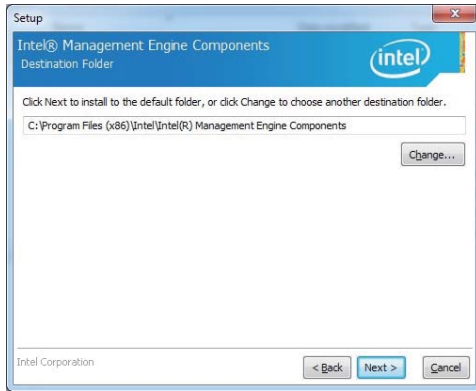
2. Click "Yes" KMDF file must being installed before ME Tool installation.



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



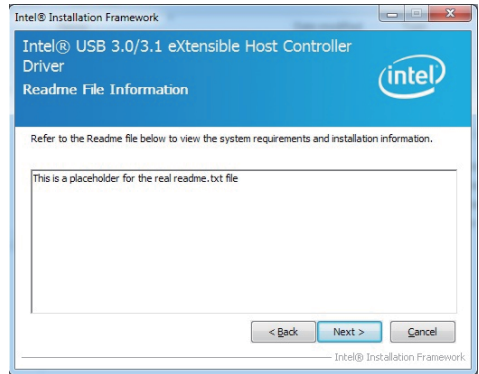
1. At the "AUTOMATIC DRIVER INSTALLATION menu", click "USB 3.0".



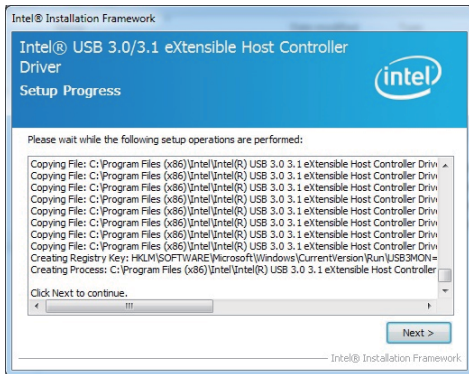
2. Click "Next".



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 2I610DW 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 2I610DA1.BIN-BIOS-ALL
```

```
-BIOS : Flash BIOS region
```

```
-ALL : Flash all
```

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

Computer will restart automatically.

Appendix 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)