# **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

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# 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.
- 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

- 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.
- 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.
- Please wear wrist strap and attach it to a metal part of the system unit before handling a component. You can also touch an object which is ground connected or attached with metal surface if you don't have wrist strap.
- 7. Please be careful to handle & don't touch the sharp-pointed components on the bottom of PCBA.
- 8. Remove or change any components form the motherboard will VOID the warranty of the motherboard.
- 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)
- "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.



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

- 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)
- 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
- Support extended 1 x full-size Mini PCle card for PCle x 1 / mSATA (auto-detect) and USB interface, 1 x full-size Mini PCle card for PCle x 1and USB interface.
- 8. Support 1 SATA port
- 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

- 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
- 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
- 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 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



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



2. Plug in the Mini Card in a 45 angle

# **Chapter-2**

### 2-1 Dimension-2I610DW



### 2-2 Layout-2l610DW-Connector and Jumper TOP



2-2-1 Layout-2l610DW-Connector and Jumper BOT



### **2-2-2 Diagram- 2I610DW** TOP



# 2-2-3 Diagram- 21610DW

вот



### 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.



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.



JSB3





\*Disabled

Enabled

# **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 N	lbps	100	Mbps	1000	Mbps
Indicate	Link LED	Active LED	Link LED	Active LED	Link LED	Active LED
Light						- *

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

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

### 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.

 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  $10K\Omega$  to +5V

- 2. If use need isolate circuit to control external device
- 3. F75111N-1 I<sup>2</sup>C 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.



### F75111 Layout Picture



### Introduction

label: asm int 1ah; asm cmp bx,dx; asm jne label;

}

#### How to use this Demo Application WriteI2CByte(I2CADDR, CONFIG, 0x03);//Set Watch Dog Timer function Writel2CByte(I2CADDR, WDT\_TIMER, timer);//Set Watch Dog Timer range from 0-255. . Writel2CByte(I2CADDR, WDT\_TIMER\_CTL, 0x73);//Enable Watch Dog Timer in second and pulse mode . \_ \_ \_ \_ \_ \_ \_ \_ \_ How to use this Demo Application ---------WriteI2CByte(I2CADDR, WDT\_TIMER\_CTL, 0x00); How to use this Demo Application void pause(int time) { asm mov ah,0h; //Ah = 00 Read System Time Counter asm int 1ah; //read time from Time Counter and store it in DX register asm add dx,time; asm mov bx,dx;

## 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 Binary file: F75111\_DIO\_Bin\_v2.8W(32bit).zip USERNAME & PASSWORD: sf http://tprd.info/lexwiki/index.php/IO\_Device:F75111

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



#### How to use this Demo Application

----

one r/5111							two F75111										
Customize 7511 Input y	1 Addi Neur cu	ress istomi	ze add	iress1 Iress2	: []	90	2	. ×	Customize 7511 Input y	) 1 Addi our cu	ress Homiz	e addr	ess1 :	0x	SE		
DIO Test	_	_		-				-	DIO Test	00100	ologithe	e auur	Cona .	ov1 .			
DVD01 T  DVD01 T  DVD01 T	EST(HI ST(LO	1								EST(H EST(L	I) 0)						
O DUDO TES	TZILO	1	in the	-						12(H	u)						
DO1 Status	7 0	6	5 Ø	4	3 @	2	1 ©	•	DOI Statos :	7	6	5	4	3	2	1	0
DI1 Status	0	0	0	0	0	0	0	۲	DI1 Status :	0	0	0	0	0	0	0	0
D02 Status	0	0	0	0	0	0	0	0	DO2 Status :	0	0	0	0	0	0	0	0
DI2 Status	0	0	0	0	0	0	0	0	DI2 Status :	0	0	0	0	0	0	۲	0
WDT Test					_	<u>81</u>	Star		- WDT Test-						_	Start	
Enable	1	10		Disa	ble:				Enable	] [	10		Disat	ale .			
Enable L	oop					h	nstall \	MDT	Enable Lo	qoo					In	ustall W	DT

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

In	Initial Internal F75111 port address (0x9c)				
1 1 1	define GPIO1X, GPIO2X, GPIO3X to input or output and Enable WDT function pin	1			
Se	Set F75111 DI/DO ( sample code as below Get Input value/Set output value )				
	DO: InterDigitalOutput(BYTE byteValue)) DI: InterDigitalInput()	- 1     			

### **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,&byteG	PIO1X) ; // Get value from GPIO1X
this->Read_Byte(F75111_INTERNAL_ADDR,GPIO3X_INPUT_DATA,&byteG	PIO3X) ; // Get value from GPIO3X
byteGPIO1X = byteGPIO1X & 0xF0;	// Mask unuseful value
byteGPIO3X = byteGPIO3X & 0x0F;	// Mask unuseful value
byteData = (byteGPIO1X & 0x10)? byteData + 0x01: byteData;	
byteData = ( byteOPIOTX & 0x60 )? byteData + 0x02 : byteData;	
byteData = ( byteCPIOTX & 0x40 )? byteData + 0x04 : byteData,	
l hyteData = / hyteCPIO3X & 0x02 \2 hyteData + 0x10 · hyteData·	
byteData = (byteGPIO3X & $0x04$ )? byteData + $0x10$ · byteData;	
byteData = ( byteOPIO3X & 0x08 )? byteData + 0x40 · byteData:	
byteData = ( byteGPIO1X & 0x20 )? byteData + 0x80 : byteData:	// Get correct DI value from GPIO1X & GPIO3X
······································	<i>"</i>
return byteData;	
}	
Enable WatehDay	
Enable WatchDog	
Enable WatchDog void F75111_SetWDTEnable (BYTE byteTimer)	
Void F75111_SetWDTEnable (BYTE byteTimer)	
void F75111_SetWDTEnable (BYTE byteTimer) ( WriteByte(F75111_INTERNAL_ADDR,WDT_TIMER_RANGE ,byteTimer);	// set WatchDog range and timer
Enable WatchDog void F75111_SetWDTEnable (BYTE byteTimer) { WriteByte(F75111_INTERNAL_ADDR,WDT_TIMER_RANGE ,byteTimer); WriteByte(F75111_INTERNAL_ADDR,WDT_CONFIGURATION,WDT_TIMEC	// set WatchDog range and timer DUT_FLAG   WDT_ENABLE   WDT_PULSE   WDT_PSWIDTH_100MS);
Enable WatchDog void F75111_SetWDTEnable (BYTE byteTimer) { WriteByte(F75111_INTERNAL_ADDR,WDT_TIMER_RANGE ,byteTimer); WriteByte(F75111_INTERNAL_ADDR,WDT_CONFIGURATION,WDT_TIMEC	// set WatchDog range and timer DUT_FLAG   WDT_ENABLE   WDT_PULSE   WDT_PSWIDTH_100MS); // Enable WatchDog, Setting WatchDog configure
Enable WatchDog void F75111_SetWDTEnable (BYTE byteTimer) { WriteByte(F75111_INTERNAL_ADDR,WDT_TIMER_RANGE ,byteTimer); WriteByte(F75111_INTERNAL_ADDR,WDT_CONFIGURATION,WDT_TIMEC	// set WatchDog range and timer DUT_FLAG   WDT_ENABLE   WDT_PULSE   WDT_PSWIDTH_100MS); // Enable WatchDog, Setting WatchDog configure
Enable WatchDog void F75111_SetWDTEnable (BYTE byteTimer) { WriteByte(F75111_INTERNAL_ADDR,WDT_TIMER_RANGE ,byteTimer); WriteByte(F75111_INTERNAL_ADDR,WDT_CONFIGURATION,WDT_TIMEC) } Disable WatchDog	// set WatchDog range and timer DUT_FLAG   WDT_ENABLE   WDT_PULSE   WDT_PSWIDTH_100MS); // Enable WatchDog, Setting WatchDog configure
Enable WatchDog void F75111_SetWDTEnable (BYTE byteTimer) { WriteByte(F75111_INTERNAL_ADDR,WDT_TIMER_RANGE ,byteTimer); WriteByte(F75111_INTERNAL_ADDR,WDT_CONFIGURATION,WDT_TIME()) Disable WatchDog void E75111_SetWDTDIseble ()	// set WatchDog range and timer DUT_FLAG   WDT_ENABLE   WDT_PULSE   WDT_PSWIDTH_100MS); // Enable WatchDog, Setting WatchDog configure
Enable WatchDog void F75111_SetWDTEnable (BYTE byteTimer) { WriteByte(F75111_INTERNAL_ADDR,WDT_TIMER_RANGE ,byteTimer); WriteByte(F75111_INTERNAL_ADDR,WDT_CONFIGURATION,WDT_TIMEC) } Disable WatchDog void F75111_SetWDTDisable () (	// set WatchDog range and timer DUT_FLAG   WDT_ENABLE   WDT_PULSE   WDT_PSWIDTH_100MS); // Enable WatchDog, Setting WatchDog configure
Enable WatchDog void F75111_SetWDTEnable (BYTE byteTimer) { WriteByte(F75111_INTERNAL_ADDR,WDT_TIMER_RANGE ,byteTimer); WriteByte(F75111_INTERNAL_ADDR,WDT_CONFIGURATION,WDT_TIMEC) } Disable WatchDog void F75111_SetWDTDisable () { WriteByte(F75111_INTERNAL_ADDR,WDT_CONFIGURATION.0x00);	// set WatchDog range and timer DUT_FLAG   WDT_ENABLE   WDT_PULSE   WDT_PSWIDTH_100MS); // Enable WatchDog, Setting WatchDog configure
Enable WatchDog void F75111_SetWDTEnable (BYTE byteTimer) { WriteByte(F75111_INTERNAL_ADDR,WDT_TIMER_RANGE ,byteTimer); WriteByte(F75111_INTERNAL_ADDR,WDT_CONFIGURATION,WDT_TIMEC } Disable WatchDog void F75111_SetWDTDisable () { WriteByte(F75111_INTERNAL_ADDR,WDT_CONFIGURATION,0x00); }	// set WatchDog range and timer DUT_FLAG   WDT_ENABLE   WDT_PULSE   WDT_PSWIDTH_100MS); // Enable WatchDog, Setting WatchDog configure
Enable WatchDog void F75111_SetWDTEnable (BYTE byteTimer) { WriteByte(F75111_INTERNAL_ADDR,WDT_TIMER_RANGE ,byteTimer); WriteByte(F75111_INTERNAL_ADDR,WDT_CONFIGURATION,WDT_TIMEC } Disable WatchDog void F75111_SetWDTDisable () { WriteByte(F75111_INTERNAL_ADDR,WDT_CONFIGURATION,0x00); }	// set WatchDog range and timer DUT_FLAG   WDT_ENABLE   WDT_PULSE   WDT_PSWIDTH_100MS); // Enable WatchDog, Setting WatchDog configure
Enable WatchDog void F75111_SetWDTEnable (BYTE byteTimer) { WriteByte(F75111_INTERNAL_ADDR,WDT_TIMER_RANGE ,byteTimer); WriteByte(F75111_INTERNAL_ADDR,WDT_CONFIGURATION,WDT_TIME() } Disable WatchDog void F75111_SetWDTDisable () { WriteByte(F75111_INTERNAL_ADDR,WDT_CONFIGURATION,0x00); } define F751111 pin in F75111.h	// set WatchDog range and timer DUT_FLAG   WDT_ENABLE   WDT_PULSE   WDT_PSWIDTH_100MS); // Enable WatchDog, Setting WatchDog configure // Disable WatchDog
Enable WatchDog void F75111_SetWDTEnable (BYTE byteTimer) { WriteByte(F75111_INTERNAL_ADDR,WDT_TIMER_RANGE ,byteTimer); WriteByte(F75111_INTERNAL_ADDR,WDT_CONFIGURATION,WDT_TIME() } Disable WatchDog void F75111_SetWDTDisable () { WriteByte(F75111_INTERNAL_ADDR,WDT_CONFIGURATION,0x00); } define F751111 pin in F75111.h //	// set WatchDog range and timer DUT_FLAG   WDT_ENABLE   WDT_PULSE   WDT_PSWIDTH_100MS); // Enable WatchDog, Setting WatchDog configure // Disable WatchDog
Enable WatchDog void F75111_SetWDTEnable (BYTE byteTimer) { WriteByte(F75111_INTERNAL_ADDR,WDT_TIMER_RANGE ,byteTimer); WriteByte(F75111_INTERNAL_ADDR,WDT_CONFIGURATION,WDT_TIMEC } Disable WatchDog void F75111_SetWDTDisable () { WriteByte(F75111_INTERNAL_ADDR,WDT_CONFIGURATION,0x00); } define F75111_INTERNAL_ADDR,WDT_CONFIGURATION,0x00); }	// set WatchDog range and timer DUT_FLAG   WDT_ENABLE   WDT_PULSE   WDT_PSWIDTH_100MS); // Enable WatchDog, Setting WatchDog configure // Disable WatchDog
Enable WatchDog void F75111_SetWDTEnable (BYTE byteTimer) { WriteByte(F75111_INTERNAL_ADDR,WDT_TIMER_RANGE ,byteTimer); WriteByte(F75111_INTERNAL_ADDR,WDT_CONFIGURATION,WDT_TIMEC } Disable WatchDog void F75111_SetWDTDisable () { WriteByte(F75111_INTERNAL_ADDR,WDT_CONFIGURATION,0x00); } define F75111_INTERNAL_ADDR,WDT_CONFIGURATION,0x00; # define F75111_INTERNAL_ADDR #define F75111_EXTERNAL_ADDR #define F75111_EXTERNAL_ADDR	// set WatchDog range and timer DUT_FLAG   WDT_ENABLE   WDT_PULSE   WDT_PSWIDTH_100MS); // Enable WatchDog, Setting WatchDog configure // Disable WatchDog // Disable WatchDog
Enable WatchDog void F75111_SetWDTEnable (BYTE byteTimer) { WriteByte(F75111_INTERNAL_ADDR,WDT_TIMER_RANGE ,byteTimer); WriteByte(F75111_INTERNAL_ADDR,WDT_CONFIGURATION,WDT_TIMEC } Disable WatchDog void F75111_SetWDTDisable () { WriteByte(F75111_INTERNAL_ADDR,WDT_CONFIGURATION,0x00); } define F75111_INTERNAL_ADDR, #define F75111_INTERNAL_ADDR #define F75111_EXTERNAL_ADDR //	// set WatchDog range and timer DUT_FLAG   WDT_ENABLE   WDT_PULSE   WDT_PSWIDTH_100MS); // Enable WatchDog, Setting WatchDog configure // Disable WatchDog // Disable WatchDog
Enable WatchDog void F75111_SetWDTEnable (BYTE byteTimer) { WriteByte(F75111_INTERNAL_ADDR,WDT_TIMER_RANGE ,byteTimer); WriteByte(F75111_INTERNAL_ADDR,WDT_CONFIGURATION,WDT_TIMEC ) Disable WatchDog void F75111_SetWDTDisable () { WriteByte(F75111_INTERNAL_ADDR,WDT_CONFIGURATION,0x00); } define F75111_INTERNAL_ADDR,WDT_CONFIGURATION,0x00; } //	// set WatchDog range and timer DUT_FLAG   WDT_ENABLE   WDT_PULSE   WDT_PSWIDTH_100MS); // Enable WatchDog, Setting WatchDog configure // Disable WatchDog // Disable WatchDog 0x9C // OnBoard F75111 Chipset 0x6E // External F75111 Chipset 0x03 // Configure GPIO13 to WDT2 Function
Enable WatchDog void F75111_SetWDTEnable (BYTE byteTimer) { WriteByte(F75111_INTERNAL_ADDR,WDT_TIMER_RANGE ,byteTimer); WriteByte(F75111_INTERNAL_ADDR,WDT_CONFIGURATION,WDT_TIMEC ) Disable WatchDog void F75111_SetWDTDisable () { WriteByte(F75111_INTERNAL_ADDR,WDT_CONFIGURATION,0x00); } define F75111_INTERNAL_ADDR,WDT_CONFIGURATION,0x00); } define F75111_INTERNAL_ADDR #define F75111_EXTERNAL_ADDR #define F75111_CONFIGURATION //	// set WatchDog range and timer DUT_FLAG   WDT_ENABLE   WDT_PULSE   WDT_PSWIDTH_100MS); // Enable WatchDog, Setting WatchDog configure // Disable WatchDog // Disable WatchDog 0x9C // OnBoard F75111 Chipset 0x6E // External F75111 Chipset 0x03 // Configure GPI013 to WDT2 Function
Enable WatchDog void F75111_SetWDTEnable (BYTE byteTimer) { WriteByte(F75111_INTERNAL_ADDR,WDT_TIMER_RANGE ,byteTimer); WriteByte(F75111_INTERNAL_ADDR,WDT_CONFIGURATION,WDT_TIMEC ) Disable WatchDog void F75111_SetWDTDisable () { WriteByte(F75111_INTERNAL_ADDR,WDT_CONFIGURATION,0x00); }  define F75111_INTERNAL_ADDR, #define F75111_INTERNAL_ADDR #define F75111_EXTERNAL_ADDR #define F75111_CONFIGURATION //	<pre>// set WatchDog range and timer DUT_FLAG   WDT_ENABLE   WDT_PULSE   WDT_PSWIDTH_100MS);</pre>
Enable WatchDog void F75111_SetWDTEnable (BYTE byteTimer) { WriteByte(F75111_INTERNAL_ADDR,WDT_TIMER_RANGE ,byteTimer); WriteByte(F75111_INTERNAL_ADDR,WDT_CONFIGURATION,WDT_TIMEC ) Disable WatchDog void F75111_SetWDTDisable () { WriteByte(F75111_INTERNAL_ADDR,WDT_CONFIGURATION,0x00); }  define F75111_INTERNAL_ADDR, //	<pre>// set WatchDog range and timer DUT_FLAG   WDT_ENABLE   WDT_PULSE   WDT_PSWIDTH_100MS);</pre>

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11\_ 0x12 // GPIO1X Input #define GPIO1X\_INPUT\_DATA #define GPIO3X INPUT DATA 0x42 // GPIO3X Input //-0x21 // GPIO2X Output #define GPIO2X\_OUTPUT\_DATA 1 // #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. 11. #define GPIO2X PULSE CONTROL 0x23 // GPIO2x Level/Pulse Control Register // 0:Level Mode // 1.Pulse Mode 0x24 // GPIO2x Pulse Width Control Register #define GPIO2X\_PULSE\_WIDTH\_CONTROL #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 (secord 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

5, 75111_DEMO VB v1.2				
For CI770 CI650 CI847 Series BayTrail Series	Legacy Series			
Please key-in the timer by sec !!				
Enable WDT Disa	ble WDT			
Please key-in the DO Value by hex II exp:0xFF = FF				
Push the Button will show the DI Value !! Check DI Value 1X Value				

- 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
н
   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 WriteI2CByte(&H23, &H0)
н
 Call WriteI2CByte(&H20, &HFF)
 Call Writel2CByte(&H2B, &HFF)
 Call Writel2CByte(&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)
н
 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
i.
   Data = Data + &H4
 End If
 If (GPIO3X And &H1) <> 0 Then
н
   Data = Data + &H8
 End If
н
 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
н
 If (GPIO1X And &H20) <> 0 Then
н
   Data = Data + &H80
н
 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

8 F75111v2.3L	
Customize F75111 Address : 0x	9C
DIO Test	
DI/DOTest(Low)	0 %
DI/DOTest (High)	0 %
7 6 5 4 3 2	1 0
DO Status	Start
WDT Test	
Enable 10 Disable	
Enable Loop Test	Install
WDT Stand by	Uninstall

- 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 SMBusloWrite(BYTE byteOffset,BYTE byteData) { outb( byteData , m SMBusMapIoAddr + byteOffset); BYTE SMBusloRead(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 11 OnBoard F75111 Chipset #define F75111 EXTERNAL ADDR 0x6E External F75111 Chipset 11 I //-#define F75111 CONFIGURATION 11 Configure GPIO13 to WDT2 Function 0x03 I //-#define GPIO1X\_CONTROL\_MODE 0x10 11 Select Output Mode or Input Mode #define GPIO2X\_CONTROL\_MODE 0x20 11 Select GPIO2X Output Mode or Input Mode #define GPIO3X\_CONTROL\_MODE 0x40 11 Select GPIO3X Output Mode or Input Mode ۱<sub>//--</sub> #define GPIO1X INPUT DATA **GPIO1X** Input 0x12 // #define GPIO3X\_INPUT\_DATA 0x42 11 GPIO3X Input 1//-#define GPIO2X\_OUTPUT\_DATA 0x21 // GPIO2X Output I //\_ #define GPIO2X OUTPUT DRIVING 0x2B 11 Select GPIO2X Output Mode or Input Mode I //-#define WDT\_TIMER\_RANGE 0x37 11 0-255 (secord or minute program by WDT\_UNIT) ! //-I #define WDT CONFIGURATION 0x36 11 Configure WDT Function WDT\_TIMEOUT\_FLAG #define 0x40 11 When watchdog timeout this bit will be set to 1. Enable watchdog timer #define WDT\_ENABLE 0x20 11 WDT PULSE Configure WDT output mode #define 0x10 11 // 0:Level Mode // 1:Pulse Mode #define WDT\_UNIT 0x08 // Watchdog unit select. // 0:Select second. // 1:Select minute. WDT LEVEL When select level output mode: #define 0x04 // // 0:Level low 1:Level high // WDT\_PSWIDTH\_1MS #define 0x00 11 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. WDT PSWIDTH 4000MS 0x03 // When select Pulse mode: 4 s. #define I //typedef struct F75111\_Address 1 BYTE bAddress; F75111 Address; F75111\_Address m\_F75111; I 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 ();

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	49 NC		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
	Mechanica	l 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	49 NC		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	PCle-TX+	34	GND
31	PCIe-TX-	32	NC
29	GND	30	NC
27 GND		28	+1.5V
25 PCle-RX+		26	GND
23 PCle-RX-		24	+3.3V
21	21 GND		PERST#
19	19 NC		NC
17 NC		18	GND
	Mechanica	l 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  $\uparrow\downarrow \leftarrow \rightarrow$  (up, down, left, right) to choose the option you want to confirm or modify.

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

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

# 4-1 Enter Setup

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

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

### 4-2 BIOS Menu Screen & Function Keys

	InsydeH2	) Setup Utility	Rev. 5.0
Main Advanced Security Power	Boot Exit		
BIOS Version Build Date Build Time Processor Type System Bus Speed System Hemory Speed Total Memory	21610DW A1 03/29/2018 14:32:14 Intel(R) Celeron( 100 HHz 2133 HHz 8192 HB	R) CPU 3955U @ 2.00GHz	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 : +/
Platform Configuration CPUID: CPU Speed: CPU Stepping: L1 Data Cache: L1 Instruction Cache: L2 Cache: L3 Cache: PCH Rev / SKU	0x406E3 (SKYLAKE ) 2000 MHz 03 (D0/K0 Steppin 32 K8 32 K8 256 K8 2048 K8 21 (C1 Stepping) SKU	JLT ULX) g) / SKL PCH-LP (U) Premium	
System Time System Date	[16:05:35] [05/03/2018]		
F1 Help	↓Select Item →Select Item	F5/F6 Change Values Enter Select ► SubMenu	F9 Setup Defaults F10 Save and Exit

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

		InsydeH20 Setup Utility	Rev. 5.0
Main Advanced Security Pow	wer Boot Exit		
		Help Dialog	
<pre>[F11: Help [Esc]: Exit [T]: Select Item [I]: Select Item [+]: Select Item [+]: Select Item [F51: Change Values [Enter]: Select ▶ SubHenu [F91: Setup Defaults [F101: Save and Exit</pre>			
F1 Help Esc Exit	1/1 Select Item	F5/F6 Change Values	F9 Setup Defaults F10 Save and Exit

#### 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  $\leftarrow \rightarrow$  (left, right) to select screen;
- Press 11 (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

	Insydel	H2O Setup Utility	Rev. 5.0
Main Advanced Security Pow	er Boot Exit		
BIOS Version Build Date Build Time Processor Type System Bus Speed System Hemory Speed Total Hemory	21610DVV A1 03/29/2018 14:32:14 intel(R) Celeror 100 HHz 2133 HHz 8192 HB	ı(R) CPU 3955U @ 2.00GHz	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 : +/
Platform Configuration CPUID: CPU Speed: CPU Stepping: L1 Data Cache: L1 Instruction Cache: L2 Cache: L3 Cache: PCH Rev / SKU	0x406E3 (SKYLAKI 2000 HHz 03 (DD/K0 Stepp 32 KB 32 KB 256 KB 2048 KB 21 (C1 Stepping) SKU	E ULT ULX) ing) ) / SKL PCH-LP (U) Premium	
System Time System Date	[16:05:35] [05/03/2018]		
F1 Help Esc Exit	1/↓ Select Item +/→ Select Item	F5/F6 Change Values Enter Select ► SubMenu	F9 Setup Defaults 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.

### 4-5 Advanced

			InsydeH20 Setup Utility	Rev. 5.0
Main Advanced Secur	ity Power	Boot Exit		
Hain Advanced Secur >Boot Configuration >Graphics Configuration >PCH-10 Configuration >PCH-FW Configuration >S10 F81804	ity Power	Boot Exit		Configures Boot Settings.
F1 Help Esc Exit	1/1 +/+	Select Item Select Item	F5/F6 Change Values Enter Select ► SubHenu	F9 Setup Defaults F10 Save and Exit

### **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

	li	nsydeH20 Setup Utility	Rev. 5.0
Advanced			
Boot Configuration			Selects Power-on state for Numlock
Nunlock	<0ff>		
F1 Help Esc Exit	1/↓ Select Item +/→ Select Item	F5/F6 Change Values Enter Select ► SubMenu	F9 Setup Defaults F10 Save and Exit

### Numlock

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

# 4-5-2 Graphics Configuration

Advanced	Insy	deH20 Setup Utility	Rev. 5.0
Graphics Configuration		Sel	ect the GTT Size
Graphics Configuration GTT Size Aperture Size DVHT Pre-Allocated DVHT Total Gfx Hem	<811B> <10241B> <2104 <25617>	Sel	ect the GTT Size
E1 Help	t/l Salact Itan	EE/EG Chappe Voluce	EQ. Sotup Dofaults
Esc Exit	+/+ Select Item	Enter Select ► SubMenu	F10 Save and Exit

### 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

	InsydeH20 Setup Utility	Rev. 5.0
Advanced		
PCH-10 Configuration		PCI Express Configuration settings
▶PCI Express Configuration ▶SATA And RST Configuration		
F1 Help 1/4 Select I Esc Exit +/+ Select I	tem F5/F6 Change Values tem Enter Select ► SubMenu	F9 Setup Defaults F10 Save and Exit

### **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

Advanced	InsydeH20	Setup Utility	Rev. !	5.0
PCI Express Configuration		I	PCI Express Root Port 03 Settings.	
▶PCI Express Root Port 04 for HPCE1 ▶PCI Express Root Port 05 for MPCE2				
F1 Help	ect Item	F5/F6 Change Values	F9 Setup Defaults	

### 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

Advanced		InsydeH20 Setup Utility	Rev. 5.0
Advanced PCI Express Root Port 04 f PCIe Speed	ior HPCE1 《Enab le 《Gen1>	Þ	Control the PCI Express Root Port.
F1 Help Esc Exit	1/↓ Select Item +/+ Select Item	F5/F6 Change Values Enter Select ▶ SubHenu	F9 Setup Defaults F10 Save and Exit

### 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

Advanced	Insyde	eH20 Setup Utility	Rev. 5.0
PCI Express Root Port 05 for I PCIe Speed PCIe/USB Switch	HPCE2 <enabled> <gen1> <pcie></pcie></gen1></enabled>		Control the PCI Express Root Port.
F1 Help Esc Exit	t/↓ Select Item +/+ Select Item	F5/F6 Change Values Enter Select ► SubMenu	F9 Setup Defaults F10 Save and Exit

### 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

Advanced	Insydel	H2O Setup Utility	Rev. 5.(
SATA And RST Configuration		Enab	ole/Disable SATA Device.
SATA Controller(s) SATA Mode Selection	<enabled> <ahcl></ahcl></enabled>		
Serial ATA Port O Port O SATA Device Type Serial ATA Port 1 Port 1 SATA Device Type	Enpty <enabled⊃ <hard disk="" drive<br="">Enpty <enabled⊃ <hard disk="" drive<="" th=""><th>92</th><th></th></hard></enabled⊃ </hard></enabled⊃ 	92	
F1 Help Esc.Exit	1/↓ Select Item +/→ Select Item	F5/F6 Change Values Enter Select ▶ SubMenu	F9 Setup Defaults F10 Save and Exit

### SATA Controller

Use this item to Enable or Disable SATA Device.

The optional settings are: Enabled (default) or Disabled

### SATA Mode Selection

Support AHCI Mode only.

## 4-5-4 PCH-FW Configuration

	Insyde	120 Setup Utility	Rev. 5.0
Advanced			
ME Firmware Version ME Firmware Mode ME Firmware SKU ME Firmware Status 1 ME Firmware Status 2	11.8.50.3425 Normal Hode Consumer SKU 2 0x90000255 0x86100306		When Disabled HE will be put into HE Temporarily Disabled Mode.
HE State	<enab led=""></enab>		
F1 Help Esc Exit	↑/↓ Select Item +/+ Select Item	F5/F6 Change Values Enter Select ► SubMenu	F9 Setup Defaults 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

	Insyde	H2O Setup Utility	Rev. 5.0
Advanced			
Serial Port A Base 1/0 Address Interrupt Mode Serial Port B Base 1/0 Address Interrupt Mode Power loss setting PHardware Honitor	<pre></pre>		Configure Serial port using options : [Disable] No Configuration [Enable] User Configuration [Auto] EFI/OS chooses configuration
F1 Help Esc Exit	1/↓ Select Item +/→ Select Item	F5/F6 Change Values Enter Select ► SubMenu	F9 Setup Defaults 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

	Insyde	120 Setup Utility	Rev. 5.0
Advanced			
Hardware Monitor			
Voltage +V3.3S VCORE +V3.3A +V3.3A VBAT +V5A Temperature	3.264 V 0.832 V 1.198 V 3.296 V 3.216 V 5.064 V		
System (°C/°F)	41. 0°C/ 105. 8'	F	
F1 Help Esc Exit	1/↓ Select Item +/+ Select Item	F5/F6 Change Values Enter Select ► SubMenu	F9 Setup Defaults 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

InsydeH20 Setup Utility				
Main Advanced Security Powe	er Boot Exit			
Current TPM Device TPM State	<not detected=""> Not Installed</not>		Install or Change the password and the length of password must be greater than one character.	
Supervisor Password	Not Installed			
Set Supervisor Password				
F1 Help Esc Exit	1/4 Select Item +/→ Select Item	F5/F6 Change Values Enter Select ▶ SubMenu	F9 Setup Defaults F10 Save and Exit	

### Supervisor Password

To set up an Supervisor password

1. Select Supervisor Password.

The screen then pops up an Create New Password dialog.

2. Enter your desired password that is no less than 3 characters and no more than 10 characters.

3. Hit [Enter] key to submit.

### 4-7 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

InsydeH20 Setup Utility					
Main Advanced Se	curity Power Boot I	Exit			
Boot Type Quiet Boot Network Stack PXE Boot capability		<uefi boot="" type=""> <enabled> <disabled> <disabled> <disabled></disabled></disabled></disabled></enabled></uefi>		Select boot type to Dual type or UEFI type	type, Legacy
FEF I					
Esc Exit	↑/↓ Selec +/+ Selec	t Item t Item	Enter Select > SubMenu	F9 Setup Default F10 Save and Exit	S

#### 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

		InsydeH20 Setup Utility	Rev. 5.0
Main Advanced Secur	ity Power Boot Exit		
Hain Advanced Secur Exit Saving Changes Save Change Without Ex Exit Discarding Change Load Optimal Defaults	ity Power Boot Exit		Exit system setup and save your changes.
F1 Help Esc Exit	1/1 Select Item ←/→ Select Item	F5/F6 Change Values Enter Select ► Subitenu	F9 Setup Defaults F10 Save and 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 Compatible on Wir	o <b>r Windows 10 (x64)</b> ndows 8.1 x64
INF VGA	ME Tool
HD Audio	LAN
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)

Skylake & Kaby Lake fo	r Windows 10 (x64)
INF VGA	ME Tool
HD Audio	LAN
Back to previous page	

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



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

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Also Note: a are an Original Equipment Manufacturer (OEM), Independent Hardware r (IHV), or Independent Software Vendor (ISV), this complete LICENSE MRNT applies; a are an End-User, then only Exhibit A, the INTEL SOFTWARE LICENSE MRNT applies	ot wish to so agree, do not install or use the Software.	
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rr (HV), or Independent Software Vendor (ISV), this complete LICENSE MENT applies; u are an End-User, then only Exhibit A, the INTEL SOFTWARE LICENSE MENT anolise	If you are an Original Equipment Manufacturer (OEM), Inde	ependent Hardware
u are an End-User, then only Exhibit A, the INTEL SOFTWARE LICENSE	endor (IHV), or Independent Software Vendor (ISV), this co GREEMENT applies:	mplete LICENSE
MENT applies	If you are an End-User, then only Exhibit A, the INTEL SOFT	TWARE LICENSE
inerti, oppresi	GREEMENT, applies.	
· · · · · · · · · · · · · · · · · · ·		*



3. At the "License Agreement"

screen, click "Accept".

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

Intel(R) Chipset Device Software	Intel(R) Chipset Device Software
	You have successfully installed the following product: Intel(R) Chipset Device Software You must restart this computer for the changes to take effect.
Cancel	View Log Files Restart Now Restart Later

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)

INF	
	ME Tool
VGA	LAN
HD Audio	LAN
Back to previous pag	e

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".

Intel® Installation Framework	Intel® Installation Framework	- 🗆 🗙
Intel® Graphics Driver	Intel® Graphics Driver	
Setup Progress	Setup Is Complete	intel
Please wait while the following setup operations are performed: Deleting File: C: ProgramData Wicrosoft Windows (Start Menu/Programs Wintel Wintel(R) HD Graf Deleting File: C: ProgramData Wicrosoft Windows (Start Menu/Programs Wintel Wintel(R) HD Graf Deleting File: C: ProgramData Wicrosoft Windows (Start Menu/Programs Wintel Wintel(R) HD Graf Deleting File: C: Visers Public/Desktop Wintel(R) HD Graphics and Deleting File: C: Visers Public/Desktop Wintel(R) HD Graphics Control Panel.Ink Deleting File: C: Visers Public/Desktop Wintel(R) HD Graphics Control Panel.Ink Deleting File: C: Visers Public/Desktop Wintel(R) File Control Panel.Ink Deleting File: C: Visers Public/Desktop Wintel(R) File (TM) Graphics Control Panel.Ink Deleting File: C: Visers Public/Desktop Wintel(R) File (TM) Graphics Control Panel.Ink Deleting File: C: Visers Public/Desktop Wintel(R) File (TM) Graphics Control Panel.Ink Deleting File: C: Visers Public/Desktop Wintel(R) File (TM) Graphics Control Panel.Ink Deleting Rejistry Key: HDM (SOFTWARE (Intel (GFX Winternal VludoFix Click Next to continue.	You must restart this computer for the changes to take effect. Would y computer now?  Item 1 want to restart this computer now.] No, I will restart this computer later. Click Finish, then remove any installation media from the drives.	ou like to restart the
Intel® Installation Framework		intel® Installation Framewo

5. At the "Setup Progress" screen,

6. Click "Finish" to restart computer.

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

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

	Compatible on v	VIIIGOWS 0.1 X04
	INF	ME Teal
	VGA	
		LAN
	HD Audio	
Ba	ick to previous page	

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\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)

Compatible	e on Windows 8.1 x64
INF	ME Tool
VGA HD Audio	LAN
Back to previous pa	ge

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



3. At the "License Agreement" screen,

Click "d" "Next".



2. At the "Welcome to the Setup Program 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)



INSTALLATION menu" screen, click "LAN".

1. At the "AUTOMATIC DRIVER



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



3. Click "Next".

HINTEL (R) Network Connections Install Wizard X License Agreement (intel) Please read the following license agreement carefully. ^ INTEL SOFTWARE LICENSE AGREEMENT IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING. Do not copy, install, or use this software and any associated materials (collectively, the "Software") provided under this license agreement ("Agreement") until you have carefully read the following terms and conditions. By copying, installing, or otherwise using the Software, you agree to be bound by the terms of this Agreement. If you do not agree to the terms of this Agreement, Print I accept the terms in the license agreement O I do not accept the terms in the license agreement <<u>B</u>ack <u>N</u>ext > Cancel

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

80

Intel(R) Network Connections Install Wizard	×
Setup Options	
Select the program features you want installed.	
Instal:	
Intel(R) PROSet for Windows* Device Manager     Journal Advanced Network Services	
└────────────────────────────────────	Intel(R) Network Connections
Feature Description	There is an issue with Microsoft* Windows* 10 that prevents the Intel(R) Advanced Network Services (Intel(R) ANS) feature from working correctly. You may install the feature, although you will be unable to create Intel(R) ANS Teams and VLANs. Do you wish to install the feature?
< Back Next > Cancel	Yes <u>N</u> o

5. Click "Next".

6. Click "Yes".

B Intel(R) Network Connections Install Wizard	×	🕼 Intel(R) Network Connections Install Wizard	×
Ready to Install the Program The wizard is ready to begin installation.	(intel)	Install wizard Completed	(intel)
Click Install to begin the installation.			
If you want to review or change any of your installation settings, click Back. exit the wizard.	Click Cancel to	To access new features, open Device Manager, and view the properties of the network adapters.	1
< Back Instal	Cancel	< Back Einish	Cancel

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 pendrive. 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)

Skylake & Kaby Lake f	for Windows 7 (x64)
INF	KMDF
VGA	ME Tool
HD Audio	USB 3.0
LAN	TPM 2.0
Back to previous page	

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

you want to install the f	ollowing Windows software u	undate?
	-	apuace.
Update for Windows (KB2	2685811)	
	Yes	

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



- 1. At the "AUTOMATIC DRIVER INSTALLATION menu", click "ME Tool".
- 2. Click "Yes" KMDF file must being installed before ME Tool installation.

Setup	Setup
Intel® Management Engine Components Wekome	Intel® Management Engine Components License Agreement
You are about to install the following product: Intel® Management Engine Components It is strongly recommended that you exit all programs before continuing. Click Next to continue, or click Cancel to exit the setup program.	INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single User)         IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.         Do not use or load the software and any associated materials (collectively, the 'Software')         unity cun have carfully read the following terms and conditions. By Useding or using the Software')         unity cun have carfully read the following terms and conditions. By Useding or using the Software')         Please Also holte:         "If you are an Original Equipment Manufacturer (OEM), Independent Hardware Vendar (DH), or independent Software' Vendar (DS), this complete LICENSE AGREEMENT, applies.         For OEMs, Invis, and ISVs:         LICENSE. This Software is licensed for use only in conjunction with Intel component products.         Use of the Software in complexing with complenent products is not licensed         w if gocept the terms in the License Agreement.
Intel Corporation <back next=""> Cancel</back>	Intel Corporation <back next=""> Cancel</back>

3. Click "Next".

4. Accept the terms and Click "Next".

Setup	Setup
Intel® Management Engine Components	Intel® Management Engine Components Completion
Click Next to install to the default folder, or click Change to choose another destination folder. C: (Program Files (x86))(Intel[Intel(R) Management Engine Components Change	You have successfully installed the following components: - Intel@Management Engine Interface - Serial Over LAN - Local Management Service
	You have successfully installed the following product: Intel® Management Engine Components
Intel Corporation < Back Next > Cancel	Click here to open log file location. Intel Corporation Sector Enish

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

# Skylake & Kaby Lake for Windows 7 (x64) INF KMDF VGA ME Tool HD Audio USB 3.0

**TPM 2.0** 

Deals to .		
Back to	previous	nage
Ducit co	pretions	Pube

LAN

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

Nelcome to	the Setup Pro	ogram		unter
This setup program Intel® USB 3.0/ Intel® USB 3.0/ Intel® USB 3.0 P Click Next to conti	n will install the follow 3.1 eXtensible Host O 3.1 Hub Driver 4onitor nue.	ving components Controller Driver	u.	

2. Click "Next".

Intel® Installation Framework

cense Agreement		(		
You must accept all of the terms of the licens program. Do you accept the terms?	e agreement in order t	o continue the	setup	
INTEL SOFTWARE LICENSE AGREEMENT (OZ IMPORTANT - READ BEFORE COPYING, INS Do not use or load this software and any as software, you agree to the terms of this Ag instal or use the Software. Please Also Note: "If you are an Original Equipment Manufact (ISV), or independent Software Vendor (ISV	EM / IHV / ISV Distributi FALLING OR USING. sociated materials (colle rms and conditions. By reement. If you do not urer (OEM), Independe ), this complete LICEN).	on & Single Usi cotively, the "S loading or usir wish to so agr ant Hardware V SE AGREEMENT F LICENSE AG	er) oftware") ng the ee, do not /endor /applies; REEMENT,	•
* If you are an End-User, then only Exhibit A	y die inflee Sof Human			



- - ×

3. Click "Yes".



river		(intol)	
etup Progre	SS	interv	
lease wait while t	he following setup operations are performed		
Copying File: C: F	rogram Files (x86)\Intel\Intel(R) USB 3.0 3.	1 eXtensible Host Controller Drivi	
Conving File: C: F	rogram Files (x86)\Intel\Intel\R) USB 3.0 3.	1 extensible Host Controller Drivi	
Copying File: C: V	rogram Files (x86) \Intel \Intel (R) USB 3.0 3.	1 eXtensible Host Controller Drive	
Copying File: C: \F	rogram Files (x86) \Intel \Intel (R) USB 3.0 3.	1 eXtensible Host Controller Driv	
Copying File: C: V	rogram Files (x86) \Intel \Intel (R) USB 3.0 3.	1 eXtensible Host Controller Drive	
Copying File: C: F	rogram Files (x86)\Intel\Intel\R) USB 3.0 3.	1 eXtensible Host Controller Drivi	
Creating Registry	Key: HKLM\SOFTWARE\Microsoft\Windows\	CurrentVersion\Run\USB3MON=	
Creating Process:	C:\Program Files (x86)\Intel\Intel(R) USB 3.	.0 3.1 eXtensible Host Controller	
Click Novt to cont		-	
1	III III		



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
Back to previous page	

### 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 )