2I810D

Intel ® Whiskey Lake-U Core™ I / Celeron processor, DDR4 LAN / HDMI / USB / Mini-PCIe / COM

All-In-One

8th gen. Intel Whiskey Lake-U Core™ I / Celeron CPU

HDMI, VGA, PCIe mini card, USB

Multi-LAN, COM, Audio, SATA

CAUTION

RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE.
DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS

NO. 2I810D
Release date: Mar. 02, 2020

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User Manual edition 0.1, Mar. 02. 2020

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.

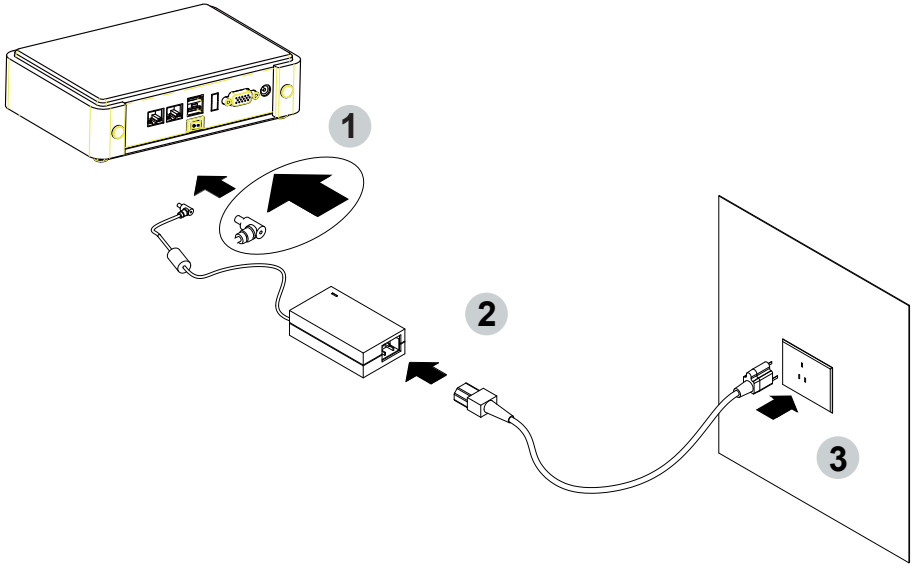
✱ Hardware Notice Guide

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 form the motherboard will VOID the warranty of the motherboard.
9. Before you install / remove any components or even make any jumper setting on the motherboard, please make sure to disconnect the power supply first. (follow the aforementioned instruction guide)
10. "POWERON after PWR-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.

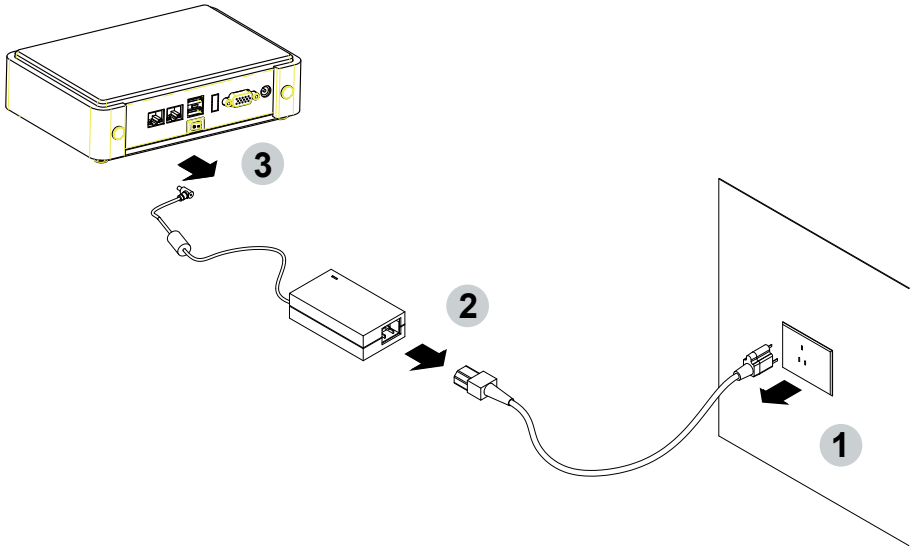
Remark 1:
Always insert / unplug the DC-in horizontally & directly to / from the motherboard. DO NOT twist, it is designed to fit snugly.
Moreover, erratic pull / push action might cause an unpredictable damage to the component & system unit.

Photo 1

Insert



Unplug



Chapter-1

General Information

The 2I810D is an ultra compact (102 x 108 mm) SBC with 8th Gen. Intel® Whiskey Lake-U i7 / i5 / i3 / Celeron processor, integrated 4 x GbE LAN, 7 x USB, 2 x COM Port and HDMI, 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 2I810D 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 / 2400 MHz memory up to 16 GB 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, 4 ports of USB 2.0. The expandable interfaces include 1 full-size PCIe Mini card & 1 half-size PCIe Mini card for PCIe x 1 or mSATA (auto-detection) and USB3.0 / 2.0 interface.

1-1 Major Feature

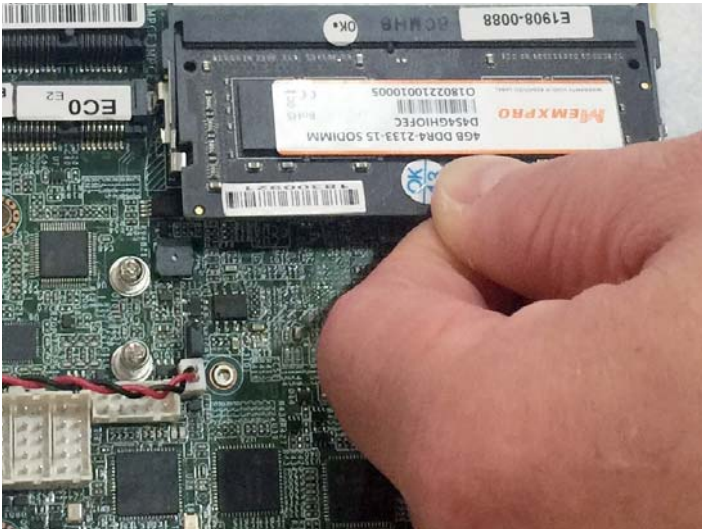
1. Intel® Celeron 4305UE Processor 2.0GHz, (Dual core), Intel® Core i5-8365UE Processor 1.6GHz / 4.1GHz (Quad core), Intel® Core i7-8665UE Processor 1.7GHz / 4.4GHz (Quad core).
2. Intel 9th generation (Gen 9) LP graphics and media encode / decode engine, Intel® Celeron 4305UE 300MHz / 1GHz, Intel® Core i5-8365UE 300MHz / 1.05GHz, Intel® Core i7-8665UE 300MHz / 1.15GHz.
3. DDR4 SODIMM slot x 1, up to 16GB.
4. Support 4 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 4 x USB 2.0.
7. Support extended 1 x full-size Mini PCIe card for PCIe x 1 / mSATA (auto-detect) and USB3.0 / 2.0 interface, 1 x half-size Mini PCIe card for PCIe x 1 / mSATA (auto-detect) and USB 3.0 / 2.0 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.

1-2 Specification

1. **SOC:** Intel® Celeron 4305UE Processor 2.0GHz, (Dual core), Intel® Core i5-8365UE Processor 1.6GHz / 4.1GHz (Quad core), Intel® Core i7-8665UE Processor 1.7GHz / 4.4GHz (Quad 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 4305UE 300MHz / 1GHz, Intel® Core i5-8365UE 300MHz / 1.05GHz, Intel® Core i7-8665UE 300MHz / 1.15GHz. Support HDMI 1.4 up to 3840 x 2160, VGA port.
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:** 1 Intel I219 PHY & 3 Intel I210-IT 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. **Audio:** ALC886 HD Audio Specification 1.0 Two channel sound
8. **USB:** 3 type A USB 3.0, 4 USB 2.0
9. **WDT / DIO:** Hardware digital Input & Output, 4 x DI / 4 x DO (Option) / Hardware Watch Dog Timer, 0~255 sec programmable
10. **Expansion interface:** one full-size PCIe Mini card for PCIe x 1 / mSATA (auto-detect) and USB 3.0/2.0 interface, one full-size Mini PCIe card for PCIe x 1 / mSATA (auto-detect) and USB 3.0 / 2.0 interface
11. **BIOS:** AMI UEFI BIOS
12. **Dimension:** 102 x 108 mm
13. **Power:** On board DC +12V

1-3 Installing the SO-DIMM

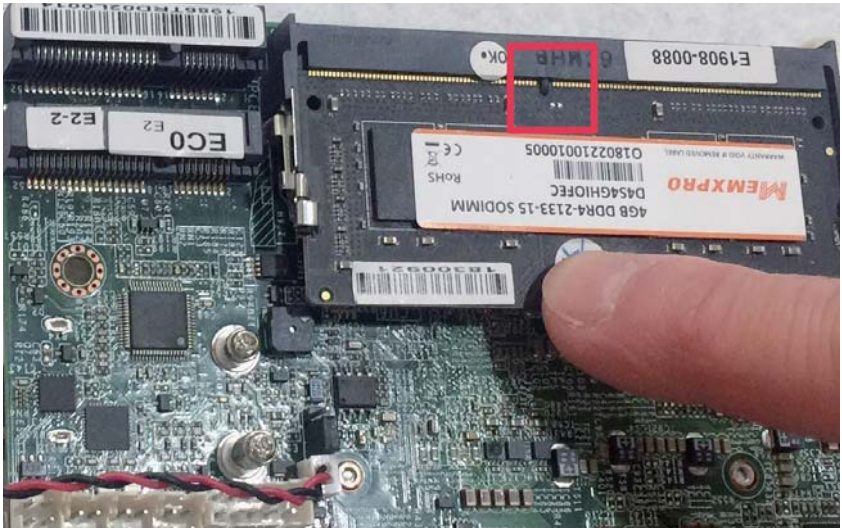
1. Align the SO-DIMM with the connector at a 45 degree angle.



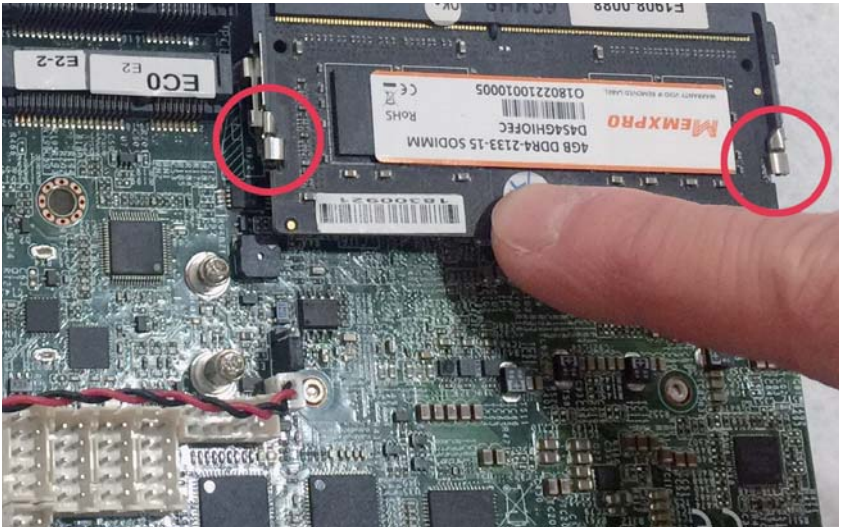
2. Press the SO-DIMM into the connector until you hear a click.

Notices:

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



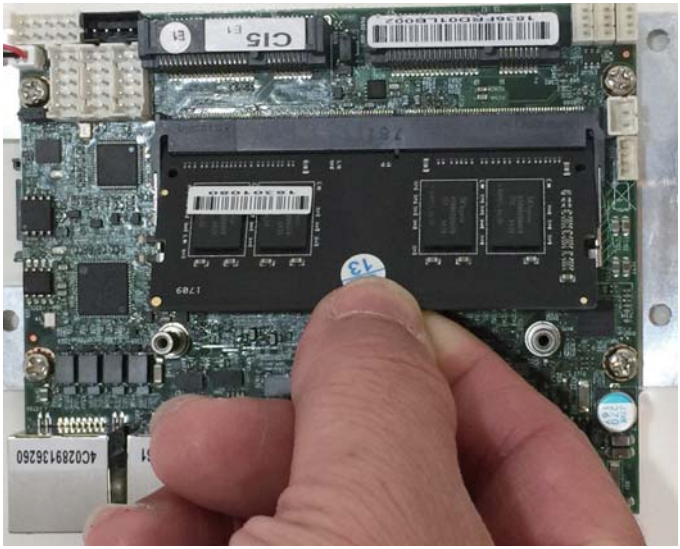
2. Make sure the retaining clips (on two sides of the slot) lock onto the notches of the card firmly.



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

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

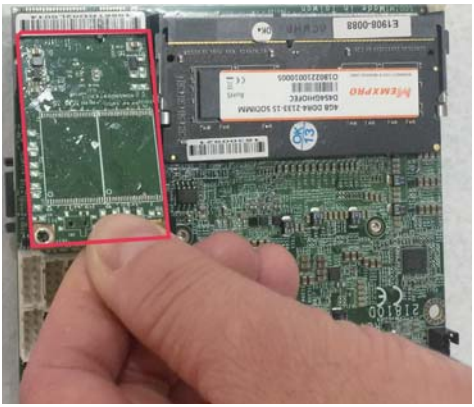
2. Lift the SO-DIMM out of its connector carefully.



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

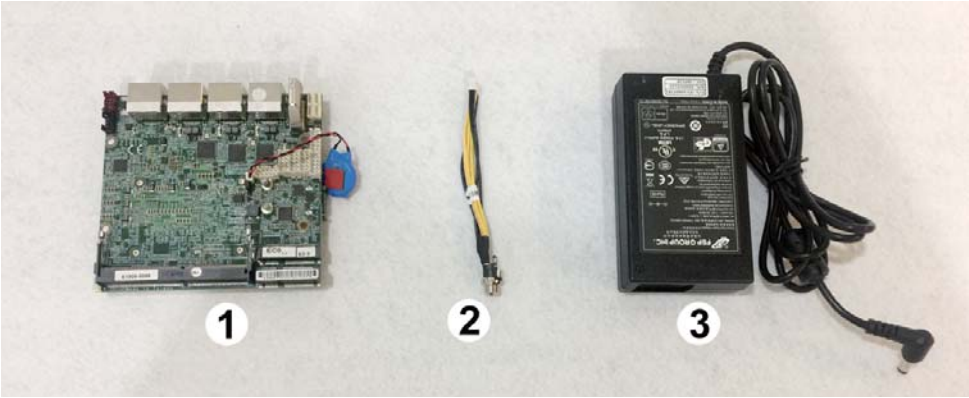
1. Unscrew the screw on the board

2. Plug in the Mini Card in a 45 angle



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

1-5 Packing List



	Material Code	Description	Detail Specification	Quantity
1	7G1901-2030001-0	MB-2I810D-EC0-001	LF,2I810D-EC0,Rev.:001	1
2	6G6003-7350-0100	Power Cable	LF, 2.0 2*4/DC JK,L=9cm	1
3	6G5212-0620-0100	■60W Power Adapter,12V/5A,2.5Ø,	LF,L Type,FSP060-DIBAN2,FSP	1

Optional accessories (items in addition to motherboard)
are not included in the standard packing.
Please contact your dealer to purchase the optional accessories.

Chapter-2

Hardware Installation

2-1 Unpacking Precaution

This chapter provides the information how to install the hardware of 2I810D.
Please follow section 1-5, 2-1 and 2-2 to check the delivery package and unpack carefully. Please follow the jumper setting procedure.

NOTE!

1. Do not touch the board or any other sensitive components without all necessary anti-static protection.
2. Please pay attention to the voltage limitation of DC-IN 12V 5%.
   Overuse of DC-IN voltage limitation or change to another power adapter (not provided with this system) will VOID warranty.

You should follow these steps to protect the board from the static electric discharge whenever you handle the board:

1. Ground yourself by a grounded wrist strap at all times when you handle the 2I810D.
   Well secure the ALLIGATOR clip of the strap to the end of the shielded wire lead from a grounded object. Please put on and connect the strap before handling the 2I810D for harmlessly discharge any static electricity through the strap.

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

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

2-2 Unpacking checkup

First of all, please follow all necessary steps of section 2-1 to protect 2I810D from electricity discharge. With reference to section 1-5 please check the delivery package again with following steps:

1. Unpack the 2I810D board and keep all packing material, manual and driver disc etc, do not dispose !

2. Is there any components lose or drops from the board?
   DO NOT CONTINUE TO INSTALL THIS BOARD!
   CONTACT THE DEALER YOU PURCHASED
   THIS BOARD FROM, IMMEDIATELY.

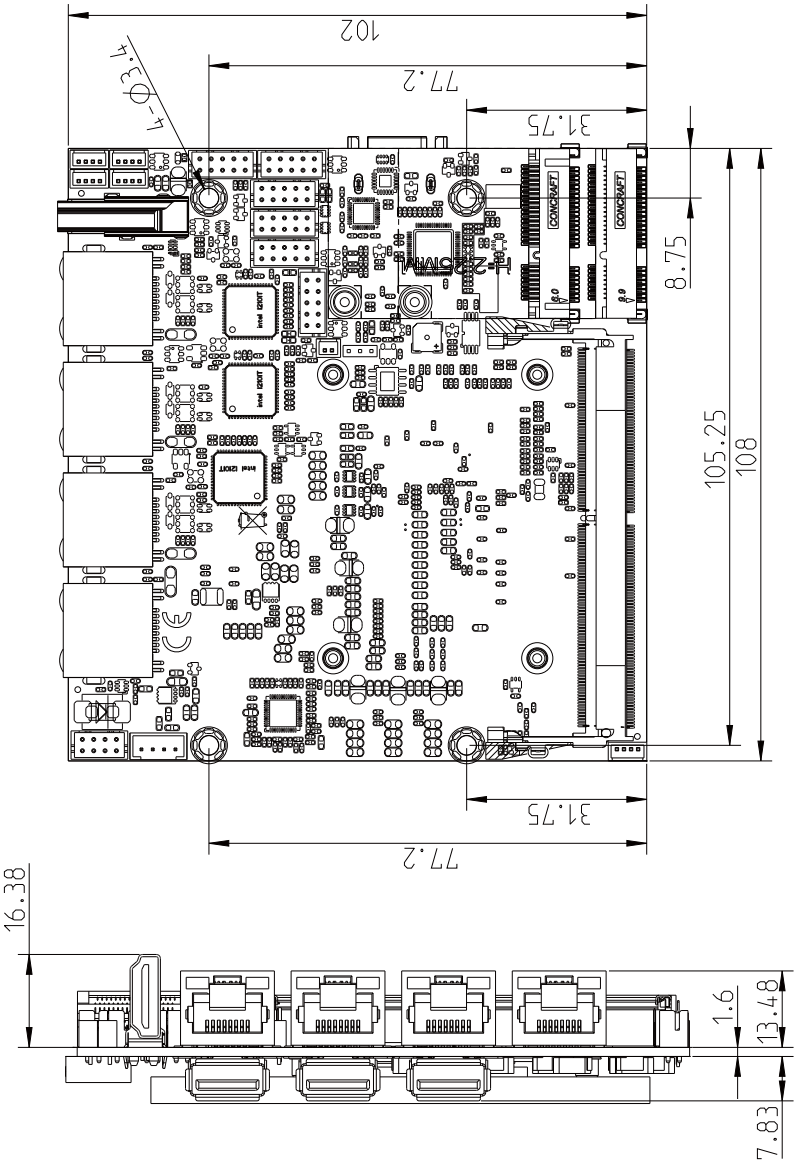
3. Is there any visible damage on the board?
   DO NOT CONTINUE TO INSTALL THIS BOARD!CONTACT
   THE DEALER YOU PURCHASED THIS BOARD FROM, IMMEDIATELY.

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

5. Check your external devices (i.e. Add-On-Card, Driver Type etc.) for complete add-in or connection and CMOS setup correctly.
   Please also refer to all information of connector connection in this manual.

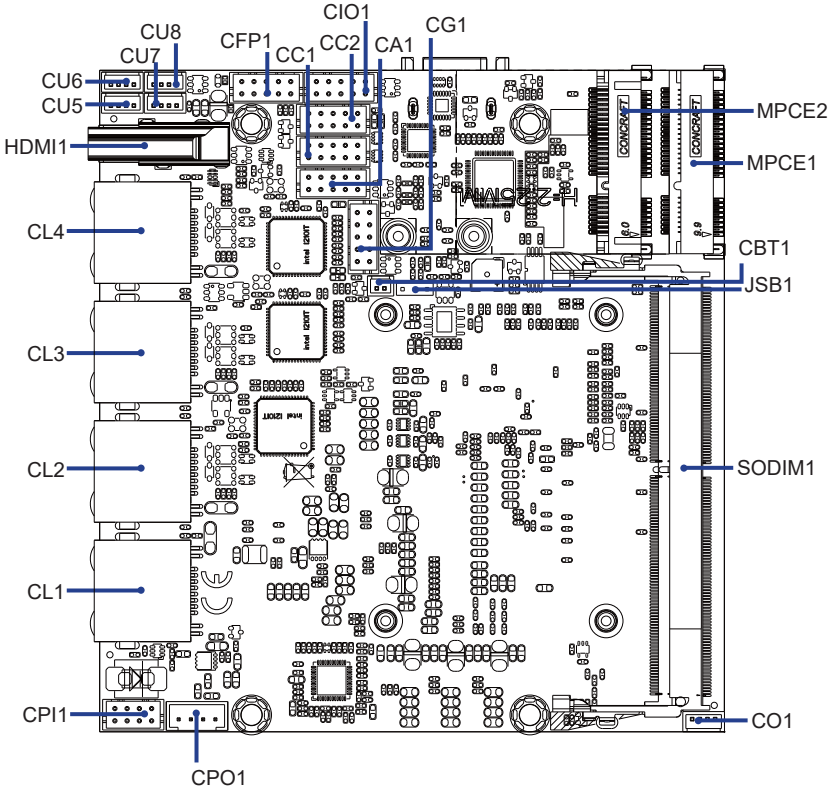
6. Please keep all necessary manual and driver disc in a good condition for future re-installation if you change your Operating System.

2-3 Dimension-2I810D



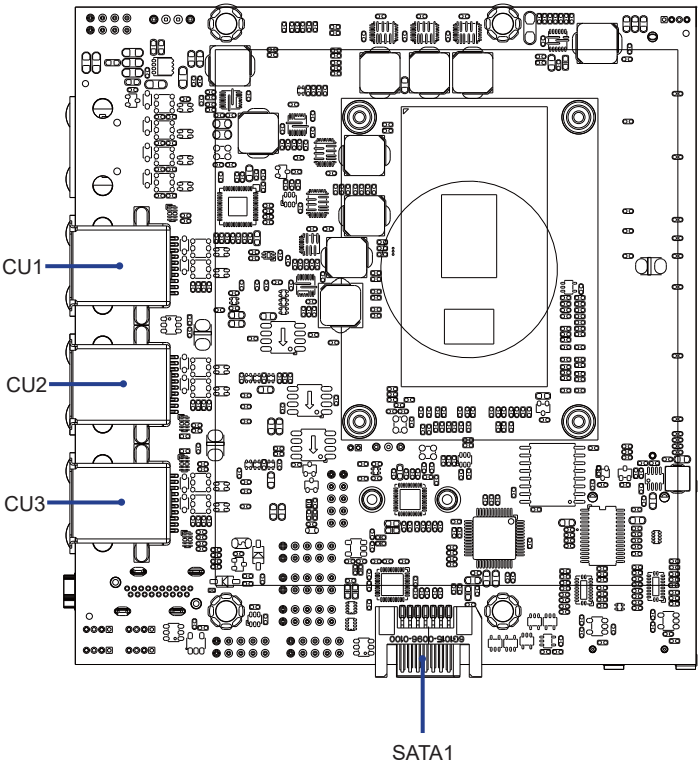
2-4 Layout-2I810D-Connector and Jumper

TOP



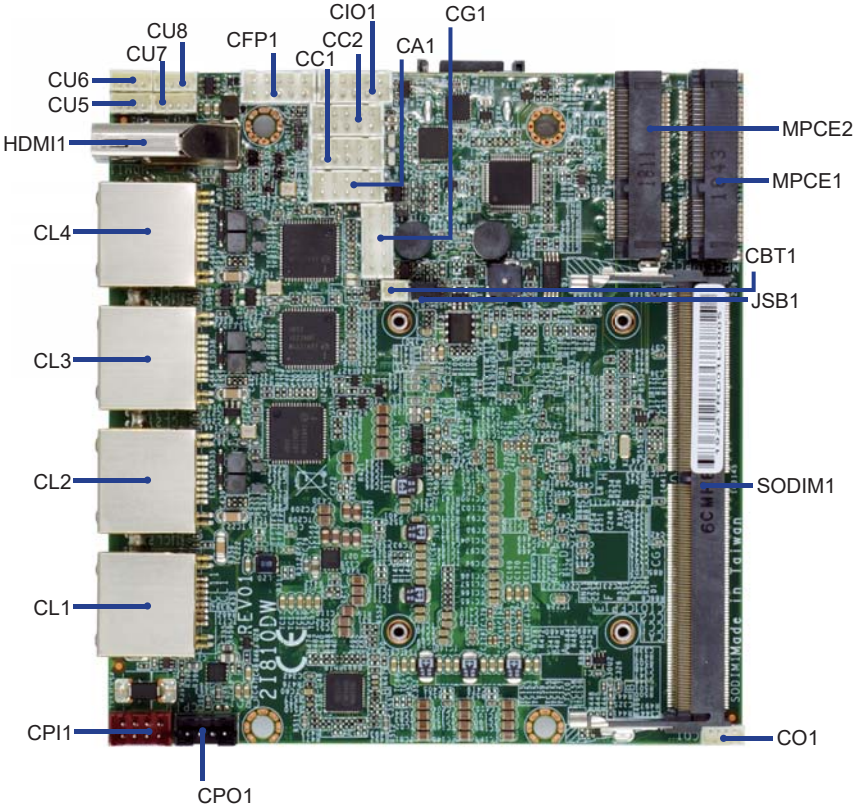
2-4-1 Layout-2I810D-Connector and Jumper

BOT



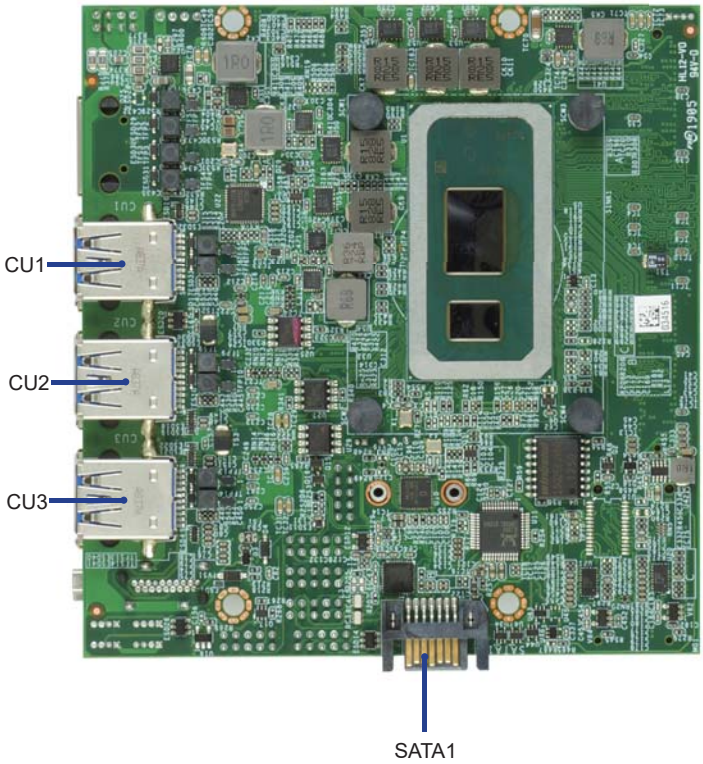
2-4-2 Diagram- 2I810D

TOP



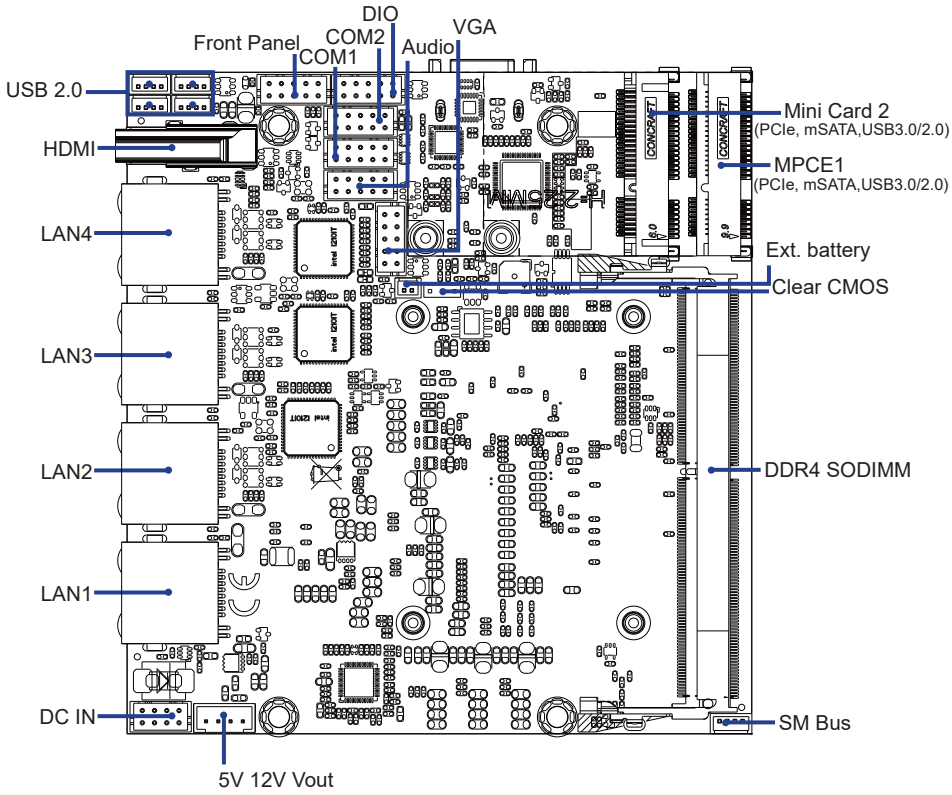
2-4-3 Diagram- 2I810D

BOT



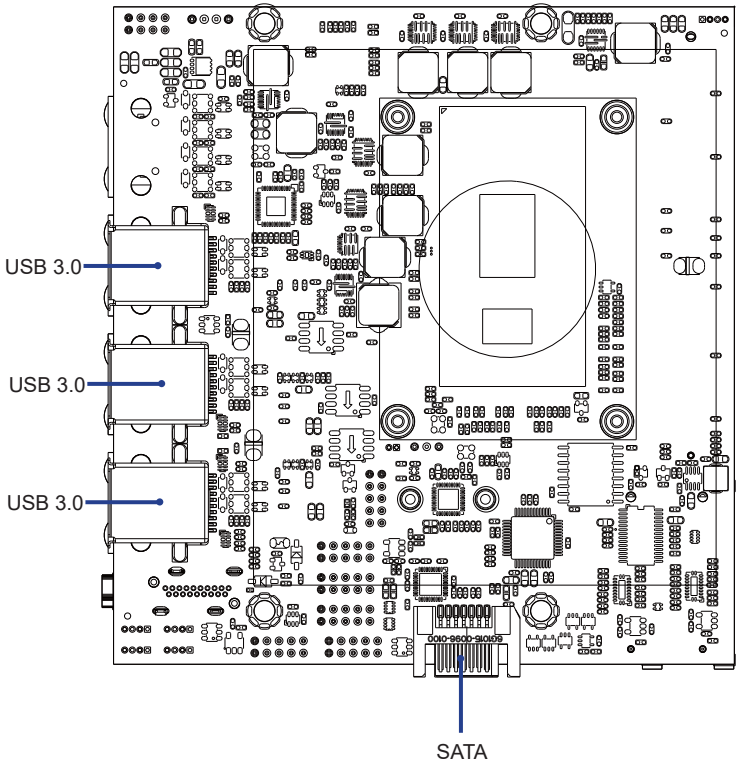
2-5 LAYOUT-2I810D-FUNCTION MAP

TOP

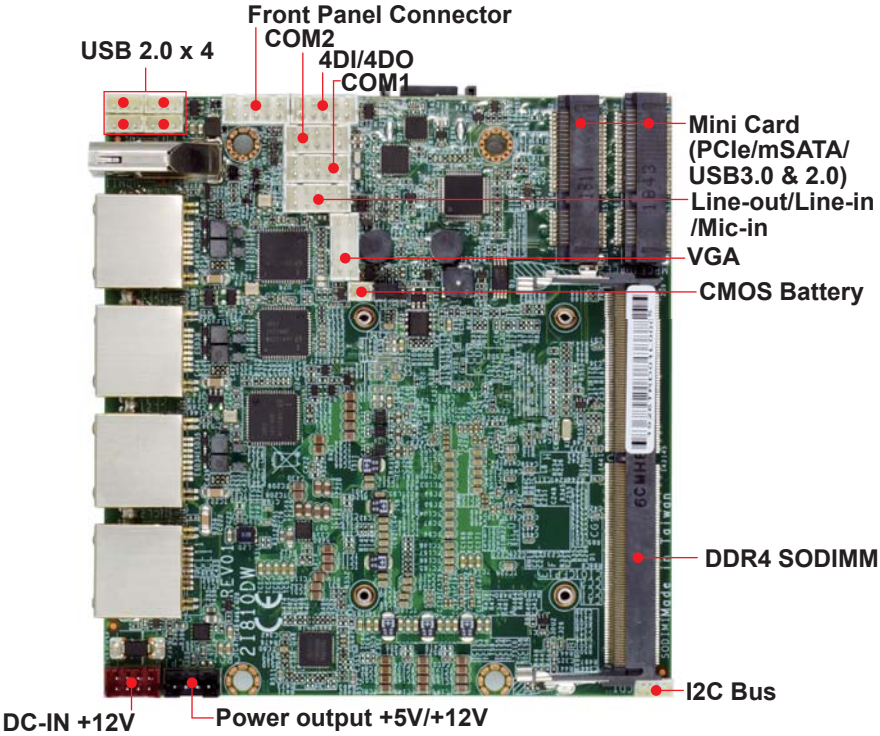


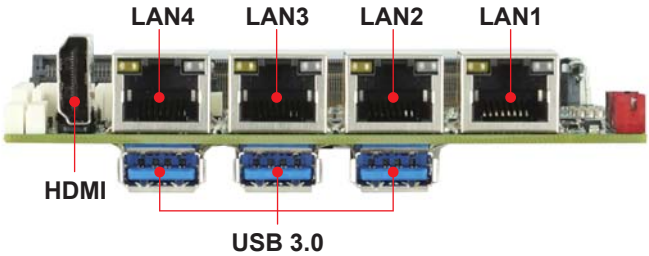
2-5-1 LAYOUT-2I810D-FUNCTION MAP

BOT



2-5-2 Function MAP- 2I810D





2-6 List of Jumpers

JSB1: CMOS DATA Clear

2-7 Jumper Setting Description

A jumper is ON as a closed circuit with a plastic cap covering two pins. A jumper is OFF as an open circuit without the plastic cap. Some jumpers have three pins, labeled 1, 2, and 3. You could connect either pin 1 and 2 or 2 and 3.

The below figure 2.2 shows the examples of different jumper settings in this manual.

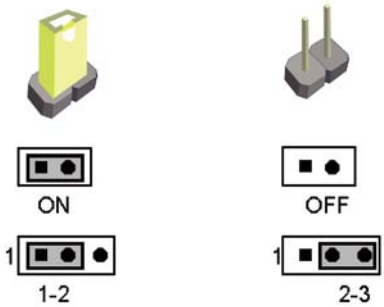


Figure 2.2

All jumpers already have its default setting with the plastic cap inserted as ON, or without the plastic cap as OFF. The default setting may be referred in this manual with a " * " symbol .

2-8 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

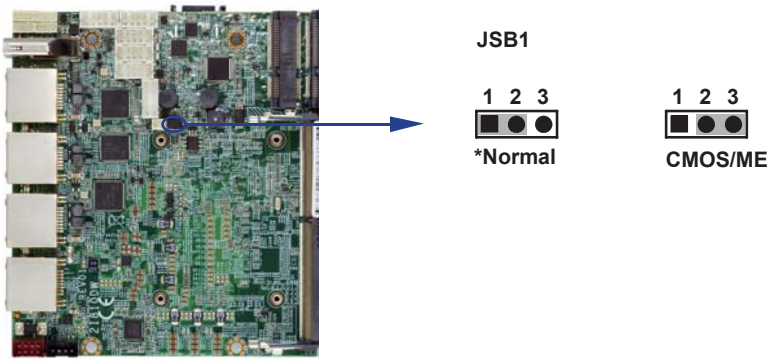
JSB1	DESCRIPTION
*1-2	Normal set
2-3	CMOS/ME data clear

Note: Do not clear CMOS unless

1. Troubleshooting

2. Forget password

3. You fail over-clocking system



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 1x2 pin (1.25mm)wafer
CA1:	Line-out/Line-in/Mic-in/SPDIF-out 2x5 pin (2.0mm) Wafer
CC1 :	COM1 2x5pin (2.0mm) wafer
CC2 :	COM2 2x5pin (2.0mm) wafer
CFP1:	Front Panel connector 2x5pin (2.0mm) wafer
CIO1:	4DI/4DO 2x5 pin (2.0mm) Wafer
CG1:	VGA 2x5 pin (2.0mm) wafer
CU1:	USB 3.0 Type A connector
CU2:	USB 3.0 Type A connector
CU3:	USB 3.0 Type A connector
CU5:	USB 2.0 port 4pin (1.25mm) Wafer
CU6:	USB 2.0 port 4pin (1.25mm) Wafer
CU7:	USB 2.0 port 4pin (1.25mm) Wafer
CU8:	USB 2.0 port 4pin (1.25mm) Wafer
CL1 :	LAN port 1 RJ45 Connector
CL2 :	LAN port 2 RJ45 Connector
CL3 :	LAN port 3 RJ45 Connector
CL4 :	LAN port 4 RJ45 Connector
CO1:	I2C Bus 4pin (1.25mm) Wafer
CPI1:	DC 12V-IN 2x4 pin (2.0mm) Red wafer
CPO1:	+12V/+5V power output 4 pin (2.0mm) Black wafer
HDMI1:	HDMI Type A connector
SATA1:	SATA connector 7pin
SODIMM1:	DDR4 Channel 0 SODIMM H: 9.2mm
MPCE1:	Full size mini card port 1 sockets 52pin H: 9.9mm
MPCE2:	Half size mini card port 2 sockets 52pin H: 6.0mm

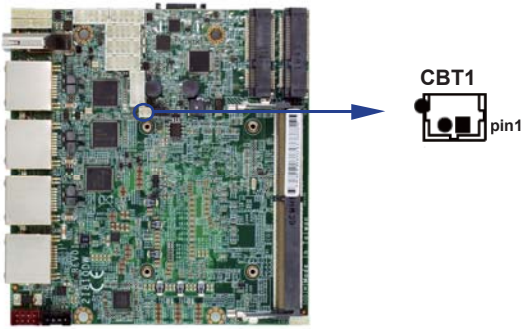
3-2 CMOS battery connector

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

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

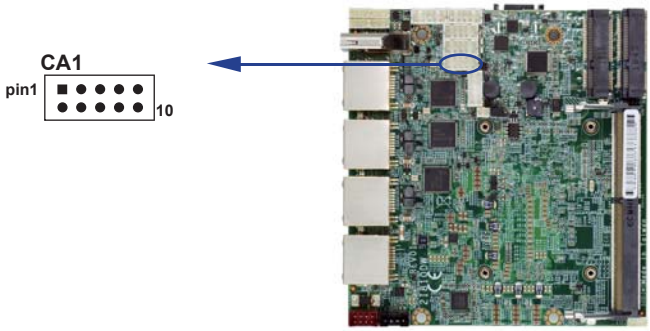
Note：

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



3-3 CA1: Line-out/Line-in/Mic-in 2x5 pin (2.0mm) Wafer

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



3-4 CC1/2 COM1/2 2x5 pin (2.0mm) wafer

- **(RS232 Mode)**

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

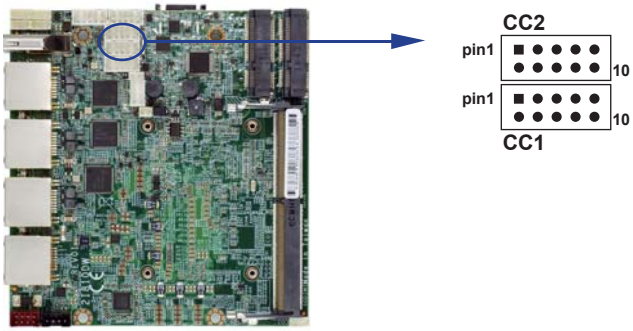
- **(RS485 Mode)**

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

- **(RS485 Mode)**

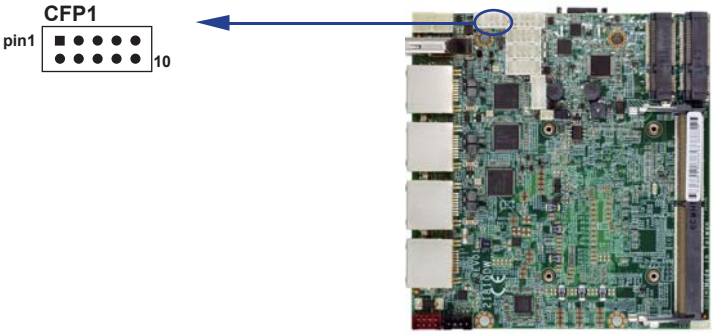
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	TX-	2	NC
3	TX+	4	NC
5	RX+	6	NC
7	RX-	8	NC
9	GND	10	+5V

Note:
1. Pin 9 RI and Voltage setting only for COM 1/2 ports, is used BOM control.
2. Default support RS232/RS422/RS485 by BIOS selected



3-5 CFP1 Front Panel connector 2x5 pin (2.0mm) wafer

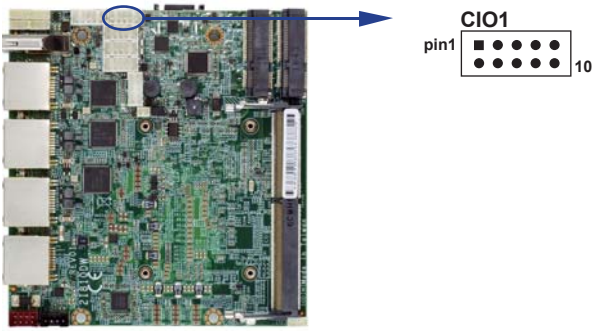
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	Power button pin	2	Power button GND
3	Reset pin	4	Reset GND
5	Power LED-	6	Power LED+
7	HDD LED-	8	HDD LED+
9	LAN LED-	10	LAN LED+



3-6 CIO1 DIO 0--3 (2x5 pin 2.0mm wafer)

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

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



- **WDT For F75111N I^2C 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.

3-6-1 IO Device:F75111 CIO Utility

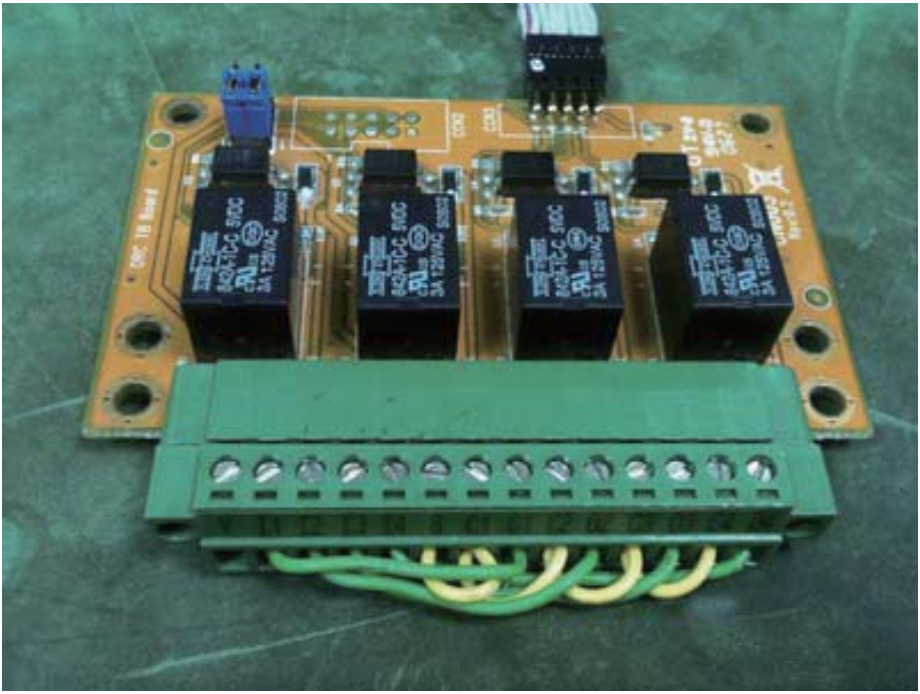
The Sample code source you can download from

Source file: CIO_Utility_Src_v3.0.5_w.zip http://tprd.info/lexwiki/index.php/IO_Device:F75111_CIO_Utility

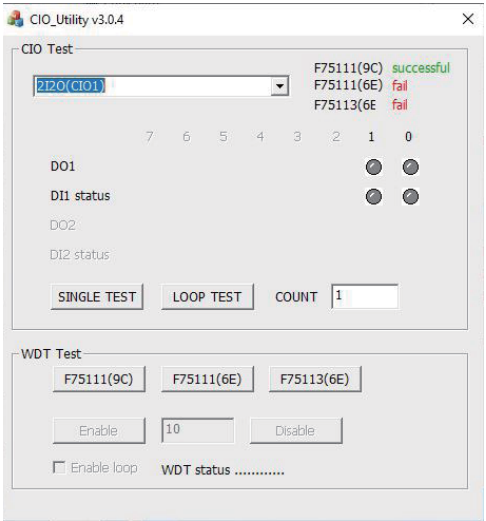
Binary file: CIO_Utility_Bin_v3.0.5_x32_w.zip CIO_Utility_Bin_v3.0.5_x64_w.zip

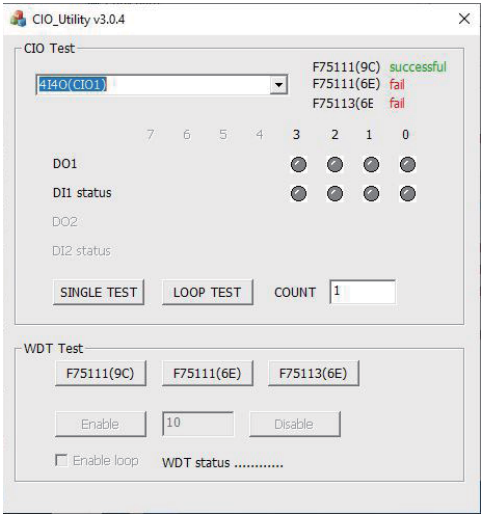
F75113 DLL : F75113.dll

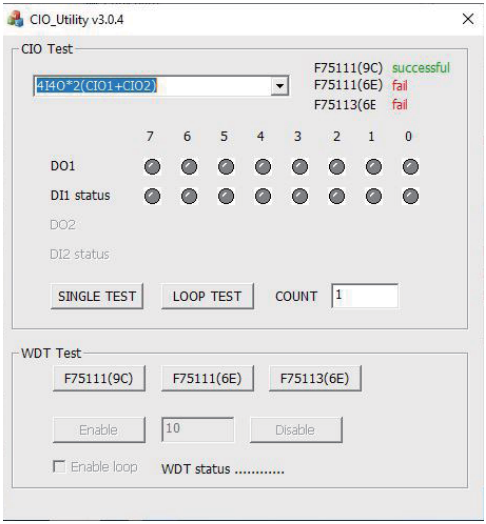
We do the demo test with a test tool which DIx connect to DOx with Relay.

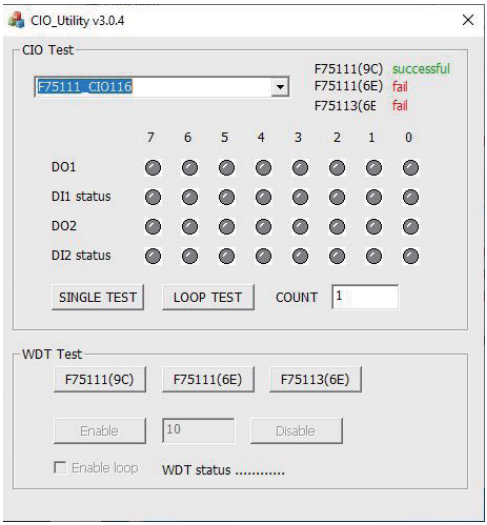


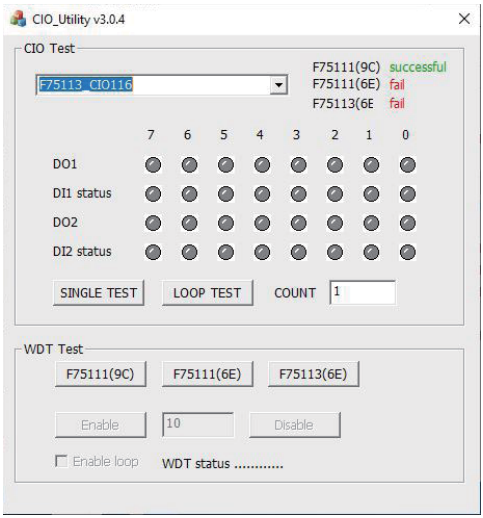
How to use this Demo Application

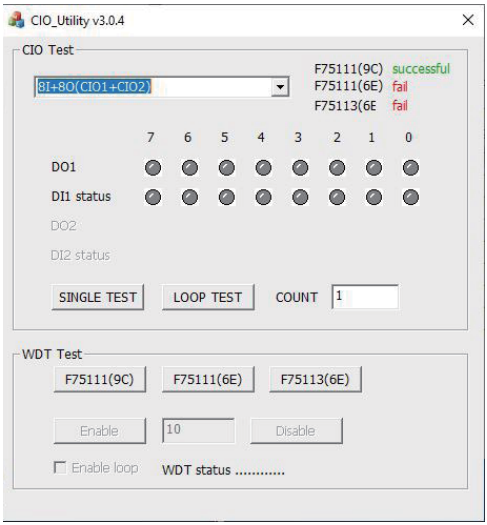








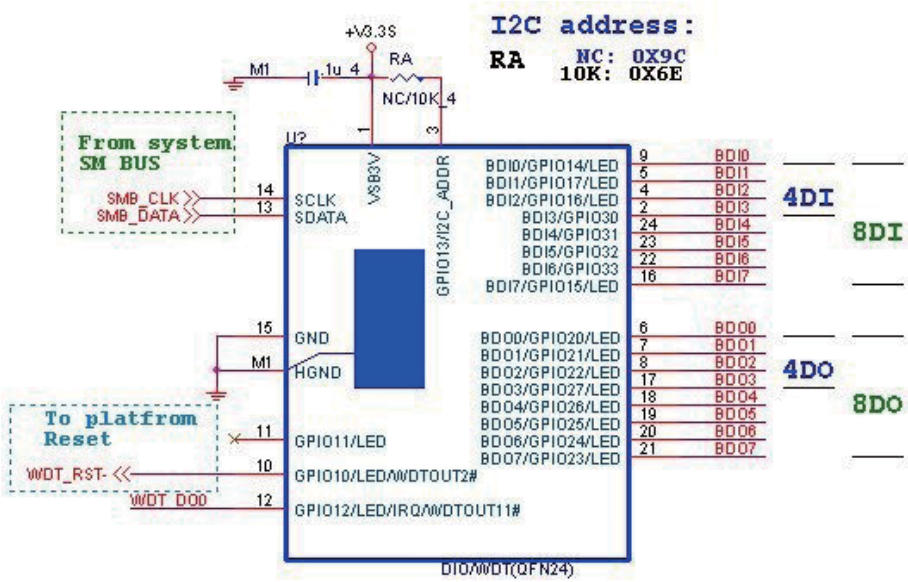




Attention Please: You must be install vcredist_x86.exe when first time you run the F75111_DIO.exe DEMO AP,The vcredist_x86.exe include all required DLL file.

1. Press the select your test "2i2o"，"4i4o"，"4i4o*2"，"F75111CIO116"，"F75113CIO116"，"8i+8o"
2. start test，select single mode or looptest

F75111 Layout Picture



Introduction F75111

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()

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

Initial internal F75111

```
void F75111::InitInternalF75111()
{
this->Write_Byte(F75111_INTERNAL_ADDR,GPIO1X_CONTROL_MODE, 0x00);   //set GPIO1X to Input function
this->Write_Byte(F75111_INTERNAL_ADDR,GPIO3X_CONTROL_MODE, 0x00);   //set GPIO3X to Input  function
this->Write_Byte(F75111_INTERNAL_ADDR,GPIO2X_CONTROL_MODE, 0xFF);   //set GPIO2X to Output function
this->Write_Byte(F75111_INTERNAL_ADDR,F75111_CONFIGURATION,   0x03);   //Enable WDT OUT function
}
```

Set output value

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

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

Get Input value

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

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

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

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

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

return byteData;
}
```

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.
//-----------------------------------------------------------------------------------------------------------------------------------------------------------
```

3-6-2 IO Device:F75111 CIO Utility CIO116

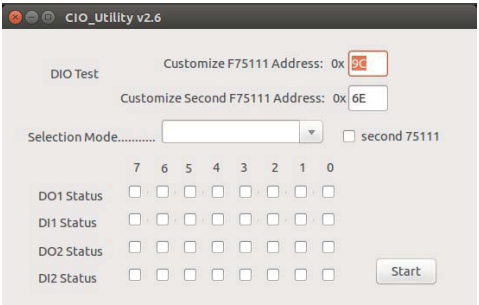
The Sample code source you can download from

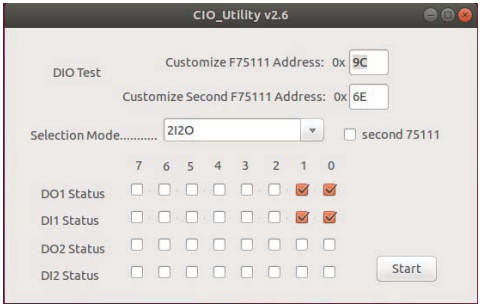
Source file: CIO_Utility_Src_v3.0.3.tar.gz

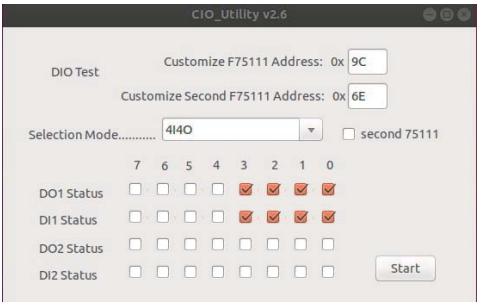
Binary file: CIO_Utility_Bin_v3.0.3_x32.tar.gz CIO_Utility_Bin_v3.0.3_x64.tar.gz

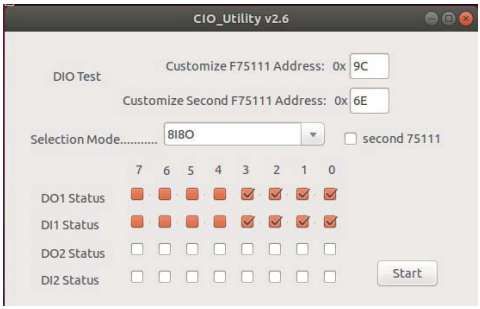
http://tprd.info/lexwiki/index.php/IO_Device:F75111_CIO_Utility_CIO116

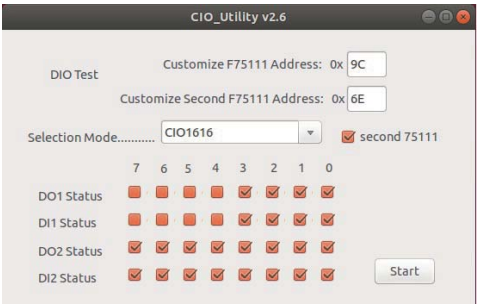
How to use this Demo Application







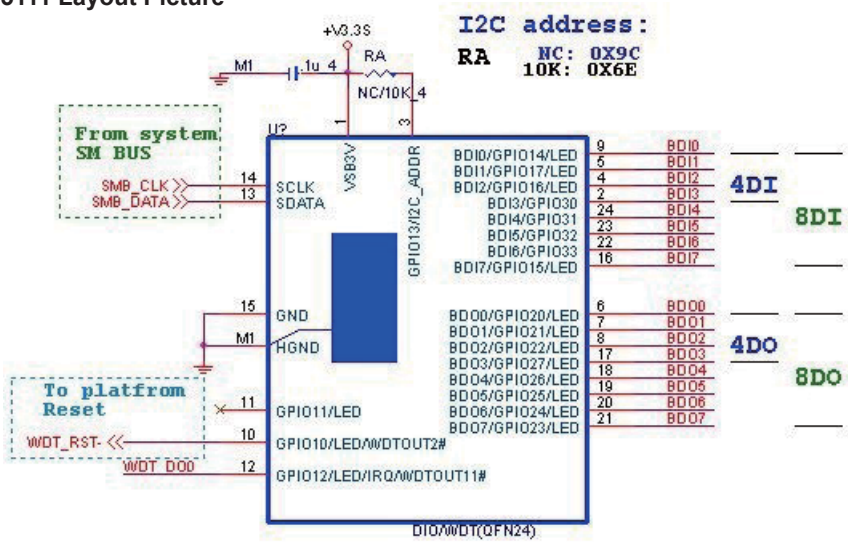




**Before executing the program began, Please switch to the highest authority , continued second F75111 ,chmod 777 and root: **

1. Press the select your test "2i2o","4i4o","8i8o","CIO1616"
2. If you test CIO1616 checkbutton second 75111
3. start button, select single mode or looptest

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()

PULSE mode

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

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

Initial internal F75111

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

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

Set output value

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

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

Get Input value

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

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

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

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

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

 return byteData;
}
```

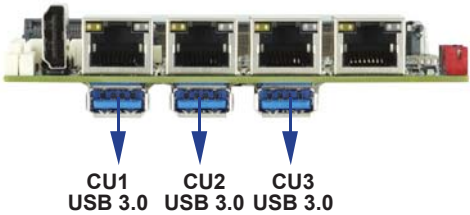
define F75111 pin in F75111.h

```
//-----------------------------------------------------------------------------------------------------------------------------------------------------------
#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.
//-----------------------------------------------------------------------------------------------------------------------------------------------------------
```

3-7 CU1/2/3: USB 3.0 Port 1/2/3 Type A Connector

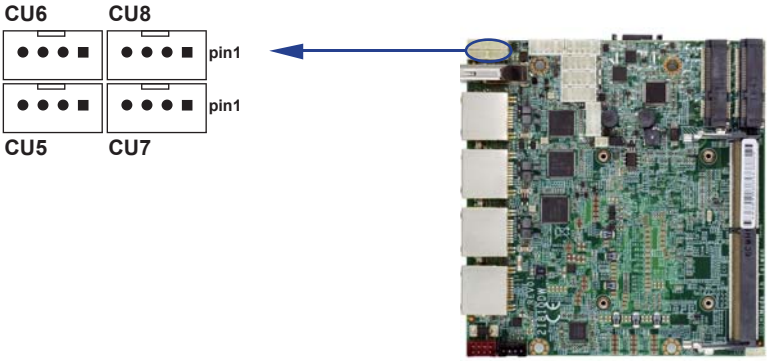
PIN NO.	Description	PIN NO.	Description
1	VBUS	5	SS_RX-
2	D-	6	SS_RX+
3	D+	7	GND
4	GND	8	SS_TX-
		9	SS_TX+

Note: the power supply 0.9A for each USB 3.0 respect specification.



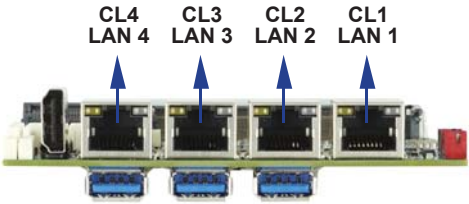
3-8 CU5/6/7/8 USB2.0 port (1x4 pin 1.25mm Wafer)

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



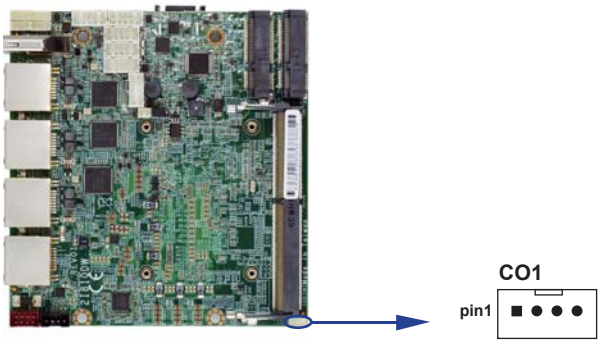
3-9 CL1/2/3/4: RJ45 LAN1/2/3/4 Connector

PIN NO.	Description	PIN NO.	Description
1	MDI0+	5	MDI2-
2	MDI0-	6	MDI1-
3	MDI1+	7	MDI3+
4	MID2+	8	MDI3-



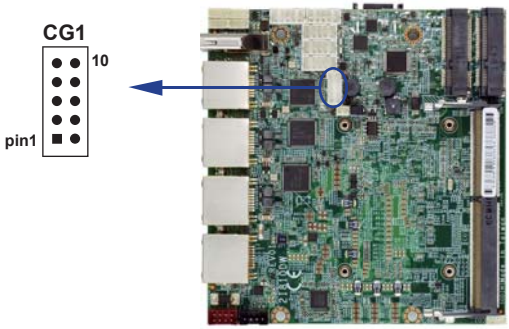
3-10 CO1: I2C Bus 4pin (1.25mm) Wafer

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



3-11 CG1: VGA 2x5 pin (2.0mm) wafer

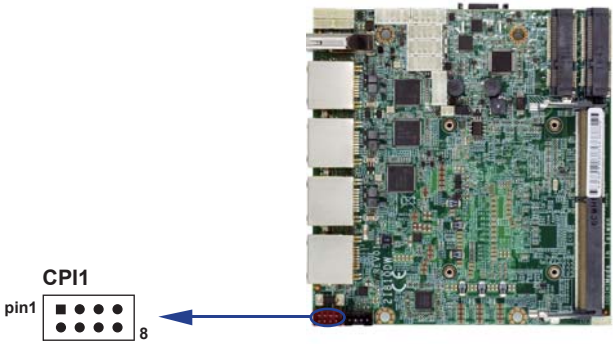
PIN NO.	Description	PIN NO.	Description
1	BLUE	2	GND
3	GND	4	DDC CLOCK
5	GREEN	6	V-SYNC
7	GND	8	H-SYNC
9	RED	10	DDC DATA



3-12 CPI1: DC Power input (2x4 pin 2.0mm Wafer) (Red)

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

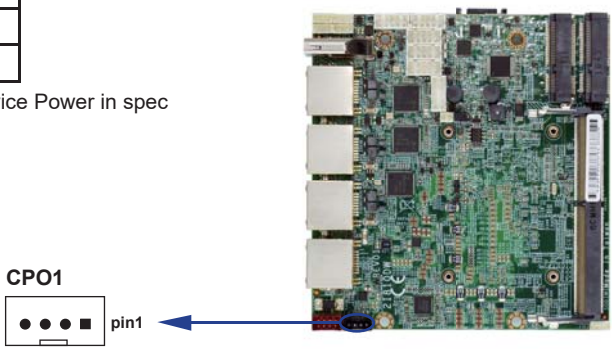
Note: Very important check DC-in Voltage



3-13 CPO1: +12V/+5V DC voltage output wafer connector (Black) (1x4pin 2.0mm)

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

* Note: Attention! Check Device Power in spec



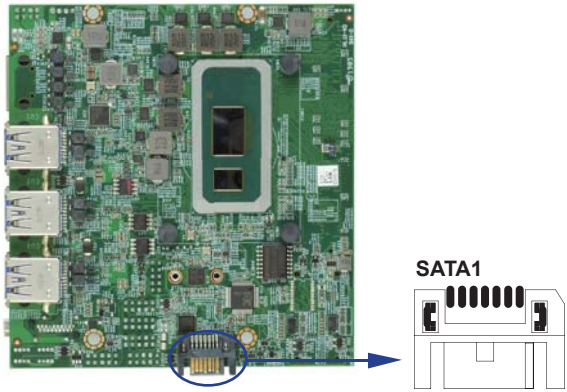
3-14 HDMI1: HDMI connector

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

3-15 SATA1: SATA port 1x7 pin Connector

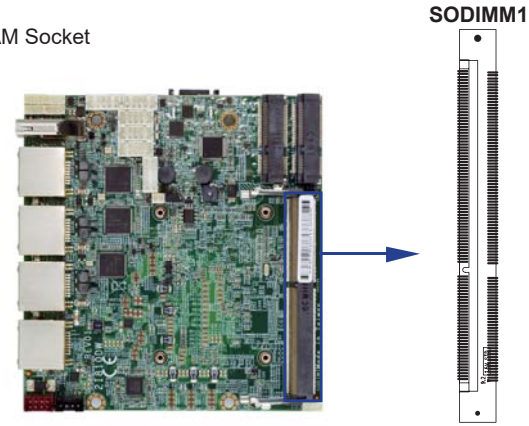
PIN NO.	DESCRIPTION
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+
7	GND

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



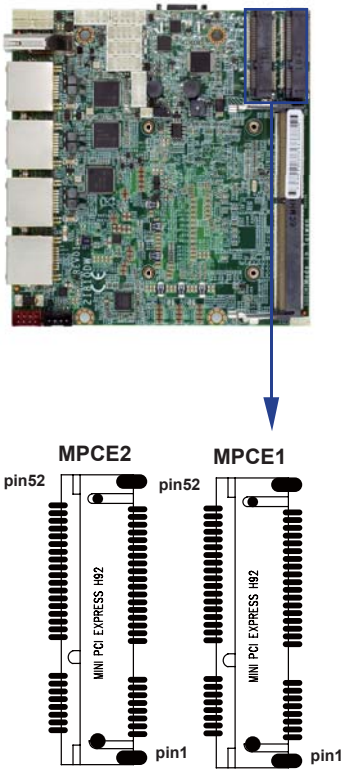
3-16 SODIMM1 socket

Note:
1.SODIM1: SO-DIMM DDR4 1.2V DRAM Socket
2. Only Support un-buffer type module



3-17 MPCE1/2 PCI Express Mini card

PIN NO.	Description	PIN NO.	Description
1	NC	2	+3.3V
3	NC	4	GND
5	NC	6	+1.5V
7	NC	8	NC
9	GND	10	NC
11	PCIe-CLK-	12	NC
13	PCIe-CLK+	14	NC
15	GND	16	NC
KEY			
17	NC	18	GND
19	NC	20	NC
21	GND	22	Reset
23	PCIe-RX- / mSATA-RX+ / USB3_RX-	24	+3.3V
25	PCIe-RX+ / mSATA-RX- / USB3_RX+	26	GND
27	GND	28	+1.5V
29	GND	30	SMB-CLK
31	PCIe-TX- / mSATA-TX- / USB3_TX-	32	SMB-DATA
33	PCIe-TX+ / mSATA-TX+ / USB3_TX+	34	GND
35	GND	36	USB-DATA-
37	GND	38	USB-DATA+
39	+3.3V	40	GND
41	+3.3V	42	NC
43	GND	44	NC
45	NC	46	NC
47	NC	48	+1.5V
49	NC	50	GND
51	mSATA/PCIe detect	52	+3.3V



Note:
1. Pin51 mSATA/PCIe auto detect function.
2.If use USB 3.0 signal, used BIOS select default set mSATA/PCIe.

3-18 Connector wafer of Compatible Brand and part number list

Location	CKTS	PITCH	Brand Name	Mating connector	Cable housing
CA1	2x5 10Pin	2.00mm	JST	B10B-PHDSS	PHDR-10VS
CG1	2x5 10Pin	2.00mm	JST	B10B-PHDSS	PHDR-10VS
CC1	2x5 10Pin	2.00mm	JST	B10B-PHDSS	PHDR-10VS
CC2	2x5 10Pin	2.00mm	JST	B10B-PHDSS	PHDR-10VS
CFP1	2x5 10Pin	2.00mm	JST	B10B-PHDSS	PHDR-10VS
CIO1	2x5 10Pin	2.00mm	JST	B10B-PHDSS	PHDR-10VS
CPI1	2x4 8Pin	2.00mm	JST	B8B-PHDSS	PHDR-08VS
CPO1	1x4 4Pin	2.00mm	JST	B4B-PH-KL	PHR-4
CO1	1x4 4Pin	1.25mm	MOLEX	53047-0410	51021-0400
CU5	1x4 4Pin	1.25mm	MOLEX	53047-0410	51021-0400
CU6	1x4 4Pin	1.25mm	MOLEX	53047-0410	51021-0400
CU7	1x4 4Pin	1.25mm	MOLEX	53047-0410	51021-0400
CU8	1x4 4Pin	1.25mm	MOLEX	53047-0410	51021-0400
CBT1	1x2 2Pin	1.25mm	MOLEX	53047-0210	51021-0200

Chapter-4

Introduction of BIOS

The BIOS is a program located in the Flash Memory on the motherboard.
This program is a bridge between motherboard and operating system.
When you start the computer, the BIOS program gains control.
The BIOS first operates an auto-diagnostic test called POST (Power on Self Test) for all the necessary hardware, it detects the entire hardware devices and configures the parameters of the hardware synchronization. After these tasks are completed, BIOS will give control of the computer back to operating system (OS). Since the BIOS is the only channel for hardware and software to communicate with, it is the key factor of system stability and of ensuring your system performance at best.
In the BIOS Setup main menu, you can see several options. We will explain these options in the following pages. First, let us see the function keys you may use here:

Press <Esc> to quit the BIOS Setup.
Press ↑↓←→(up, down, left, right) to choose the option you want to confirm or modify.
Press <F10> to save these parameters and to exit the BIOS Setup menu after you complete the setup of BIOS parameters.
Press Page Up/Page Down or +/- keys to modify the BIOS parameters for the active option.

4-1 Enter Setup

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

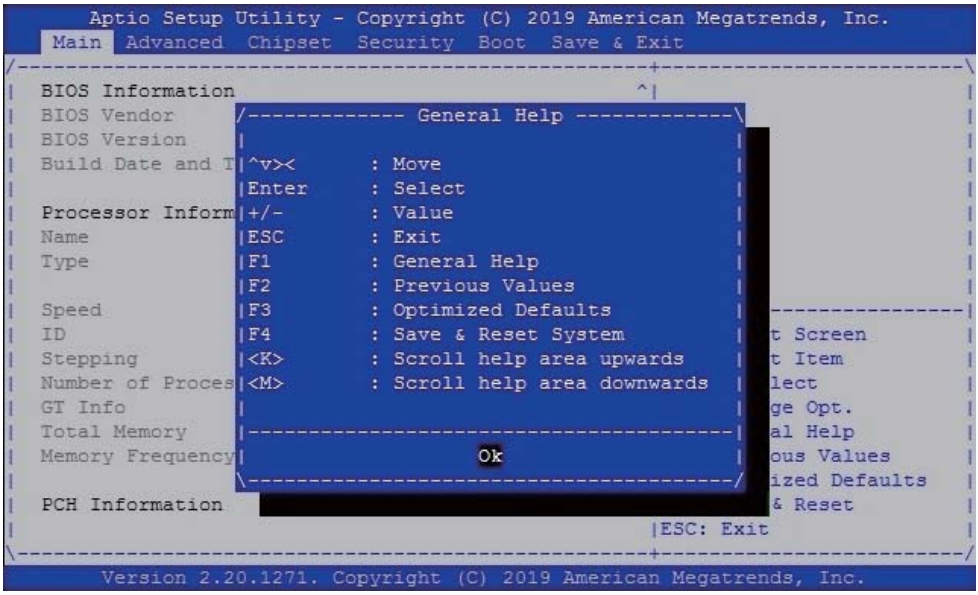
4-2 BIOS Menu Screen & Function Keys

```
Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
 Main  Advanced  Chipset  Security  Boot  Save & Exit
/-----------------------------------------------------+-------------------------\
|  BIOS Information                                   ^|Set the Date. Use Tab    |
|  BIOS Vendor              American Megatrends       *|to switch between Date   |
|  BIOS Version             2I810D A1                 *|elements.                |
|  Build Date and Time      10/29/2019 14:49:11       *|Default Ranges:          |
|                                                     *|Year: 2005-2099          |
|  Processor Information                              *|Months: 1-12             |
|  Name                     WhiskeyLake ULT           *|Days: dependent on month |
|  Type                     Intel(R) Core(TM)         *|                         |
|                           i7-8665UE CPU @ 1.70GHz   *|                         |
|  Speed                    2000 MHz                  *|-------------------------|
|  ID                       0x806EC                   *|><: Select Screen        |
|  Stepping                 V0                        *|^v: Select Item          |
|  Number of Processors     4Core(s) / 8Thread(s)     *|Enter: Select            |
|  GT Info                  GT2 (0x3EA0)              +|+/-: Change Opt.         |
|  Total Memory              8192 MB                  +|F1: General Help         |
|  Memory Frequency          2400 MHz                 +|F2: Previous Values      |
|                                                     +|F3: Optimized Defaults   |
|  PCH Information                                    *|F4: Save & Reset         |
|  Name                     CNL PCH-LP                *|ESC: Exit                |
|  PCH SKU                  (U) Premium  SKU          *|                         |
|  Stepping                 D0                        *|                         |
|                                                     *|                         |
|  System Date              [Wed 10/30/2019]          *|                         |
|  System Time              [15:37:31]                v|                         |
|                                                      |                         |
\-----------------------------------------------------+-------------------------/
Version 2.20.1271. Copyright (C) 2019 American Megatrends, Inc.
```

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 >< (right, left) 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.
- [F2]: Previous values.
- [F3]: Optimized defaults.
- [F4]: Save & Reset.
- Press <Esc> to quit the BIOS Setup.

4-3 General Help



Status Page Setup Menu/ Option Page Setup Menu

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

4-4 Menu Bars

There are six menu bars on top of BIOS screen:

Main To change system basic configuration

Advanced To change system advanced configuration

Chipset To change PCH IO configuration

Security Password settings

Boot Quiet boot or boot from USB selected.

Save & Exit Save setting, loading and exit options.

User can press the right or left arrow key on the keyboard to switch from menu bar.

The selected one is highlighted.

4-5 Main

```
Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
 Main  Advanced  Chipset  Security  Boot  Save & Exit
/-----------------------------------------------------+-------------------------\
|  BIOS Information                                   ^|Set the Date. Use Tab    |
|  BIOS Vendor              American Megatrends       *|to switch between Date   |
|  BIOS Version             2I810D A1                 *|elements.                |
|  Build Date and Time      10/29/2019 14:49:11       *|Default Ranges:          |
|                                                     *|Year: 2005-2099          |
|  Processor Information                              *|Months: 1-12             |
|  Name                     WhiskeyLake ULT           *|Days: dependent on month |
|  Type                     Intel(R) Core(TM)         *|                         |
|                           i7-8665UE CPU @ 1.70GHz   *|                         |
|  Speed                    2000 MHz                  *|-------------------------|
|  ID                       0x806EC                   *|><: Select Screen        |
|  Stepping                 V0                        *|^v: Select Item          |
|  Number of Processors     4Core(s) / 8Thread(s)     *|Enter: Select            |
|  GT Info                  GT2 (0x3EA0)              +|+/-: Change Opt.         |
|  Total Memory              8192 MB                  +|F1: General Help         |
|  Memory Frequency          2400 MHz                 +|F2: Previous Values      |
|                                                     +|F3: Optimized Defaults   |
|  PCH Information                                    *|F4: Save & Reset         |
|  Name                     CNL PCH-LP                *|ESC: Exit                |
|  PCH SKU                  (U) Premium  SKU          *|                         |
|  Stepping                 D0                        *|                         |
|                                                     *|                         |
|  System Date              [Wed 10/30/2019]          *|                         |
|  System Time              [15:37:31]                v|                         |
|                                                      |                         |
\-----------------------------------------------------+-------------------------/
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```

Main menu screen includes some basic system information. Highlight the item and then use the <+> or <-> and numerical keyboard keys to select the value you want in each item.

System Date

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

System Time

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

4-6 Advanced

```
Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
Main  Advanced  Chipset  Security  Boot  Save & Exit
/-------------------------------------------------------+-------------------------\
|> PCH-FW Configuration                                 |Configure Management     |
|> Trusted Computing                                    |Engine Technology        |
|> F81804 Super IO Configuration                        |Parameters               |
|> F81804 Hardware Monitor                              |                         |
|> USB Configuration                                    |                         |
|> Network Stack Configuration                          |                         |
|                                                       |                         |
|                                                       |                         |
|                                                       |                         |
|                                                       |-------------------------|
|                                                       |><: Select Screen        |
|                                                       |^v: Select Item          |
|                                                       |Enter: Select            |
|                                                       |+/-: Change Opt.         |
|                                                       |F1: General Help         |
|                                                       |F2: Previous Values      |
|                                                       |F3: Optimized Defaults   |
|                                                       |F4: Save & Reset         |
|                                                       |ESC: Exit                |
\-------------------------------------------------------+-------------------------/
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```

PCH-FW Configuration
Please refer section 4-6-1

Trusted Computing
Please refer section 4-6-2

F81804 Super IO Configuration
Please refer section 4-6-3

F81804 Hardware Monitor
Please refer section 4-6-4

USB Configuration
Please refer section 4-6-5

Network Stack Configuration
Please refer section 4-6-6

4-6-1 PCH-FW Configuration

```
Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
Main  Advanced  Chipset  Security  Boot  Save & Exit
/-------------------------------------------------------+-------------------------\
|> PCH-FW Configuration                                 |Configure Management     |
|> Trusted Computing                                    |Engine Technology        |
|> F81804 Super IO Configuration                        |Parameters               |
|> F81804 Hardware Monitor                              |                         |
|> USB Configuration                                    |                         |
|> Network Stack Configuration                          |                         |
|                                                       |                         |
|                                                       |                         |
|                                                       |                         |
|                                                       |-------------------------|
|                                                       |><: Select Screen        |
|                                                       |^v: Select Item          |
|                                                       |Enter: Select            |
|                                                       |+/-: Change Opt.         |
|                                                       |F1: General Help         |
|                                                       |F2: Previous Values      |
|                                                       |F3: Optimized Defaults   |
|                                                       |F4: Save & Reset         |
|                                                       |ESC: Exit                |
\-------------------------------------------------------+-------------------------/
Version 2.20.1271. Copyright (C) 2019 American Megatrends, Inc.
```

```
Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
Advanced
/-------------------------------------------------------+-------------------------\
|  ME Firmware Version        12.0.39.1431              |Configure Intel(R)       |
|  ME Firmware Mode           Normal Mode               |Active Management        |
|  ME Firmware SKU            Corporate SKU             |Technology Parameters    |
|  ME Firmware Status 1       0x90000255                |                         |
|  ME Firmware Status 2       0x80108106                |                         |
|                                                       |                         |
|  ME State                   [Enabled]                 |                         |
|  Manageability              [Enabled]                 |                         |
|  Features State                                       |                         |
|  AMT BIOS Features          [Enabled]                 |-------------------------|
|> AMT Configuration                                    |><: Select Screen        |
|                                                       |^v: Select Item          |
|                                                       |Enter: Select            |
|                                                       |+/-: Change Opt.         |
|                                                       |F1: General Help         |
|                                                       |F2: Previous Values      |
|                                                       |F3: Optimized Defaults   |
|                                                       |F4: Save & Reset         |
|                                                       |ESC: Exit                |
\-------------------------------------------------------+-------------------------/
Version 2.20.1271. Copyright (C) 2019 American Megatrends, Inc.
```

AMT Configuration

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

```
Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
Advanced
/-----------------------------------------------------+-------------------------\
|  ASF support                [Enabled]               |Enable/Disable Alert     |
|                                                     |Standard Format support. |
|  USB Provisioning of        [Disabled]              |                         |
|  AMT                                                |                         |
|> CIRA Configuration                                 |                         |
|> ASF Configuration                                  |                         |
|> Secure Erase Configuration                         |                         |
|> OEM Flags Settings                                 |                         |
|> MEBx Resolution Settings                           |                         |
|                                                     |-------------------------|
|                                                     |><: Select Screen        |
|                                                     |^v: Select Item          |
|                                                     |Enter: Select            |
|                                                     |+/-: Change Opt.         |
|                                                     |F1: General Help         |
|                                                     |F2: Previous Values      |
|                                                     |F3: Optimized Defaults   |
|                                                     |F4: Save & Reset         |
|                                                     |ESC: Exit                |
\-----------------------------------------------------+-------------------------/
Version 2.20.1271. Copyright (C) 2019 American Megatrends, Inc.
```

ASF support

Select ASF support or not, default is <Enabled>

USB Provisioning of AMT

Select USB provisioning of AMT or not, default is <Disabled>

CIRA Configuration

Please refer section 4-6-1-1

ASF Configuration

Please refer section 4-6-1-2

Secure Erase Configuration

Please refer section 4-6-1-3

OEM Flags Settings

Please refer section 4-6-1-4

MEBx Resolution Settings

Please refer section 4-6-1-5

4-6-1-1 ► CIRA Configuration

```
Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
Advanced
/-------------------------------------------------------+-------------------------\
|  Activate Remote          [Disabled]                  |Trigger CIRA boot        |
|  Assistance Process                                   |Note:                    |
|  CIRA Timeout             0                           |Network Access must be   |
|                                                       |activated first from     |
|                                                       |MEBx Setup.              |
|                                                       |                         |
|                                                       |                         |
|                                                       |                         |
|                                                       |                         |
|                                                       |-------------------------|
|                                                       |><: Select Screen        |
|                                                       |^v: Select Item          |
|                                                       |Enter: Select            |
|                                                       |+/-: Change Opt.         |
|                                                       |F1: General Help         |
|                                                       |F2: Previous Values      |
|                                                       |F3: Optimized Defaults   |
|                                                       |F4: Save & Reset         |
|                                                       |ESC: Exit                |
\-------------------------------------------------------+-------------------------/
Version 2.20.1271. Copyright (C) 2019 American Megatrends, Inc.
```

Activate Remote Assistance Process default is Disabled

Client Initiated Remote Access : To access from remote.

4-6-1-2 ► ASF Configuration

```
Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
Advanced
/-----------------------------------------------------+-------------------------\
|  PET Progress              [Enabled]                |Enable/Disable PET       |
|  WatchDog                  [Disabled]               |Events Progress to       |
|  OS Timer                  0                        |receive PET Events.      |
|  BIOS Timer                0                        |                         |
|  ASF Sensors Table         [Disabled]               |                         |
|                                                     |                         |
|                                                     |                         |
|                                                     |                         |
|                                                     |                         |
|                                                     |-------------------------|
|                                                     |><: Select Screen        |
|                                                     |^v: Select Item          |
|                                                     |Enter: Select            |
|                                                     |+/-: Change Opt.         |
|                                                     |F1: General Help         |
|                                                     |F2: Previous Values      |
|                                                     |F3: Optimized Defaults   |
|                                                     |F4: Save & Reset         |
|                                                     |ESC: Exit                |
\-----------------------------------------------------+-------------------------/
Version 2.20.1271. Copyright (C) 2019 American Megatrends, Inc.
```

PET Progress

Use Platform Environment Test item to select to receive PET events or not, default is Enabled

WatchDog

To send the start watchdog timer command or not, default is Disabled

ASF Sensors Table

To add ASF sensor table into ASF or not, default is Disabled

4-6-1-3 ► Secure Erase Configuration

```
Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
Advanced
/-------------------------------------------------------+-------------------------\
|  Secure Erase mode          [Simulated]               |Change Secure Erase      |
|  Force Secure Erase         [Disabled]                |module behavior:         |
|                                                       |Simulated: Performs SE   |
|                                                       |flow without erasing SSD |
|                                                       |Real: Erase SSD.         |
|                                                       |                         |
|                                                       |                         |
|                                                       |                         |
|                                                       |                         |
|                                                       |-------------------------|
|                                                       |><: Select Screen        |
|                                                       |^v: Select Item          |
|                                                       |Enter: Select            |
|                                                       |+/-: Change Opt.         |
|                                                       |F1: General Help         |
|                                                       |F2: Previous Values      |
|                                                       |F3: Optimized Defaults   |
|                                                       |F4: Save & Reset         |
|                                                       |ESC: Exit                |
\-------------------------------------------------------+-------------------------/
Version 2.20.1271. Copyright (C) 2019 American Megatrends, Inc.
```

Secure Erase mode

To change secure erase module behavior, Simulated or Real, default is Simulated.

Force Secure Erase

To force secure erase on next boot, default is Disabled

4-6-1-4 ► OEM Flags Settings

```
Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
Advanced
/-----------------------------------------------------+-------------------------\
|  MEBx hotkey Pressed        [Disabled]              |OEMFLag Bit 1:           |
|  MEBx Selection Screen      [Disabled]              |Enable automatic MEBx    |
|  Hide Unconfigure ME        [Disabled]              |hotkey press.            |
|  Confirmation Prompt                                |                         |
|  MEBx OEM Debug Menu        [Disabled]              |                         |
|  Enable                                             |                         |
|  Unconfigure ME             [Disabled]              |                         |
|                                                     |                         |
|                                                     |                         |
|                                                     |-------------------------|
|                                                     |><: Select Screen        |
|                                                     |^v: Select Item          |
|                                                     |Enter: Select            |
|                                                     |+/-: Change Opt.         |
|                                                     |F1: General Help         |
|                                                     |F2: Previous Values      |
|                                                     |F3: Optimized Defaults   |
|                                                     |F4: Save & Reset         |
|                                                     |ESC: Exit                |
\-----------------------------------------------------+-------------------------/
Version 2.20.1271. Copyright (C) 2019 American Megatrends, Inc.
```

MEBx hotkey Pressed

To Enable MEBX hotkey entrance or hide, default is Disabled.

MEBx Selection Screen

Allows OEM to switch to desired MEBx screen resolution, default is Disabled

Hide Unconfigure ME Confirmation Prompt

It will hide the confirmation prompt when performing un-configure without password, default is Disabled Simulated.

MEBx OEM Debug Menu Enable

To enable OEM Menu in MENx or not, default is Disabled

Unconfigure ME

To reset MEBx password by default, default is Disabled

4-6-1-5 ► MEBx Resolution Settings

```
Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
Advanced
/-------------------------------------------------------+-------------------------\
|  Non-UI Mode Resolution    [Auto]                     |Resolution for non-UI    |
|  UI Mode Resolution        [Auto]                     |text mode.               |
|  Graphics Mode             [Auto]                     |                         |
|  Resolution                                           |                         |
|                                                       |                         |
|                                                       |                         |
|                                                       |                         |
|                                                       |                         |
|                                                       |                         |
|                                                       |-------------------------|
|                                                       |><: Select Screen        |
|                                                       |^v: Select Item          |
|                                                       |Enter: Select            |
|                                                       |+/-: Change Opt.         |
|                                                       |F1: General Help         |
|                                                       |F2: Previous Values      |
|                                                       |F3: Optimized Defaults   |
|                                                       |F4: Save & Reset         |
|                                                       |ESC: Exit                |
\-------------------------------------------------------+-------------------------/
Version 2.20.1271. Copyright (C) 2019 American Megatrends, Inc.
```

Non-UI Mode Resolution

To select non-UI Resolution

The optional settings are: Auto (default), 80x25, 100x31

UI Mode Resolution

To select UI Resolution

The optional settings are: Auto (default), 80x25, 100x31

Graphics Mode Resolution

Graphics resolution select to Auto (default), 640x480, 800x600, 1024x768

4-6-2 Trusted Computing

```
Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
Main  Advanced  Chipset  Security  Boot  Save & Exit
/-------------------------------------------------------+-------------------------\
|> PCH-FW Configuration                                 |Trusted Computing        |
|> Trusted Computing                                    |Settings                 |
|> F81804 Super IO Configuration                        |                         |
|> F81804 Hardware Monitor                              |                         |
|> USB Configuration                                    |                         |
|> Network Stack Configuration                          |                         |
|                                                       |                         |
|                                                       |                         |
|                                                       |                         |
|                                                       |-------------------------|
|                                                       |><: Select Screen        |
|                                                       |^v: Select Item          |
|                                                       |Enter: Select            |
|                                                       |+/-: Change Opt.         |
|                                                       |F1: General Help         |
|                                                       |F2: Previous Values      |
|                                                       |F3: Optimized Defaults   |
|                                                       |F4: Save & Reset         |
|                                                       |ESC: Exit                |
\-------------------------------------------------------+-------------------------/
Version 2.20.1271. Copyright (C) 2019 American Megatrends, Inc.
```

```
Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
Advanced
/-------------------------------------------------------+-------------------------\
|  Configuration                                        |Enables or Disables      |
|    Security Device        [Enable]                    |BIOS support for         |
|  Support                                              |security device. O.S.    |
|    NO Security Device                                 |will not show Security   |
|  Found                                                |Device. TCG EFI          |
|                                                       |protocol and INT1A       |
|                                                       |interface will not be    |
|                                                       |available.               |
|                                                       |                         |
|                                                       |-------------------------|
|                                                       |><: Select Screen        |
|                                                       |^v: Select Item          |
|                                                       |Enter: Select            |
|                                                       |+/-: Change Opt.         |
|                                                       |F1: General Help         |
|                                                       |F2: Previous Values      |
|                                                       |F3: Optimized Defaults   |
|                                                       |F4: Save & Reset         |
|                                                       |ESC: Exit                |
\-------------------------------------------------------+-------------------------/
Version 2.20.1271. Copyright (C) 2019 American Megatrends, Inc.
```

Security Device Support

To enable BIOS support security device or not, default is Enabled.

4-6-3 F81804 Super IO Configuration

```
Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
Advanced
/-------------------------------------------------------+-------------------------\
|  F81804 Super IO Configuration                        |Set Parameters of        |
|                                                       |Serial Port 1 (COMA)     |
|  Super IO Chip            F81804                      |                         |
|> Serial Port 1 Configuration                          |                         |
|> Serial Port 2 Configuration                          |                         |
|  Power Failure            [Keep last state]           |                         |
|                                                       |                         |
|                                                       |                         |
|                                                       |                         |
|                                                       |-------------------------|
|                                                       |><: Select Screen        |
|                                                       |^v: Select Item          |
|                                                       |Enter: Select            |
|                                                       |+/-: Change Opt.         |
|                                                       |F1: General Help         |
|                                                       |F2: Previous Values      |
|                                                       |F3: Optimized Defaults   |
|                                                       |F4: Save & Reset         |
|                                                       |ESC: Exit                |
\-------------------------------------------------------+-------------------------/
Version 2.20.1271. Copyright (C) 2019 American Megatrends, Inc.
```

Serial Port 1 Configuration

Please refer section 4-6-3-1

Serial Port 2 Configuration

Please refer section 4-6-3-2

Power Failure

Please refer section 4-6-3-3

4-6-3-1 ► Serial Port 1 Configuration

```
Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
Advanced
/-----------------------------------------------------+-------------------------\
|  Serial Port 1 Configuration                        |Enable or Disable        |
|                                                     |Serial Port (COM)        |
|  Serial Port              [Enabled]                 |                         |
|  Device Settings          IO=3F8h; IRQ=4;           |                         |
|                                                     |                         |
|  Change Settings          [Auto]                    |                         |
|  Serial Mode              [RS232]                   |                         |
|                           /--- Serial Port ----\    |                         |
|                           | Disabled           |    |                         |
|                           | Enabled            |    |-------------------------|
|                           \--------------------/    |><: Select Screen        |
|                                                     |^v: Select Item          |
|                                                     |Enter: Select            |
|                                                     |+/-: Change Opt.         |
|                                                     |F1: General Help         |
|                                                     |F2: Previous Values      |
|                                                     |F3: Optimized Defaults   |
|                                                     |F4: Save & Reset         |
|                                                     |ESC: Exit                |
\-----------------------------------------------------+-------------------------/
Version 2.20.1271. Copyright (C) 2019 American Megatrends, Inc.
```

To Enable Serial port or not, default is Enabled.

```
Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
Advanced
/-----------------------------------------------------+-------------------------\
|  Serial Port 1 Configuration                        |Select an optimal        |
|                                                     |settings for Super IO    |
|  Serial Port              [Enabled]                 |Device                   |
|  Device Settings          IO=3F8h; IRQ=4;           |                         |
|                                                     |                         |
|  Change Settings   /--------- Change Settings ----------\                     |
|  Serial Mode       | Auto                                |                     |
|                    | IO=3F8h; IRQ=4;                     |                     |
|                    | IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12;  |                     |
|                    | IO=2F8h; IRQ=3,4,5,6,7,9,10,11,12;  |                     |
|                    | IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12;  |  ect Screen         |
|                    | IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12;  |  ect Item           |
|                    \-------------------------------------/  Select            |
|                                                             ange Opt.         |
|                                                     |F1: General Help         |
|                                                     |F2: Previous Values      |
|                                                     |F3: Optimized Defaults   |
|                                                     |F4: Save & Reset         |
|                                                     |ESC: Exit                |
\-----------------------------------------------------+-------------------------/
Version 2.20.1271. Copyright (C) 2019 American Megatrends, Inc.
```

Change Settings, default is Auto.

```
Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
Advanced
/-------------------------------------------------------+-------------------------\
|  Serial Port 1 Configuration                          |Set COM Port as RS232,   |
|                                                       |RS422 or RS485 mode.     |
|  Serial Port              [Enabled]                   |                         |
|  Device Settings          IO=3F8h; IRQ=4;             |                         |
|                                                       |                         |
|  Change Settings          [Auto]                      |                         |
|  Serial Mode              /--- Serial Mode ----\      |                         |
|                           | RS232              |      |                         |
|                           | RS422              |      |                         |
|                           | RS485              |      |-------------------------|
|                           \--------------------/      |><: Select Screen        |
|                                                       |^v: Select Item          |
|                                                       |Enter: Select            |
|                                                       |+/-: Change Opt.         |
|                                                       |F1: General Help         |
|                                                       |F2: Previous Values      |
|                                                       |F3: Optimized Defaults   |
|                                                       |F4: Save & Reset         |
|                                                       |ESC: Exit                |
\-------------------------------------------------------+-------------------------/
Version 2.20.1271. Copyright (C) 2019 American Megatrends, Inc.
```

To select the Serial port to RS232 / RS422 / RS485, default is RS232.

4-6-3-2 ► Serial Port 2 Configuration

```
Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
Advanced
/-------------------------------------------------------+-------------------------\
|  Serial Port 2 Configuration                          |Enable or Disable        |
|                                                       |Serial Port (COM)        |
|  Serial Port              [Enabled]                   |                         |
|  Device Settings          IO=2F8h; IRQ=3;             |                         |
|                                                       |                         |
|  Change Settings          [Auto]                      |                         |
|  Serial Mode              [RS232]                     |                         |
|                          /--- Serial Port ----\       |                         |
|                          | Disabled           |       |                         |
|                          | Enabled            |       |-------------------------|
|                          \--------------------/       |><: Select Screen        |
|                                                       |^v: Select Item          |
|                                                       |Enter: Select            |
|                                                       |+/-: Change Opt.         |
|                                                       |F1: General Help         |
|                                                       |F2: Previous Values      |
|                                                       |F3: Optimized Defaults   |
|                                                       |F4: Save & Reset         |
|                                                       |ESC: Exit                |
\-------------------------------------------------------+-------------------------/
Version 2.20.1271. Copyright (C) 2019 American Megatrends, Inc.
```

To Enable Serial port or not, default is Enabled.

```
Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
Advanced
/-------------------------------------------------------+-------------------------\
|  Serial Port 2 Configuration                          |Select an optimal        |
|                                                       |settings for Super IO    |
|  Serial Port              [Enabled]                   |Device                   |
|  Device Settings          IO=2F8h; IRQ=3;             |                         |
|                                                       |                         |
|  Change Settings   /--------- Change Settings ----------\                       |
|  Serial Mode       | Auto                               |                         |
|                    | IO=2F8h; IRQ=3;                    |                         |
|                    | IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12; |                         |
|                    | IO=2F8h; IRQ=3,4,5,6,7,9,10,11,12; |                         |
|                    | IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12; |  ect Screen             |
|                    | IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12; |  ect Item               |
|                    \------------------------------------/  Select                 |
|                                                            ange Opt.              |
|                                                       |F1: General Help         |
|                                                       |F2: Previous Values      |
|                                                       |F3: Optimized Defaults   |
|                                                       |F4: Save & Reset         |
|                                                       |ESC: Exit                |
\-------------------------------------------------------+-------------------------/
Version 2.20.1271. Copyright (C) 2019 American Megatrends, Inc.
```

Change Settings, default is Auto.

```
Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
Advanced
/-------------------------------------------------------+-------------------------\
|  Serial Port 2 Configuration                          |Set COM Port as RS232,   |
|                                                       |RS422 or RS485 mode.     |
|  Serial Port              [Enabled]                   |                         |
|  Device Settings          IO=2F8h; IRQ=3;             |                         |
|                                                       |                         |
|  Change Settings          [Auto]                      |                         |
|  Serial Mode              /--- Serial Mode ----\      |                         |
|                           | RS232              |      |                         |
|                           | RS422              |      |                         |
|                           | RS485              |      |-------------------------|
|                           \--------------------/      |><: Select Screen        |
|                                                       |^v: Select Item          |
|                                                       |Enter: Select            |
|                                                       |+/-: Change Opt.         |
|                                                       |F1: General Help         |
|                                                       |F2: Previous Values      |
|                                                       |F3: Optimized Defaults   |
|                                                       |F4: Save & Reset         |
|                                                       |ESC: Exit                |
\-------------------------------------------------------+-------------------------/
Version 2.20.1271. Copyright (C) 2019 American Megatrends, Inc.
```

To select the Serial port to RS232 / RS422 / RS485, default is RS232.

4-6-3-3 ► Power Failure

```
Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
Advanced
/-----------------------------------------------------+-------------------------\
|  F81804 Super IO Configuration                      |Set Power Fail as [Keep  |
|                                                     |last state], [Always     |
|  Super IO Chip            F81804                    |on] or [Always off]      |
|> Serial Port 1 Configuration                        |mode.                    |
|> Serial Port 2 Configuration                        |                         |
|  Power Failure            [Keep last state]         |                         |
|                         /--- Power Failure ----\    |                         |
|                         | Keep last state      |    |                         |
|                         | Always on            |    |                         |
|                         | Always off           |    |                         |
|                         \----------------------/    |-------------------------|
|                                                     |><: Select Screen        |
|                                                     |^v: Select Item          |
|                                                     |Enter: Select            |
|                                                     |+/-: Change Opt.         |
|                                                     |F1: General Help         |
|                                                     |F2: Previous Values      |
|                                                     |F3: Optimized Defaults   |
|                                                     |F4: Save & Reset         |
|                                                     |ESC: Exit                |
\-----------------------------------------------------+-------------------------/
Version 2.20.1271. Copyright (C) 2019 American Megatrends, Inc.
```

To select the power behavior after power fail, default is Keep last state.

4-6-4 F81804 Hardware Monitor

```
Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
Advanced
/-------------------------------------------------------+-------------------------\
|  Pc Health Status                                     |                         |
|                                                       |                         |
|  CPU Temperature          : +45 C                     |                         |
|  SYSTEM2 Temperature      : +43 C                     |                         |
|  +VCORE                   : +0.736 V                  |                         |
|  +VDDQ                    : +1.160 V                  |                         |
|  +3.3S                    : +3.216 V                  |                         |
|  +3.3A                    : +3.248 V                  |                         |
|  +5V                      : +5.016 V                  |                         |
|  VBAT                     : +3.168 V                  |-------------------------|
|                                                       |><: Select Screen        |
|                                                       |^v: Select Item          |
|                                                       |Enter: Select            |
|                                                       |+/-: Change Opt.         |
|                                                       |F1: General Help         |
|                                                       |F2: Previous Values      |
|                                                       |F3: Optimized Defaults   |
|                                                       |F4: Save & Reset         |
|                                                       |ESC: Exit                |
\-------------------------------------------------------+-------------------------/
Version 2.20.1271. Copyright (C) 2019 American Megatrends, Inc.
```

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.

4-6-5 USB Configuration

```
Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
Advanced
/-------------------------------------------------------+-------------------------\
|  USB Configuration                                    |This is a workaround     |
|                                                       |for OSes without XHCI    |
|  USB Module Version        21                         |hand-off support. The    |
|                                                       |XHCI ownership change    |
|  USB Controllers:                                     |should be claimed by     |
|        1 XHCI                                         |XHCI driver.             |
|  USB Devices:                                         |                         |
|        1 Keyboard, 1 Mouse                            |                         |
|                                                       |                         |
|  XHCI Hand-off             [Enabled]                  |-------------------------|
|  USB Mass Storage          [Enabled]                  |><: Select Screen        |
|  Driver Support                                       |^v: Select Item          |
|                                                       |Enter: Select            |
|                                                       |+/-: Change Opt.         |
|                                                       |F1: General Help         |
|                                                       |F2: Previous Values      |
|                                                       |F3: Optimized Defaults   |
|                                                       |F4: Save & Reset         |
|                                                       |ESC: Exit                |
\-------------------------------------------------------+-------------------------/
Version 2.20.1271. Copyright (C) 2019 American Megatrends, Inc.
```

XHCI Hand-off

To enable XHCI hand-off support or not, default is Enabled.

USB Mass Storage Driver Support

To enable USB mass storage support or not, default is Enabled.

4-6-6 Network Stack Configuration

```
Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
 Main  Advanced  Chipset  Security  Boot  Save & Exit
/-----------------------------------------------------+-------------------------\
|> PCH-FW Configuration                                |Network Stack Settings   |
|> Trusted Computing                                   |                         |
|> F81804 Super IO Configuration                       |                         |
|> F81804 Hardware Monitor                             |                         |
|> USB Configuration                                   |                         |
|> Network Stack Configuration                         |                         |
|                                                      |                         |
|                                                      |                         |
|                                                      |                         |
|                                                      |-------------------------|
|                                                      |><: Select Screen        |
|                                                      |^v: Select Item          |
|                                                      |Enter: Select            |
|                                                      |+/-: Change Opt.         |
|                                                      |F1: General Help         |
|                                                      |F2: Previous Values      |
|                                                      |F3: Optimized Defaults   |
|                                                      |F4: Save & Reset         |
|                                                      |ESC: Exit                |
\-----------------------------------------------------+-------------------------/
Version 2.20.1271. Copyright (C) 2019 American Megatrends, Inc.
```

```
Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
 Advanced
/-----------------------------------------------------+-------------------------\
|  Network Stack            [Disabled]                 |Enable/Disable UEFI      |
|                                                      |Network Stack            |
|                                                      |                         |
|                                                      |                         |
|                                                      |                         |
|                                                      |                         |
|                                                      |                         |
|                                                      |                         |
|                                                      |                         |
|                                                      |                         |
|                                                      |                         |
|                                                      |-------------------------|
|                                                      |><: Select Screen        |
|                                                      |^v: Select Item          |
|                                                      |Enter: Select            |
|                                                      |+/-: Change Opt.         |
|                                                      |F1: General Help         |
|                                                      |F2: Previous Values      |
|                                                      |F3: Optimized Defaults   |
|                                                      |F4: Save & Reset         |
|                                                      |ESC: Exit                |
\-----------------------------------------------------+-------------------------/
Version 2.20.1271. Copyright (C) 2019 American Megatrends, Inc.
```

```
/--- Network Stack ----\
| Disabled            |
| Enabled             |
\---------------------/
```

To enable the Network stack or not, default is Disabled.

4-7 Chipset

```
Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
Main  Advanced  Chipset  Security  Boot  Save & Exit
/-------------------------------------------------------+-------------------------\
|> System Agent (SA) Configuration                       |System Agent (SA)        |
|> PCH-IO Configuration                                  |Parameters               |
|                                                        |                         |
|                                                        |                         |
|                                                        |                         |
|                                                        |                         |
|                                                        |                         |
|                                                        |                         |
|                                                        |                         |
|                                                        |-------------------------|
|                                                        |><: Select Screen        |
|                                                        |^v: Select Item          |
|                                                        |Enter: Select            |
|                                                        |+/-: Change Opt.         |
|                                                        |F1: General Help         |
|                                                        |F2: Previous Values      |
|                                                        |F3: Optimized Defaults   |
|                                                        |F4: Save & Reset         |
|                                                        |ESC: Exit                |
\-------------------------------------------------------+-------------------------/
Version 2.20.1271. Copyright (C) 2019 American Megatrends, Inc.
```

System Agent (SA) Configuration.
Please refer section 4-7-1

PCH-IO Configuration.
Please refer section 4-7-2

4-7-1 System Agent (SA) Configuration

```
Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
                    Chipset
/-------------------------------------------------------+-------------------------\
|  System Agent (SA) Configuration                      |Graphics Configuration   |
|                                                       |                         |
|  SA PCIe Code Version      7.0.78.32                  |                         |
|  VT-d                      Supported                  |                         |
|                                                       |                         |
|> Graphics Configuration                               |                         |
|                                                       |                         |
|                                                       |                         |
|                                                       |                         |
|                                                       |-------------------------|
|                                                       |><: Select Screen        |
|                                                       |^v: Select Item          |
|                                                       |Enter: Select            |
|                                                       |+/-: Change Opt.         |
|                                                       |F1: General Help         |
|                                                       |F2: Previous Values      |
|                                                       |F3: Optimized Defaults   |
|                                                       |F4: Save & Reset         |
|                                                       |ESC: Exit                |
\-------------------------------------------------------+-------------------------/
Version 2.20.1271. Copyright (C) 2019 American Megatrends, Inc.
```

Graphics Configuration.
Please refer section 4-7-1-1

4-7-1-1 ► Graphics Configuration

```
Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
                    Chipset
/-------------------------------------------------------+-------------------------\
|  Graphics Configuration                               |Select the GTT Size      |
|                                                       |                         |
|  GTT Size                  [8MB]                      |                         |
|  Aperture Size             [256MB]                    |                         |
|  DVMT Pre-Allocated        [64M]                      |                         |
|  DVMT Total Gfx Mem        [256M]                     |                         |
|                                                       |                         |
|                                                       |                         |
|                                                       |                         |
|                                                       |-------------------------|
|                                                       |><: Select Screen        |
|                                                       |^v: Select Item          |
|                                                       |Enter: Select            |
|                                                       |+/-: Change Opt.         |
|                                                       |F1: General Help         |
|                                                       |F2: Previous Values      |
|                                                       |F3: Optimized Defaults   |
|                                                       |F4: Save & Reset         |
|                                                       |ESC: Exit                |
\-------------------------------------------------------+-------------------------/
Version 2.20.1271. Copyright (C) 2019 American Megatrends, Inc.
```

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

Aperture Size
The optional settings are: 128MB, 256MB (default), 512MB, 1024MB, 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, 64MB (default)

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: 128MB, 256MB (default), MAX.

4-7-2 PCH-IO Configuration

```
Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
                    Chipset
/-------------------------------------------------------+-------------------------\
|  PCH-IO Configuration                                 |PCI Express              |
|                                                       |Configuration settings   |
|> PCI Express Configuration                            |                         |
|> SATA And RST Configuration                           |                         |
|                                                       |                         |
|                                                       |                         |
|                                                       |                         |
|                                                       |                         |
|                                                       |                         |
|                                                       |-------------------------|
|                                                       |><: Select Screen        |
|                                                       |^v: Select Item          |
|                                                       |Enter: Select            |
|                                                       |+/-: Change Opt.         |
|                                                       |F1: General Help         |
|                                                       |F2: Previous Values      |
|                                                       |F3: Optimized Defaults   |
|                                                       |F4: Save & Reset         |
|                                                       |ESC: Exit                |
\-------------------------------------------------------+-------------------------/
Version 2.20.1271. Copyright (C) 2019 American Megatrends, Inc.
```

PCI Express Configuration.
Please refer section 4-7-2-1

SATA And RST Configuration.
Please refer section 4-7-2-2

4-7-2-1 ► PCI Express Configuration

```
Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
                    Chipset
/-------------------------------------------------------+-------------------------\
|  PCI Express Configuration                            |PCI Express Root Port    |
|                                                       |Settings.                |
|  PCIE Port assigned to    13                          |                         |
|  LAN                                                  |                         |
|                                                       |                         |
|> PCI Express Root Port 11(MPCE1)                      |                         |
|> PCI Express Root Port 12(MPCE2)                      |                         |
|                                                       |                         |
|                                                       |                         |
|                                                       |-------------------------|
|                                                       |><: Select Screen        |
|                                                       |^v: Select Item          |
|                                                       |Enter: Select            |
|                                                       |+/-: Change Opt.         |
|                                                       |F1: General Help         |
|                                                       |F2: Previous Values      |
|                                                       |F3: Optimized Defaults   |
|                                                       |F4: Save & Reset         |
|                                                       |ESC: Exit                |
\-------------------------------------------------------+-------------------------/
Version 2.20.1271. Copyright (C) 2019 American Megatrends, Inc.
```

PCI Express Root Port 11 (MPCE1)
Please refer section 4-7-2-1-1

PCI Express Root Port 12 (MPCE2)
Please refer section 4-7-2-1-2

4-7-2-1-1 ► PCI Express Root Port 11 (MPCE1)

```
Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
                    Chipset
/-------------------------------------------------+-------------------------\
|  PCI Express Root Port     [Enabled]            |Control the PCI Express  |
|  11(MPCE1)                                      |Root Port.               |
|  PCIe Speed                [Auto]               |                         |
|  MPCE Switch               [PCIe/SATA]          |                         |
|                                                 |                         |
|                                                 |                         |
|                                                 |                         |
|                                                 |                         |
|                                                 |                         |
|                                                 |-------------------------|
|                                                 |><: Select Screen        |
|                                                 |^v: Select Item          |
|                                                 |Enter: Select            |
|                                                 |+/-: Change Opt.         |
|                                                 |F1: General Help         |
|                                                 |F2: Previous Values      |
|                                                 |F3: Optimized Defaults   |
|                                                 |F4: Save & Reset         |
|                                                 |ESC: Exit                |
\-------------------------------------------------+-------------------------/
Version 2.20.1271. Copyright (C) 2019 American Megatrends, Inc.
```

PCI Express Root Port 11 (MPCE1)
The optional settings are: Enabled (default), Disabled.

PCI Speed
To select PCI Express port speed. The optional settings are: Auto (default), Gen1, Gen2, Gen3

MPCE Switch
To select PCIe / SATA or USB device. The optional settings are: PCIe / SATA (default), USB 3.0

4-7-2-1-2 ► PCI Express Root Port 12 (MPCE2)

```
Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
                    Chipset
/-------------------------------------------------------+-------------------------\
|  PCI Express Root Port     [Enabled]                  |Control the PCI Express  |
|  12(MPCE2)                                            |Root Port.               |
|  PCIe Speed                [Auto]                     |                         |
|  MPCE Switch               [PCIe/SATA]                |                         |
|                                                       |                         |
|                                                       |                         |
|                                                       |                         |
|                                                       |                         |
|                                                       |                         |
|                                                       |-------------------------|
|                                                       |><: Select Screen        |
|                                                       |^v: Select Item          |
|                                                       |Enter: Select            |
|                                                       |+/-: Change Opt.         |
|                                                       |F1: General Help         |
|                                                       |F2: Previous Values      |
|                                                       |F3: Optimized Defaults   |
|                                                       |F4: Save & Reset         |
|                                                       |ESC: Exit                |
\-------------------------------------------------------+-------------------------/
Version 2.20.1271. Copyright (C) 2019 American Megatrends, Inc.
```

PCI Express Root Port 12 (MPCE2)
The optional settings are: Enabled (default), Disabled.

PCI Speed
To select PCI Express port speed. The optional settings are: Auto (default), Gen1, Gen2, Gen3

MPCE Switch
To select PCIe / SATA or USB device. The optional settings are: PCIe / SATA (default), USB 3.0

4-7-2-2 ► SATA And RST Configuration

```
Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
                    Chipset
/-----------------------------------------------------+-------------------------\
|  SATA And RST Configuration                         |Enable/Disable SATA      |
|                                                     |Device.                  |
|  SATA Controller(s)        [Enabled]                |                         |
|  SATA Mode Selection       [AHCI]                   |                         |
|                                                     |                         |
|  Serial ATA Port 0         Empty                    |                         |
|    Software Preserve       Unknown                  |                         |
|    Port 0                  [Enabled]                |                         |
|    SATA Device Type        [Hard Disk Drive]        |                         |
|  Serial ATA Port 1         Empty                    |-------------------------|
|    Software Preserve       Unknown                  |><: Select Screen        |
|    Port 1                  [Enabled]                |^v: Select Item          |
|    SATA Device Type        [Hard Disk Drive]        |Enter: Select            |
|  Serial ATA Port 2         Empty                    |+/-: Change Opt.         |
|    Software Preserve       Unknown                  |F1: General Help         |
|    Port 2                  [Enabled]                |F2: Previous Values      |
|    SATA Device Type        [Hard Disk Drive]        |F3: Optimized Defaults   |
|                                                     |F4: Save & Reset         |
|                                                     |ESC: Exit                |
\-----------------------------------------------------+-------------------------/
Version 2.20.1271. Copyright (C) 2019 American Megatrends, Inc.
```

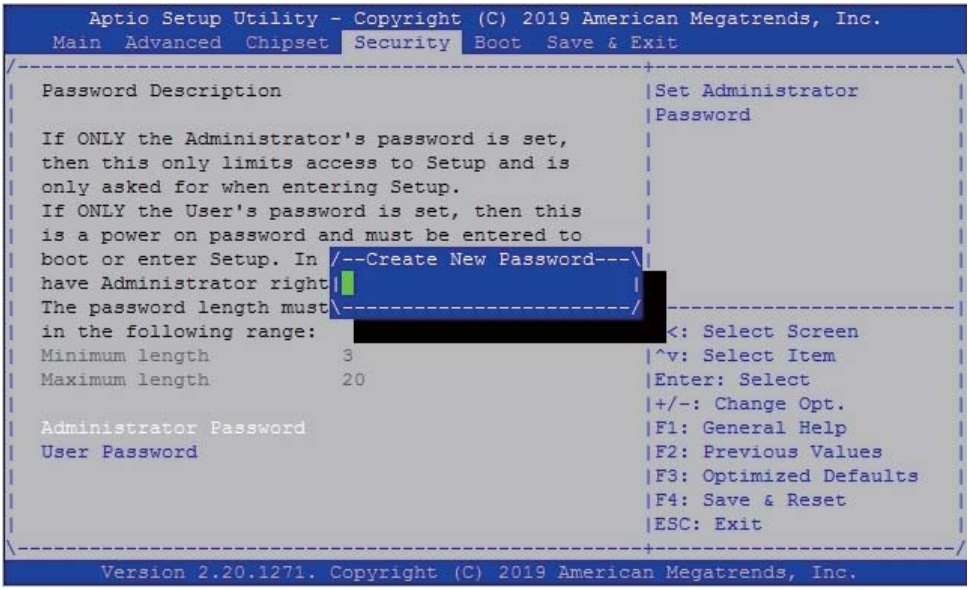
SATA Controller

Use this item to Enable or Disable SATA Device.

SATA Mode Selection

Support AHCI Mode only.

4-8 Security

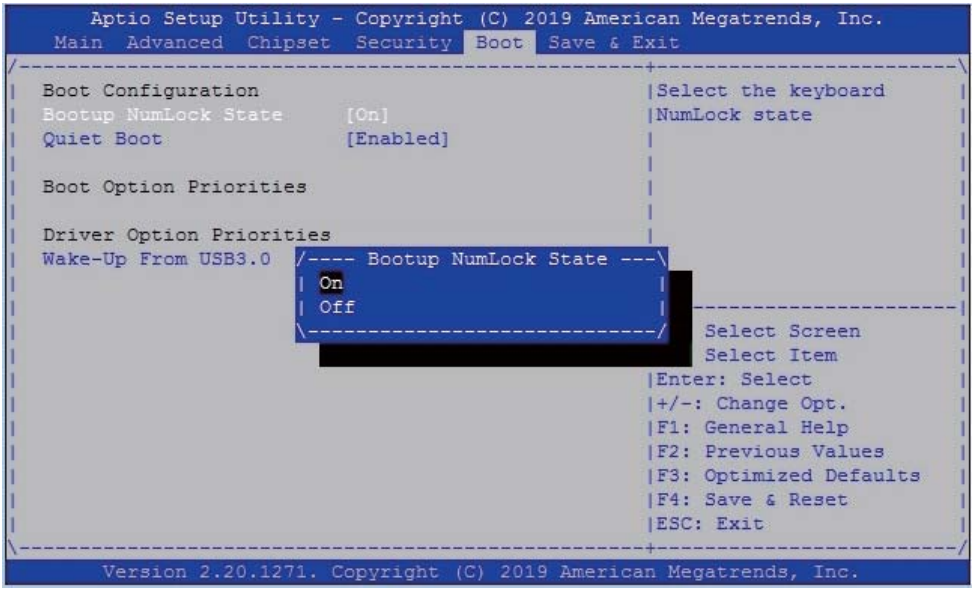


Administrator Password

User Password

To set up an Administrator or an User password

4-9 Boot



Bootup NumLock State
To select Power-on state for NumLock, default is <On>

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

Wake-Up From USB3.0
The optional settings are: Enabled, Disabled (default).

4-10 Save & Exit

```
Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
Main  Advanced  Chipset  Security  Boot  Save & Exit
/-------------------------------------------------------+-------------------------\
|  Save Options                                         |Reset the system after   |
|  Save Changes and Reset                               |saving the changes.      |
|  Discard Changes and Reset                            |                         |
|                                                       |                         |
|  Default Options                                      |                         |
|  Restore Defaults                                     |                         |
|                                                       |                         |
|  Boot Override                                        |                         |
|                                                       |                         |
|                                                       |-------------------------|
|                                                       |><: Select Screen        |
|                                                       |^v: Select Item          |
|                                                       |Enter: Select            |
|                                                       |+/-: Change Opt.         |
|                                                       |F1: General Help         |
|                                                       |F2: Previous Values      |
|                                                       |F3: Optimized Defaults   |
|                                                       |F4: Save & Reset         |
|                                                       |ESC: Exit                |
\-------------------------------------------------------+-------------------------/
Version 2.20.1271. Copyright (C) 2019 American Megatrends, Inc.
```

Save Change and Reset
Save configuration and reset

Discard Changes and Reset
Reset without saving the changes

Restore Defaults
To restore the optimal default for all the setup options

4-11 How to update AMI BIOS

STEP 1. Prepare a bootable disc.
(Storage device could be USB pen drive.)

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

STEP 3. Here take 2I810D as an example, 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
For legacy mode,
X:\>afudos.exe 2I810DA1.bin /p /b /n /x
For UEFI mode,
X:\>AfuEfix64.efi 2I810DA1.bin /p /b /n /x

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)