3I640A/CW

Intel Elkhart Lake ATOM® x6413E / J6412 SoC CPU, DDR4 SODIMM, 2 x LAN / HDMI / DVI / USB / COM / M.2

All-In-One SBC
Intel Elkhart Lake ATOM® x6413E / J6412 SoC CPU
HDMI, DVI, LVDS, Touch Screen
2 x M.2, 2 x LAN, 1 x Mini SIM
USB, COM, Wide Range DC-IN 9~36V (3I640CW)

CAUTION

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

NO. 3I640A/CW
Release date: Sep. 15. 2023

Contents

3I640A/CW
Warning!..... 1
Hardware Notice Guide 2
CHAPTER 1 GENERAL INFORMATION 4
1-1 MAJOR FEATURE..... 5
1-2 SPECIFICATION 6
1-3 INSTALLING THE SO-DIMM 7
1-3-1-1 REMOVING THE SO-DIMM 9
1-4 INSTALLING THE MINI PCI-e CARD (FULL SIZE) 10
1-5 DIRECTIONS FOR INSTALLING THE M.2 B KEY MINI CARD 11
CHAPTER 2 HARDWARE INSTALLATION 12
2-1 DIMENSION-3I640A/CW 12
2-2 LAYOUT-3I640A/CW-FUNCTION MAP-TOP 13
2-2-1 LAYOUT-3I640A/CW-FUNCTION MAP-BOT 14
2-3 FUNCTION MAP-3I640A/CW 15
2-4 CONNECTOR MAP-3I640A/CW-TOP 16
2-4-1 CONNECTOR MAP-3I640A/CW-BOT 17
2-5 DIAGRAM-3I640A/CW-TOP 18
2-5-1 DIAGRAM-3I640A/CW-BOT 19
2-6 LIST OF JUMPERS 20
2-7 JUMPER SETTING DESCRIPTION 20
2-8 JSB1: CMOS DATA CLEAR 21
2-9 JAT1: POWER IN ALWAYS ON FUNCTION 22
2-10 JVL1: LCD PANEL POWER SELECT 22
2-11 JVC1/2/3/4: COM1/2/3/4 PIN9 RI/+12V/+5V SELECT 23
CHAPTER 3 CONNECTION 24
3-1 LIST OF CONNECTORS..... 24
3-2 CBT2: CMOS BATTERY IN 1x2 PIN (1.25mm) WAFER 25
3-3 AUDIO INTERFACE 26
3-4 USB INTERFACE 27
3-5 LAN INTERFACE 28
3-6 CC1/2: COM1/2 2x5 PIN (2.0mm) WAFER 29
3-7 CFP1 FRONT PANEL 2x5 PIN (2.0mm) WAFER 31
3-8 DIGITAL INPUT/OUTPUT/WATCH DOG TIME 32
3-8-1 IO DEVICE: F75113 LPC UNDER WINDOWS (64bit) 33
3-8-2 IO DEVICE: F75113 LPC UNDER LINUX (64bit) 37
3-9 SMBUS INTERFACE 40
3-10 CI2C1: I2C BUS 1x4 PIN (1.25mm) WAFER 40
3-11 DC POWER INPUT 41

3-12 CT1: TOUCH SCREEN 25 PIN (2.0mm) USB INTERFACE 42
3-13 SATA INTERFACE 43
3-14 SIM1: SIM SOCKET 44
3-15 SWP1 POWER ON/OFF SWITCH WAFER (1x2 PIN 2.0mm WAFER) 44
3-16 MODULE SOCKET 45
3-17 NGFF1: PCI EXPRESS M.2 B KEY 2242/3042 H=8.5 SOCKETS 75 PIN 46
3-18 NGFF2: PCI EXPRESS M.2 B KEY 2242/2280 H=8.5 SOCKETS 75 PIN 47
3-19 HDMI1: HDMI TYPE A CONNECTOR 48
3-20 DVI1: DVI-D 12BIT CONNECTOR (DVI CONNECTOR) 48
3-21 LVDS1: LCDS INTERFACE 2x15 PIN (1.25mm) WAFER 49
3-22 CPP1: LVDS PANEL BACKLIGHT POWER 1x5 PIN (2.0mm) WAFER 50
3-23 CKM1: KB/MS PORT 1x6 PIN (1.25mm) WAFER 50
3-24 CONNECTOR WAFER OF COMPATIBLE BRAND AND PART NUMBER LIST 51
CHAPTER 4 INTRODUCTION OF BIOS 52
4-1 ENTER SETUP 52
4-2 BIOS MENU SCREEN & FUNCTION KEYS 53
4-3 GETTING HELP 54
4-4 MENU BARS 55
4-5 MAIN 55
4-6 ADVANCED 56
4-6-1 BOOT CONFIGURATION 57
4-6-2 SOC CONFIG CONFIGURATION 58
4-6-2-1 ACPI CONFIGURATION 59
4-6-2-2 CPU POWER LIMIT CONFIGURATION 60
4-6-2-3 SYSTEM AGENT (SA) CONFIGURATION 63
4-6-2-4 PCH-IO CONFIGURATION 65
4-6-2-4-1 PCI EXPRESS CONFIGURATION 66
4-6-2-4-2 SATA CONFIGURATION 69
4-6-2-5 PCH-FW CONFIGURATION 70
4-6-3 SIO F81966 71
4-6-3-1 UART PORT 1 CONFIGURATION 72
4-6-3-2 UART PORT 2 CONFIGURATION 76
4-6-3-3 UART PORT 3 CONFIGURATION 80
4-6-3-4 UART PORT 4 CONFIGURATION 83
4-6-3-5 UART PORT 5 CONFIGURATION 86
4-6-3-6 UART PORT 6 CONFIGURATION 89
4-6-3-7 HARDWARE MONITOR 92
4-6-3-8 RESTORE ON POWER LOSS 93
4-6-4 NVM EXPRESS INFORMATION 94
4-7 SECURITY 95
4-8 POWER 98

4-9 BOOT 99
4-10 SAVE & EXIT 100
4-11 HOW TO UPDATE INSYDE BIOS 101
APPENDIX B: RESOLUTION LIST 102

Copyright
This manual is copyrighted and all rights are reserved. It does not allow any non authorization in copied, photocopied, translated or reproduced to any electronic or machine readable form in whole or in part without prior written consent from the manufacturer.

In general, the manufacturer will not be liable for any direct, indirect, special, incidental or consequential damages arising from the use of inability to use the product or documentation, even if advised of the possibility of such damages.

The manufacturer keeps the rights in the subject to change the contents of this manual without prior notices in order to improve the function design, performance, quality, and reliability. The author assumes no responsibility for any errors or omissions, which may appear in this manual, nor does it make a commitment to update the information contained herein.

Trademarks
Intel is a registered trademark of Intel Corporation.
Award is a registered trademark of Award Software, Inc.
All other trademarks, products and or product's name mentioned here are for identification purposes only, and may be trademarks and/or registered trademarks of their respective companies or owners.

© Copyright 2023
All Rights Reserved.
User Manual edition 0.1, Sep. 15. 2023

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.

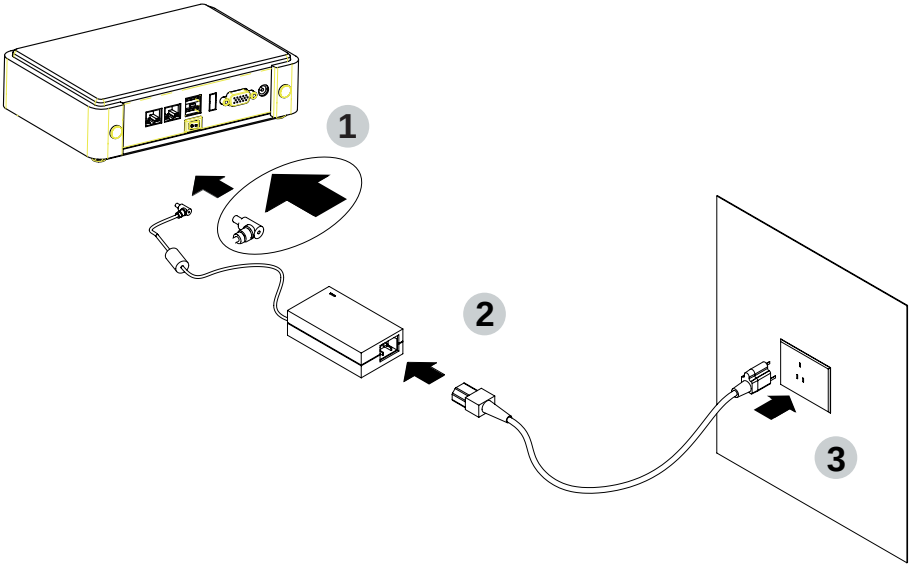
12. It is important to install a system fan toward the CPU to decrease the possibility of overheating / system hanging up issues, or customer is suggested to have a fine cooling system to dissipate heat from CPU.

✱ Hardware Notice Guide

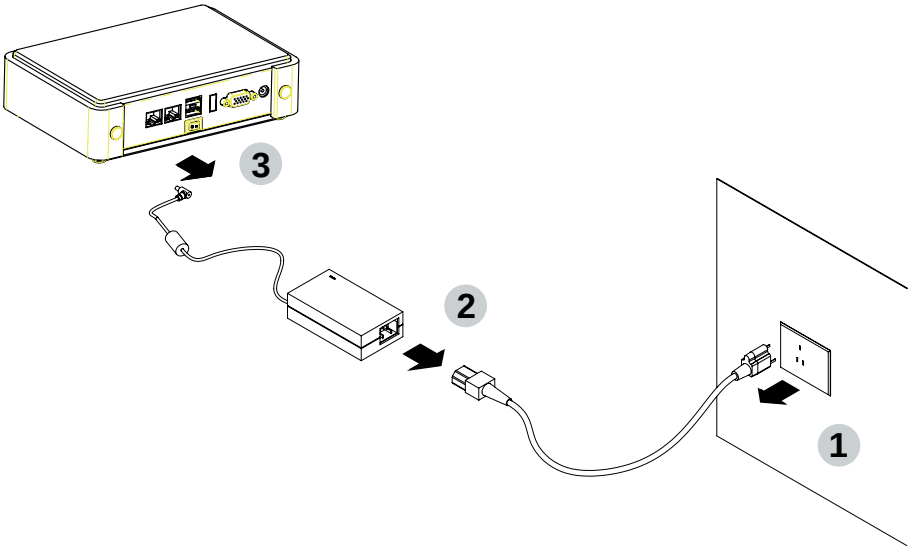
1. Before linking power supply with the motherboard, please attach DC-in adapter to the motherboard first. Then plug the adapter power to AC inlet.
   Always shut down the computer normally before you move the system unit or remove the power supply from the motherboard. Please unplug the DC-in adapter first and then unplug the adapter from the AC inlet.
   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 invalidate 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.
11. **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 3I640A/CW is a 3.5" (146 x 102 mm)motherboard powered with Intel Atom® x6000E series and Celeron® J (formerly Elkhart Lake) processor & offered the ideal platform for high performance applications. 3I640A/CW integrated 2 x 2.5 GbE LAN, 6 x USB, 6 x COM Port, 1 x HDMI, 1 x DVI, 1 x LVDS display interface and 1 x Mini PCIe, 2 x M.2 expansion slot offers the ideal platform for graphics performance with integrated AIoT features, real-time performance, manageability, and security. 3I640A/CW with excellent processor performance, multiple Serial ports and touch screen controller features is the ideal solution for AI accelerators platform and advanced Edge AI, Intelligent Control, Factory Automation Industry 4.0, Internet of Things (IoT) and Edge Computing applications

The 3I640A/CW supports high-speed data transfer interfaces such as PCIe gen2, USB 3.0, and SATA 6 Gb/s (SATA III) for mSATA interface M.2 B-Key device, with one-channel DDR4 3200 MHz memory up to 32GB SODIMM slot and supports two serial port RS232 / RS485 / RS422 jumper free auto switch by BIOS. It supports 2 port of USB 3.0, 4 port of USB 2.0. The expandable interfaces include 1 Mini PCIe for PCIe and USB interface, 1 M.2 B-Key for SATA and USB 3.0 / 2.0 with mini SIM slot and 1 M.2 B-Key for PCIe x 2 and USB 2.0 interface.

The embedded motherboard 3I640A/CW is specially designed with Wide-Range Voltage DC in (9~36V) for widely varying input voltage requirement. All wafer IO design offers superb performance and PC specification in the industry using the specific housing. It supports with two 2.5 Gbps Ethernet for seamless broadband connectivity. With Wake-On LAN function and the PXE function in BIOS, these are perfect control boards for networking devices.

1-1 Major Feature

1. Intel® Atom x6413E Processor 1.5GHz / 2.7GHz (Quad Core),
   Intel® Celeron Processor J6412 2.0GHz / 2.6GHz (Quad Core)
2. Intel® UHD Graphics for 10th Gen Intel® Atom x6413E 500MHz / 750MHz,
   Intel® Celeron J6412 400MHz / 800MHz
3. DDR4 SODIMM slot x 1, up to 32GB
4. Support 2 x 2.5 Gbps Intel LAN port
5. Support 2 x RS232 selectable to RS485 / RS422 by BIOS and 4 x RS232
6. 2 x USB 3.0 and 4 x USB 2.0
7. ALC888 HD Audio Specification 1.0 Two channels sound.
   Two channel Class D Audio Amplifier (Only for 3I640CW)
8. Support extended 1 x Mini PCIe for PCIe and USB 2.0, 1 x M.2 B-Key for SATA
   and USB 3.0 / 2.0 with SIM slot, 1 x M.2 PCIe x 2 and USB 2.0 interface
9. Hardware digital Input & Output, 8 x DI / 8 x DO, Hardware Watch Dog Timer,
   0~255 sec programmable
10. Wide Range DC IN +9V~36V, (DC IN +12V for 3I640A)

1-2 Specification

1. **SOC:** Intel® Atom x6413E Processor 1.5GHz / 2.7GHz (Quad Core),
   Intel® Celeron Processor J6412 2.0GHz / 2.6GHz (Quad Core)
2. **Memory:** DDR4 SODIMM slot x 1, up to 32GB
3. **Graphics:** Intel® UHD Graphics for 10th Gen Intel® Atom x6413E 500MHz / 750MHz,
   Intel® Celeron J6412 400MHz / 800MHz
4. **LAN:** 2 Intel I2225 LAN chipset with 2.5 Gbps
5. **I/O Chip:** Switch chipset for 2 port RS232 / RS422 / RS485 selected by BIOS
   and 4 port RS232
6. **Audio:** ALC888 HD Audio Specification 1.0 Two channel sound chipset
   (Only for 3I640CW)
7. **Audio Amplifier:** TPA20120D2 Class-D 2.1W / 4Ω or 1.4W / 8Ω chipset
   (Only for 3I640CW)
8. **USB:** 2 type A USB 3.0, 4 USB 2.0
9. **WDT/DIO:** Hardware digital Input & Output, 8 x DI / 8 x DO (Option) /
   Hardware Watch Dog Timer, 0~255 sec programmable
10. **Expansion interface:** one Mini PCIe for PCIe and USB 2.0, one M.2 B-Key
    for SATA and USB 3.0 / 2.0 with SIM slot, one M.2 B-key
    for PCIe x 2 and USB 2.0 interface
11. **BIOS:** Insyde UEFI BIOS
12. **Dimension:** 146 x 102 mm
13. **Power:** On board DC +9~36V, DC +12V for 3I640A

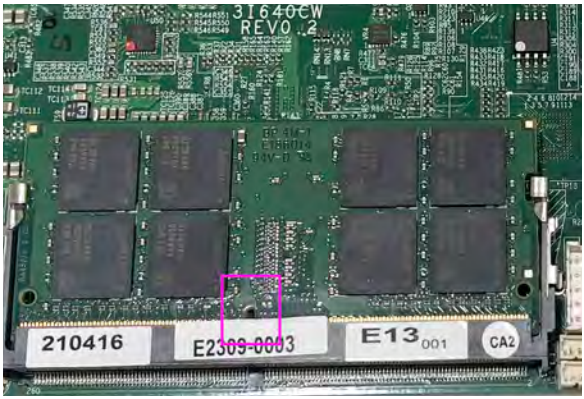
1-3 Installing the SO-DIMM

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

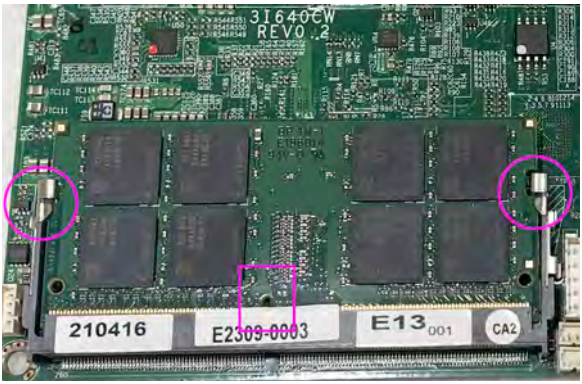
2. Press the SO-DIMM into the connector until you hear a click.

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.



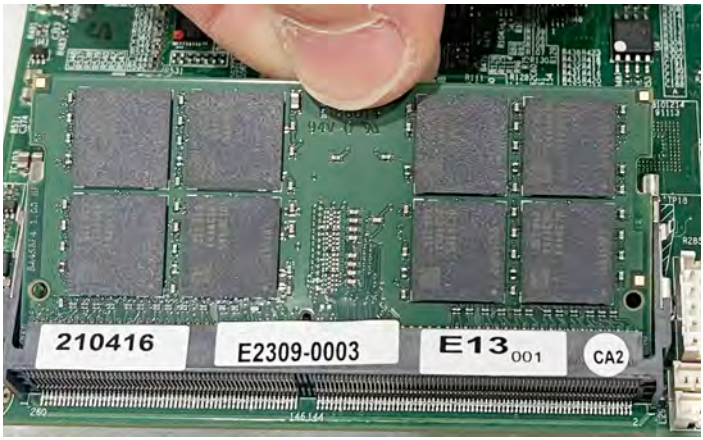
2. Make sure the retaining clips (on two sides of the slot) lock onto the notches of the card firmly.



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

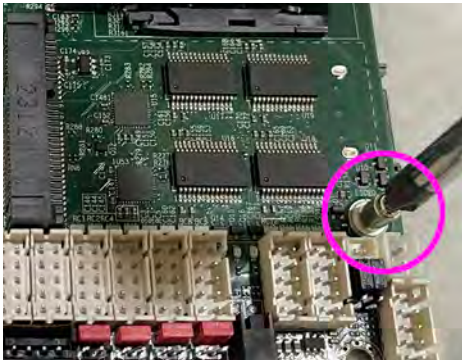
1. Release the SO-DIMM by pulling outward the two retaining clips and the SO-DIMM pops up slightly.

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 Directions for installing the M.2 B Key Mini Card

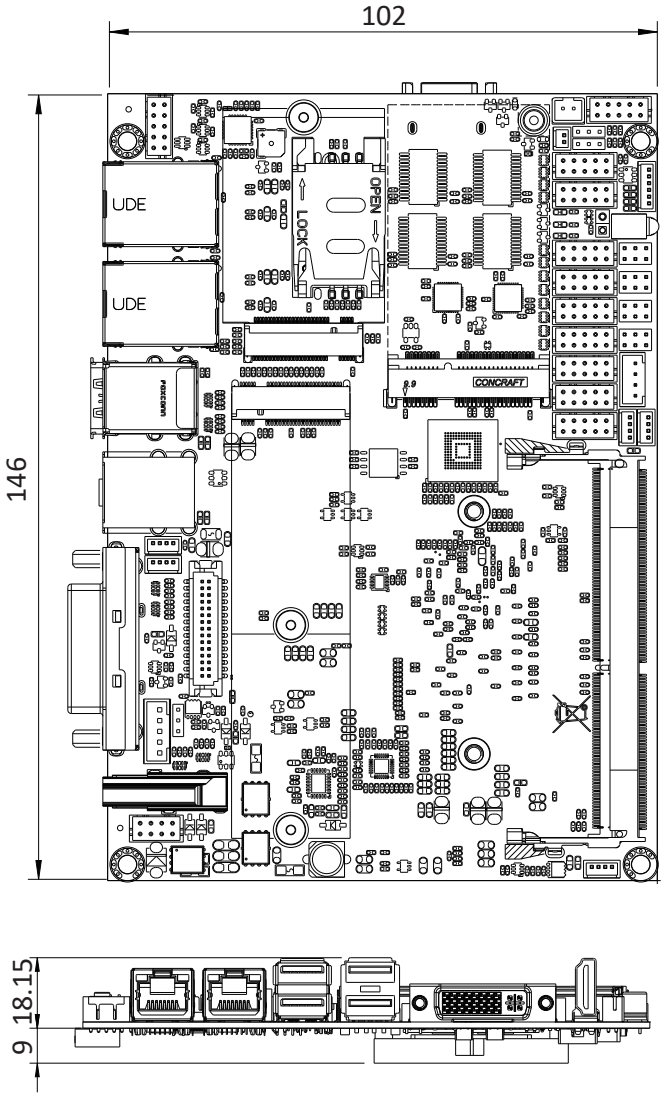
1. Unscrew the screw on the board

2. Plug in the Mini Card in a 45 angle

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

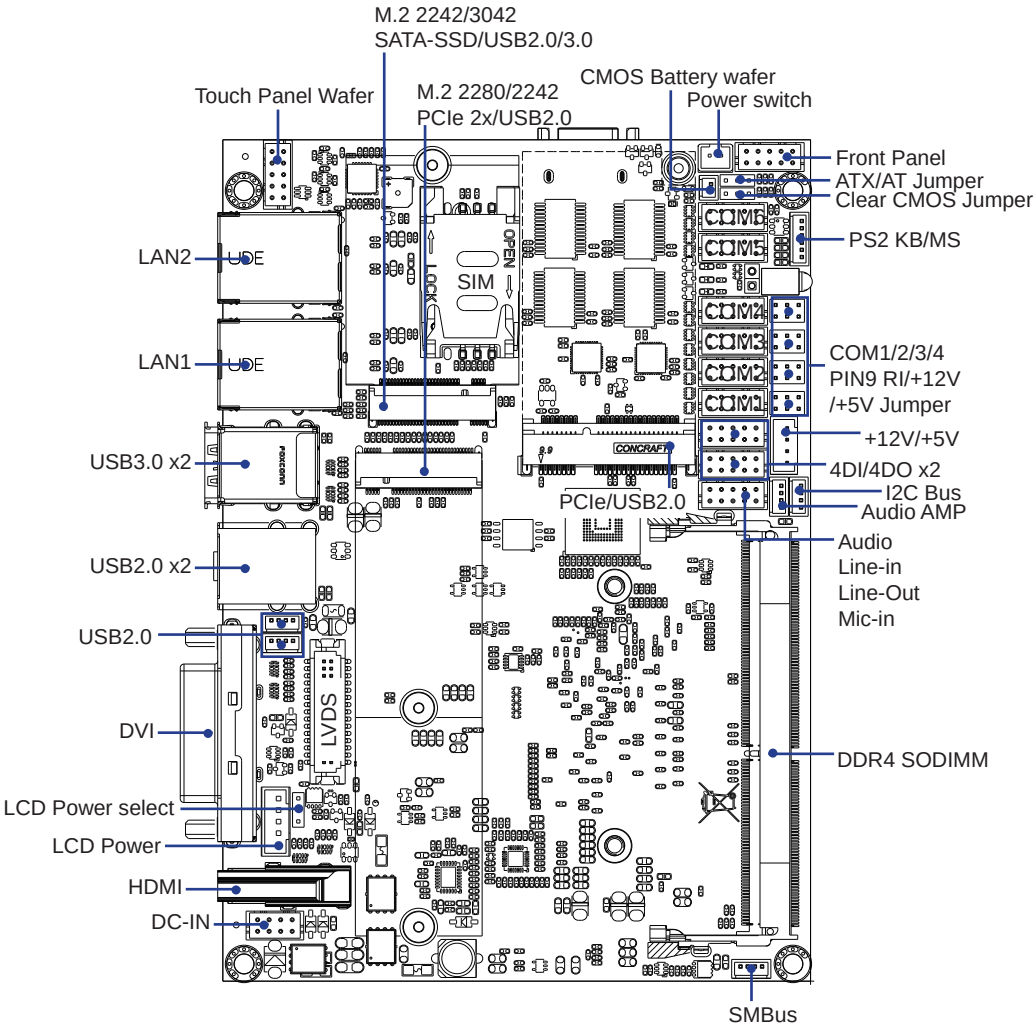
Chapter-2

2-1 Dimension-3I640A/CW



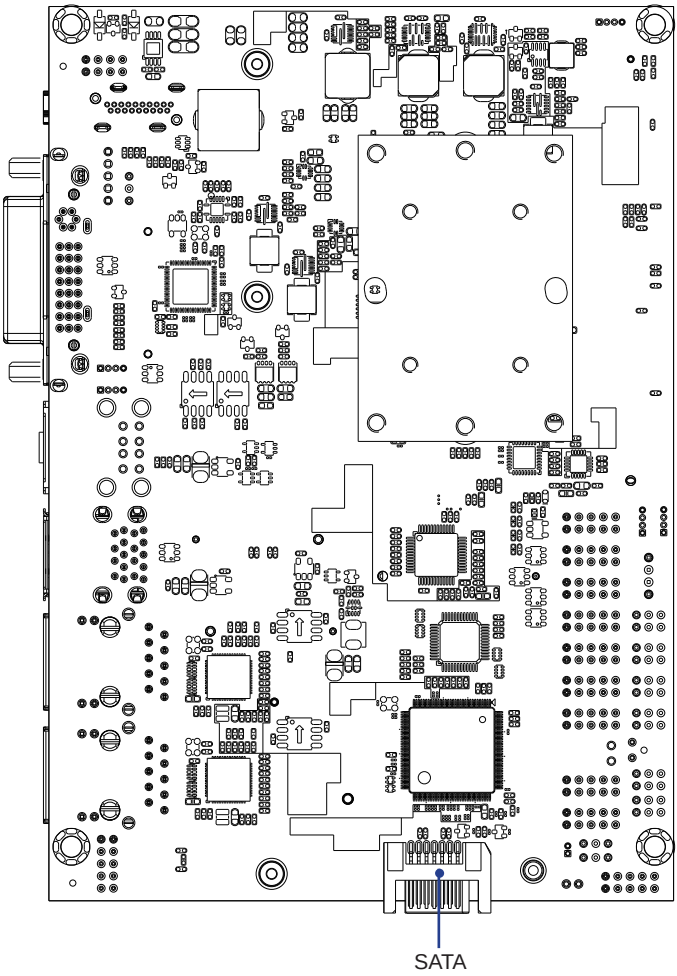
2-2 Layout-3I640A/CW-Function Map

TOP

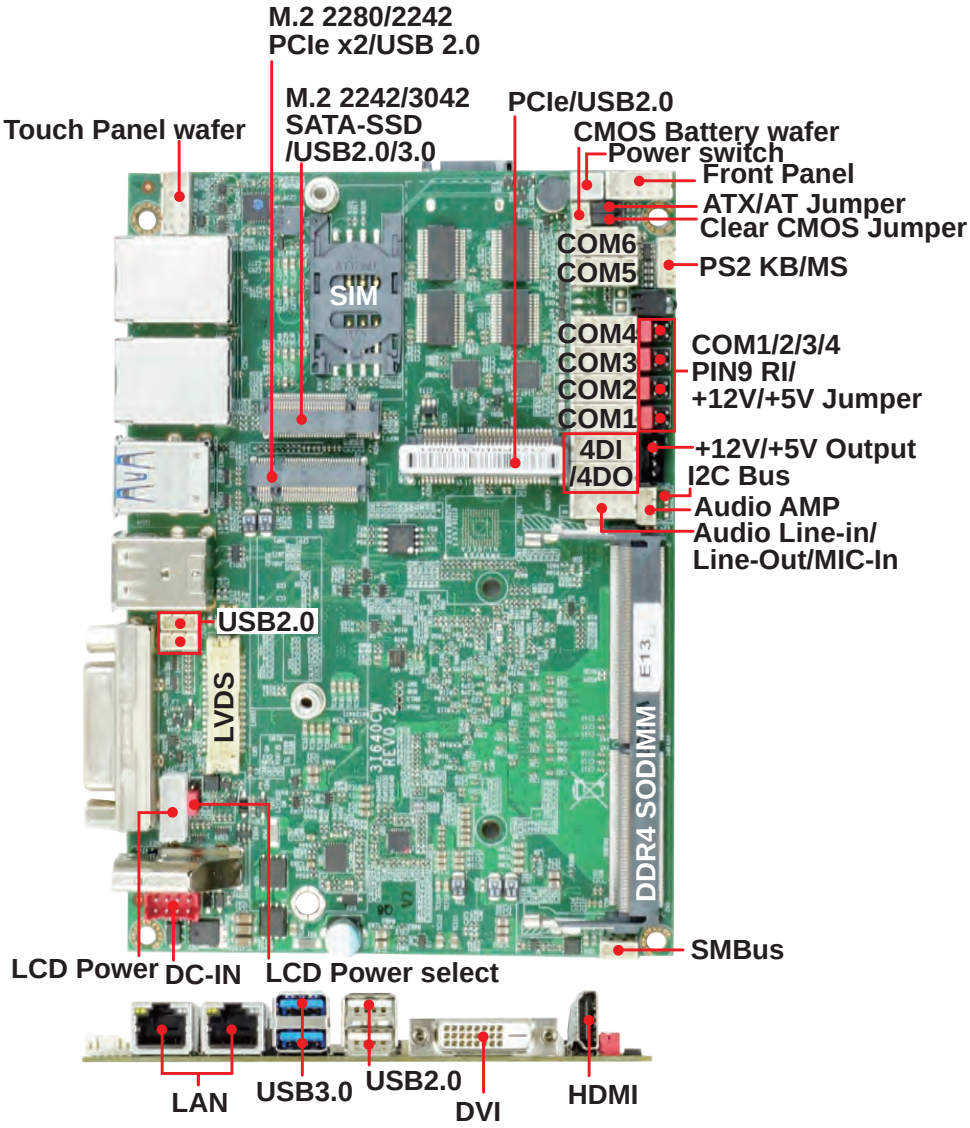


2-2-1 Layout-3I640A/CW-Function Map

BOT

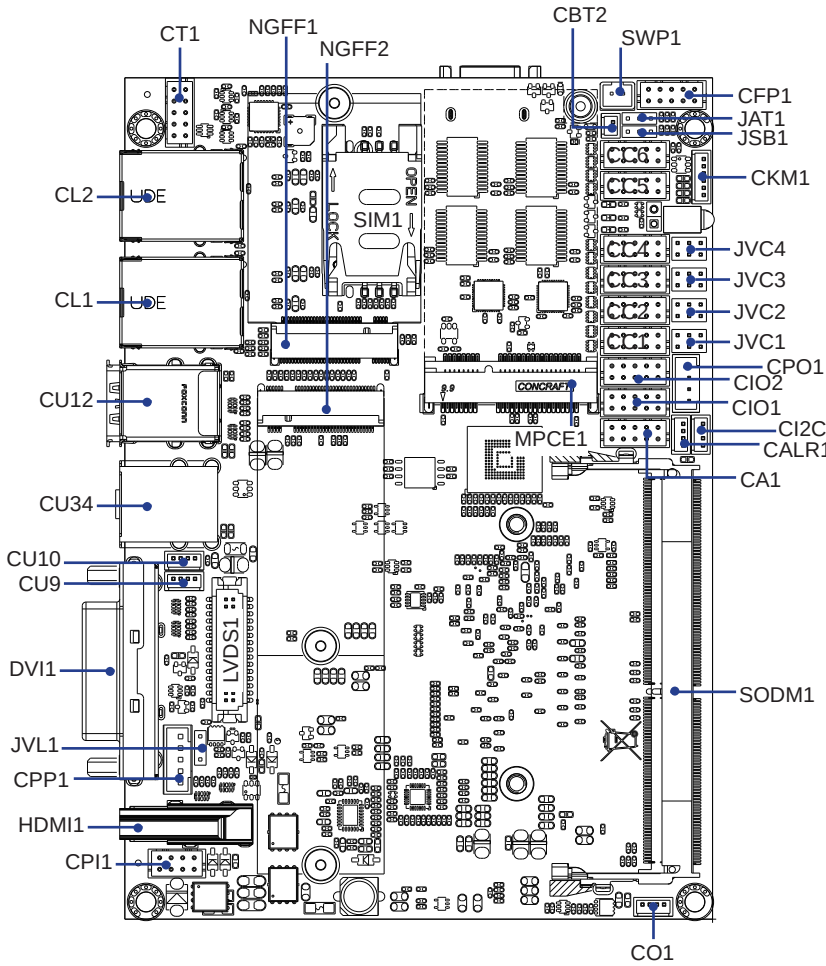


2-3 Function Map-3I640A/CW



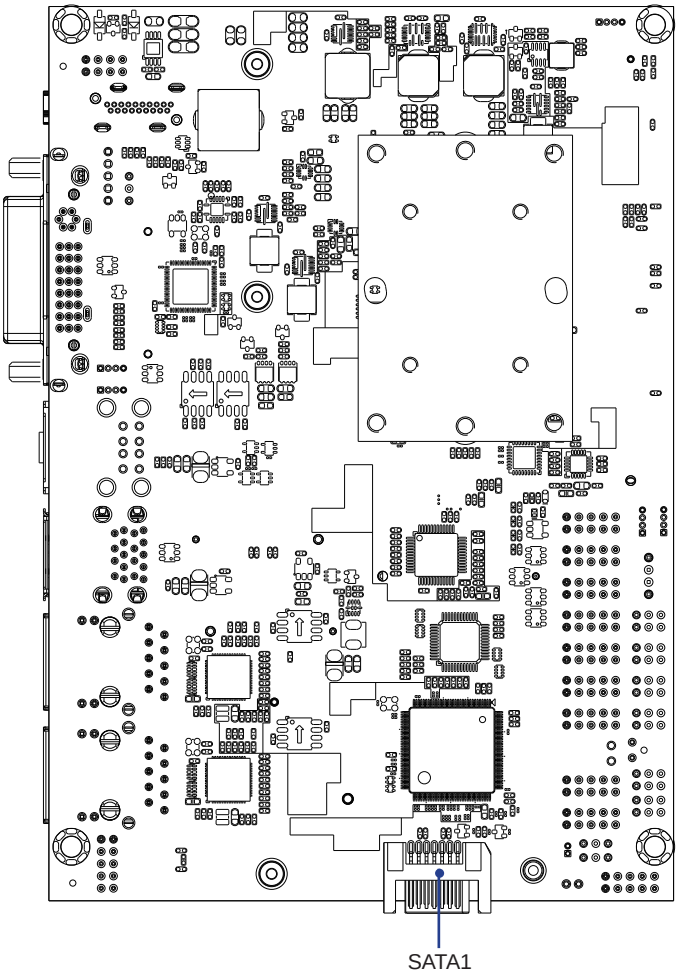
2-4 Connector MAP-3I640A/CW

TOP



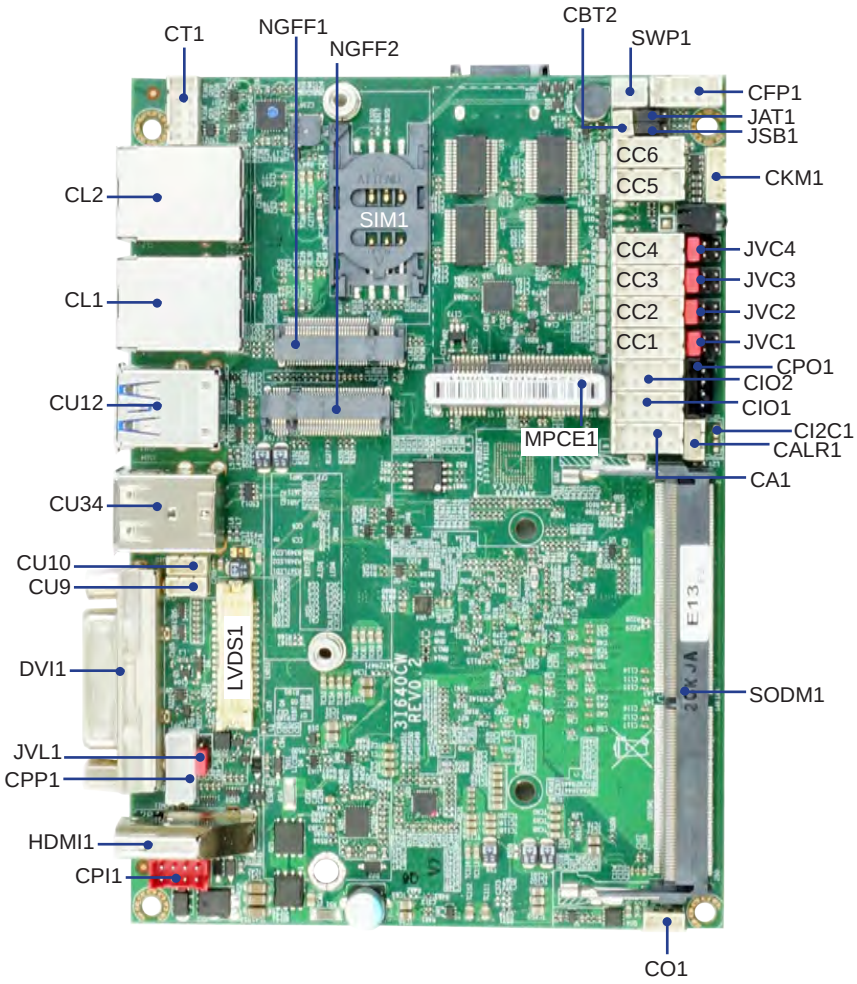
2-4-1 Connector MAP-3I640A/CW

BOT



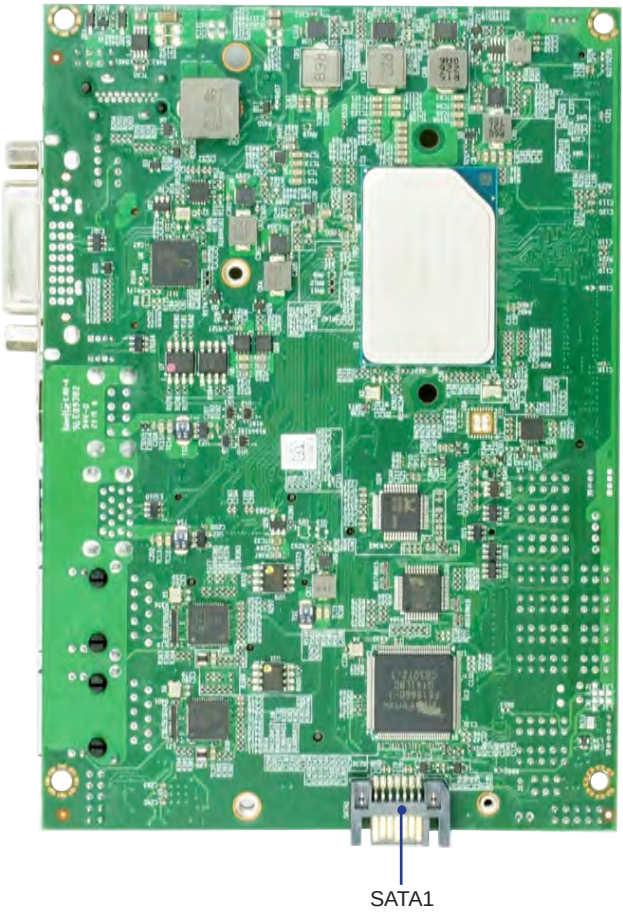
2-5 Diagram- 3I640A/CW

TOP



2-5-1 Diagram- 3I640A/CW

BOT



2-6 List of Jumpers

JSB1: CMOS DATA Clear
JAT1: Power in always ON function
JVL1: LCD panel power select
JVC1/2/3/4: COM1/2/3/4 PIN9 RI/+12V/+5V Select

2-7 Jumper Setting Description

A jumper is ON as a closed circuit with a plastic cap covering two pins. A jumper is OFF as an open circuit without the plastic cap. Some jumpers have three pins, labeled 1, 2, and 3. You could connect either pin 1 and 2 or 2 and 3.The below figure 2.2 shows the examples of different jumper settings in this manual.

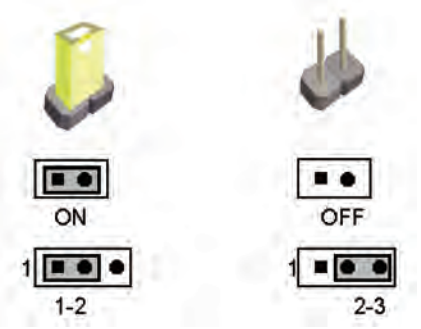


Figure 2.2

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

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 JSB2 to store the CMOS data.

To clear the CMOS, follow the procedures below:

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

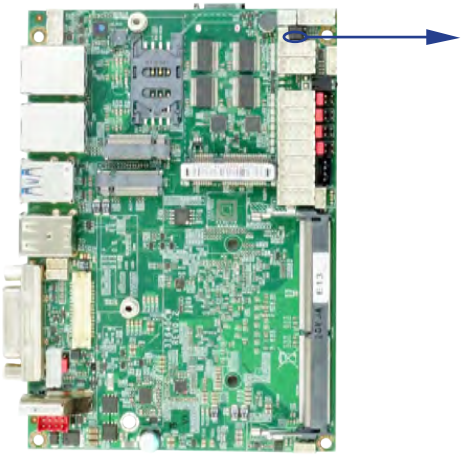
JSB1	DESCRIPTION
*1-2	Normal Set
2-3	CMOS data clear

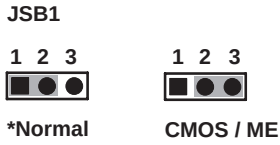
Note: Do not clear CMOS unless

1. Troubleshooting

2. Forget password

3. You fail over-clocking system

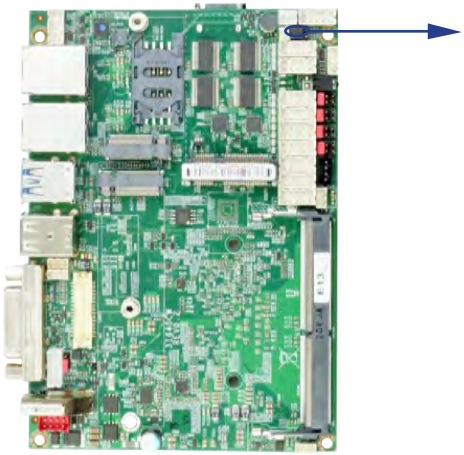


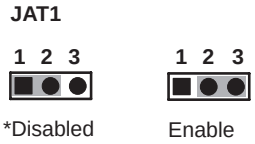


2-9 JAT1: Power in always ON function

JAT1	DESCRIPION
*1-2	Disabled
2-3	Enable

NOTE: Power always on function default is disabled.

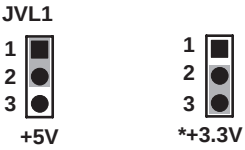


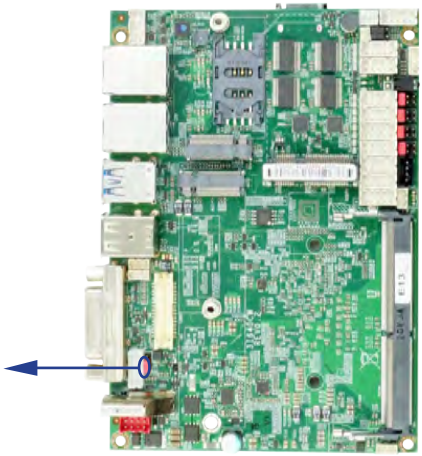


2-10 JVL1: LCD panel power select

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

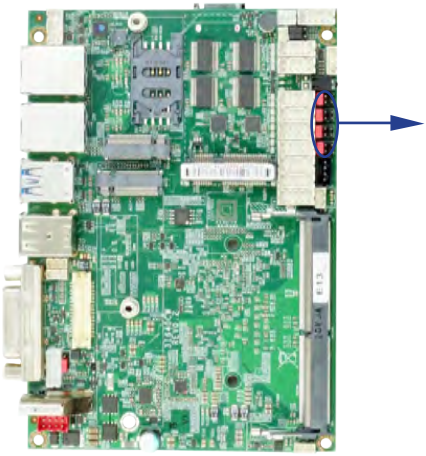
NOTE: Attention! Check Device Power in spec.

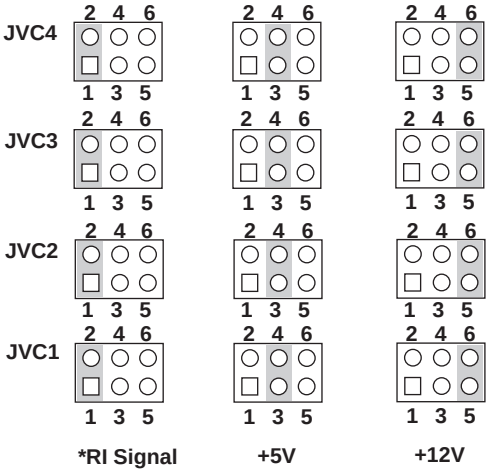




2-11 JVC1/2/3/4: COM1/2/3/4 PIN9 RI/+12V/+5V Select

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





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

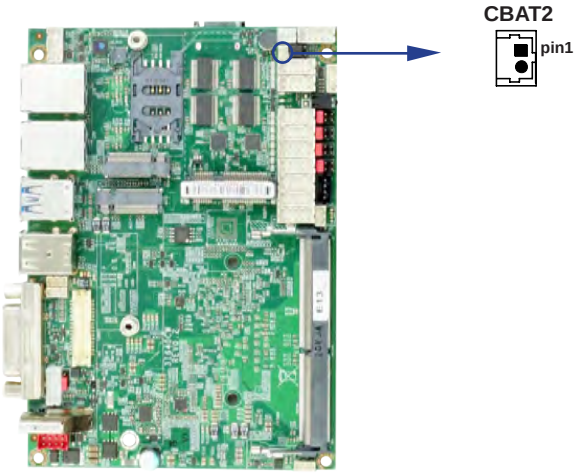
CBT2:	CMOS Battery in 1x2 pin (1.25mm) wafer
CA1:	Line-out / Line-in / Mic-in 2x5 pin (2.0mm) Wafer
CALR1:	Amp Line-out 2 channel 4pin (1.25mm) wafer
CU12:	Dual USB 3.0 type A connector
CU34:	Dual USB 2.0 type A connector
CU9:	USB 2.0 port 1x4 pin (1.25mm) wafer
CU10:	USB 2.0 port 1x4 pin (1.25mm) wafer
CL1:	RJ45 LAN connector
CL2:	RJ45 LAN connector
CC1:	COM 1 2x5 pin (2.0mm) wafer
CC2:	COM 2 2x5 pin (2.0mm) wafer
CC3:	COM 3 2x5 pin (2.0mm) wafer
CC4:	COM 4 2x5 pin (2.0mm) wafer
CC5:	COM 5 2x5 pin (2.0mm) wafer
CC6:	COM 6 2x5 pin (2.0mm) wafer
CFP1:	Front Panel connector 2x5 pin (2.0mm) wafer
CIO1:	4DI / 4DO 2x5 pin (2.0mm) wafer
CIO2:	4DI / 4DO 2x5 pin (2.0mm) wafer
CO1:	SMBus 1x4 pin (1.25mm) wafer
CI2C1:	I2C Bus 1x4 pin (1.25mm) wafer
CPI1:	DC-IN 1x4 pin (2.0mm) Redwafer
CPO1:	+12V / +5V output 1x4 pin (2.0mm) Black wafer
CT1:	Touch 2x5 pin (2.0mm) wafer
SATA1:	SATA connector 7pin
SIM1:	SIM card socket
SWP1:	Power On-Off 1x2 pin Wafer
MPCE1:	Full size mini card port 1 sockets 52pin
NGFF1:	M.2 B key 2242 / 3042 H=8.5 sockets 75pin
NGFF2:	M.2 B key 2242 / 2280 H=8.5 sockets 75pin
HDMI1:	HDMI typeA connector
DVI1:	DVI-D connector

LVDS1: LVDS 2CH 2x15 pin (1.25mm) wafer
CPP1: LVDS Panel Backlight power 1x5 pin (2.0mm) wafer
CKM1: PS2 KB/MS 1x6 pin (1.25mm) wafer

3-2 CBT2: CMOS Battery in 1x2pin (1.25mm) wafer

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

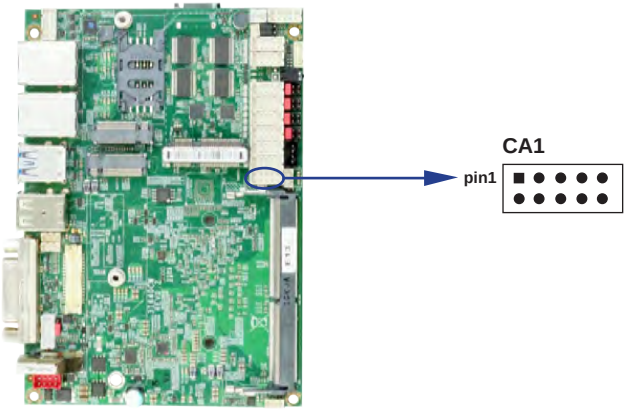
NOTE: CBT2 for external connector can extend battery capacity.



3-3 Audio interface

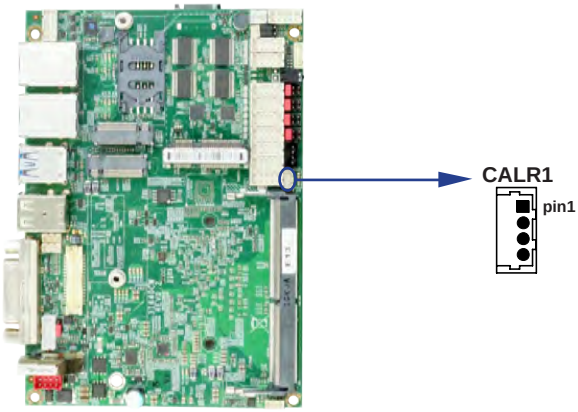
● CA1: Line-out / Line-in / MIC-in 2x5 pin (1.25mm) wafer

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



● CALR1: Amplifier Line-out Right & Left channel 1x4 pin (1.25mm) wafer

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



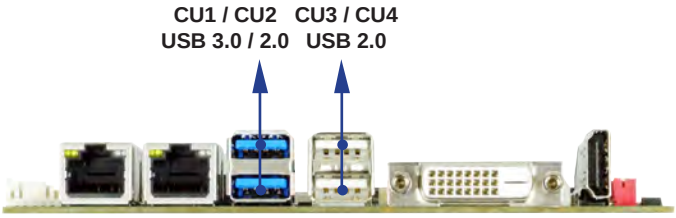
3-4 USB Interface

- **CU1 / CU2: Dual USB 3.0 / 2.0 Type Aconnector**

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

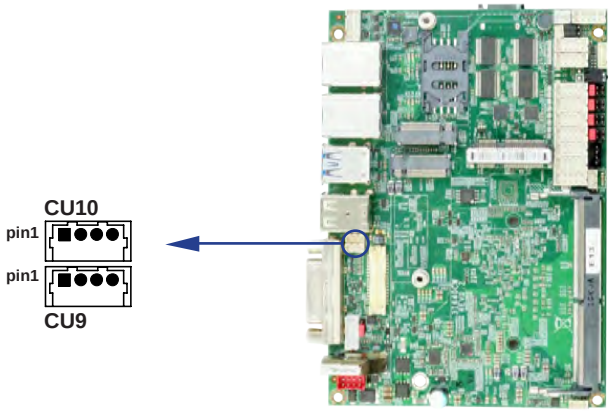
- **CU3 / CU4: Dual USB 2.0 Type A Connector**

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



- **CU9.CU10: USB 2.0 1x4 pin (1.25mm) wafer**

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



3-5 LAN Interface

- **CL1 / CL2: RJ45 LAN Connector**

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

3-6 CC1/2: COM1 / 2 2x5 pin (2.0mm) wafer

- **RS232 Mode**

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

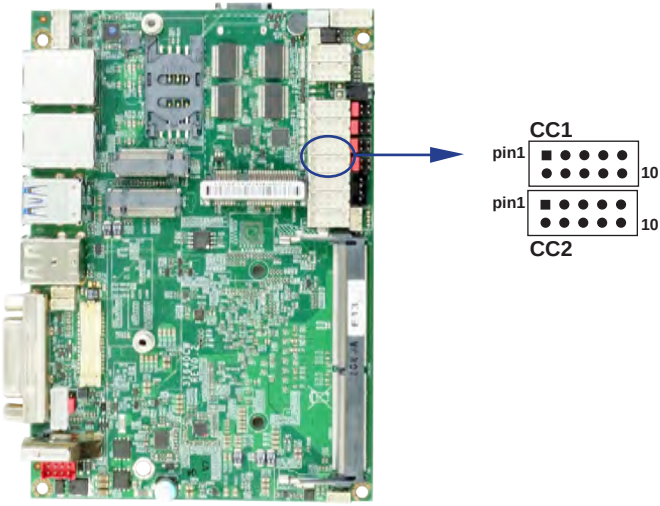
Note:
1. COM 1/2 Default RS232, RS485 / RS422 by BIOS control.
2. The pin9 RI can be modify to Power to supply device. The power voltage can be set +12V or +5V. The RI change Voltage function set by JVC1-6 control. Default is RI signal.
3. Pin 10 provides +5V for external device.

- **RS485 Mode**

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

- **RS422 Mode**

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

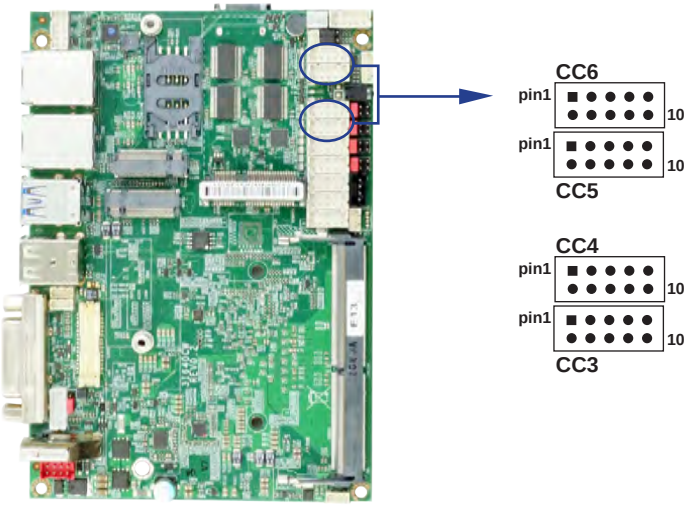


- **CC3 / 4 / 5 / 6: COM3 / 4 / 5 / 6 2x5 pin (2.0mm) wafer**

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

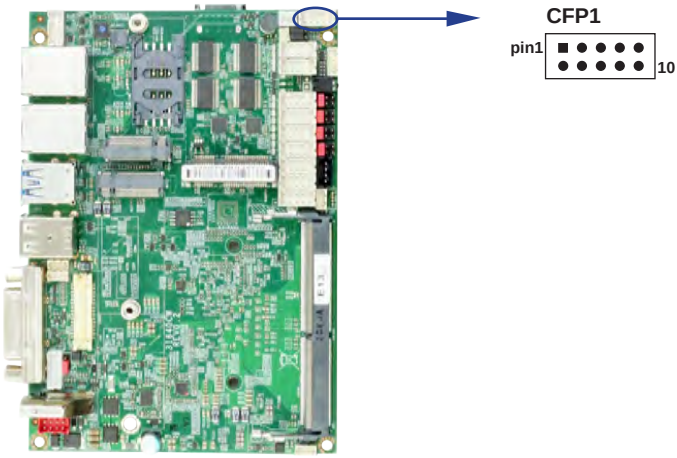
Note:

1. The pin9 RI can be modify to Power to supply device. The power voltage can be set +12V or +5V. The RI change Voltage function set by JVC3-6 control. Default is RI signal.
2. Pin 10 provides +5V for external device.



3-7 CFP1: Front Panel 2x5 pin (2.0mm) wafer

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



3-8 Digital Input / Output / Watch Dog Time

• CIO1 DIO 0--3 (2x5pin 2.0mm wafer)

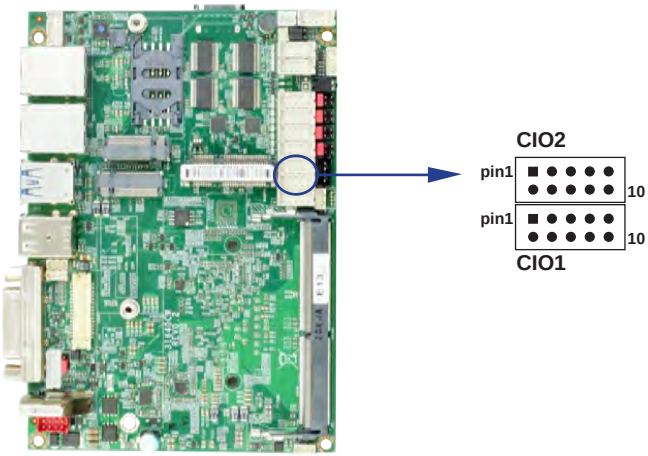
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	DI-0	2	DO-3
3	DI-1	4	DO-2
5	DI-2	6	DO-1
7	DI-3	8	DO-0
9	GND	10	+5V

Note:
1. DI pin default pull up 10KΩ to +5V.
2. If use need isolate circuit to control external device.

• CIO2 DIO 4--7 (2x5pin 2.0mm wafer)

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

Note:
1. DI pin default pull up 10KΩ to +5V.
2. If use need isolate circuit to control external device.



3-8-1 IO Device: F75113 LPC under Windows (64bit)

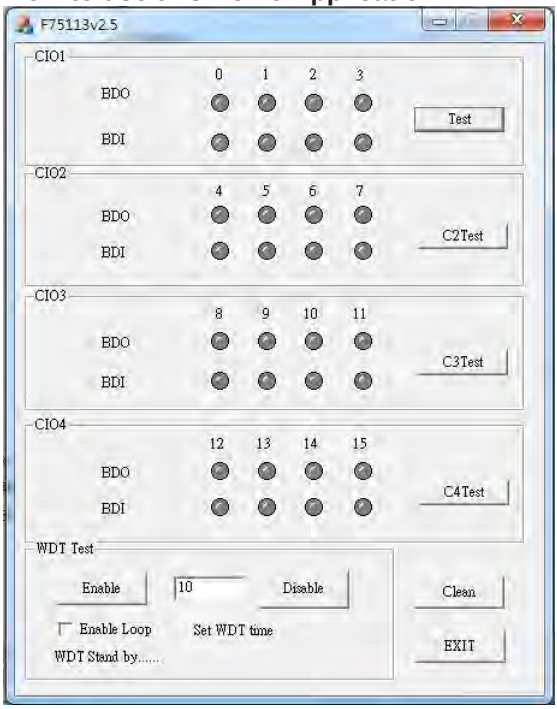
Contents [hide]

1 The Sample code source you can download from
2 How to use this Demo Application
3 F75113 GPIO Picture
4 Introduction
  4.1 F75113 driver connection
  4.2 GPIO Status Register Write
  4.3 GPIO Status Register Read
  4.4 GPIO Comparison
  4.5 F75113 driver delete
5 Version update details
  5.1 Version 2.1 update code removes default naming change to wafer name and write comment

The Sample code source you can download from

Source file: F75113v2.5W_src.zip
Binary file: F75113v2.5W_bin_x64.zip
We do the demo test with a test tool which DIx connect to DOx with Relay.

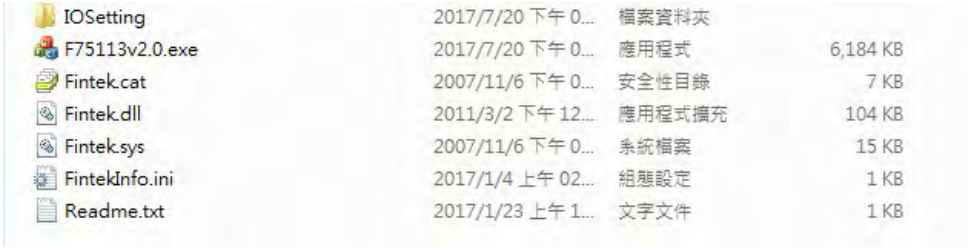
How to use this Demo Application



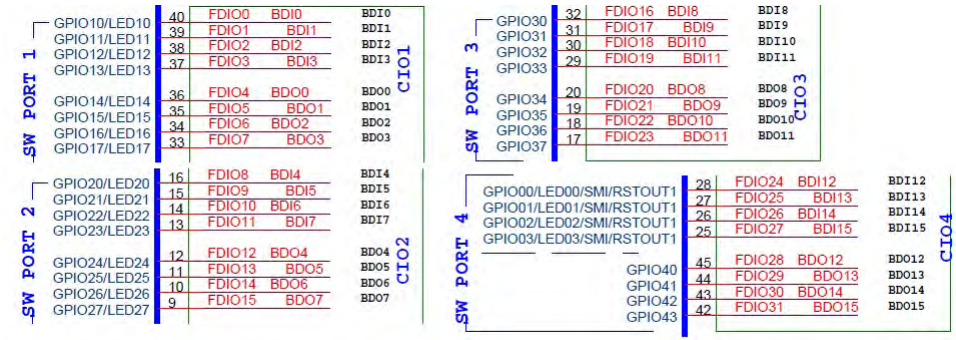
1. Press the "Test" button to test CIO1 function
2. Press the "C2test" button to test CIO2 function
3. Press the "C3test" button to test CIO3 function
4. Press the "C4test" button to test CIO4 function

If the next picture appears

MB no LPC or the drive placement is wrong
Drive the location for the next picture



F75113 GPIO Picture



Introduction

F75113 driver connection

```
hinstLib = LoadLibrary(L"Fintek.dll");
 if (hinstLib == NULL)
 {
    if(Application->MessageBoxW(L"Load fail Fintek.dll,Continued?",L"Error",16+4)==IDNO)
    {
      Application->Terminate();
    }
      return;
 }
```

GPIO Status Register Write

```
SETINT2PROC ProcAdd;
 char *endptr;
 char Numbers[] = "0x20";
 char Value[] =   "0xF0";
 ProcAdd = (SETINT2PROC) GetProcAddress(hinstLib, "GPIO_LPC_W");
 if (NULL != ProcAdd)
 {
   if (! (*ProcAdd)( strtol(Numbers, &endptr, 16), strtol(Value, &endptr, 16)))
   {
     ShowMessage("Write Fail");
   }
 }
```

GPIO Status Register Read

```
GETINT2PROC ProcAdd1;
 int datatest;
 char NRtest[] = "0x22";
 ProcAdd1 = (GETINT2PROC) GetProcAddress(hinstLib, "GPIO_LPC_R");
 if (NULL != ProcAdd1)
 {
   if (! (*ProcAdd1)( strtol(NRtest, &endptr, 16), &datatest))
   {
     ShowMessage("Read Fail");
   }
 }
```

GPIO Comparison

```
if( data == 0xF0 )
{
  ((CStatic *)GetDlgItem(IDC_LED_DO0))->SetBitmap(::LoadBitmap(AfxGetInstanceHandle(),MAKEIN
TRESOURCE(IDB_BITMAP_Green)));
  ((CStatic *)GetDlgItem(IDC_LED_DO1))->SetBitmap(::LoadBitmap(AfxGetInstanceHandle(),MAKEIN
TRESOURCE(IDB_BITMAP_Green)));
  ((CStatic *)GetDlgItem(IDC_LED_DO2))->SetBitmap(::LoadBitmap(AfxGetInstanceHandle(),MAKEIN
TRESOURCE(IDB_BITMAP_Green)));
  ((CStatic *)GetDlgItem(IDC_LED_DO3))->SetBitmap(::LoadBitmap(AfxGetInstanceHandle(),MAKEIN
TRESOURCE(IDB_BITMAP_Green)));
   if( data2 == 0x01 )
   {
      ((CStatic *)GetDlgItem(IDC_LED_DI0))->SetBitmap(::LoadBitmap(AfxGetInstanceHandle(),MAKEI
NTRESOURCE(IDB_BITMAP_Green)));
      ((CStatic *)GetDlgItem(IDC_LED_DI1))->SetBitmap(::LoadBitmap(AfxGetInstanceHandle(),MAKEI
NTRESOURCE(IDB_BITMAP_Red)));
      ((CStatic *)GetDlgItem(IDC_LED_DI2))->SetBitmap(::LoadBitmap(AfxGetInstanceHandle(),MAKEI
NTRESOURCE(IDB_BITMAP_Red)));
      ((CStatic *)GetDlgItem(IDC_LED_DI4))->SetBitmap(::LoadBitmap(AfxGetInstanceHandle(),MAKEI
NTRESOURCE(IDB_BITMAP_Red)));
   }
   .....
}
```

F75113 driver delete

```
 char N9[] = "0x10";
 char V9[] = "0x00";
 ProcAdd = (SETINT2PROC) GetProcAddress(hinstLib, "GPIO_LPC_W");
  if (NULL != ProcAdd)
   {
    if (! (*ProcAdd)( strtol(N9, &endptr, 16), strtol(V9, &endptr, 16)))
     {
      ShowMessage("Write Fail");
     }
   }
   if (hinstLib != NULL)
   {
    FreeLibrary(hinstLib);
   }
```

Version update details

Version 2.1 update code removes default naming change to wafer name and write comment

Category: AllowPages
AllowPages > AllowPages

3-8-2 IO Device:F75113 LPC under Linux(64bit)

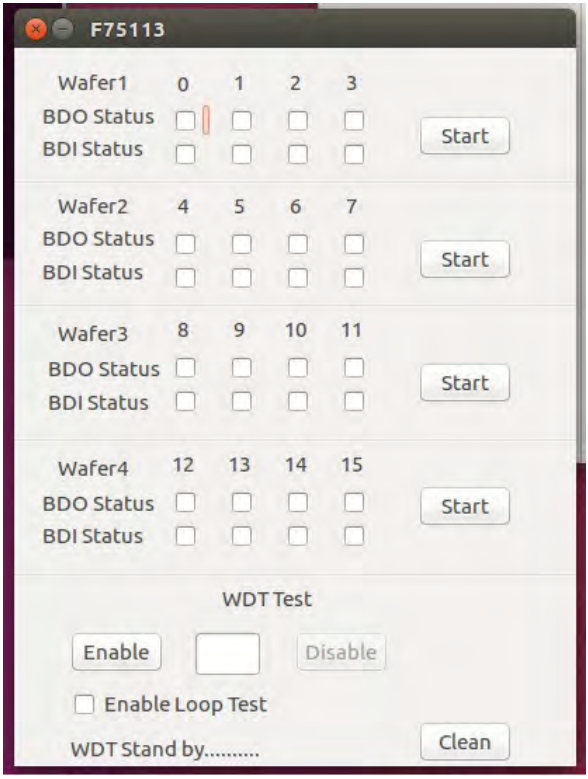
Contents [hide]

1 The Sample code source you can download from
2 How to use this Demo Application
3 F75113 GPIO Picture
4 Introduction
  4.1 GPIO Status Register Write
  4.2 GPIO Status Register Read
  4.3 GPIO Comparison
  4.4 F75113 driver delete

The Sample code source you can download from

Source file: F75113v2.5_linux_src.tar.gz
Binary file: Linux_F75113v2.5_bin.tar.gz
We do the demo test with a test tool which DIx connect to DOx with Relay.

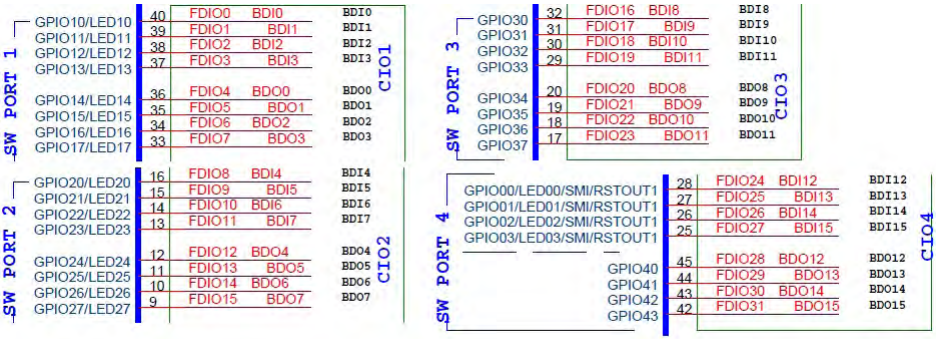
How to use this Demo Application



1. Press the "Start" button to test CIO1 function
2. Press the "Start" button to test CIO2 function
3. Press the "Start" button to test CIO3 function
4. Press the "Start" button to test CIO4 function
5. Press the "Enable" button to test WDT function

If you need to use the WDT,Please use "sh F75113set.sh"
He can help you set the WDT register for normal use WDT

F75113 GPIO Picture



Introduction

GPIO Status Register Write

```
init_fintek_sio(eSIO_TYPE_F81866, 0 ,&sio_data)
ActiveSIO(sio_data.ic_port, sio_data.key);
CHECK_RET(_EnableGPIO(0x06 , eGPIO_Mode_Enable));
CHECK_RET(_SetGpioOutputEnableIdx( 0x06 , eGPIO_Direction_Out));
CHECK_RET(_SetGpioDriveEnable( 0x06 , eGPIO_Drive_Mode_OpenDrain));
CHECK_RET(_SetGpioOutputDataIdx( 0x06 , 1));
DeactiveSIO(sio_data.ic_port);
```

GPIO Status Register Read

```
init_fintek_sio(eSIO_TYPE_F81866, 0 ,&sio_data)
ActiveSIO(sio_data.ic_port, sio_data.key);
CHECK_RET(_EnableGPIO(0x06 , eGPIO_Mode_Enable));
CHECK_RET(_SetGpioOutputEnableIdx( 0x06 , eGPIO_Direction_In));
CHECK_RET(_GetGpioInputDataIdx( 0x06 , &data));
DeactiveSIO(sio_data.ic_port);
```

GPIO Comparison

```
CHECK_RET(_GetGpioInputDataIdx (0x10,&BDIO_data));
 if((BDIO_data == 1) & (BDIO_startvalue_data == 0) )
 {
    gtk_toggle_button_set_active(GTK_TOGGLE_BUTTON(checkbutton2), TRUE);
 }
 CHECK_RET(_GetGpioInputDataIdx (0x11,&BDI1_data));
 if((BDI1_data == 1) & (BDI1_startvalue_data == 0) )
 {
    gtk_toggle_button_set_active(GTK_TOGGLE_BUTTON(checkbutton4), TRUE);
 }
 CHECK_RET(_GetGpioInputDataIdx (0x12,&BDI2_data));
 if((BDI2_data == 1) & (BDI2_startvalue_data == 0) )
 {
    gtk_toggle_button_set_active(GTK_TOGGLE_BUTTON(checkbutton6), TRUE);
 }
 CHECK_RET(_GetGpioInputDataIdx (0x13,&BDI3_data));
 if((BDI3_data == 1) & (BDI3_startvalue_data == 0) )
 {
    gtk_toggle_button_set_active(GTK_TOGGLE_BUTTON(checkbutton8), TRUE);
 }
```

F75113 driver delete

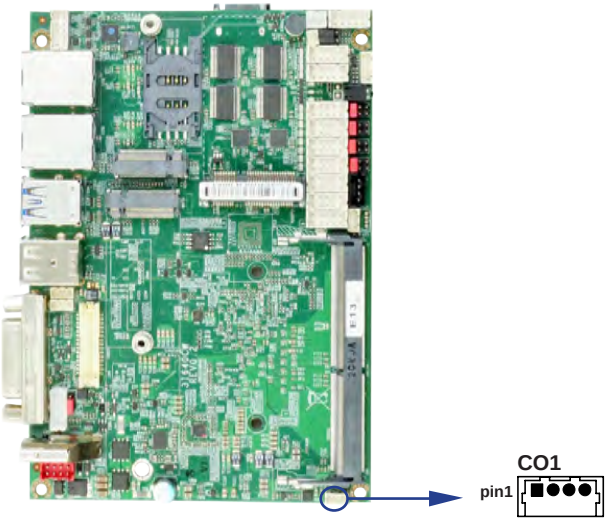
```
on_window1_destory        (GtkObject    *object,
                           gpointer     user_data)
{
  int nRet = 0;
  sFintek_sio_data sio_data;
  set_debug(1);
  if( nRet = init_fintek_sio(eSIO_TYPE_F75113,0, &sio_data))
  {
      fprintf(stderr,"init_fintek_sio error\n");
      exit(3);
  }
  ActiveSIO(sio_data.ic_port, sio_data.key);
  DeactiveSIO(sio_data.ic_port);
  gtk_main_quit();
}
```

Category: AllowPages
AllowPages > AllowPages

3-9 SMBus Interface

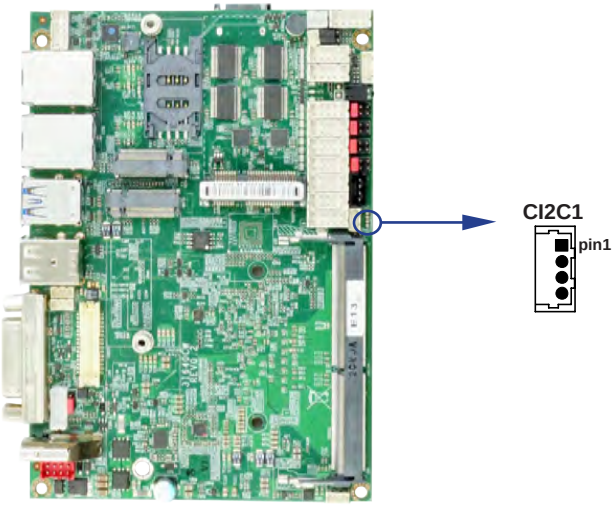
- **CO1: SMBus 1x4 pin (1.25mm) wafer**

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



3-10 CI2C1: I2C Bus 1x4 pin (1.25mm) wafer

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	+3.3V	2	GND
3	I2C Clock	4	I2C Data

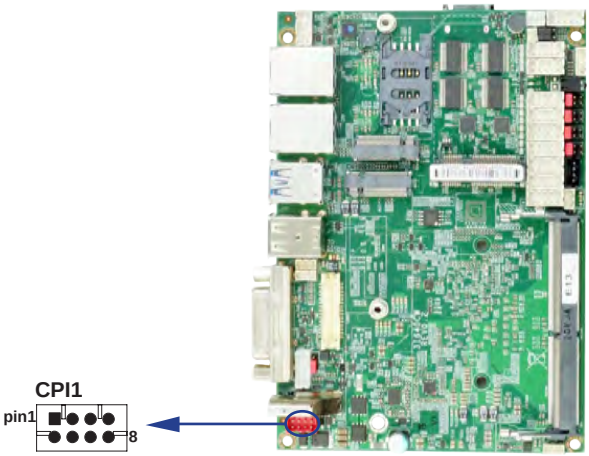


3-11 DC power input

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

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

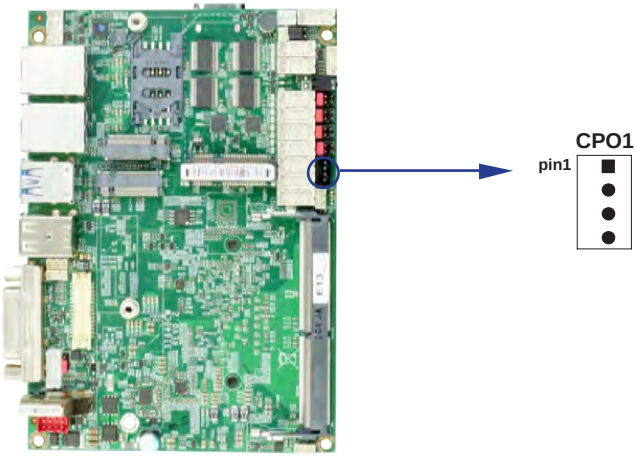
Note: Very important check DC-in Voltage.



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

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

Note: Attention! Check Device Power in spec.

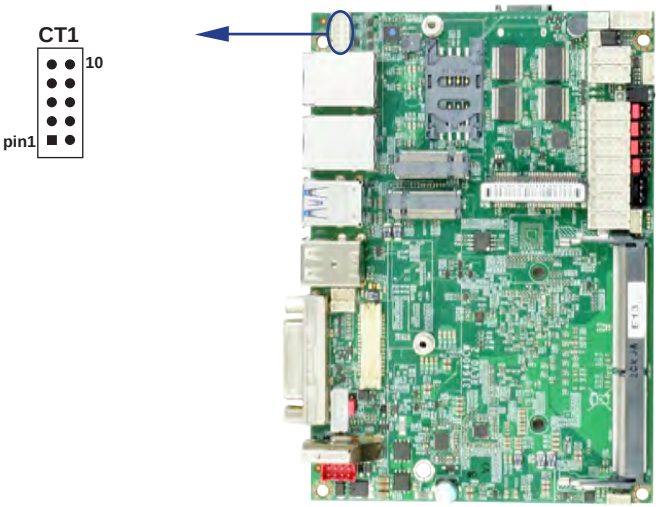


3-12 CT1: Touch screen 2x5 pin (2.0mm) USB interface

- **For 8-wire type pin define**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	Bottom	2	Bottom Sense
3	Top Sense	4	Top
5	Right	6	Right Sense
7	Left	8	Left Sense
9	GND	10	NC

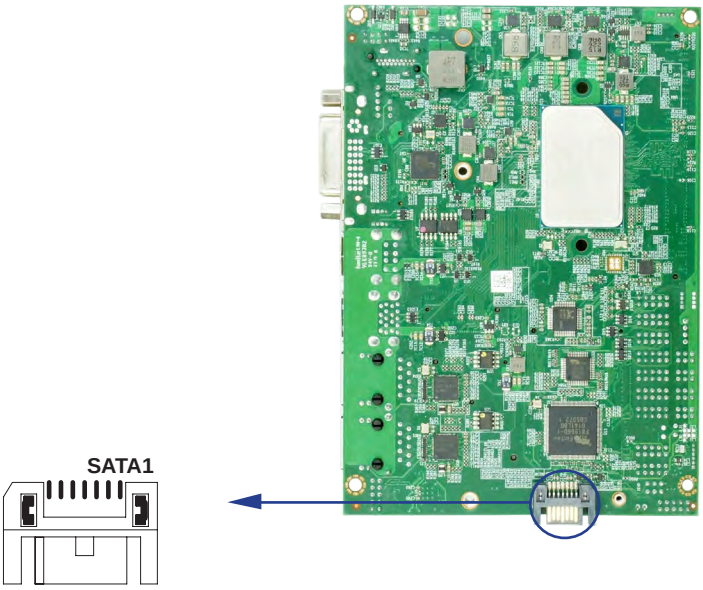
Note: For eight wire type cable Pin 3 and Pin 4 need short.



3-13 SATA interface

- **SATA1: SATA port 1x7 pin Connector**

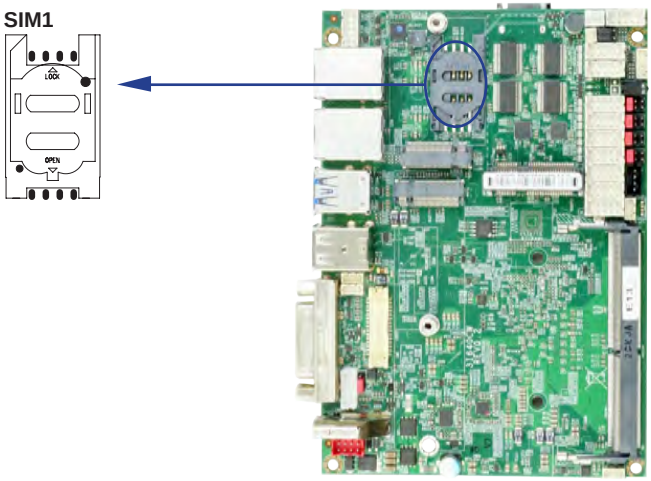
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	TX+
3	TX-	4	GND
5	RX-	6	RX+
7	GND		



3-14 SIM1: SIM socket

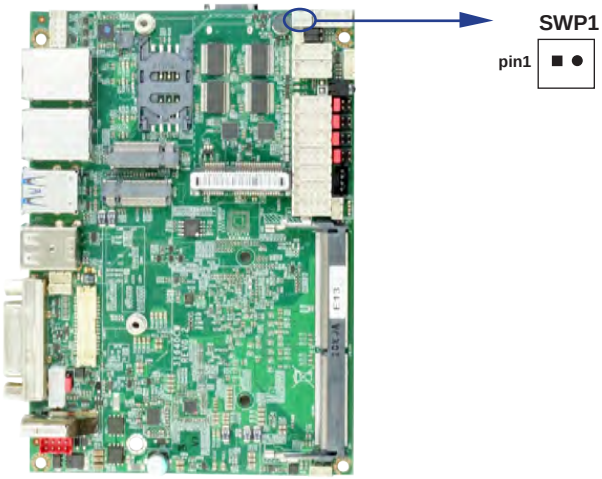
• SIM1: SIM card socket pin define is follow ISO 7816-2 smart card standard.

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



3-15 SWP1 Power On/off switch Wafer (1x2 pin 2.00mm wafer)

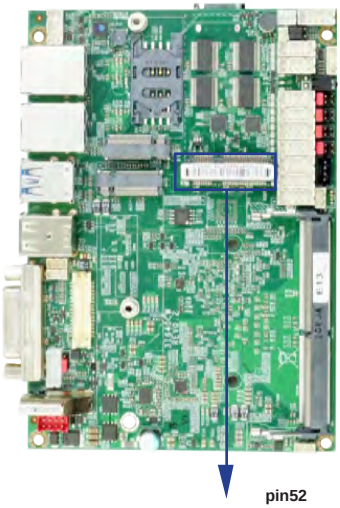
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	Power button pin	2	Power button GND



3-16 Module socket

● MPCE1 PCI Express Mini card

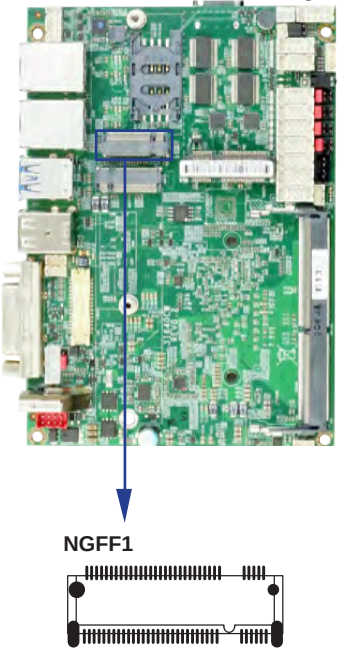
PIN NO.	Description	PIN NO.	Description
1	WAKE_N	2	+3.3V
3	NC	4	GND
5	NC	6	+1.5V
7	NC	8	NC
9	GND	10	NC
11	PCIe-CLK-	12	NC
13	PCIe-CLK+	14	NC
15	GND	16	NC
KEY			
17	NC	18	GND
19	NC	20	NC
21	GND	22	Reset
23	PCIe-RX-	24	+3.3V
25	PCIe-RX+	26	GND
27	GND	28	+1.5V
29	GND	30	SMB-CLK
31	PCIe-TX-	32	SMB-DATA
33	PCIe-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



MPCE1

3-17 NGFF1: PCI Express M.2 B key 2242 / 3042 H=8.5 sockets 75pin

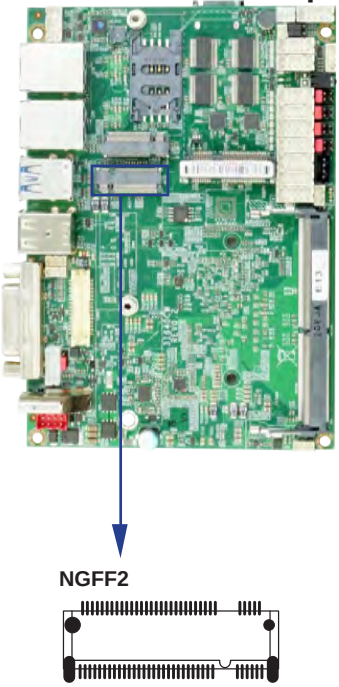
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	CFG3_USB3_PCIE	2	+3.3V / +3.7V
3	GND	4	+3.3V / +3.7V
5	GND	6	FULL_CARD_PWR
7	USB2.0_P	8	W_DISABLE_1
9	USB2.0_N	10	M2_LED
11	GND		
B Key notch			
		20	NC
21	GND	22	NC
23	NC	24	NC
25	NC	26	W_DISABLE_2
27	GND	28	NC
29	USB3Rn \ PERn1	30	SIM_RST_M2
31	USB3Rp \ PERp1	32	SIM_CLK_M2
33	GND	34	SIM_DATA_M2
35	USB3Tn \ PETn1	36	SIM_PWR_M2
37	USB3Tp \ PETp1	38	NC
39	GND	40	NC
41	SATA-RX+ \ PERn0	42	NC
43	SATA-RX- \ PERp0	44	NC
45	GND	46	NC
47	SATA-TX- \ PETn0	48	NC
49	SATA-TX+ \ PETp0	50	PREST
51	GND	52	SRCCLKREQ_N
53	PCIE_CLK_N0	54	NC
55	PCIE_CLK_P0	56	NC
57	GND	58	NC
59	NC	60	NC
61	NC	62	NC
63	NC	64	NC
65	NC	66	SIM_DET
67	MD_RESET_N	68	NC
69	NC	70	+3.3V / +3.7V
71	GND	72	+3.3V / +3.7V
73	GND	74	+3.3V / +3.7V
75	CONFIG_2		



Note:
1. NGFF1 support USB 3.0 / SATA-SSD. PCIe x2 by BOM control.
2. VCC voltage default support +3.3V.
3. BOM control, if need 4G LTE device VCC voltage is +3.7V.

3-18 NGFF2: PCI Express M.2 B key 2242 / 2280 H=8.5 sockets 75pin

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	+3.3V
3	GND	4	+3.3V
5	GND	6	FULL_CARD_PWR
7	USB2.0_P	8	W_DISABLE_1
9	USB2.0_N	10	M2_LED
11	GND		
B Key notch			
		20	NC
21	GND	22	NC
23	NC	24	NC
25	NC	26	W_DISABLE_2
27	GND	28	NC
29	PERn1	30	NC
31	PERp1	32	NC
33	GND	34	NC
35	PETn1	36	NC
37	PETp1	38	NC
39	GND	40	NC
41	PERn0	42	NC
43	PERp0	44	NC
45	GND	46	NC
47	PETn0	48	NC
49	PETp0	50	PREST
51	GND	52	SRCCLKREQ_N
53	PCIE_CLK_N0	54	NC
55	PCIE_CLK_P0	56	NC
57	GND	58	NC
59	NC	60	NC
61	NC	62	NC
63	NC	64	NC
65	NC	66	SIM_DET
67	NC	68	NC
69	NC	70	+3.3V
71	GND	72	+3.3V
73	GND	74	+3.3V
75	GND		



Note: NGFF2 only support PCIe x2

3-19 HDMI1: HDMI type A 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	DDC DATA
17	GND	18	+5V
19	H.P. Detect		

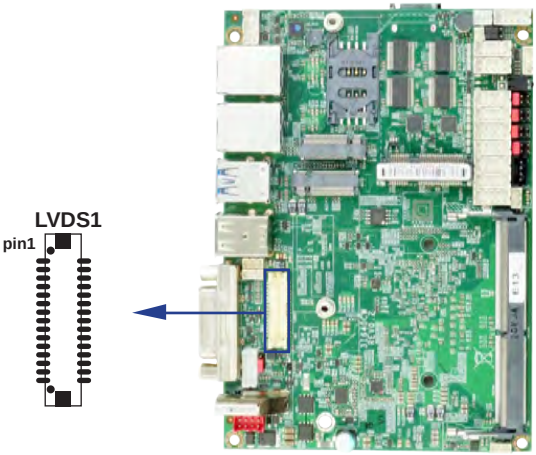
3-20 DVI1: DVI-D 12bit connector (DVI Connector)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	Data 2-	9	Data 1-	17	Data 0-
2	Data 2+	10	Data 1+	18	Data 0+
3	GND	11	GND	19	GND
4	NC	12	NC	20	NC
5	NC	13	NC	21	NC
6	I2C-CLK	14	+5V	22	GND
7	I2C-DATA	15	GND	23	CLK+
8	NC	16	DVI-DETECT	24	CLK-
C1	NC	C3	NC	C5	NC
C2	NC	C4	NC	C6	NC

3-21 LVDS1: LVDS interface 2x15 pin (1.25mm) wafer

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

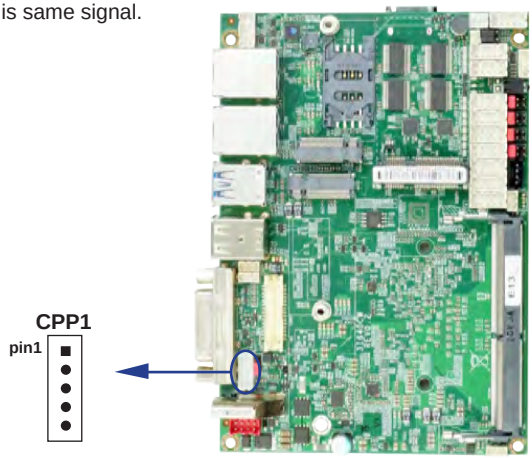
Note:
1. LVDS interface supports 18 / 24bits two channel.
2. JVL1: LVDS panel +5V / +3.3V (default) Voltage select.
3. LVDS1 PIN 1 for panel backlight dimming control.



3-22 CPP1: LVDS Panel backlight power 1x5 pin (2.0mm) wafer

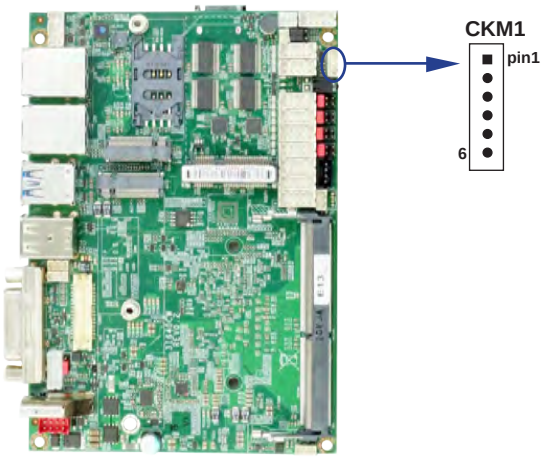
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	+12V	2	GND
3	PWM dimming	4	ENBKL (3.3V)
5	ENBKL (5V)		

Note: CPP1 PIN 3 and LVDS1 PIN1 is same signal.



3-23 CKM1: KB/MS port 1x6 pin (1.25mm) Wafer

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



3-24 Connector wafer of Compatible Brand and part number list

Location	CKTS	PITCH	Brand Name	Mating connector	Cable housing
CA1	2x5 10Pin	2.00mm	JST	B10B-PHDSS	PHDR-10VS
CALR1	1x4 4Pin	1.25mm	MOLEX	53047-0410	51021-0400
CC1	2x5 10Pin	2.00mm	JST	B10B-PHDSS	PHDR-10VS
CC2	2x5 10Pin	2.00mm	JST	B10B-PHDSS	PHDR-10VS
CFP1	2x5 10Pin	2.00mm	JST	B10B-PHDSS	PHDR-10VS
CIO1	2x5 10Pin	2.00mm	JST	B10B-PHDSS	PHDR-10VS
CKM1	1x6 6Pin	1.25mm	MOLEX	53047-0610	51021-0600
CO1	1x4 4Pin	1.25mm	MOLEX	53047-0410	51021-0400
CI2C1	1x4 4Pin	1.25mm	MOLEX	53047-0410	51021-0400
CPI1	2x4 8Pin	2.00mm	JST	B8B-PHDSS	PHDR-08VS
CPO1	1x4 4Pin	2.00mm	JST	B4B-PH-KL	PHR-4
CU8	1x4 4Pin	1.25mm	MOLEX	53047-0410	51021-0400
CU9	1x4 4Pin	1.25mm	MOLEX	53047-0410	51021-0400
CU10	1x4 4Pin	1.25mm	MOLEX	53047-0410	51021-0400
SWP1	1x2 2Pin	2.00mm	JST	B2B-PH-KL	PHR-2

Chapter-4

Introduction of BIOS

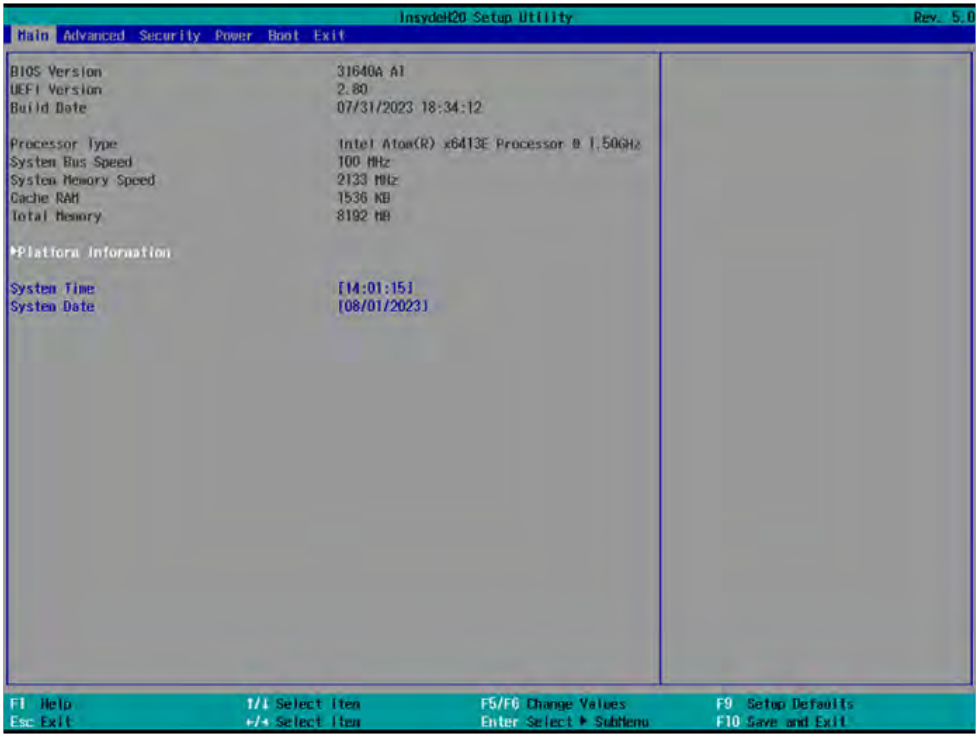
The BIOS is a program located in the Flash Memory on the motherboard.
This program is a bridge between motherboard and operating system.
When you start the computer, the BIOS program gains control.
The BIOS first operates an auto-diagnostic test called POST (Power on Self Test) for all the necessary 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.

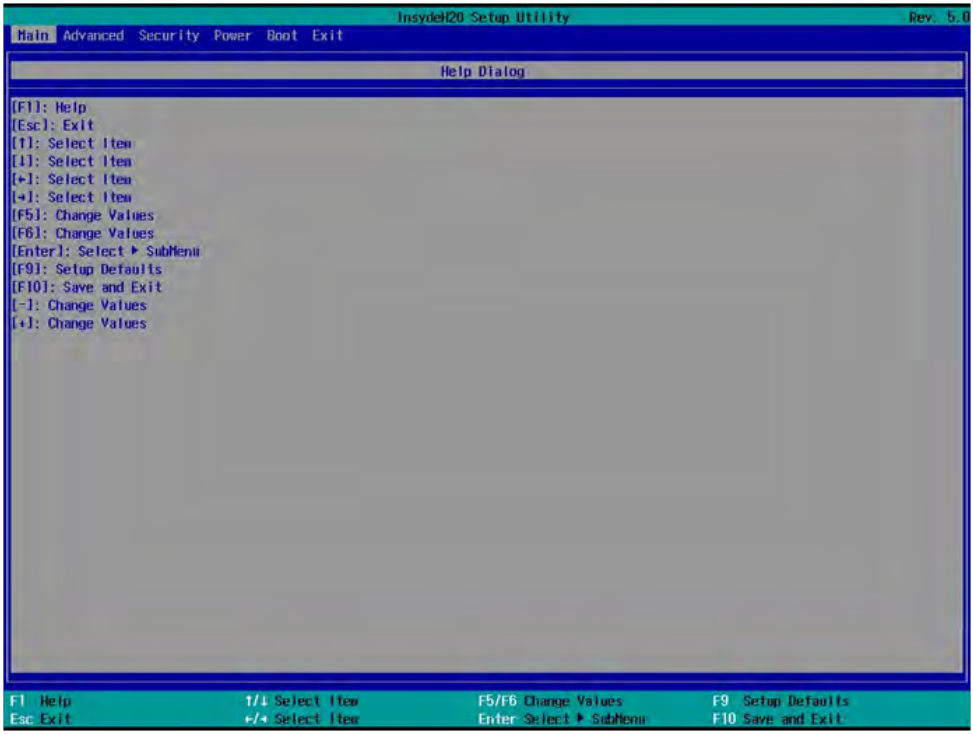
4-2 BIOS Menu Screen & Function Keys



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



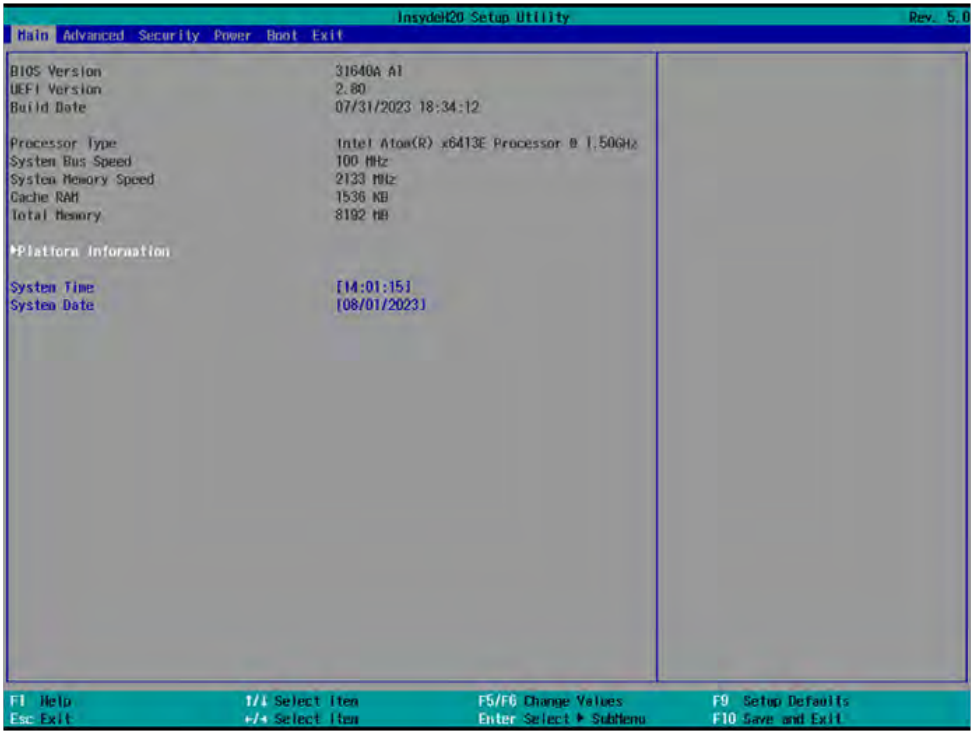
Status Page Setup Menu / Option Page Setup Menu

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

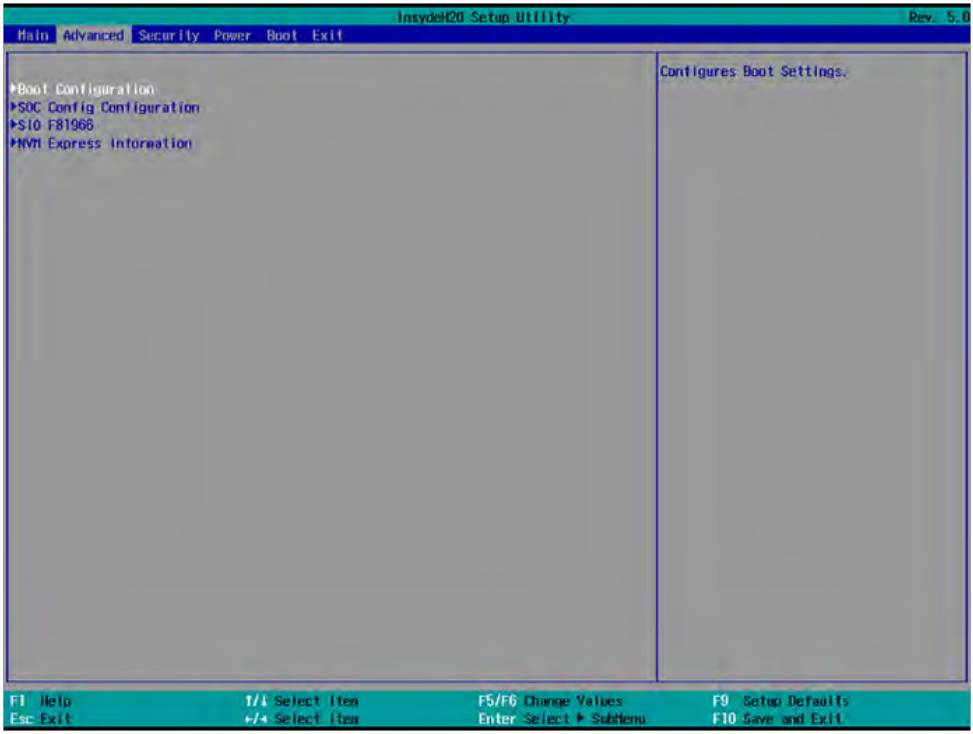


Main menu screen includes some basic system information. Highlight the item and then use the <+> or <-> and numerical keyboard keys to select the value you want in each item.

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

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

4-6 Advanced



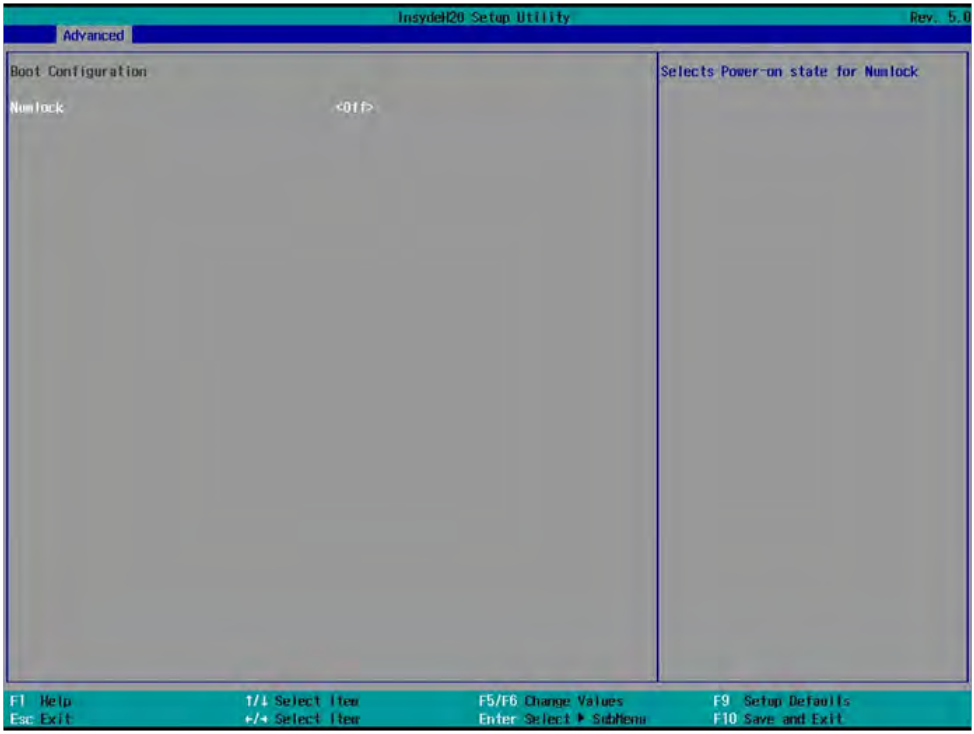
Boot Configuration
Please refer section 4-6-1

SOC Config Configuration
Please refer section 4-6-2

SIO F81966
Please refer section 4-6-3

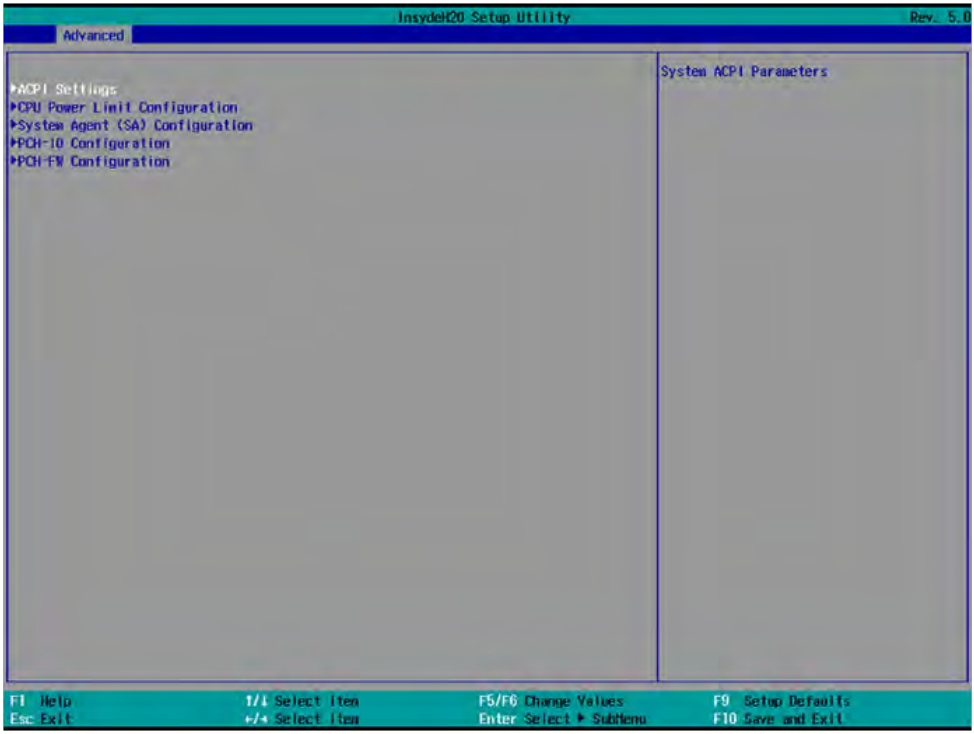
NVM Express information
Please refer section 4-6-4

4-6-1 Boot Configuration



To select Power-on state for NumLock, default is <off>

4-6-2 SOC Config Configuration



ACPI Settings
Please refer section 4-6-2-1

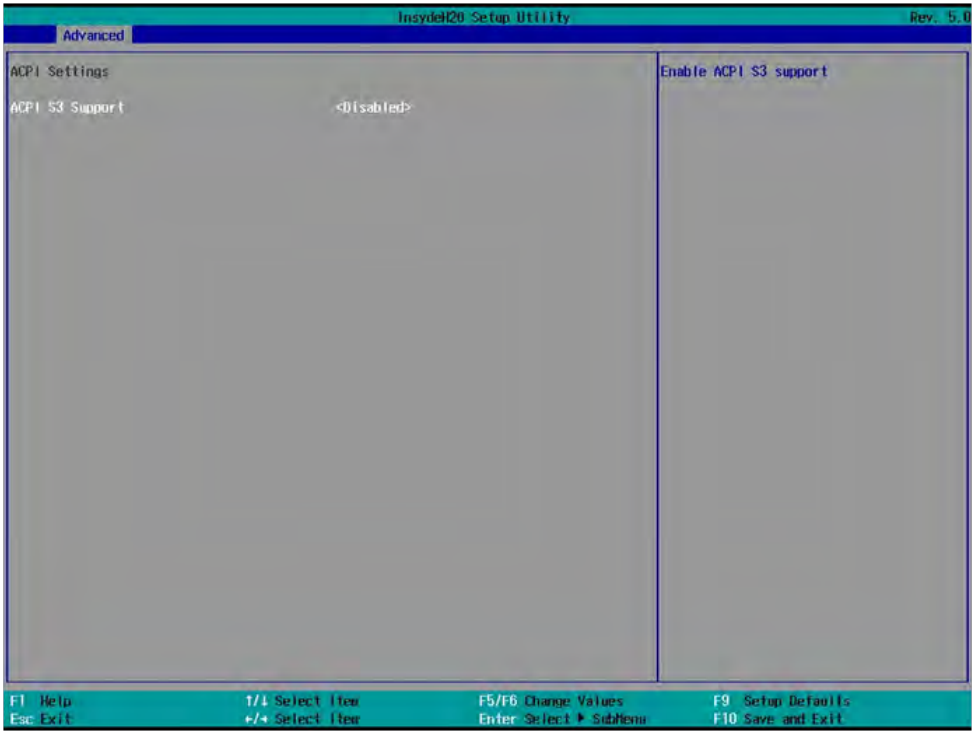
CPU Power Limit Configuration
Please refer section 4-6-2-2

System Agent (SA) Configuration
Please refer section 4-6-2-3

PCH-IO Configuration
Please refer section 4-6-2-4

PCH-FW Configuration
Please refer section 4-6-2-5

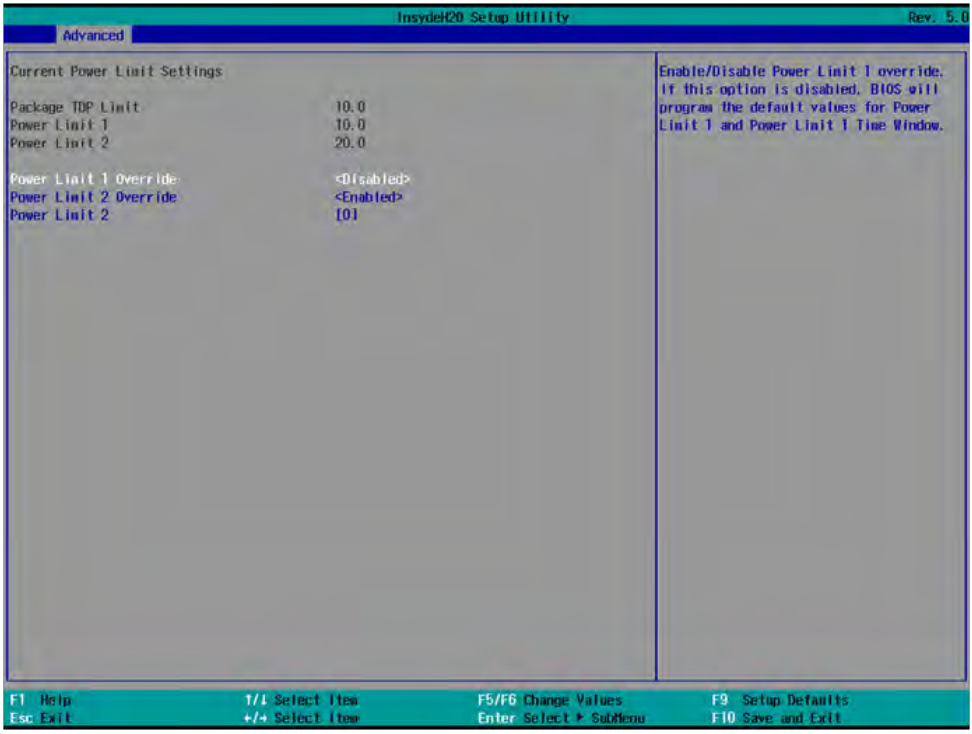
4-6-2-1 ► ACPI Settings



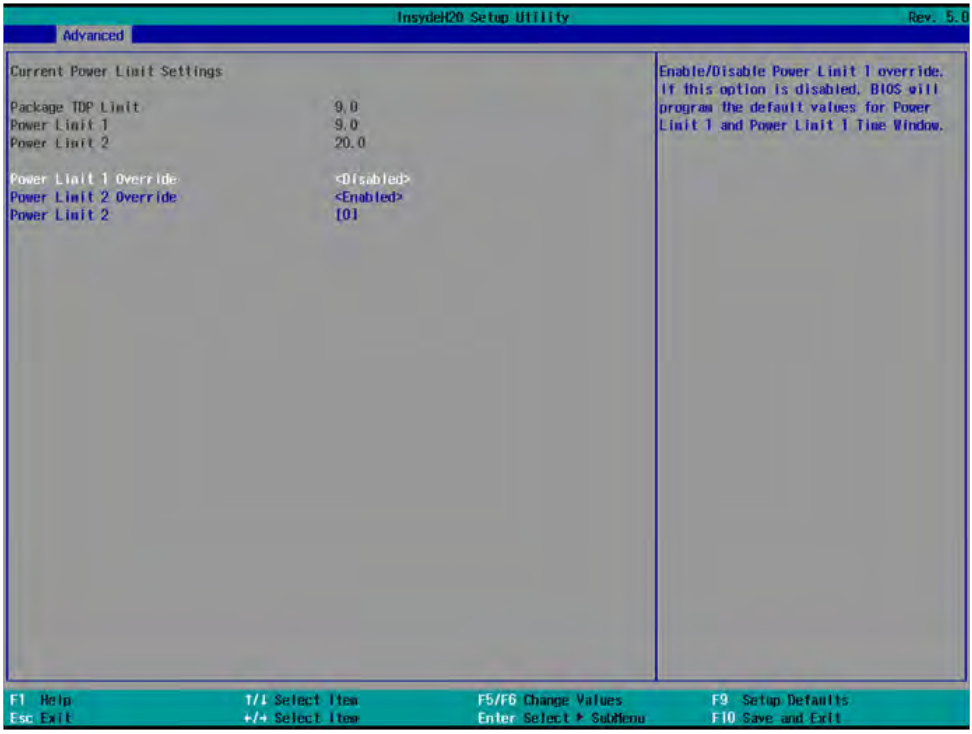
ACPI S3 Support

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

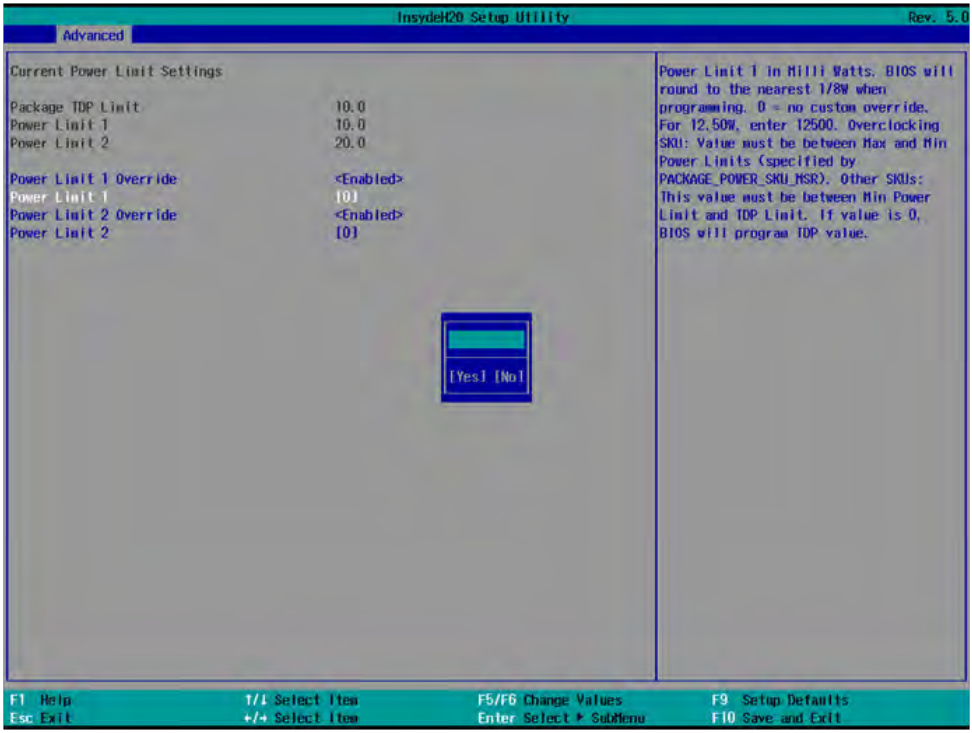
4-6-2-2 ► CPU Power Limit Configuration



The setting follows INTEL Celeron J6412 CPU power limit default configuration.



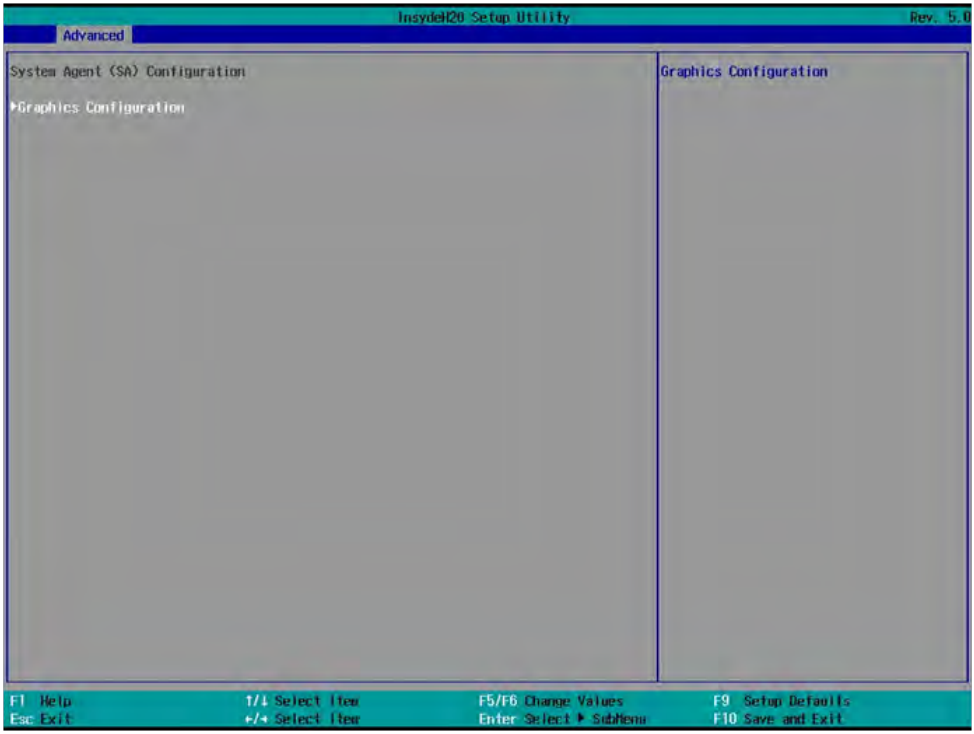
The setting follows INTEL Atom x6413E power limit default configuration.

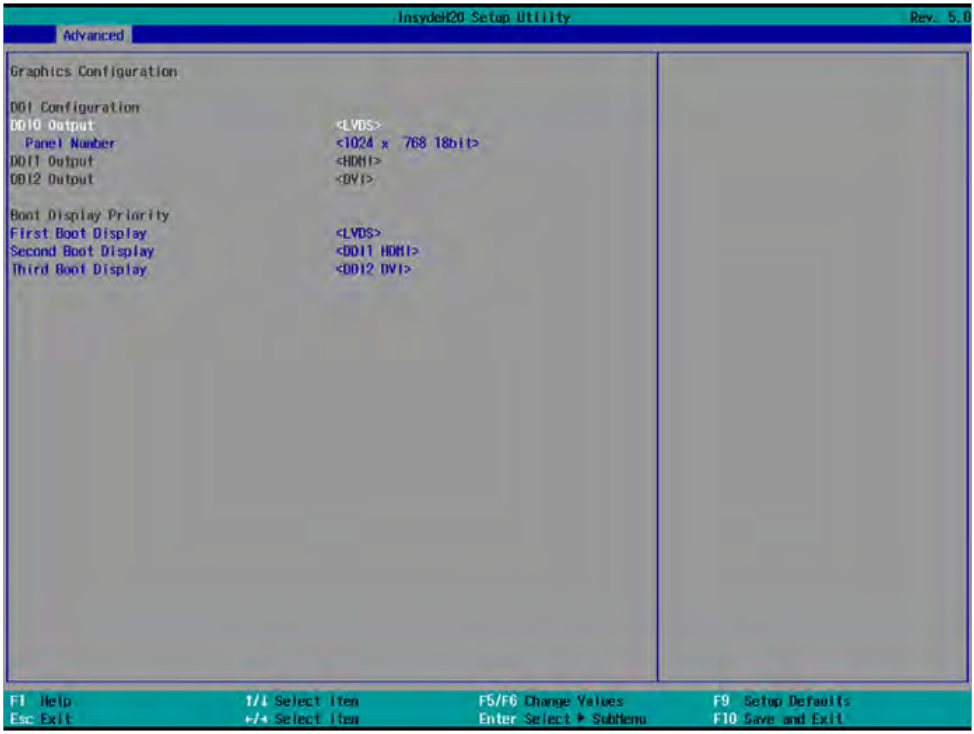


Power Limit Override

Eenable / disable PL1 / PL2 and enter the power numerical value from 0 to 20000 to get higher or lower CPU TDP

4-6-2-3 ► System Agent (SA) Configuration





Graphic Configuration

To select First Boot Display priority, there are LVDS, DDI1 HDMI, DDI2 DVI, default is LVDS

First Boot Display

To select First Boot Display priority, there are LVDS, DDI1 HDMI, DDI2 DVI, default is LVDS

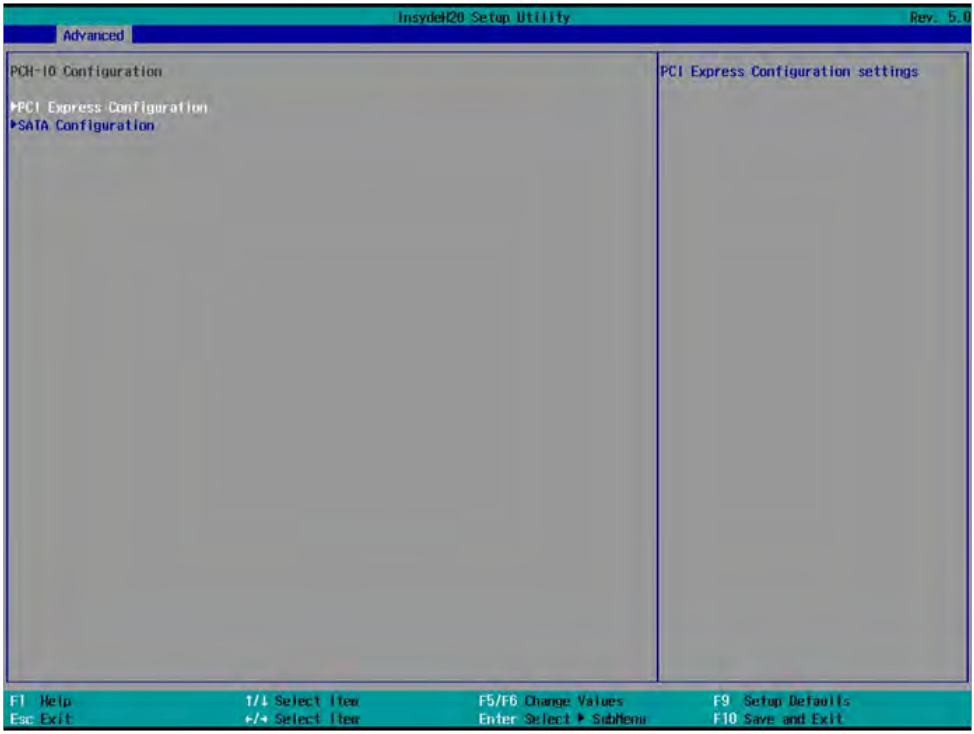
Second Boot Display

To select Second Boot Display priority, there are DDI1 HDMI, DDI2 DVI, default is DDI1 HDMI

Third Boot Display

To select Third Boot Display priority, there is DDI2 DVI

4-6-2-4 ► PCH-IO Configuration



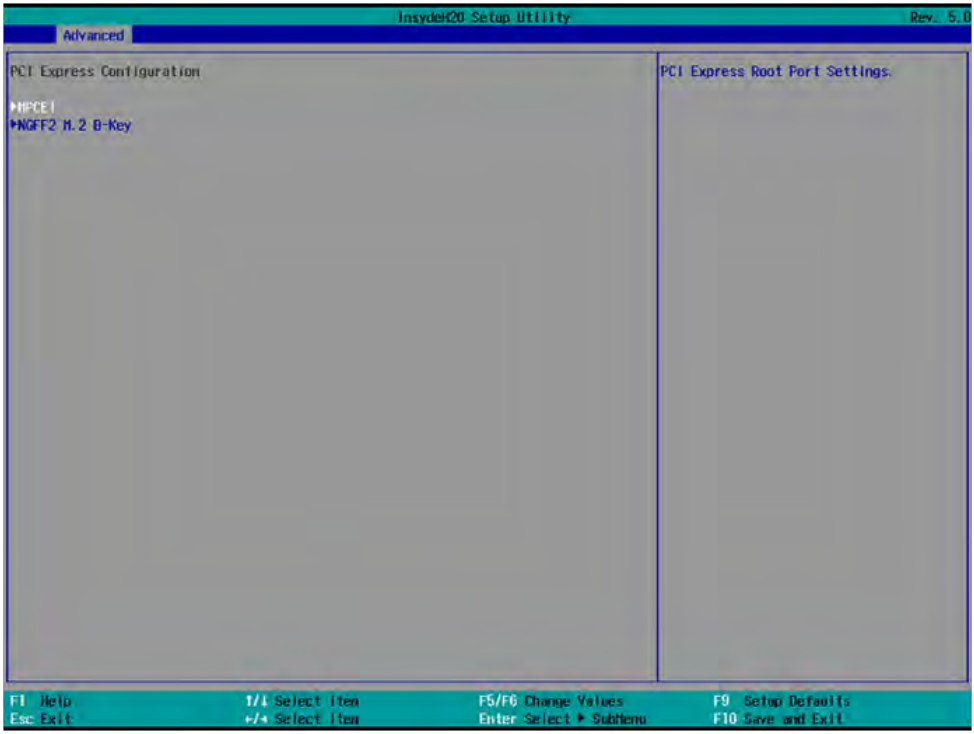
PCI Express Configuration

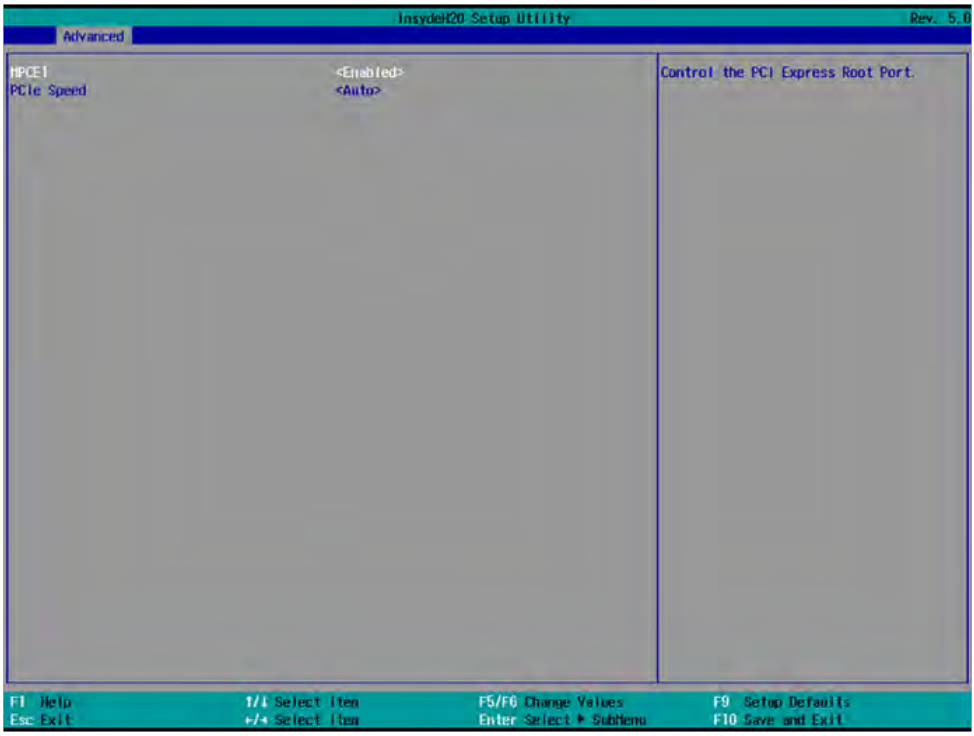
Please refer section 4-6-2-4-1

SATA Configuration

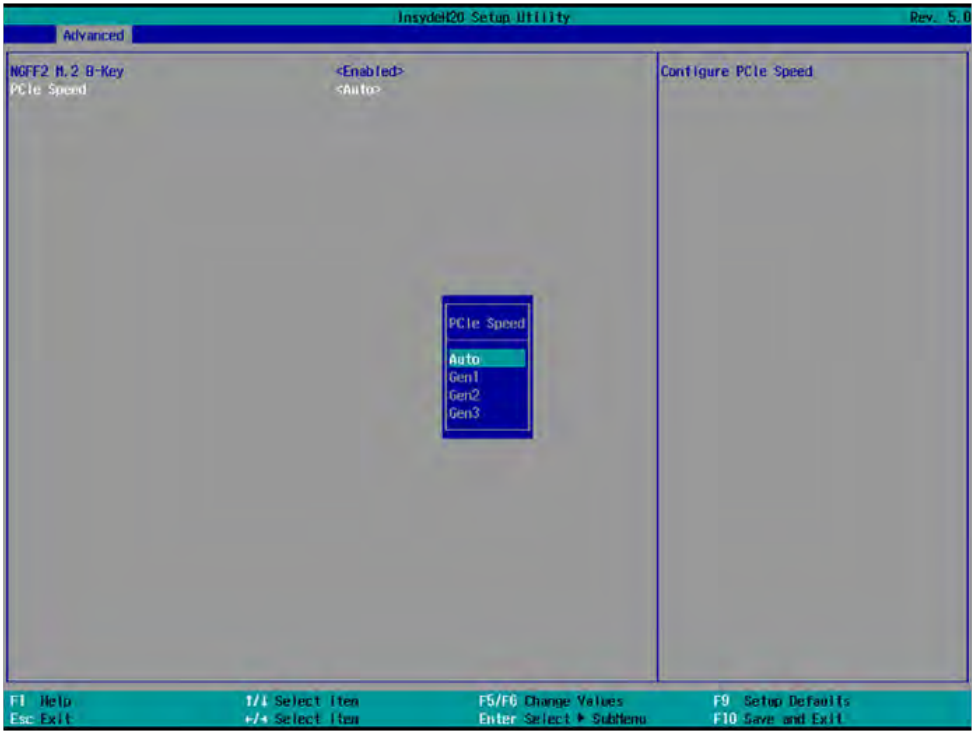
Please refer section 4-6-2-4-2

4-6-2-4-1 ► PCI Express Configuration



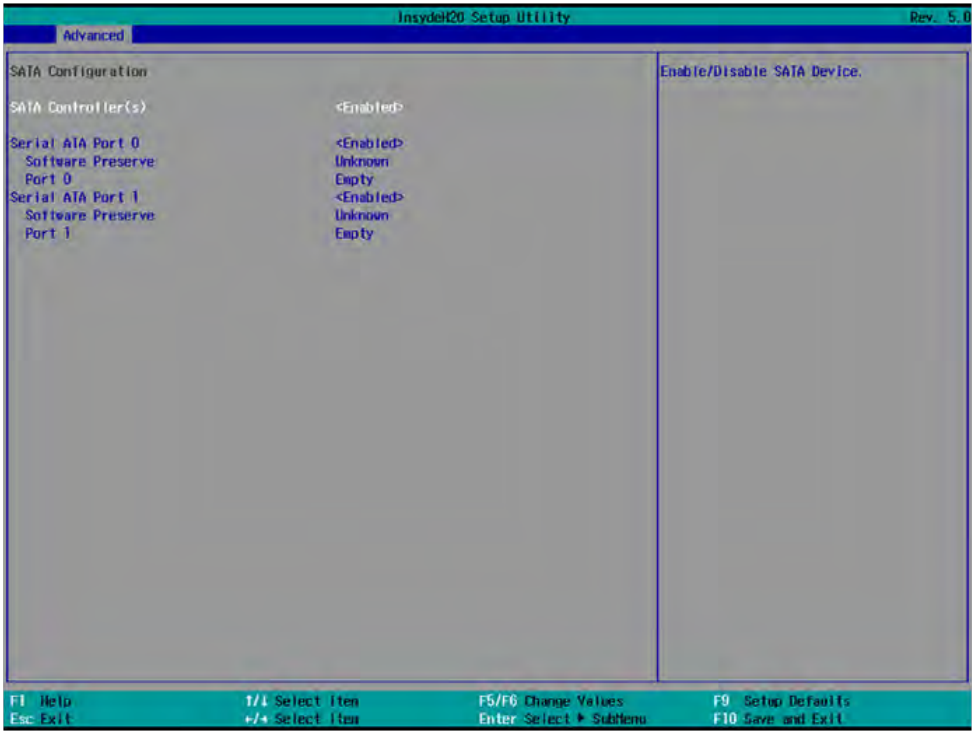


To select MPCE1 device enabled or not and to change the PCIe Speed, there are Auto, Gen1, Gen2, Gen3, default is Auto



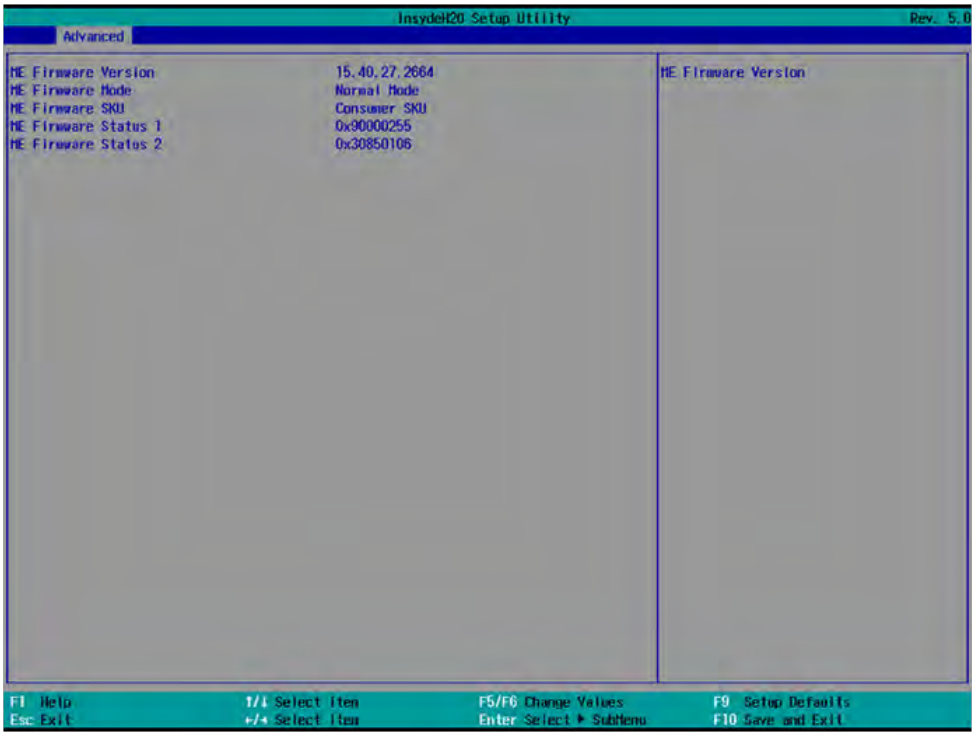
To select NGFF2 device enabled or not and to change the PCIe Speed, there are Auto, Gen1, Gen2, Gen3, default is Auto

4-6-2-4-2 ► SATA Configuration

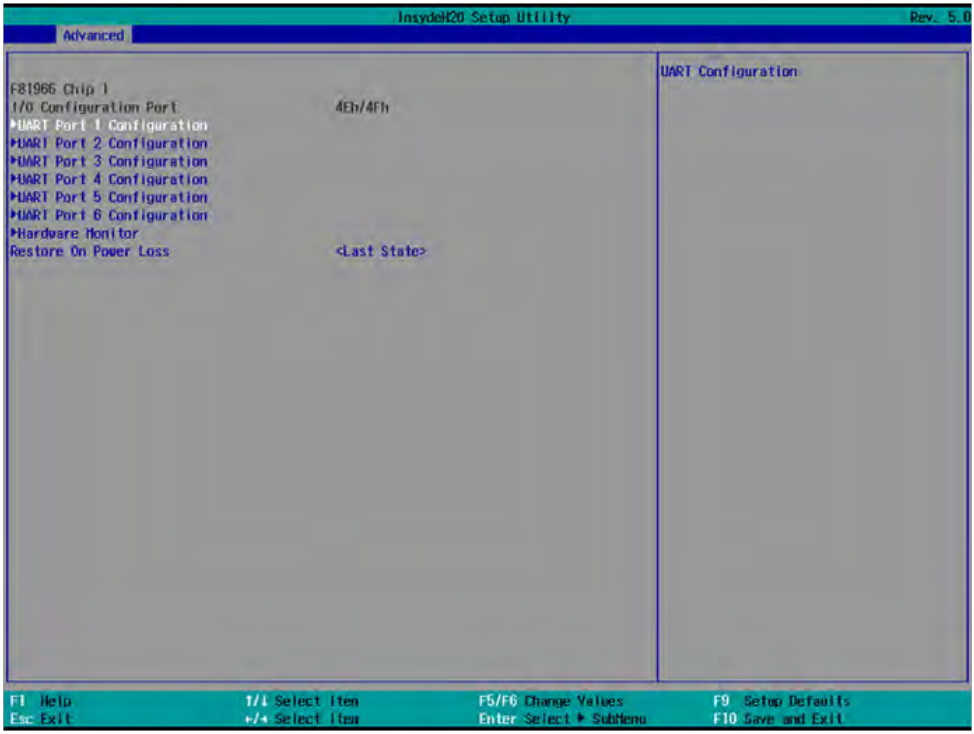


To select SATA port & NGFF2 M.2 SATA device enabled or not.

4-6-2-5 ► PCH-FW Configuration



4-6-3 SIO F81966



UART Port 1 Configuration
Please refer section 4-6-3-1

UART Port 2 Configuration
Please refer section 4-6-3-2

UART Port 3 Configuration
Please refer section 4-6-3-3

UART Port 4 Configuration
Please refer section 4-6-3-4

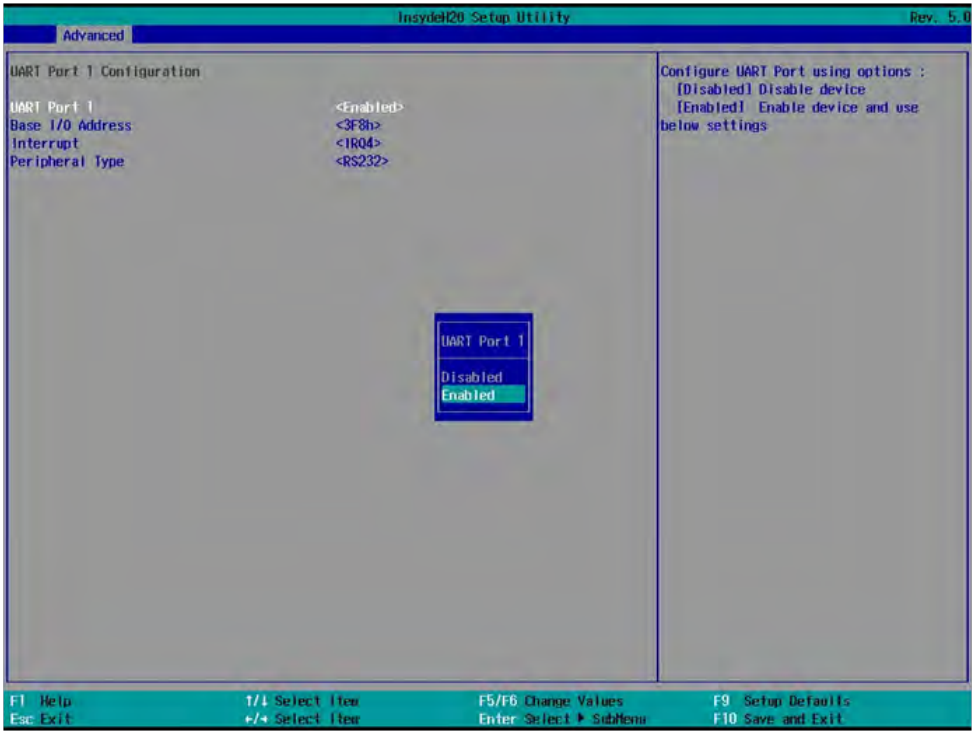
UART Port 5 Configuration
Please refer section 4-6-3-5

UART Port 6 Configuration
Please refer section 4-6-3-6

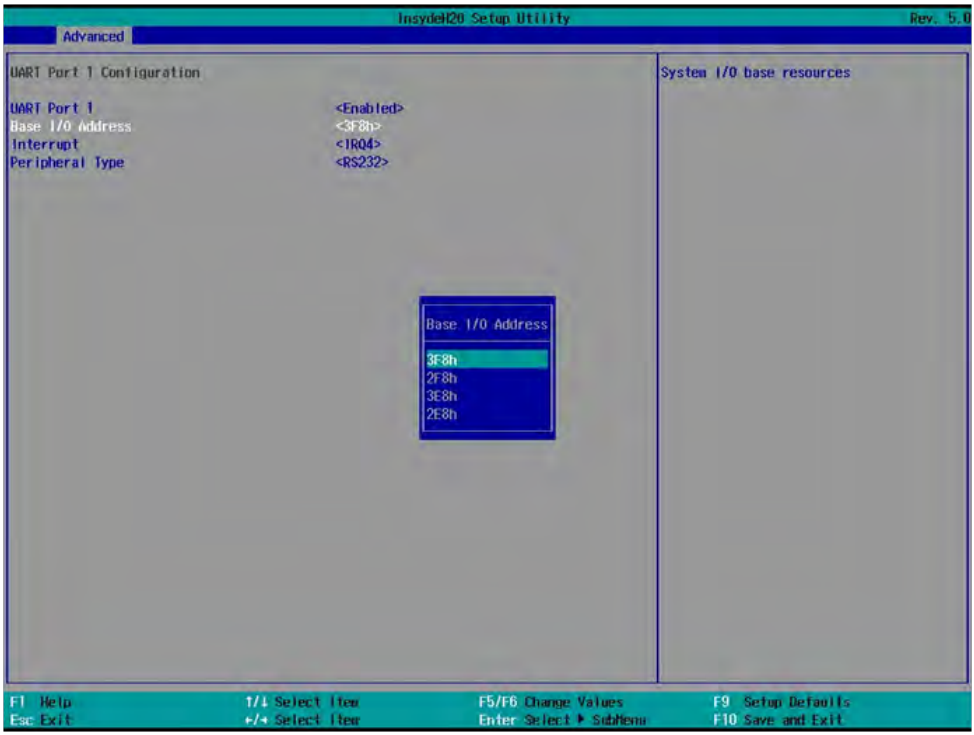
Hardware Monitor
Please refer section 4-6-3-7

Restore on Power Loss
Please refer section 4-6-3-8

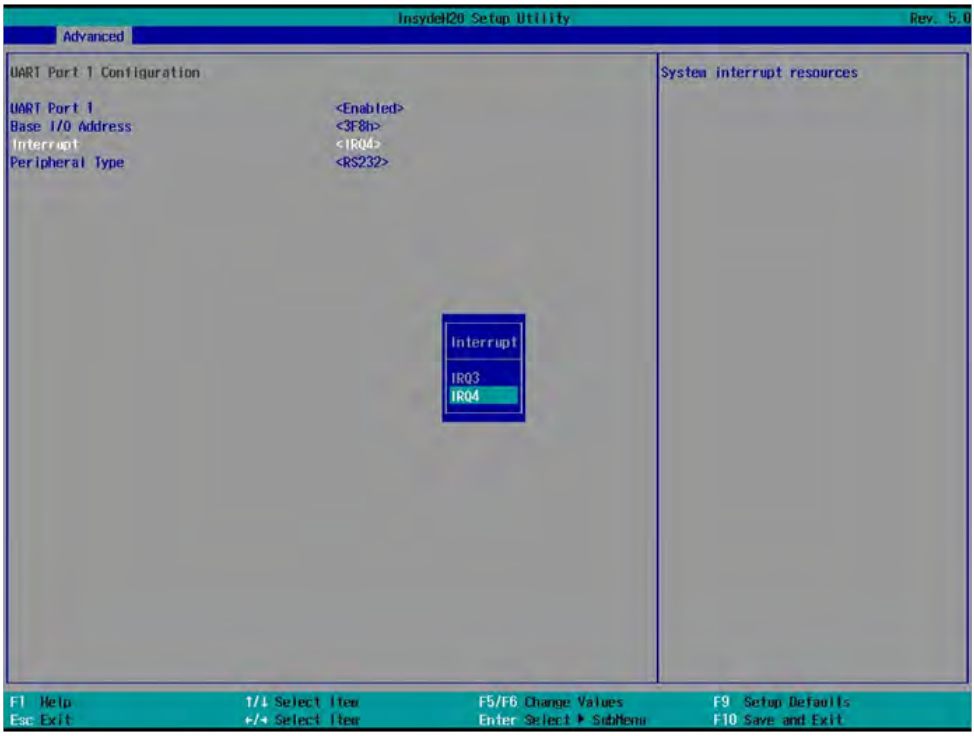
4-6-3-1 ► UART Port 1 Configuration



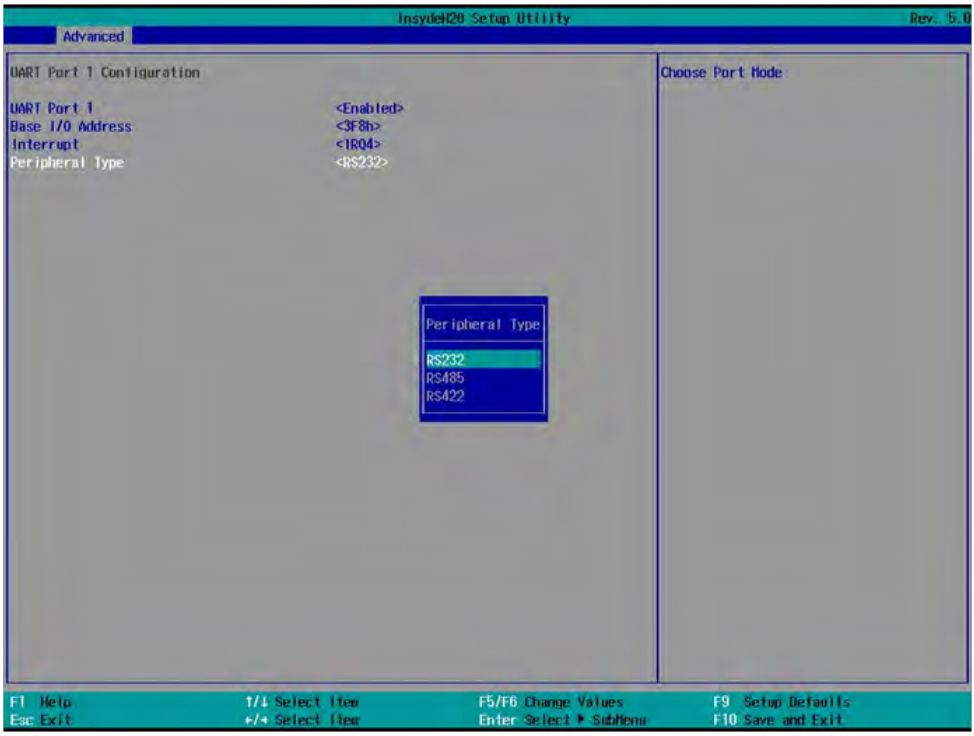
To Enable Serial port or not, default is Enabled.



Base I/O Address, default is 3F8h.

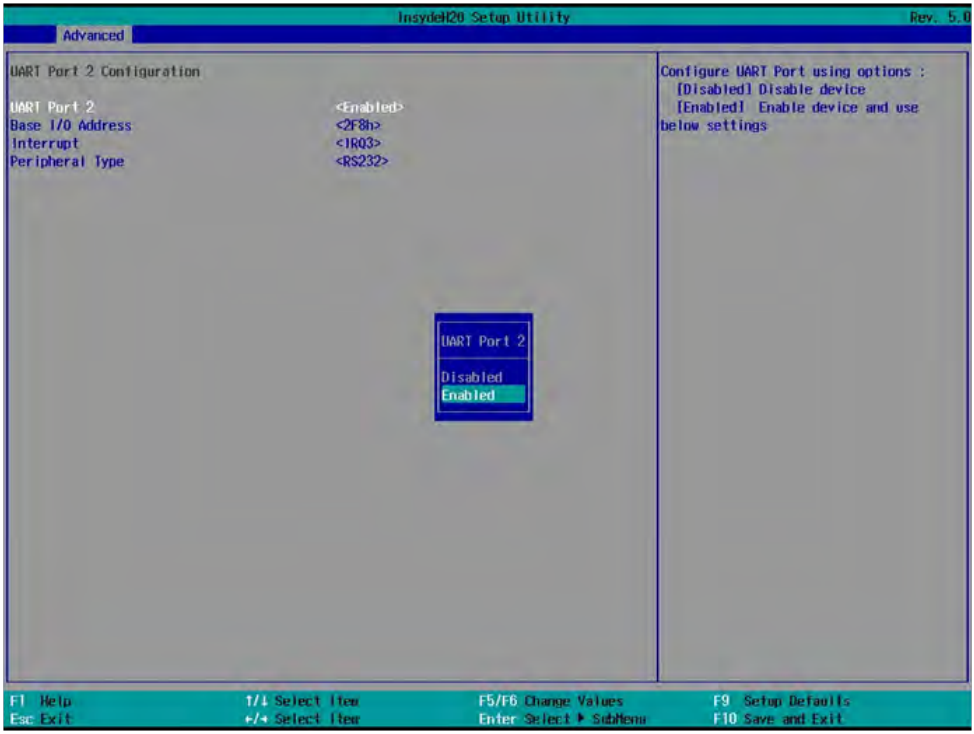


Interrupt, default is IRQ4.

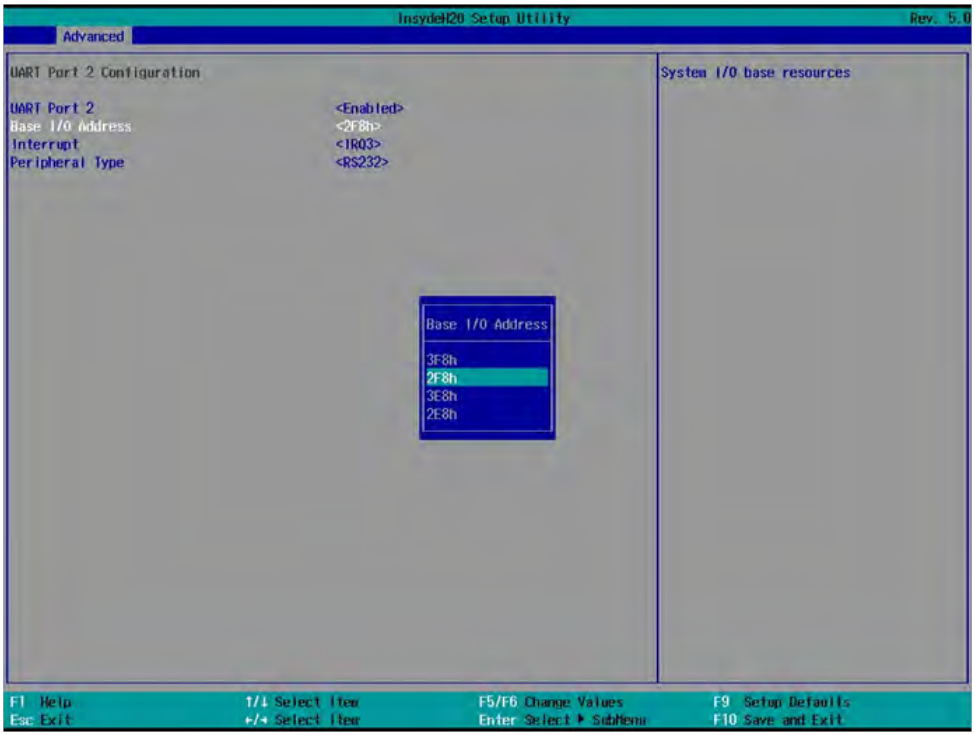


Peripheral, to select the Serial port to RS232 / RS422 / RS485, default is RS232.

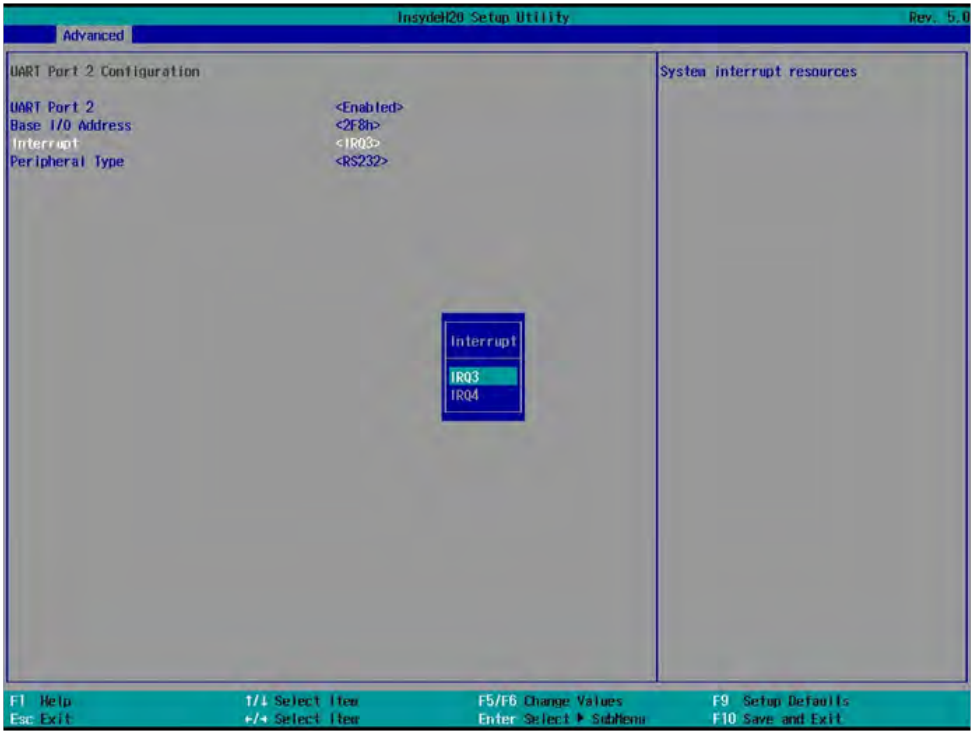
4-6-3-2 ► UART Port 2 Configuration



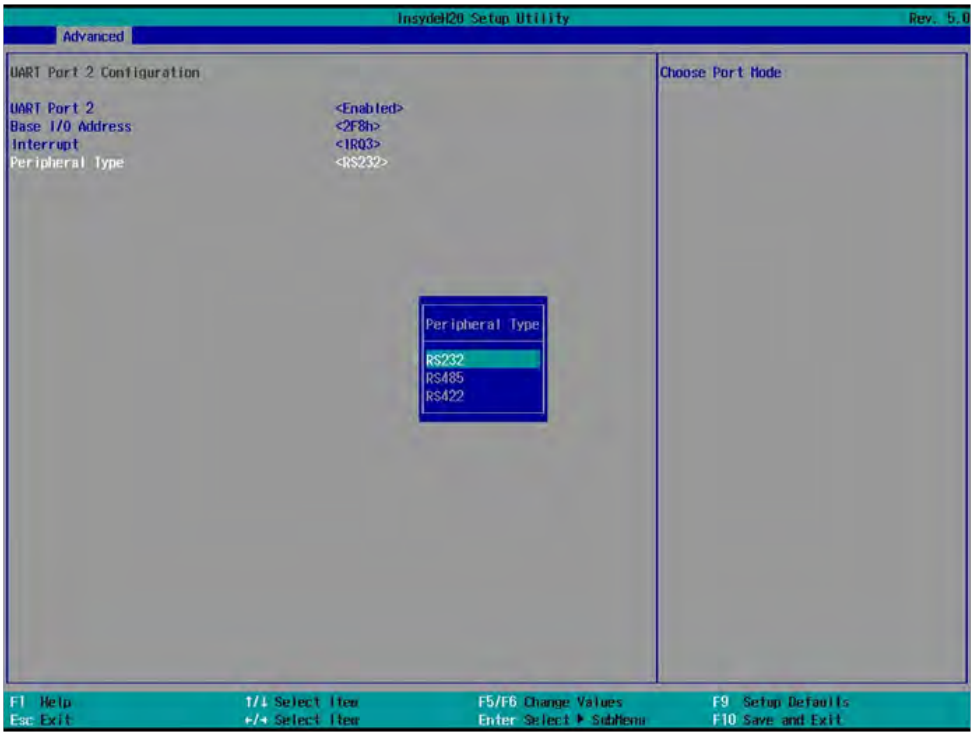
To Enable Serial port or not, default is Enabled.



Base I/O Address, default is 2F8h.

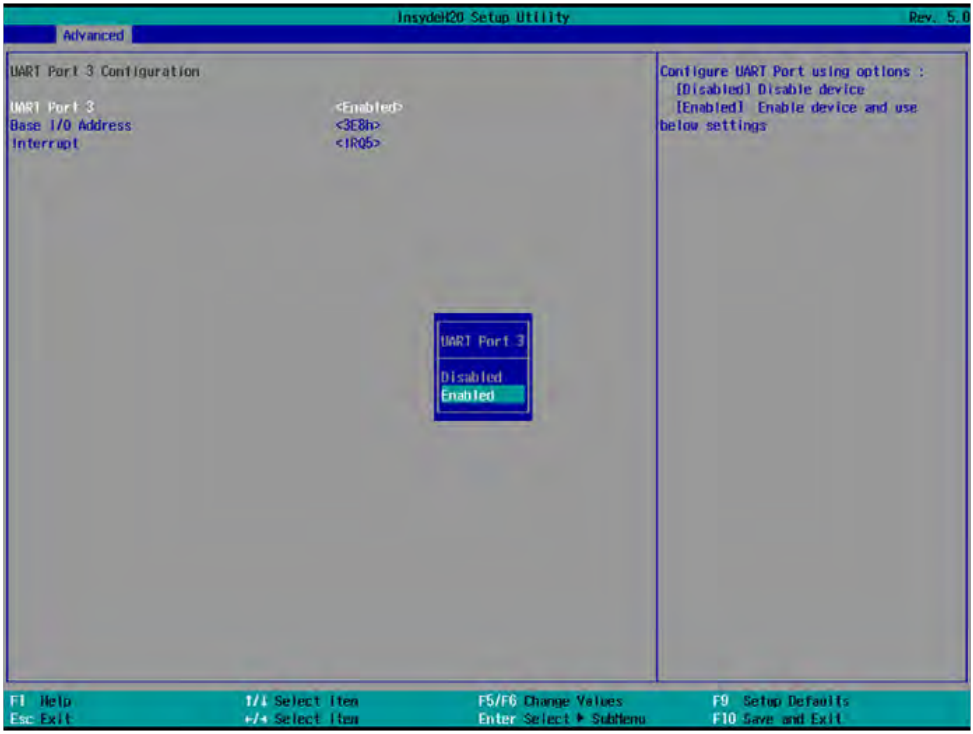


Interrupt, default is IRQ3.

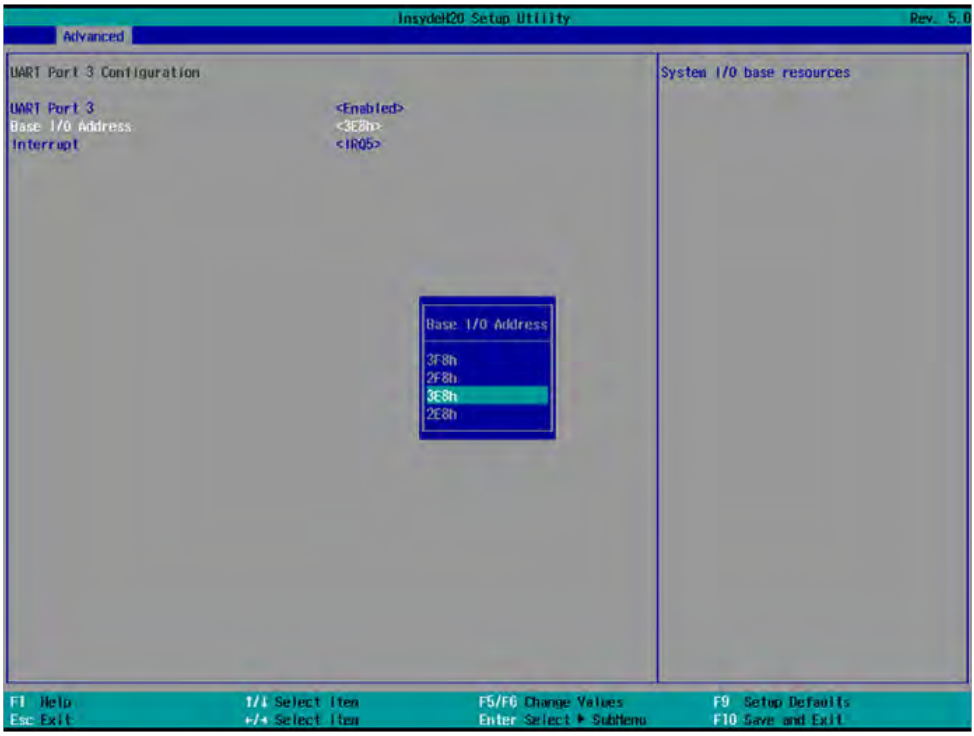


Peripheral, to select the Serial port to RS232 / RS422 / RS485, default is RS232.

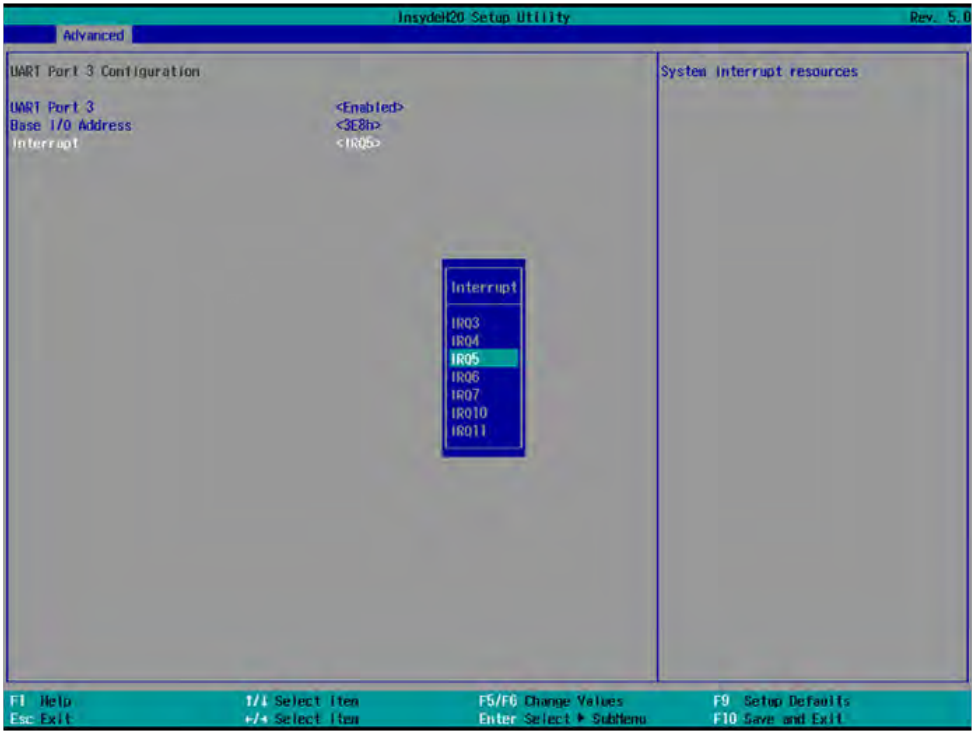
4-6-3-3 ► UART Port 3 Configuration



To Enable Serial port or not, default is Enabled

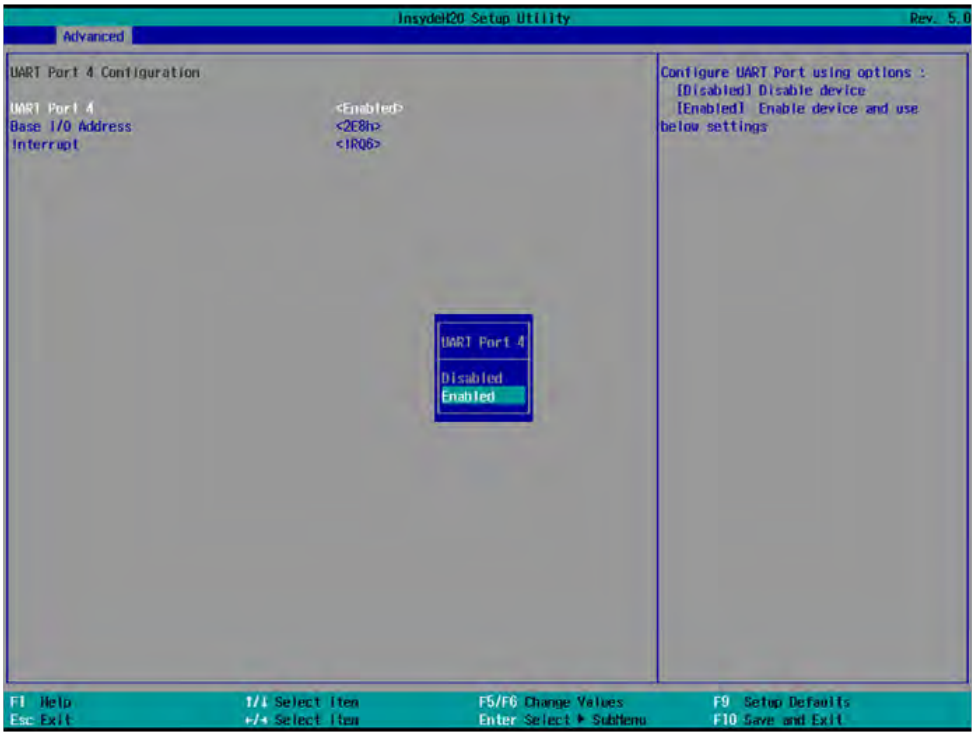


Base I/O Address, default is 3E8h.

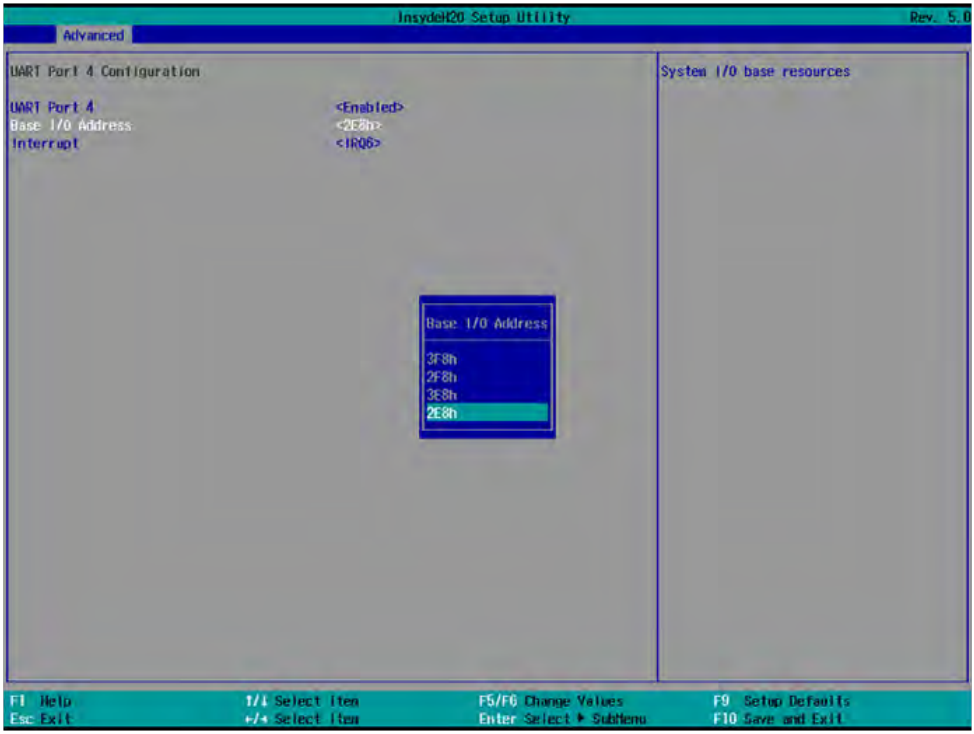


Interrupt, default is IRQ5

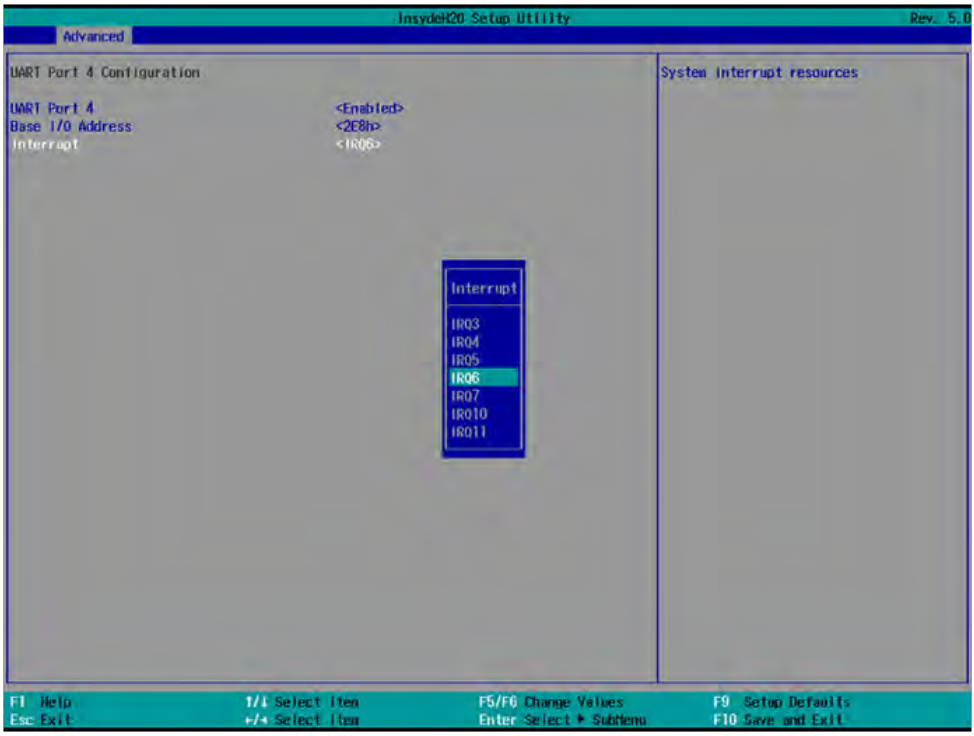
4-6-3-4 ► UART Port 4 Configuration



To Enable Serial port or not, default is Enabled.

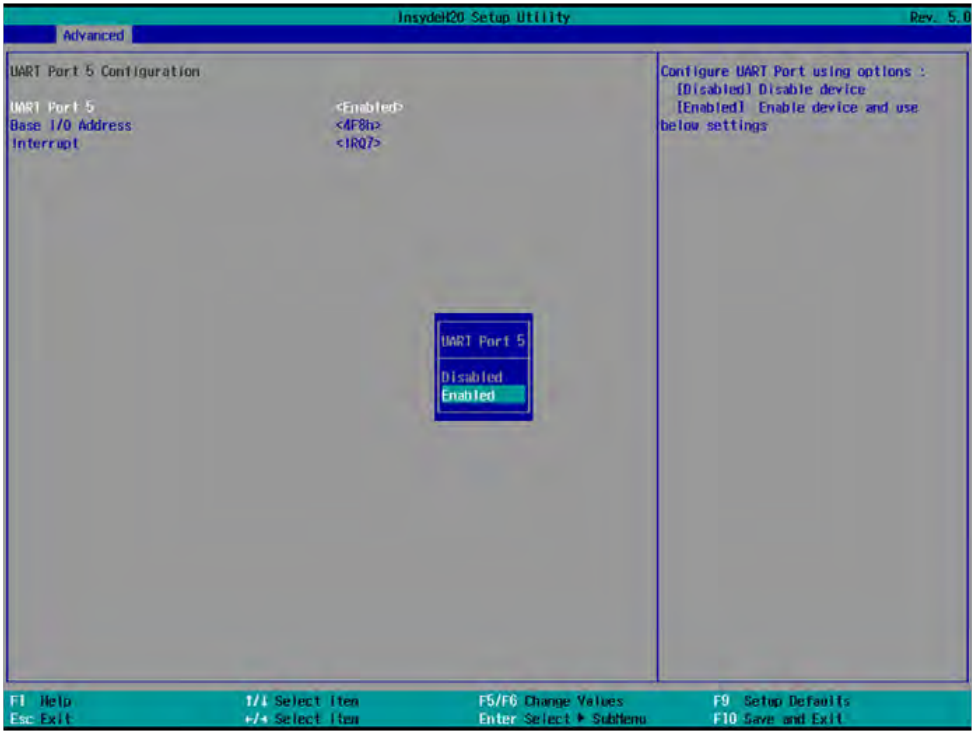


Base I/O Address, default is 2E8h.

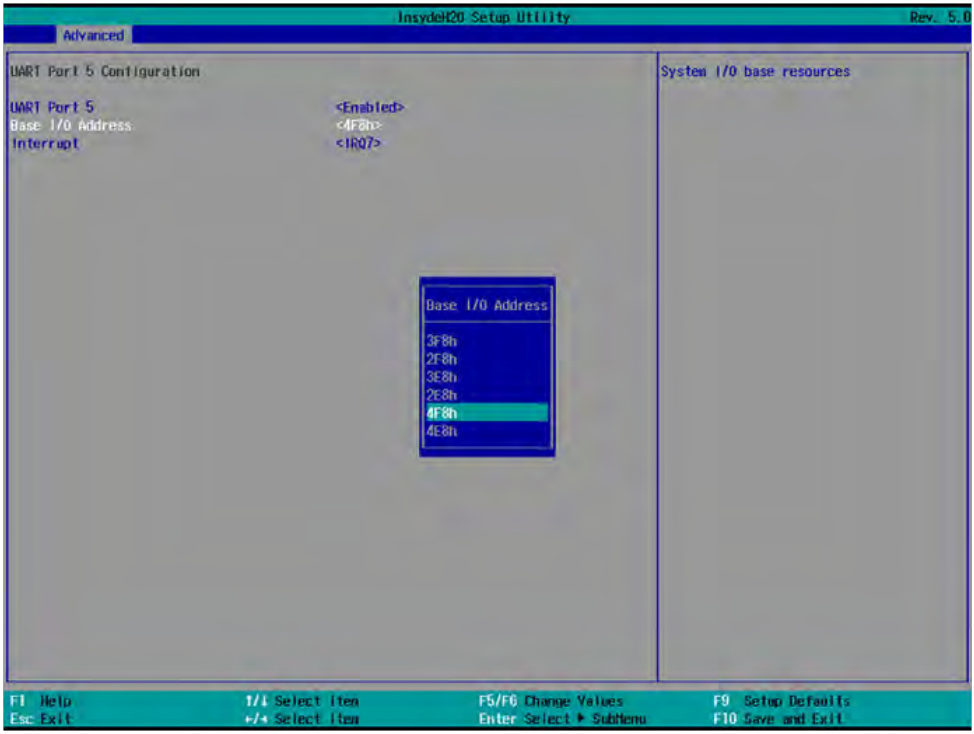


Interrupt, default is IRQ6.

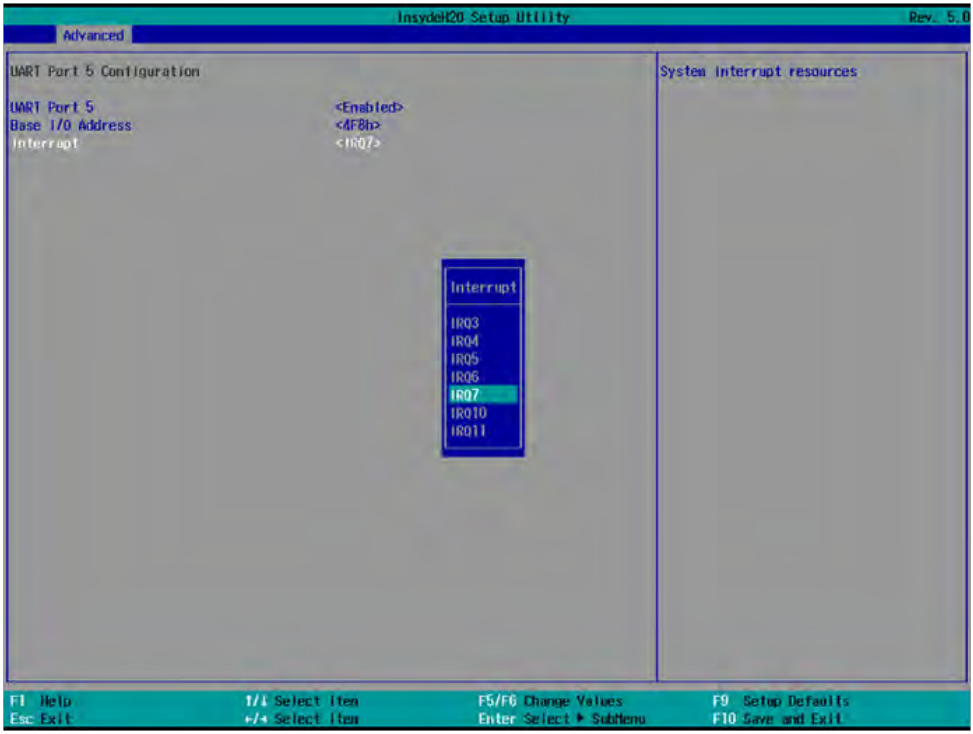
4-6-3-5 ► UART Port 5 Configuration



To Enable Serial port or not, default is Enabled.

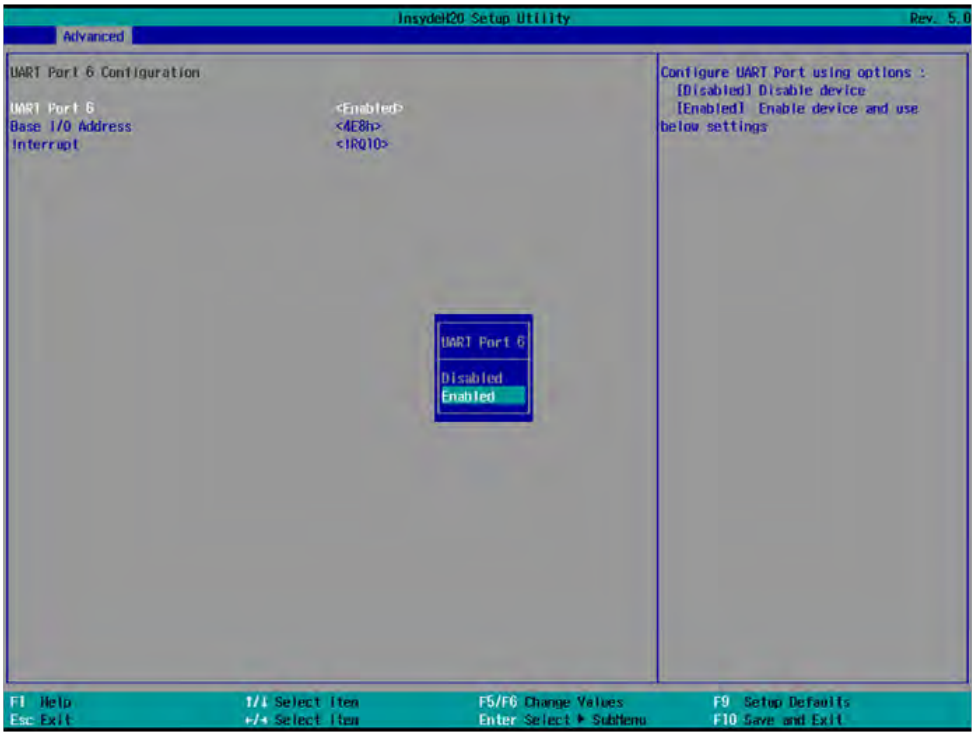


Base I/O Address, default is 4F8h.

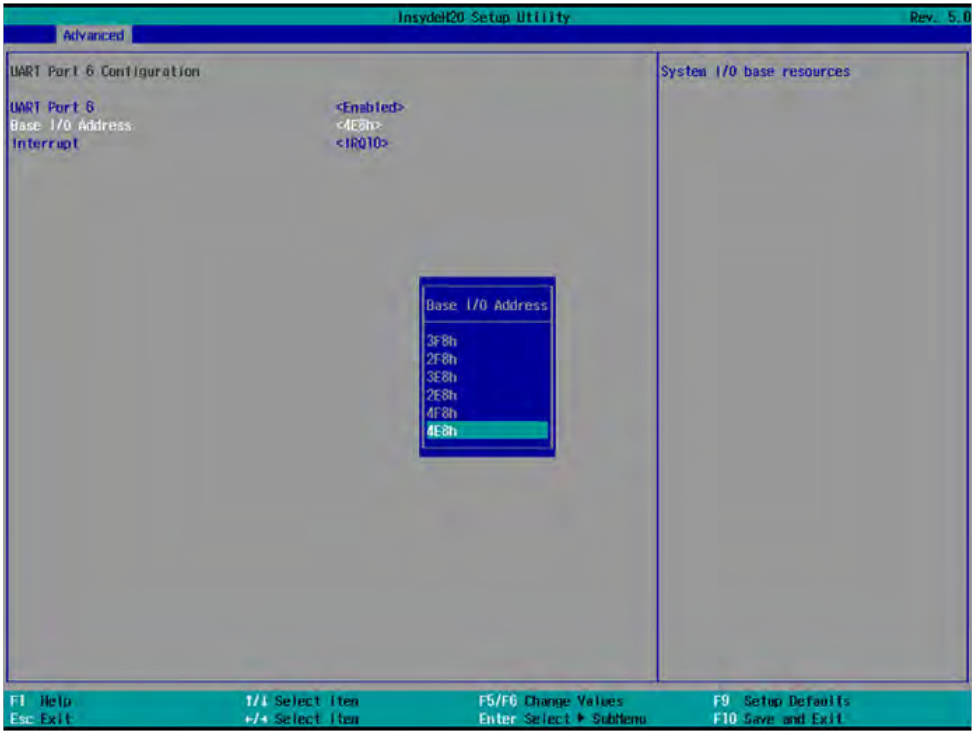


Interrupt, default is IRQ7.

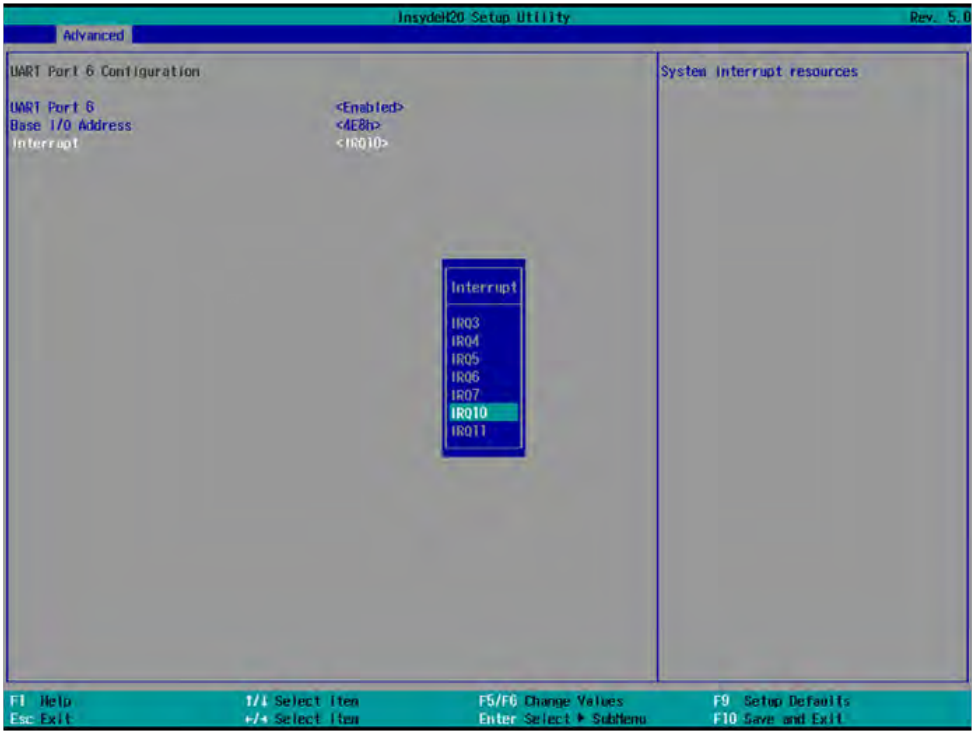
4-6-3-6 ► UART Port 6 Configuration



To Enable Serial port or not, default is Enabled.



Base I/O Address, default is 4E8h.

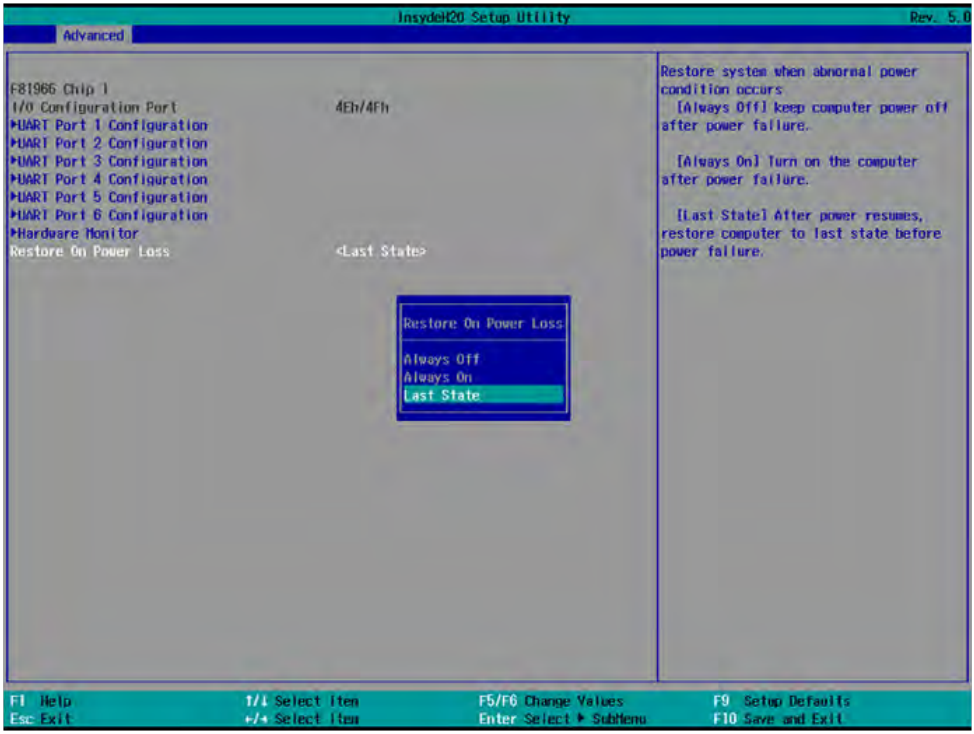


Interrupt, default is IRQ10.

4-6-3-7 ► Hardware Monitor

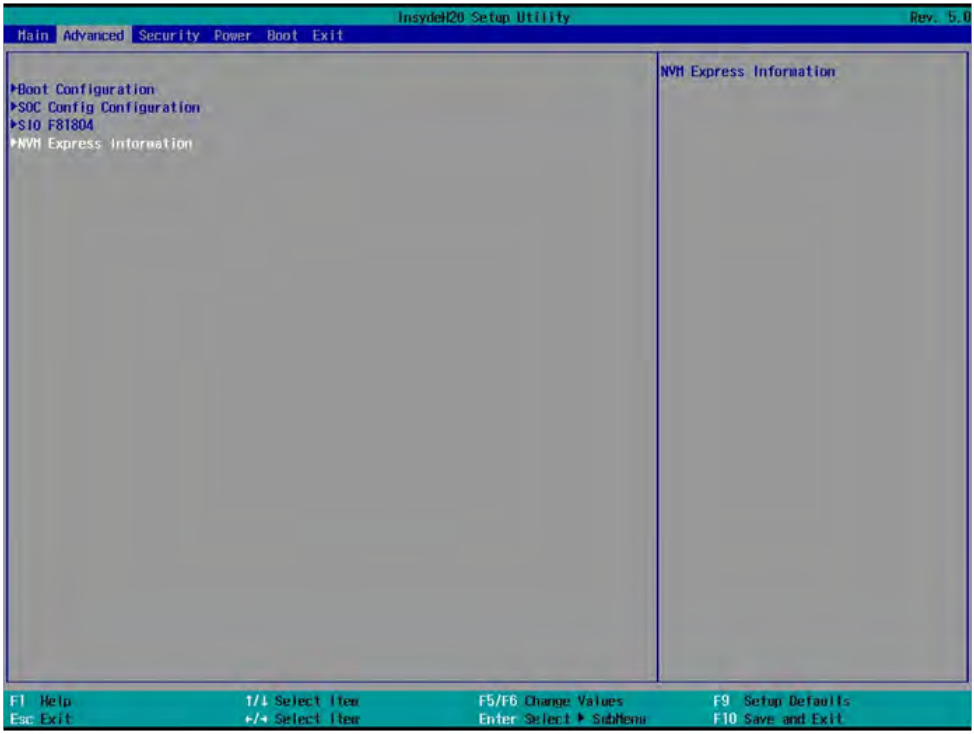
Press [Enter] to view PC health status.
This section shows the status of your CPU, Fan, and overall system.
This is only available when there is Hardware Monitor function onboard.

4-6-3-8 Restore On Power Loss



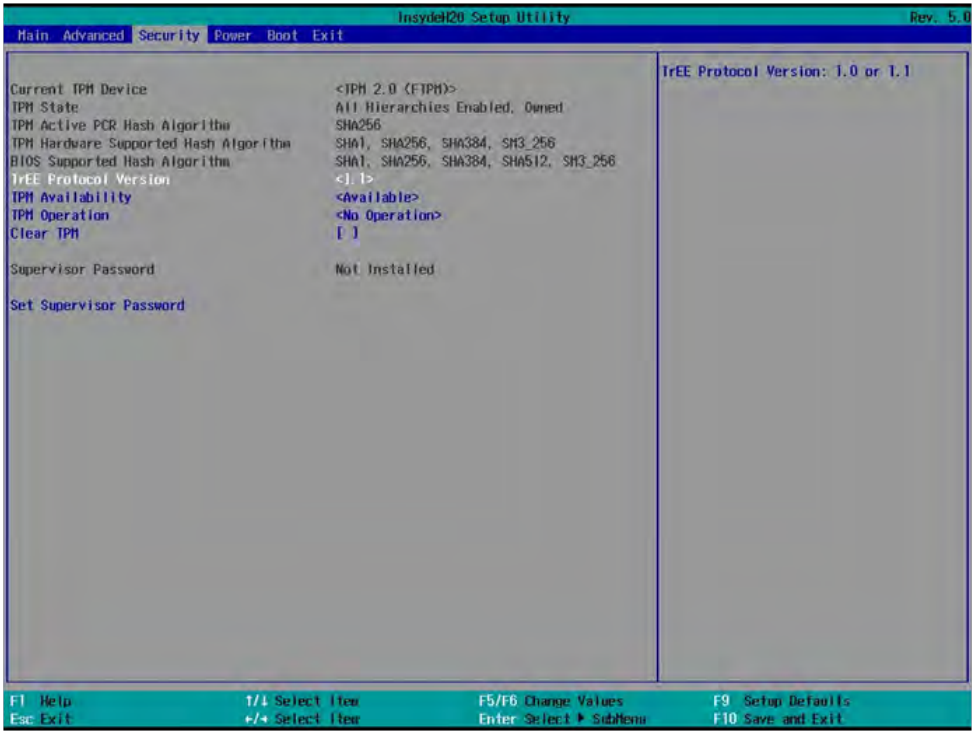
To select the power behavior after power fail, default is last state.

4-6-4 NVM Express Information



Press [Enter] to view the NVMe storage devices information.

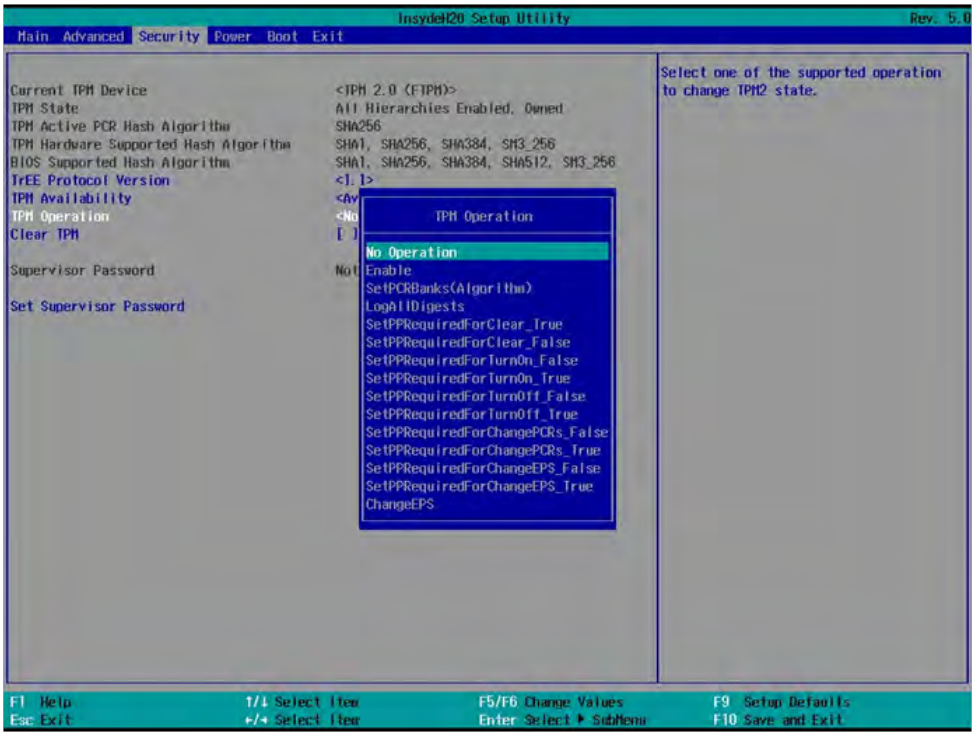
4-7 Security



TrEE Protocol Version
There are 1.0 and 1.1 versions.

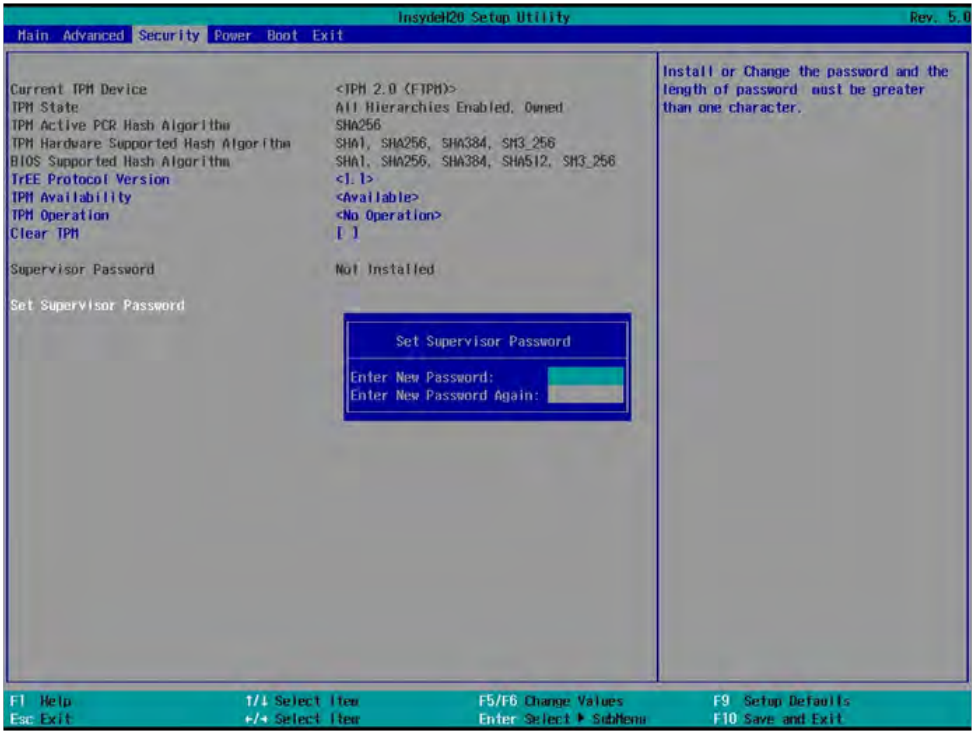
TPM Availability
To select TPM available or hidden

TPM Operation



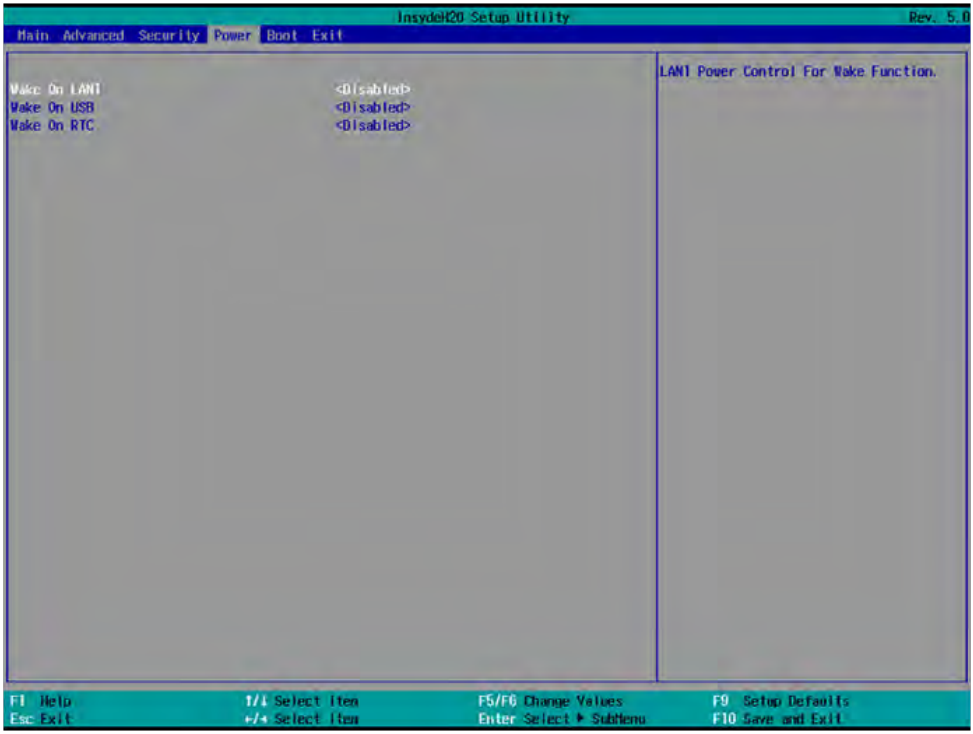
To select TPM operations

Set Supervisor Password



To set up an Supervisor password

4-8 Power

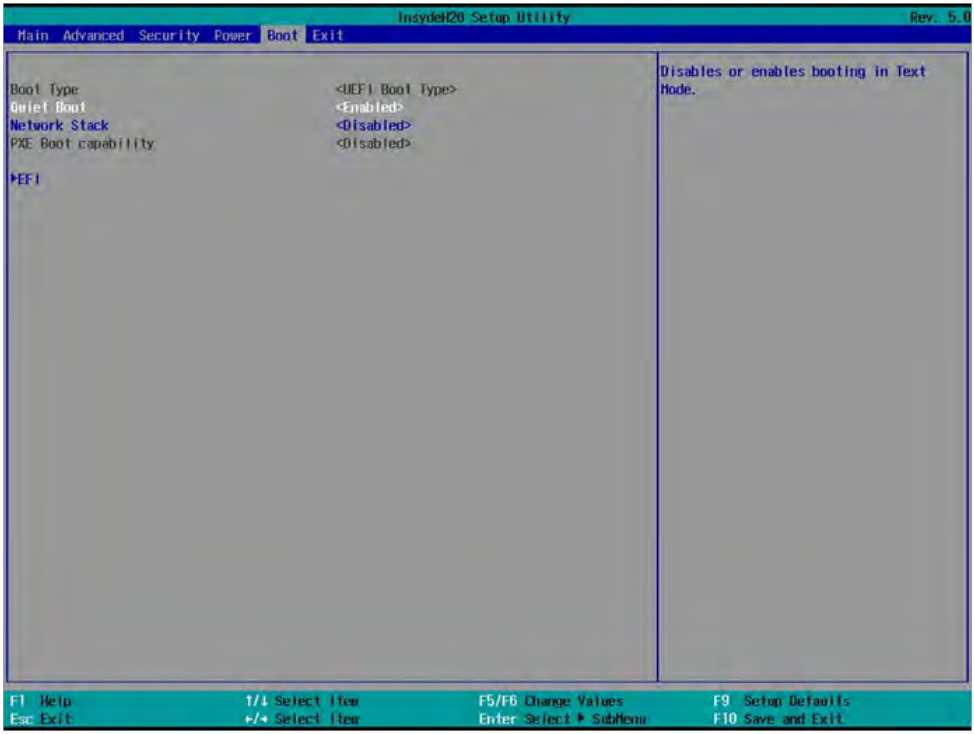


Wake On LAN1
To select S3, S5 or S3 / S5 wake on LAN1, default is Disabled.

Wake On USB
To select S3 wake on USB, default is Disabled.

Wake On RTC
The optional settings are: Disabled (default), By every day, By day of month.

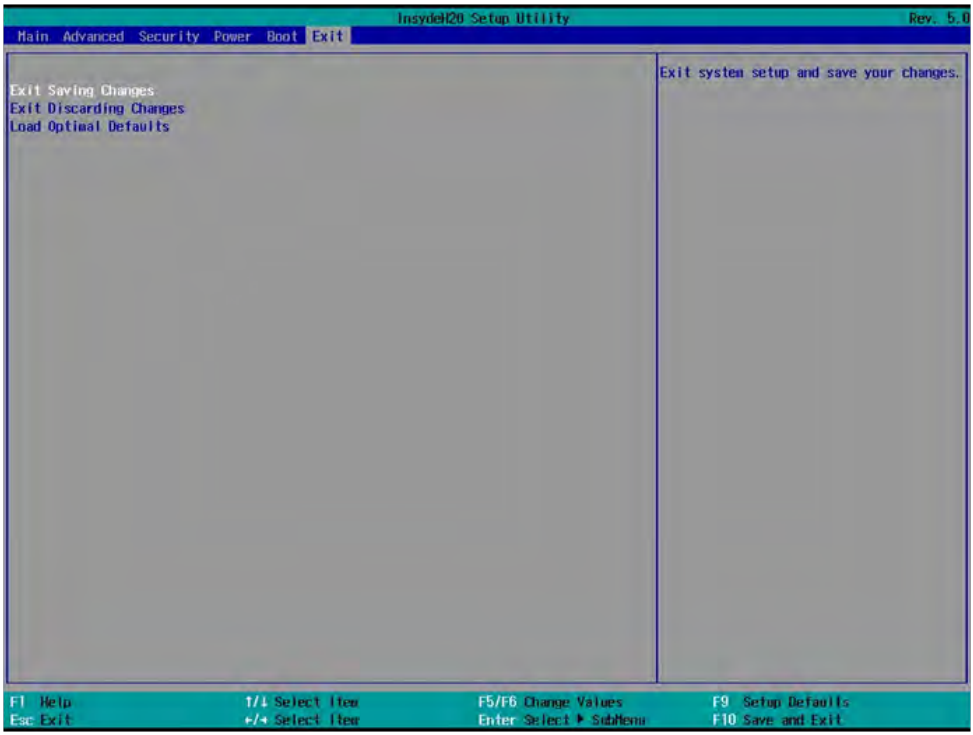
4-9 Boot



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

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

4-10 Save & Exit



Exit Saving Changes
Save configuration and reset

Exit Discarding Changes
Reset without saving the changes

Load Optimal Defaults
To restore the optimal default for all the setup options

4-11 How to update Insyde BIOS

Under DOS Mode

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

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

STEP 3. Copy the latest BIOS for your LEX motherboard from our website to your bootable disc.

STEP 4. (Here take 3I640A/CW as an example, please enter your motherboard's name)
Insert your bootable disc into X: (X could be C:, A: or others.
It depends on which type of storage device you use.)

Start the computer and type

X:\: H2OFFT-D.EXE 3I640A/CW.ROM –BIOS -ALL

3I640A/CW.ROM is the file name of the latest BIOS.

It may be 3I640A/CW.ROM or 3I640A/CW.ROM, etc.

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

By Bay Trail series mainboard, please type

X:\: H2OFFT-D.EXE 3I640A/CW.ROM –BIOS -ALL

-BIOS : Flash BIOS region

-ALL : Flash all

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

Appendix B: Resolution list

640 x 480 x (256 / 16bit / 32bit)
800 x 600 x (256 / 16bit / 32bit)
1024 x 768 x (256 / 16bit / 32bit)
1152 x 864 x (256 / 16bit / 32bit)
1280 x 600 x (256 / 16bit / 32bit)
1280 x 720 x (256 / 16bit / 32bit)
1280 x 768 x (256 / 16bit / 32bit)
1280 x 800 x (256 / 16bit / 32bit)
1280 x 960 x (256 / 16bit / 32bit)
1280 x 1024 x (256 / 16bit / 32bit)
1400 x 1050 x (256 / 16bit / 32bit)
1440 x 900 x (256 / 16bit / 32bit)
1600 x 900 x (256 / 16bit / 32bit)
1600 x 1200 x (256 / 16bit / 32bit)
1680 x 1050 x (256 / 16bit / 32bit)
1920 x 1080 x (256 / 16bit / 32bit)
1920 x 1200 x (256 / 16bit / 32bit)