PI800F

**Intel® Atom® x7000RE
Series Processors
PICO-ITX Motherboard**

User's Manual

Version 1.0
(October 2025)

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Copyright

Disclaimer

Trademarks

Compliance

This product has passed CE Class B tests for environmental specifications and limits. This product is in accordance with the directives of the European Union (EU). In a domestic environment, this product may cause radio interference in which case users may be required to take adequate measures.

This product has been tested and found to comply with the limits for a Class B device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with manufacturer's instructions, may cause harmful interference to radio communications.

WEEE

This product must not be disposed of as normal household waste, in accordance with the EU directive of for waste electrical and electronic equipment (WEEE - 2012/19/EU). Instead, it should be disposed of by returning it to a municipal recycling collection point. Check local regulations for disposal of electronic products.

Green IBASE

This product complies with RoHS 2 restrictions, which prohibit the use of certain hazardous substances in electrical and electronic equipment. The following substances must not exceed the specified concentrations:
• Hexavalent chromium: 1,000 ppm
• Poly-brominated biphenyls (PBBs): 1,000 ppm
• Poly-brominated diphenyl ethers (PBDEs): 1,000 ppm
• Cadmium: 100 ppm
• Mercury: 1,000 ppm
• Lead: 1,000 ppm
• Bis(2-ethylhexyl) phthalate (DEHP): 1,000 ppm
• Butyl benzyl phthalate (BBP): 1,000 ppm
• Dibutyl phthalate (DBP): 1,000 ppm
• Diisobutyl phthalate (DIBP): 1,000 ppm

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Important Safety Information

Environmental conditions:

- Do not leave this product in an environment where the storage temperature may be below -20° C or above 80° C. To prevent damages, the product must be used in a controlled environment.

Care for your IBASE products:

- Before cleaning the PCB, unplug all cables and remove the battery.
- Clean the PCB with a circuit board cleaner or degreaser, or use cotton swabs and alcohol.
- Vacuum the dust with a computer vacuum cleaner to prevent the fan from being clogged.

 WARNING

Attention during use:

- Do not use this product near water.
- Do not spill water or any other liquids on this product.
- Do not place heavy objects on the top of this product.

Anti-static precautions

- Wear an anti-static wrist strap to avoid electrostatic discharge.
- Place the PCB on an anti-static kit or mat.
- Hold the edges of PCB when handling.
- Touch the edges of non-metallic components of the product instead of the surface of the PCB.
- Ground yourself by touching a grounded conductor or a grounded bit of metal frequently to discharge any static.

 CAUTION

There is danger of explosion if the internal lithium-ion battery is replaced by an incorrect type. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions or recycle them at a local recycling facility or battery collection point.

Warranty Policy

- **IBASE standard products:**

  24-month (2-year) warranty from the date of shipment. If the date of shipment cannot be ascertained, the product serial numbers can be used to determine the approximate shipping date.

- **3rd-party parts:**

  12-month (1-year) warranty from delivery for the 3rd-party parts that are not manufactured by IBASE, such as CPU, CPU cooler, memory, storage devices, power adapter, panel and touchscreen.

* PRODUCTS, HOWEVER, THAT FAIL DUE TO MISUSE, ACCIDENT, IMPROPER INSTALLATION OR UNAUTHORIZED REPAIR WILL BE CONSIDERED OUT OF WARRANTY AND CUSTOMERS WILL BE BILLED FOR REPAIR AND SHIPPING CHARGES.

Technical Support & Services

1. Visit the IBASE website at www.ibase.com.tw to find the latest information about the product.
2. If you need any further assistance from your distributor or sales representative concerning problems that you may have encountered, please prepare the following information:

   - Product model name
   - Product serial number
   - Detailed description of the problem
   - The error messages in text or in screenshots if there is any
   - The arrangement of the peripherals
   - Software in use (such as OS and application software, including the version numbers)

3. If repair service is required, please visit the IBASE's website to read the warranty and RMA policy, before logging in to the eRMA System.

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Table of Contents

Chapter 1
General Information

The information provided in this chapter includes:

- Features

- Packing List

- Optional Accessories

- Specifications

- Block Diagram

- Board Pictures

- Board Dimensions

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1.1   Introduction

The PI800F is a compact industrial-grade PICO-ITX motherboard powered by Intel® Atom® x7000RE Series processors, delivering efficient performance for embedded applications. It supports up to 16GB of DDR5-4800 SO-DIMM memory and features dual display outputs with HDMI 2.0b and DisplayPort 1.2a. The board offers rich connectivity, including dual PCIe 2.5G LAN ports, two COM ports (RS232/422/485), four USB 3.2 Type-A ports, two USB 2.0 ports, and one SATA III interface. Expansion options include two M.2 sockets (M2242 for SATA/PCIe and E2230 for USB/PCIe), while reliability is enhanced with a watchdog timer, digital I/O, and TPM 2.0 support. With a +12 V DC power input and a compact 100 mm × 72 mm PCB size, the PI800F is well-suited for space-constrained industrial and IoT deployments requiring robust connectivity and security.

1.2   Features

- ● Onboard Intel® Atom® x7000RE Series Processors
- ● 1x DDR5-4800 SO-DIMM, Max. 16GB
- ● Supports HDMI (2.0b) and DisplayPort (1.2a)
- ● 2x RTL-8125BI PCI-E 2.5G LAN, 2x COM (RS232/422/485)
- ● 4x USB 3.2 (Type-A), 2x USB 2.0, 1x SATA III
- ● 2x M.2 sockets (M2242 [SATA + PCI-E] + E2230 [USB + PCI-E])
- ● Watchdog timer, Digital I/O, TPM (2.0), +12V DC input only
- ● PCB dimensions: 100mm x 72mm

PI800F with Heatsink

1.3   Packing List

Your PI800F package should include the items listed below. If any of the items below is missing, contact the distributor or dealer you purchased the product from.

- PI800F SBC   x 1

1.4   Optional Accessories

IBASE provides the following optional accessories:

- IB881SW-R : For front panel with Power button, Reset button, PWR LED and SSD LED

- EXT-926: Extension cable for IB881SW-R

- IDA102 : Single COM port module

- EXT-912: Extension cable for IDA102(COM port)

- IDA103 : Single USB 2.0 port module

- EXT-920: Extension cable for IDA103 (USB 2.0 port)

- Heat sink (HSPI800-C) (PN# H052HSPI800C0000AP)

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1.5   Specifications

Model Name	Description
PI800F-7835RE	Intel® Atom® x7835RE SoC onboard PICO-ITX board, w/ dual 2.5Gb, HDMI + DP, 2x COM, 2x M.2, 4x USB 3.2, 2x USB 2 .0, TPM, single +12V DC-in

Specifications	
Dimensions	100mm x 72mm (3.94" x 2.84")
CPU	Intel® Atom® 8-Core x7835RE SoC
Memory	1x DDR5-4800 MHz, Max. 16GB
Mini Type Slots	1x M.2 (M-Key, type:2242, supports SATA & PCI-E(x1) signal) 1x M.2 (E-Key, type: 2230, supports USB 2.0 & PCI-E(x1) signal)
Graphics	Intel® SoC integrated graphics
Video Output	1x HDMI (2.0b) 1x DisplayPort 1.2a (DP++)
Ethernet	2x Realtek RTL-8125BI PCI-E 2.5G LAN ports
BIOS	AMI BIOS
Super I/O	Fintek F81804U
Audio	N/A
Serial Port	2x RS232/422/485
USB 2.0	2x USB 2.0 (pin header)
USB 3.X	4x USB 3.1 Gen2 (10Gbps)
Serial ATA	1x SATA III
Digital IO	4-In & 4-Out
Others	TPM (2.0), 12V power input, H/W Monitor
Watchdog Timer	Yes (256 segments, 0, 1, 2…255 sec / min)

Environment	
Operating Temperature	-40°C~+70°C (-40°F ~+158°F)
Storage Temperature	-40°C~80°C (-40°F ~+176°F)
Relative Humidity	95 % (non-condensing)

All specifications are subject to change without prior notice.

1.6 Block Diagram

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1.7   Board Pictures

- Front I/O
- FAN header
- M.2 E-Key(2230)
- USB 2.0
- M.2 M-Key(2242)
- SATA + PWR
- +12V DC input
- DDR5 SO-DIMM

- Digital I/O
- COM#1&#2
- CPU

- USB 3.2
- DisplayPort
- USB 3.2
- 2.5G LAN
- HDMI
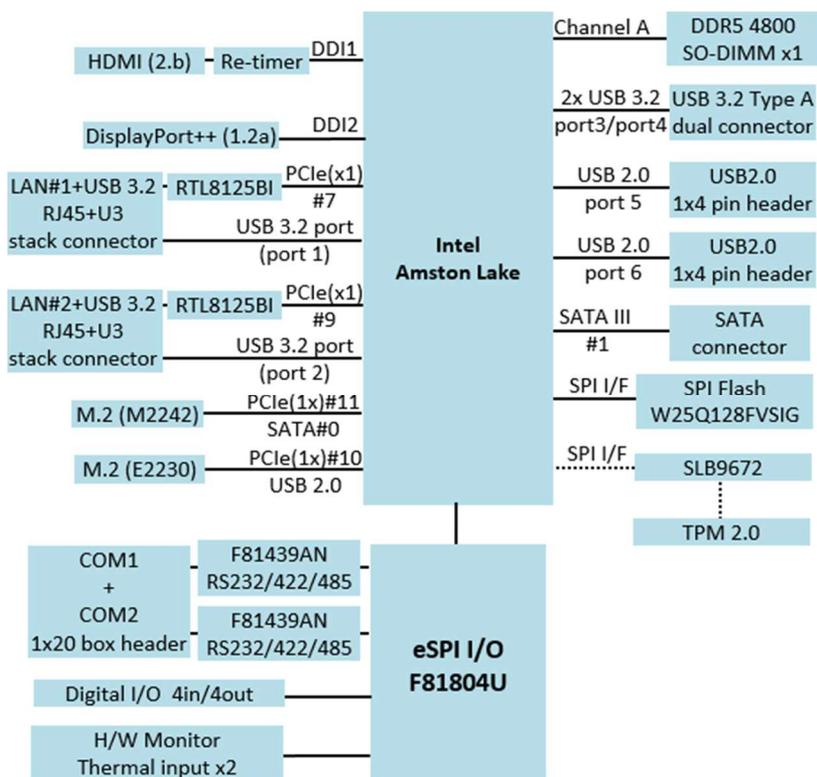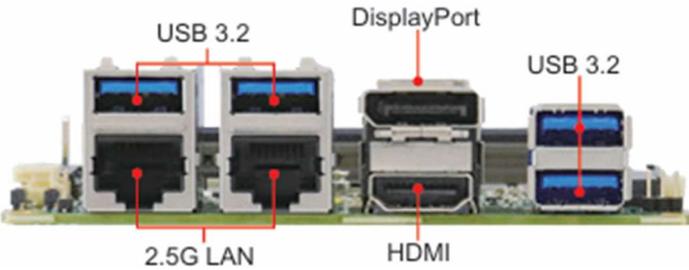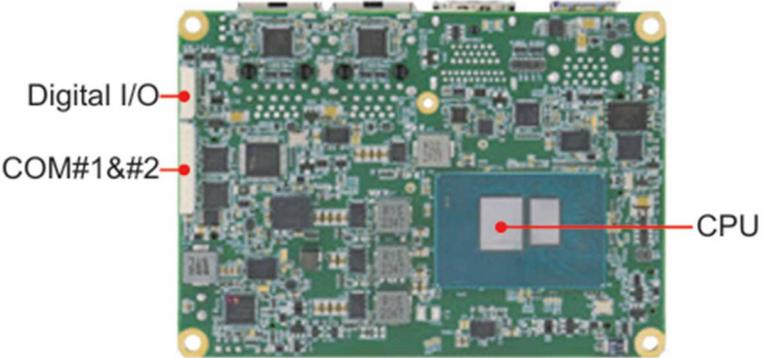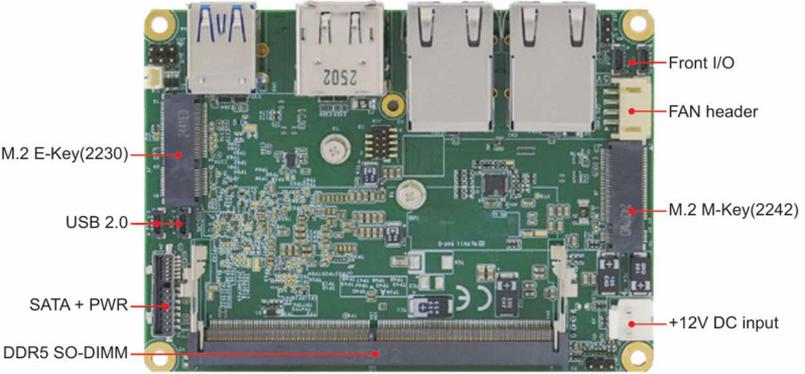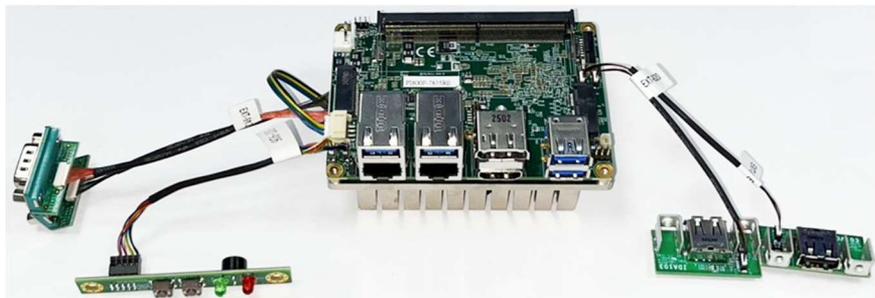
The above picture shows the PI800F PICO-ITX Motherboard connected to extended cables to serial ports, USB 2.0 ports and power button/LED front panel modules.

IDA102 COM module   IDA103 USB 2.0 module

IB881SW-R power button / LED front panel module

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1.8   Dimensions
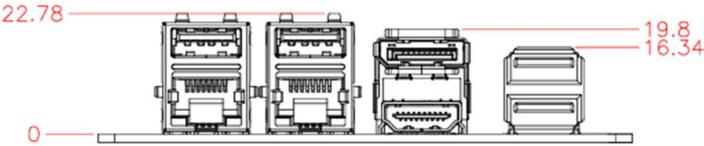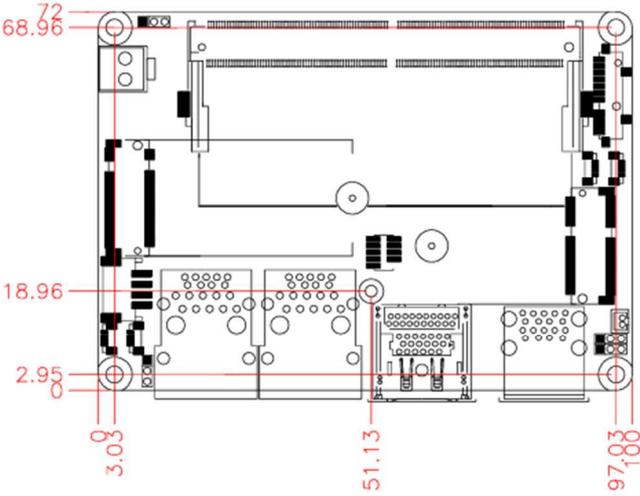
(PI800F Board)
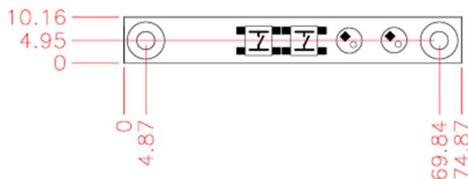
(IB881SW-R Module)
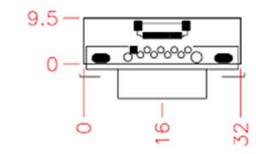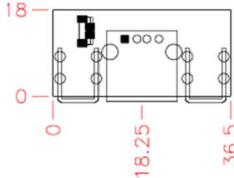
(IDA102 COM Module)   **(IDA103 USB 2.0 Module)**
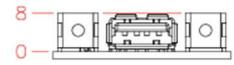
Chapter 2
Hardware Configuration

This section provides information on jumper settings and connectors on the PI800F in order to set up a workable system. On top of that, you will also need to install crucial pieces such as the CPU and the memory before using the product. The topics covered are:

- Essential installations
- Jumpers and Connectors

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2.1   Essential Installations

2.1.1   Installing the Memory

The PI800F supports one DDR5 memory socket. To install the modules, locate the memory slot on the board and perform the following steps:
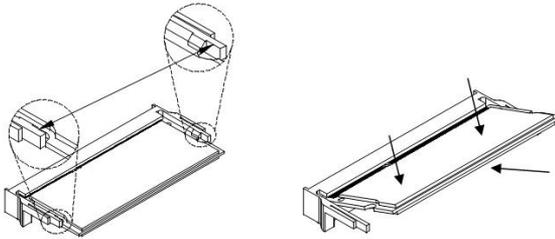
1. Align the key of the memory module with that on the memory slot and insert the module slantwise.

2. Gently push the module in an upright position until the clips of the slot close to hold the module in place when the module touches the bottom of the slot.

To remove the module, press the clips outwards with both hands, and the module will pop-up.

2.2   Setting the Jumpers

Set up and configure your PI800F by using jumpers for various settings and features according to your needs and applications. Contact your supplier if you have doubts about the best configuration for your use.

Jumpers are short-length conductors consisting of several metal pins with a non-conductive base mounted on the circuit board. Jumper caps are used to have the functions and features enabled or disabled. If a jumper has 3 pins, you can connect either PIN1 to PIN2 or PIN2 to PIN3 by shorting.
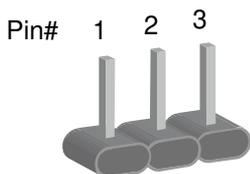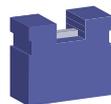
A 3-pin jumper   **A jumper cap**

Refer to the illustration below to set jumpers.

Pin closed	Jumper	Setting
Open		
1-2		
2-3		
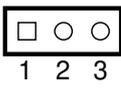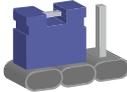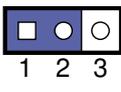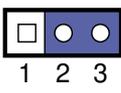
When two pins of a jumper are encased in a jumper cap, this jumper is **closed**, i.e. turned **On**.
When a jumper cap is removed from two jumper pins, this jumper is **open**, i.e. turned **Off**.

2.3   Jumper & Connector Locations
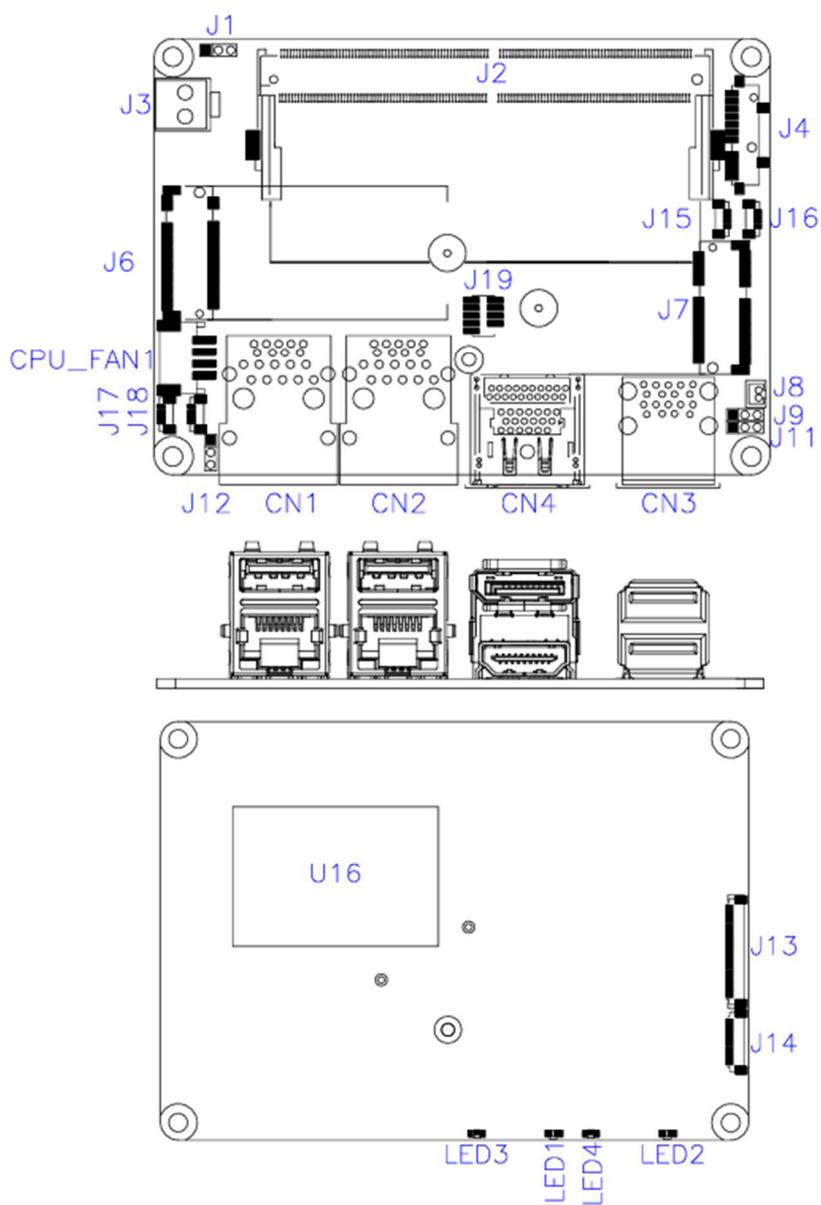
2.4   Jumpers Quick Reference

Function	Jumper
Clear ME Register	J9
Clear CMOS Data	J11
AT / ATX Selection	J12

2.4.1   Clear ME Contents (J9)

Function	Pin closed	Setting
Normal	1-2	
Clear ME	2-3	

2.4.2   Clear CMOS Contents (J11)
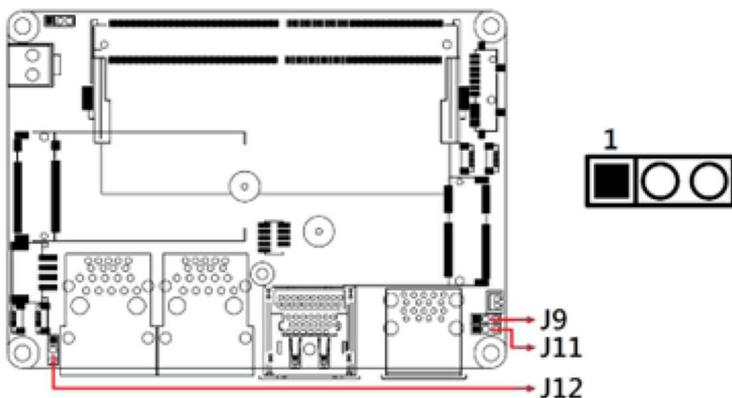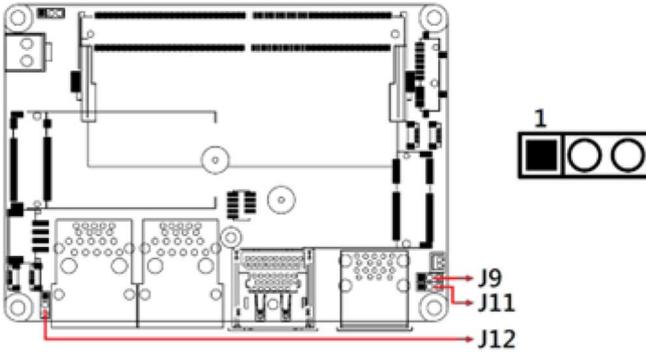
Function	Pin closed	Setting
Normal	1-2	1 ▢ ● ○
Clear CMOS	2-3	1 ▢ ● ●

2.4.3   ATX & AT Power Mode Selection (J12)
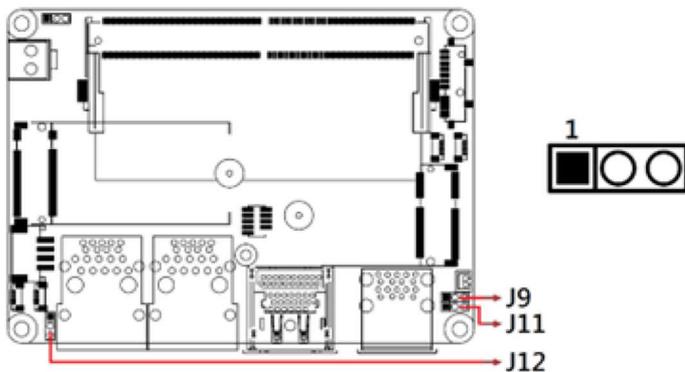
Function	Pin closed	Setting
ATX	1-2	
AT (default)	2-3	

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2.5 Connectors Quick Reference

Function	Connector
2.5G LAN (RTL8125BI) + Type-A USB3.2 Gen2	CN1
SATA 2.5G LAN (RTL8125BI) + Type-A USB3.2 Gen2	CN2
2x USB 3.2 Gen 2 Type-A	CN3
DisplayPort (Top) + HDMI (Bottom)	CN4
CPU Fan Power Connector	CPU_FAN1
DDR5 SO-DIMM Socket	J2
12V Input Connector	J3
SATA Connector with Power	J4
M.2 M-Key Slot	J6
M.2 E-Key Slot	J7
Coin Battery Socket	J8
Two Serial Ports	J13
Digital I/O 4in-4out	J14
USB 2.0 Header	J15, J16
Front Panel Header for Power Button	J17
Front Panel Header for LED	J18
80 Port	J19

2.5.1 2.5G LAN (RTL8125BI) + Type-A USB3.2 Gen2 (CN1)

CN2

CN1
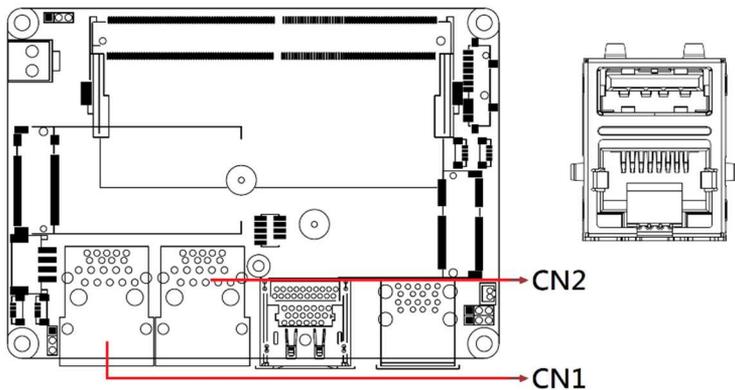
2.5.2 2.5G LAN (RTL8125BI) + Type-A USB3.2 Gen2 (CN2)

CN2

CN1
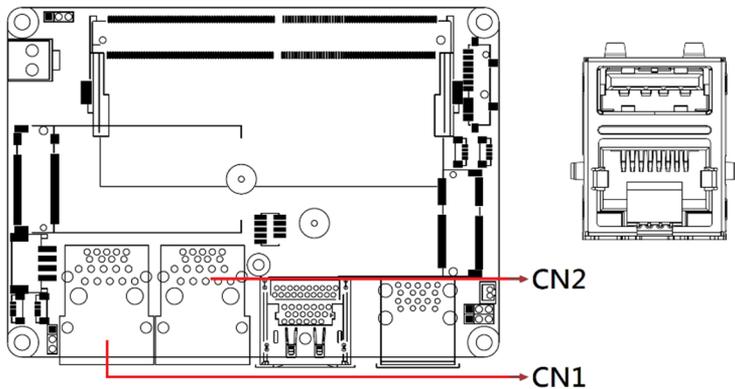
2.5.3   2x USB3.2 Gen 2 Type-A (CN3)

CN3
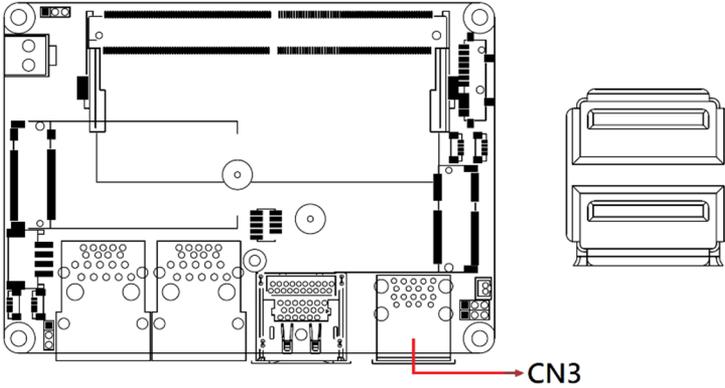
2.5.4   Display Port(Top) + HDMI (Bottom) (CN4)

CN4
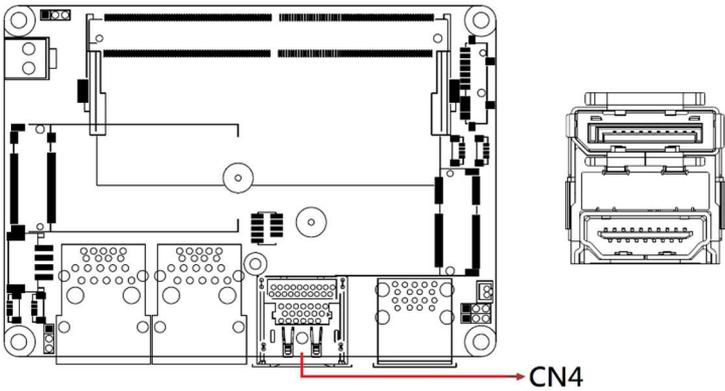
2.5.5   CPU Fan Power Connector (CPU_FAN1)

CPU_FAN1
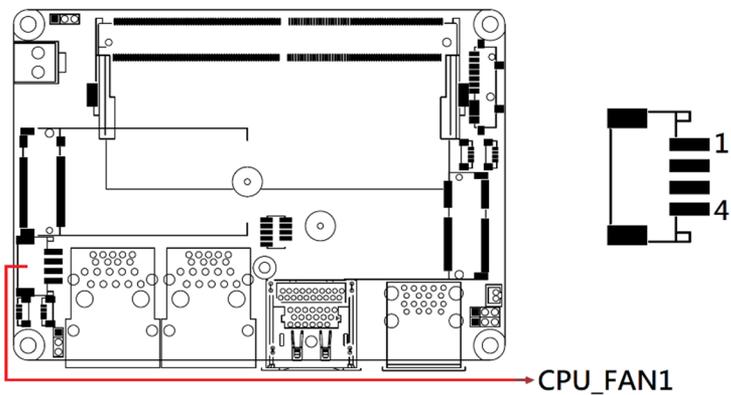
Pin	Assignment
1	GND
2	5V
3	Fan-In
4	Fan-Out

2.5.6 DDR5 SO-DIMM Socket (J2)

J2

261   1

262   2
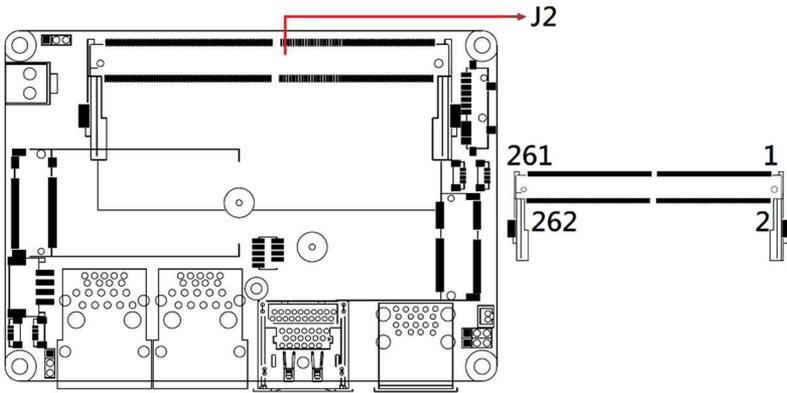
2.5.7 12V Input Connector (J3)

J3

1
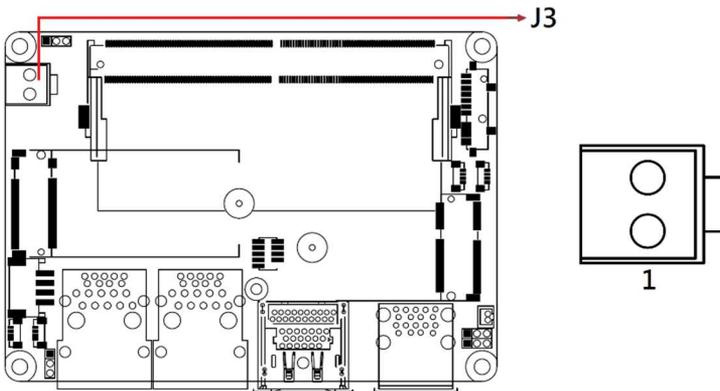
Pin	Assignment
1	+12V
2	Ground

2.5.8 SATA Connector with Power (J4)
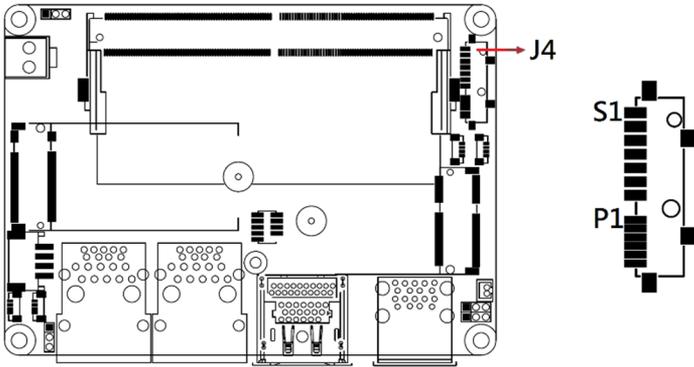
Pin	Assignment
S1	GND
S2	SATA_TXP1
S3	SATA_TXN1
S4	GND
S5	SATA_RXN1
S6	SATA_RXP1
S7	GND
P1	NC
P2	NC
P3	GND
P4	GND
P5	+5V
P6	+5V

Remarks: **SATA13P ACES_51205-0134T-001**

2.5.9   M.2 M-Key Slot (J6)
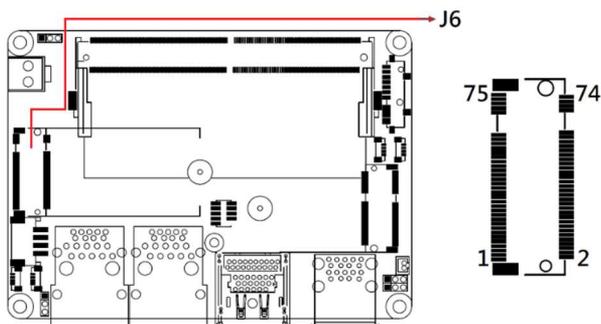
Pin	Assignment	Pin	Assignment
1	GND	2	3.3V
3	GND	4	3.3V
5	PCIE_RXN3	6	NC
7	PCIE_RXP3	8	NC
9	GND	10	SSD_LED
11	PCIE_TXN3	12	3.3V
13	PCIE_TXP3	14	3.3V
15	GND	16	3.3V
17	PCIE_RXN2	18	3.3V
19	PCIE_RXP2	20	NC
21	GND	22	NC
23	PCIE_TXN2	24	NC
25	PCIE_TXP2	26	NC
27	GND	28	NC
29	PCIE_RXN1	30	NC
31	PCIE_RXP1	32	NC
33	GND	34	NC
35	PCIE_TXN1	36	NC
37	PCIE_TXP1	38	NC
39	GND	40	NC
41	PCIE_RXN0	42	NC
43	PCIE_RXP0	44	NC
45	GND	46	NC
47	PCIE_TXN0	48	NC
49	PCIE_TXP0	50	PCIE_RST#
51	GND	52	CLK_REQ#
53	PCIE_CLK_N	54	PCIE_WAKE#
55	PCIE_CLK_P	56	NC
57	GND	58	NC
59	NC	60	NC
61	NC	62	NC
63	NC	64	NC
65	NC	66	NC
67	NC	68	SUS_CLK
69	NC	70	3.3V
71	GND	72	3.3V
73	GND	74	3.3V
75	GND		

2.5.10 M.2 E-Key Slot (J7)
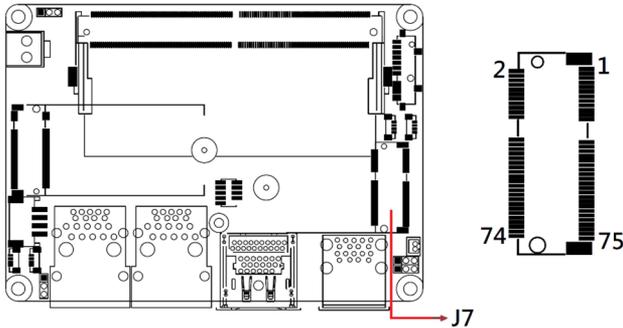
Pin	Assignment	Pin	Assignment
1	GND	2	3.3V
3	USB_D+	4	3.3V
5	USB_D-	6	NC
7	GND	8	NC
9	CNV_WR_D1_DN	10	M.2_BT_PCMFRM
11	CNV_WR_D1_DP	12	NC
13	GND	14	M.2_BT_PCMOUT
15	CNV_WR_D0_DN	16	NC
17	CNV_WR_D0_DP	18	GND
19	GND	20	UART_BT_WAKE#
21	CNV_WR_CLK_DN	22	CNV_BRI_RSP
23	CNV_WR_CLK_DN	24	NC
25	NC	26	NC
27	NC	28	NC
29	NC	30	NC
31	NC	32	CNV_RGI_DT
33	GND	34	CNV_RGI_RSP
35	PCIE_TXP	36	CNV_BRI_DT
37	PCIE_TXN	38	CNV_WLAN_CLINK_RST_N
39	GND	40	CNV_WLAN_CLINK_DATA
41	PCIE_RXP	42	CNV_WLAN_CLINK_CLK
43	PCIE_RXN	44	NC
45	GND	46	NC
47	PCIE_CLK_P	48	NC
49	PCIE_CLK_N	50	SUS_CLK
51	GND	52	PCIE_RST#
53	CLK_REQ#	54	BT_RF_OFF
55	PCIE_WAKE#	56	WIFI_RF_OFF
57	GND	58	NC
59	CNV_WT_D1_DN	60	NC
61	CNV_WT_D1_DP	62	NC
63	GND	64	NC
65	CNV_WT_D0_DN	66	PCIE_RST#
67	CNV_WT_D0_DP	68	NC
69	GND	70	PCIE_WAKE#
71	CNV_WT_CLK_DN	72	3.3V
73	CNV_WT_CLK_DN	74	3.3V
75	GND		

2.5.11 Coin Battery Socket (J8)
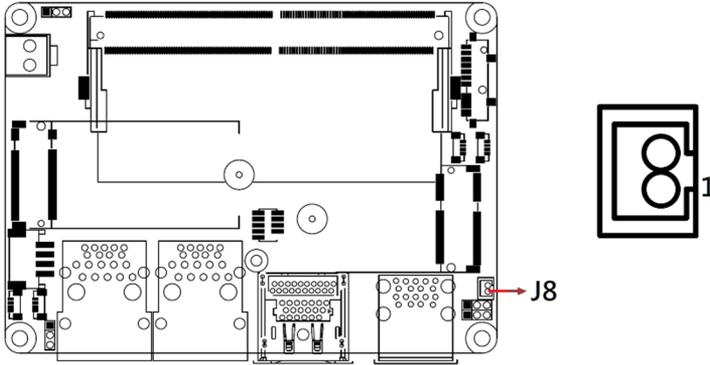
Pin	Assignment
1	3.3V
2	GND

2.5.12 Two Serial Ports (J13)
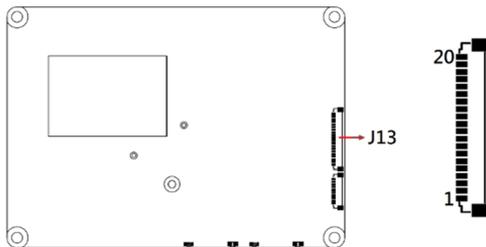
Pin	Assignment	Pin	Assignment
1	DCD_1	11	DCD_2
2	SIN_1	12	SIN_2
3	SOUT_1	13	SOUT_2
4	DTR_1	14	DTR_2
5	GND	15	GND
6	DSR_1	16	DSR_2
7	RTS_1	17	RTS_2
8	CTS_1	18	CTS_2
9	RI_1	19	RI_2
10	RI_1	20	RI_2

Remarks: TECHBEST_AS0960120AC10

iBASE
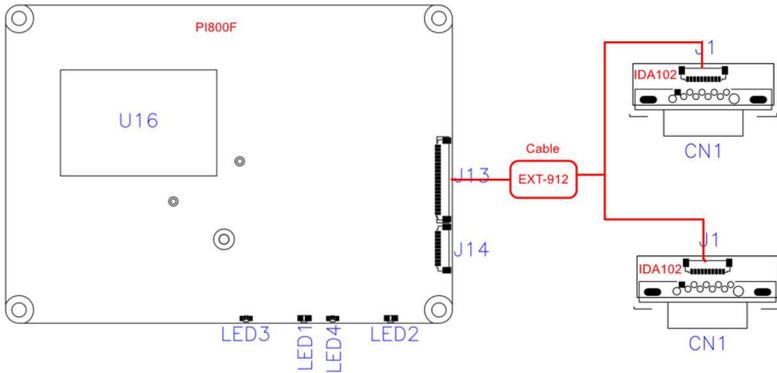
Note: The above diagram shows connection of EXT-912 extension cables for two COM port module (IDA102).
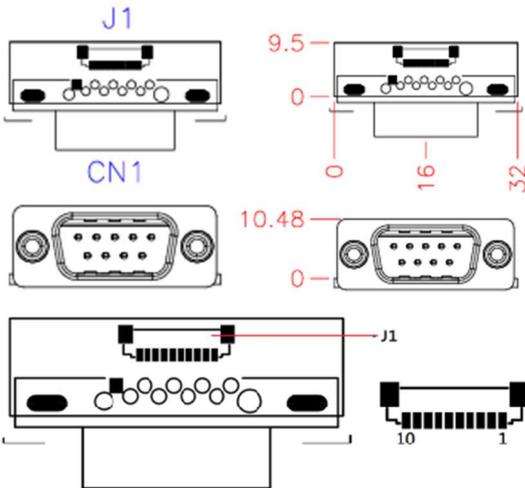
IDA102

2.5.13 Digital I/O 4in-4out (J14)
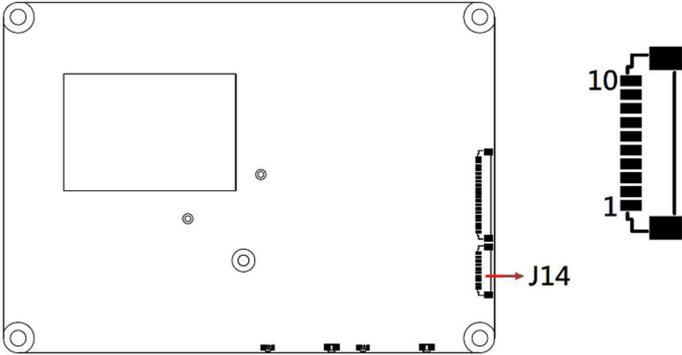
Pin	Assignment
1	+5V
2	OUT0
3	OUT1
4	OUT2
5	OUT3
6	GND
7	IN0
8	IN1
9	IN2
10	IN3

Remarks: TECHBEST_AS0960110AC10

2.5.14 USB 2.0 Header (J15, J16)
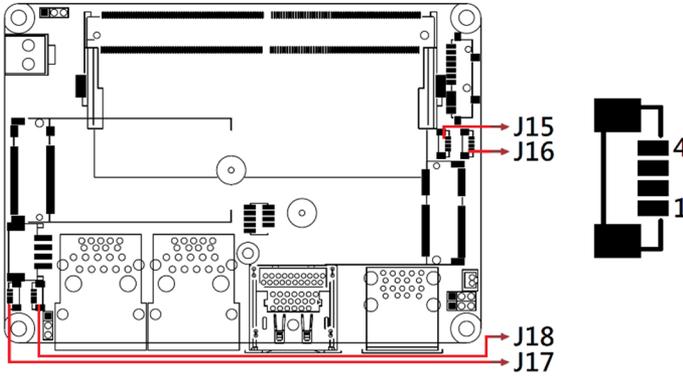
Pin	Assignment	Pin	Assignment
1	+5V	3	USB2P
2	USB2N	4	GND

Remarks: TYU_TF0801WNV-04S-GO-C1-NL-C-A
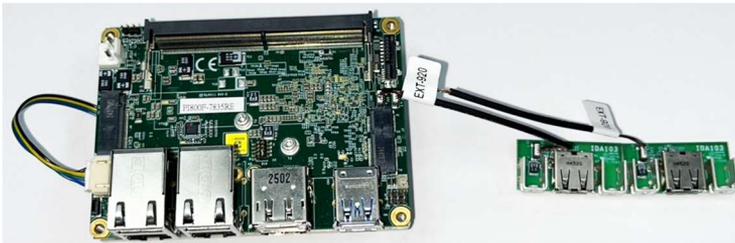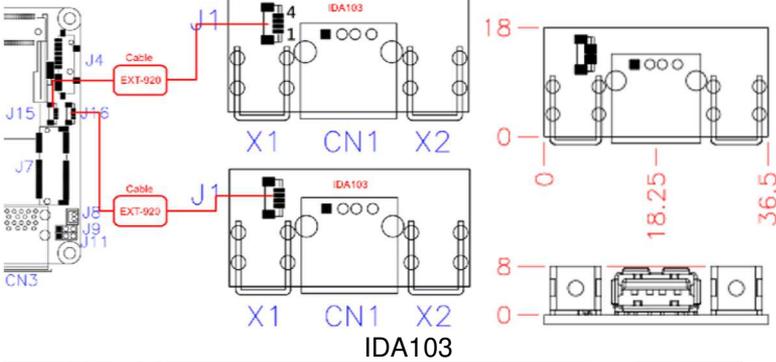
IDA103

The picture shows EXT-920 cables connected to the
J15/J16 headers and to the IDA103 USB 2.0 modules

2.5.15 Front Panel Header for Power Button (J17)
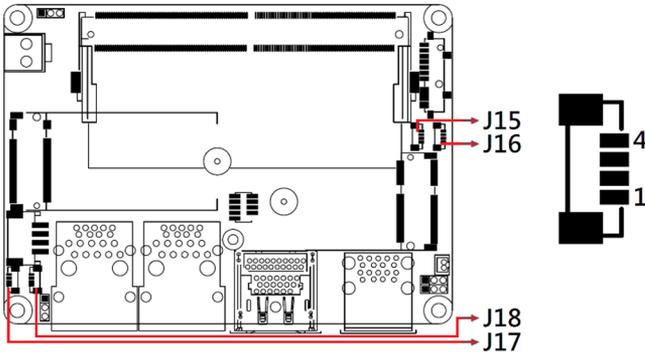
Pin	Assignment	Pin	Assignment
1	P_BTN-	3	GND
2	PWR_BTN#_BF	4	HW_RST#

Remarks: TYU_TF0801WNV-04S-GO-C1-NL-C-A

2.5.16 Front Panel Header for LED (J18)
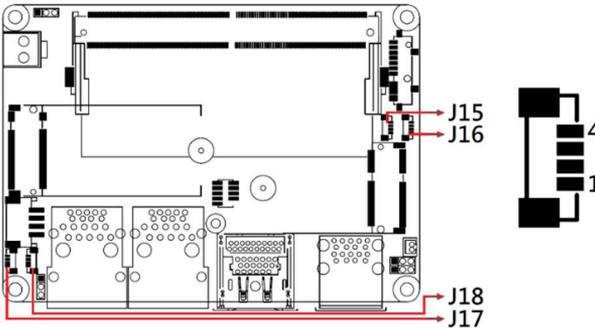
Pin	Assignment	Pin	Assignment
1	PWR_LED	3	HDD_LED+
2	GND	4	HDD_LED#

Remarks: TYU_TF0801WNV-04S-GO-C1-NL-C-A
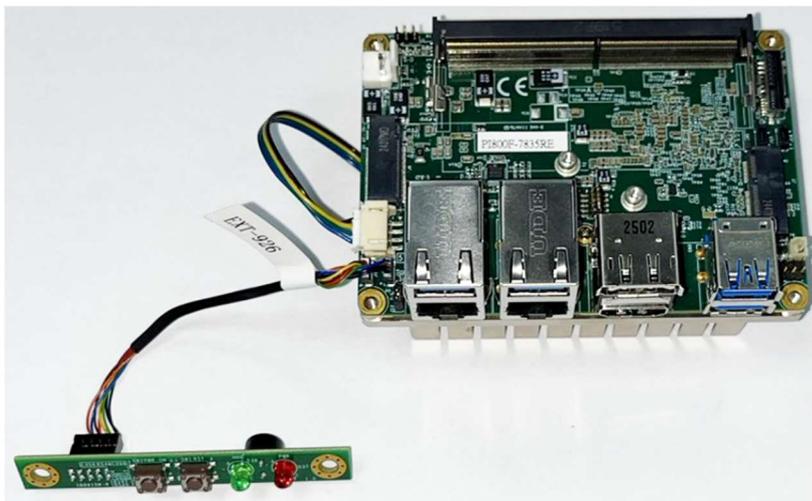
The picture above shows the PI800F board's J17 at the board edge (power button) and J18 (LEDs) connectors that connect to the EXT-926 cable which is then connected to the J25 headers of the IB881SW-R power button / LED combo front panel module
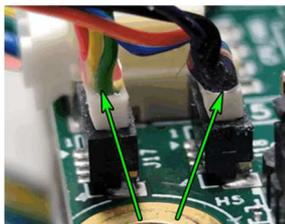
Since there are two terminals on EXT-926, one with a green wire and another with a black wire, please connect the terminal with the green wire in J17 connector which is at the board edge, as shown on the left of the picture.
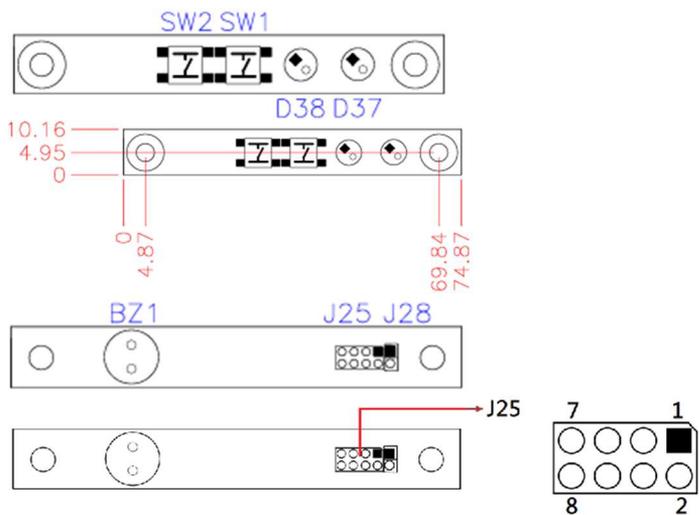
IB881-SW

J25: 2x5 pin header for LED&Power button(no audio) (E-CALL_P2101-10S)

Pin	Assignment	Pin	Assignment
1	Speaker+	2	Speaker-
3	PWR LED-	4	PWR LED+
5	GND	6	PWR_BTN
7	GND	8	RST_BTN
9	HDD LED+		HDD LED-

2.5.17 80 Port (J19)
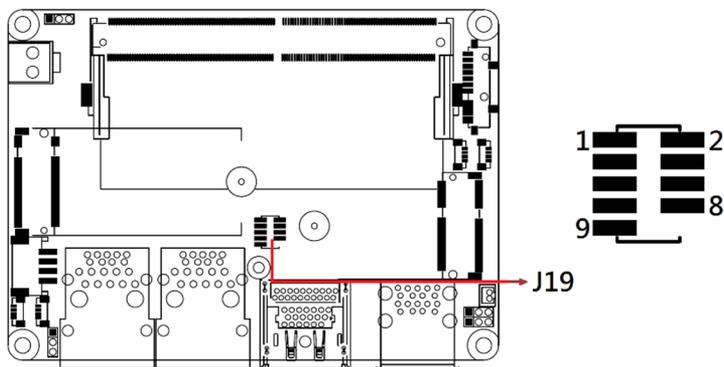
Pin	Assignment	Pin	Assignment
1	ESPI_IO_0	2	ESPI_RESET#
3	ESPI_IO_1	4	ESPI_CS
5	ESPI_IO_2	6	1.8V
7	ESPI_IO_3	8	GND
9	ESPI_CLK		

Remarks: E-CALL_0522-01-207-001009

Chapter 3
Drivers Installation

This chapter introduces installation of the following drivers:

- Intel® Chipset Software Installation Utility
- Intel® Graphics Drivers
- Intel® ME Drivers
- Intel® Serial IO Drivers
- Intel® LAN Drivers

iBASE

3.1   Introduction

This section describes the installation procedures for software and drivers.

Note: After installing your Windows operating system, you must install the Intel® Chipset Software Installation Utility first before proceeding with the drivers installation.

3.2   Intel® Chipset Software Installation Utility

The Intel® Chipset drivers should be installed first before the software drivers to install INF files for Plug & Play function for Intel chipset components. Follow the instructions below to complete the installation.

1.   Go to the download page of the product. Copy the compressed drivers file to your computer. Double click the file to decompress it. Run "CDGuide" to go to the main drivers page as shown below. Run the drivers disk. Click **Intel** on the left pane and then **Intel(R) Alder-N/Amston/Twin Lake Chipset Drivers** on the right pane.

2. Click **Intel(R) Chipset Software Installation Utility**.

3. When the *Welcome* screen to the Intel® Chipset Device Software appears, click **Next** to continue.

4. Accept the software license agreement and proceed with the installation process.

5. On the *Readme File Information* screen, click **Install**.


```
**********************************************************
*  Product: Intel(R) Chipset Device Software
*  Package version: 10.1.19899.8597
*  Installer version: 3.1.7.195
*  Date: 06/26/2024
```
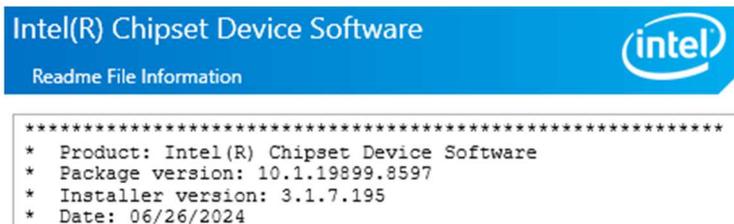
6. Click **Finish** to complete the setup process.

3.3   VGA Driver Installation

1.   Click **Intel** on the left pane and then **Intel(R) Alder-N/Amston/Twin Lake Chipset Drivers** on the right pane.

2.   Click **Intel(R) Alder-N/Amston/Twin Graphics Driver**.

3.   Click **Begin installation**.

3.4 Intel® Management Engine Drivers Installation

1. Click **Intel** on the left pane and then **Intel(R) Alder-N/Amston/Twin Lake Chipset Drivers** on the right pane.

2. Click **Intel(R) ME Drivers**.

Setup

Intel® Management Engine Components
Welcome   (intel)

You are about to install the following product:

Intel® Management Engine Components 2425.6.26.0

It is strongly recommended that you exit all programs before continuing.
Click Next to continue, or click Cancel to exit the setup program.

3. When the *Welcome* screen appears, click **Next**.

Setup

Intel® Management Engine Components
Welcome   (intel)

You are about to install the following product:

Intel® Management Engine Components 2341.5.37.0

It is strongly recommended that you exit all programs before continuing.
Click Next to continue, or click Cancel to exit the setup program.

4. Accept the license agreement and click **Next**.

5. Cick **Next** to install to the default folder, or click Change to choose another destination folder

6. After Intel Management Engine Components have been successfully installed, click **Finish**.

Intel® Management Engine Components
Completion   (intel)
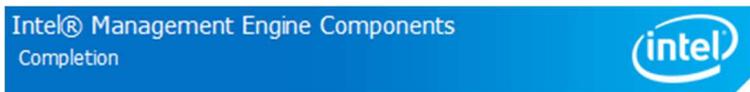
You have successfully installed the following components:

- Intel® Management Engine Interface
- Intel® Dynamic Application Loader
- Intel® Trusted Connect Service

3.5 Intel(R) Serial IO Drivers Installation

1. Click **Intel** on the left pane and then **Intel(R) Alder-N/Amston/Twin Lake Chipset Drivers** on the right pane.

2. Click **Intel(R) Serial IO Drivers Installation**.

3. In the Welcome screen, click **Next**.
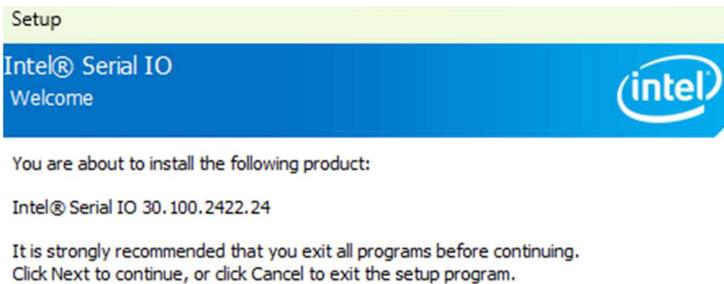
4. In the next screen, accept the license agreement and click **Next**.

5. In the Readme File Information screen, click **Next**.

6. In the Confirmation screen, click **Next**.
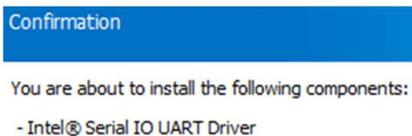
7. When installation has been completed, click **Finish**.

iBASE

3.6   LAN Driver Installation

1.   Click **LAN Card** on the left pane and then **Realtek LAN Controller Drivers**. Click **Realtek RTL8125BG 2.5G LAN Drivers** .

2.   When the Welcome screen appears, click **Next**.
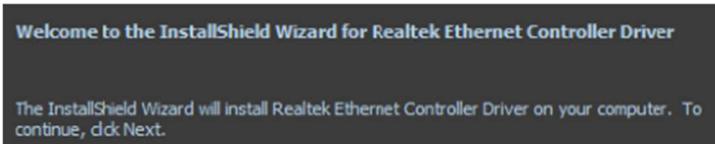
3.   When the Ready to Install the Program screen appears, clic**k Install**.
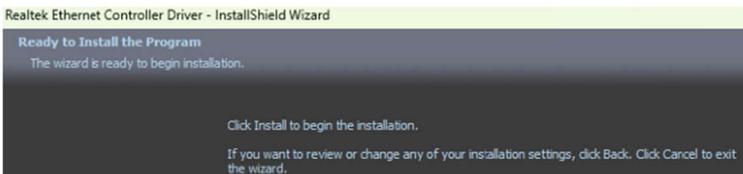
4.   When InstallShield Wizard has completed the installation. click **Finish**.
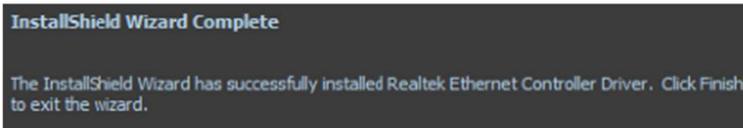
Chapter 4
BIOS Setup

This chapter describes the different settings available in the AMI BIOS that comes with the board. The topics covered in this chapter are as follows:

- Main Settings

- Advanced Settings

- Chipset Settings

- Security Settings

- Boot Settings

- Save & Exit

4.1 Introduction

The BIOS (Basic Input/Output System) installed in the ROM of your computer system supports Intel® processors. The BIOS provides critical low-level support for standard devices such as disk drives and serial ports. It also provides password protection as well as special support for detailed fine-tuning of the chipset controlling the entire system.

4.2 BIOS Setup

The BIOS provides a Setup utility program for specifying the system configurations and settings. The BIOS ROM of the system stores the Setup utility. When you turn on the computer, the BIOS is immediately activated. Pressing the <Del> key immediately allows you to enter the Setup utility. If you are a little bit late pressing the <Del> key, POST (Power On Self Test) will continue with its test routines, thus preventing you from invoking the Setup.

If you still need to enter Setup, restart the system by pressing the "Reset" button or simultaneously pressing the <Ctrl>, <Alt> and <Delete> keys. You can also restart by turning the system Off and back On again.

The following message will appear on the screen:

```
          Press  <DEL>  to  Enter  Setup
```

In general, press the arrow keys to highlight items, <Enter> to select, the <PgUp> and <PgDn> keys to change entries, <F1> for help, and <Esc> to quit.

When you enter the BIOS Setup utility, the *Main Menu* screen will appear on the screen. The Main Menu allows you to select from various setup functions and exit choices.

Warning: It is strongly recommended that you avoid making any changes to the chipset defaults.

These defaults have been carefully chosen by both AMI and your system manufacturer to provide the absolute maximum performance and reliability. Changing the defaults could make the system unstable and crash in some cases.

4.3 Main Settings

```
                          Aptio Setup - AMI
  Main  Advanced  Chipset  Security  Boot  Save & Exit

 BIOS Information                                      Set the Date. Use Tab to
 BIOS Version                    PI800-GS002-250721 (D...   switch between Date elements.
                                                      Default Ranges:
 Total Memory                    8192 MB               Year: 1998-9999
 Memory Frequency                4800 MHz              Months: 1-12
                                                      Days: Dependent on month
 System Date                     [Fri 08/29/2025]      Range of Years may vary.
 System Time                     [00:35:52]



                                                      ++: Select Screen
                                                      T↓: Select Item
                                                      Enter: Select
                                                      +/-: Change Opt.
                                                      F1: General Help
                                                      F2: Previous Values
                                                      F3: Optimized Defaults
                                                      F4: Save & Exit
                                                      ESC: Exit


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```

BIOS Setting	Description
System Date	Sets the date. Use the <Tab> key to switch between the date elements.
System Time	Set the time. Use the <Tab> key to switch between the time elements.

iBASE

4.4 Advanced Settings

This section allows you to configure system features according to your preference.

```
                          Aptio Setup - AMI
      Main  Advanced  Chipset  Security  Boot  Save & Exit

    ▶ CPU Configuration                        CPU Configuration Parameters
    ▶ Power & Performance
    ▶ PCH-FW Configuration
    ▶ Trusted Computing
    ▶ ACPI Settings
    ▶ Super IO Configuration
    ▶ Hardware Monitor
    ▶ USB Configuration
    ▶ Network Stack Configuration
    ▶ NVMe Configuration

                                               ←→: Select Screen
                                               ↑↓: Select Item
                                               Enter: Select
                                               +/-: Change Opt.
                                               F1: General Help
                                               F2: Previous Values
                                               F3: Optimized Defaults
                                               F4: Save & Exit
                                               ESC: Exit

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```

4.4.1   CPU Configuration

```
                              Aptio Setup - AMI
        Advanced

    CPU Configuration                                  Displays the E-core Information

  ▶ Efficient-core Information

    ID                              0xB06E0
    Brand String                    Intel(R) Atom(TM) x78...
    VMX                             Supported
    SMX/TXT                         Not Supported

    Intel (VMX) Virtualization Technol   [Enabled]
    Active Efficient-cores               [All]
    AES                                  [Enabled]
```

```
    Efficient-core Information

    L1 Data Cache                        32 KB × 8
    L1 Instruction Cache                 64 KB × 8
    L2 Cache                             2048 KB × 2
    L3 Cache                             6 MB
```

BIOS Setting	Description
Efficient-core Information	Displays the E-core Information.
Intel (VMX) Virtualization Technology	When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.
Active Efficient-cores	Number of E-cores to enable in each processor package. Note: Number of cores and E-cores are looked at together. When both are (o,o), Pcode will enable all cores.
AES	Enable/Disable AES (Advanced Encryption Standard)

iBASE

4.4.2   Power & Performance
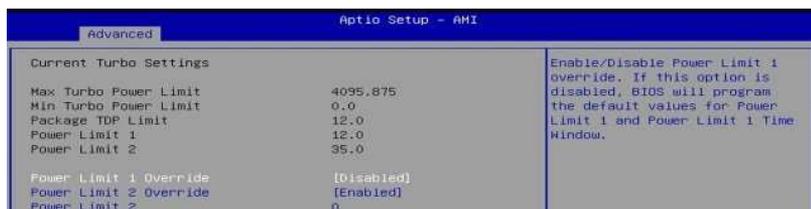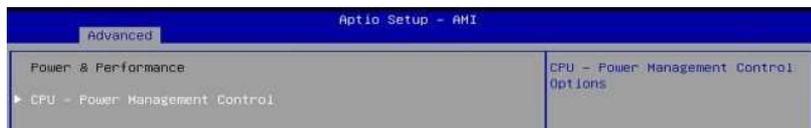
BIOS Setting	Description
CPU – Power Management Control	CPU – Power Management Control Options
Intel Speedstep	Allows more than two frequency ranges to be supported
Intel Speed Shift Technology	Enable/Disable Intel Speed Shift Technology support. Enabling will expose the CPPC v2 interface to allow for hardware controlled P-states.
Turbo Mode	Enable/Disable processor Turbo Mode (requires EMTTM enabled too). Auto means enabled.
Power Limit 1 Override	Enable/Disable Power Limit 1 override. If this option is disabled, BIOS will program the default values for Power Limit 1 and Power Limit 1 Time Window.
Power Limit 2 Override	Enable/Disable Power Limit 2 override. If this option is disabled, BIOS will program the default values for Power Limit 2.
Power Limit 2	Power Limit 2 value in Milli Watts. BIOS will round to the nearest 1/8W when programming. If the value is 0, BIOS will program this value as 1.25+Processor Base Power (TDP). For 12.50W, enter 12500. Processor applies control policies such that the package power does not exceed this limit.

4.4.3   PCH-FW Configuration

iBASE

4.4.4   Trusted Computing

BIOS Setting	Description
Security Device Support	Enables / Disables BIOS support for security device. OS will not show security device. TCG EFI protocol and INT1A interface will not be available.
SHA256 PCR Bank	Options: Enabled / Disabled
SHA384 PCR Bank	Options: Enabled / Disabled
Pending operation	Schedule an operation for the security device. Note: Your computer will reboot during restart in order to change state of security device.
Platform Hierarchy	Enables / Disables platform hierarchy.
Storage Hierarchy	Enables / Disables storage hierarchy.
Endorsement Hierarchy	Enables / Disables endorsement hierarchy.
Physical Presence Spec Version	Select to tell O.S. to support PPI Spec Version 1.2 or 1.3. Note some HCK tests might not support 1.3.
Device Select	TPM 1.2 will restrict support to TPM 1.2 devices. TPM 2.0 will restrict support to TPM 2.0 devices. Auto will support both with the default set to TPM 2.0 devices if not found, TPM 1.2 devices will be enumerated.

4.4.5 ACPI Settings

```
                              Aptio Setup - AMI
       Advanced

   ACPI Settings                                    Enables or Disables System
                                                    ability to Hibernate (OS/S4
   Enable Hibernation              [Enabled]        Sleep State). This option may
   ACPI Sleep State                [S3 (Suspend to RAM)]   not be effective with some
                                                    operating systems.




                                                    →←: Select Screen
                                                    ↑↓: Select Item
                                                    Enter: Select
                                                    +/-: Change Opt.
                                                    F1: General Help
                                                    F2: Previous Values
                                                    F3: Optimized Defaults
                                                    F4: Save & Exit
                                                    ESC: Exit



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```

BIOS Setting	Description
Enable Hibernation	Enables / Disables the system ability to hibernate (OS/S4 Sleep State). This option may be not effective with some OS.
ACPI Sleep State	Select the highest ACPI sleep state the system will enter when the SUSPEND button is pressed.

4.4.7   Super IO Configuration

BIOS Setting	Description
Serial Port 1/2 Configuration	Sets parameters of Serial Port 1/2/3/4

Aptio Setup - AMI

Advanced

Serial Port 2 Configuration

Serial Port	[Enabled]
Device Settings	IO=2F8h; IRQ=3;
Change Settings	[Auto]
Multi Function	[RS-232]

Enable or Disable Serial Port (COM)

Aptio Setup - AMI

Advanced

Serial Port 2 Configuration

Serial Port	[Enabled]
Device Settings	IO=2F8h; IRQ=3;
Change Settings	[Auto]
Multi Function	[RS-232]

Select an optimal settings for Super IO Device

Change Settings
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;
IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12;

Select Screen
Select Item
: Select

Aptio Setup - AMI

Advanced

Serial Port 2 Configuration

Serial Port	[Enabled]
Device Settings	IO=2F8h; IRQ=3;
Change Settings	[Auto]
Multi Function	[RS-232]

There is a risk of permanent damage to electronic equipment if RS232 equipment is connected to RS422/485 equipment.

Multi Function
RS-232
RS-485
RS-422

→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit

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4.4.8 Hardware Monitor

```
                          Aptio Setup - AMI
     Main  Advanced  Chipset  Security  Boot  Save & Exit

   ▶ CPU Configuration                      Monitor hardware status
   ▶ Power & Performance
   ▶ PCH-FW Configuration
   ▶ Trusted Computing
   ▶ ACPI Settings
   ▶ Super IO Configuration
   ▶ Hardware Monitor
   ▶ USB Configuration
   ▶ Network Stack Configuration
   ▶ NVMe Configuration

                                            →←: Select Screen
                                            ↑↓: Select Item
                                            Enter: Select
                                            +/-: Change Opt.
                                            F1: General Help
                                            F2: Previous Values
                                            F3: Optimized Defaults
                                            F4: Save & Exit
                                            ESC: Exit

                  Version 2.22.1293 Copyright (C) 2025 AMI
```

```
                          Aptio Setup - AMI
        Advanced

   Pc Health Status                         Smart Fan  Mode Select

   CPU Smart Fan Function        [Disabled]
   CPU Temperature               : +34 C
   SYS Temperature               : +33 C
   CPU Fan Speed                 : 4477 RPM
   VCORE                         : +1.160 V
   VCC5V                         : +4.961 V
```

BIOS Setting	Description
CPU Smart Fan Function	Options: Disabled, 50C, 60C, 70C, 80C, and 90C.
Temperatures / Voltages	These fields are the parameters of the hardware monitoring function feature of the motherboard. The values are read-only values as monitored by the system and show the PC health status.

4.4.9   USB Configuration

BIOS Setting	Description
Legacy USB Support	• **Enabled** enables Legacy USB support. • **Auto** disables legacy support if there is no USB device connected. • **Disabled** keeps USB devices available only for EFI applications.
XHCI Hand-off	This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.
USB Mass Storage Driver Support	Enables / Disables the support for USB mass storage driver.
USB Transfer time-out	The time-out value (1 / 5 10 / 20 secs) for Control, Bulk, and Interrupt transfers.
Device reset time-out	USB mass storage device Start Unit command time-out (10/20/30/40 sec).
Device power-up delay	Max.time the device will take before it properly reports itself to the Host Controller. 'Auto' uses default value: for a Root port it is 100ms, for a Hub port the delay is taken from Hub descriptor.

iBASE

4.4.10 Network Stack Configuration
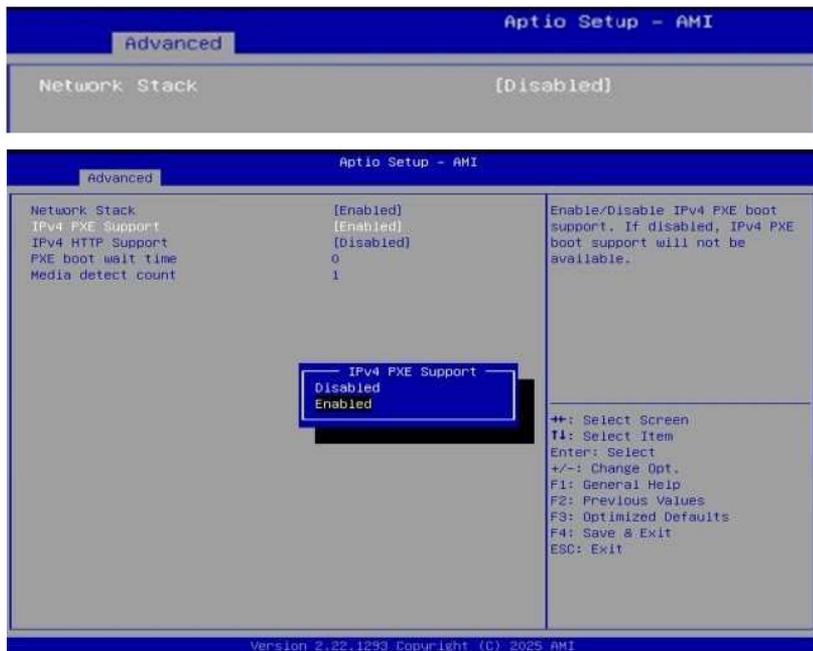
BIOS Setting	Description
Network Stack	Enable/Disable UEFI Network Stack
IPv4 PXE Support	Enable/Disable IPv4 PXE boot support. If disabled, IPv4 PXE boot support will not be available.
IPv4 HTTP Support	Enable/Disable IPv4 HTTP boot support. If disabled, IPv4 HTTP boot support will not be available.
PXE boot wait time	Wait time in seconds to press ESC key to abort the PXE boot. Use either +/- or numeric keys to set the value.
Media detect count	Number of times the presence of media will be checked. Use either +/- or numeric keys to set the value.

4.4.11   NVME Configuration

4.5 Chipset Settings

4.5.1   System Agent (SA) Configuration
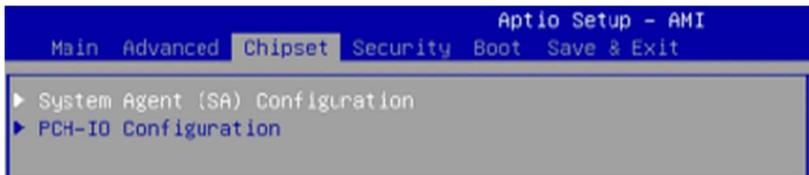
4.5.1.1.   Graphics Configuration:
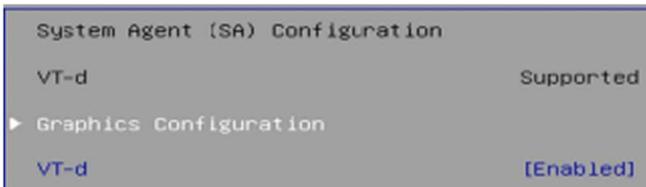
BIOS Setting	Description
Graphics Turbo IMON Current	Graphics tubo IMON current values supported (14-31)
GTT Size	Select the GTT Size (2MB / 4MB / 8MB).
Aperture Size	Select the Aperture Size (128MB/256MB/ 512MB/1024MB). Note: Above 4GB MMIO BIOS assignment is automatically enabled when selecting > 2048MB aperture. To use this feature, please disable CSM Support.
DVMT Pre-Allocated	Select DVMT 5.0 Pre-Allocated (Fixed) Graphics Memory size used by the Internal Graphics Device.
VT-d	Enable/Disable VT-d capability

4.5.2   PCH-IO Configuration

```
                                        Aptio Setup - AMI
                        Chipset

   PCH-IO Configuration

▶ SATA Configuration

   Power-On after Power failure          [Power Off]
```

4.5.2.1 SATA Configuration:

```
SATA Configuration

SATA Controller(s)                     [Enabled]

Serial ATA Port 0                      Empty
  Software Preserve                    Unknown
  Hot Plug                             [Disabled]
Serial ATA Port 1                      Empty
  Software Preserve                    Unknown
  Hot Plug                             [Disabled]
```

```
PCH-IO Configuration

SATA Configuration

Power-On after Power failure          [Power Off]

                              ── Power-On after Power failure
                              Power On
                              Power Off
```

BIOS Setting	Description
SATA and RST Configuration	SATA device options and settings
SATA Controller(s)	Enables / Disables the SATA Device.
Serial ATA Port 0~1	Enables / Disables Serial Port 0 ~ 1.
SATA Ports Hot Plug	Enables / Disables SATA Ports HotPlug.
Power-On After Power failure	Specify what state to go to when power is re-applied after a power failure (G3 state)

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4.6 Security Settings

BIOS Setting	Description
Setup Administrator Password	Sets an administrator password for the setup utility.
User Password	Sets a user password.
Secure Boot	Secure Boot feature is Active if Secure Boot is enabled. Platform Key(PK) is enrolled and the system is in user mode. The mode change requires platform reset.
Secure Boot Mode	Secure Boot mode options: Standard or Custom. In Custom mode, Secure Boot Policy variables can be configured by a physically present user without full authentication
Key Management	Enables expert users to modify Secure Boot Policy variables without variable authentication.

```
System Mode                        Setup

Secure Boot                        [Disabled]
                                   Not Active

Secure Boot Mode                   [Custom]
► Restore Factory Keys
► Reset To Setup Mode

► Key Management
```

```
Vendor Keys                        Valid

Factory Key Provision              [Disabled]
► Restore Factory Keys
► Reset To Setup Mode
► Enroll Efi Image
► Export Secure Boot variables

Secure Boot variable    | Size| Keys| Key Source
► Platform Key      (PK)|    0|    0| No Keys
► Key Exchange Keys (KEK)|    0|    0| No Keys
► Authorized Signatures (db)|   0|   0| No Keys
► Forbidden  Signatures(dbx)|   0|   0| No Keys
► Authorized TimeStamps(dbt)|   0|   0| No Keys
► OsRecovery Signatures(dbr)|   0|   0| No Keys
```

BIOS Setting	Description
Factory Key Provision	Install factory default Secure Boot keys after the platform reset and while the system is in setup mode.
Restore Factory Keys	Force System to User Mode. Install factory default secure boot key databases.
Enroll Efi Image	Allow Efi image to run in secute boot mode. Enroll SHA256 Hash certificate of a PE image into Authorized Signature Database (db).
Platform Key Key Exchange Keys Authorized Signatures Forbidden Signatures Authorize TimeStamps OsRecovery Signatures	Enroll Factory Defaults or load certificates from a file: 1. Public Key Certificate: a)EFI_SIGNATURE_LIST b)EFI_CERT_X509 (DER) c)EFI_CERT_RSA2048 (bin) d) EFI_CERT_SHAXXX 2. Authenticated UEFI variable. 3.EFI PE/COFF Image(SHA256) Key Source: Factory.Modified.Mixed

4.7 Boot Settings

```
                                        Aptio Setup - AMI
        Main  Advanced  Chipset  Security  Boot  Save & Exit

       Boot Configuration
       Setup Prompt Timeout                     1
       Bootup NumLock State                     [On]
       Quiet Boot                               [Disabled]

       FIXED BOOT ORDER Priorities
       Boot Option #1                           [Hard Disk]
       Boot Option #2                           [NVME]
       Boot Option #3                           [CD/DVD]
       Boot Option #4                           [SD]
       Boot Option #5                           [USB Hard Disk]
       Boot Option #6                           [USB CD/DVD]
       Boot Option #7                           [USB Key]
       Boot Option #8                           [USB Floppy]
       Boot Option #9                           [USB Lan]
       Boot Option #10                          [Network]
```

BIOS Setting	Description
Setup Prompt Timeout	Number of seconds to wait for setup activation key. 65535 (0xFFFF) means indefinite waiting.
Bootup NumLock State	Selects the keyboard NumLock state.
Quiet Boot	Enables / Disables Quiet Boot option.
FIXED BOOT ORDER Priorities	Sets the system boot order.

4.8 Save & Exit Settings

```
                              Aptio Setup - AMI
     Main  Advanced  Chipset  Security  Boot  Save & Exit

  Save Options
  Save Changes and Exit
  Discard Changes and Exit

  Save Changes and Reset
  Discard Changes and Reset

  Save Changes
  Discard Changes

  Default Options
  Restore Defaults
  Save as User Defaults
  Restore User Defaults
```
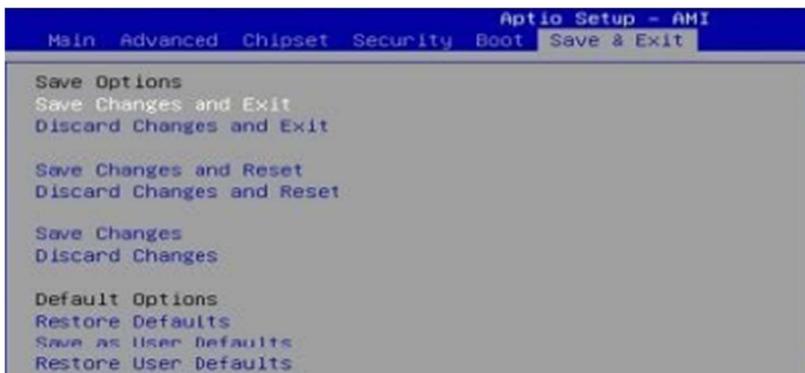
BIOS Setting	Description
Save Changes and Exit	Exits system setup after saving the changes.
Discard Changes and Exit	Exits system setup without saving any changes.
Save Changes and Reset	Resets the system after saving the changes.
Discard Changes and Reset	Resets system setup without saving any changes.
Save Changes	Saves changes done so far to any of the setup options.
Discard Changes	Discards changes done so far to any of the setup options.
Restore Defaults	Restores / Loads defaults values for all the setup options.
Save as User Defaults	Saves the changes done so far as User Defaults.
Restore User Defaults	Restores the user defaults to all the setup options.

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Appendix

This section provides the mapping addresses of peripheral devices and the sample code of watchdog timer configuration.

A.   I/O Port Address Map

Each peripheral device in the system is assigned a set of I/O port addresses which also becomes the identity of the device. The following table lists the I/O port addresses used.

Address	Device Description
0x00000A00-0x00000A0F	Motherboard resources
0x00000A10-0x00000A1F	Motherboard resources
0x00000A20-0x00000A2F	Motherboard resources
0x0000002E-0x0000002F	Motherboard resources
0x0000004E-0x0000004F	Motherboard resources
0x00000061-0x00000061	Motherboard resources
0x00000063-0x00000063	Motherboard resources
0x00000065-0x00000065	Motherboard resources
0x00000067-0x00000067	Motherboard resources
0x00000070-0x00000070	Motherboard resources
0x00000080-0x00000080	Motherboard resources
0x00000092-0x00000092	Motherboard resources
0x000000B2-0x000000B3	Motherboard resources
0x00000680-0x0000069F	Motherboard resources
0x0000164E-0x0000164F	Motherboard resources
0x00003F00-0x00003FFF	Realtek PCIe 2.5GbE Family Controller
0x00000040-0x00000043	System timer
0x00000050-0x00000053	System timer
0x00004000-0x00004FFF	PCI Express Root Port #7 - 54BE
0x000003F8-0x000003FF	Communications Port (COM1)
0x000002F8-0x000002FF	Communications Port (COM2)
0x00005000-0x0000503F	Intel(R) UHD Graphics
0x00001854-0x00001857	Motherboard resources
0x00000000-0x00000CF7	PCI Express Root Complex
0x00000D00-0x0000FFFF	PCI Express Root Complex
0x00005090-0x00005097	Standard SATA AHCI Controller
0x00005080-0x00005083	Standard SATA AHCI Controller
0x00005060-0x0000507F	Standard SATA AHCI Controller
0x00002000-0x000020FE	Motherboard resources

Address	Device Description
0x00000020-0x00000021	Programmable interrupt controller
0x00000024-0x00000025	Programmable interrupt controller
0x00000028-0x00000029	Programmable interrupt controller
0x0000002C-0x0000002D	Programmable interrupt controller
0x00000030-0x00000031	Programmable interrupt controller
0x00000034-0x00000035	Programmable interrupt controller
0x00000038-0x00000039	Programmable interrupt controller
0x0000003C-0x0000003D	Programmable interrupt controller
0x000000A0-0x000000A1	Programmable interrupt controller
0x000000A4-0x000000A5	Programmable interrupt controller
0x000000A8-0x000000A9	Programmable interrupt controller
0x000000AC-0x000000AD	Programmable interrupt controller
0x000000B0-0x000000B1	Programmable interrupt controller
0x000000B4-0x000000B5	Programmable interrupt controller
0x000000B8-0x000000B9	Programmable interrupt controller
0x000000BC-0x000000BD	Programmable interrupt controller
0x000004D0-0x000004D1	Programmable interrupt controller
0x00004F00-0x00004FFF	Realtek PCIe 2.5GbE Family Controller #2
0x00000060-0x00000060	Standard PS/2 Keyboard
0x00000064-0x00000064	Standard PS/2 Keyboard
0x00003000-0x00003FFF	PCI Express Root Port #9 - 54B0

B.   Interrupt Request Lines (IRQ)

Peripheral devices use interrupt request lines to notify CPU for the service required. The following table shows the IRQ used by the devices on board.

Level	Function
IRQ 4294967292	Intel(R) USB 3.20 eXtensible Host Controller - 1.20 (Microsoft)
IRQ 4294967259-90	Realtek PCIe 2.5GbE Family Controller
IRQ 0	System timer
IRQ 4294967226	Intel(R) Management Engine Interface #1
IRQ 4	Communications Port (COM1)
IRQ 3	Communications Port (COM2)
IRQ 19	High Definition Audio Controller
IRQ 4294967291	Intel(R) UHD Graphics
IRQ 16	Intel(R) Serial IO UART Host Controller - 54A8
IRQ 55~204	Microsoft ACPI-Compliant System
IRQ 256~511	Microsoft ACPI-Compliant System
IRQ 4294967294	Standard SATA AHCI Controller
IRQ 4294967293	Intel(R) USB 3.10 eXtensible Host Controller - 1.20 (Microsoft)
IRQ 4294967227-58	Realtek PCIe 2.5GbE Family Controller #2
IRQ 1	Standard PS/2 Keyboard
IRQ 12	Microsoft PS/2 Mouse

C.   Watchdog Timer Configuration

The Watchdog Timer (WDT) is used to generate a variety of output signals after a user programmable count. The WDT is suitable for use in the prevention of system lock-up, such as when software becomes trapped in a deadlock. Under these sorts of circumstances, the timer will count to zero and the selected outputs will be driven.

Under normal circumstance, you will need to restart the WDT at regular intervals before the timer counts to zero.

Sample Code:

```
//-------------------------------------------------------------------------
//
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR
// PURPOSE.
//
//-------------------------------------------------------------------------
#include<dos.h>
#include<conio.h>
#include<stdio.h>
#include<stdlib.h>
#include" F81804.H"
//-------------------------------------------------------------------------
int main (int argc, char*argv[]);
void EnableWDT(int);
void DisableWDT(void);
//-------------------------------------------------------------------------
int main (int argc, char *argv[])
{
            unsigned char bBuf;
            unsigned char bTime;
            char **endptr;

            char SIO;

            printf("Fintek 81866 watch dog program\n");
            SIO = Init_ F81804();
            if (SIO == 0)
            {
                        printf("Can not detect Fintek 81866, program abort.\n");
                        return(1);
            }//if (SIO == 0)

            if (argc != 2)
            {
                        printf(" Parameter incorrect!!\n");
                        return (1);
            }
```

```
            bTime = strtol (argv[1], endptr, 10);
            printf("System will reset after %d seconds\n", bTime);

            if (bTime)
            {             EnableWDT(bTime); }
            else
            {             DisableWDT();}
            return 0;
}
//------------------------------------------------------------------------
void EnableWDT(int interval)
{
            unsigned char bBuf;

            bBuf = Get_ F81804_Reg(0x2B);
            bBuf &= (~0x20);
            Set_ F81804_Reg(0x2B,  bBuf);           //Enable WDTO

            Set_ F81804_LD(0x07);                   //switch to logic device 7
            Set_ F81804_Reg(0x30,  0x01);           //enable timer

            bBuf = Get_ F81804_Reg(0xF5);
            bBuf &= (~0x0F);
            bBuf |= 0x52;
            Set_ F81804_Reg(0xF5,  bBuf);           //count mode is second

            Set_ F81804_Reg(0xF6,  interval);       //set timer

            bBuf = Get_ F81804_Reg(0xFA);
            bBuf |= 0x01;
            Set_ F81804_Reg(0xFA,  bBuf);           //enable WDTO output

            bBuf = Get_ F81804_Reg(0xF5);
            bBuf |= 0x20;
            Set_ F81804_Reg(0xF5,  bBuf);           //start counting
}
//------------------------------------------------------------------------
void DisableWDT(void)
{
            unsigned char bBuf;

            Set_ F81804_LD(0x07);                   //switch to logic device 7

            bBuf = Get_ F81804_Reg(0xFA);
            bBuf &= ~0x01;
            Set_ F81804_Reg(0xFA,  bBuf);           //disable WDTO output

            bBuf = Get_ F81804_Reg(0xF5);
            bBuf &= ~0x20;
            bBuf |= 0x40;
            Set_ F81804_Reg(0xF5,  bBuf);           //disable WDT
}
//------------------------------------------------------------------------


//------------------------------------------------------------------------
//
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY
```

```
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR
// PURPOSE.
//
//------------------------------------------------------------------------
#include " F81804.H"
#include <dos.h>
//------------------------------------------------------------------------
unsigned int F81804_BASE;
void Unlock_ F81804 (void);
void Lock_ F81804 (void);
//------------------------------------------------------------------------
unsigned int Init_ F81804(void)
{
              unsigned int result;
              unsigned char ucDid;

               F81804_BASE = 0x4E;
              result = F81804_BASE;

              ucDid = Get_ F81804_Reg(0x20);
              if (ucDid == 0x07)                        //Fintek 81866
              {                   goto   Init_Finish;          }

               F81804_BASE = 0x2E;
              result = F81804_BASE;

              ucDid = Get_ F81804_Reg(0x20);
              if (ucDid == 0x07)                        //Fintek 81866
              {                   goto   Init_Finish;          }

               F81804_BASE = 0x00;
              result = F81804_BASE;

Init_Finish:
              return (result);
}
//------------------------------------------------------------------------
void Unlock_ F81804 (void)
{
              outportb( F81804_INDEX_PORT, F81804_UNLOCK);
              outportb( F81804_INDEX_PORT, F81804_UNLOCK);
}
//------------------------------------------------------------------------
void Lock_ F81804 (void)
{
              outportb( F81804_INDEX_PORT, F81804_LOCK);
}
//------------------------------------------------------------------------
void Set_ F81804_LD( unsigned char LD)
{
              Unlock_ F81804();
              outportb( F81804_INDEX_PORT, F81804_REG_LD);
              outportb( F81804_DATA_PORT, LD);
              Lock_ F81804();
}
//------------------------------------------------------------------------
```

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```
void Set_ F81804_Reg( unsigned char REG, unsigned char DATA)
{
            Unlock_ F81804();
            outportb( F81804_INDEX_PORT, REG);
            outportb( F81804_DATA_PORT, DATA);
            Lock_ F81804();
}
//----------------------------------------------------------------------
unsigned char Get_ F81804_Reg(unsigned char REG)
{
            unsigned char Result;
            Unlock_ F81804();
            outportb( F81804_INDEX_PORT, REG);
            Result = inportb( F81804_DATA_PORT);
            Lock_ F81804();
            return Result;
}
//----------------------------------------------------------------------




//----------------------------------------------------------------------
//
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR
// PURPOSE.
//
//----------------------------------------------------------------------
#ifndef    F81804_H
#define    F81804_H                    1
//----------------------------------------------------------------------
#define        F81804_INDEX_PORT        ( F81804_BASE)
#define        F81804_DATA_PORT         ( F81804_BASE+1)
//----------------------------------------------------------------------
#define        F81804_REG_LD            0x07
//----------------------------------------------------------------------
#define        F81804_UNLOCK            0x87
#define        F81804_LOCK              0xAA
//----------------------------------------------------------------------
unsigned int Init_ F81804(void);
void Set_ F81804_LD( unsigned char);
void Set_ F81804_Reg( unsigned char,
unsigned char); unsigned char
Get_ F81804_Reg( unsigned char);
//----------------------------------------------------------------------
#endif  //    F81804_H
```

D. Onboard Connector Reference Types

Function	Connector	Onboard Type	Compatible Mating Type
SATA Connector with Power	J4	ACES 51205-0134T-001	LV07113-231
COM1 + COM2 Serial Ports	J13	TECHBEST AS0960120AC10	JST 20SUR-32S
Digital I/O 4in-4out	J14	TECHBEST AS0960120AC10	JST 10SUR-32S
USB 2.0 Header	J15, J16	TYU TF0801WNV-04S-GO-C1-NL-C-A	JST 04SUR-32S
Front Panel Header for Power Button	J17	TYU TF0801WNV-04S-GO-C1-NL-C-A	JST 04SUR-32S
Front Panel Header for LED	J18	TYU TF0801WNV-04S-GO-C1-NL-C-A	JST 04SUR-32S

E. USB Power Control Mapping

PDPC (Peripheral Device Power Control) allows users to turn off the external power and restart it via software, enabling the external device to recover and ensuring the system remains operational. Here are the bit-mapping for software SDK.

Function	Connector	Software Mapping
USB	**CN3**	**bit_0**