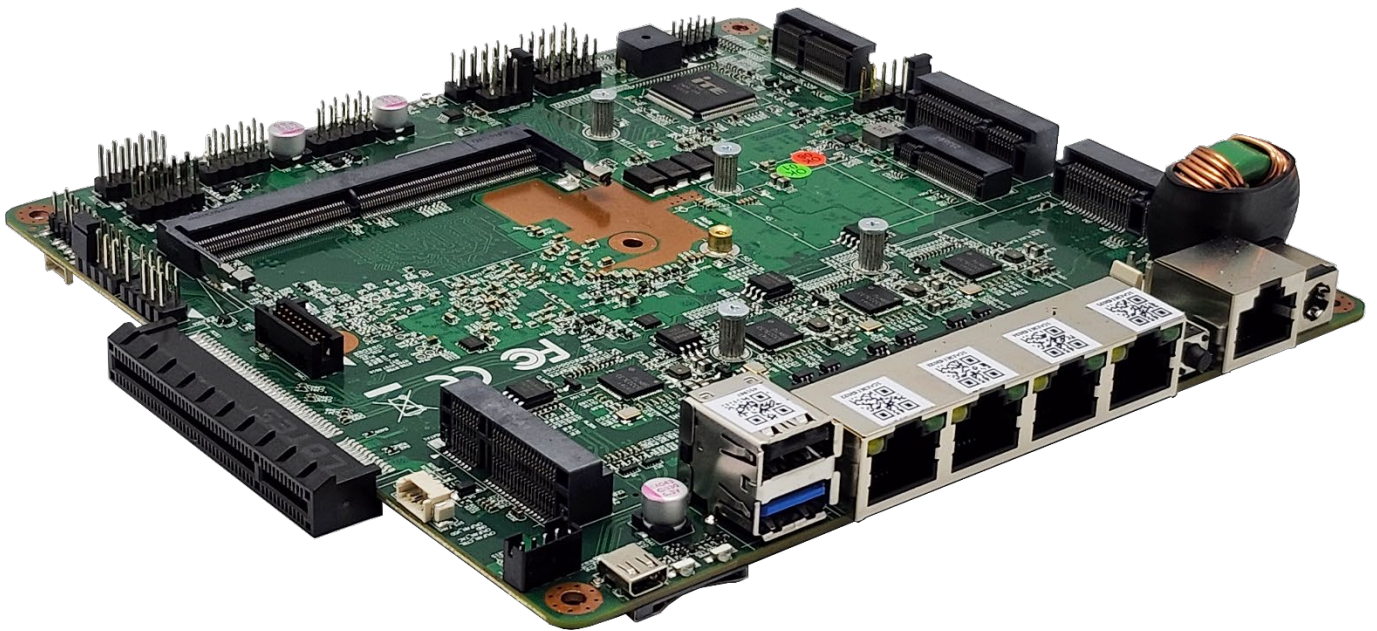# BOINGFIRE™

BFX2 System Board

Hardware Manual

Version: 1.0

About this Document

This guide provides insights into the diverse features of this product and the necessary steps for setup. It's designed for individuals who are:

In charge of setting up, managing, and addressing issues with this system, like IT experts.

Presumed to possess proficiency in computer equipment servicing, including seasoned system integrators and technical staff.

Acknowledgment

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Details provided in this manual aim to be precise and trustworthy. However, Boingfire Systems assumes no liability for its application, nor for any potential violations of third-party rights that might arise from its use.

Technical Support

Besides reaching out to your distributor or sales agent, there are alternative avenues to seek support from Boingfire:

Email Us
support@boingfire.com

Compliances and Certification

CE

This product has passed the CE test for environmental specifications. Test conditions for passing included the equipment being operated within an industrial enclosure. To protect the product from being damaged by ESD (Electrostatic Discharge) and EMI leakage, we strongly recommend the use of CE-compliant industrial enclosure products.

FCC Class A

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful

interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. The operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

EMC Notice

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. The operation of this equipment in a residential area is likely to cause harmful interference in which case users will be required to correct the interference at their own expense.

Safety Guidelines

Adhere to these precautions for optimal safety:

- Ensure the chassis vicinity remains clean and devoid of dust during and post-installation.
- Avoid wearing garments or accessories that might entangle in the chassis. Secure ties or scarves and tuck in your sleeves.
- Employ protective eyewear if operating under conditions potentially harmful to your eyesight.
- Refrain from actions that pose risks to individuals or compromise the equipment's safety.
- Before installing, removing a chassis, or being near power sources, disconnect all electrical connections by switching off and unplugging the power cord.
- Avoid operating in potentially dangerous situations unaccompanied.
- Never presume a circuit is power-free; always conduct a thorough check.

Lithium Battery Caution

- Risk of Explosion if Battery is replaced by an incorrect type. Dispose of used batteries according to the instructions.
- Installation only by a trained electrician or only by an electrically trained person who knows all English Installation and Device Specifications which are to be applied.
- Do not carry the handle of power supplies when moving to another place.
- The machine can only be used in a fixed location such as labs or computer facilities.

Operating Safety

- Electrical equipment generates heat. Ambient air temperature may not be adequate to cool equipment to acceptable operating temperatures without adequate circulation. Be sure that the room in which you choose to operate your system has adequate air circulation.

- Ensure that the chassis cover is secure. The chassis design allows cooling air to circulate effectively. An open chassis permits air leaks, which may interrupt and redirect the flow of cooling air from internal components.
- Electrostatic discharge (ESD) can damage equipment and impair electrical circuitry. ESD damage occurs when electronic components are improperly handled and can result in complete or intermittent failures. Be sure to follow ESD-prevention procedures when removing and replacing components to avoid these problems.
- Wear an ESD-preventive wrist strap, ensuring that it makes good skin contact. If no wrist strap is FW-8894 User Manual available, ground yourself by touching the metal part of the chassis.
- Periodically check the resistance value of the antistatic strap, which should be between 1 and 10 megohms (Mohms).

Installation Precautions

Environmental:

- Do not install and/or operate this unit in any place that flammable objects are stored or used in.
- If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (TMA) specified by the manufacturer.
- Installation of the equipment (especially in a rack) should consider the ventilation of the system's intake (for taking chilled air) and exhaust (for emitting hot air) openings so that the amount of air flow required for safe operation of the equipment is not compromised.
- To avoid a hazardous load condition, be sure the mechanical loading is even when mounting.
- Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on over-current protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.
- Reliable earthing should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g. use of power strips).
- Boingfire Systems shall not be held liable for any losses resulting from insufficient strength for supporting the unit or use of inappropriate installation components.

Installation & Operation:

- The installation of this product must be performed by trained specialists; otherwise, a non-specialist might create the risk of the system's falling to the ground or other damages.
- Boingfire Systems shall not be held liable for any losses resulting from insufficient strength for supporting the system or use of inappropriate installation components.

CHAPTER 1: Introduction

PRODUCT OVERVIEW

These are some highlights to give you better understanding about BFX2 System Board.

- ✓ Tailored for fanless network appliances like routers, firewalls, VPNs, IPBX, and IoT gateways.

- ✓ Fully compatible with open-source operating systems including CentOS, OpenBSD, OPNsense, and FreeBSD, making it a prime choice for open-source enthusiasts.

- ✓ Designed for ultra-low power consumption, cutting energy usage by 20% compared to rival products.

- ✓ Enhanced thermal design ensures unparalleled stability, especially within confined spaces.

- ✓ Powered by an Intel Celeron J6412 CPU with 4 cores, running at a frequency of 2.6GHz and equipped with a 1.5MB L2 cache and AES-NI.

- ✓ Uses DDR4 technology at 3200MHz, supporting up to 32GB of data with a single 260-pin SODIMM socket.

- ✓ Features one Micro-HDMI port, capable of supporting a resolution up to 4096 x 2160 at 60Hz.

- ✓ Offers up to 4 Ethernet interfaces with an Intel i226-V, speed 2.5 Gbps controller and RJ45 connectors.

- ✓ Equipped with a system reset output and a flexible timer ranging from 1-255 seconds to 1-255 minutes.

- ✓ Comes with two full-sized mSATA, an eMMC slot exclusive for Boingfire Modules, and a SATAII interface with 6.0 Gb/s transfer rates.

- ✓ Houses 3 serial ports, an Micro-HDMI output, dual reset, and power buttons, four USB ports (including one USB 3.0), and a 24-bit GPIO.

- ✓ One Mini PCIe slots designed for 4G/LTE and one port for M2. 5G WiFi functionalities.

- ✓ Requires a 12V power input with a variance of +/- 10%, and on a minimal system setup, it consumes a mere 1.6A@12V (18W).

- ✓ Measures at 160 x 152 mm, weighing 0.45 kg with its heatsink. Can operate between 0-60°C and sustain non-operating temperatures of -40°C to 85°C

System Specifications

- **Design Features**
  - Ultra-low power consumption: 25% lower than competitors.
  - Superior thermal design ensuring stability, especially in closed housing.
- **Processor**
 - CPU: Intel Celeron J6412
  - Cores: 4

- Frequency: 2.6GHz
- L2 Cache: 1.5MB
- BIOS: AMI 128 Mbit
- Encryption Support: AES-NI
- **Memory**
  - Technology: DDR4 3200MHz
  - Capacity: Up to 32GB
  - Socket: 1 x 260-pin SODIMM
- **Display**
  - Micro-HDMI Port: 1
  - Max Resolution: 4096 x 2160 at 60Hz
- **Ethernet**
  - Interfaces: Up to 4
  - Controller: Intel i226-V (2.5Gbps)
  - Connector: RJ45
- **Watchdog Timer**
  - Output: System Reset
  - Adjustable Timer: 1-255s, 1-255min, with a disable option
- **Storage**
  - mSATA: 2 (full size)
  - eMMC: 1 (Compatible with Boingfire Module only)
  - SATA: 1 (SATAIII with transfer rates up to 6.0 Gb/s)[Custom order]
- **Internal I/O**
  - Serial Ports: 3 (1 x RS-232, 2 x TTL with transfer rate up to 1Mbit/s)
  - Micro-HDMI: 1
  - Power Button: 1 (for system wake)
  - USB Ports: 5 x USB2.0, 1 x USB3.0
  - GPIO: 24-bit GPIOs
  - I2C: 1
  - Reset Button: 1
- **Expansion**
  - Mini PCIe1: 4G/LTE with Dedicated SIM Slot
  - Mini PCIe2: M2. 5G with Dedicated SIM Slot via USB3.0
  - Mini PCIe3: M2. WiFi Radio Card
  - PCIE x 4 Slot for expansion Card
- **Power**
  - Input: 12V+/- 10%
  - Consumption: 1.6A@12V (18W) for a minimal system
  - Suggestion PSU: 36W (Typical) 60W (Attached PCIe cards)
- **Operating Environment**
  - Temperature: 0 ~ 60° C (32 ~ 140° F)
  - Humidity: 40° C @ 95% RH non-condensing
- **Storage Environment**
  - Temperature: -40° C ~ 85° C and 60° C @ 95% RH non-condensing
- **Physical Specifications**

- Dimensions: 160 x 152 mm (6.3" x 5.99")
- Weight: 0.5 kg (0.99 lb) with heatsink
- Total Height: 38mm (including cooler, PCB, and bottom)
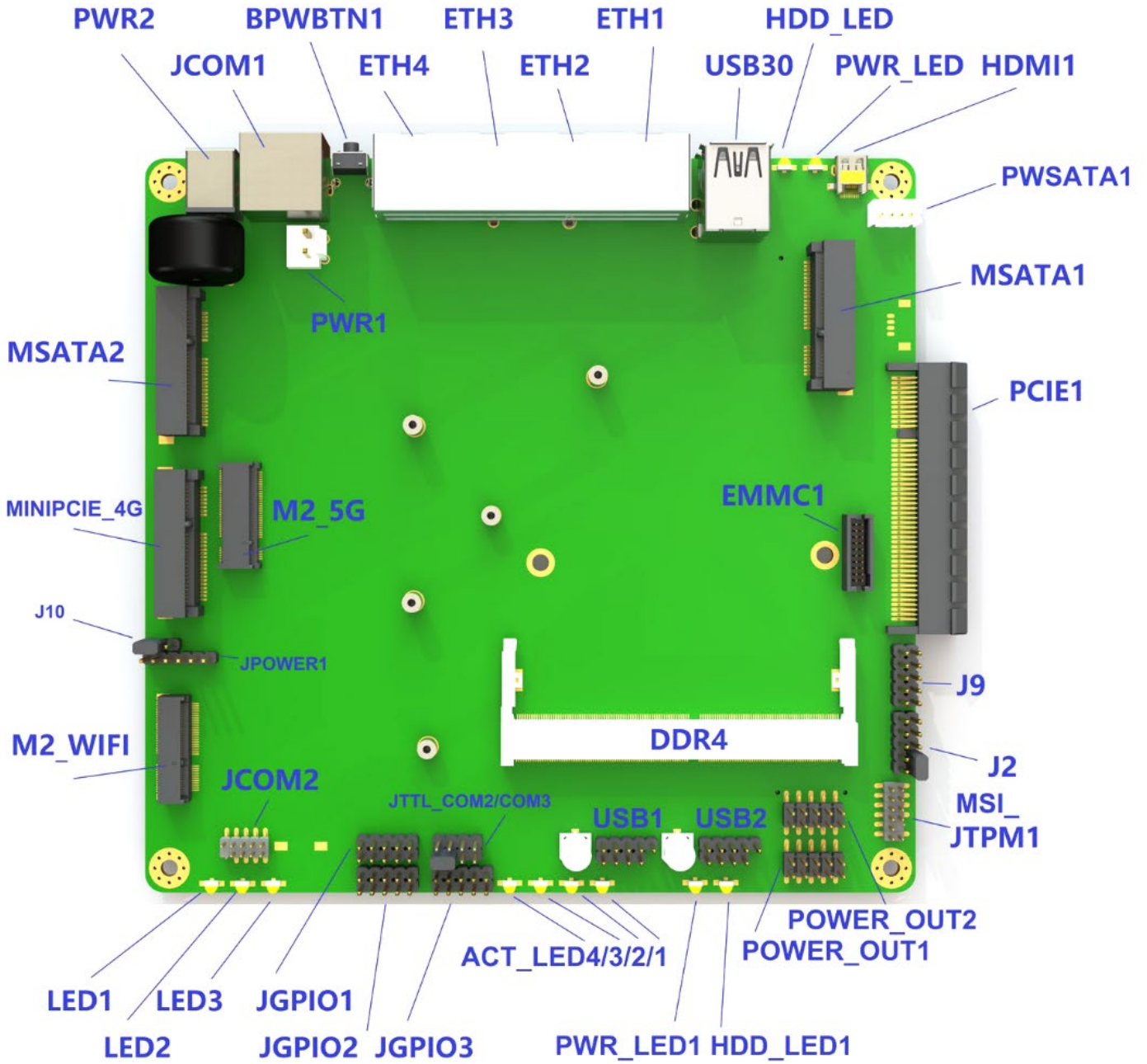- **Module**
  - TPM2.0 (Optional)

TOP VIEW
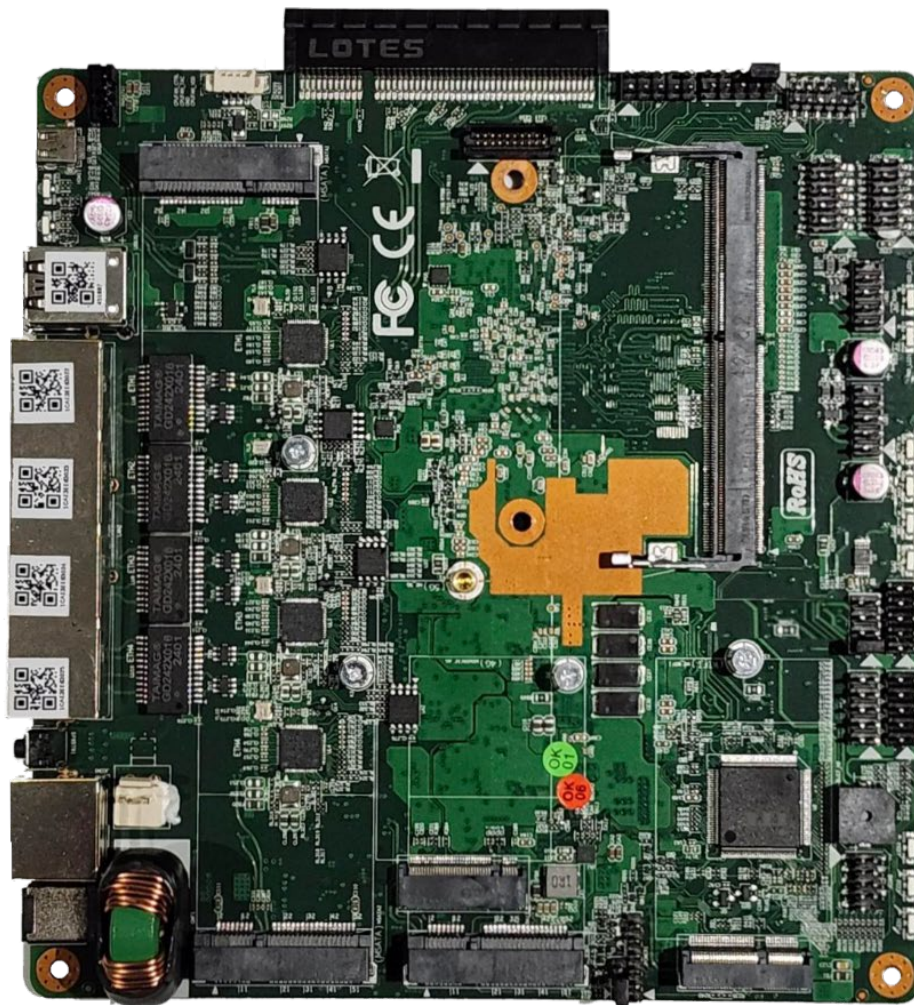
Dimension OF BFX2
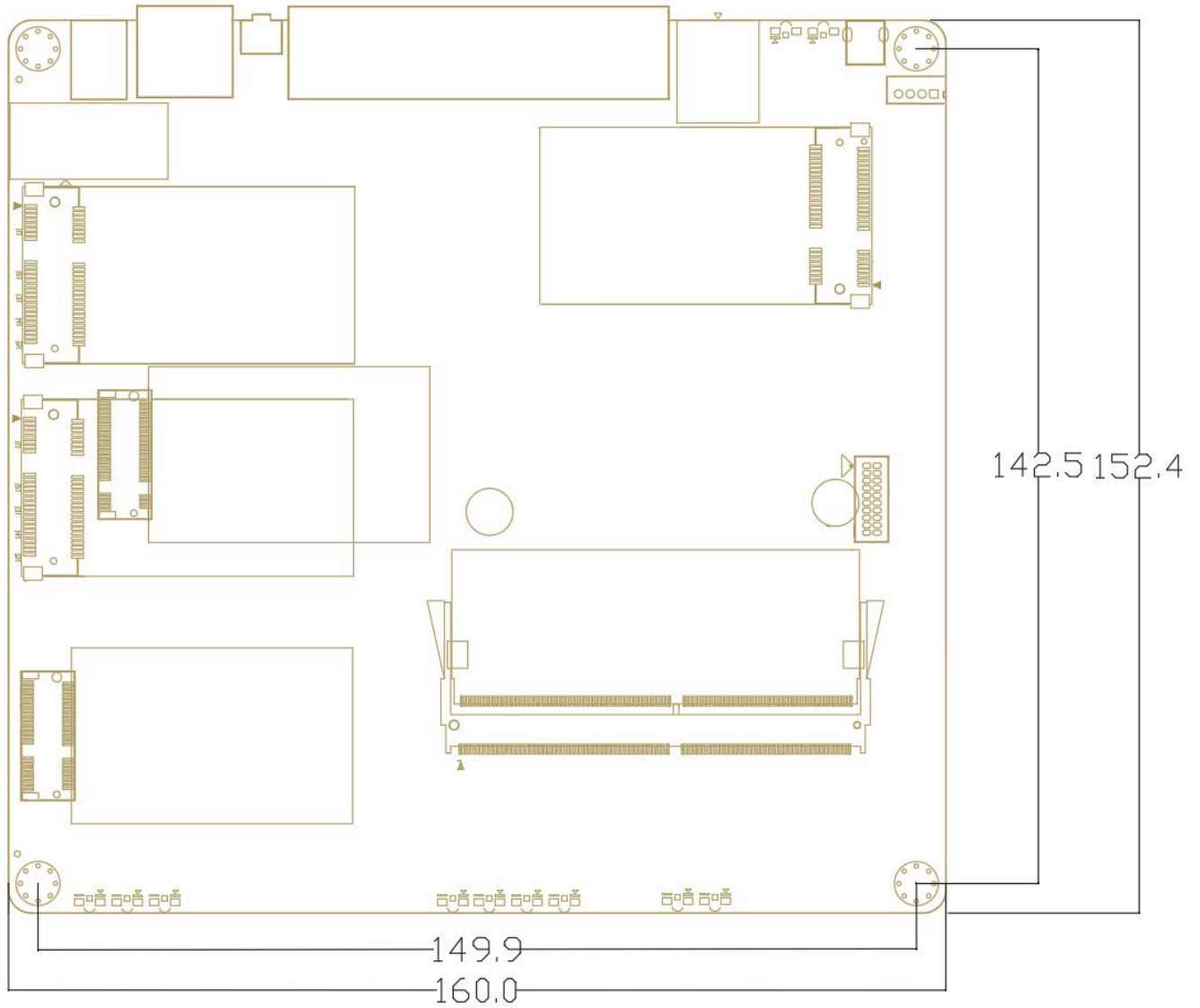
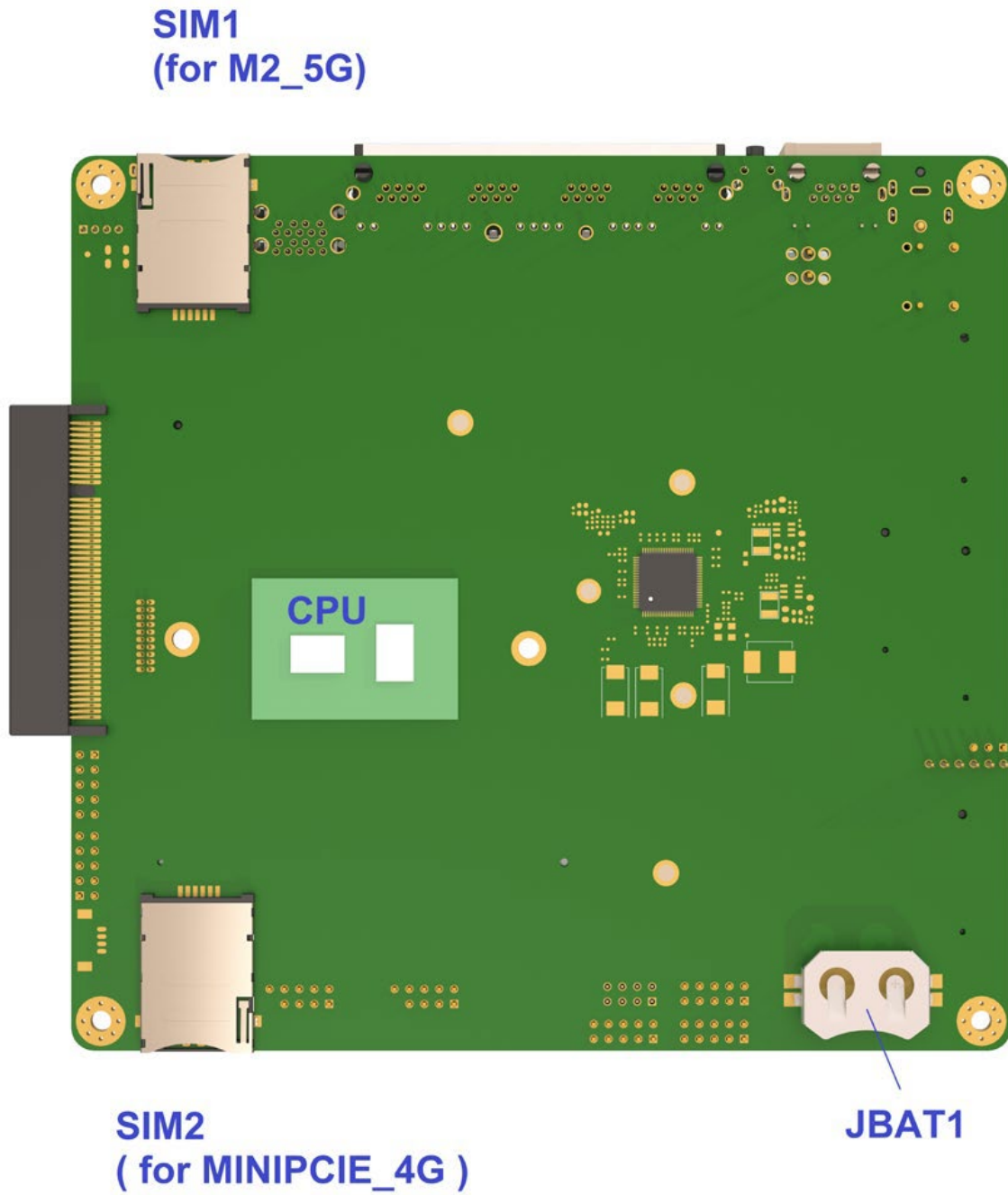**2D and 3D images are available, contact your distributor/reseller for more information.**

Some conditions apply.

CHAPTER 2: CONNECTOR LAYOUT

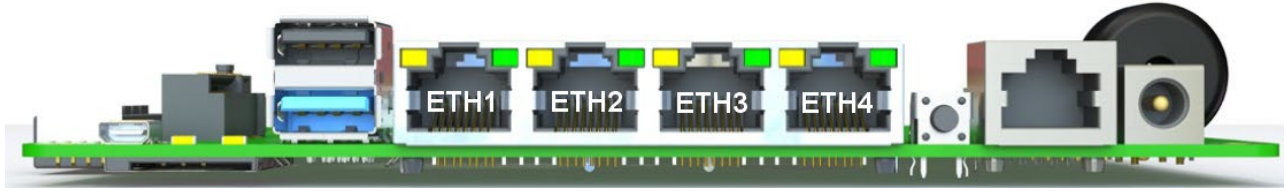Here all the connectors from the top of BFX2 are mentioned.

At the bottom of the board connector shown in the image below.

BFX2 I/O Connector List

Ethernet Connectors

ETH1, ETH2, ETH3, ETH4 (2.5 Gbps RJ45 Ports)

(ETH1~ ETH4) Definition:

PIN	NAME	PIN	NAME
1	MDI_0+	2	MDI_0-
3	MDI_1+	4	MDI_2+
5	MDI_2-	6	MDI_1-
7	MDI_3+	8	MDI_3-

In FreeBSD, ETH1 ~ ETH4 correspond to igb0 ~ igb3 Respectively.

root@:~ # uname -a
FreeBSD 12.0-RELEASE FreeBSD 12.0-RELEASE r341666 GENERIC amd64
root@:~ # dmesg | grep address
igb0: Ethernet address: 1c:ae:3e:e6:30:36 //ETH1 (The network port close to USB port)
igb1: Ethernet address: 1c:ae:3e:e6:30:37 //ETH2
igb2: Ethernet address: 1c:ae:3e:e6:30:38 //ETH3
igb3: Ethernet address: 1c:ae:3e:e6:30:39 //ETH4 (The network port close to console)
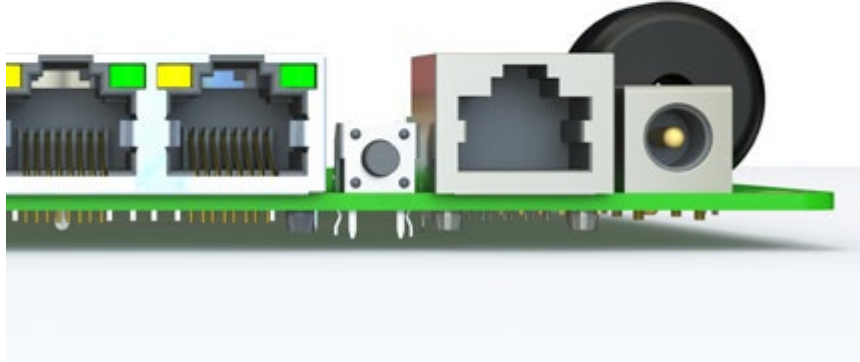
FreeBSD IP Setting
Recommended IP setting (freeBSD)
root@:/ # vi /etc/rc.conf
clear_tmp_enable="YES"
sendmail_enable="NONE"
hostname=""
#ifconfig_igb0="DHCP" // dhcp
ifconfig_igb0="inet 192.168.0.210 netmask 255.255.255.0" // static IP of igb0
ifconfig_igb1="inet 192.168.1.210 netmask 255.255.255.0"
ifconfig_igb2="inet 192.168.2.210 netmask 255.255.255.0"
ifconfig_igb3="inet 192.168.3.210 netmask 255.255.255.0"
sshd_enable=#"YES"
# Set dumpdev to "AUTO" to enable crash dumps, "NO" to disable
dumpdev="AUTO"
sshd_enable=yes // sshd

COM Port Information
COM1 Port Identification (Close to power button)

RJ45 Console port Support remote PC accessing.

PIN	NAME	PIN	NAME
1	RTS1	2	DTR1
3	TXD1	4	GND1
5	GND1	6	RXD1
7	DSR1	8	CTS1

Support typical baud rate from 9600bps ~ 115200bps (115200 default).

Baud rate setting in BIOS
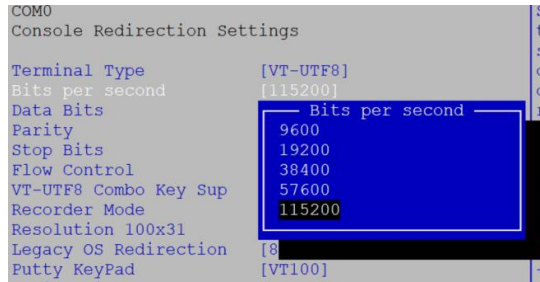
Baud rate setting in freeBSD

root@:/ # vi /boot/loader.conf
console="comconsole"//select serial portas console
comconsole_speed=115200// 115200 is recommended
autoboot_delay="0"// waiting time setting

Recommended settings on Putty (Remote MS Windows OS)

JCOM2 (RS232 Level)

Short pin 1-3 of the jumper to enable JCOM2 in RS232 level.

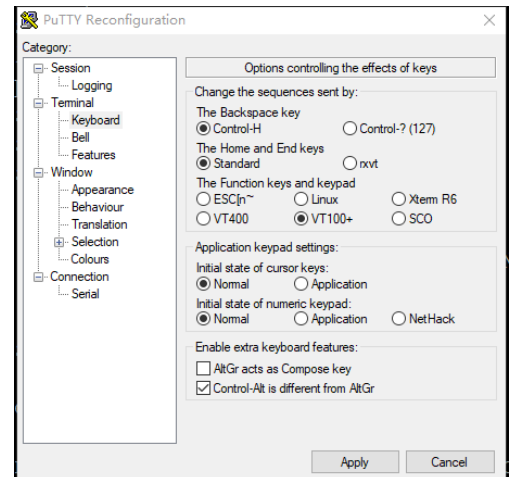| Jumper	NAME
1-3	COM2 in RS232 Level (JCOM2)
1-2 (Default)	COM2 in TTL level (JTTL_COM2)
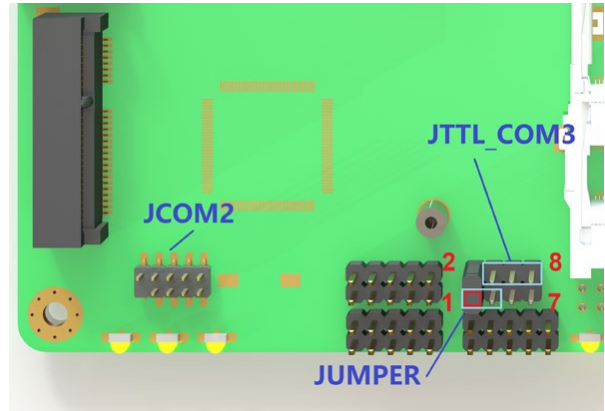
PIN	NAME	PIN	NAME
1	DCD2	2	RXD2
3	TXD2	4	DTR2
5	GND	6	DSR2
7	TRS2	8	CTS2
9	RI2	10	NC

COM2 ~ COM3 Definition: (TTL level)

Short pin 1-2 of the jumper to enable JCOM2 in TTL level.
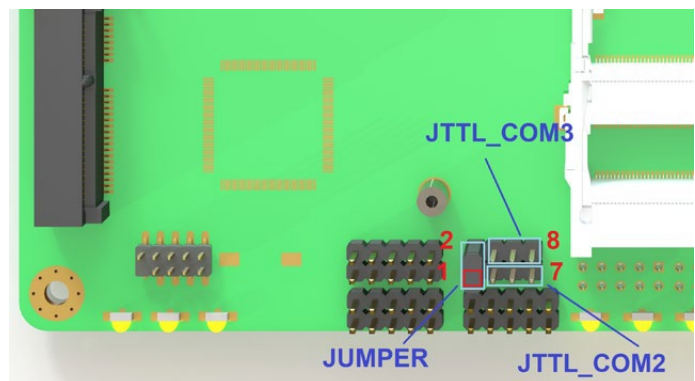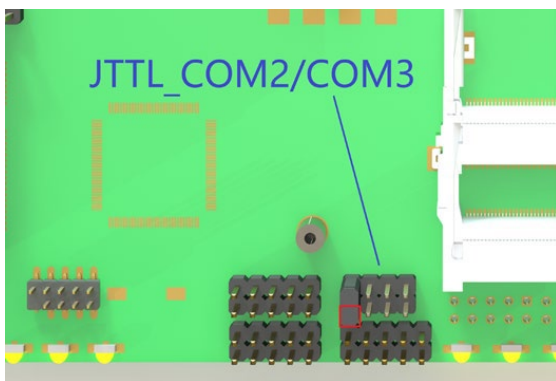
JTTL_COM2

It's the copy of RJ45 console port JCOM2, TTL level.

The port would be available as soon as pin header soldered.

PIN	NAME
3	TXD2_TTL
5	RXD2_TTL
7	GND

JTTL_COM3 (TTL level)

The TTL level serial ports are from a USB bus convert chip CH340

PIN	NAME
2	TXD3_TTL
4	RXD3_TTL
6	GND

J2

Shorting pin 1-3 ,AT mode (default) , After the power is turned on, the system starts automatically.

Opening pin 1-3 ,ATX mode, After the power is turned on, press the power button and the system will start.
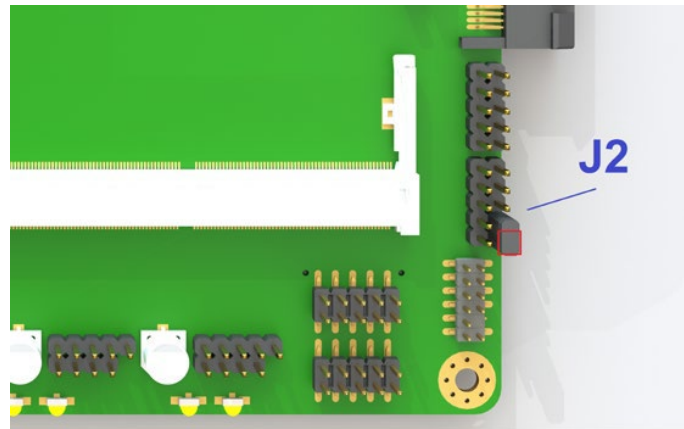
PIN	NAME	PIN	NAME
1	ATX_1	2	SOC_LPSS_RX
3	ATX_2	4	SOC_LPSS_TX
5	GND	6	GND
7	SPI_WP-N	8	SOC_I2C_SCL
9	GND	10	SOC_I2C_SDA

HDMI Connector (HDMI1)

HDMI1 is micro-HDMI female connector. Please use a micro-HDMI male to HDMI female cable to connect monitor to BFX2 System board.
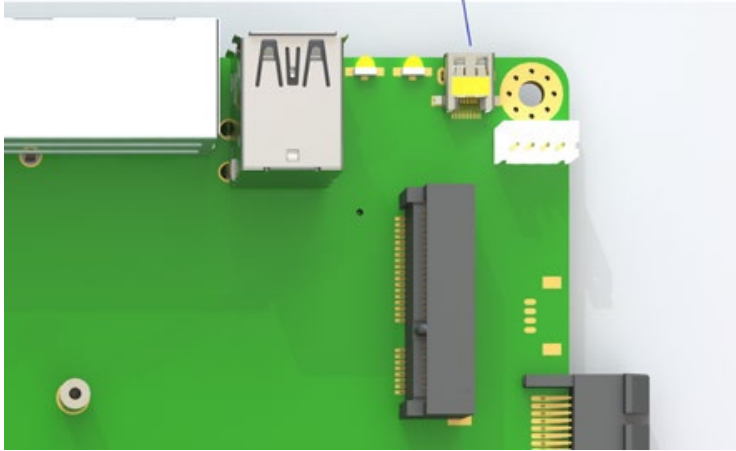
PIN	NAME	PIN	NAME
1	2+	2	HDMI_SCL
3	2+	4	HDMI-SDA
5	1+	6	NC
7	1-	8	DETECT
9	0+	10	DVI_5V (OFF IN S4)
11	0-	12	GND
13	CLK+	14	GND
15	CLK-	16	GND

BPWBTN1
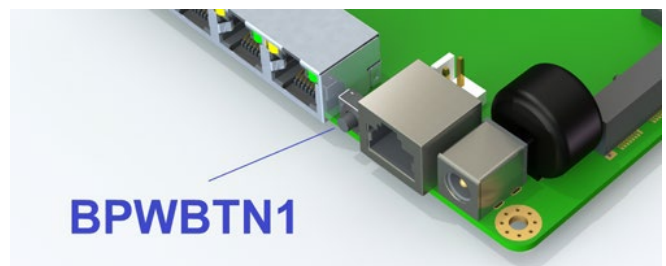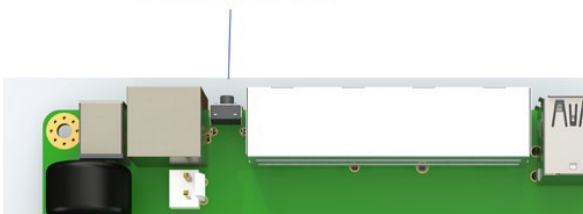
NAME	FUNCTION
BPWBTN1	Power Button

LED INFO

HDD_LED,HDD_LED1,PWR_LED,PWR_LED1

HDD_LED PWR_LED
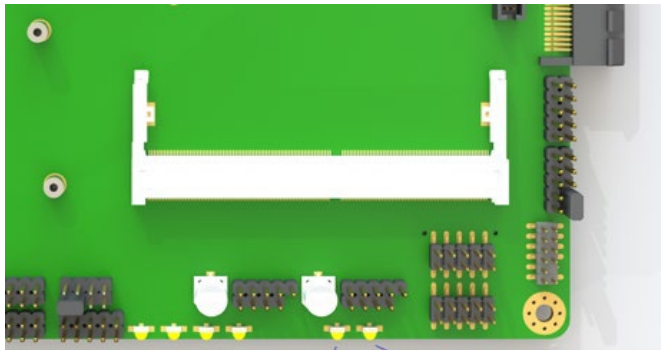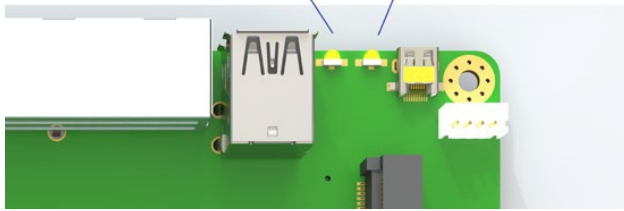
PWR_LED1   HDD_LED1

NAME	FUNCTION
HDD_LED HDD_LED1	HDD Activity light, blink when HDD in reading/writing
PWR_LED PWR_LED1	Power Status Light off in case system is in shutdown

LED1, LED2, LED3
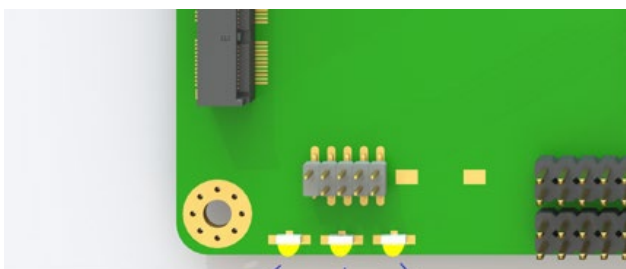
LED1 LED2 LED3

PIN	NAME
LED1	GPIO pin. Wired out from GPIO33 of SOC (pin AN7)
LED2	GPIO pin. Wired out from GPIO34 of SOC (pin AJ21)
LED3	GPIO pin. Wired out from GPIO35 of SOC (pin AJ24)

ACT_LED1, ACT_LED2, ACT_LED3, ACT_LED4

ACT_LED4/3/2/1
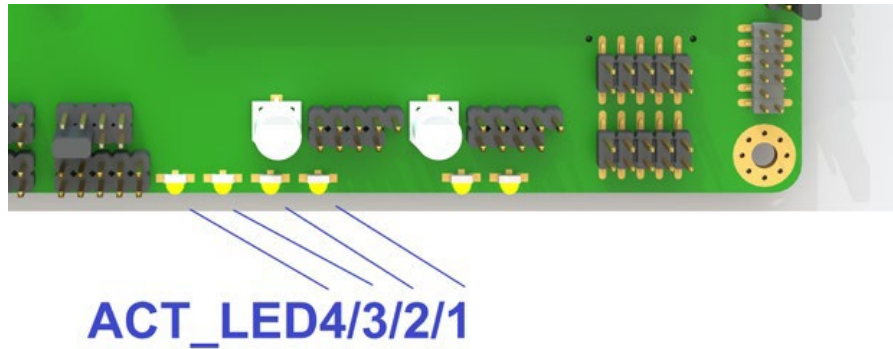
NAME	FUNCTION
ACT_LED1~4	Activity LED1~4 of ETH1~4

PWR2

PIN	NAME
Central Pin	+12VSB (ALWAYS ON)
Another Pin	GND

PWR1

PWR1 and PWR2 are redundant power supply design. No need external redundant unit.

PWR1 is compatible with Boingfire's UPS, POE, PSE cards.
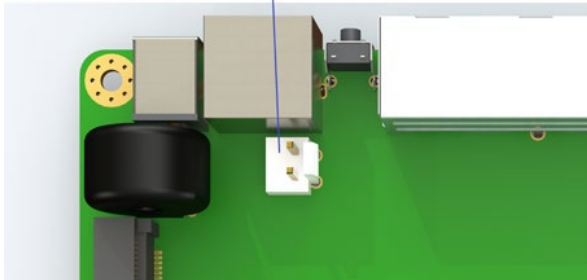
PIN	NAME
1	+12VSB (Always ON)
2	GND

Caution:

12V_S (OFF IN S4) and +12VSB (ALWAYS ON) are different power rail.

Must not wire +12VSB to 12V_S, Short them would damage the motherboard.

USB Ports

USB2.0 + USB3.0 Header
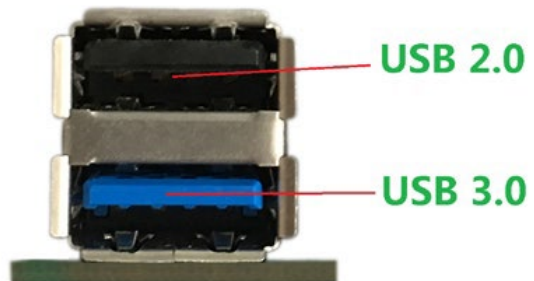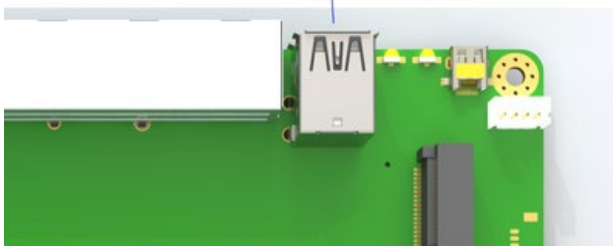
POSITION	USB SPEED
Upper Port	USB2.0
Lower Port	USB3.0

USB1, USB2

USB 2.0 header
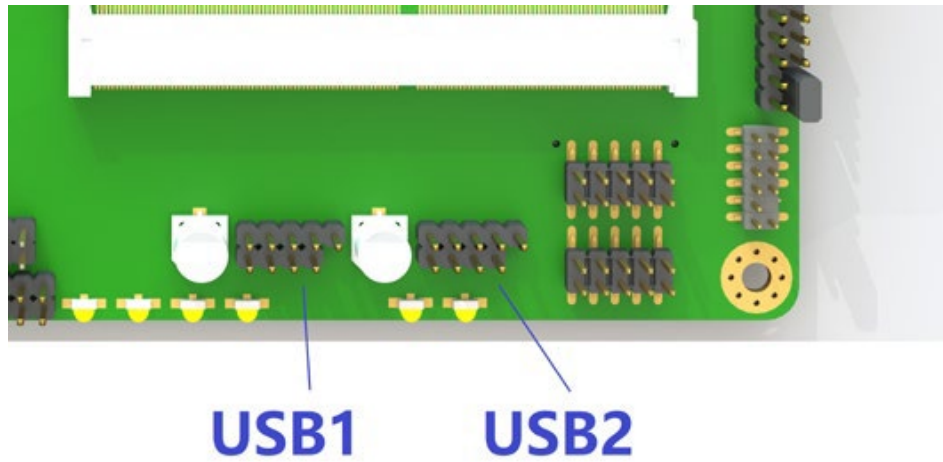
PIN	NAME	PIN	NAME
1	VCC	2	VCC
3	D0-	4	D1-
5	D0+	6	D1+
7	GND	8	GND
		10	GND

MSATA1 and MSATA2 (SSD)

Support mSATA SSD. SATA 3.0 , 6.0 Gb/s.

Based on dual MLC mSATA SSD, user can build soft RAID storage solution.

Significantly improve data and OS reliability.

M2_WIFI (WiFi)

The slot supports the Wi-Fi cards, PCIe Gen3 X2.

Support 30X52MM cards, or smaller cards with metal frame.
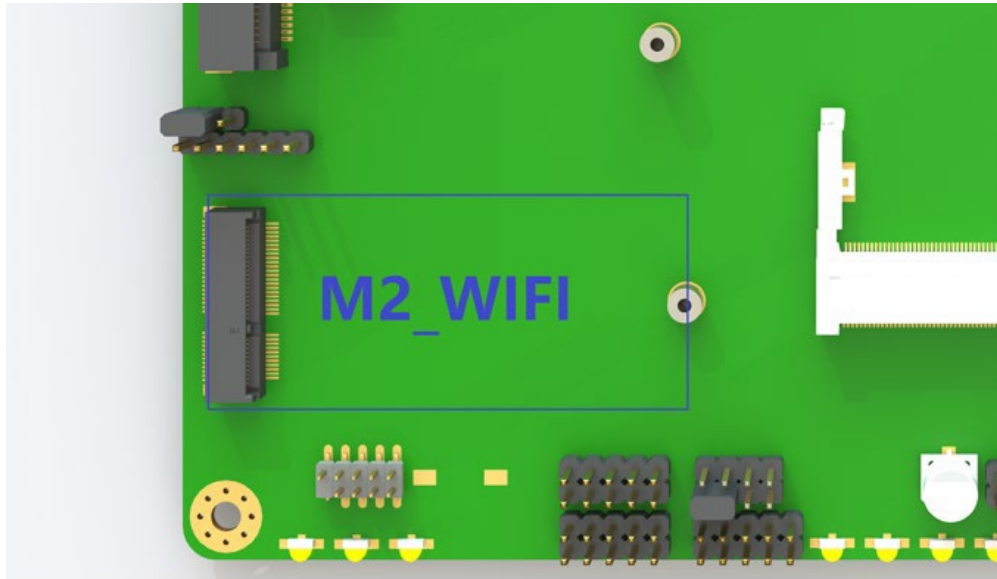
MINIPCIE_4G (4G/LTE/5G)

Support mPCIe 4G/LTE/5G module.

MINIPCIE_4G (4G/LTE/5G) is connected to SIM2 slot (underside).
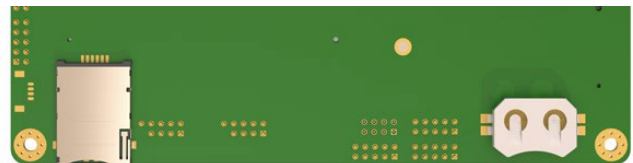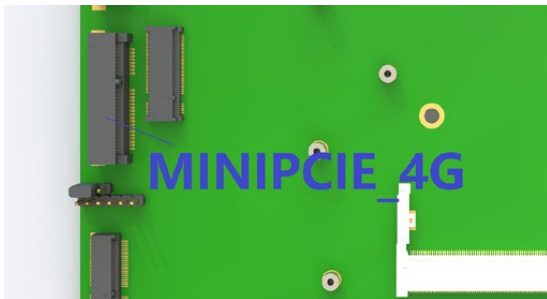
M2_5G (4G/5G)

Support M.2 B key 30x52mm 4G/5G module.

The M.2 slot integrated USB3.1 signal features with up to 10Gbps throughput for 5G cards. M2_S2(4G/5G) is connected to SIM1 slot(underside).
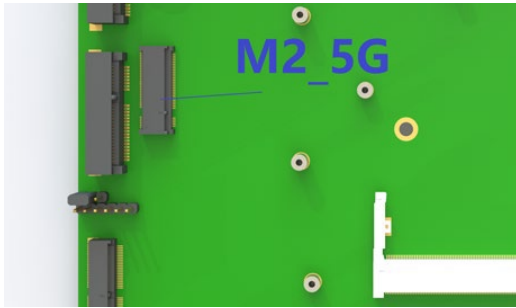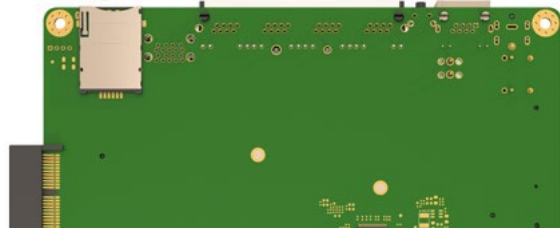
J10

The jumper is used for setting supply voltage of 4G/5G card in MINIPCIE_4G and M2_5G. If the 4G/5G card can accept maximum voltage of 4V, it is strongly recommended to set this jumper to 3.8V in a poor signal environment.
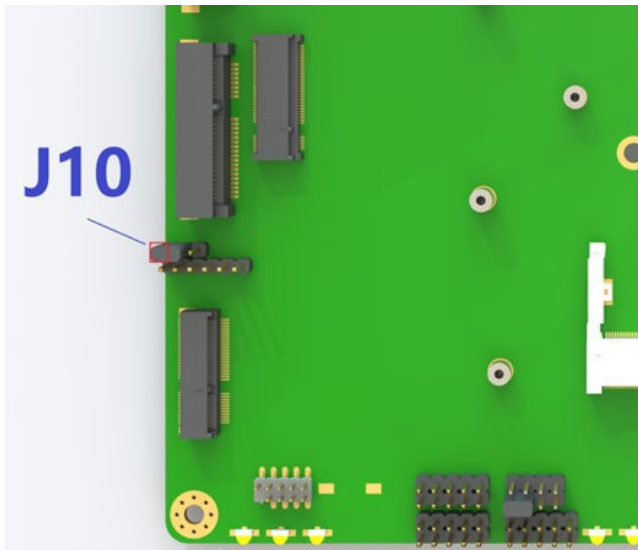
Jumper Setting	Voltage of Mini-PCIE1
1-2 (Default)	3.3V
2-3	3.8V

PWSATA1

It's power header for external cards. 1*4*2.0mm pitch female header.
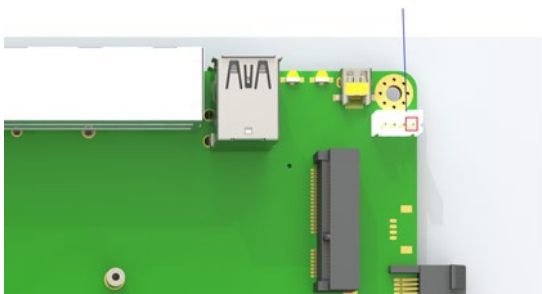
PIN	NAME
1	VCC
2	GND
3	GND
4	12V_S

PCIE1

Side PCIe x4 Gen3 slot. This interface is used to expand X4/X2/X1 PCIE cards, especially optimized for network VOIP cards. Boingfire's PCIe copper / SFP cards are also compatible with the slot. Through flexible combinations, integrators can quickly build devices with various ports.
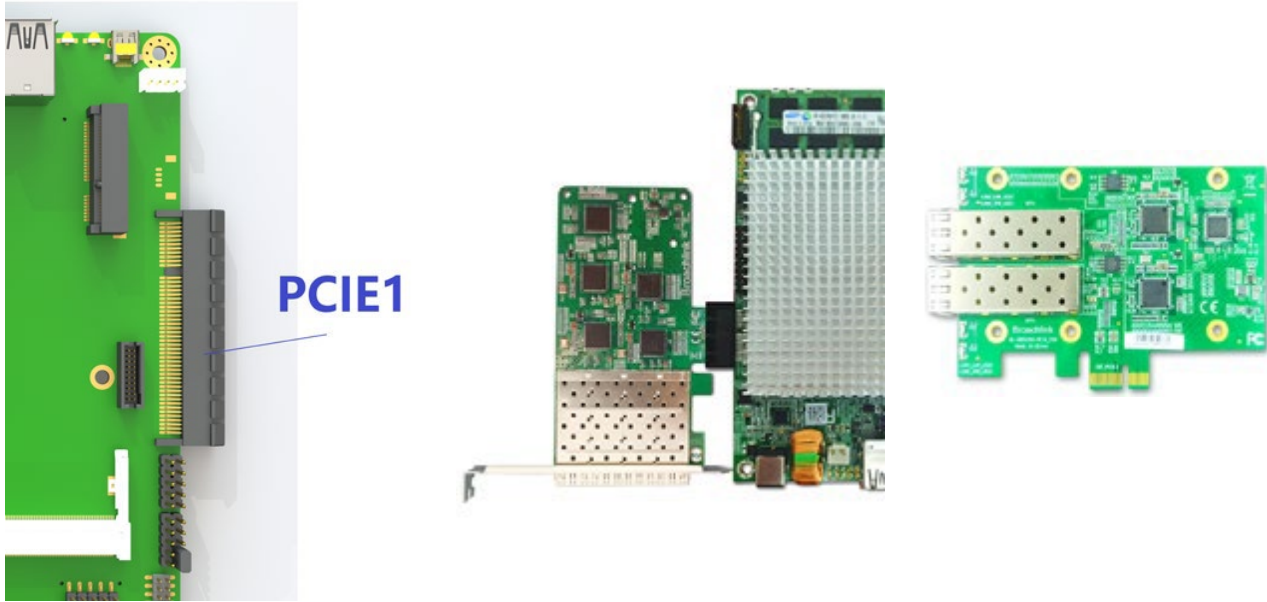
PIN	NAME	PIN	NAME
A1	NC	B1	12V_S (OFF in S4)
A2	12V_S (OFF in S4)	B2	12V_S (OFF in S4)
A3	12V_S(OFF in S4)	B3	12V_S (OFF inS4)
A4	GND	B4	GND
A5	NC	B5	SMB_CLK
A6	NC	B6	SMB_DAT
A7	NC	B7	GND
A8	NC	B8	3.3V
A9	3.3V	B9	NC
A10	3.3V	B10	3.3VSB (Always On)
A11	PERST#	B11	WAKE#
KEY NOTCH			
A12	GND	B12	NC
A13	PCIE_CLK+	B13	GND
A14	PCIE_CLK-	B14	PCIE_TX+
A15	GND	B15	PCIE_TX-
A16	PCIE_RX+	B16	GND
A17	PCIE_RX-	B17	NC
A18	GND	B18	GND

JPOWER1

Shorting pin 4~5 means the watchdog could trigger a system reset after WDT timeout.

Users can refer to the marks on the bottom of the PCB to wire out the pin headers.
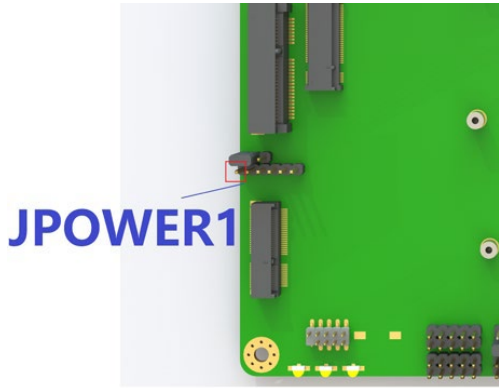
PIN	NAME
1	Power Button
2	GND
3	GND
4	RESET#
5	Watchdog_Trigger# Active-Low Level
6	GND

J9

The port is used for BF-BIOS-RECOVERY-KIT for BIOS upgrade.
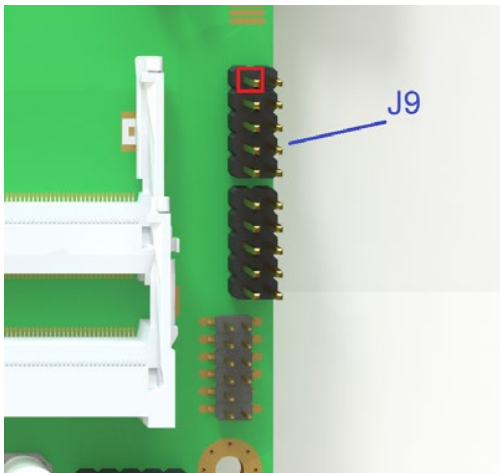
PIN	NAME	PIN	NAME
1	3.3VSB	2	GND
3	SPI_CS	4	SPI_CLK
5	SPI_MOSI	6	SPI_MSO
7	SPI_ISP	8	NO PIN
9	CLR_CMOS	10	GND

Shorting pin 9-10 means clear CMOS, restore to default setting of BIOS.

MSI-JTPM1
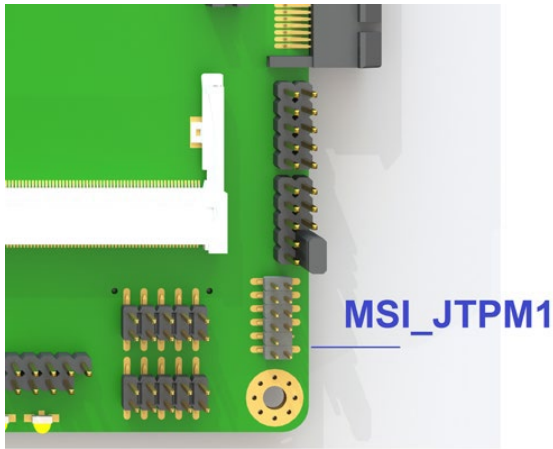
PIN	NAME	PIN	NAME
1	SPI_POWER	2	SPI_CS
3	SPI_MISO	4	SPI_MOSI
5	NC	6	SPI_CLK
7	GND	8	SPI_RST
9	NC	10	NO PIN
11	NC	12	SPI_CS

JGPIO1, JGPIO2, JGPIO3

BFX2 has three 10-pin headers that support up to 24 channels 3.3V GPIO signals. 16 channels are controlled by SOC, and the remaining 8 channels are controlled by SUPER IO IT8772.
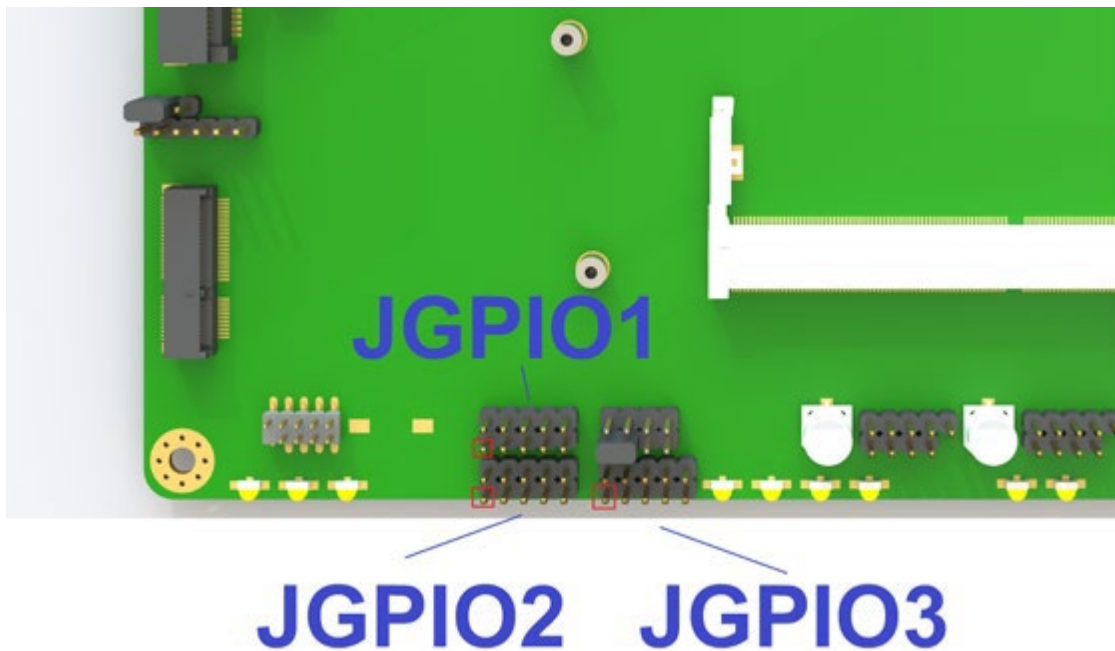
JGPIO1 (SOC Source)

PIN	NAME	PIN	NAME
1	GP0	2	VCC3
3	GP1	4	GP6
5	GP2	6	GP7
7	GP3	8	GP8
9	GND	10	GP9

JGPIO2 (SOC Source)

PIN	NAME	PIN	NAME
1	GP22	2	VCC3
3	GP23	4	GP27
5	GP24	6	GP28
7	GP25	8	GP29
9	GND	10	GP9

JGPIO3 (Super I/O Source)

PIN	NAME	PIN	NAME
1	GP52	2	3.3V
3	GP51	4	GP56
5	GP37	6	GP57
7	GP36	8	GP60
9	GND	10	GP61

In order to help developers carry out secondary development on BFX2, Boingfire has released GPIO development tools, including BF-GPIO-KIT (purchase separately) 3 x 8 CH GPIO card, and FreeBSD, Linux, windows demo code. Contact sales@boingfire.com for more info.

CHAPTER 3: BIOS Settings

BFX2 system board comes with 128bit AMI BIOS. You can access BIOS by pressing DEL button at the time of boot up.

In this section we will cover some basic tasks that will help you to start getting into your system for the configurations and OS installation as per your project requirements.

How to configure BFFTDICON Console Cable?

BFFTDICON cable is made up with the FTDI Chip. There are all the drivers available for all the OS that includes, Linux, MacOS, Windows XP to Windows 11 and Windows CE.

https://ftdichip.com/drivers/vcp-drivers/

This link contains all the OS drivers, you can download based on your OS and access through Putty or any other terminal software to access system through Serial Port.

Installation documentation is available on their website as follows:

https://ftdichip.com/document/installation-guides/

Windows Issue after driver installation.

After installation of driver you might get the following device in your windows machine and system will not recognize BFFTDICON as COM port.
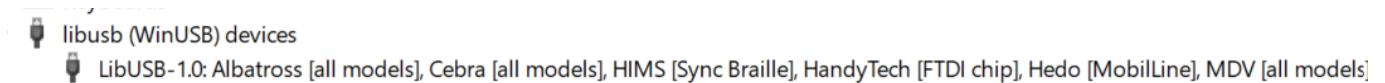
After confirmation that driver is installed, you have to keep cable connected to your Windows machine and follow the instructions below to resolve this issue.

1. Go to your Device Manager
2. Right click on the device showing as LibUSB-1.0.....
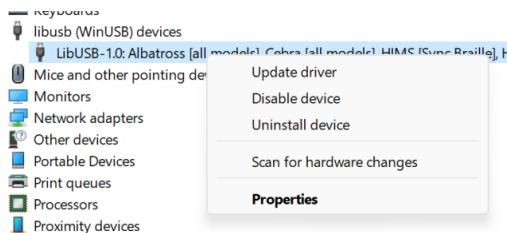
3. Click on update driver

4. You will see this window open, click on Browse my PC for drivers

Browse for drivers on your computer

Search for drivers in this location:

C:\Users\Documents

☑ Include subfolders

→ Let me pick from a list of available drivers on my computer
This list will show available drivers compatible with the device, and all drivers in the same category as the device.

5. Click on **"Let me pick from a list of available drivers on my computer"**
6. You should see this screen if your drivers are already installed.

Select the device driver you want to install for this hardware.

Select the manufacturer and model of your hardware device and then click Next. If you have a disk that contains the driver you want to install, click Have Disk.

☑ Show compatible hardware

Model

LibUSB-1.0: Albatross [all models], Cebra [all models], HIMS [Sync Braille], HandyTech [FTDI chip], Hedo [
USB Serial Converter

This driver is digitally signed.   Have Disk...
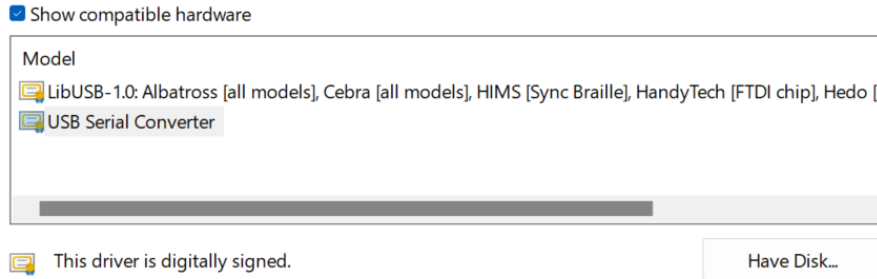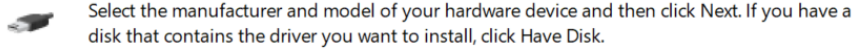
7. Select "USB Serial Converter" and proceed.
8. You should see this screen

Update Drivers - USB Serial Converter

Windows has successfully updated your drivers

Windows has finished installing the drivers for this device:

USB Serial Converter

9. Now go to your Device Manager and you can see the COM port with the number as showing in the image below.

10. You computer can show multiple COM ports and number could be different than this guide.

11. Open putty (Recommended) and select following configurations.
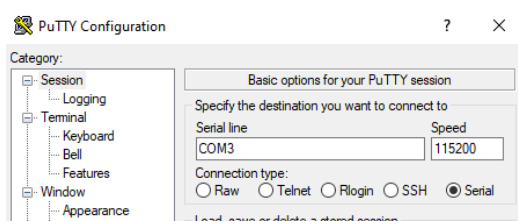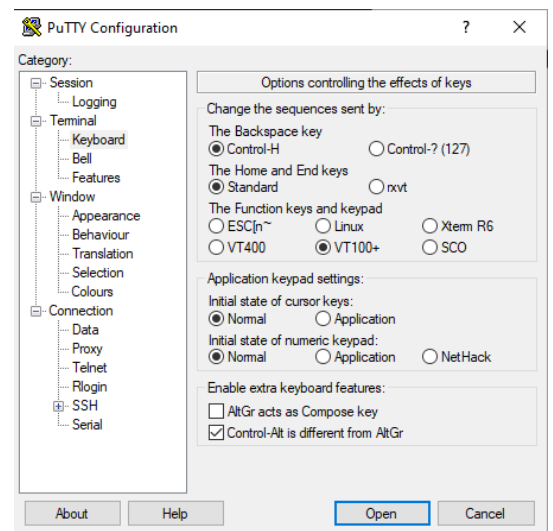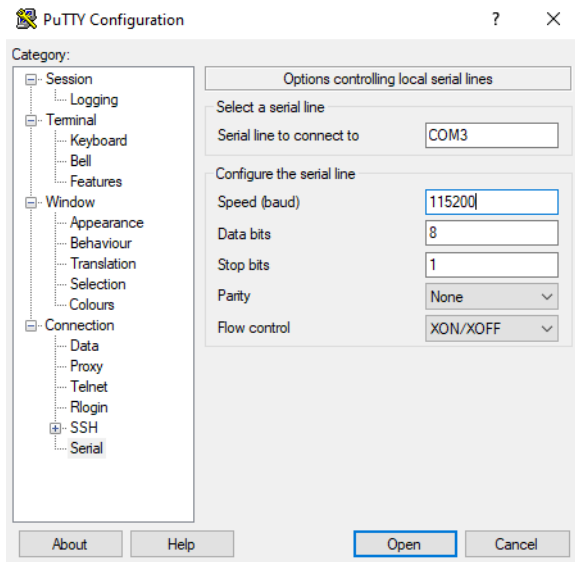
12. Click Open and you should be able to see your Terminal screen now.

Booting BFX2 system from USB.

By default, system configured with the UEFI boot option where BFX2 System boots up from EFI System Partition. To enable system to boot from USB or other media sources, you must go to BIOS by following the instructions available in this document.

```
           Aptio Setup Utility - Copyright (C) 2023 American Megatrends, Inc.
      Main  Advanced  Chipset  Security  Boot  Save & Exit

   Boot Configuration                         ▲  Select boot mode
   Setup Prompt Timeout      6                   LEGACY/UEFI
   Bootup NumLock State      [On]

   Quiet Boot                [Disabled]
   Fast Boot                 [Disabled]

   Boot mode select        ┌──── Boot mode select ────┐
                           │  LEGACY                  │
   FIXED BOOT ORDER Priori │  UEFI                    │
   Boot Option #1          └──────────────────────────┘  ←: Select Screen
   Boot Option #2            [                           ↓: Select Item
   Boot Option #3            [USB CD/DVD]                Enter: Select
   Boot Option #4            [USB Lan]                   +/-: Change Opt.
   Boot Option #5            [CD/DVD]                    F1: General Help
   Boot Option #6            [Hard Disk]              ▒  F2: Previous Values
   Boot Option #7            [Network]                   F3: Optimized Defaults
   Boot Option #8            [Disabled]              ▼  F4: Save & Exit
                                                        ESC: Exit

           Version 2.18.1263. Copyright (C) 2023 American Megatrends, Inc.
```

Change Boot Mode from UEFI to LEGACY, Save and Exit. Now your system will boot up from the Sequence of BOOT ORDER

Guidance on Console Redirection Configuration

For optimal system performance and visual output, users are given the capability to manage Console Redirection settings. If the system employs an HDMI port as the primary display output and you are in the process of installing operating systems such as pfSense, OPNSense, or any other OS compatible with Serial Console, an issue may arise during the initial boot from USB.

Specifically, the visual output might cease midway, creating an impression that the system has become unresponsive. This phenomenon is typically due to the COM port redirection capturing part of the display output.

To ensure uninterrupted visual feedback on the monitor connected via HDMI, it's recommended to disable COM port redirection. This adjustment ensures that the entire display output remains consistently visible on the HDMI-connected monitor.

You need to do this activity through BIOS.

Follow these screen shots to Enable/Disable Console Redirection.

1. Restart your system and wait till you get the DEL message to enter BIOS
2. Go to Advanced Tab and go to

```
        Aptio Setup Utility - Copyright (C) 2023 American Megatrends, Inc.
         Main  Advanced  Chipset  Security  Boot  Save & Exit

    ▶ Trusted Computing                              Serial Port Console
    ▶ GPIO Configuration                             Redirection
    ▶ WATCHDOG Configuration
    ▶ IT8772E Super IO Configuration
    ▶ Serial Port Console Redirection
    ▶ CPU Configuration
    ▶ SATA Configuration
    ▶ Miscellaneous Configuration
    ▶ LPSS & SCC Configuration                      _____
    ▶ CSM Configuration
    ▶ SDIO Configuration                            →←: Select Screen
    ▶ USB Configuration                             ↑↓: Select Item
    ▶ Platform Trust Technology                     Enter: Select
                                                    +/-: Change Opt.
                                                    F1: General Help
                                                    F2: Previous Values
                                                    F3: Optimized Defaults
                                                    F4: Save & Exit
                                                    ESC: Exit

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```

3. Open "Serial Port console Redirection"

```
        Aptio Setup Utility - Copyright (C) 2023 American Megatrends, Inc.
           Advanced

                                                    Console Redirection
        COM0                                        Enable or Disable.
        Console Redirection     [Enabled]
    ▶ Console Redirection Settings




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

        Version 2.18.1263. Copyright (C) 2023 American Megatrends, Inc.
```

4. You can Enter by selecting the options shown in the step 3 and disable it if you want to Disable it, or enable it if you want to enable redirection.

You can enable/disable COM Port by following steps.

1. Go to BIOS as mentioned previously and follow the screen shots shown below.
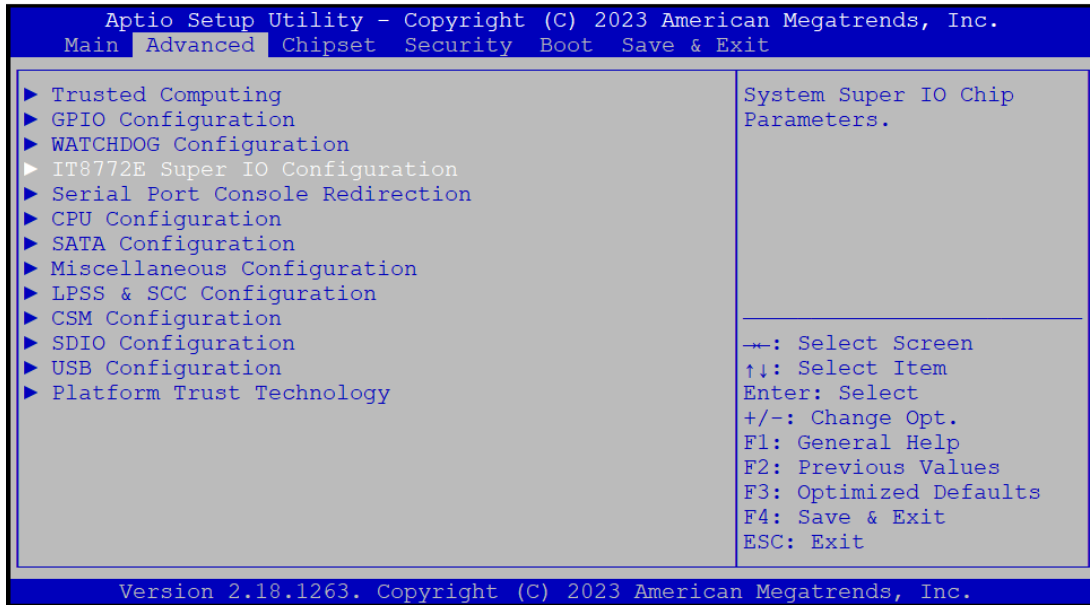
2. Open "**IT8772E Super IO Configuration**" by pressing Enter

3. Open "**Serial Port 1 Configuration**"
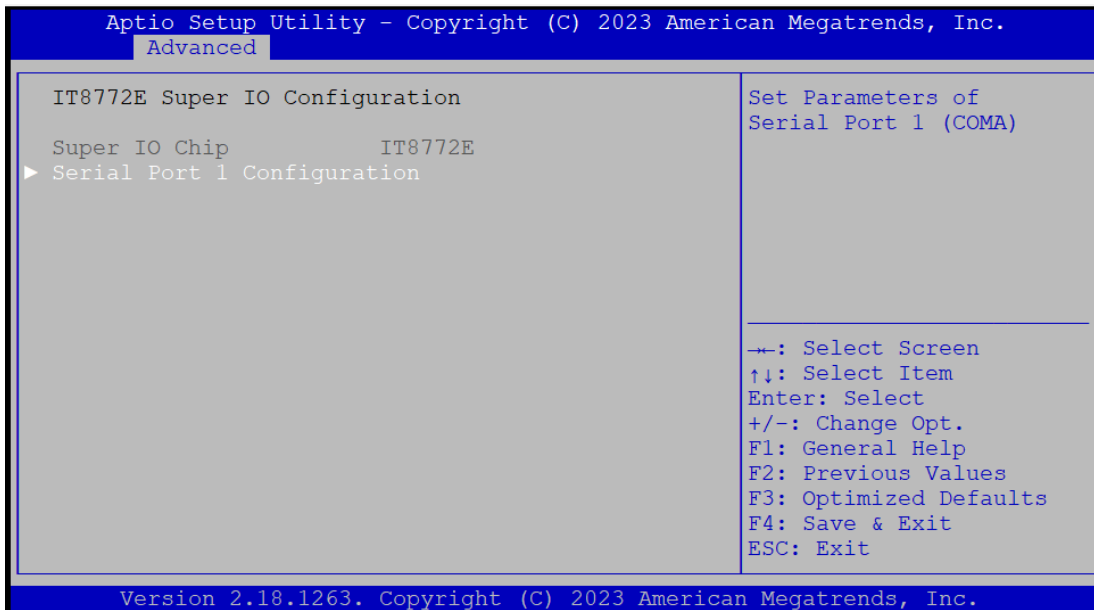
4. Disable by selecting Serial Port and press enter to change settings to Disable or Enable depending on your requirements.

```
          Aptio Setup Utility – Copyright (C) 2023 American Megatrends, Inc.
            Advanced

   Serial Port 1 Configuration                           Enable or Disable
                                                         Serial Port (COM)
   Serial Port              [Enabled]
   Device Settings          IO=3F8h; IRQ=4;

   Change Settings          [Auto]

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

          Version 2.18.1263. Copyright (C) 2023 American Megatrends, Inc.
```
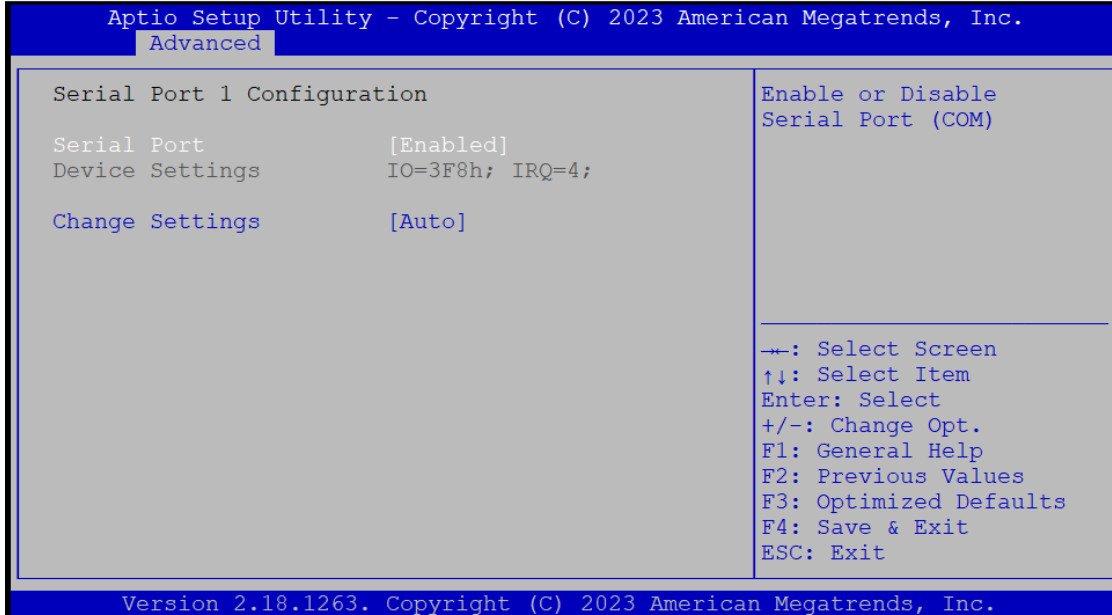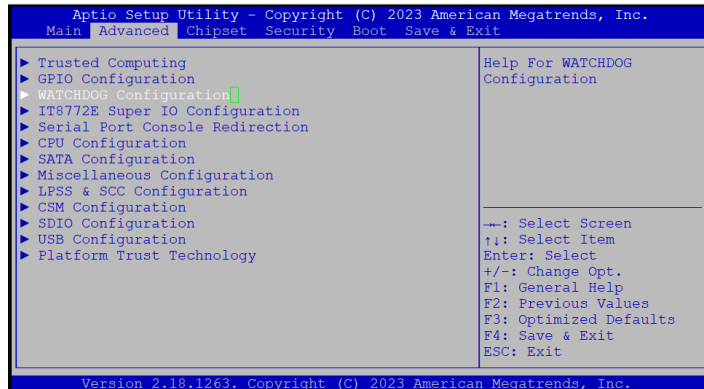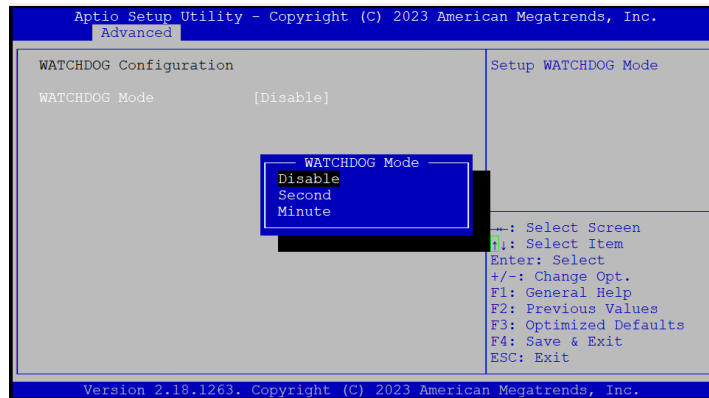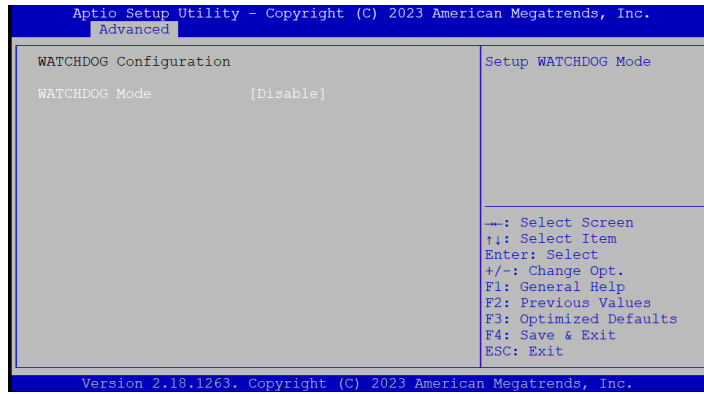
Watchdog settings in the BIOS

1. **System Monitoring:** At its core, the watchdog timer in the AMI BIOS is designed to keep an eye on system operations to ensure that everything is running smoothly.

2. **Automatic Recovery:** It provides an automated recovery mechanism in scenarios where system malfunctions occur. This helps in cases where there might not be immediate human intervention available to reset the system.

BFX2 System board Watchdog Configuration
Go to BIOS and follow the following Screen shots to enable and configure Watchdog.

```
          Aptio Setup Utility – Copyright (C) 2023 American Megatrends, Inc.
           Main  Advanced  Chipset  Security  Boot  Save & Exit

   ► Trusted Computing                                  Help For WATCHDOG
   ► GPIO Configuration                                 Configuration
   ► WATCHDOG Configuration
   ► IT8772E Super IO Configuration
   ► Serial Port Console Redirection
   ► CPU Configuration
   ► SATA Configuration
   ► Miscellaneous Configuration
   ► LPSS & SCC Configuration
   ► CSM Configuration
   ► SDIO Configuration                                 →←: Select Screen
   ► USB Configuration                                  ↑↓: Select Item
   ► Platform Trust Technology                          Enter: Select
                                                        +/–: Change Opt.
                                                        F1: General Help
                                                        F2: Previous Values
                                                        F3: Optimized Defaults
                                                        F4: Save & Exit
                                                        ESC: Exit

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```

TERMS AND CONDITIONS

Warranty Policy

1. Products come with a one-year warranty from the purchase date, covering defects in materials and craftsmanship.
2. During the warranty period, the buyer covers the shipping costs for returning products for repairs, while the manufacturer pays for the return shipping post-repair.
3. Post-warranty, the buyer is responsible for all repair costs (including parts and labor) and both-way shipping charges.
4. Incomplete or incorrect RMA Service Request Forms will result in the return of items at the customer's expense.
5. Warranty does not cover:
   - Customer's failure to maintain the product properly.
   - Unauthorized alterations, misuse, or backward engineering.
   - Usage beyond the product's specified environmental conditions

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