



GM831-CSF

Gaming Computing System User's Manual

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FCC and DOC Statement on Class A

This equipment has been tested and found to comply with the limits for a Class B 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 residential installation. 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. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio TV technician for help.

Notice:

- 1. The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
- 2. Shielded interface cables must be used in order to comply with the emission limits.

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About this Manual

An electronic file of this manual can be obtained from the DFI website at <u>www.dfi.com</u>. To download the user's manual from our website, please go to Support > Download Center. On the Download Center page, select your product or type the model name and click "Search" to find all technical documents including the user's manual for a specific product.

Warranty

- 1. Warranty does not cover damages or failures that arises from misuse of the product, inability to use the product, unauthorized replacement or alteration of components and product specifications.
- 2. The warranty is void if the product has been subjected to physical abuse, improper installation, modification, accidents or unauthorized repair of the product.
- 3. Unless otherwise instructed in this user's manual, the user may not, under any circumstances, attempt to perform service, adjustments or repairs on the product, whether in or out of warranty. It must be returned to the purchase point, factory or authorized service agency for all such work.
- 4. We will not be liable for any indirect, special, incidental or consequential damages to the product that has been modified or altered.

Static Electricity Precautions

It is easy to inadvertently damage your PC, system board, components or devices even before installing them in your system unit. Static electrical discharge can damage computer components without causing any signs of physical damage. You must take extra care in handling them to ensure against electrostatic build-up.

- 1. To prevent electrostatic build-up, leave the system board in its anti-static bag until you are ready to install it.
- 2. Wear an antistatic wrist strap.
- 3. Do all preparation work on a static-free surface.
- 4. Hold the device only by its edges. Be careful not to touch any of the components, contacts or connections.
- 5. Avoid touching the pins or contacts on all modules and connectors. Hold modules or con nectors by their ends.

Im

Important:

Electrostatic discharge (ESD) can damage your processor, disk drive and other components. Perform the upgrade instruction procedures described at an ESD workstation only. If such a station is not available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to a metal part of the system chassis. If a wrist strap is unavailable, establish and maintain contact with the system chassis throughout any procedures requiring ESD protection.

Safety Measures

To avoid damage to the system:

• Use the correct DC input voltage range.

To reduce the risk of electric shock:

- Unplug the power cord before removing the system chassis cover for installation or servic-
- ing. After installation or servicing, cover the system chassis before plugging the power cord.

Battery:

- Danger of explosion if battery incorrectly replaced.
- Replace only with the same or equivalent type recommend by the manufacturer.
- Dispose of used batteries according to local ordinance.

Safety Precautions

- Keep this system away from humidity.
- Place the system on a stable surface. Dropping it or letting it fall may cause damage.
- The openings on the system are for air ventilation to protect the system from overheating. DO NOT COVER THE OPENINGS.
- Place the power cord in such a way that it will not be stepped on. Do not place anything on top of the power cord. Use a power cord that has been approved for use with the system and that it matches the voltage and current marked on the system's electrical range label.
- If the system will not be used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.
- If one of the following occurs, consult a service personnel:
- The power cord or plug is damaged.
- Liquid has penetrated the system.
- The system has been exposed to moisture.
- The system is not working properly.
- The system dropped or is damaged.
- The system has obvious signs of breakage.
- The unit uses a three-wire ground cable which is equipped with a third pin to ground the unit and prevent electric shock. Do not defeat the purpose of this pin. If your outlet does not support this kind of plug, contact your electrician to replace the outlet.
- Disconnect the system from the DC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.

About the Package

The package contains the following items. If any of these items are missing or damaged, please contact your dealer or sales representative for assistance.

- GM831-CSF system unit
- Power Supply (PSU)
- CD disk includes
- Manual - Drivers
- Quick Installation Guide

The board and accessories in the package may not come similar to the information listed above. This may differ in accordance to the sales region or models in which it was sold. For more information about the standard package in your region, please contact your dealer or sales representative.

Before Using the System

Before powering-on the system, prepare the basic system components.

If you are installing the system for the first time, you will need at least one of the following internal components.

• Storage devices such as SATA HDD or M.2 modules.

You will also need external system peripherals, which will normally include at least a keyboard, a mouse and a video display.

Chapter 1 - Introduction

Overview



Front View

Key Features

Model Name	GM831-CSF
Processor	9th/8th Generation Intel® Core™ LGA 1151 Socket Processors
Audio	Realtek ALC888
LAN	Two RJ45 LAN ports
СОМ	COM1 : RS-232/422/485 DB9 (RS-232 w/ power) COM3: RS-232 COM4: RS-232
Display	One HDMI One DVI-I (DVI-D signal) One DP++
USB	Two USB 3.1 Gen 2 Two USB 3.1 Gen 1 Six USB 2.0



Front View (with Power Supply)

Gaming Section Features

Card Name	GM901
Intrusion Detection	6 x Intrusion Dections (one is already applied to PC BOX) Operates with and without AC power Logs Date/ Time of latest 64 events 5 Years data retention during AC off
NVRAM	Supports up to 16Mbyte Coin Battery backup to Retain Data for 5 years during AC off Support Battery voltage monitoring & Warning
DI/DO	32-bit Digital Input/OC Output

Specifications

System	Processor	9th/8th Generation Intel® Core TM LGA 1151 Socket Processors: Intel® Core TM i5-9500E (6 Cores, 9M Cache, up to 4.2 GHz); 65W Intel® Core TM i5-9500TE (6 Cores, 9M Cache, up to 3.6 GHz); 35W Intel® Core TM i3-9100E (4 Cores, 6M Cache, 3.7 GHz); 65W Intel® Core TM i3-9100TE (4 Cores, 6M Cache, to 3.2 GHz); 35W Intel® Core TM i7-8700T (6 Cores, 12M Cache, up to 4.6 GHz); 65W Intel® Core TM i7-8700T (6 Cores, 12M Cache, up to 4.0 GHz); 35W Intel® Core TM i5-8500 (6 Cores, 9M Cache, up to 4.0 GHz); 35W Intel® Core TM i5-8500T (6 Cores, 9M Cache, up to 4.1 GHz); 65W Intel® Core TM i5-8500T (6 Cores, 9M Cache, up to 3.5 GHz); 35W Intel® Core TM i3-8100 (4 Cores, 6M Cache, 3.6 GHz); 65W Intel® Core TM i3-8100T (4 Cores, 6M Cache, to 3.1 GHz); 35W Intel® Pentium® G5400T (2 Cores, 4M Cache, 3.1 GHz); 35W Intel® Celeron® G4900T (2 Cores, 2M Cache, 2.9 GHz); 35W
	Chipset	Intel® Q370/H310 Chipset
	Memory	Four 288-pin DIMM up to 64GB Dual Channel DDR4 2400/2666 MHz
	BIOS	Insyde or AMI UEFI (Supports hash and public key validation)
Graphics	Controller	Intel® HD Gen 9 Graphics
	Feature	OpenGL 5.0, DirectX 12, OpenCL 2.1 HW Decode: AVC/H.264, MPEG2, VC1/WMV9, JPEG/MJPEG, HEVC/H265, VP8, VP9 HW Encode: MPEG2, AVC/H264, JPEG, HEVC/H265, VP8, VP9
	Display	1 x HDMI 1 x DVI-I (DVI-D signal) 1 x DP++ HDMI 2.0a: resolution up to 4096x2160 @ 60Hz DVI-D: resolution up to 1920x1200 @ 60Hz DP++: resolution up to 4096x2106 @ 60Hz
	Triple Displays	DVI-D + HDMI + DP++
Storage	Interface	5 x SATA 3.0 1 x 2.5″ SSD Bay
Expansion	Interface	1 x PCIe x16 (Gen 3) 2 x PCIe x4 (Gen 3) 1 x mini PCIe (PCIe/mSATA/USB2.0) 1 x M.2 2242/2260/2280 M key (PCIe Gen3 x4 NVMe) Support AMD E9260 Graphic card 180(L) x115(H)mm; up to 75W

Audio	Audio Codec	Realtek ALC888	
Ethernet	Controller	1x Intel i219LM PCIe (10/100/1000Mbps) with iAMT 12.0 (only Core i7/ i5 supports iAMT) 1x Intel I211at PCIe (10/100/1000 Mbps)	
LED	Indicators	1 x Power LED 1 x HDD LED	
I/O	Ethernet	2 x GbE (RJ-45)	
	Serial	COM1 : RS-232/422/485 DB9 (RS-232 w/ power) COM3: RS-232 COM4: RS-232	
	USB	2 x USB 3.1 Gen 2 2 x USB 3.1 Gen 1 6 x USB 2.0	
	Display	1 x HDMI 1 x DVI-I (DVI-D signal) 1 x DP++	
	Audio	1x Line-out 1x Line-in (colay,opt. by request, MOQ required) 1xMic-in	
	PS/S	1x PS/2 (mini-DIN-6)	
Gaming	Intrusion Detection	7 x Intrusion Dections (one is already applied to PC BOX) Operates with and without AC power Logs Date/Time of latest 64 events 5 Years data retention during AC off	
	NVRAM	Supports up to 16Mbyte Coin Battery backup to Retain Data for 5 years during AC off Support Battery voltage monitoring & Warning	
	DI/DO	32-bit Digital Input 32-bit OC output (29-bit x 500mA, disconnect detection for up to 8 meters; 3-bit x 3A)	
Watchdog Timer	Output & Interval	System Reset, Programmable via Software from 1 to 255 Seconds	
Security	ТРМ	Infineon TPM 1.2/ 2.0 (Available upon request, MOQ required)	
Power	Туре	Flex-ATX 250W (optional)	
	Connector	12V DC-in , 24-pin ATX power	
OS & Software	OS Support	Windows 10(64bit) Ubuntu 18.04 LTS 64bit	
Support	Software	Supplied with gaming function SDK	
Environment	Operating Temperature	0~45°C	
	Storage Temperature	-20~85°C	
	Relative Humidity	5%~90%	

Chapter 1 Introduction

Mechanism	Mounting	Wall Mount
	Dimensions (W x H x D)	275x146.3x296.43mm (without PSU & mounting kits) 365x145.3x296.43mm (with PSU & without mounting kits)
	Weight	TBD
Standards and certificates	Shock	Operation: IEC 60068-2-64 Test Fh: Vibration board-band random test Half-sine, 3G @ 11ms, 18 Shock $\pm X$, $\pm Y$, $\pm Z$ (each axis 3 times) Non-Operation: IEC 60068-2-27 Test Ea: Shock test Half-sine, 5G @ 11ms, 18 Shock $\pm X$, $\pm Y$, $\pm Z$ (each axis 3 times)
	Vibration	Operation: IEC 60068-2-64 Test Fh: Vibration Board-Band Random Test Random,1Grms @ 5~500 Hz, 30min. Non-Operation: IEC 60068-2-6 Test Fc: Vibration Sinusoidal Test Sweep sine, 2Grms @ 10~500Hz, 30min
	Certifications	CE, FCC class A

Getting to Know the GM831-CSF

Front View



DVI-I (DVI-D Signal) Port

The DVI-I port is used to connect a LCD monitor. This port supports DVI-D signal only. Connect the display device's cable connector to the DVI-I port. After plugging the cable connector into the port, gently tighten the cable screws to hold the connector in place.

COM ports

COM1 (DB-9): connects RS232/RS422/RS485 devices. COM3: connects RS232 devices. COM4: connects RS232 devices.

USB 2.0 & 3.1 Ports

6 USB 2.0 ports, 2 USB 3.1 Gen 1 ports and 2 USB 3.1 Gen 2 ports.

PS/2 KB/Mouse

Connects a PS/2 keyboard and mouse.

HDMI

Connects the HDMI connector of an LCD monitor.

DP++ Port Connects the DisplayPort of an LCD monitor.

RJ45 LAN Ports Connect the system to a local area network.

Line-out Connects an external speaker.

Mic-in Connects an external microphone.

Expansion slots Provides PCIe or PCI expansion connectivity.

Gaming Section - GM901

The system that are from GM901.

Digital Input/Output Provides 8-bit digital input/output.

Instrusion Switch x6 Provides 6 via 2x4 micro-fit connector.

NVRAM

NVRAM has longer lifecyle of data-stored due to the SRAM+ battery on FPGA.



Mechanical Dimensions

Chassis Dimension (with Power Supply)

Front View



Chapter 2 - Getting Started

Preparing the System

Before you start using the system, you might need the following items:

• Power Supply (PSU)

Installing Device

The following devices should be installed in the system.

• Power Supply (PSU)

Configuring the BIOS

To get you started, you may need to change configurations such as the date, time and the priority of boot devices.

- 1. Power on the system.
- 2. After the memory test, the message "Press DEL to run setup" will appear on the screen. Press the Delete key to enter the BIOS setup utility.

Installing a Operating System

Please refer to your operating system manual for instructions on installing an operating system.

Installing the Drivers

The system comes with a software package including drivers. These drivers must be installed to provide the best system performance. Refer to the Supported Software Chapter for instructions on installing drivers.

Chapter 3 - Installing Devices

Removing the Chassis Cover

Please observe the following guidelines before opening the chassis cover:

- 1. Make sure the system and all other peripherals connected to it have been powered off.
- 2. Disconnect all power cords and cables.
- 3. The mounting screw on the rear side of the system compartment is used to secure the cover to the chassis. Remove this screw and put it in a safe place for later use.
- 4.U se the key (push it down slightly and turn it counterclockwise) to unlock the system compartment cover.
- 5. Slide the cover backward to open the chassis cover.





Installing a 2.5" SATA Drive

The system can accommodate one 2.5" HDDs.

1. To install a 2.5" HDD, use the 2.5" HDD bracket as shown below. Align the mounting holes on the SATA drive with the mounting holes on the HDD bracket and use the mounting screws provided in the drive bay kit to secure the drive in place.



2. Place the HDD bracket with the installed SATA drives back into the chassis and use the provided mounting screws to attach the HDD bracket to the drive bay. Use the provided mounting screws to attach the HDD bracket to the drive bay.



3. Connect the SATA data cable to the SATA drive.



Connecting the PSU

The PSU is an optional item of GM831-CSF for the power supply solution. The instruction below is to demonstrate the process to connect the PSU to GM831-CSF.

- 1. Make sure the system and all other peripherals connected to it have been powered off.
- 2. Disconnect all power cords and cables.
- 3. Remove the mounting screw on the side and take off the cover to unveil the hole. (Green label)
- 4. Put all the cables from the PSU into GM831-CSF through the hole.
- 5. Connect the PSU to GM831-CSF's port using the multi-clolor cable. (Orange label)
- 6. Connect the PSU to GM831-CSF's port using the small cable. (Blue label)
- 7. Connect the PSU to GM831-CSF's port using the SATA power cable. (Pink label)



Chapter 4 - Gaming I/O Board

Gaming I/O Board - GM901



Features

EXPANSION CONNECTOR	2 PCIe x1
INTERFACE 1	PCIe x1 gold finger
INTERFACE 2 (optional)	PCIe connector (36 pin)
SECURITY	Security-ROM Intrusion detection (8 doors)
VOLTAGE WATCHER	Voltage monitoring and warning via MCU

Features

Expansion Slots

- 2 x PCIe x1 connector
- 1 x PCIe x1 connector/PCIe x1 via 36-pin connector (opt.)

COM Port

• RS232 via box header

Gaming IO

- Intrusion switch inputs:
- 6 via 2x4 micro-fit connector
- 2 via 2-pin box headers

Digital I/O

- 32 ESD-protected inputs
- 32 ESD-protected outputs

Security ROM

2 x SRAM (BGA type): 64K x16, 512K x16, 1M x16, 2M x16, 4M x16

Battery

- Battery for MCU:
- 1 x CR2032 Lithium 3V/220mAh batteries
- Battery for SRAM:
- 2 x CR2032 Lithium 3V/220mAh batteries
- 1 x 2-pin box header

Environmental

- Operating temperature:
- Operating: 0 ~ 60°C
- Storage: -40 ~ 85°C
- Operating humidity:
- Operating: 5 ~ 90% RH
- Storage: 5 ~ 90% RH

Dimension

• 170mm* 80mm

FPGA

This section gives a high level overview the functionalities and process flow of the APIs. The following table outlines the names of the APIs and their usage.



DFI Logic Processor API	Description
Configuration Operation mode	Provides two operations mode: Normal mode, and Multi-mirror mode.
Read/Write SRAM data	Supports four different access: BYTE (1 byte), WORD (2 bytes), DWORD (4 bytes), multi-bytes read/write.
CRC checksum	Provides calculate specify address range of data with CRC32.
GPIO control	Provides to control GPIO output level and input interrupt detect feature.

MCU

The set of APIs can be categorized into 8 groups:



In Windows, the Intru-Processor API is called DFIGamingIntru.dll which accesses the serial port with the library DFISerailPort.dll. Both of the libraries have to be together with AP in the same folder.

In Linux, the Intru-Processor API is called DFIGamingIntru.so which accesses the serial port with t he library DFISerailPort.so. Both of the libraries have to be put to /usr/lib.

Chapter 5 - Jumper Settings

Clear CMOS Data



Mini PCIe/mSATA Signal Select



If any anomaly of the followings is encountered -

- a) CMOS data is corrupted;
- b) you forgot the supervisor or user password;
- c) failure to start the system due to BIOS mis-configuration

- it is suggested that the system be reconfigured with default values stored in the ROM BIOS. To load the default values stored in the ROM BIOS, please follow the steps below.

- 1. Power-off the system and unplug the power cord.
- 2. Put a jumper cap on JP9's pin 2 and pin 3. Wait for a few seconds and set JP9 back to its default setting, i.e. jumper cap on pin 1 and pin 2.
- 3. Plug the power cord and power-on the system.

JP9 is used to select the Mini PCIe signal: Mini PCIe (default) or mSATA.

Chapter 5 **Jumper Settings**



JP1/JP2/JP3 (for COM 1) and JP6/JP8/JP10 (for COM 2) are used to configure the COM ports to RS232, RS422 (Full Duplex) or RS485. When COM 1 RS232/422/485 is selected, JP1 and JP2 must be set in accordance to JP3.

When COM 2 RS232/422/485 is selected, JP6 and JP8 must be set in accordance to JP10. The pin functions of the COM ports will vary according to the jumpers' setting.



2

9

9

246

1 3 5

1-3, 4-6 On: RS232 (default)

246

1 3 5

1-3, 2-4 On: RS232 (default)

246

1 3 5

1-3, 2-4 On: RS232 (default)



NC

RI-

▼ JP3 (COM1)/JP10 (COM2)



246 1 3 5 3-5, 2-4 On: RS485

▼ JP1/JP2 (COM 1) 246



3-5, 4-6 On: RS485

▼ JP6/JP8 (COM 2) 246 1 3 5 3-5, 4-6 On: RS422 Full Duplex

1 3 5

3-5, 4-6 On: RS485

NC

NC

GND

NC

NC

NC

NC

246

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Chapter 5 Jumper Settings

▼ JP4 (COM 1)



246

1 3 5

1-3 (RI-), 2-4 (DCD-) On: RS232 (default)

12345

6789

9 11 1 2



▼ JP7 (COM 2)





COM1/COM2 RS232 Power Select

Pins	RS232	RS232 with power
1	DCD-	+12V
2	SIN-	SIN-
3	SO-	SO-
4	DTR-	DTR-
5	GND	GND
6	DSR-	DSR-
7	RTS-	RTS-
8	CTS-	CTS-
9	RI-	+5V

COM1/COM2 RS232 Power Select



JP4 (for COM 1) and JP7 (for COM 2) are used to configure Serial COM ports to pure RS232 or RS232 with power. The pin functions of COM 1 and COM 2 will vary according to JP4's and JP7's setting respectively.

PS/2 Power Select



JP20 is designed to select the PS/2 power: +5VDU (default) or +5V.

USB Power Select



JP15, JP16, JP17, JP18, JP19 and JP21 are used to select the power of the USB ports. Selecting +5VDU will allow you to use a USB device to wake up the system.



Important:

If you are using the Wake-On-USB Keyboard/Mouse function for 2 USB ports, the +5V_standby power source of your power supply must support \geq 1.5A. For 3 or more USB ports, the +5V_standby power source of your power supply must support \geq 2A.

Chapter 6 - Ports and Connectors

Overview



The rear panel I/O ports consist of the following:

- 1 PS/2 Keyboard/Mouse port
- 2 USB 2.0 ports
- 1 Serial COM port
- 1 HDMI port
- 1 DVI-I (DVI-D signal) port
- 1 DP++ port
- 2 RJ45 LAN ports
- 2 USB 3.1 Gen 1 ports
- 2 USB 3.1 Gen 2 ports
- 1 Line-in jack (optional)
- 1 Line-out jack
- 1 Mic-in jack

PS/2 Keyboard/Mouse Port



This rear I/O port is used to connect a PS/2 mouse and a PS/2 keyboard. The PS/2 mouse port uses IRQ12.

COM (Serial) Ports



COM 3/4: RS232

Pins	Pin Assignment
1	DCD-
2	SIN-
3	SO-
4	DTR-
5	GND
6	DSR-
7	RTS-
8	CTS-
9	RI-

The pin functions of COM 1 port will vary according to setting of JP1, JP2, JP3 and JP4. Refer to "COM1/COM2 RS232/422/485 Select" and "COM1/COM2 RS232/Power Select" in this chapter for more information.

The pin functions of COM 2 port will vary according to setting of JP6, JP7, JP8 and JP10. Refer to "COM1/COM2 RS232/422/485 Select" and "COM1/COM2 RS232/Power Select" in this chapter for more information.

COM 3 and COM 4 are fixed at RS232. The pin functions are listed at right.

The serial ports are asynchronous communication ports with 16C550A-compatible UARTs that can be used with modems, serial printers, remote display terminals, and other serial devices.

Connecting External Serial Ports

Your COM port may come mounted on a card-edge bracket. Install the card-edge bracket to an available slot at the rear of the system chassis then insert the serial port cable to the COM connector. Make sure the colored stripe on the ribbon cable is aligned with pin 1 of the COM connector.

Graphics Interfaces

The display ports consist of the following:

- 1 HDMI port
- 1 DVI-I (DVI-D signal) port
- 1 DP++ port

HDMI Port

The HDMI port which carries both digital audio and video signals is used to connect a LCD monitor or digital TV that has the HDMI port.

DVI-I (DVI-D Signal) Port

The DVI-I port is used to connect a LCD monitor. This port supports DVI-D signal only. Connect the display device's cable connector to the DVI-I port. After plugging the cable connector into the port, gently tighten the cable screws to hold the connector in place.

DP++ Port

The DP++ port which carries both digital audio and video signals is used to connect a LCD monitor or a digital TV that has the DP++ port.



Chapter 6 Ports and Connectors

RJ45 LAN Ports



Features

- 1 Intel® I211AT PCIe
- 1 Intel[®] I219LM PCIe with iAMT12.0

The LAN ports allow the system board to connect to a local area network by means of a network hub.

Audio



Rear Audio

The system board is equipped with 2 audio jacks (Line-out and Mic-in). Line-in jack is available upon request. A jack is a one-hole connecting interface for inserting a plug.

• Optional Line-in Jack (Light Blue)

This jack is used to connect any audio devices such as Hi-fi set, CD player, tape player, AM/FM radio tuner, synthesizer, etc.

• Line-out Jack (Lime)

This jack is used to connect a headphone or external speakers.

• Mic-in Jack (Pink)

This jack is used to connect an external microphone.

Front Audio

The front audio connector allows you to connect to the second line-out and mic-in jacks that are at the front panel of your system.

USB Ports

Wake-On-USB Keyboard/Mouse

The Wake-On-USB Keyboard/Mouse function allows you to use a USB keyboard or USB mouse to wake up a system from the S3 (STR - Suspend To RAM) state.



The USB device allows data exchange between your computer and a wide range of simultaneously accessible external Plug and Play peripherals.

The system board is equipped with 2 onboard USB 2.0 ports (USB 5-6), 2 onboard USB 3.1 Gen 1 ports (USB 1-2) and 4 onboard USB 3.1 Gen 2 ports (USB 3-4/5-6). The 10-pin connectors allow you to connect 4 additional USB 2.0 ports (USB 7-8/9-10). The additional USB ports may be mounted on a card-edge bracket. Install the card-edge bracket to an available slot at the rear of the system chassis and then insert the USB port cables to a connector.

Important:

If you are using the Wake-On-USB Keyboard/Mouse function for 2 USB ports, the +5V_standby power source of your power supply must support \geq 1.5A. For 3 or more USB ports, the +5V_standby power source of your power supply must support \geq 2A.

USB 3.1 Gen 2 5-6 Header

Pins	Assignment	Pins	Assignment
1	GND	20	PWR
2	TX+	19	DATA-
3	TX-	18	DATA+
4	GND	17	GND
5	RX+	16	RX+
6	RX-	15	RX-
7	GND	14	GND
8	DATA+	13	TX+
9	DATA-	12	TX-
10	PWR	11	GND

USB 2.0 7-8/9-10 Headers

Pins	Assignment	Pins	Assignment
1	PWR	2	PWR
3	DATA-	4	DATA-
5	DATA+	6	DATA+
7	GND	8	GND
9		10	NC

SATA (Serial ATA) Connectors



Features

- 5 Serial ATA 3.0 ports with data transfer rate up to 6Gb/s (CS331-Q370)
- 6 Serial ATA 3.0 ports with data transfer rate up to 6Gb/s (CS331-C246)
- Integrated Advanced Host Controller Interface (AHCI) controller
- Supports RAID 0, RAID 1, RAID 5, RAID 10

The Serial ATA connectors are used to connect Serial ATA devices. Connect one end of the Serial ATA data cable to a SATA connector and the other end to your Serial ATA device.

Digital I/O Connector



The 8-bit Digital I/O connector provides powering-on function to external devices that are connected to these connectors. The pin functions of the 8-bit digital I/O connector are listed below.

Digital I/O Connector

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Pins	Pin Assignment	Pins	Pin Assignment
1	GND	2	+12V
3	DIO7	4	+12V
5	DIO6	6	GND
7	DIO5	8	+5V
9	DIO4	10	+5V
11	DIO3	12	GND
13	DIO2	14	+5VDU
15	DIO1	16	+5VDU
17	DIO0	18	GND
19	GND	20	

Cooling Fan Connectors



These fan connectors are used to connect cooling fans. The cooling fans will provide adequate airflow throughout the chassis to prevent overheating the CPU and system board components.

Power Connectors



Use a power supply that complies with the ATX12V Power Supply Design Guide Version 1.1. An ATX12V power supply unit has a standard 24-pin ATX main power connector that must be inserted into the 24-pin connector. The 8-pin +12V power connector enables the delivery of more +12VDC current to the processor's Voltage Regulator Module (VRM).

The power connectors from the power supply unit are designed to fit the 24-pin and 8-pin connectors in only one orientation. Make sure to find the proper orientation before plugging the connectors.

The system board requires a minimum of 300 Watt power supply to operate. Your system configuration (CPU power, amount of memory, add-in cards, peripherals, etc.) may exceed the minimum power requirement. To ensure that adequate power is provided, we strongly recommend that you use a minimum of 400 Watt (or greater) power supply.



Important:

Insufficient power supplied to the system may result in instability or the add-in boards and peripherals not functioning properly. Calculating the system's approximate power usage is important to ensure that the power supply meets the system's consumption requirements.

Chassis Intrusion Connector



The board supports the chassis intrusion detection function. Connect the chassis intrusion sensor cable from the chassis to this connector. When the system's power is on and a chassis intrusion occurred, an alarm will sound. When the system's power is off and a chassis intrusion occurred, the alarm will sound only when the system restarts.

Front Panel Connector



HDD-LED - Hard Disk Drive LED

Lighting of the LED indicates that the hard drive is being accessed.

RESET - Reset Switch

This switch allows you to reboot without having to power off the system.

PWR-LED - Power/Standby LED

When the system's power is on, this LED will light up. When the system is in the S1 (POS - Power On Suspend) state, it will blink at 1-second intervals. When the system is in the S3 (STR - Suspend To RAM) state, it will blink at 4-second intervals.

ATX-SW - ATX Power Switch

This switch is used to power on or off the system.

Front Panel Pin Assignment

	Pins	Assignment		Pins	Assignment
	1	N.C.		2	LED Power
HD- LED	3	HDD Power	PWR- LED	4	LED Power
	5	Signal		6	Signal
RESET	7	Ground	ATX- SW	8	Ground
	9	Signal		10	Signal
	11	N.C.		12	

LAN LED Connector





The LAN LED connector is used to detect the connection state of RJ45 LAN ports when the connection is made to an active network via a cable. The pin functions of the LAN LED connector are listed below.



The S/PDIF connector is used to connect an external S/PDIF port. Your S/PDIF port may be mounted on a card-edge bracket. Install the card-edge bracket to an available slot at the rear of the system chassis then connect the audio cable to the S/PDIF connector. Make sure pin 1 of the audio cable is aligned with pin 1 of the S/PDIF connector.

LAN LED Pin Assignment

Pins	Assignment	Pins	Assignment
1	GBE_1000-	2	GBE_LED_100-
3	GBE_LED_LINK_ ACT-	4	3V3DU
5	LINK_1000_4	6	LINK_100_4
7	LINK_ACTIVITY_4	8	3V3DU

SMBus Connector



The SMBus (System Management Bus) connector is used to connect SMBus devices. It is a multiple device bus that allows multiple chips to connect to the same bus and enable each one to act as a master by initiating data transfer.

Standby Power LED



This LED will lit red when the system is in the standby mode. It indicates that there is power on the system board. Power-off the PC and then unplug the power cord prior to installing any devices. Failure to do so will cause severe damage to the motherboard and components.

LPC Connector



The Low Pin Count Interface was defined by Intel[®] Corporation to facilitate the industry's transition towards legacy free systems. It allows the integration of low-bandwidth legacy I/O components within the system, which are typically provided by a Super I/O controller. Furthermore, it can be used to interface firmware hubs, Trusted Platform Module (TPM) devices and embedded controller solutions. Data transfer on the LPC bus is implemented over a 4 bit serialized data interface, which uses a 33MHz LPC bus clock. For more information about LPC bus refer to the Intel[®] Low Pin Count Interface Specification Revision 1.1'. The table below indicates the pin functions of the LPC connector.

LPC Pin Assignment

Pins	Assignment	Pins	Assignment
1	CLK	2	LAD1
3	RST#	4	LAD0
5	FRAME#	6	3V3
7	LAD3	8	GND
9	LAD2	10	
11	INT_SERIRQ	12	GND
13	5VDU	14	5V

External COM Port Module

The external COM port modules — EXT-RS232 and EXT-RS485 — are designed by DFI's proprietary technology, and support four additional COM ports per module. The EXT-RS232/RS485 card is connected to the motherboard via the LPC connector and secured by a standoff as illustrated below.



Note:

The EXT-RS232/RS485 modules are optional peripherals that are not included in the standard package. For more information, please contact DFI sales representatives or visit <u>go.dfi.com/EXT-RS232</u>, and <u>go.dfi.com/EXT-RS485</u>.

Expansion Slots



M.2 (M Key) Socket

The M.2 socket is the Next Generation Form Factor (NGFF) which is designed to support multiple modules and make the M.2 more suitable in application for solid-state storage.

PCI Express x16 Slot

Install PCI Express x16 graphics card, that comply to the PCI Express specifications, into the PCI Express x16 slot. To install a graphics card into the x16 slot, align the graphics card above the slot then press it down firmly until it is completely seated in the slot. The retaining clip of the slot will automatically hold the graphics card in place.

PCI Express x4 Slot

Install PCI Express cards such as network cards or other cards that comply to the PCI Express specifications into the PCI Express x4 slot.

Mini PCIe Socket

The full-size Mini PCIe socket supports USB/Mini PCIe/mSATA signals and is used to install a Mini PCIe card. Mini PCIe and mSATA signals can be switched with the jumper JP9.

Gaming I/O Board - GM901

The GM901 card is connected to the motherboard via the PCI Express x4 Slot.



Battery



The lithium ion battery addendum supplies power to the real-time clock and CMOS memory as an auxiliary source of power when the main power is shut off.

Safety Measures

- There exists explosion hazard if the battery is incorrectly installed.
- Replace only with the same or equivalent type recommended by the manufacturer.
- Dispose of used batteries according to local ordinances.

Chapter 7 - Mounting

Note: The sy These

The system unit used in the following illustrations may not resemble the actual one. These illustrations are for reference only.

Wall Mount

The system has screw holes on the bottom of the chassis to support wall mount.

- 1. Screw 2 mount rails (Blue part) into the holes on the bottom part of GM831-CSF.
- 2. Drill 8 holes in the wall and insert screw bolts into the holes (Red part).
- 3. Drill the screws into the screw anchors.
- 4. Hang the device on the wall.

The diagram on the right shows the screw holes and dimensions of wall mount (in millimeter).



Chapter 8 - BIOS Setup

Overview

The BIOS is a program that takes care of the basic level of communication between the CPU and peripherals. It contains codes for various advanced features found in this system board. The BIOS allows you to configure the system and save the configuration in a battery-backed CMOS so that the data retains even when the power is off. In general, the information stored in the CMOS RAM of the EEPROM will stay unchanged unless a configuration change has been made such as a hard drive replaced or a device added.

It is possible that the CMOS battery will fail causing CMOS data loss. If this happens, you need to install a new CMOS battery and reconfigure the BIOS settings.



Note:

The BIOS is constantly updated to improve the performance of the system board; therefore the BIOS screens in this chapter may not appear the same as the actual one. These screens are for reference purpose only.

Default Configuration

Most of the configuration settings are either predefined according to the Load Optimal Defaults settings which are stored in the BIOS or are automatically detected and configured without requiring any actions. There are a few settings that you may need to change depending on your system configuration.

Entering the BIOS Setup Utility

The BIOS Setup Utility can only be operated from the keyboard and all commands are keyboard commands. The commands are available at the right side of each setup screen.

The BIOS Setup Utility does not require an operating system to run. After you power up the system, the BIOS message appears on the screen and the memory count begins. After the memory test, the message "Press DEL to run setup" will appear on the screen. If the message disappears before you respond, restart the system or press the "Reset" button. You may also restart the system by pressing the <Ctrl> <Alt> and keys simultaneously.

Legends

Keys	Function
Right / Left arrow	Move the highlight left or right to select a menu
Up / Down arrow	Move the highlight up or down between submenus or fields
<enter></enter>	Enter the highlighted submenu
+ (plus key)	Scroll forward through the values or options of the highlighted field
- (minus key)	Scroll backward through the values or options of the highlighted field
<f1></f1>	Display general help
<f2></f2>	Display previous values
<f9></f9>	Optimized defaults
<f10></f10>	Save and reset the setup program
<esc></esc>	Exit to the BIOS Setup Utility

Scroll Bar

When a scroll bar appears to the right of the setup screen, it indicates that there are more available fields not shown on the screen. Use the up and down arrow keys to scroll through all the available fields.

Submenu

When " \blacktriangleright " appears on the left of a particular field, it indicates that a submenu which contains additional options are available for that field. To display the submenu, move the highlight to that field and press <Enter>.

► Introduction

DFI's "Jurisdiction BIOS" technology is a gaming-oriented security boot which can prevent from unauthorized logging in the system and is verified by GLI as a

valid security mechanism. Jurisdiction BIOS implements a hash and public key mechanism to verify the integrity of BIOS and storage media device. PIs refer to the following boot flow of Jurisdiction BIOS.

GLI File Number: CS-00-DFF-18-01


► Main

The Main menu is the first screen that you will see when you enter the BIOS Setup Utility.

Aptio Se	tup Utility - Copyright (C) 2020 A	merican Megatr	ends, Inc.
Main Advanced	Chipset Security Boot S	Save & Exit	
Project Name BIOS Version	GM831 B208.19A	Â	Set the Date. Use Tab to switch between Date
FSP version RC version	07.00.6C.40 07.00.6C.40		Default Ranges: Year: 2005-2099
Intel(R) Core(TM) i3-910	0E CPU @ 3.10GHz		Days: dependent on month
Stepping L1 Data Cache	R0 32 KB x 4		
L1 Instruction Cache L2 Cache	32 KB x 4 256 KB x 4		
L3 Cache Number of Processors Microcode Revision	6 MB 4Core(s) / 4Thread D6	d(s)	→←: Select Screen ↑↓: Select Item Enter: Select
Memory RC Version Total Memory Memory Frequency	0.7.1.111 8192 MB 2400 MHz		 +/-: Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults
PCH SKU ME FW Version ME Firmware SKU	Q370 12.0.65.1567 Corporate SKU		F10: Save & Exit ESC: Exit
System Date	[Tue 12/01/2020]		
Versio	n 2.20.1271. Copyright (C) 2020 Am	herican Megatren	ds, Inc.

System Date

The date format is <day>, <month>, <date>, <year>. Day displays a day, from Sunday to Saturday. Month displays the month, from 01 to 12. Date displays the date, from 01 to 31. Year displays the year, from 2005 to 2099.

Aptio Se	tup Utility - Copyright (C) 2020	American Megati	rends, Inc.
Main Advanced	Chipset Security Boot	Save & Exit	
BIOS Version FSP version	B208.19A 07.00.6C.40		Set the Time. Use Tab to switch between Time elements.
RC version Intel(R) Core(TM) i3-910 ID Stepping L1 Data Cache L2 Cache L2 Cache L3 Cache Number of Processors Microcode Revision Memory RC Version Total Memory Memory Frequency PCH SKU ME FW Version ME Firmware SKU System Date System Date	07.00.6C.40 07.00.6C.40 0E CPU @ 3.10G 0x906ED R0 32 KB x 4 32 KB x 4 32 KB x 4 256 KB x 4 6 MB 4Core(s) / 4Thre D6 0.7.1.111 8192 MB 2400 MHz Q370 12.0.65.1567 Corporate SKU [Tue 12/01/2020 10.45.201]	ad(s)	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Versio	n 2.20.1271. Copyright (C) 2020 A	merican Megatren	ids, Inc.

System Time

The time format is <hour>, <minute>, <second>. The time is based on the 24-hour militarytime clock. For example, 1 p.m. is 13:00:00. Hour displays hours from 00 to 23. Minute displays minutes from 00 to 59. Second displays seconds from 00 to 59.

► Advanced

The Advanced menu allows you to configure your system for basic operation. Some entries are defaults required by the system board, while others, if enabled, will improve the performance of your system or let you set some features according to your preference.





RC ACPI Settings

This section is used to configure the system ACPI parameters.

Aptio Setup Utility - Copyright (C) 2020 American Megatrends, Inc. Advanced		
RC ACPI Settings Wake system from S5 via RTC State After G3	[Disabled] [S0 State]	Enable or disable Sys- tem wake on alarm event. When enabled System will wake on the hr::min::sec specified
		→←: Select Screen ↑↓: Select Item Enter: Select +/- : Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Version 2.20.1271	. Copyright (C) 2020 America	n Megatrends, Inc.

Wake system from S5 via RTC

When Enabled, the system will automatically power up at a designated time every day from the Real-time clock (RTC) battery. More settings will be displayed once it's switched to [Enabled] as detailed in the next page.

State After G3

Select between S0 State, Last State, and S5 State. This field is used to specify what state the system is set to return to when power is re-applied after a power failure (G3 state).

► Advanced ► RC ACPI Settings

Aptio Setup Utility Advanced	- Copyright (C) 2020 Americ	can Megatrends, Inc.
RC ACPI Settings Wake system from S5 Wake up hour Wake up minute Wake up second State After G3	[Enabled] 0 0 [S0 State]	Select 0-23 For example enter 3 for 3am and 15 for 3pm
		→ ←: Select Screen ↑↓: Select Item Enter: Select +/- : Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit

Wake up hour

Select hour from 0 to 23.

Wake up minute

Select minute from 0 to 59.

Wake up second

Select second from 0 to 59.

Advanced

CPU Configuration

This section is used to configure the CPU.

CPU Configuration		When enabled, a VMM
Intel (VMX) Virtualization		hardware capabilities
Active Processor Cores	[All]	Technology.
		 ↑↓: Select Item Enter: Select +/- : Change Opt. F1: General Help
		F2: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit

Intel (VMX) Virtualization Technology

When this field is set to Enabled, the VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.

Active Processor Cores

Select number of cores to enable in each processor package.

Advanced

Power & Performance

This section is used to configure the power & performance options.

Aptio Setup Utility - Copyright (C) 2020 American Megatrends, Inc.		
Power & Performance Intel(R) SpeedStep(tm) Turbo Mode C states	[Enabled] [Enabled] [Enabled]	Allows more than two frequency ranges to be supported.
		→←: Select Screen ↑4: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Version 2.20.1271	. Copyright (C) 2020 American Megatren	ids, Inc.

Intel(R) SpeedStep(tm)

This field is used to enable or disable the Intel Enhanced SpeedStep Technology. If enabled, Turbo Mode will appear for configuration.

Turbo Mode

This field is used to enable or disable processor turbo mode (requires that Intel(R) SpeedStep(tm) is enabled too), which allows the processor core to automatically run faster than the base frequency when the processor's power, temperature, and specification are within the limits of TDP.

C states

Enable or disable CPU Power Management. It allows CPU to go to C states when it's not 100% utilized.

Advanced

PCH-FW Configuration

This section configures the parameters of Management Engine Technology.

Advanced		
ME State Manageability Features State AMT BIOS Features AMT Configuration ME Unconfig on RTC Clear Firmware Update Configuration	[Enabled] [Enabled] [Enabled] [Enabled]	When Disabled ME wil be put into ME Tempor ily Disabled Mode.
		→ -: Select Screen ↑↓: Select Item Enter: Select +/- : Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit

ME State

When this field is set to Disabled, ME will be put into ME Temporarily Disabled Mode.

Manageability Features State

Enable or disable Intel(R) Manageability features. This option disables/enables Manageability Features support in FW. To disable, support platform must be in an unprovisioned state first.

AMT BIOS Features

When disabled, AMT BIOS features are no longer supported and user is no longer able to access MEBx Setup. This option does not disable manageability features in FW.

AMT Configuration

This section is used to configure Intel(R) Active Management Technology Parameters.

ME Unconfig on RTC Clear

When disabled, ME will not be unconfigured on RTC Clear.

Firmware Update Configuration

This section is used to configure Management Engine Technology Parameters.

► Advanced ► PCH-FW Configuration

ME State [Enabled] Manageability Features State [Enabled] AMT BIOS Features [Enabled] AMT Configuration [Enabled] ME Unconfig on RTC Clear [Enabled] Firmware Update Configuration (Enabled] →←: Select Screen ?: Select Item Enter: Select ?: Change Opt. F1: General Help ?: General Help F1: General Help ?: Select Detailts F1: Goneral Defaults F1: General Help F1: State & Exit ESC: Exit

Aptio Setup Utility - Copyright (C) 2020 American Megatrends, Inc.		
Advanced		
USB Provisioning of AMT • Secure Erase Configuration • OEM Flags Settings	[Disabled]	Enable/Disable of AMT USB Provisioning. →: Select Screen ↑↓: Select Item Enter: Select H/-: Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F9: Optimized Defaults F9: Optimized Defaults F9: Set Exit
Version 2.20.1271. Copyright (C) 2020 American Megatrends, Inc.		

USB Provisioning of AMT

Enable or disable AMT USB Provisioning.

Secure Erase Configuration

This section is used to configure Secure Erase.

Aptio Setup Utility - Copyright (C) 2020 American Megatrends, Inc.		
Advanced		
Secure Erase mode Force Secure Erase	[Simulated] [Disabled]	Change Secure Erase module behavior: Simulated: Performs SE flow without erasing SSD Real: Erase SSD. →←: Select Screen f\: Select Item
		Enter: Select +/- : Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Version 2.20.1271. Copyright (C) 2020 American Megatrends, Inc.		

Secure Erase Mode

Select Secure Erase module behavior: Simulated or Real.

Force Secure Erase

Enable or disable Force Secure Erase on next boot.



Aptio Setup Utility - Copyright (C) 2020 American Megatrends, Inc. Advanced		
Hide Unconfigure ME Confirmation Prompt	[Disabled]	OEMFlag Bit 6: Hide Unconfigure ME
Unconfigure ME	[Disabled]	confirmation prompt when attempting ME uncon- figuration.
		v - Select Screen
		↑↓: Select Item Enter: Select +/- : Change Opt. F1: General Help
		F2: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Version 2 20 1271 Con	uright (C) 2020 Amorican	Megatrends Inc

OEM Flags Settings-

Hide Unconfigure ME Confirmation Prompt

Enable or disable to hide unconfigure ME confirmation prompt when attempting ME unconfiguration.

Unconfigure ME

Enable or disable to unconfigure ME with resetting MEBx password to default.

Aptio Setup Utilit Advanced	y - Copyright (C) 2020 American Megat	rends, Inc.
ME State Manageability Features State AMT BIOS Features • AMT Configuration ME Unconfig on RTC Clear • Firmware Update Configuration	[Enabled] [Enabled] [Enabled] [Enabled]	Configure Management Engine Technology Parameters.
		→←: Select Screen ↑↓: Select Item Enter: Select +/: : Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Version 2.20.127	1. Copyright (C) 2020 American Megatre	nds, Inc.

Aptio Setup U Advanced	itility - Copyright (C) 2020 An	merican Megatrends, Inc.
Me FW Image Re-Flash	[Disabled]	Enable/Disable Me FW Image Re-Flash function.
		→ ←: Select Screen ↑↓: Select Item Enter: Select +/: Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Version 2.2).1271. Copyright (C) 2020 Am	nerican Megatrends, Inc.

Firmware Update Configuration-

Me FW Image Re-Flash

This field is used to enable or disable the Me FW Image Re-Flash function.

Advanced

Trusted Computing

This section configures settings relevant to Trusted Computing innovations.

Aptio Setup Utility	- Copyright (C) 2020 Americ	an Megatrends, Inc.
Advanced		
TPM20 Device Found Firmware Version: Vendor:	5.62 IFX	Enables or Disables BIOS support for secu- rity device. O.S will not show Security Device.
Security Device Support Pending operation	[Enable] [None]	TCG EFI protocol and INT1A interface will not be available.
		$\rightarrow \leftarrow$: Select Screen \uparrow_{4} : Select Item Enter: Select +/: Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Version 2.20.1271. Copyright (C) 2020 American Megatrends, Inc.		

Security Device Support

This field is used to enable or disable BIOS support for the security device. O.S will not show the security device. TCG EFI protocol and INT1A interface will not be available.

Pending operation

To clear the existing TPM encryption, select "TPM Clear" and restart the system. This field is not available when "Security Device Support" is disabled.

Advanced

NCT6116D Super IO Configuration

This section is used to configure the I/O functions supported by the onboard Super I/O chip.

Aptio Setup Utility -	Copyright (C) 2020 America	an Megatrends, Inc.
Advanced		
NCT6116D Super IO Configuration		WatchDog Timer Unit
Super IO Chip	NCT6116D	Scientian
WatchDog Timer Unit SuperIO WatchDog Timer	[Second] 0	
 Serial Port 1 Configuration Serial Port 2 Configuration Serial Port 3 Configuration Serial Port 4 Configuration 		
		→-: Select Screen 1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Version 2.20.1271.	Copyright (C) 2020 American	Megatrends, Inc.

WatchDog Timer Unit

Select WatchDog Timer Unit: Second or Minute.

SuperIO WatchDog Timer

Set SuperIO WatchDog Timer Timeout value. The range is from 0 (disabled) to 255.

Serial Port 1 Configuration to Serial Port 4 Configuration

Set the parameters of serial port 1 (COM 1) to serial port 4 (COM 4).

Serial Port 1 to 4 Configuration

Set the parameters of serial port 1 (COM 1) to serial port 4 (COM 4).

Aptio Setup Utility Advanced	- Copyright (C) 2020 American Meg	atrends, Inc.
Serial Port 1 Configuration Serial Port Device Settings RS485 Auto Flow	[Enabled] IO=3F8h; IRQ=4; [Disabled]	Enable or Disable Serial Port (COM)
		→ \leftarrow : Select Screen ↑↓: Select Item Enter: Select +/-: (Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Version 2.20.1271	. Copyright (C) 2020 American Megati	rends, Inc.

Serial Port

Enable or disable the serial COM port.

RS485 Auto Flow

Enable or disable RS485 auto flow. This field is only available for COM ports that support RS485 mode.

Advanced

NCT6116D HW Monitor

This section displays the hardware health monitor and also configures smart fan and case open functions. Multiple aspects of the real-time physical status of the board are displayed.

Aptio Setup Utilit	y - Copyright (C) 2020 America	n Megatrends, Inc.
Advanced Pc Health Status Smart Fan Function Case Open System temperature CPU Fan1 Speed SYS Fan2 Speed SYS Fan3 Speed VBAT VCORE VDDQ SV +12V	[Disabled] : +33 °C : +46 °C : N/A : 2973 RPM : 1327 RPM : N/A : +3.040 V : +1.024 V : +1.200 V : +5.116 V : +12.320 V	Smart Fan function setting →←: Select Screen 1\2: Select Hem Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Version 2.20.127	71. Copyright (C) 2020 American	Megatrends, Inc.

Smart Fan Function

Press Enter to enter the sub-menu of Smart Fan Function as shown below.

Case Open

Enable or disable the case open detection function.

Smart Fan Function		▲ Enable CPU SmartFan
CPU Smart Fan Control Boundary 1 Boundary 2 Boundary 3 Boundary 4 Speed Count 1 Speed Count 2 Speed Count 3 Speed Count 4	[Enabled] 30 40 50 60 35 60 80 100	
System Smart Fan(1) Control Boundary 1 Boundary 2 Boundary 3 Boundary 4 Speed Count 1 Speed Count 2 Speed Count 3 Speed Count 4	[Enabled] 30 40 50 60 35 60 80 100	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults #I0: Save & Exit
System Smart Fan(2) Control Boundary 1 Boundary 2	[Enabled] 30 40	ESC: Exit

Aptio Setup Utilit	y - Copyright (C) 2020 American	Megatrends, Inc.
Advanced		
Boundary 4 Speed Count 1 Speed Count 2 Speed Count 3 Speed Count 4 System Smart Fan(2) Control Boundary 1 Boundary 2 Boundary 3 Boundary 4 Speed Count 1 Speed Count 1 Speed Count 2 Speed Count 4 System Smart Fan(3) Control Boundary 1 Boundary 3 Boundary 3 Boundary 3 Boundary 4 Speed Count 1 Speed Count 1 Speed Count 2 Speed Count 3 Speed Count 4	60 35 60 80 100 [Enabled] 30 40 50 60 80 100 [Enabled] 30 40 50 60 80 100 [Enabled] 30 40 50 60 80 100 [Enabled] 35 60 80 100 [Enabled] 35 60 80 100 [Enabled] 35 60 80 100 [Enabled] 30 40 50 60 80 100 [Enabled] 35 60 80 100 [Enabled] 35 60 80 100 [Enabled] 35 60 80 100 [Enabled] 35 60 80 100 [Enabled] 30 40 50 60 80 100 [Enabled] 35 60 80 100 [Enabled] 30 80 100 [Enabled] 30 80 100 [Enabled] 30 80 100 [Enabled] 30 40 50 60 80 100 [Enabled] 30 40 50 60 80 100 [Enabled] 30 40 50 60 80 100 [Enabled] 35 60 80 100 [Enabled] 35 60 80 100 [Enabled] 35 60 80 100 [Enabled] 35 60 80 100 [Enabled] 35 60 80 100 [Enabled] 35 60 80 100 [Enabled] 35 60 80 100 [Enabled] 35 60 80 100 [Enabled] 35 60 80 [Enabled] 35 60 80 [Enabled] [En	 Speed Count 1/2/3/4, Range 1-100% → ←: Select Screen ↑ Select Item Enter: Select Item Enter: Select Item F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save & Reset ESC: Exit
Version 2.20.127	71. Copyright (C) 2020 American M	egatrends, Inc.

CPU Smart Fan, System Smart Fan(1)/(2)/(3) Control

Enable or disable the CPU smart fan and system smart fan(1)/(2)/(3).

Boundary 1 to Boundary 4

Set the boundary temperatures that determine the operation of the fan with different fan speeds accordingly. For example, when the system or the CPU temperature reaches boundary temperature 1, the system or CPU fan should be turned on and operate at the designated speed. The range is from $0-127^{\circ}$ C.

Speed Count 1 to Speed Count 4

Set the fan speed. The range is from 1-100% (full speed).

Aptio Setup Utility - Copyright (C) 2020 American Megatrends, Inc.		
Advanced		
Smart Fan Function		Enable CPU SmartFan
CPU Smart Fan Control Fix Fan Speed Count	[Disabled] 100	
System Smart Fan(1) Control Fix Fan Speed Count	[Disabled] 100	
System Smart Fan(2) Control Fix Fan Speed Count	[Disabled] 100	
System Smart Fan(3) Control Fix Fan Speed Count	[Disabled] 100	
		→ Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save & Reset ESC: Exit
Version 2.20.127	1. Copyright (C) 2020 Americ	can Megatrends, Inc.

By disabling CPU Smart Fan Control, System Smart Fan(1)/(2)/(3) Control, the fan will be operating at a fixed rate configurable in the field "Fix Fan Speed Count".

Fix Fan Speed Count

Set the fix fan speed. The range is from 1-100% (full speed).

Advanced

Serial Port Console Redirection

This section configures settings relevant to serial port console redirection.

Aptio Setup Utilit	y - Copyright (C) 2020 American Mega	trends, Inc.
Advanced		
COM1 Console Redirection ► Console Redirection Settings		Console Redirection En- able or Disable.
COM2 Console Redirection ► Console Redirection Settings	[Disabled]	
COM3 Console Redirection ► Console Redirection Settings	[Disabled]	
COM4 Console Redirection ► Console Redirection Settings	[Disabled]	→ e: Select Screen ↑4: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Version 2.20.12	71. Copyright (C) 2020 American Megatre	nds, Inc.

Console Redirection

By enabling Console Redirection of a COM port, the sub-menu of console redirection settings will become available for configuration as shown below.

Aptio Setup Utilit Advanced	y - Copyright (C) 2020 American Megat	rends, Inc.
COM1 Console Redirection Console Redirection Settings COM2 Console Redirection Console Redirection Settings	[Enabled] [Enabled]	The settings specify how the host computer and the remote computer (which the user is using) will ex- change data. Both comput- ers should have the same or compatible settings.
COM3 Console Redirection Settings COM4 Console Redirection Console Redirection Settings	[Enabled] [Enabled]	→ ←: Select Screen ↑↓: Select Item Enter: Select +/: Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Version 2.20.1271. Copyright (C) 2020 American Megatrends, Inc.		



Terminal Type

Select terminal type: VT100, VT100+, VT-UTF8 or ANSI.

Bits per second

Select serial port transmission speed: 9600, 19200, 38400, 57600 or 115200.

Data Bits

Select data bits: 7 bits or 8 bits.

Parity

Select parity bits: None, Even, Odd, Mark or Space.

Stop Bits

Select stop bits: 1 bit or 2 bits.

Flow Control

Select flow control type: None or Hardware RTS/CTS.

Advanced

USB Configuration

This section is used to configure the USB settings.

Aptio Setup Utility - Cop	yright (C) 2020 American Megat	rends, Inc.
Advanced		
USB Configuration Legacy USB Support XHCI Hand-off USB Mass Storage Driver Support	[Enabled] [Enabled] [Enabled]	Enables Legacy USB support. AUTO option disables legacy support if no USB devices are con- nected. DISABLE option will keep USB devices available only for EFI applications.
		→←: Select Screen ↑↓: Select Item Enter: Select +/- : Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Version 2.20.1271. Cop	right (C) 2020 American Megatrer	nds, Inc.

Legacy USB Support

Enable	ed	Enable Legacy USB support.
Disab	led	Keep USB devices available only for EFI applications.
Auto	Disable	Legacy support if no USB devices are connected.

XHCI Hand-off

Enable or disable XHCI Hand-off.

USB Mass Storage Driver Support

Enable or disable USB Mass Storage Driver Support.

Advanced

CSM Configuration

This section is used to configure the CSM settings.



CSM Support

This section is used to enable or disable CSM Support. When CSM Support is set to enabled, several options will appear for configuration.

Aptio Setup Utility - Copyright (C) 2020 American Megatrends, Inc.		
Advanced		
Compatibility Support Module C CSM Support	Configuration [Enabled]	Enable/Disable CSM Support.
Boot option filter Option ROM execution	[UEFI only]	
Network Storage Video Other PCI devices	[Do not launch] [UEFI] [Legacy] [UEFI]	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Version 2.20.	1271. Copyright (C) 2020 American	Megatrends, Inc.

► Advanced ► CSM Configuration

Boot option filter

This field controls Legacy/UEFI ROMs priority.

Network

This field controls the execution of UEFI and Legacy Network OpROM.

Storage

This field controls the execution of UEFI and Legacy Storage OpROM.

Video

This field controls the execution of UEFI and Legacy Video OpROM.

Other PCI devices

This field determines OpROM execution policy for devices other than Network, Storage or Video.

Advanced

USB Power Control

USB 3.0 ports (USB 1-6) and USB 2.0 ports (USB 5-10) support system wakeup from S3 or S4 state via keyboard and mouse signal input. To enable S3/S4 wakeup, select 5V_Dual. To disable S3/S4 wakeup, select 5V.

Aptio Setup Utility - Advanced	Copyright (C) 2020 Americ	an Megatrends, Inc.
USB3_1/2_USB3_3/4_USB3_5/6 USB2_5/6_USB2_7/8_USB2_9/10	[5V_Dual]	5V. Dual: Support system wake up from S3/S4 by USB KB&MS 5V: No support system wake up from S3/S4 by USB KB&MS →←: Select Screen ↑↓: Select Item Enter: Select Item Enter: Select Item F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Version 2.20.1271.	Copyright (C) 2020 American	n Megatrends, Inc.

Advanced

Network Stack Configuration

This section is used to configure the Network Stack settings.

Network Stack

This section is used to enable or disable UEFI network stack. When Network Stack is set to enabled, several options will appear for configuration.

Aptio Setup Uti	lity - Copyright (C) 2020 Americ	an Megatrends, Inc.
Advanced		
Network Stack Ipv4 PXE Support Ipv6 PXE Support PXE boot wait time Media detect count	[Enabled] [Disabled] [Disabled] 0 1	Enable/Disable UEFI Network Stack →←: Select Screen ↑↓: Select Item Enter: Select +/- : Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Version 2.20.	1271. Copyright (C) 2020 America	n Megatrends, Inc.

Ipv4 PXE Support

Enable or disable IPv4 PXE boot support. If disabled, IPv4 PXE boot support will not be available.

Ipv6 PXE Support

Enable or disable IPv6 PXE boot support. If disabled, IPv6 PXE boot support will not be available.

PXE boot wait time

Set the 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

Set the number of times the presence of media will be checked. Use either +/- or numeric keys to set the value.

► Chipset



Graphics Configuration

Aptio Setup Utility - Copyright (C) 2020 American Megatrends, Inc.		
Graphics Configuration Primary Display Internal Graphics	[Auto] [Auto]	Initial priority : AUTO: PEG->PCI->PCI- >IGFX IGFX: IGFX->PEG- >PCI->PCI PEG: PEG->PCI- >IGFX PCI: PCI->PCI->PCI- >IGFX $\rightarrow \leftarrow$: Select Item Enter: Select +/+: Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Version 2.20.1	271. Copyright (C) 2020 Americ	can Megatrends, Inc.

Primary Display

Select which of IGFX/PEG/PCI Graphics device to be the primary display.

Internal Graphics

Keep IGFX enabled based on the setup options.

► Chipset

PEG Port Configuration

This section configures the PCIe Graphics (PEG) function available for PCIE1 and PCIE2.

Aptio Setup Utility - Copyright (C) 2020 American Megatrends, Inc. Chipset		
PEG Port Configuration PCIE1 Enable Root Port Max Link Speed PCIE2 Enable Root Port Max Link Speed	Not Present [Enabled] [Auto] Not Present [Enabled] [Auto]	Enable or Disable the Root Port
 PEG Port Feature Configuration 		→←: Select Screen ↑↓: Select Item Enter: Select +/- : Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Version 2.20.1271.	Copyright (C) 2020 American Megatre	ends, Inc.

Enable Root Port

Enable or disable the root port.

Max Link Speed

Configure PCIE1/PCIE2 port's Max Speed: Auto, Gen1, Gen2 or Gen3.

PEG Port Feature Configuration



Detect Non-Compliance Device

Enable or disable function of detecting non-compliant devices.

Chipset

PCH-IO Configuration

This section illustrates the PCH parameters.

Aptio Setup Utility - Copyright (C) 2020 Americs Chipset	in Megatrends, Inc.
PCH-IO Configuration > SATA And RST Configuration > HD Audio Configuration LANI(1219) [Enabled] Wake on LAN Enable [Enabled] Above 4GB MMIO BIOS assignment [Dynamic]	PCI Express Configuration settings →←: Select Screen ↑↓: Select Item Enter: Select Item Enter: Select Item F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Version 2.20.1271. Copyright (C) 2020 American	Megatrends, Inc.

PCI Express Configuration

This section configures PCI Express settings. Refer to following sections for more information.

SATA And RST Configuration

This section configures SATA Device Options settings. Refer to following sections for more information.

HD Audio Configuration

This section configures HD Audio Subsystem settings. Refer to following sections more information.

LAN1(I219)

Enable or disable onboard NIC.

Wake on LAN Enable

Enable or disable integrated LAN to wake the system.

Above 4GB MMIO BIOS assignment

Switch MemoryMappedIO BIOS assignment above 4GB.

Max TOLUD

Assign a value or set "Dynamic" to automatically adjust TOLUD based on largest MMIO length.

► Chipset ► PCH-IO Configuration

PCI Express Configuration

Aptio Setup Utility - Copyright (C) 2020 American Megatrends, Inc. Chipset	
PCI Express Configuration > PCIE3 > PCIE4 > LAN2(1211) > Mini_PCIE > M.2	PCI Express Root Port Settings.
	→ \leftarrow : Select Screen ↑ : Select Item Enter: Select + /- : Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Version 2.20.1271, Copyright (C) 2020 Am	nerican Megatrends. Inc.

PCIE3

Enable or disable the port.

PCIE4

Enable or disable the port.

LAN2(I211)

Enable or disable the port.

Mini_PCIE

Enable or disable the port.

M.2

Enable or disable the port.

► PCI Express Configuration ► PCIE3/4 and Mini_PCIE, M.2

Aptio Setup Utility Chipset	y - Copyright (C) 2020 American Meg	gatrends, Inc.
PCIE3 Hot Plug PCIe Speed Detect Non-Compliance Device	[Enabled] [Disabled] [Auto] [Disabled]	PCI Express Root Port Settings.
		→←: Select Storeen ↑↓: Select Item Enter: Select +/- : Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Version 2.20.127	1. Copyright (C) 2020 American Mega	trends, Inc.

Hot Plug

Enable or disable the hot plug function of the PCI Express root port.

PCIe Speed

Select the speed of the PCI Express root port: Auto, Gen1, Gen 2 or Gen3.

Detect Non-Compliance Device

Enable or disable function of detecting non-compliant devices.

Aptio S	Setup Utility - Copyright (C) 2020 American	1 Megatrends, Inc.
	Chipset	
Mini PCIE Hot Plug PCIe Speed	[Enabled] [Disabled] [Auto]	PCI Express Root Port Settings. →←: Select Screen ↑↓: Select Item Enter: Select +/- : Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Vers	on 2.20.1271. Copyright (C) 2020 American M	Megatrends, Inc.

► Chipset ► PCH-IO Configuration

SATA And RST Configuration

Aptio Setup Utility - Copyright (C) 2020 American Megatrends, Inc.		
Chipset		
SATA And RST Configuration		Enable/Disable SATA Device.
SATA Controller(s) SATA Speed	[Enabled] [Auto]	
SATA Mode Selection	[AHCI]	
SATA0 (R0)	Empty	
Hot Plug	[Disabled]	
SATA0 (R1) Port 1	Empty [Enabled]	
Hot Plug	[Disabled]	→←: Select Screen
Port 2	[Enabled]	↑↓: Select Item
SATA0 (R3)	Empty	+/- : Change Opt.
Port 3 Hot Plug	[Enabled] [Disabled]	F1: General Help F2: Previous Values
Mini PCIE (R4)	Empty	F9: Optimized Defaults
SATA0 (R5)	Empty	ESC: Exit
Port 5 Hot Plug	[Enabled] [Disabled]	
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SATA Controller(s)

This field is used to enable or disable the Serial ATA controller.

SATA Speed

This field is used to select SATA speed generation limit: Auto, Gen1, Gen2 or Gen3.

SATA Mode Selection

The mode selection determines how the SATA controller(s) operates.

- **AHCI** This option allows the Serial ATA controller(s) to use AHCI (Advanced Host Controller Interface).
- Intel RST Premium With Intel Optane System Acceleration (for CS331-Q370 only) This option allows you to create RAID or Intel Rapid Storage configuration with Intel[®] Optane[™] system acceleration on Serial ATA devices.

Use RST Legacy OROM

This field shows up when SATA Mode Selection is set to Intel RST Premium With Intel Optane System Acceleration. Enable or disable to use RST Legacy OROM when CSM is enabled.

Port 0/1/2/3/4/5 and Hot Plug

Enable or disable the Serial ATA port and its hot plug function.

► Chipset ► PCH-IO Configuration



Number of SATA ports differ according to the chipset that is installed on the board, i.e. C246 or Q370.

► HD Audio Configuration

Aptio Setup Utility - Copyright (C) 2020 American Megatrends, Inc. Chipset		
HD Audio Subsystem Conf HD Audio	figuration Settings [Enabled]	Control Detection of the HD-Audio device. Disabled = HDA will be unconditionally disabled Enabled = HDA will be unconditionally enabled.
		→ ←: Select Screen ↑ : Select Item Enter: Select + /: Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Version	Version 2.20.1271. Copyright (C) 2020 American Megatrends, Inc.	

HD Audio

Control the detection of the HD Audio device.

Disabled	HDA will be unconditionally disabled.
Enabled	HDA will be unconditionally enabled.

► Security

Aptio Setup Utility - Copyright (C) 2020 American Megatrends, Inc.					
Main Advanced	Chipset	Security	Boot	Save & Exit	
Password Description					Set Administrator
Minimum length Maximum length		3 20			1 435/014
Administrator Passwor					
 Secure Boot 					
					Calant Company
					↑↓: Select Item Enter: Select
					+/- : Change Opt. F1: General Help
					F2: Previous Values F9: Optimized Defaults F10: Save & Exit
					ESC: Exit
Version 2.20.1271. Copyright (C) 2020 American Megatrends, Inc.					

Administrator Password

Set the administrator password. Input the password, press Enter, and then input the same character string again to confirm. To remove the password, input no character.

Secure Boot

Secure Boot is used to verify that your boot loader is not tampered by malware.

Aptio Setup U	Aptio Setup Utility - Copyright (C) 2020 American Megatrends, Inc. Security					
System Mode Secure Boot	User [Enabled] Not Active	Set Administrator Password				
Secure Boot Mode • Restore Factory Keys • Reset To Setup Mode	[Standard]	→←: Select Screen 1↓: Select Item Enter: Select +/- : Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit				
Version 2.20.1271. Copyright (C) 2020 American Megatrends, Inc.						

System Mode

This field displays whether the system is in User or Setup mode.

Secure Boot

Enable or disable Secure Boot. Please reset the platform after changing the setting.

Restore Factory Keys

Force System to User Mode and install factory default Secure Boot key databases.

Return to Setup Mode

This command is only available when the system mode is in User mode and Secure Boot Mode is set to Custom.

Boot

Aptio S	etup Utility	- Copyrigh	t (C) 202	0 American	Megatr	ends, Inc.
Main Advanced	Chipset	Security	Boot	Save & E:	xit	
Boot Configuration Setup Prompt Timout Bootup NumLock State Quiet Boot Boot Option Priorities		l [On] [Enat	oled]			Boot Graphics Resource Table
Boot Option #1		[Wind (P2: 2 3ME-	dow Boot 2.5" SAT/ 4)]	Manager A SSD		
BUKI Logo		ואמושן	bieuj			→←: Select Screen ↑↓: Select Item Enter: Select +/- : Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Vers	on 2.20.127	1. Copyright	(C) 2020	American M	Megatren	ds, Inc.

Setup Prompt Timeout

Set the number of seconds to wait for the setup activation key. 65535 (0xFFF) denotes indefinite waiting.

Bootup NumLock State

Select the keyboard NumLock state: On or Off.

Quiet Boot

This section is used to enable or disable quiet boot option.

Boot Option Priorities

Select the system boot order.

BGRT Logo

It is used to enable or disable to support display logo with ACPI BGRT table.

If "Boo

If "Boot option filter" of "CSM Configuration" is set to "UEFI and Legacy" or "UEFI only" and "Quiet Boot" is set to enabled, "BGRT Logo" will show up for configuration. Refer to the Advanced > CSM Configuration for more information.

► Save & Exit



Save Changes and Reset

To save the changes, select this field and then press <Enter>. A dialog box will appear. Select Yes to reset the system after saving all changes made.

Discard Changes and Reset

To discard the changes, select this field and then press <Enter>. A dialog box will appear. Select Yes to reset the system setup without saving any changes.

Restore Defaults

To restore and load the optimized default values, select this field and then press <Enter>. A dialog box will appear. Select Yes to restore the default values of all the setup options.

Boot Override

Move the cursor to an available boot device and press Enter, and then the system will immediately boot from the selected boot device. The Boot Override function will only be effective for the current boot. The "Boot Option Priorities" configured in the Boot menu will not be changed.

Save Setting to file

Select this option to save BIOS configuration settings to a USB flash device.

Restore Setting from file

This field will appear only when a USB flash device is detected. Select this field to restore setting from the USB flash device.

► Updating the BIOS

To update the BIOS, you will need the new BIOS file and a flash utility. Please contact technical support or your sales representative for the files. You may refer to the how-to video "How to update AMI BIOS in UEFI mode on DFI products?" at https://www.dfi.com/Knowledge/ Video/5 for updating the BIOS steps.

► Notice: BIOS SPI ROM

1. The Intel[®] Management Engine has already been integrated into this system board. Due to the safety concerns, the BIOS (SPI ROM) chip cannot be removed from this system board and used on another system board of the same model.

2. The BIOS (SPI ROM) on this system board must be the original equipment from the factory and cannot be used to replace one which has been utilized on other system boards.

3. If you do not follow the methods above, the Intel $^{\circ}$ Management Engine will not be updated and will cease to be effective.



Note:

- a. You can take advantage of flash tools to update the default configuration of the BIOS (SPI ROM) to the latest version anytime.
- b. When the BIOS IC needs to be replaced, you have to populate it properly onto the system board after the EEPROM programmer has been burned and follow the technical person's instructions to confirm that the MAC address should be burned or not.

Chapter 9 - RAID

The system board allows configuring RAID on Serial ATA drives. It supports RAID 0, RAID 1, RAID 5 and RAID 10.

RAID Levels

RAID 0 (Striped Disk Array without Fault Tolerance)

RAID 0 uses two new identical hard disk drives to read and write data in parallel, interleaved stacks. Data is divided into stripes and each stripe is written alternately between two disk drives. This improves the I/O performance of the drives at different channel; however it is not fault tolerant. A failed disk will result in data loss in the disk array.

RAID 1 (Mirroring Disk Array with Fault Tolerance)

RAID 1 copies and maintains an identical image of the data from one drive to the other drive. If a drive fails to function, the disk array management software directs all applications to the other drive since it contains a complete copy of the drive's data. This enhances data protection and increases fault tolerance to the entire system. Use two new drives or an existing drive and a new drive but the size of the new drive must be the same or larger than the existing drive.

RAID 5

RAID 5 stripes data and parity information across hard drives. It is fault tolerant and provides better hard drive performance and more storage capacity.

RAID 10 (Mirroring and Striping)

RAID 10 is a combination of data striping and data mirroring providing the benefits of both RAID 0 and RAID 1. Use four new drives or an existing drive and three new drives for this configuration.

RAID Level	Min. Drives	Protection	Description
RAID 0	2	None	Data striping without redundancy
RAID 1	2	Single Drive Failure	Disk mirroring
RAID 5	3	Single Drive Failure	Block-level data striping with distributed parity
RAID 10	4	1 Disk Per Mirrored Stripe (not same mirror)	Combination of RAID 0 (data striping) and RAID 1 (mirroring)

Settings

To enable the RAID function, the steps below are required and elaborated in following sections.

- 1. Connect the Serial ATA drives.
- 2. Enable RAID in the AMI BIOS.
- 3. Create a RAID volume.
- 4. Install the Intel Rapid Storage Technology Utility.

Step 1: Connect the Serial ATA Drives

Refer to chapter 2 for details on connecting the Serial ATA drives.

Important:

- 1. Make sure you have installed the Serial ATA drives and connected the data cables otherwise you won't be able to enter the RAID BIOS utility.
- 2. Treat the cables with extreme caution especially while creating RAID. A damaged cable will ruin the entire installation process and operating system. The system will not boot and you will lost all data in the hard drives. Please give special attention to this warning because there is no way of recovering back the data.

Step 2: Enable RAID in the AMI BIOS

- 1. Power-on the system then press to enter the main menu of the AMI BIOS.
- 2. Go to "Chipset" menu and select the "PCH-IO Configuration" menu then "SATA And RST Configuration" menu.
- 3. Change the "SATA Mode Selection" to "Intel RST Premium With Intel Optane System Acceleration" mode.
- 4. Press F10 to save the changes.
- 5. Reboot the system.

Step 3: Create a RAID Volume

1. Go to the "Advanced" menu of the AMI BIOS and select "Intel(R) Rapid Storage Technology".

Aptio Setup Utility - Copyright (C) 2020 American Megatrends, Inc.						
Main	Advanced	Chipset	Security	Boot	Save & Exit	
RC ACP CPU Cor CPU Cor Power & PCH-FW Trusted C NCT6100 NCT6100 Scrial Po USB Cor USB Cor USB Pov Network Intel(R) I	I Settings figuration Performance Configuratior Omputing 5D Super IO (5D HW Monit of D HW Monit of D HW Monit of D HW Monit Stack Configuration Stack Configuration	Configuration or direction ration Technology	1			System ACPI Parameters. →+-: Select Screen ↑↓: Select Item Enter: Select +/- : Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
	Version	n 2.20.1271.	Copyright (C) 2020 A	American Megatre	nds, Inc.

- 2. The screen displays all available drives. Select "Create RAID volume" to create a RAID volume".
- 3. Use the up or down arrow keys to select the RAID level and press <Enter>.
- 4. Use the up or down arrow keys to scroll through the list of hard drives and press <Enter> to select the drive.
- 5. Press <Enter>.
- 6. Use the up or down arrow keys to select the strip size and press <Enter>.
- 7. Enter the volume size and press <Enter>.
- 8. At the prompt, press <Y> to confirm volume creation.

Step 4: Install the Intel Rapid Storage Technology Utility

The Intel Rapid Storage Technology Utility can be installed from within Windows. It allows RAID volume management (create, delete, migrate) from within the operating system. It will also display useful SATA device and RAID volume information. The user interface, tray icon service and monitor service allow you to monitor the current status of the RAID volume and/ or SATA drives. It enables enhanced performance and power management for the storage subsystem.

Chapter 10 - Intel AMT Settings

► Overview

Intel Active Management Technology (Intel[®] AMT) combines hardware and software solution to provide maximum system defense and protection to networked systems.

The hardware and software information are stored in non-volatile memory. With its built-in manageability and latest security applications, Intel® AMT provides the following functions.

Discover

Allows remote access and management of networked systems even while PCs are powered off; significantly reducing desk-side visits.

Repair

Remotely repair systems after OS failures. Alerting and event logging help detect problems quickly to reduce downtime.

Protect

Intel AMT's System Defense capability remotely updates all systems with the latest security software. It protects the network from threats at the source by proactively blocking incoming threats, reactively containing infected clients before they impact the network, and proactively alerting when critical software agents are removed.

Enable Intel® AMT in the AMI BIOS

- 1. Power-on the system then press to enter the main menu of the AMI BIOS.
- 2. In the Advanced menu, select PCH-FW Configuration.

Aptio Setup Utility - Copyright (C) 2020 American Megatrends, Inc.							
Main	Advanced	Chipset	Security	Boot	Save &	Exit	
 RC ACI CPU Cc Power & PCH-FV Trusted NCT611 NCT611 NCT611 Serial P USB Cc CSM Cc USB Po Network 	PI Settings onfiguration & Performance V Configuratio Computing 6D Super IO (6D HW Moni of Console Re onfiguration onfiguration wer Control c Stack Configu	Configuration for direction tration					Configure Management Engine Technology Parameters →←: Select Screen ↑↓: Select Item Enter: Select Item Enter: Select Item F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
	Versio	n 2.20.1271.	Copyright (C) 2020 A	American	Megatre	nds, Inc.

3. Select Enabled in the AMT BIOS Features field.

Aptio Setup Utility - Copyright (C) 2020 American Megatrends, Inc.					
Advanced					
ME State Manageability Features State AMT BIOS Features AMT Configuration ME Unconfig on RTC Clear Firmware Update Configuration	[Enabled] [Enabled] [Enabled] [Enabled]	When disabled AMT BIOS Features are no longer supported and user is no longer able to access MEBx Setup. Note: This option does not disable Manageability Features in FW. →←: Select Screen ↑↓: Select Item Enter: Select H=: General Help F2: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit			
Version 2.20.1271. Copyright (C) 2020 American Megatrends, Inc.					

 In the Save & Exit menu, select Save Changes and Reset and then press <Enter>. A dialog box will appear. Select Yes and press Enter to reset the system after saving all changes made.

Aptio Setup Utility - Copyright (C) 2020 American Megatrends, Inc.						
Main Advanced Chipset	Security	Boot	Save & Exit			
Save Options Save Changes and Reset Discard Changes and Reset Restore Defaults Boot Override Save Setting to file Restore Setting from file				Reset the system after saving the changes		
				→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit		
Version 2.20.12	71. Copyright	(C) 2020	American Megatre	nds, Inc.		

Configure Intel® AMT in the Intel® Management Engine BIOS Extension (MEBX)

1. When the system reboots, the following message will be displayed. Press **<Ctrl + P>** as soon as the message is displayed. This message will only be displayed very briefly.



Version 2. 20. 1271. Copyright (C) 2020 American Megatrends, Inc. BIOS Date: 12/04/2020 09:48:59 Ver: B208.19A Press <Ctrl + P> to Enter MEBX setup menu Press to enter setup. Select MEBx Login and press Enter. You will be prompted for a password. The default password is "admin". Enter the default password in the space provided under Intel(R) ME Password then press Enter.



- 3. Enter a new password in the space provided under Intel(R) ME New Password then press Enter. The password must include:
 - 8-32 characters
 - Strong 7-bit ASCII characters excluding : , and " characters
 - At least one digit character (0, 1, ...9)
 - At least one 7-bit ASCII non alpha-numeric character, above 0x20, (e.g. !, \$, ;)
 - Both lower case and upper case characters



4. You will be asked to verify the new password. Enter the same new password in the space provided under Verify Password then press Enter.

Intel(R) Management Engine BIOS Extension v12.0.0.0010/Intel(R) ME v12.0.40.1433 Copyright(C) 2003-17 Intel Corporation, All Rights Reserved					
MAIN MENU					
MEBx Login > Intel(R) ME General Settings Intel(R) AMT <enabled> > Intel(R) AMT Configuration MEBx Exit Verify password</enabled>					
Intel(R) ME Password					
[↑↓] =Move Highlight [Enter] =Select Entry [Esc] =Exit					

5. Select Intel(R) ME General Settings then press Enter.

Intel(R) Management Engine BIOS Extension v12.0.0010/Intel(R) ME v12.0.40.1433 Copyright(C) 2003-17 Intel Corporation. All Rights Reserved								
MAI	MAIN MENU							
 Intel(R) ME General Settings Intel(R) AMT Intel(R) AMT Configuration MEBx Exit 	<enabled></enabled>							
$[\uparrow\downarrow]$ =Move Highlight [Enter] =	=Select Entry [Esc] =Exit							

6. If you want to change ME password, select **Change ME Password** then press Enter. Enter the current password in the space provided under Intel(R) ME Password then press Enter.

Intel(R) Management Engine BIOS Extension v12.0.0.0010/Intel(R) ME v12.0.40.1433 Copyright(C) 2003-17 Intel Corporation. All Rights Reserved						
INTEL(I	R) ME PLATFORM CONFIG	URATION				
Change ME Password FW Update	<enabled></enabled>					
Intel(R) ME Password						
Intel(R) ME New Password						
$[\uparrow\downarrow]$ =Move Highlight	[Enter] =Select Entry	[Esc] =Exit				

- 7. Enter a new password in the space provided under Intel(R) ME New Password then press Enter. The password must include:
 - 8-32 characters
 - Strong 7-bit ASCII characters excluding : , and " characters
 - At least one digit character (0, 1, ...9)
 - At least one 7-bit ASCII non alpha-numeric character, above 0x20, (e.g. !, \$, ;)
 - Both lower case and upper case characters

Intel(R) Management Engine BIOS Extension v12.0.0010/Intel(R) ME v12.0.40.143 Copyright(C) 2003-17 Intel Corporation. All Rights Reserved					
INTEL(F	R) ME PLATFORM CONFIG	URATION			
Change ME Password FW Update	<enabled></enabled>				
	Intel(R) ME New Password	3			
Intel(R) ME New	w Password				
[↑↓] =Move Highlight	[Enter] =Select Entry	[Esc] =Exit			

8. You will be asked to verify the new password. Enter the same new password in the space provided under Verify Password then press Enter.

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INTEL(R) ME PLATFORM CON	FIGURATION
Change ME Password FW Update <enabled></enabled>		
Verify password		
Intel(R) ME New Password		
[↑↓] =Move Highlight	[Enter] =Select Entry	[Esc] =Exit

9. Select **FW Update** then press Enter. Select **Enabled** or **Disabled** or **Password Protected** then press Enter.



10. Press Esc until you return to the **Main Menu**. Select **Intel(R) AMT** then press Enter. Select **Enabled** or **Disabled** then press Enter.

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MAIN MENU	
 > Intel(R) ME General Settings Intel(R) AMT > Intel(R) AMT Configuration MEBx Exit 	
[↑↓] =Move Highlight [Enter] =Select Entry [Esc] =Exit	

12. In the **Intel(R) AMT Configuration** menu, select **Manageability Feature Selection** then press Enter. Select **Enabled** or **Disabled** then press Enter.

Intel(R) Management Engine BIOS Extension v12.0.0.0010/Intel(R) ME v12.0.40.1433 Copyright(C) 2003-17 Intel Corporation. All Rights Reserved		
INTEL(R) AMT CONFIGURATION		
Manageability Feature Selectio > SOL/Storage Redirection/KVM > User Consent	a <enabled></enabled>	
Password Policy > Network Setup Activate Network Access Unconfigure Network Access	<anytime> Disabled Enabled Unprovision></anytime>	
 > Remote Setup And Configuration > Power Control 	n	
$[\uparrow\downarrow] =$ Move Highlight <enter></enter>	=Complete Entry [Esc] =Discard Changes	

11. Select Intel(R) AMT Configuration then press Enter.

Intel(R) Management Engine BIOS Extension v12.0.00010/Intel(R) ME v12.0.40.1433 Copyright(C) 2003-17 Intel Corporation. All Rights Reserved		
MAIN MENU		
 > Intel(R) ME General Settings Intel(R) AMT > Intel(R) AMT Configuration MEBx Exit 	<enabled></enabled>	
$[\uparrow\downarrow] =$ Move Highlight [Enter] =	Select Entry [Esc] =Exit	

13. In the **Intel(R) AMT Configuration** menu, select S**OL/Storage Redirection/KVM** then press Enter.

Intel(R) Management Engine BIOS Extension v12.0.0.0010/Intel(R) ME v12.0.40.1433 Copyright(C) 2003-17 Intel Corporation. All Rights Reserved		
INTEL(R) AMT CONFIGURATION		
Manageability Feature Selection	<enabled></enabled>	
> SOL/Storage Redirection/KVM		
Password Policy	<anytime></anytime>	
> Network Setup	·	
Activate Netwok Access Unconfigure Network Access	<full unprovision=""></full>	
> Remote Setup And Configuration		
> Power Control		
$[\uparrow\downarrow]$ =Move Highlight [Enter] =Select Er	ntry [Esc] =Exit	

14. Select SOL then press Enter. Select Enabled or Disabled then press Enter.

Intel(R) Management Engine BIOS Extension v12.0.0010/Intel(R) ME v12.0.40.1433 Copyright(C) 2003-17 Intel Corporation. All Rights Reserved		
SOL/Storage Redirection/KVM		
SOL Storage Redirection KVM Feature Selection	< <u>Enabled></u> <enabled> <enabled> <enabled></enabled></enabled></enabled>	
	Disabled Enabled	
$[\uparrow\downarrow]$ =Move Highlight <enter> =</enter>	Complete Entry [Esc] =Discard Changes	

15. Select **Storage Redirection** then press Enter. Select **Enabled** or **Disabled** then press Enter.



16. Select **KVM Feature Selection** then press Enter. Select **Enabled** or **Disabled** then press Enter.

Intel(R) Management Engine BIOS Extension v12.0.0010/Intel(R) ME v12.0.40.1433 Copyright(C) 2003-17 Intel Corporation. All Rights Reserved		
SOL/Storage Redirection/KVM		
SOL	<enabled></enabled>	
Storage Redirection	<enabled></enabled>	
KVM Feature Selection	<enabled></enabled>	
	Disabled Enabled	
$[\uparrow\downarrow]$ =Move Highlight <enter> =</enter>	Complete Entry [Esc] =Discard Changes	

17. Press Esc until you return to the Intel(R) AMT Configuration menu. Select User Consent then press Enter.



18. In the **User Consent** menu, select **User Opt-in** then press Enter. Select **NONE** or **KVM** or **ALL** then press Enter.

Intel(R) Management Engine BIOS Extension v12.0.0.0010/Intel(R) ME v12.0.40.1433 Copyright(C) 2003-17 Intel Corporation. All Rights Reserved USER CONSENT		
User Opt-in Configurable from Remote IT <- KVM> Opt-in Configurable from Remote IT <- Enabled>		
NONE KVM ALL		
[↑↓] =Move Highlight <enter> =Complete Entry [Esc] =Discard Changes</enter>		

19. Select **Opt-in Configurable from Remote IT** then press Enter. Select **Enabled** or **Disabled** then press Enter.

Intel(R) Management Engine BIOS Extension v12.0.0010/Intel(R) ME v12.0.40.143. Copyright(C) 2003-17 Intel Corporation. All Rights Reserved		
USER CONSENT		
User Opt-in	<kvm></kvm>	
Opt-in Configurable from Remote IT	<enabled></enabled>	
	Disabled Enabled	
$[\uparrow\downarrow] =$ Move Highlight <enter> =Comp</enter>	elete Entry [Esc] =Discard Changes	

20. Press Esc until you return to the Intel(R) AMT Configuration menu. Select Password Policy then press Enter.

You may choose to use a password only during setup and configuration or to use a password anytime the system is being accessed.

Intel(R) Management Engine BIOS Extension v12.0.00010/Intel(R) ME v12.0.40.1433 Copyright(C) 2003-17 Intel Corporation. All Rights Reserved		
INTEL(R) AMT CONFIGURATION		
Manageability Feature Selection <enabled> > SOL/Storage Redirection/KVM</enabled>		
Source Consent Password Policy Network Setup		
Activate Network Access Unconfigure Network Access <full unprovision=""> > Remote Setun And Configure</full>		
 Power Control Default Password Only During Setup And Configuration Anytime 		
[↑↓] =Move Highlight <enter> =Complete Entry [Esc] =Discard Changes</enter>		

21. In the Intel(R) AMT Configuration menu, select Network Setup then press Enter.



22. In the Intel(R) ME Network Setup menu, select Intel(R) ME Network Name Settings then press Enter.

Intel(R) Management Engine BIOS Extension v12.0.0.0010/Intel(R) ME v12.0.40.1433 Copyright(C) 2003-17 Intel Corporation. All Rights Reserved	
INTEL(R) ME NETWORK SETUP	
> Intel(R) ME Network Name Settings > TCP/IP Settings	
$[\uparrow\downarrow]$ =Move Highlight [Enter] =Select Entry [Esc] =Exit	

23. In the **Intel(R) ME Network Name Settings** menu, select **Host Name** then press Enter. Enter the computer's host name then press Enter.

Intel(R) Management Engine BIOS Extension v12.0.00010/Intel(R) ME v12.0.40.1433 Copyright(C) 2003-17 Intel Corporation. All Rights Reserved INTEL(R) ME NETWORK NAME SETTINGS		
Host Name Domain Name Shared/Dedicated FQDN Dynamic DNS Update Shared> Disabled>		
Computer Host Name		
<pre><enter> =Complete Entry [Esc] =</enter></pre>	Discard Changes	

24. Select **Domain Name** then press Enter. Enter the computer's domain name then press Enter.

Intel(R) Management Engine BIOS Extension v12.0.0010/Intel(R) ME v12.0.40.1433		
Copyright(C) 2003-17 Intel Corporation. All Rights Reserved		
INTEL(K) ME NETWOKK NAME SETTINGS		
Host Name		
Domain Name		
Shared/Dedicated FQDN <shared></shared>		
Dynamic DNS Update <disabled></disabled>		
Computer Domain Name		
<enter> =Complete Entry [Esc] =Discard Changes</enter>		

25. Select **Shared/Dedicated FQDN** then press Enter. Select **Shared** or **Dedicated** then press Enter.

ttel(R) Management Engine BIOS Extension v12.0.00010/Intel(R) ME v12.0.40.1433 Copyright(C) 2003-17 Intel Corporation. All Rights Reserved	
INTEL(R) ME NETWORK NAME SETTINGS	
Host Name Domain Name Shared/Dedicated FQDN Dynamic DNS Update	- Shared> <disabled></disabled>
Dedicated Shared	
$[\uparrow\downarrow] =$ Move Highlight <enter> = Co</enter>	omplete Entry [Esc] =Discard Changes

26. Select **Dynamic DNS Update** then press Enter. Select **Enabled** or **Disabled** then press Enter. If **Dynamic DNS Update** is set to Enabled, Periodic Update Interval and TTL fields will show up.

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INTEL(R) ME NETWORK NAME SETTINGS	
Host Name Domain Name Shared/Dedicated FQDN <shared> Dynamic DNS Update <disabled></disabled></shared>	
Enabled	
$\uparrow\downarrow$ =Move Highlight <enter> =Complete Entry [Esc] =Discard Changes</enter>	

27. Select Periodic Update Interval then press Enter. Enter value then press Enter.

Intel(R) Management Engine BIOS Extension v12.0.00010/Intel(R) ME v12.0.40.1433 Copyright(C) 2003-17 Intel Corporation. All Rights Reserved	
INTEL(R) ME N	ETWORK NAME SETTINGS
Host Name Domain Name Shared/Dedicated FQDN Dynamic DNS Update Periodic Update Interval TTL	$= \frac{-}{ \\ 1440 \\ 900 \\ ue=0 \text{ or } >= 20 \\ 0 \\ ue=0 \\ $
<ente< td=""><td>r> =Complete Entry [Esc] =Discard Changes</td></ente<>	r> =Complete Entry [Esc] =Discard Changes

28. Select **TTL** then press Enter. Enter value then press Enter.

Intel(R) Management Engine BIOS Extension v12.0.0010/Intel(R) ME v12.0.40.1433 Copyright(C) 2003-17 Intel Corporation. All Rights Reserved	
INTEL(R) ME	NETWORK NAME SETTINGS
Host Name – Domain Name – Shared/Dedicated FQDN – Shared> Dynamic DNS Update – <enabled> Periodic Update Interval 1440 TTL 900 Value in Seconds 900</enabled>	
<en< td=""><td>ter> =Complete Entry [Esc] =Discard Changes</td></en<>	ter> =Complete Entry [Esc] =Discard Changes

29. Press Esc until you return to the Intel(R) ME Network Setup menu. Select TCP/IP Settings then press Enter. In the TCP/IP Settings menu, select Wired LAN IPV4 Configuration then press Enter.

Intel(R) Management Engine BIOS Extension v12.0.0.0010/Intel(R) ME v12.0.40.1433 Copyright(C) 2003-17 Intel Corporation. All Rights Reserved		
TCP/IP SETTINGS		
> Wired LAN IPV4 Configuration		
[↑↓] =Move Highlight [Enter] =Select Entry [Esc] =Exit		

30. In the Wired LAN IPV4 Configuration menu, select DHCP Mode then press Enter. Select Enabled or Disabled then press Enter. If set to Disabled, IPV4 Address, Subnet Mask Address, Default Gateway Address, Preferred DNS Address and Alternate DNS Address will show up.

Intel(R) Management Engine BIOS Extension v12.0.0.0010/Intel(R) ME v12.0.40.1433 Copyright(C) 2003-17 Intel Corporation. All Rights Reserved			
WIR	WIRED LAN IPV4 CONFIGURATION		
DHCP Mode <enabled></enabled>			
$\uparrow\uparrow\downarrow$] =Move Highlight	<enter> =Complete Entry [Esc] =Di</enter>	scard Changes	

31. Select **IPV4 Address** then press Enter. Enter address then press Enter.

Intel(R) Management Engine BIOS Extension v12.0.0.0010/Intel(R) ME v12.0.40.1433 Copyright(C) 2003-17 Intel Corporation. All Rights Reserved		
WIRED I	LAN IPV4 CONFIGURATION	
DHCP Mode	<disabled></disabled>	
IPV4 Address	0.0.0.0	
Subnet Mask Address	0.0.0.0	
Default Gateway Address	0.0.0.0	
Preferred DNS Address	0.0.0.0	
Alternate DNS Address	0.0.0.0	
11	P address (e.g. 123.123.123.100)	
0.	0.0.0	
<	Enter> =Complete Entry [Esc] =Discard Changes	

32. Select Subnet Mask Address then press Enter. Enter address then press Enter.

Intel(R) Management Engine BIOS Extension v12.0.0.0010/Intel(R) ME v12.0.40.1433 Copyright(C) 2003-17 Intel Corporation. All Rights Reserved		
WIRED LAN IPV4 CONFIGURATION		
DHCP Mode IPV4 Address Subnet Mask Address Default Gateway Address Preferred DNS Address Alternate DNS Address Subnet mask (e.g. 0.0.0	<disabled> 0.0.0.0 0.0.0.0 0.0.0.0 0.0.0.0 0.0.0.0 2. 255.255.255.0)</disabled>	
<enter> =Complete Entry [Esc] =Discard Changes</enter>		

33. Select **Default Gateway Address** then press Enter. Enter address then press Enter.

Intel(R) Management Engine BIOS Extension v12.0.0.0010/Intel(R) ME v12.0.40.1433 Copyright(C) 2003-17 Intel Corporation. All Rights Reserved		
WIRED LAN IPV4 CONFIGURATION		
DHCP Mode IPV4 Address Subnet Mask Address Default Gateway Address Preferred DNS Address Alternate DNS Address Default Gatewa 0.0.00	<disabled> 0.0.0.0 0.0.0.0 0.0.0.0 0.0.0.0 0.0.0.0 0.0.0.0</disabled>	
<enter> =Complete Entry [Esc] =Discard Changes</enter>		

34. Select Preferred DNS Address then press Enter. Enter address then press Enter.

Intel(R) Management Engine BIOS Extension v12.0.0010/Intel(R) ME v12.0.40.1433 Copyright(C) 2003-17 Intel Corporation. All Rights Reserved		
WIRED LAN IPV4	CONFIGURATION	
DHCP Mode	<disabled></disabled>	
IPV4 Address	0.0.0.0	
Subnet Mask Address	0.0.0.0	
Default Gateway Address	0.0.0.0	
Preferred DNS Address	0.0.0.0	
Alternate DNS Address	0.0.0.0	
Preferred DNS address 0.0.0.0		
<enter> =Complete Entry [Esc] =Discard Changes</enter>		

35. Select Alternate DNS Address then press Enter. Enter address then press Enter.

Intel(R) Management Engine BIOS Extension v12.0.0.0010/Intel(R) ME v12.0.40.1433 Copyright(C) 2003-17 Intel Corporation. All Rights Reserved		
WIRED LAN IPV4 CONFIGURATION		
DHCP Mode IPV4 Address Subnet Mask Address Default Gateway Address Preferred DNS Address Alternate DNS Address Alternate DNS Address	<disabled> 0.0.0.0 0.0.0.0 0.0.0.0 0.0.0.0 0.0.0.0 0.0.0.0</disabled>	
<enter> =C</enter>	omplete Entry [Esc] =Discard Changes	

36. Press Esc until you return to the **Intel(R) AMT Configuration** menu. If you want to activate the current network settings and open the ME network inferface, select **Activate Network Access**, press Enter, then press Y.



37. In the Intel(R) AMT Configuration menu, select Unconfigure Network Access then press Enter.

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INTEL(R) AMT CONFIGURATION		
Manageability Feature Selection > SOL/Storage Redirection/KVM	<enabled></enabled>	
 > User Consent Password Policy > Network Setup 	<anytime></anytime>	
Activate Network Access Unconfigure Network Access > Remote Setup And Configuration	<full unprovision=""></full>	
> Power Control	Full Unprovision	
$\uparrow\uparrow\downarrow$ =Move Highlight <enter> =C</enter>	omplete Entry [Esc] =Discard Changes	

38. In the Intel(R) AMT Configuration menu, select Remote Setup And Configuration then press Enter.

Intel(R) Management Engine BIOS Extension v12.0.0010/Intel(R) ME v12.0.40.1433 Copyright(C) 2003-17 Intel Corporation. All Rights Reserved			
INTEL(R) AMT CONFIGURATION			
Manageability Feature Selection > SOL/Storage Redirection/KVM	<enabled></enabled>		
> User Consent			
Password Policy	<anytime></anytime>		
> Network Setup			
Unconfigure Network Access	<full unprovision=""></full>		
> Remote Setup And Configuration			
> Power Control			
$[\uparrow\downarrow] =$ Move Highlight [Enter] =Select	Entry [Esc] =Exit		

 In the Intel(R) Remote Setup And Configuration menu, select Current Provisioning Mode then press Enter.

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INTEL(R) REMOTE SETUP AND CONFIGURATION		
Current Provisioning Mode Provisioning Record Provisioning Server IPV4/IPV6 _ Provisioning Server FQDN _ > RCFG > TLS PKI		
Provisioning Mode: PKI		
[↑↓] =Move Highlight [Enter] =Select Entry [Esc] =Exit		

40. In the Intel(R) Remote Setup And Configuration menu, select Provisioning Record then press Enter.

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INTEL(R) REMOTE SETUP AND CONFIGURATION		
Current Provisioning Mode Provisioning Record Provisioning Server IPV4/IPV6 Provisioning Server FQDN > RCFG > TLS PKI Provision Record is not present		
[↑↓] =Move Highlight [Enter] =Select Entry [Esc] =Exit		

41. In the Intel(R) Remote Setup And Configuration menu, select Provisioning Server IPV4/IPV6 then press Enter. Enter the address then press Enter.

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INTEL(R) REMOTE SETUP AND CONFIGURATION		
Current Provisioning Mode Provisioning Record Provisioning Server IPV4/IPV6 Provisioning Server FQDN > RCFG > TLS PKI		
Provisioning server address		
<enter> =Complete Entry [Esc] =Discard Changes</enter>		

42. In the Intel(R) Remote Setup And Configuration menu, select Provisioning Server FQDN then press Enter. Enter the FQDN then press Enter.

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INTEL(R) REMOTE SETUP AND CONFIGURATION		
Current Provisioning Mode Provisioning Record Provisioning Server IPV4/IPV6 Provisioning Server FQDN > RCFG > TLS PKI Enter FQDN of provisioning server		
<enter> =Complete Entry [Esc] =Discard Changes</enter>		

43. If you want to activate remote configuration, in the **Intel(R) Remote Setup And Con**figuration menu, select **RCFG** then press Enter. Select **Start Configuration** then press Enter. Press Y to activate.

Intel(R) Management Engine BIOS Extension v12.0.0010/Intel(R) ME v12.0.40.1433 Copyright(C) 2003-17 Intel Corporation. All Rights Reserved		
INTEL(R) REMOTE CONFIGURATION		
Start Configuration		
This will activate Remote Configuration. Continue: (Y/N)		
[↑↓] =Move Highlight [Enter] =Select Entry [Esc] =Exit		

44. Press Esc until you return to the **Intel(R) Remote Setup And Configuration** menu. Select **TLS PKI** then press Enter. Select **Remote Configuration** ** then press Enter. Select **Enabled** or **Disabled** then press Enter.

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INTEL(R) REMOTE CONFIGURATION			
Remote Configuration PKI DNS Suffix > Manage Hashes	** <enabled> -</enabled>	1	
	Disabled Enabled		
$[\uparrow\downarrow] = Move Highlight$	<enter> =Complete Entry</enter>	[Esc] =Discard Changes	

45. Select **PKI DNS Suffix** then press Enter. Enter the PKI DNS Suffix then press Enter.

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INTEL(R) REMOTE CONFIGURATION			
Remote Configurat PKI DNS Suffix > Manage Hashes	ion** <enabl< td=""><td>ed≻</td></enabl<>	ed≻	
	Enter PKI DNS S	iuffix	
	<enter> =Complete Entry</enter>	[Esc] =Discard Changes	

46. In the Intel(R) Remote Configuration menu, select **Manage Hashes** then press Enter. Select the hash name then press Insert to enter custom hash certificate name, press Delete to delete hash, press Enter to view hash information, press + to activate or deactivate hash, and press Esc to exit.

Intel(R) Management Engine BIOS Extension v12.0.0.0010/Intel(R) ME v12.0.40.1433 Copyright(C) 2003-17 Intel Corporation. All Rights Reserved			
INTEL(R) REMOTE CONFIGURATION			
Hash Name	Active	Default	Algorithm
VeriSign Class 3	Active: [*]	Default: [*]	SHA256
VeriSign Class 3	Active: [*]	Default: [*]	SHA256
Go Daddy Class 2	Active: [*]	Default: [*]	SHA256
Comodo AAA CA	Active: [*]	Default: [*]	SHA256
Starfield Class 2	Active: [*]	Default: [*]	SHA256
VeriSign Class 3	Active: [*]	Default: [*]	SHA256
VeriSign Class 3	Active: [*]	Default: [*]	SHA256
VeriSign Class 3	Active: [*]	Default: [*]	SHA256
GTE CyberTrust G1	Active: [*]	Default: [*]	SHA256
Baltimore Cyber Tr	Active: [*]	Default: [*]	SHA256
Cybertrust Global	Active: [*]	Default: [*]	SHA256
Verizon Global Ro	Active: [*]	Default: [*]	SHA256
Entrust.net CA (2	Active: [*]	Default: [*]	SHA256
Entrust Root CA	Active: [*]	Default: [*]	SHA256
VeriSign Universa	Active: [*]	Default: [*]	SHA256
Go Daddy Root CA	Active: [*]	Default: [*]	SHA256
Entrust Root CA -	Active: [*]	Default: [*]	SHA256
Startfield Root CA	Active: [*]	Default: [*]	SHA256 J
[Ins] =Add New Hash [↑↓] =Move Highlight	[Delete] =Delete Hash [Enter] =View Hash	[+] =Activate Hash [Esc] =Exit	

47. Press Esc until you return to the Intel(R) AMT Configuration menu, select Power Control then press Enter. In the Intel(R) AMT Power Control menu, select Intel(R) AMT ON in Host Sleep States then press Enter. Select an option then press Enter.



48. In the **Intel(R) AMT Power Control** menu, select **Idle Timeout** then press Enter. Enter the timeout value and press Enter.



49. Press Esc until you return to the **Main Menu**. Select **MEBx Exit** then press Enter. Press Y to exit.



Chapter 11 - Supported Software

You may acquire your software from your sales representatives or from the website download page at https://www.dfi.com/DownloadCenter.

Click "More >>" on the lower right to view go to the next page of the auto-run menu, and click "<< Previous" to return to the previous menu.

Auto-run Menu

After inserting your DVD-ROM into your optical drive, the System Utility auto-run menu may pop up. Click on the utility or driver that is to be installed on the system. Please refer to the following sections that correspond to your selection for more information.




► Intel Chipset Software Installation Utility

The Intel Chipset Software Installation Utility is used for updating Windows[®] INF files so that the Intel chipset can be recognized and configured properly in the system.

1. Setup is ready to install the utility. Click "Next".



2. Read the license agreement then click "Accept".



3. Go through the readme document for more installation tips then click "Install".



4. The step displays the installing status in the progress.



- After completing installation, click "Restart Now" to exit setup.
 - Restarting the system will allow the new software installation to take effect.



► Intel HD Graphics Drivers

 Setup is now ready to install the graphics driver. Click "Next".



By default, the "Automatically run WinSAT and enable the Windows Aero desktop theme" is enabled. With this enabled, after installing the graphics driver and the system rebooted, the screen will turn blank for 1 to 2 minutes (while WinSAT is running) before the Windows 10 desktop appears. The "blank screen" period is the time Windows is testing the graphics performance.

We recommend that you skip this process by disabling this function then click "Next".

2. Read the license agreement then click "Yes".



 Go through the readme document for system requirements and installation tips then click "Next".

Intel® Installation Framework	-		Х
Intel® Graphics Driver			
Readme File Information		(in	tel
Refer to the Readme file below to view the system requirements and install	ation i	nformatio	n.
Driver Version: 21.20.16.4727			^
Release Version: Production Version			
Platforms/ Operating System(s):			
7th Gen Intel(R) Core(TM) processor family (Codename Kaby Lake) Microsoft Windows* 10-64			
6th Gen Intel(R) Core(TM) processor family (codename Skylake) Microsoft Windows* 7-64 Microsoft Windows* 8.1-64			~
< Back Next	>	Can	cel
Intel(® Inst	allation Fi	amework

4. Setup is now installing the driver. Click "Next" to continue.

ntel® Installation Framework	
Intel® Graphics Driver	
Setup Progress	(intel)
Please wait while the following setup operations are performed:	
Deleting File: C: IProgrambate Microsoft Windows [Start Henu/Proc Deleting File: C: IJeser Shubic Desktop Unterleft) HG Graphics Contro Deleting File: C: Uleser Shubic Desktop Untel(R) HG Graphics and Media Deleting File: C: Uleser Shubic Desktop Untel(R) HG Graphics and Media Deleting File: C: Viprogrambate Microsoft Windows (Start Menu/Prop Deleting Registry Key: HML/NDESKTOP WARE Untel(Viprof) Graph Deleting Registry Key: HML/NDEFTWARE Untel(Sr:Vinternal/Audio	prame Untel(R) Graphics and prame Untel(R) Graphic I Panel.Ink Control Panel.Ink grame Untel(R) Iris(TM) grame Untel(R) Iris(TM) Grap Untel(R) Iris(TM) Grap Untel(R) Iris(TM) Grap Untel(R) Fix
Click Next to continue.	Y
	Next >

- Click "Yes, I want to restart this computer now" then click "Finish".
 - Restarting the system will allow the new software installation to take effect.



Realtek Audio Drivers

1. Setup is ready to install the driver. Click "Next".



- ► Intel LAN Drivers
 - 1. Setup is ready to install the driver. Click "Next".



 Click "Yes, I want to restart my computer now" then click "Finish".

Restarting the system will allow the new software installation to take effect.



 Click "I accept the terms in the license agreement" then click "Next".

Intel(R) Network Connections Install Wizard	×			
License Agreement				
Please read the following license agreement carefully.	intel			
	^			
INTEL SOFTWARE LICENSE AGREEMENT				
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USIN	IG.			
Do not copy, install, or use this software and any associated materials (collectively, the "Software") provided under this license agreement ("Agreement") until you have carefully read the following terms and conditions.				
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< Back Next >	Cancel			

 Select the program features you want installed then click "Next".

Intel(R) Network Connections Install Wiza	ard		×
Setup Options Select the program features you want in	nstalled.		(intel)
Install:			
[····································	ices		
Feature Description			
	< Back	Next >	Cancel

4. Click "Install" to begin the installation.



5. The step displays the installing status in the progress.



6. After completing installation, click "Finish".



- ► Intel ME Drivers
 - 1. Setup is ready to install the driver. Click "Next".



2. Read the license agreement then tick "I accept the terms in the License Agreement". Click "Next".

Setup	×
Intel® Management Engine Components License Agreement	
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ntel Corporation < Back Next > Can	cel

 Click "Next" to install to the default folder, or click "Change" to choose another destination folder.



4. Please wait while the product is being installed.



5. After completing installation, click "Finish".



► Intel Serial IO Drivers

 Setup is ready to install the driver. Click "Next".



2. Read the license agreement carefully.

Tick "I accept the terms in the License Agreement" then click "Next".



3. Go through the readme document for system requirements and installation tips then click "Next".



5. Setup is now installing the driver.

Setup	
Intel® Serial IO Progress	(intel)
Please wait while the product is being installed.	
Intel Corporation	
	< gaok Mext > Cancel

4. Setup is ready to install the driver. Click "Next".

Intel® Serial IO Confirmation	(intel)
You are about to install the following components: - Intel® Setial ID GPIO Driver - Intel® Setial ID UART Driver - Intel® Setial IO IZC Driver - Intel® Setial IO IZC Driver	
Intel Corporation	< <u>B</u> ack <u>N</u> ext > <u>C</u> ancel

 Click "Yes, I want to restart this computer now" then click "Finish".

> Restarting the system will allow the new software installation to take effect.



► Adobe Acrobat Reader 9.3

1. Click "Next" to install or click "Change Destination Folder" to select another folder.



3. Setup is now installing the driver.

🛃 Adobe	Reader 9.3 -	Setup			-		\times
X							
Installin	g Adobe Rea	ader 9.3					
The pro	ogram feature	s you selected are	being installed.				
1 6	Please wait v	vhile setup installs	Adobe Reader 9.	3. This may tak	(e severa	al minutes.	
	Status:	Copying new files					
Adobe			< Back	Next >		Cance	el

2. Click "Install" to begin installation.

🛃 Adobe Reader 9.3 - Setup			×
A			
Ready to Install the Program			
Click Install to begin the installation.			
If you want to review or change any of setup.	[•] your installatio	n folder, dick Back. Olick	Cancel to exit
Adobe	< Back	Instal	Cancel

4. Click "Finish" to exit installation.

🛃 Adobe Reader 9.3 - Setup			×
٨			
Setup Completed			
Setup has successfully installed Adobe R	eader 9.3. Click F	Finish to exit setup.	
Adobe			
	< Back	Finish	Cancel

 \times

► Intel Rapid Storage Technology

The Intel Rapid Storage Technology is a utility that allows you to monitor the current status of the SATA drives. It enables enhanced performance and power management for the storage subsystem.

Intel® Installation Framework

Intel® Installation Framework

3. Go through the readme document to view system requirements and installation information then click "Next".

Intel® Installation Framework	×
Intel® Rapid Storage Technology Readme File Information	P
Installation Readme for Installation Readme for Intel[R] Rapid Storage Technology (Intel[R] RST):Intel[R] Optome[TM] Memory System Acceleration^^Intel[R] Sprane[TM] Memory System Acceleration^^Intel[R] Sprane[TM] Memory System Acceleration^^Intel[R] Sprane[TM] Memory System Acceleration^^Intel[R] Sprane[TM] Memory System Acceleration and the information may be discoded to others. Please read the Disclaimer section at the bottom of this document, and contact "your Intel field representative if you would like more information	~
Intel Corporation <back next=""> Can</back>	cel

4. Click "Next" to install to the default folder or click "Change to choose another destination folder".

Intel® Installation Framework	×
Intel® Rapid Storage Technology Destination Folder	(intel)
Click Next to install to the default folder, or click Change to d	hoose another destination folder.
C:\Program Files\Intel\Intel(R) Rapid Storage Technology	
	Change
ntel Corporation	< Back Next > Cancel

5. Confirm the installation and click "Next".



Intel® Rapid Storage Technology You are about to install the following product: Intel® Rapid Storage Technology It is strongly recommended that you exit all programs before continuing. Click Next to continue, or click Cancel to exit the setup program.

1. Setup is ready to install the utility.

Click "Next".

2. Read the license agreement and click "I accept the terms in the License Agreement". Then, click "Next".

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×

(intel

Cancel

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< Back Next >

 Click "Yes, I want to restart this computer now" to complete the installation and then click "Finish".

Intek Compl	Rapid Storage Technology etion		(intel)
	You have successfully installed the following p Intel® Rapid Storage Technology	product:	
	Please restart your PC to implement these changes. Would you like to restart your PC now?		
	• Yes, I want to restart this computer now.		
	\bigcirc No, I will restart this computer later.		
Click be	ere to open log file location.		
CHCK III			
Click be	ere to open log file location.		