

# GA-SBC7100 GA-SBC7300 GA-SBC7600

## User's Manual

Rev. 1001

GA-SBC7100



GA-SBC7300



GA-SBC7600



For more product details, please visit  
GIGABYTE's website.



To reduce the impacts on global warming, the packaging materials of this product are recyclable and reusable. GIGABYTE works with you to protect the environment.

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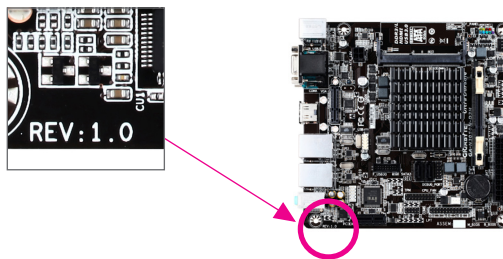
- In order to assist in the use of this product, carefully read the User's Manual.
- For product-related information, check on our website at: <https://www.gigabyte.com>

## **Identifying Your Motherboard Revision**

The revision number on your motherboard looks like this: "REV: X.X." For example, "REV: 1.0" means the revision of the motherboard is 1.0. Check your motherboard revision before updating motherboard BIOS, drivers, or when looking for technical information.

Example:

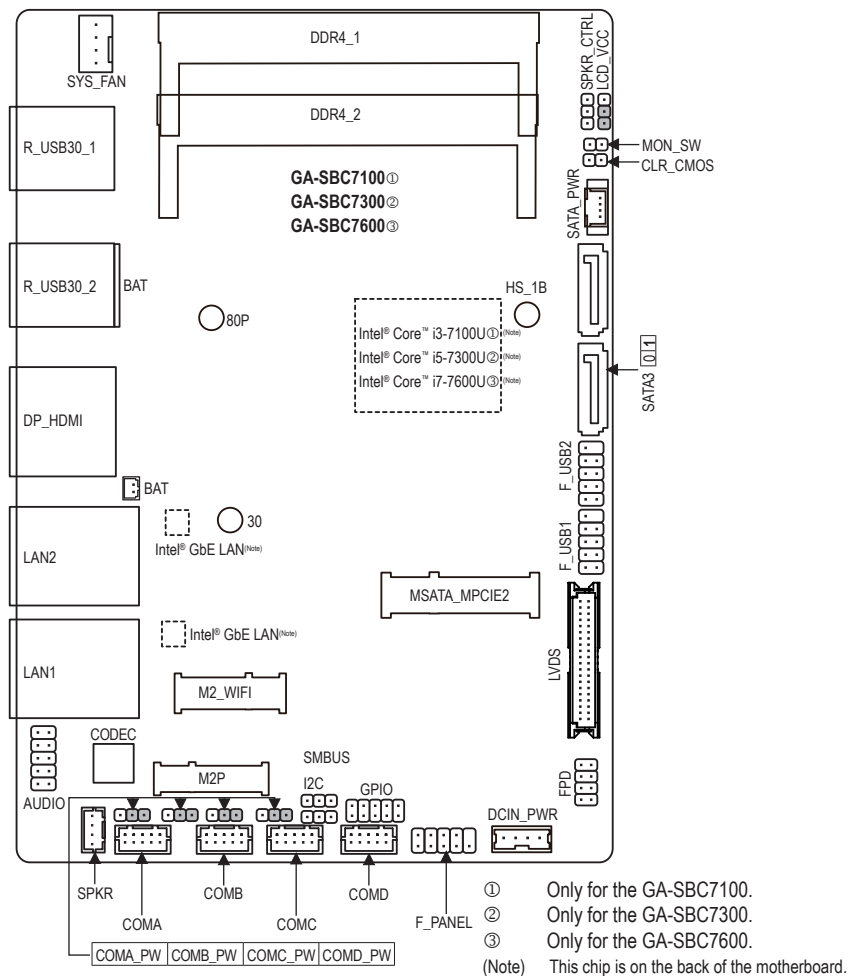
Jun. 8, 2018



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# GA-SBC7100(7300)(7600) Motherboard Layout



## Box Contents

- ☒ GA-SBC7100, GA-SBC7300, or GA-SBC7600 motherboard
- ☒ User's Manual
- ☒ Two SATA cables
- ☒ One COM port cable
- ☒ One Heatsink
- ☒ Motherboard driver disc
- ☒ One SATA Power Cable
- ☒ One DC Power Cable
- ☒ One Audio Cable

\* The box contents above are for reference only and the actual items shall depend on the product package you obtain. The box contents are subject to change without notice.












## Chapter 1 Hardware Installation

### 1-1 Installation Precautions

The motherboard contains numerous delicate electronic circuits and components which can become damaged as a result of electrostatic discharge (ESD). Prior to installation, carefully read the user's manual and follow these procedures:

- Prior to installation, make sure the chassis is suitable for the motherboard.
- Prior to installation, do not remove or break motherboard S/N (Serial Number) sticker or warranty sticker provided by your dealer. These stickers are required for warranty validation.
- Always remove the AC power by unplugging the power cord from the power outlet before installing or removing the motherboard or other hardware components.
- When connecting hardware components to the internal connectors on the motherboard, make sure they are connected tightly and securely.
- When handling the motherboard, avoid touching any metal leads or connectors.
- It is best to wear an electrostatic discharge (ESD) wrist strap when handling electronic components such as a motherboard, CPU or memory. If you do not have an ESD wrist strap, keep your hands dry and first touch a metal object to eliminate static electricity.
- Prior to installing the motherboard, please have it on top of an antistatic pad or within an electrostatic shielding container.
- Before connecting or unplugging the power supply cable from the motherboard, make sure the power supply has been turned off.
- Before turning on the power, make sure the power supply voltage has been set according to the local voltage standard.
- Before using the product, please verify that all cables and power connectors of your hardware components are connected.
- To prevent damage to the motherboard, do not allow screws to come in contact with the motherboard circuit or its components.
- Make sure there are no leftover screws or metal components placed on the motherboard or within the computer casing.
- Do not place the computer system on an uneven surface.
- Do not place the computer system in a high-temperature or wet environment.
- Turning on the computer power during the installation process can lead to damage to system components as well as physical harm to the user.
- If you are uncertain about any installation steps or have a problem related to the use of the product, please consult a certified computer technician.
- If you use an adapter, extension power cable, or power strip, ensure to consult with its installation and/or grounding instructions.










## 1-2 Product Specifications

 CPU	<ul style="list-style-type: none"> <li>• Built in with an Intel® Core™ i3-7100U SoC<sup>①</sup></li> <li>• Built in with an Intel® Core™ i5-7300U SoC<sup>②</sup></li> <li>• Built in with an Intel® Core™ i7-7600U SoC<sup>③</sup> <ul style="list-style-type: none"> <li>* Do not disassemble the onboard SoC by yourself to avoid damage to these components.</li> </ul> </li> <li>• 3 MB L2 Cache <sup>① ②</sup></li> <li>• 4 MB L2 Cache <sup>③</sup></li> </ul>
 Memory	<ul style="list-style-type: none"> <li>• 2 x DDR4 SO-DIMM socket supporting up to 8 GB of system memory</li> <li>• Support for DDR4 2133 MHz memory module (Go to GIGABYTE's website for the latest supported memory speeds and memory modules.)</li> </ul>
 Onboard Graphics	<ul style="list-style-type: none"> <li>• Integrated in the SoC: <ul style="list-style-type: none"> <li>- 1 x DisplayPort, supporting a maximum resolution of 4096x2304@60 Hz <ul style="list-style-type: none"> <li>* Support for DisplayPort 1.4 version.</li> </ul> </li> <li>- 1 x HDMI port, supporting a maximum resolution of 4096x2304@24 Hz <ul style="list-style-type: none"> <li>* Support for HDMI 1.4 version.</li> </ul> </li> </ul> </li> <li>• Maximum shared memory of 512 MB</li> </ul>
 Audio	<ul style="list-style-type: none"> <li>• Realtek® ALC887 codec</li> <li>• High Definition Audio</li> <li>• 2/4/5.1/7.1-channel <ul style="list-style-type: none"> <li>* To configure 7.1-channel audio, you need to open the audio software and select Device advanced settings &gt; Playback Device to change the default setting first. Please visit GIGABYTE's website for details on configuring the audio software.</li> </ul> </li> </ul>
 LAN	<ul style="list-style-type: none"> <li>• 2 x Intel® GbE LAN chip (1 Gbit/100 Mbit)</li> </ul>
 Expansion Slots	<ul style="list-style-type: none"> <li>• 1 x M.2 Socket 1 connector for the wireless communication module (M2_WIFI)</li> </ul>
 Storage Interface	<ul style="list-style-type: none"> <li>• Integrated in the SoC: <ul style="list-style-type: none"> <li>- 2 x SATA 6Gb/s connectors</li> <li>- 1 x M.2 connector (Socket 3, M key, type 2280 SATA and PCIe x4/x2 SSD support) (M2P)</li> <li>- 1 x MSATA connector (MSATA_MPCIE2) <ul style="list-style-type: none"> <li>* The MSATA_MPCIE2 shares bandwidth with the SATA3 1 connector. The SATA3 1 becomes unavailable when a device is installed in the MSATA_MPCIE2 connector.</li> </ul> </li> </ul> </li> </ul>
 USB	<ul style="list-style-type: none"> <li>• Integrated in the SoC: <ul style="list-style-type: none"> <li>- 4 x USB 3.0 ports on the back panel</li> <li>- 4 x USB 2.0/1.1 ports available through the internal USB headers</li> </ul> </li> </ul>
 Internal Connectors	<ul style="list-style-type: none"> <li>• 1 x DC-In power connector (DCIN_PWR)</li> <li>• 1 x system fan header (SYS_FAN)</li> <li>• 2 x SATA 6Gb/s connectors (SATA3 0/1)</li> <li>• 1 x SATA power connector (SATA_PWR)</li> <li>• 1 x front panel header (F_PANEL)</li> <li>• 1 x battery cable header (BAT)</li> <li>• 2 x USB 2.0/1.1 headers (F_USB1/2)</li> <li>• 4 x serial port headers (COMA/B/C/D)</li> <li>• 4 x serial port power select jumpers (COMA/B/C/D_PW)</li> </ul>

① Only for the GA-SBC7100.

② Only for the GA-SBC7300.

③ Only for the GA-SBC7600.

 Internal Connectors	<ul style="list-style-type: none"> <li>♦ 1 x GPIO status configuration jumper (GPIO)</li> <li>♦ 1 x LVDS header (LVDS)</li> <li>♦ 1 x LVDS drive voltage jumper (LCD_VCC)</li> <li>♦ 1 x flat panel display header (FPD)</li> <li>♦ 1 x flat panel display switch header</li> <li>♦ 1 x speaker header (SPKR)</li> <li>♦ 1 x volume control header (SPKR_CTRL)</li> <li>♦ 1 x I2C</li> <li>♦ 1 x SMBUS</li> <li>♦ 1 x Clear CMOS jumper (CLR_CMOS)</li> </ul>
 Back Panel Connectors	<ul style="list-style-type: none"> <li>♦ 1 x HDMI port</li> <li>♦ 1 x DisplayPort</li> <li>♦ 4 x USB 3.0 ports</li> <li>♦ 2 x RJ-45 ports</li> </ul>
 I/O Controller	♦ Nuvoton Super I/O
 Hardware Monitor	<ul style="list-style-type: none"> <li>♦ Voltage detection</li> <li>♦ Temperature detection</li> <li>♦ Fan speed detection</li> <li>♦ Fan speed control</li> </ul> <p>* Whether the fan speed control function is supported will depend on the cooler you install.</p>
 BIOS	<ul style="list-style-type: none"> <li>♦ 1 x 128 Mbit flash</li> <li>♦ Use of licensed AMI UEFI BIOS</li> <li>♦ PnP 1.0a, DMI 2.7, WfM 2.0, SM BIOS 2.7, ACPI 5.0</li> </ul>
 Unique Features	<ul style="list-style-type: none"> <li>♦ Support for Xpress Install</li> <li>♦ Support for @BIOS</li> <li>♦ Support for APP Center</li> </ul> <p>* Available applications in APP Center may vary by motherboard model. Supported functions of each application may also vary depending on motherboard specifications</p>
 Bundled Software	♦ Norton® Internet Security (OEM version)
 Operating System	♦ Support for Windows 10 64-bit
 Form Factor	♦ SBC Form Factor; 14.6cm x 10.2cm

\* GIGABYTE reserves the right to make any changes to the product specifications and product-related information without prior notice.

GA-SBC7100



GA-SBC7300



GA-SBC7600



Please visit GIGABYTE's website for support lists of memory modules, SSDs, and M.2 devices.



Please visit the **Support/Utility List** page on GIGABYTE's website to download the latest version of apps.

## 1-3 Installing the Memory



Read the following guidelines before you begin to install the memory:

- Make sure that the motherboard supports the memory.  
(Go to GIGABYTE's website for the latest supported memory speeds and memory modules.)
- Always turn off the computer and unplug the power cord from the power outlet before installing the memory to prevent hardware damage.
- Memory modules have a foolproof design. A memory module can be installed in only one direction. If you are unable to insert the memory, switch the direction.

## 1-4 Installing an Expansion Card



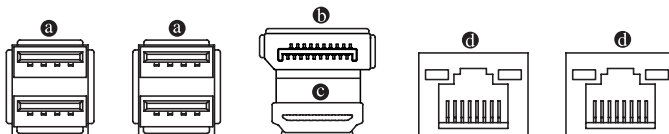
Read the following guidelines before you begin to install an expansion card:

- Make sure the motherboard supports the expansion card. Carefully read the manual that came with your expansion card.
- Always turn off the computer and unplug the power cord from the power outlet before installing an expansion card to prevent hardware damage.



Do not disassemble the onboard SoC by yourself to avoid damage to these components.

## 1-5 Back Panel Connectors



### a USB 3.0 Port

The USB 3.0 port supports the USB 3.0 specification and is compatible to the USB 2.0 specification. Use this port for USB devices.

### b DisplayPort

DisplayPort delivers high quality digital imaging and audio, supporting bi-directional audio transmission. DisplayPort can support both DPCP and HDCP 2.3 content protection mechanisms. It provides improved visuals supporting Rec. 2020 (Wide Color Gamut) and High Dynamic Range (HDR) for Blu-ray UHD playback. You can use this port to connect your DisplayPort-supported monitor. Note: The DisplayPort Technology can support a maximum resolution of 4096x2304@60 Hz but the actual resolutions supported depend on the monitor being used.

### c HDMI Port

**HDMI™** The HDMI port is HDCP compliant and supports Dolby TrueHD and DTS HD Master Audio formats. It also supports up to 192KHz/24bit 7.1-channel LPCM audio output. You can use this port to connect your HDMI-supported monitor. The maximum supported resolution is 4096x2304@24 Hz, but the actual resolutions supported are dependent on the monitor being used.



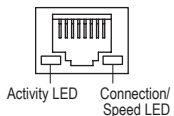
After installing the HDMI/DisplayPort device, make sure to set the default sound playback device to HDMI/DisplayPort. (The item name may differ depending on your operating system.)

### Dual-Display Configurations for the Onboard Graphics:

Dual-display configurations are supported after you install motherboard drivers in OS.

## ❶ RJ-45 LAN Port

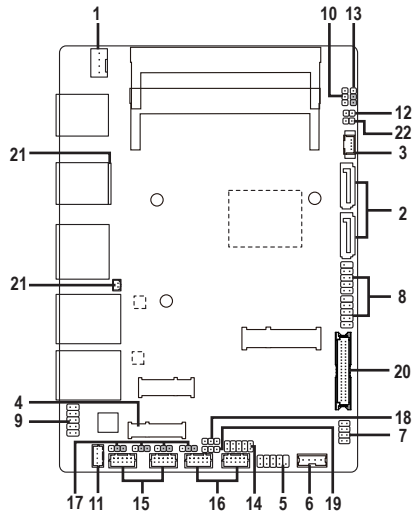
The Gigabit Ethernet LAN port provides Internet connection at up to 1 Gbps data rate. The following describes the states of the LAN port LEDs.

LAN Port		Connection/Speed LED:		Activity LED:	
		State	Description	State	Description
		Orange	1 Gbps data rate	Blinking	Data transmission or receiving is occurring
		Green	100 Mbps data rate	On	No data transmission or receiving is occurring
		Off	10 Mbps data rate		



- When removing the cable connected to a back panel connector, first remove the cable from your device and then remove it from the motherboard.
- When removing the cable, pull it straight out from the connector. Do not rock it side to side to prevent an electrical short inside the cable connector.

## 1-6 Internal Connectors



1) SYS_FAN	12) MON_SW
2) SATA3 0/1	13) LCD_VCC
3) SATA_PWR	14) GPIO
4) M2P	15) COMA/COMB
5) F_PANEL	16) COMC/COMD
6) DCIN_PWR	17) COMA/B/C/D_PW
7) FPD	18) SMBUS
8) F_USB1/F_USB2	19) I2C
9) AUDIO	20) LVDS
10) SPKR_CTRL	21) BAT
11) SPKR	22) CLR_CMOS



Read the following guidelines before connecting external devices:

- First make sure your devices are compliant with the connectors you wish to connect.
- Before installing the devices, be sure to turn off the devices and your computer. Unplug the power cord from the power outlet to prevent damage to the devices.
- After installing the device and before turning on the computer, make sure the device cable has been securely attached to the connector on the motherboard.

### 1) SYS\_FAN (Fan Header)

The fan header on this motherboard is 4-pin. The fan header possesses a foolproof insertion design. When connecting a fan cable, be sure to connect it in the correct orientation (the black connector wire is the ground wire). The speed control function requires the use of a fan with fan speed control design. For optimum heat dissipation, it is recommended that a system fan be installed inside the chassis.



Pin No.	Definition
1	GND
2	Voltage Speed Control
3	Sense
4	PWM Speed Control



- Be sure to connect fan cables to the fan headers to prevent your system from overheating. Overheating may result in damage to the system may hang.
- The fan header is not configuration jumper blocks. Do not place a jumper cap on the header.

### 2) SATA3 0/1 (SATA 6Gb/s Connectors)

The SATA connectors conform to SATA 6Gb/s standard and are compatible with SATA 3Gb/s and SATA 1.5Gb/s standard. Each SATA connector supports a single SATA device.



Pin No.	Definition
1	GND
2	TXP
3	TXN
4	GND
5	RXN
6	RXP
7	GND

### 3) SATA\_PWR (SATA Power Connector)

The connector provides power to installed SATA device.



Pin No.	Definition
1	GND
2	VCC
3	+12V
4	GND

#### 4) M2P (M.2 Socket 3 Connector)

The M.2 connector supports an M.2 SATA SSD or M.2 PCIe SSD.



Follow the steps below to correctly install an M.2 SSD in the M.2 connector.

Step 1:

Use a screw driver to unfasten the screw from the motherboard. Slide the M.2 SSD into the connector at an angle.

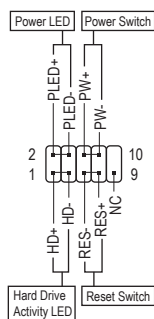
Step 2:

Press the M.2 SSD down and then secure it with the screw.



#### 5) F\_PANEL (Front Panel Header)

Connect the power switch, reset switch, and system status indicator on the chassis to this header according to the pin assignments below. Note the positive and negative pins before connecting the cables.



- **PLED (Power LED, Yellow):**

System Status	LED
S0	On
S3/S4/S5	Off

Connects to the power status indicator on the chassis front panel. The LED is on when the system is operating. The LED is off when the system is in S3/S4 sleep state or powered off (S5).

- **PW (Power Switch, Red):**

Connects to the power switch on the chassis front panel. You may configure the way to turn off your system using the power switch.

- **HD (Hard Drive Activity LED, Blue):**

Connects to the hard drive activity LED on the chassis front panel. The LED is on when the hard drive is reading or writing data.

- **RES (Reset Switch, Green):**

Connects to the reset switch on the chassis front panel. Press the reset switch to restart the computer if the computer freezes and fails to perform a normal restart.

- **NC (Purple):**

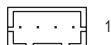
No connection.



The front panel design may differ by chassis. A front panel module mainly consists of power switch, reset switch, power LED, hard drive activity LED and etc. When connecting your chassis front panel module to this header, make sure the wire assignments and the pin assignments are matched correctly.



## 6) DCIN\_PWR (DC Power Connector, Input 9V ~ 36V)



Pin No.	Definition
1	GND
2	DC IN
3	DC IN
4	GND

## 7) FPD (Flat Panel Display Header)

The FPD is a high-speed interface connecting the output of a video controller in a laptop computer, computer monitor or LCD television set to the display panel. Most laptops, LCD computer monitors and LCD TVs use this interface internally. The header conforms to FPD specification.



Pin No.	Definition	Pin No.	Definition
1	BKLT_EN	5	BKLT_GND/Brightness_GND
2	BKLT_PWM	6	BKLT_GND/Brightness_GND
3	BKLT_PWR (FPD_PWR)	7	Brightness_Up
4	BKLT_PWR (FPD_PWR)	8	Brightness_Down

## 8) F\_USB1/F\_USB2 (USB 2.0/1.1 Headers)

The headers conform to USB 2.0/1.1 specification. Each USB header can provide two USB ports via an optional USB bracket. For purchasing the optional USB bracket, please contact the local dealer.



Pin No.	Definition	Pin No.	Definition
1	Power (5V)	6	USB DY+
2	Power (5V)	7	GND
3	USB DX-	8	GND
4	USB DY-	9	No Pin
5	USB DX+	10	NC



- Do not plug the IEEE 1394 bracket (2x5-pin) cable into the USB header.
- Prior to installing the USB bracket, be sure to turn off your computer and unplug the power cord from the power outlet to prevent damage to the USB bracket.

## 9) AUDIO (Front Panel Audio Header)

The front panel audio header supports High Definition audio (HD). You may connect your chassis front panel audio module to this header. Make sure the wire assignments of the module connector match the pin assignments of the motherboard header. Incorrect connection between the module connector and the motherboard header will make the device unable to work or even damage it.



Pin No.	Definition	Pin No.	Definition
1	LINE_R	6	MIC_L
2	MIC_R	7	GND
3	GND	8	GND
4	GND	9	RSV
5	LINE_L	10	RSV



Some chassis provide a front panel audio module that has separated connectors on each wire instead of a single plug. For information about connecting the front panel audio module that has different wire assignments, please contact the chassis manufacturer.

#### 10) SPKR\_CTRL (Volume Control Header)

The header connects to the volume control button of the monitor to control the volume. This feature requires a software update to be enabled.



Pin No.	Definition
1	VOL_DW
2	GND
3	VOL_UP

#### 11) SPKR (Speaker Header)

This header connects to the L/R Audio output of the motherboard and supports 3W stereo speaker (40hm) in an AIO chassis



Pin No.	Definition
1	Speaker OUT R-
2	Speaker OUT R+
3	Speaker OUT L-
4	Speaker OUT L+

#### 12) MON\_SW (Flat Panel Display Switch Header)

This header allows you to connect an on/off switch for the display.



Pin No.	Definition
1	PWRDN/VCC3
2	GND

#### 13) LCD\_VCC (LVDS Drive Voltage Jumper)

This jumper can be used to provide different screen voltage settings.



1-2 Close: Set to 3V. (Default)



2-3 Close: Set to 5V.

#### 14) GPIO (GPIO Header)

Use this header to connect a GPIO device.



Pin No.	Definition	Pin No.	Definition
1	GPIO	6	GPIO
2	GPIO	7	GPIO
3	GPIO	8	GPIO
4	GPIO	9	GPIO
5	GP_OUT	10	GND

#### 15) COMA/COMB (Serial Port Headers)

Each COM header can provide one serial port via an optional COM port cable. For purchasing the optional COM port cable, please contact the local dealer.



Pin No.	Definition	Pin No.	Definition
1	ND CD-	6	NCT S-
2	NDSR-	7	NDTR-
3	NSIN	8	12V_5V
4	NRTS-	9	GND
5	NSOUT	10	NC

#### 16) COMC/COMD (Serial Port Headers)

Each COM header can provide one serial port via an optional COM port cable. For purchasing the optional COM port cable, please contact the local dealer. The two headers support RS232, RS422, and RS485 devices.



For RS232 Devices:

Pin No.	Definition
1	ND CD-
2	NDSR-
3	NSIN
4	NRTS-
5	NSOUT
6	NCT S-
7	NDTR-
8	+5V/+12V
9	GND
10	NC

For RS422 Devices:

Pin No.	Definition
1	TX(B)
2	NC
3	TX(A)
4	NC
5	RX(A)
6	NC
7	RX(B)
8	+5V/+12V
9	GND
10	NC

For RS485 Devices:

Pin No.	Definition
1	D-
2	NC
3	D+
4	NC
5	NC
6	NC
7	NC
8	+5V/+12V
9	GND
10	NC

#### 17) COMA\_PW/COMB\_PW/COMC\_PW/COMD\_PW (Serial Port Header Power Select Jumpers)

The power select jumpers are used to select serial port power.



1-2 Close: Set to 12V.



2-3 Close: Set to 5V. (Default)

18) SMBUS (System Management Bus)



Pin No.	Definition
1	SMB_CLK
2	SMB_DATA
3	GND

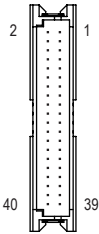
19) I2C (Inter-Integrated Circuit)



Pin No.	Definition
1	I2C_SCL
2	I2C_SDA
3	GND

20) LVDS (LVDS Header)

LVDS stands for Low-voltage differential signaling, which uses high-speed analog circuit techniques to provide multigigabit data transfers on copper interconnects and is a generic interface standard for high-speed data transmission.

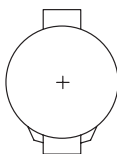


Pin No.	Definition	Pin No.	Definition	Pin No.	Definition
1	LCD_VCC	15	-RXO3	29	Panel Detect <sup>(Note)</sup>
2	LCD_VCC	16	+RXO3	30	-RXE3
3	VCC3	17	GND	31	+RXE3
4	NC	18	-RXECLKO	32	GND
5	NC	19	+RXECLKO	33	-RXECLKE
6	-RXO0	20	GND	34	+RXECLKE
7	+RXO0	21	-RXE0	35	GND
8	GND	22	+RXE0	36	Enable
9	-RXO1	23	GND	37	BackLight Control
10	+RXO1	24	-RXE1	38	FPD_PWR
11	GND	25	+RXE1	39	FPD_PWR
12	-RXO2	26	GND	40	FPD_PWR
13	+RXO2	27	-RXE2		
14	GND	28	+RXE2		

(Note) Connects to the ground pin of the LVDS.

## 21) BAT (Battery/Battery Cable Header)

The battery provides power to keep the values (such as BIOS configurations, date, and time information) in the CMOS when the computer is turned off. Replace the battery when the battery voltage drops to a low level, or the CMOS values may not be accurate or may be lost.



1 (+)



2 (-)

You may clear the CMOS values by removing the battery cable:

1. Turn off your computer and unplug the power cord.
2. Unplug the battery cable from the battery cable header and wait for one minute.
3. Plug in the battery cable.
4. Plug in the power cord and restart your computer.

Pin No.	Definition
1(+)	RTC Power
2 (-)	GND



- Always turn off your computer and unplug the power cord before replacing the battery.
- Replace the battery with an equivalent one. Danger of explosion if the battery is replaced with an incorrect model.
- Contact the place of purchase or local dealer if you are not able to replace the battery by yourself or uncertain about the battery model.
- When installing the battery, note the orientation of the positive side (+) and the negative side (-) of the battery (the positive side should face up).
- Used batteries must be handled in accordance with local environmental regulations.

## 22) CLR\_CMOS (Clear CMOS Jumper)

Use this jumper to clear the BIOS configuration and reset the CMOS values to factory defaults. To clear the CMOS values, use a metal object like a screwdriver to touch the two pins for a few seconds.



Open: Normal



Short: Clear CMOS Values



- Always turn off your computer and unplug the power cord from the power outlet before clearing the CMOS values.
- After system restart, go to BIOS Setup to load factory defaults (select Load Optimized Defaults) or manually configure the BIOS settings.

## Chapter 2 BIOS Setup

BIOS (Basic Input and Output System) records hardware parameters of the system in the CMOS on the motherboard. Its major functions include conducting the Power-On Self-Test (POST) during system startup, saving system parameters and loading operating system, etc. BIOS includes a BIOS Setup program that allows the user to modify basic system configuration settings or to activate certain system features.

When the power is turned off, the battery on the motherboard supplies the necessary power to the CMOS to keep the configuration values in the CMOS.

To access the BIOS Setup program, press the <Delete> key during the POST when the power is turned on.

To upgrade the BIOS, use the GIGABYTE @BIOS utility, which is a Windows-based utility that searches and downloads the latest version of BIOS from the Internet and updates the BIOS.



- Because BIOS flashing is potentially risky, if you do not encounter problems using the current version of BIOS, it is recommended that you not flash the BIOS. To flash the BIOS, do it with caution. Inadequate BIOS flashing may result in system malfunction.
- It is recommended that you not alter the default settings (unless you need to) to prevent system instability or other unexpected results. Inadequately altering the settings may result in system's failure to boot. If this occurs, try to clear the CMOS values and reset the board to default values. (Refer to the "Load Optimized Defaults" section in this chapter or introductions of the battery/clear CMOS jumper in Chapter 1 for how to clear the CMOS values.)

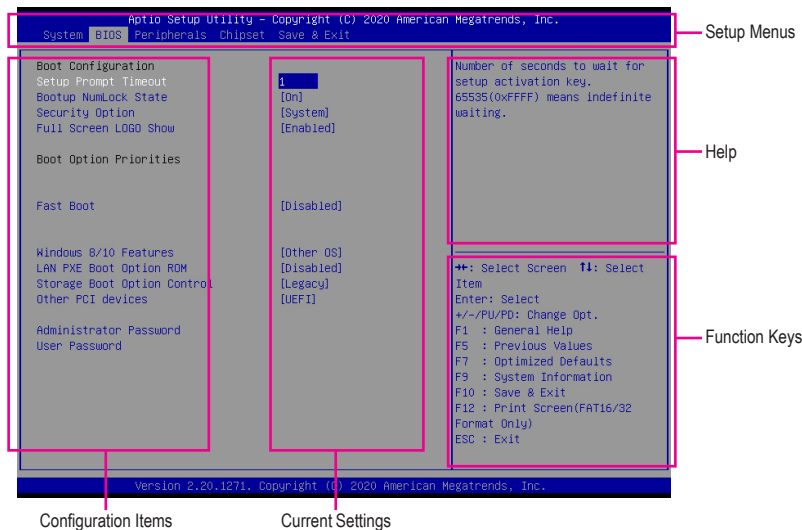
### 2-1 Startup Screen

The following startup Logo screen will appear when the computer boots.



- When the system is not stable as usual, select the **Load Optimized Defaults** item to set your system to its defaults.
- The BIOS Setup menus described in this chapter are for reference only and may differ by BIOS version.

## 2-2 The Main Menu



### Classic Setup Function Keys

<←><→>	Move the selection bar to select a setup menu
<↑><↓>	Move the selection bar to select an configuration item on a menu
<Enter>	Execute command or enter a menu
<+>/<Page Up>	Increase the numeric value or make changes
<->/<Page Down>	Decrease the numeric value or make changes
<F1>	Show descriptions of the function keys
<F5>	Restore the previous BIOS settings for the current submenus
<F7>	Load the Optimized BIOS default settings for the current submenus
<F9>	Display system information
<F10>	Save all the changes and exit the BIOS Setup program
<F12>	Capture the current screen as an image and save it to your USB drive
<Esc>	Main Menu: Exit the BIOS Setup program Submenus: Exit current submenu

## 2-3 System



This section provides information on your motherboard model and BIOS version. You can also select the default language used by the BIOS and manually set the system time.

### Access Level

Displays the current access level depending on the type of password protection used. (If no password is set, the default will display as **Administrator**.) The Administrator level allows you to make changes to all BIOS settings; the User level only allows you to make changes to certain BIOS settings but not all.

### System Language

Selects the default language used by the BIOS.

### System Date

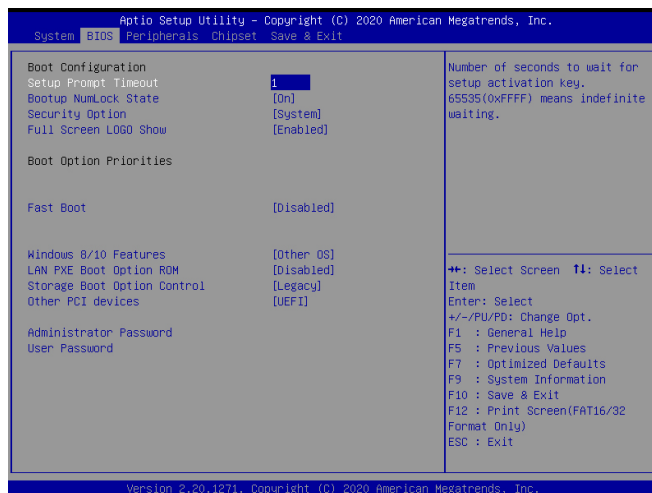
Sets the system date. The date format is week (read-only), month, date, and year. Use <Enter> to switch between the Month, Date, and Year fields and use the <Page Up> or <Page Down> key to set the desired value.

### System Time

Sets the system time. The time format is hour, minute, and second. For example, 1 p.m. is 13:00:00. Use <Enter> to switch between the Hour, Minute, and Second fields and use the <Page Up> or <Page Down> key to set the desired value.



## 2-4 BIOS



- **Setup Prompt Timeout**  
Allows you to configure the number of seconds to stay in BIOS setup prompt screen. (Default: 1)
- **Bootup NumLock State**  
Enables or disables Numlock feature on the numeric keypad of the keyboard after the POST. (Default: On)
- **Security Option**  
Specifies whether a password is required every time the system boots, or only when you enter BIOS Setup. After configuring this item, set the password(s) under the **Administrator Password/User Password** item.
  - Setup A password is only required for entering the BIOS Setup program.
  - System A password is required for booting the system and for entering the BIOS Setup program. (Default)
- **Full Screen LOGO Show**  
Allows you to determine whether to display the GIGABYTE Logo at system startup. **Disabled** skips the GIGABYTE Logo when the system starts up. (Default: Enabled)
- **Boot Option Priorities**  
Specifies the overall boot order from the available devices. Removable storage devices that support GPT format will be prefixed with "UEFI:" string on the boot device list. To boot from an operating system that supports GPT partitioning, select the device prefixed with "UEFI:" string.  
Or if you want to install an operating system that supports GPT partitioning such as Windows 10 64-bit, select the optical drive that contains the Windows 10 64-bit installation disc and is prefixed with "UEFI:" string.
- **Hard Drive/CD/DVD ROM Drive/Floppy Drive/Network Device BBS Priorities**  
Specifies the boot order for a specific device type, such as hard drives, optical drives, floppy disk drives, and devices that support Boot from LAN function, etc. Press <Enter> on this item to enter the submenu that presents the devices of the same type that are connected. This item is present only if at least one device for this type is installed.
- **Fast Boot**  
Enables or disables Fast Boot to shorten the OS boot process. (Default: Disabled)

### ☞ **SATA Support**

- » Last Boot HDD Only Except for the previous boot drive, all SATA devices are disabled before the OS boot process completes.
- » All Sata Devices All SATA devices are functional in the operating system and during the POST. (Default)

This item is configurable only when **Fast Boot** is set to **Enabled**.

### ☞ **NVMe Support**

Allows you to enable or disable NVMe device(s). (Default: Enabled)

This item is configurable only when **Fast Boot** is set to **Enabled**.

### ☞ **VGA Support**

Allows you to select which type of operating system to boot.

- » Auto Enables legacy option ROM only.
- » EFI Driver Enables EFI option ROM. (Default)

This item is configurable only when **Fast Boot** is set to **Enabled**.

### ☞ **USB Support**

- » Disabled All USB devices are disabled before the OS boot process completes.
- » Full Initial All USB devices are functional in the operating system and during the POST.
- » Partial Initial Part of the USB devices are disabled before the OS boot process completes. (Default)

This item is configurable only when **Fast Boot** is set to **Enabled**.

### ☞ **PS2 Devices Support**

- » Disabled All PS/2 devices are disabled before the OS boot process completes.
- » Enabled All PS/2 devices are functional in the operating system and during the POST. (Default)

This item is configurable only when **Fast Boot** is set to **Enabled**.

### ☞ **NetWork Stack Driver Support**

- » Disabled Disables booting from the network. (Default)
- » Enabled Enables booting from the network.

This item is configurable only when **Fast Boot** is set to **Enabled**.

### ☞ **Redirection Support**

Allows you to enable or disable Serial Redirection. (Default: Disabled)

This item is configurable only when **Fast Boot** is set to **Enabled**.

### ☞ **Windows 8/10 Features**

Allows you to select the operating system to be installed. (Default: Other OS)

### ☞ **LAN PXE Boot Option ROM**

Allows you to select whether to enable the legacy option ROM for the LAN controller. (Default: Disabled)

### ☞ **Storage Boot Option Control**

Allows you to select whether to enable the UEFI or legacy option ROM for the storage device controller.

- » Do not launch Disables option ROM.
- » UEFI Enables UEFI option ROM only.
- » Legacy Enables legacy option ROM only. (Default)

### ☞ **Other PCI devices**

Allows you to select whether to enable the UEFI or Legacy option ROM for the PCI device controller other than the LAN, storage device, and graphics controllers.

- » Do not launch Disables option ROM.
- » UEFI Enables UEFI option ROM only. (Default)
- » Legacy Enables legacy option ROM only.

### **Administrator Password**

Allows you to configure an administrator password. Press <Enter> on this item, type the password, and then press <Enter>. You will be requested to confirm the password. Type the password again and press <Enter>. You must enter the administrator password (or user password) at system startup and when entering BIOS Setup. Differing from the user password, the administrator password allows you to make changes to all BIOS settings.

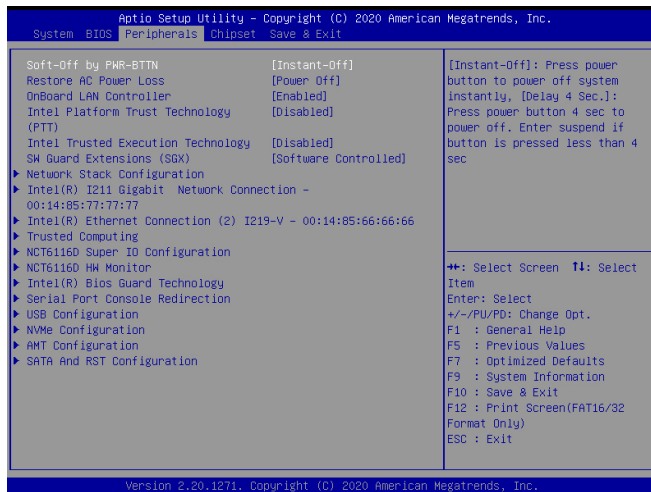
### **User Password**

Allows you to configure a user password. Press <Enter> on this item, type the password, and then press <Enter>. You will be requested to confirm the password. Type the password again and press <Enter>. You must enter the administrator password (or user password) at system startup and when entering BIOS Setup. However, the user password only allows you to make changes to certain BIOS settings but not all.

To cancel the password, press <Enter> on the password item and when requested for the password, enter the correct one first. When prompted for a new password, press <Enter> without entering any password. Press <Enter> again when prompted to confirm.

NOTE: Before setting the User Password, be sure to set the Administrator Password first.

## 2-5 Peripherals



### ☞ **Soft-Off by PWR-BTTN**

Configures the way to turn off the computer in MS-DOS mode using the power button.

- » Instant-Off Press the power button and then the system will be turned off instantly. (Default)
- » Delay 4 Sec. Press and hold the power button for 4 seconds to turn off the system. If the power button is pressed for less than 4 seconds, the system will enter suspend mode.

### ☞ **Restore AC Power Loss**

Determines the state of the system after the return of power from an AC power loss.

- » Last State The system returns to its last known awake state upon the return of the AC power.
- » Power On The system is turned on upon the return of the AC power.
- » Power Off The system stays off upon the return of the AC power. (Default)

### ☞ **OnBoard LAN Controller (LAN2)**

Enables or disables the onboard LAN function. (Default: Enabled)

If you wish to install a 3rd party add-in network card instead of using the onboard LAN, set this item to **Disabled**.

### ☞ **Intel Platform Trust Technology (PTT)**

Enables or disables Intel® PTT Technology. (Default: Disabled)

### ☞ **Intel Trusted Execution Technology**

Enables or disables Intel® Trusted Execution Technology (Intel® TXT). Intel® Trusted Execution Technology provides a hardware-based security foundation. (Default: Disabled)

### ☞ **SW Guard Extensions (SGX)**

Enables or disables the Intel® Software Guard Extensions technology. This feature allows legal software to operate in a safe environment and protects the software against attacks from malicious software. The **Software Controlled** option allows you to enable or disable this feature with an Intel-provided application. (Default: Software Controlled)

▶ **Network Stack Configuration**

☞ **Network Stack**

Disables or enables booting from the network to install a GPT format OS, such as installing the OS from the Windows Deployment Services server. (Default: Disabled)

☞ **Ipv4 PXE Support**

Enables or disables IPv4 PXE Support. This item is configurable only when **Network Stack** is enabled.

☞ **Ipv4 HTTP Support**

Enables or disables HTTP boot support for IPv4. This item is configurable only when **Network Stack** is enabled.

☞ **Ipv6 PXE Support**

Enables or disables IPv6 PXE Support. This item is configurable only when **Network Stack** is enabled.

☞ **Ipv6 HTTP Support**

Enables or disables HTTP boot support for IPv6. This item is configurable only when **Network Stack** is enabled.

☞ **IPSEC Certificate**

Enables or disables the Internet Protocol Security. This item is configurable only when Network Stack is enabled.

☞ **PXE boot wait time**

Allows you to configure how long to wait before you can press <Esc> to abort the PXE boot. This item is configurable only when **Network Stack** is enabled. (Default: 0)

☞ **Media detect count**

Allows you to set the number of times to check the presence of media. This item is configurable only when **Network Stack** is enabled. (Default: 1)

▶ **Intel(R) I211 Gigabit Network Connection (LAN2)**

This sub-menu provides information on LAN configuration and related configuration options.

▶ **Intel(R) Ethernet Connection (LAN1)**

This sub-menu provides information on LAN configuration and related configuration options.

▶ **Trusted Computing**

Enables or disables Trusted Platform Module (TPM).

▶ **NCT6116D Super IO Configuration**

This section provides information on the super I/O chip and allows you to configure the serial ports.

▶ **NCT6116D HW Monitor**

☞ **CPU Temperature/System Temperature**

Displays current CPU/system temperature.

☞ **System Fan Speed**

Displays current system fan speeds.

☞ **VCORE/12V/VDDQ/VCC**

Displays the current system voltages.

▶ **Smart Fan Function**

This sub-menu provides information on system fan configuration and related configuration options.

▶ **Intel(R) Bios Guard Technology**

Enables or disables the Intel® BIOS Guard feature, which protects the BIOS from malicious attacks.

▶ **Serial Port Console Redirection**

This section allows you to enable/disable serial port console redirection for remote server management

through a serial port.

▶ **USB Configuration**

☞ **Legacy USB Support**

Allows USB keyboard/mouse to be used in MS-DOS. (Default: Enabled)

☞ **XHCI Hand-off**

Determines whether to enable XHCI Hand-off feature for an operating system without XHCI Hand-off support. (Default: Disabled)

☞ **USB Mass Storage Driver Support**

Enables or disables support for USB storage devices. (Default: Enabled)

☞ **Port 60/64 Emulation**

Enables or disables emulation of I/O ports 64h and 60h. This should be enabled for full legacy support for USB keyboards/mice in MS-DOS or in operating system that does not natively support USB devices. (Default: Disabled)

☞ **Mass Storage Devices**

Displays a list of connected USB mass storage devices. This item appears only when a USB storage device is installed.

▶ **NVMe Configuration**

Displays information on your M.2 NVMe PCIe SSD if installed.

▶ **AMT Configuration**

This section allows you to enable/disable **Intel® Active Management Technology** (Intel® AMT) for remote computer management on hardware level and provides you with further configuration options.

▶ **SATA And RST Configuration**

☞ **SATA Controller(s)**

Enables or disables the integrated SATA controllers. (Default: Enabled)

☞ **SATA Mode Selection**

Specifies the operating mode of the integrated SATA controllers.

- ▶ AHCI      Configures the SATA controllers to AHCI mode. Advanced Host Controller Interface (AHCI) is an interface specification that allows the storage driver to enable advanced Serial ATA features such as Native Command Queuing and hot plug. (Default)

☞ **Aggressive LPM Support**

Enables or disables the power saving feature, ALPM (Aggressive Link Power Management), for the Chipset SATA controllers. (Default: Enabled)

☞ **Port 1/2**

Enables or disables each SATA port. (Default: Enabled)

☞ **Hot plug**

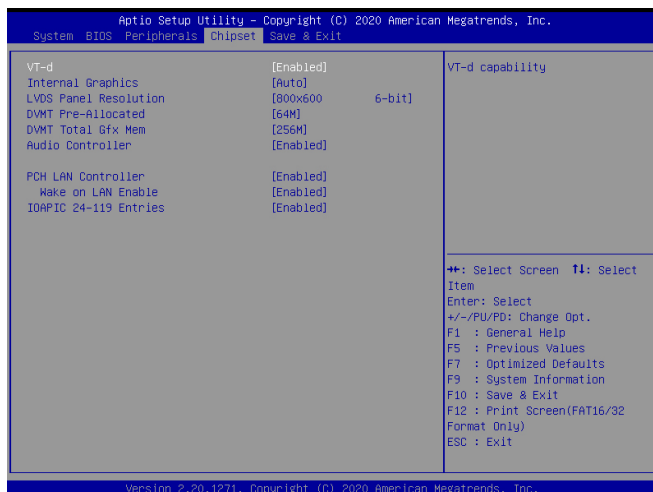
Enables or disable the hot plug capability for each SATA port. (Default: Disabled)

☞ **Configured as eSATA**

Enables or disables support for external SATA devices.

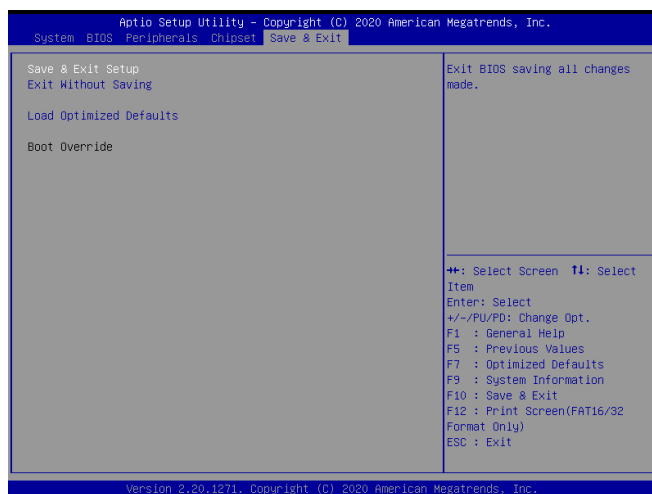
Allows to you set LVDS resolution and bit rate. (Default: 1024x600 6-bit)

## 2-6 Chipset



- ☞ **VT-d**  
Enables or disables Intel® Virtualization Technology for Directed I/O. (Default: Enabled)
- ☞ **Internal Graphics**  
Enables or disables the onboard graphics function. (Default: Auto)
- ☞ **LVDS Panel Resolution**  
Allows you to set LVDS resolution and bit rate. (Default: 800x600 6-bit)
- ☞ **DVMT Pre-Allocated**  
Allows you to set the onboard graphics memory size. Options are: 32M~1024M. (Default: 64M)
- ☞ **DVMT Total Gfx Mem**  
Allows you to allocate the DVMT memory size of the onboard graphics. Options are: 128M, 256M, MAX. (Default: 256M)
- ☞ **Audio Controller**  
Enables or disables the onboard audio function. (Default: Enabled)  
If you wish to install a 3rd party add-in audio card instead of using the onboard audio, set this item to **Disabled**.
- ☞ **PCH LAN Controller (LAN1)**  
Enables or disables the Intel® GbE LAN function. (Default: Enabled)  
If you wish to install a 3rd party add-in network card instead of using the onboard LAN, set this item to **Disabled**.
- ☞ **Wake on LAN Enable**  
Enables or disables the wake on LAN function. (Default: Enabled)
- ☞ **IOAPIC 24-119 Entries**  
Enables or disables this function. (Default: Enabled)

## 2-7 Save & Exit



### ☞ Save & Exit Setup

Press <Enter> on this item and select **Yes**. This saves the changes to the CMOS and exits the BIOS Setup program. Select **No** or press <Esc> to return to the BIOS Setup Main Menu.

### ☞ Exit Without Saving

Press <Enter> on this item and select **Yes**. This exits the BIOS Setup without saving the changes made in BIOS Setup to the CMOS. Select **No** or press <Esc> to return to the BIOS Setup Main Menu.

### ☞ Load Optimized Defaults

Press <Enter> on this item and select **Yes** to load the optimal BIOS default settings. The BIOS defaults settings help the system to operate in optimum state. Always load the Optimized defaults after updating the BIOS or after clearing the CMOS values.

### ☞ Boot Override

Allows you to select a device to boot immediately. Press <Enter> on the device you select and select **Yes** to confirm. Your system will restart automatically and boot from that device.

### ☞ Save Profiles

This function allows you to save the current BIOS settings to a profile. You can create up to 8 profiles and save as Setup Profile 1~ Setup Profile 8. Press <Enter> to complete. Or you can select **Select File in HDD/FDD/USB** to save the profile to your storage device.

### ☞ Load Profiles

If your system becomes unstable and you have loaded the BIOS default settings, you can use this function to load the BIOS settings from a profile created before, without the hassles of reconfiguring the BIOS settings. First select the profile you wish to load and then press <Enter> to complete. You can select **Select File in HDD/FDD/USB** to input the profile previously created from your storage device or load the profile automatically created by the BIOS, such as reverting the BIOS settings to the last settings that worked properly (last known good record).




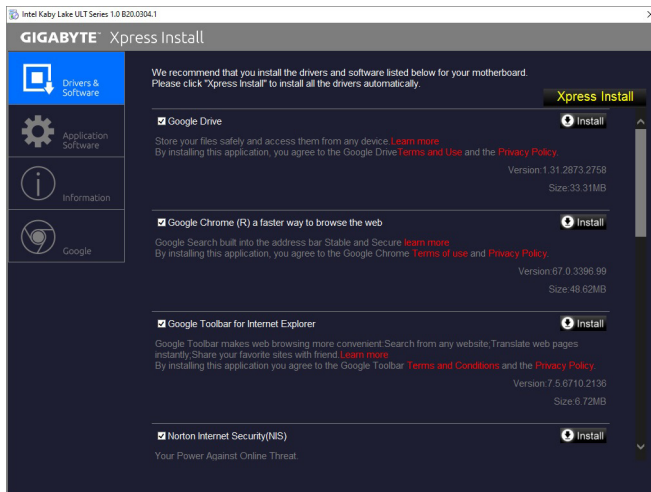
## Chapter 3 Appendix

### Drivers Installation



- Before installing the drivers, first install the operating system.
- After installing the operating system, insert the motherboard driver disc into your optical drive. Click on the message "Tap to choose what happens with this disc" on the top-right corner of the screen and select "Run Run.exe." (Or go to My Computer, double-click the optical drive and execute the Run.exe program.)

"Xpress Install" will automatically scan your system and then list all of the drivers that are recommended to install. You can click the **Xpress Install** button and "Xpress Install" will install all of the selected drivers. Or click the arrow  **Install** icon to individually install the drivers you need.



# Regulatory Notices

## United States of America, Federal Communications Commission Statement

### Supplier's Declaration of Conformity 47 CFR § 2.1077 Compliance Information

Product Name: **Motherboard**  
Trade Name: **GIGABYTE**  
Model Number: **GA-SBC7100/GA-SBC7300/GA-SBC7600**  
  
Responsible Party – U.S. Contact Information: **G.B.T. Inc.**  
Address: 17358 Railroad street, City Of Industry, CA91748  
Tel.: 1-626-854-9338  
Internet contact information: <https://www.gigabyte.com>

#### FCC Compliance Statement:

This device complies with Part 15 of the FCC Rules, Subpart B, Unintentional Radiators.

Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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 in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with manufacturer's instructions, may cause harmful interference to radio communications. 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 receiver.
- Connect the equipment to 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.

#### Canadian Department of Communications Statement

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications. This class B digital apparatus complies with Canadian ICES-003.

#### Avis de conformité à la réglementation d'Industrie Canada

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

#### European Union (EU) CE Declaration of Conformity

This device complies with the following directives: Electromagnetic Compatibility Directive 2014/30/EU, Low-voltage Directive 2014/35/EU, RoHS directive (recast) 2011/65/EU & the 2015/863 Statement. This product has been tested and found to comply with all essential requirements of the Directives.

**European Union (EU) RoHS (recast) Directive 2011/65/EU & the European Commission Delegated Directive (EU) 2015/863 Statement**  
GIGABYTE products have not intended to add and safe from hazardous substances (Cd, Pb, Hg, Cr+6, PBDE, PBB, DEHP, BBP, DBP and DIBP). The parts and components have been carefully selected to meet RoHS requirement. Moreover, we at GIGABYTE are continuing our efforts to develop products that do not use internationally banned toxic chemicals.

#### European Union (EU) Community Waste Electrical & Electronic Equipment (WEEE) Directive Statement

GIGABYTE will fulfill the national laws as interpreted from the 2012/19/EU WEEE (Waste Electrical and Electronic Equipment) (recast) directive. The WEEE Directive specifies the treatment, collection, recycling and disposal of electric and electronic devices and their components. Under the Directive, used equipment must be marked, collected separately, and disposed of properly.

#### WEEE Symbol Statement



The symbol shown below is on the product or on its packaging, which indicates that this product must not be disposed of with other waste. Instead, the device should be taken to the waste collection centers for activation of the treatment, collection, recycling and disposal procedure.

For more information about where you can drop off your waste equipment for recycling, please contact your local government office, your household waste disposal service or where you purchased the product for details of environmentally safe recycling.

#### End of Life Directives-Recycling



The symbol shown below is on the product or on its packaging, which indicates that this product must not be disposed of with other waste. Instead, the device should be taken to the waste collection centers for activation of the treatment, collection, recycling and disposal procedure.

#### Déclaration de Conformité aux Directives de l'Union européenne (UE)

Cet appareil portant la marque CE est conforme aux directives de l'UE suivantes: directive Compatibilité Electromagnétique 2014/30/UE, directive Basse Tension 2014/35/UE et directive RoHS II 2011/65/UE. La conformité à ces directives est évaluée sur la base des normes européennes harmonisées applicables.

#### European Union (EU) CE-Konformitätserklärung

Dieses Produkte mit CE-Kennzeichnung erfüllen folgenden EU-Richtlinien: EMV-Richtlinie 2014/30/EU, Niederspannungsrichtlinie 2014/30/EU und RoHS-Richtlinie 2011/65/EU erfüllt. Die Konformität mit diesen Richtlinien wird unter Verwendung der entsprechenden Standards zur Europäischen Normierung beurteilt.

#### CE declaração de conformidade

Este produto com a marcação CE estão em conformidade com das seguintes Diretivas UE: Diretiva Baixa Tensão 2014/35/UE; Diretiva CEM 2014/30/UE; Diretiva RSP 2011/65/UE. A conformidade com estas diretivas é verificada utilizando as normas europeias harmonizadas.

#### CE Declaración de conformidad

Este producto que llevan la marca CE cumplen con las siguientes Directivas de la Unión Europea: Directiva EMC (2014/30/EU), Directiva de bajo voltaje (2014/35/EU), Directiva RoHS (recast) (2011/65/EU). El cumplimiento de estas directivas se evalúa mediante las normas europeas armonizadas.

#### Dichiarazione di conformità CE

Questo prodotto è conforme alle seguenti direttive: Direttiva sulla compatibilità elettromagnetica 2014/30/UE, Direttiva sulla bassa tensione 2014/35/UE, Direttiva RoHS (rifusione) 2011/65/UE. Questo prodotto è stato testato e trovato conforme a tutti i requisiti essenziali delle Direttive.



## Contact Us

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Tech. and Non-Tech. Support (Sales/Marketing) : <https://esupport.gigabyte.com>

WEB address (English): <https://www.gigabyte.com>

WEB address (Chinese): <https://www.gigabyte.com/tw>

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- **GIGABYTE eSupport**

To submit a technical or non-technical (Sales/Marketing) question, please link to:  
<https://esupport.gigabyte.com>

