GA-SBCAP3455

User's Manual

Rev. 1001

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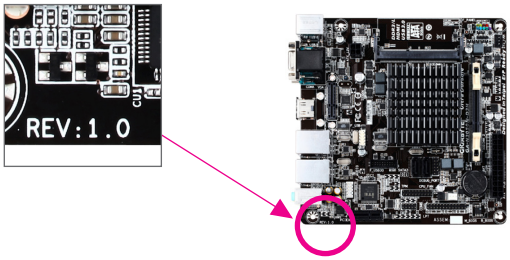
- In order to assist in the use of this product, carefully read the User's Manual.
- For product-related information, check on our website at: https://www.gigabyte.com

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:



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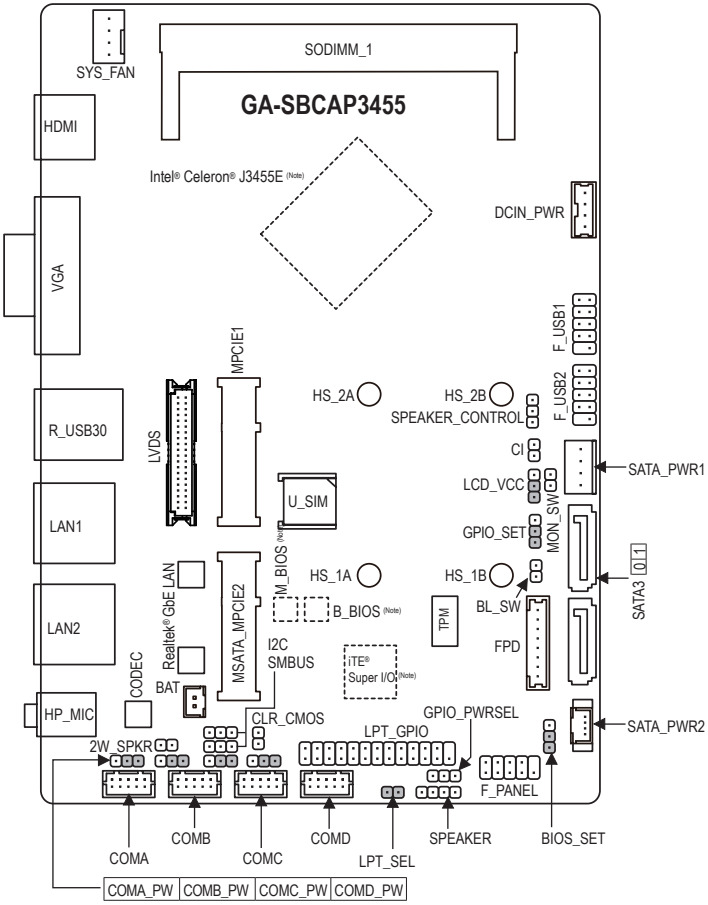
GA-SBCAP3455 Motherboard Layout



Box Contents

- ☑ GA-SBCAP3455 motherboard
- ☑ Motherboard driver disc
- ☑ User's Manual
- ☑ One COM port cable
- ☑ One LPT port cable
- ☑ Two SATA cables
- ☑ One SATA power cable
- ☑ One heat spreader
- ☑ One DC power 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.

(Note) This chip is on the back of the motherboard.

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	◆ Built in with an Intel® Quad-Core Celeron® J3455E SoC (1.1 GHz~2.2 GHz) * Do not disassemble the onboard SoC by yourself to avoid damage to these components. ◆ 2 MB L2 Cache
Memory	◆ 1 x DDR3L SO-DIMM socket supporting up to 8 GB of system memory ◆ Support for DDR3L 1866/1600/1333 MHz memory module (Go to GIGABYTE's website for the latest supported memory speeds and memory modules.)
Onboard Graphics	◆ Integrated in the SoC: - 1 x D-Sub port, supporting a maximum resolution of 1920x1200@60 Hz - 1 x HDMI port, supporting a maximum resolution of 3840x2160@30 Hz ◆ Maximum shared memory of 512 MB
Audio	◆ Realtek® ALC255 codec ◆ High Definition Audio ◆ 2-channel
LAN	◆ 2 x Realtek® GbE LAN chips (1000 Mbit/100 Mbit)
TPM	◆ Infineon chip, supporting TPM 2.0
Expansion Slots	◆ 1 x half size Mini PCIe slot (MPCIE1) (The Mini PCIe slot conforms to PCI Express 2.0 standard.)
Storage Interface	◆ Integrated in the SoC: - 2 x SATA 6Gb/s connectors - 1 x MSATA connector (MSATA_MPCIE2) * 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.
USB	◆ Integrated in the SoC: - 2 x USB 3.0 ports on the back panel - 4 x USB 2.0/1.1 ports available through the internal USB headers
Internal Connectors	◆ 1 x DC-In power connector (DCIN_PWR) ◆ 1 x system fan header (SYS_FAN) ◆ 2 x SATA 6Gb/s connectors (SATA3 0/1) ◆ 2 x SATA power connectors (SATA_PWR1, SATA_PWR2) ◆ 1 x front panel header (F_PANEL) ◆ 1 x battery cable header (BAT) ◆ 2 x USB 2.0/1.1 headers (F_USB1, F_USB2) ◆ 4 x serial port headers (COMA/B/C/D) ◆ 4 x serial port power select jumpers (COMA/B/C/D_PW) ◆ 1 x speaker header (2W_SPKR) ◆ 1 x GPIO power selection jumper (GPIO_PWRSEL) ◆ 1 x GPIO status configuration jumper (GPIO_SET) ◆ 1 x LVDS header (LVDS) ◆ 1 x LVDS drive voltage jumper (LCD_VCC) ◆ 1 x flat panel display header (FPD) ◆ 1 x flat panel display switch header (MON_SW) ◆ 1 x backlight switch header (BL_SW) ◆ 1 x volume control header (SPEAKER_CONTROL) ◆ 1 x buzzer header (SPEAKER)

Internal Connectors	◆	1 x LPT/GPIO header (LPT_GPIO)
	◆	1 x LPT configuration jumper (LPT_SEL)
	◆	1 x I2C jumper (I2C)
	◆	1 x SMBUS jumper (SMBUS)
	◆	1 x BIOS Select jumper (BIOS_SET)
	◆	1 x Clear CMOS jumper (CLR_CMOS)
	◆	1 x chassis intrusion header (CI)
Back Panel Connectors	◆	1 x HDMI port
	◆	1 x D-Sub port
	◆	2 x USB 3.0 ports
	◆	2 x RJ-45 ports
	◆	1 x audio jack (headphone and microphone combo jack)
I/O Controller	◆	iTE® I/O Controller Chip
Hardware Monitor	◆	Voltage detection
	◆	Temperature detection
	◆	Fan speed detection
	◆	Fan speed control * Whether the fan speed control function is supported will depend on the cooler you install.
BIOS	◆	2 x 64 Mbit flash
	◆	Use of licensed AMI UEFI BIOS
	◆	Support for DualBIOS™
	◆	PnP 1.0a, DMI 2.7, WfM 2.0, SM BIOS 2.7, ACPI 5.0
Unique Features	◆	Support for Xpress Install
	◆	Support for @BIOS
	◆	Support for APP Center * Available applications in APP Center may vary by motherboard model. Supported functions of each application may also vary depending on motherboard specifications
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.

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

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:

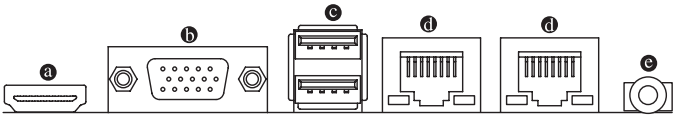
- Make sure that the motherboard supports the memory.
  (Go to GIGABYTE's website for the latest supported memory speeds and memory modules.)
- Always turn off the computer and unplug the power cord from the power outlet before installing the memory to prevent hardware damage.
- Memory modules have a 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.

1-5 Back Panel Connectors



ⓐ HDMI Port

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 3840x2160@30 Hz, but the actual resolutions supported are dependent on the monitor being used.

After installing the HDMI device, make sure to set the default sound playback device to HDMI. (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.

ⓑ D-Sub Port

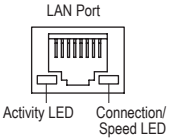
The D-Sub port supports a 15-pin D-Sub connector and supports a maximum resolution of 1920x1200@60 Hz (the actual resolutions supported depend on the monitor being used). Connect a monitor that supports D-Sub connection to this port.

ⓒ 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.

ⓓ 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.



Connection/Speed LED:

State	Description
Orange	1 Gbps data rate
Green	100 Mbps data rate
Off	10 Mbps data rate

Activity LED:

State	Description
Blinking	Data transmission or receiving is occurring
Off	No data transmission or receiving is occurring

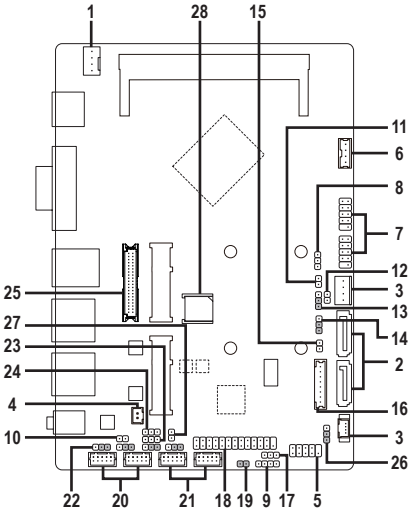
ⓔ HP MIC (Headphone and Microphone Combo Jack)

This jack is for connecting a headphone or microphone. You can connect a microphone, headphone or speaker to this jack.

Please visit GIGABYTE's website for more software information.

- 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	15)	BL_SW
2)	SATA3 0/1	16)	FPD
3)	SATA_PWR1/SATA_PWR2	17)	GPIO_PWRSEL
4)	BAT	18)	LPT_GPIO
5)	F_PANEL	19)	LPT_SEL
6)	DCIN_PWR	20)	COMA/COMB
7)	F_USB1/F_USB2	21)	COMC/COMD
8)	SPEAKER_CONTROL	22)	COMA/B/C/D_PW
9)	SPEAKER	23)	SMBUS
10)	2W_SPKR	24)	I2C
11)	CI	25)	LVDS
12)	MON_SW	26)	BIOS_SET
13)	LCD_VCC	27)	CLR_CMOS
14)	GPIO_SET	28)	USIM

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)

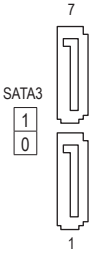
The fan header on this motherboard is 4-pin. The fan header possesses a foolproof insertion design. When connecting a fan cable, be sure to connect it in the correct orientation (the black connector wire is the ground wire). The speed control function requires the use of a fan with fan speed control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

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

- Be sure to connect fan cable to the fan header to prevent your system from overheating. Overheating may result in damage to the system may hang.
- These 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_PWR1/SATA_PWR2 (SATA Power Connectors)

The connectors provide power to the installed SATA devices.

SATA_PWR1:

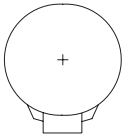
Pin No.	Definition
1	VCC
2	GND
3	GND
4	+12V

SATA_PWR2:

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

4) BAT/BAT_CON (Battery/Battery Power Cable Connector)

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.



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

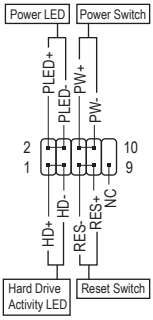
1. Turn off your computer and unplug the power cord.
2. Unplug the the battery cable from the battery cable header and wait for one minute.
3. Plug in the battery cable.
4. Plug in the power cord and restart your computer.

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. Damage to your devices may occur 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.
- Used batteries must be handled in accordance with local environmental regulations.

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):

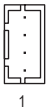
System Status	LED
S0	On
S3/S4/S5	Off

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) 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.

8) SPEAKER_CONTROL (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

9) SPEAKER (Buzzer Header)

Connects to the buzzer on the chassis front panel. The system reports system startup status by issuing a beep code. One single short beep will be heard if no problem is detected at system startup.

Pin No.	Definition
1	VCC
2	NC
3	NC
4	SPK-

10) 2W_SPKR (Speaker Header)

This header provides a 2W (4ohm) speaker on your AIO chassis.

Pin No.	Definition
1	SPK_LP
2	SPK_LN

11) CI (Chassis Intrusion Header)

This motherboard provides a chassis detection feature that detects if the chassis cover has been removed. This function requires a chassis with chassis intrusion detection design.

Pin No.	Definition
1	Signal
2	GND

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	Mon_SW
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_SET (GPIO Status Configuration Jumper)

Use this jumper to set the GPIO status of the LPT_GPIO header to HIGH or LOW.

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

2-3 Close: Set to LOW level.

15) BL_SW (Backlight Switch)

The backlight switch provides the function for screen backlight adjustment.

Pin No.	Definition
1	BL_DOWN
2	BL_UP

16) 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
1	BKLT_EN
2	BKLT_PWM
3	BKLT_PWR (FPD_PWR)
4	BKLT_PWR (FPD_PWR)
5	BKLT_GND/Brightness_GND
6	BKLT_GND/Brightness_GND
7	Brightness_Up
8	Brightness_Down

17) GPIO_PWRSEL (GPIO Power Selection Jumper)

Move the jumper cap from the LPT_SEL jumper to this jumper to configure the LPT_GPIO header to support GPIO device and also to specify the GPIO voltage.

1-2 Close: Set GPIO voltage to +12V.

2-3 Close: Set GPIO voltage to 5V.

18) LPT_GPIO (LPT/GPIO Header)

Use this header to connect a LPT or GPIO device. Refer to the descriptions of the LPT_SEL and GPIO_PWRSEL jumpers for further configuration.

LPT:

Pin No.	Definition	Pin No.	Definition	Pin No.	Definition
1	STB-	10	GND	19	ACK-
2	AFD-	11	PD4	20	GND
3	PD0	12	GND	21	BUSY
4	ERR-	13	PD5	22	GND
5	PD1	14	GND	23	PE
6	INIT-	15	PD6	24	GND
7	PD2	16	GND	25	SLCT
8	SLIN-	17	PD7	26	No Pin
9	PD3	18	GND		

GPIO:

Pin No.	Definition	Pin No.	Definition	Pin No.	Definition
1	SIO_GP87	10	GPIOPWR	19	SIO_GP83
2	SIO_GP86	11	SIO_GP74	20	GND
3	SIO_GP70	12	GPIOPWR	21	SIO_GP82
4	NC	13	SIO_GP75	22	GND
5	SIO_GP71	14	GND	23	SIO_GP81
6	SIO_GP85	15	SIO_GP76	24	GND
7	SIO_GP72	16	GND	25	SIO_GP80
8	SIO_GP84	17	SIO_GP77	26	No Pin
9	SIO_GP73	18	GND		

19) LPT_SEL (LPT Configuration Jumper)

Place the jumper cap on the two pins to configure the LPT_GPIO header to support LPT device. Note: If the jumper cap is removed from this jumper, be sure to place it on the GPIO_PWRSEL pins.

Short: Configure the LPT_GPIO header to support LPT device. (Default)

20) 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	NDCD-	6	NCTS-
2	NDSR-	7	NDTR-
3	NSIN	8	12V_5V
4	NRTS-	9	GND
5	NSOUT	10	NC

21) 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	NDCD-
2	NDSR-
3	NSIN
4	NRTS-
5	NSOUT
6	NCTS-
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

22) 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 1-2 Close: Set to 12V.

1 2-3 Close: Set to 5V. (Default)

23) SMBUS (System Management Bus Jumper)

This header provides the SMBUS signals.

Pin No.	Definition
1	SMB_CLK
2	SMB_DATA
3	GND

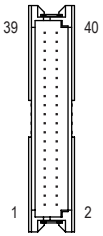
24) I2C (Inter-Integrated Circuit Jumper)

This header provides the I2C signals.

Pin No.	Definition
1	I2C_SCL
2	I2C_SDA
3	GND

25) 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
1	LCD_VCC	21	-RXE0_C
2	LCD_VCC	22	+RXE0_C
3	VCC3	23	GND
4	NC	24	-RXE1_C
5	NC	25	+RXE1_C
6	-RXO0_C	26	GND
7	+RXO0_C	27	-RXE2_C
8	GND	28	+RXE2_C
9	-RXO1_C	29	CABLE_DET (Note)
10	+RXO1_C	30	-RXE3_C
11	GND	31	+RXE3_C
12	-RXO2_C	32	GND
13	+RXO2_C	33	-RXECLKE_C
14	GND	34	+RXECLKE_C
15	-RXO3_C	35	GND
16	+RXO3_C	36	SC_BKLT_EN
17	GND	37	SC_BKLT_CTL
18	-RXECLKO_C	38	FPD_PWR
19	+RXECLKO_C	39	FPD_PWR
20	GND	40	FPD_PWR

(Note) Connects to Pin 35 and the ground pin of the LVDS.

26) BIOS_SET (BIOS Select Jumper)

The jumper allows users to easily select a different BIOS for boot up.

1-2 Close: M_BIOS (Boot from the main BIOS) (Default)

2-3 Close: B_BIOS (Boot from the backup BIOS)

27) 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.

28) USIM (USIM Connector)

This connector can be used to install a Micro Sim card to connect to a mini PCIe LAN card.

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 whe`n the computer boots.

2-2 Main

Once you enter the BIOS Setup program, the Main Menu (as shown below) appears on the screen. Use arrow keys to move among the items and press <Enter> to accept or enter a sub-menu.

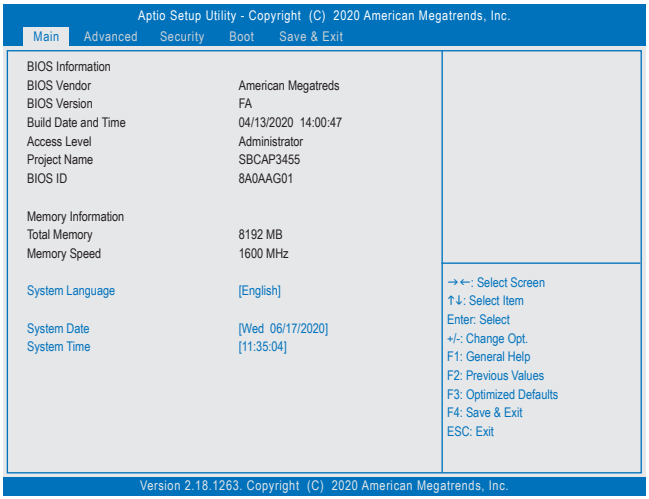
Main Menu Help

The on-screen description of a highlighted setup option is displayed on the bottom line of the Main Menu.

Submenu Help

While in a submenu, press <F1> to display a help screen (General Help) of function keys available for the menu. Press <Esc> to exit the help screen. Help for each item is in the Item Help block on the right side of the submenu.

- When the system is not stable as usual, select the **Restore 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.



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.

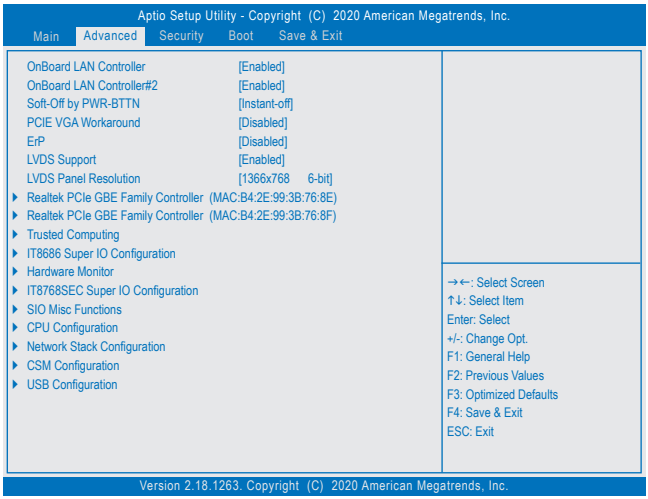
☞ System Date

Sets the system date. The date format is week (read-only), month, date, and year. Use <Tab> to switch between the Month, Date, and Year fields and use the <+> or <-> 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 <Tab> to switch between the Hour, Minute, and Second fields and use the <+> or <-> key to set the desired value.

2-3 Advanced



☞ OnBoard LAN Controller (LAN1)

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**.

☞ OnBoard LAN Controller#2 (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**.

☞ 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.

☞ PCIE VGA Workaround

Allows you to increase the compatibility of the PCI graphics card. (Default: Disabled)

☞ ErP

Determines whether to let the system consume least power in S5 (shutdown) state. (Default: Disabled)

Note: When this item is set to **Enabled**, the Resume by Alarm function becomes unavailable.

☞ LVDS Support

Enables or disables the LVDS function. (Default: Enabled)

☞ LVDS Panel Resolution

Allows to you set LVDS resolution and bit rate. (Default: 1366x768 6-bit)

Realtek PCIe GBE Family Controller

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

Trusted Computing

Enables or disables Trusted Platform Module (TPM).

IT8686 Super IO Configuration

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

Hardware Monitor

CPU Temperature/System Temperature

Displays current CPU/system temperature.

System Fan Speed

Displays current system fan speeds.

VCCGI/VCC3/+12V/VCC/Vnn/DDR_VDDQ

Displays the current system voltages.

IT8768SEC Super IO Configuration

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

SIO Misc Functions

AC BACK

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

- Memory — The system returns to its last known awake state upon the return of the AC power.
- Always On — The system is turned on upon the return of the AC power.
- Always Off — The system stays off upon the return of the AC power. (Default)

Case Open

Displays the detection status of the chassis intrusion detection device attached to the motherboard CI header. If the system chassis cover is removed, this field will show "Open", otherwise it will show "Close." To clear the chassis intrusion status record, set **Reset Case Open Status** to **Enabled**, save the settings to the CMOS, and then restart your system.

Reset Case Open Status

- Disabled — Keeps or clears the record of previous chassis intrusion status. (Default)
- Enabled — Clears the record of previous chassis intrusion status and the **Case Open** field will show "No" at next boot.

Case intrusion Prompt

Allows you to determine whether to display chassis intrusion notification at system startup. (Default: Disabled)

Watch Dog

Enables or disables Watch Dog function. (Default: Disabled)

CPU Configuration

CPU Power Management

EIST

Enables or disables Enhanced Intel® Speed Step Technology (EIST). Depending on CPU loading, Intel® EIST technology can dynamically and effectively lower the CPU voltage and core frequency to decrease average power consumption and heat production. **Auto** lets the BIOS automatically configure this setting. (Default: Enabled)

Turbo Mode

Allows you to determine whether to enable the Intel® CPU Turbo Boost technology. (Default: Enabled)

C-States

Enables or disables support for C-States. (Default: Enabled)

Enhanced C-states

Allows you to determine whether to let the CPU enter C states. When enabled, the CPU core frequency will be reduced during system halt state to decrease power consumption. This item is configurable only when **C-States** is enabled. (Default: Enabled)

Power Limit 1 Enable

Enables or disables Power Limit 1. (Default: Enabled)

Power Limit 1 Clamp Mode

Enables or disables Power Limit 1 Clamp Mode. (Default: Enabled)

Power Limit 1 Power/Power Limit 1 Time window

Allows you to set the power limit for CPU Turbo mode and how long it takes to operate at the specified power limit. If the specified value is exceeded, the CPU will automatically reduce the core frequency in order to reduce the power. **Auto** sets the power limit according to the CPU specifications.

Active Processor Cores

Allows you to select the number of CPU cores to enable. (Default: Disabled)

Intel Virtualization Technology

Enables or disables Intel® Virtualization Technology. Virtualization enhanced by Intel® Virtualization Technology will allow a platform to run multiple operating systems and applications in independent partitions. With virtualization, one computer system can function as multiple virtual systems. (Default: Enabled)

VT-d

Enables or disables Intel® Virtualization Technology for Directed I/O. (Default: Disabled)

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.

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)

CSM Configuration

CSM Support

Enables or disables UEFI CSM (Compatibility Support Module) to support a legacy PC boot process.

- Enabled — Enables UEFI CSM. (Default)
- Disabled — Disables UEFI CSM and supports UEFI BIOS boot process only.

Network

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

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

This item is configurable only when **CSM Support** is set to **Enabled**.

Storage

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. (Default)
- Legacy — Enables legacy option ROM only.

This item is configurable only when **CSM Support** is set to **Enabled**.

Video

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

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

This item is configurable only when **CSM Support** is set to **Enabled**.

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.

This item is configurable only when **CSM Support** is set to **Enabled**.

USB Configuration

Onboard USB Feature

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

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: Enabled)

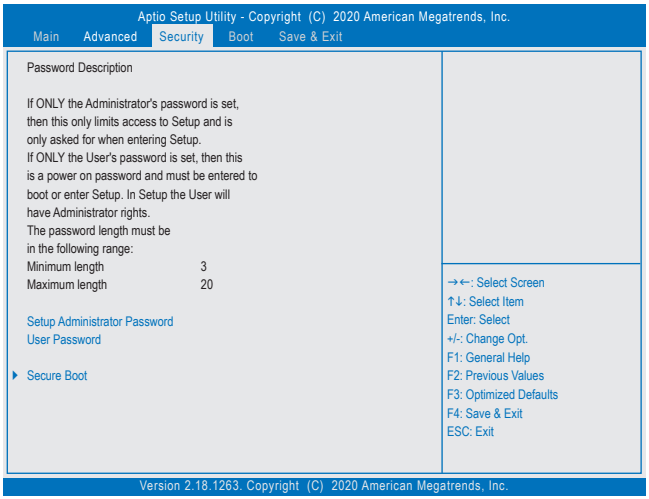
USB Mass Storage Driver Support

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

USB Storage Devices

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

2-4 Security



☞ Setup 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.

☞ HDD Security Configuration

Displays a list of connected hard drives and allows you to set a password for a specific hard drive. This item appears only when a hard drive is installed.

▶ Secure Boot

☞ System Mode

Displays the current system mode.

☞ Secure Boot

Displays the current secure boot state.

☞ Vendor Keys

Displays the vendor keys.

☞ Attempt Secure Boot

Enables or disables the secure boot function. Secure Boot requires all the applications that are running during the booting process to be pre-signed with valid digital certificates. This way, the system knows all the files being loaded before Windows 8 loads and gets to the login screen have not been tampered with. (Default: Disabled)

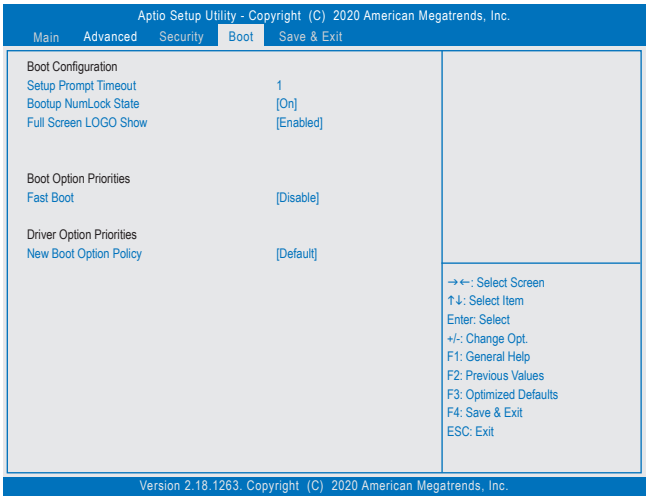
☞ Secure Boot Mode

Allows you to configure the secure boot mode. (Default: Customized)

▶ Key Management

This section provides you with configuration options for secure boot key management.

2-5 Boot



☞ 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)

☞ 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 #1/2

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 disk and is prefixed with "UEFI:" string.

☞ Fast Boot

Enables or disables Fast Boot to shorten the OS boot process. (Default: Disabled)

☞ SATA Support

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

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

- ▸▸ Disable — All PS/2 devices are disabled before the OS boot process completes.
- ▸▸ Enable — 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

- ▸▸ Disable — Disables booting from the network. (Default)
- ▸▸ Enable — Enables booting from the network.

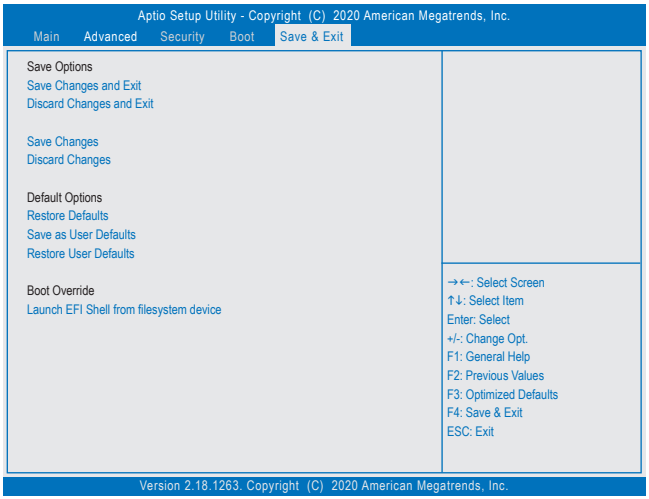
This item is configurable only when **Fast Boot** is set to **Enabled**.

☞ New Boot Option Policy

Allows you to determine whether to change the boot order when a new device is added.

- ▸▸ Dedault — Keeps the previous boot order settings. (Default)
- ▸▸ Place First — Set the newly added device as the first boot device.
- ▸▸ Place Last — Set the newly added device as the last boot device.

2-6 Save & Exit



☞ Save Changes and Exit

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.

☞ Discard Changes and Exit

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.

☞ Save Changes

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

☞ Discard Changes

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

☞ Restore Defaults

Press <Enter> on this item and select **Yes** to load the BIOS factory 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.

☞ Save as User Defaults

Save to current BIOS settings as user-defined default settings.

☞ Restore User Defaults

Load the user-define default settings for all BIOS options.

☞ 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.

☞ Launch EFI Shell from filesystem device

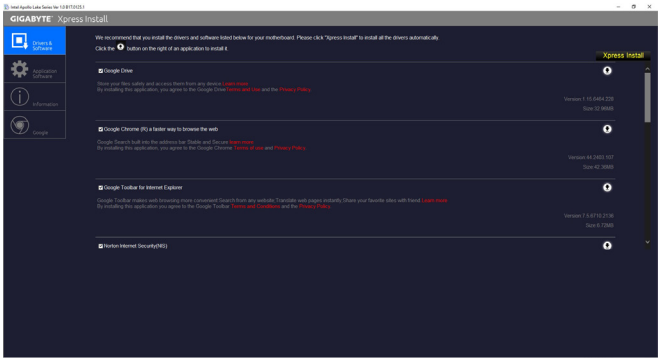
Allows you to launch the EFI Shell application (shell.efi) from one of the available filesystem devices. Press <Enter> on this option and the system will restart to the EFI Shell screen automatically.

Chapter 3 Appendix

Drivers Installation

- Before installing the drivers, first install the operating system.
- After installing the operating system, insert the motherboard driver disk 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 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-SBCAP3455**

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

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 zurEuropäischen 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/EU; Diretiva CEM 2014/30/EU; 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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TEL: +886-2-8912-4000, FAX: +886-2-8912-4005

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

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

- **GIGABYTE eSupport**

  To submit a technical or non-technical (Sales/Marketing) question, please link to:
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