J3455I-CM-A

Industrial Motherboard

HDMI™
HIGH-DEFINITION MULTIMEDIA INTERFACE

E18240
Revised Edition v3
April 2021

Contents

Appendix

Chapter 1
Product overview

1.1 Package contents

Check your industrial motherboard package for the following items.

☑ 1 x ASUS J3455I-CM-A Motherboard

☑ 1 x Serial ATA 6.0 Gb/s cables

☑ 2 x M.2 screw packages

☑ 1 x ASUS I/O Shield

NOTE: If any of the above items is damaged or missing, contact your distributor or sales representative immediately.

1.2 Features

- Built-in Intel® Celeron® Quad-core Processor J3455
- Two DDR3L 1866/1600/1333 MHz Non-ECC Un-buffered U-DIMMs up to 8GB
- 2 x SATA 6Gb/s, 6 x USB 3.2 Gen 1, 4 x USB 2.0, 2 x COM headers
- 1 x PCIe 2.0 x4 slot (x1 mode), 1 x M.2 Socket 1 with E key
- Multi-display: 1 x VGA, 1 x HDMI, 1 x LVDS, HDMI + VGA + LVDS

1.3 Specifications

CPU	Built-in Intel® Celeron® Quad-core Processor J3455
Memory	2 x DDR3L, max.8GB, DDR3L 1866/1600/1333 MHz Non-ECC, Unbuffered Memory
Graphics	Integrated graphics processor - Intel® HD Graphics support - Supports VGA output with a maximum resolution of 1920 x 1200 @ 60Hz - Supports HDMI™ output with a maximum resolution of 3840 x 2160 @ 30Hz - Supports LVDS output with a maximum resolution of 1920 x 1200 @ 60Hz Support up to three displays simultaneously
Expansion slots	1 x PCI Express 2.0 x4 slot (x1 mode) 1 x M.2 Socket 1 with E key, type 2230 for WIFI/BT device
Storage	2 x SATA Gen3.0 up to 6.0 Gb/s ports
Ethernet	1 Realtek® 8111H
Audio	Realtek® ALC887-VD2 / ALC897 High Definition Audio *** The audio codec may vary between motherboards, please consult your sales window for the motherboards' exact codec type.**
Rear panel I/O ports	1 x VGA port 1 x HDMI™ port 4 x USB 3.2 Gen 1 ports 1 x Serial port (RS232) 1 x LAN (RJ45) ports 1 x P/S2 keyboard port 1 x P/S2 mouse port 3 x Audio jacks
Internal Connectors	1 x Serial Port header (1 x RS232) 1 x CPU Fan header (PWM Mode) 1 x Chassis Fan header (PWM + DC Mode) 1 x Chassis intrusion header 1 x Front panel audio header (AAFP) 1 x System panel header (10-1 pin) 1 x Clear CMOS jumper 1 x Buzzer 1 x LVDS header 1 x Display Panel Backlight power selection header 1 x Flat Panel Display Brightness selection header 1 x USB 3.2 Gen 1 header supports additional 2 USB 3.2 Gen 1 ports

(continued on the next page)

Internal Connectors	2 x USB 2.0 headers support additional 4 USB 3.2 Gen 1 ports 1 x Parallel Port header 1 x LPC TPM header 1 x Display Panel VCC Power selection header 1 x LCD panel monitor switch header 1 x 24-pin EATX power connector 1 x 4-pin ATX 12V power connector
Manageability	WfM 2.0, WOL by PME
Power requirement	ATX mode
Operation Temperature	0~50°C
Non-Operation Temperature	-40~75°C
Relative Humidity	0%~85%
OS support	Windows® 10 (64bit) Ubuntu, RedHat Enterprise, Fedora Workstation, OpenSUSE
Form Factor	Mini-ITX Form Factor, 6.7”x 6.7” (17.0cm x 17.0cm)

NOTE: Specifications are subject to change without notice.

Chapter 2
Motherboard information

2.1 Before you proceed

Take note of the following precautions before you install motherboard components or change any motherboard settings.

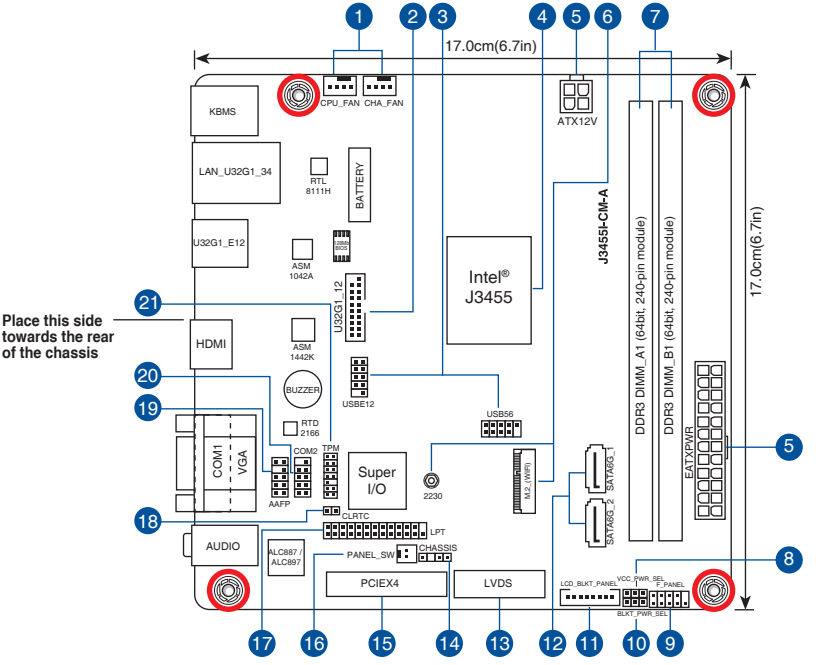
CAUTION!

- Unplug the power cord from the wall socket before touching any component.
- Before handling components, use a grounded wrist strap or touch a safely grounded object or a metal object, such as the power supply case, to avoid damaging them due to static electricity.
- Hold components by the edges to avoid touching the ICs on them.
- Whenever you uninstall any component, place it on a grounded antistatic pad or in the bag that came with the component.
- Before you install or remove any component, always remove the AC power by unplugging the power cord from the power outlet. Failure to do so may cause severe damage to the motherboard, peripherals, or components.

2.2 Motherboard layout

NOTE: Place four screws into the holes indicated by circles to secure the motherboard to the chassis.

CAUTION! Do not overtighten the screws! Doing so can damage the motherboard.



NOTE: The audio codec may vary between motherboards, please consult your sales window for the motherboards' exact codec type.

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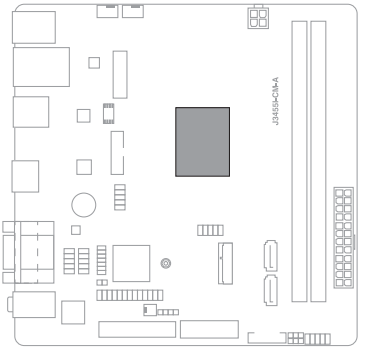
20.	TPM header (14-1 pin TPM)	2-19

2.3 Central Processing Unit (CPU)

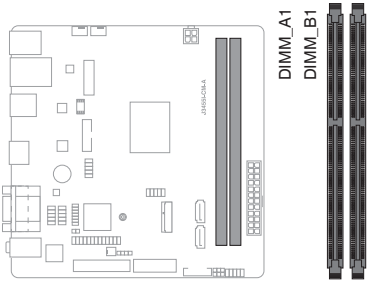
The motherboard comes with an onboard Intel® Celeron® Quad-core processor J3455.



Intel®
J3455

2.4 System memory

This motherboard comes with two Double Data Rate 3 (DDR3) Dual Inline Memory Module (DIMM) sockets. The figure illustrates the location of the DDR3 DIMM sockets:

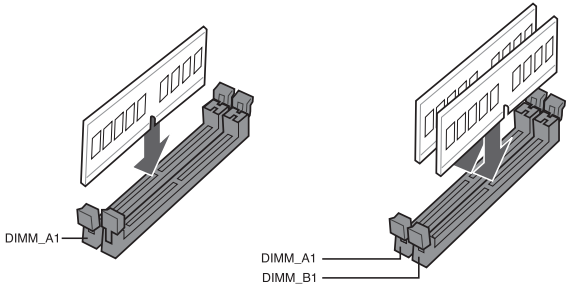


Channel	Sockets
Channel A	DIMM_A1
Channel B	DIMM_B1

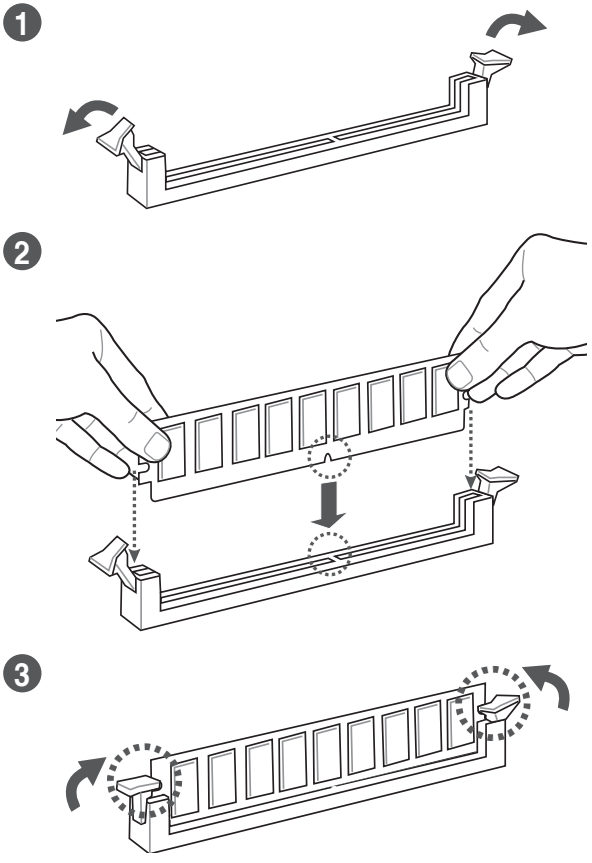
- You may install varying memory sizes in Channel A and Channel B. The system maps the total size of the lower-sized channel for the dual-channel configuration. Any excess memory from the higher-sized channel is then mapped for single-channel operation.
- Always install the DIMMS with the same CAS Latency. For an optimum compatibility, we recommend that you install memory modules of the same version or data code (D/C) from the same vendor. Check with the vendor to get the correct memory modules.
- According to Intel® CPU spec, DIMM voltage below 1.35V is recommended to protect the CPU.

Visit the ASUS website at www.asus.com for the latest QVL.

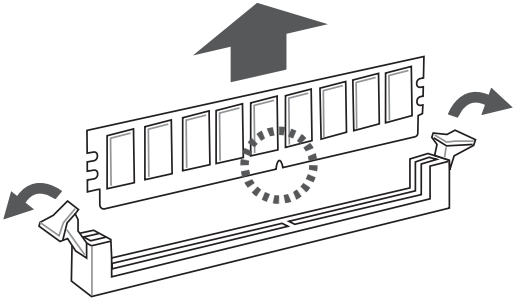
Recommended memory configuration



Installing a DIMM



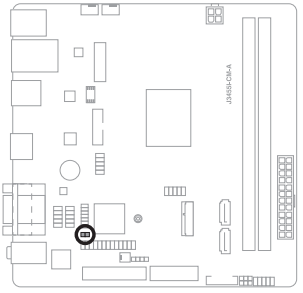
To remove a DIMM



2.5 Jumpers

1. Clear RTC RAM (2-pin CLRTC)

This header allows you to clear the CMOS RTC RAM data of the system setup information such as date, time, and system passwords.



Connector type	HEADER 1x2p, 2.54mm pitch, S/T

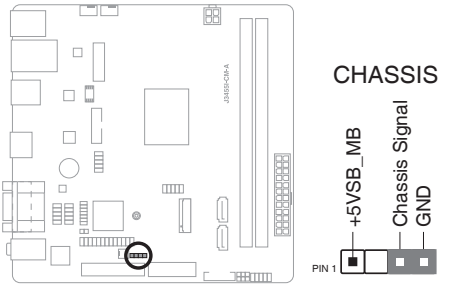
To erase the RTC RAM:

1. Turn OFF the computer and unplug the power cord.
2. Use a metal object such as a screwdriver to short the two pins.
3. Plug the power cord and turn ON the computer.
4. Hold down the **<Del>** key during the boot process and enter BIOS setup to re-enter data.

NOTE: If the steps above do not help, remove the onboard battery and move the jumper again to clear the CMOS RTC RAM data. After clearing the CMOS, reinstall the battery.

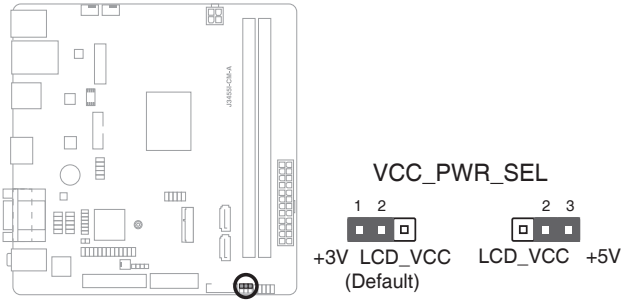
2. Chassis intrusion header (4-1 pin_CHASSIS)

This header is for a chassis-mounted intrusion detection sensor or switch. Connect one end of the chassis intrusion sensor or switch cable to this connector. The chassis intrusion sensor or switch sends a low-level signal to this connector when a chassis component is installed. The signal is then generated as a chassis intrusion event.



Connector type	HEADER 4p, K2, 2.54mm pitch

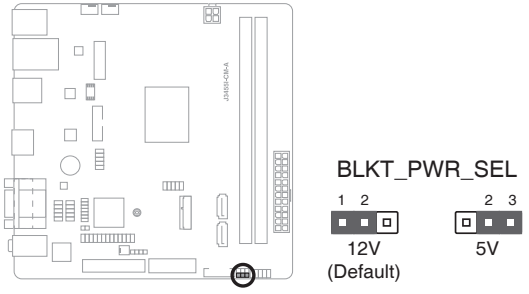
3. Display panel VCC power selection (3-pin VCC_PWR_SEL)



Setting	Pins
3.3V (Default)	1-2
5V	3-4

Connector type	HEADER 1 x 3p, 2.54mm pitch, S/T

4. Display panel backlight power selection (3-pin BLKT_PWR_SEL)

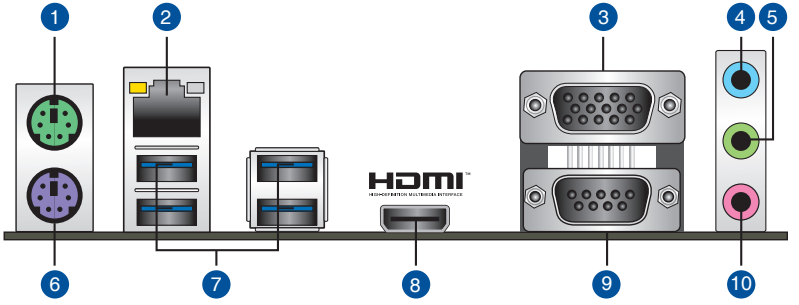


	Pins
12V (Default)	1-2
5V	2-3

Connector type	HEADER 1x3p, 2.54mm pitch, S/T

2.6 Connectors

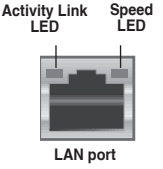
2.6.1 Rear panel connectors



1. **PS/2 mouse port (green)**. This port is for a PS/2 mouse.
2. **LAN (RJ-45) ports.** These ports allow Gigabit connection to a Local Area Network (LAN) through a network hub.

   LAN port LED indications

Activity/Link LED		Speed LED	
Status	Description	Status	Description
Off	No link	OFF	10Mbps connection
Orange	Linked	ORANGE	100Mbps connection
Orange (Blinking)	Data activity	GREEN	1Gbps connection
Orange (Blinking then steady)	Ready to wake up from S5 mode		



3. **Video Graphics Adapter (VGA) ports.** These 15-pin ports are for VGA monitors or other VGA-compatible devices.
4. **Line In port (light blue).** This port connects to the tape, CD, DVD player, or other audio sources.
5. **Line Out port (lime).** This port connects to a headphone or a speaker. In the 4, and 5.1 channel configurations, the function of this port becomes Front Speaker Out.
6. **PS/2 keyboard port (purple)**. This port is for a PS/2 keyboard.
7. **USB 3.2 Gen 1 (up to 5Gbps) ports.** These 9-pin Universal Serial Bus (USB) ports are for USB 3.2 Gen 1 devices.

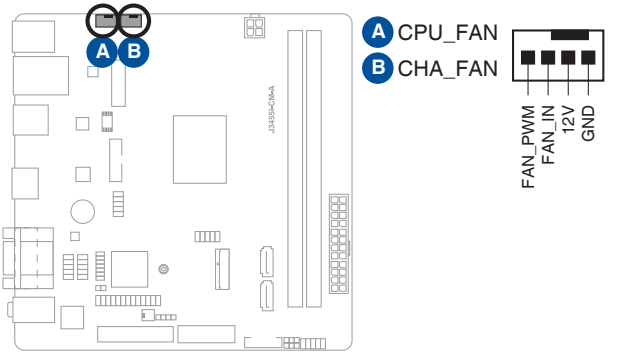
- USB 3.2 Gen 1 devices can only be used for data storage.
- We strongly recommend that you connect USB 3.2 Gen 1 devices to USB 3.2 Gen 1 ports for faster and better performance from your USB 3.2 Gen 1 devices.

8. **HDMI port.** This port is for a High-Definition Multimedia Interface (HDMI) connector, and is HDCP compliant allowing playback of HD DVD, Blu-Ray, and other protected content.
9. **Serial port connector (COM).** This port connects a modem, or other devices that conform with serial specification.
10. **Microphone port (pink).** This port connects a microphone.

2.6.2 Internal connectors

1. CPU and chassis fan headers (4-pin CPU_FAN, 4-pin CHA_FAN)

Connect the fan cables to the fan headers on the motherboard, ensuring that the black wire of each cable matches the ground pin of the header.

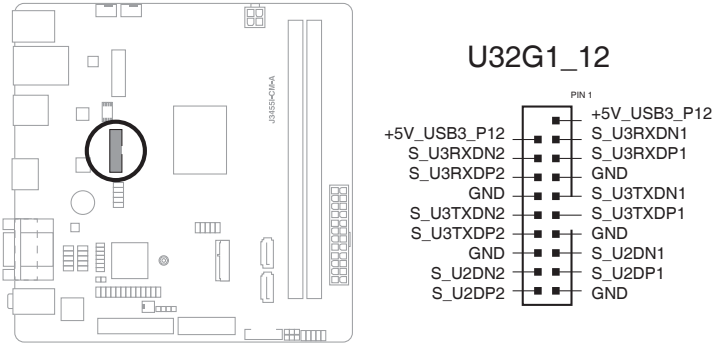


Connector type	WAFER HD 4p, 2.54mm pitch, S/T

CAUTION: Do not forget to connect the fan cables to the fan headers. Insufficient air flow inside the system may damage the motherboard components. These are not jumpers! Do not place jumper caps on the fan headers!

2. USB 3.2 Gen 1 header (20-1 pin U32G1_12)

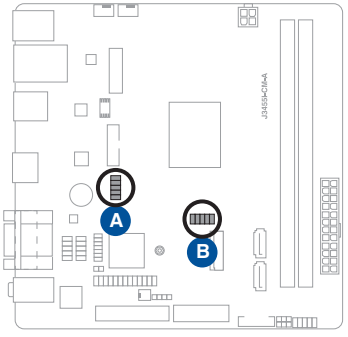
Connect a USB 3.2 Gen 1 module to this header for additional USB 3.2 Gen 1 front or rear panel ports. This header complies with USB 3.2 Gen 1 specifications and provides faster data transfer speeds of up to 5 Gbps, faster charging time for USB-chargeable devices, optimized power efficiency, and backward compatibility with USB 2.0.

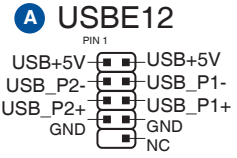


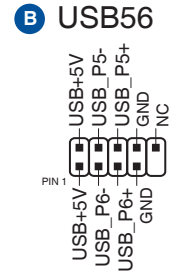
Connector type	BOX HD 2x10p, K20, 2.0mm pitch

3. USB 2.0 header (10-pin USBE12, USB56)

These headers are for USB 2.0 ports. Connect the USB cables to these headers. These USB headers comply with USB 2.0 specification that supports up to 480 Mbps connection speed.







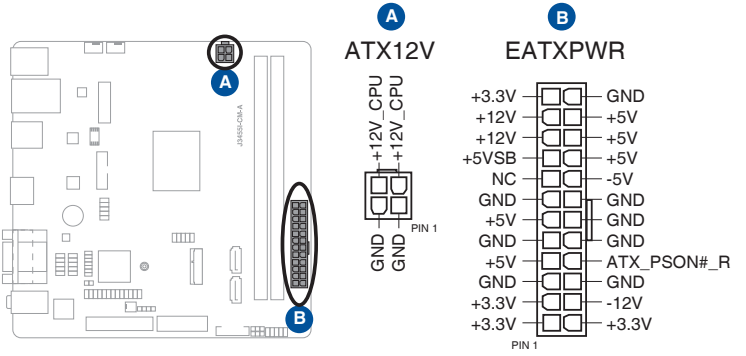
Connector type	Header 2x5p, K9, 2.54mm pitch

CAUTION! Never connect a 1394 cable to the USB headers. Doing so will damage the motherboard.

NOTE: The USB cables are purchased separately.

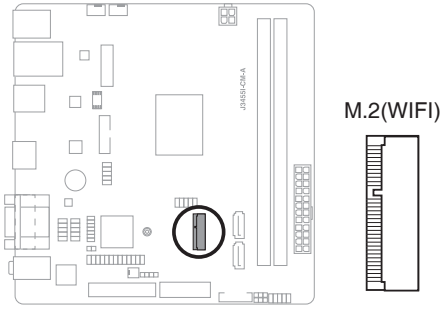
4. ATX power connectors (24-pin EATXPWR, 4-pin ATX12V)

Correctly orient the ATX power supply plugs into these connectors and push down firmly until the connectors completely fit.



5. M.2 Wi-Fi

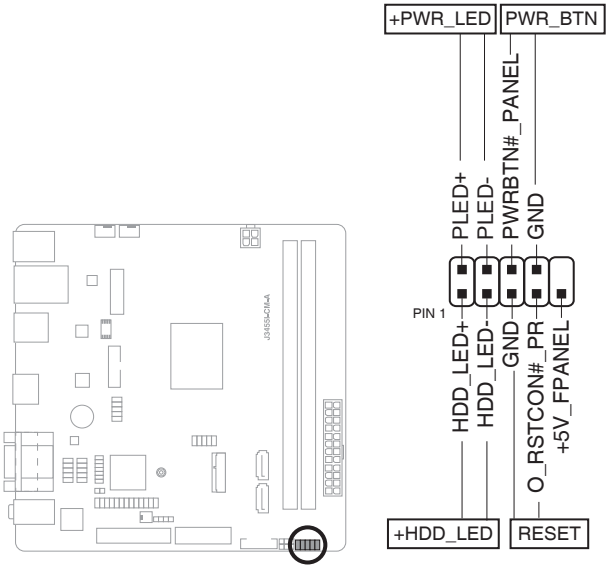
This socket connects to an M.2 Wi-Fi device.



NOTE: The M.2 Wi-Fi module is purchased separately.

6. Front panel system panel header (10-1 pin F_PANEL)

This header supports several chassis-mounted functions.



Connector type	Header 2x5p, K10, 2.54mm pitch

- **System power LED (2-pin +PWR_LED)**

  This 2-pin header is for the system power LED. Connect the chassis power LED cable to this header. The system power LED lights up when you turn on the system power, and blinks when the system is in sleep mode.

- **Hard disk drive activity LED (2-pin +HDD_LED)**

  This 2-pin header is for the HDD Activity LED. Connect the HDD Activity LED cable to this header. The IDE LED lights up or flashes when data is read from or written to the HDD.

- **ATX power button/soft-off button (2-pin PWR_BTN)**

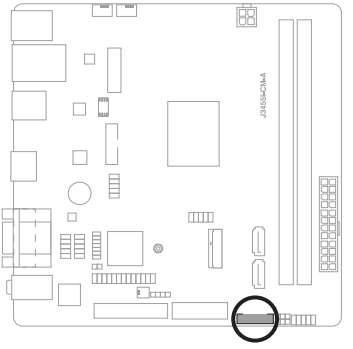
  This 2-pin header is for the system power button.

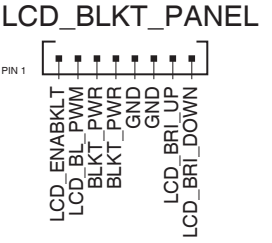
- **Reset button (2-pin RESET)**

  This 2-pin header is for the chassis-mounted reset button for system reboot without turning off the system power.

7. Flat panel display brightness header (8-pin LCD_BLKT_PANEL)

This header is for the LCD panel brightness controls.

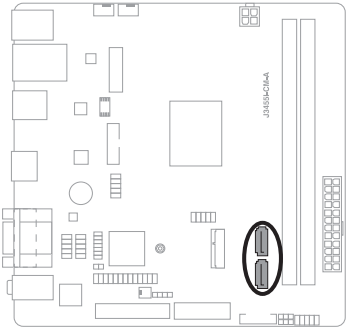


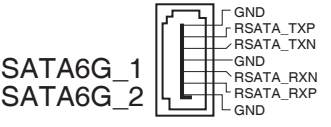


Connector type	WAFER 6p, 2.0mm pitch

8. Serial ATA 6.0Gb/s connectors (7-pin SATA6G_1/2)

These connectors connect to Serial ATA 6.0 Gb/s hard disk drives or an optical drive via Serial ATA 6.0 Gb/s signal cables.

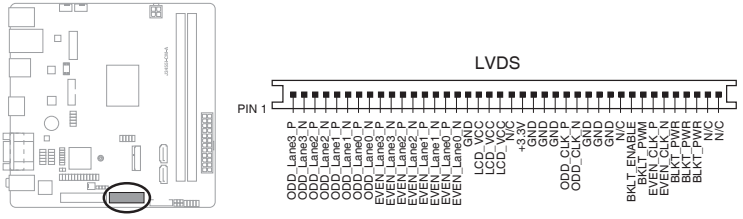




Connector type	WAFER HD 7p, 1.27mm pitch

9. LVDS connector (40-pin LVDS)

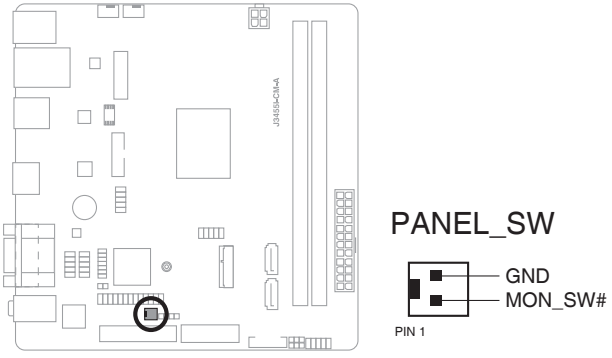
This connector is for an LCD monitor that supports Low Voltage Differential Signalling (LVDS) interface.



Connector type	WAFER HD 2x15p, 1.25mm pitch

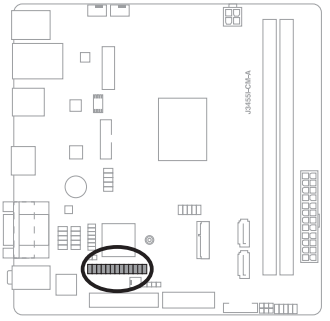
10. Panel switch (2-pin PANEL_SW)

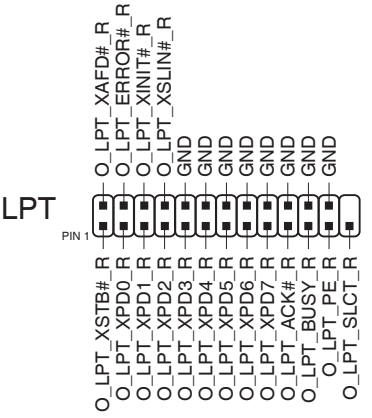
This 2-pin header is for connecting a monitor switch that can turn off the LCD panel display backlight.



11. LPT header (26-1 pin LPT)

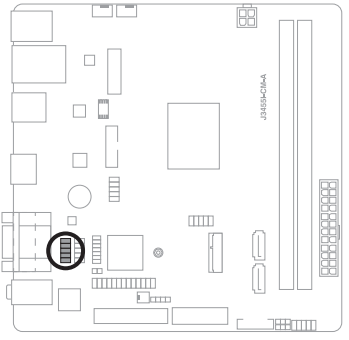
The LPT (Line Printing Terminal) header supports devices such as a printer. LPT is standardized as IEEE 1284, which is the parallel port interface on IBM PC-compatible computers.

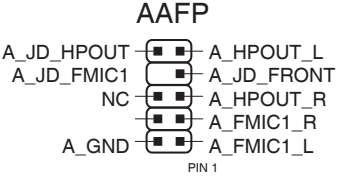




12. Front panel audio header (10-1 pin AAFP)

This header is for a chassis-mounted front panel audio I/O module that supports HD Audio standard. Connect one end of the front panel audio I/O module cable to this header.





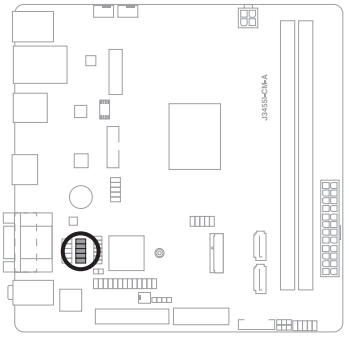
Connector type	HEADER 2x5p, K8, 2.54mm pitch

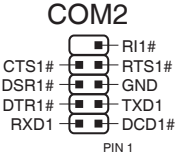
IMPORTANT!

- We recommend that you connect a high-definition front panel audio module to this header to avail of the motherboard's high-definition audio capability.
- If you want to connect a high-definition front panel audio module to this header, set the HD Audio Controller item in the BIOS setup to [Enabled].

13. Serial port header (10-pin COM2)

This header is for a serial (COM) port. Connect the serial port cable to this header, then install the module to a slot opening at the back of the system chassis.



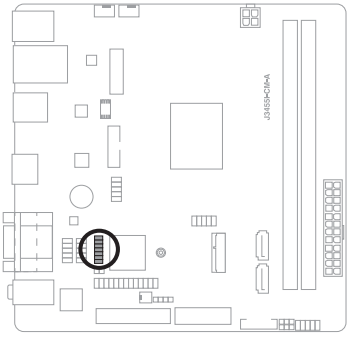


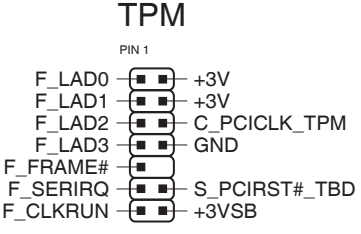
Connector type	BOX header 2x5p, K10, 2.54mm pitch

NOTE: The serial port cable is purchased separately.

14. TPM header (14-1 pin TPM)

This header supports a Trusted Platform Module (TPM) system, which can securely store keys, digital certificates, passwords and data. A TPM system also enhances network security, protects digital identities, and ensures platform integrity.





Connector type	Header 2x7p, K14, 2.0mm pitch

Chapter 3
BIOS setup

Scan the QR code to view the BIOS update guide.

3.1 BIOS setup program

Use the BIOS Setup program to update the BIOS or configure its parameters. The BIOS screens include navigation keys and brief online help to guide you in using the BIOS Setup program.

Entering BIOS Setup at startup

To enter BIOS Setup at startup:

Press <Delete> or <F2> during the Power-On Self Test (POST). If you do not press <Delete> or <F2>, POST continues with its routines.

Entering BIOS Setup after POST

To enter BIOS Setup after POST:

- Press **<Ctrl>**+**<Alt>**+**<Del>** simultaneously.
- Press the reset button on the system chassis.
- Press the power button to turn the system off then back on. Do this option only if you failed to enter BIOS Setup using the first two options.

Using the power button, reset button, or the <Ctrl>+<Alt>+<Del> keys to reboot a running operating system can cause damage to your data or system. Always shut down the system properly from the operating system.

- Visit the ASUS website at www.asus.com to download the latest BIOS file for this motherboard.
- The default BIOS settings for this motherboard apply to most working conditions and ensures optimal performance. If the system becomes unstable after changing any BIOS settings, load the default settings to regain system stability. Select the option **Restore Defaults** under the Exit Menu or press hotkey F3.
- The BIOS setup screens shown in this section are for reference purposes only, and may not exactly match what you see on your screen.

Menu bar

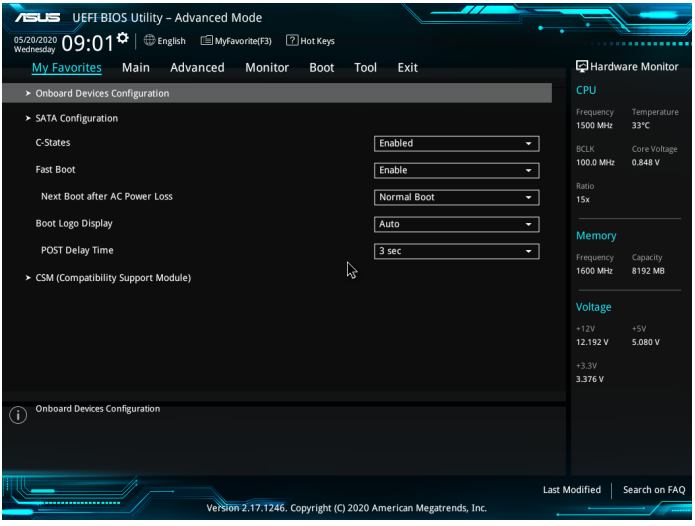
The menu bar on top of the screen has the following main items:

My Favorites	For saving the frequently-used system settings and configuration
Main	For changing the basic system configuration
Advanced	For changing the advanced system settings
Monitor	For displaying the system temperature, power status, and changing the fan settings
Boot	For changing the system boot configuration
Tool	For configuring options for special functions
Exit	For selecting the exit options and loading default settings

To select an item on the menu bar, press the right or left arrow key on the keyboard until the desired item is highlighted.

3.2 My Favorites

MyFavorites is your personal space where you can easily save and access your favorite BIOS items.



Adding items to My Favorites

To add frequently-used BIOS items to My Favorites:

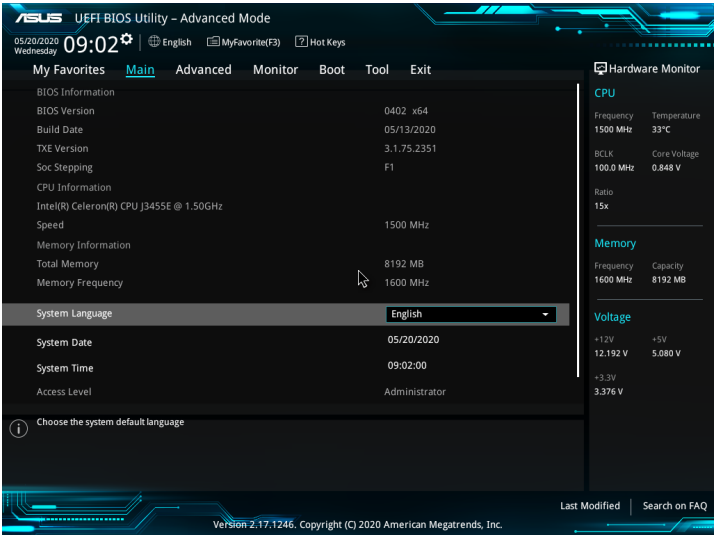
1. Use the arrow keys to select an item that you want to add. When using a mouse, hover the pointer to the item.
2. Press <F4> on your keyboard or right-click on your mouse to add the item to My Favorites page.

You cannot add the following items to My Favorites:

- Items with submenu options
- User-configurable items such as language and boot device order
- Configuration items such as Memory SPD Information, system time and date

3.3 Main menu

The Main menu screen appears when you enter the Advanced Mode of the BIOS Setup program. The Main menu provides you an overview of the basic system information, and allows you to set the system date, time, language, and security settings.



3.3.1 System Language [English]

Allows you to choose the BIOS language version from the options. Configuration options: [English] [Français] [Deutsch] [简体中文] [繁體中文] [日本語] [Español] [Русский] [한국어]

3.3.2 System Date [Day xx/xx/xxxx]

Allows you to set the system date.

3.3.3 System Time [xx:xx:xx]

Allows you to set the system time.

3.3.4 Security

The Security menu items allow you to change the system security settings.

Administrator Password

If you have set an administrator password, we recommend that you enter the administrator password for accessing the system. Otherwise, you might be able to see or change only selected fields in the BIOS setup program.

To set an administrator password:

- If you have forgotten your BIOS password, erase the CMOS Real Time Clock (RTC) RAM to clear the BIOS password.
- The **Administrator** or **User Password** items on top of the screen show the default **Not Installed**. After you set a password, these items show **Installed**.

1. Select the **Administrator Password** item and press <Enter>.
2. From the **Create New Password** box, key in a password, then press <Enter>.
3. Confirm the password when prompted.

To change an administrator password:

1. Select the **Administrator Password** item and press <Enter>.
2. From the **Enter Current Password** box, key in the current password, then press <Enter>.
3. From the **Create New Password** box, key in a new password, then press <Enter>.
4. Confirm the password when prompted.

To clear the administrator password, follow the same steps as in changing an administrator password, but press <Enter> when prompted to create/confirm the password. After you clear the password, the **Administrator Password** item on top of the screen shows **Not Installed**.

User Password

If you have set a user password, you must enter the user password for accessing the system. The **User Password** item on top of the screen shows the default **Not Installed**. After you set a password, this item shows **Installed**.

To set a user password:

1. Select the **User Password** item and press <Enter>.
2. From the **Create New Password** box, key in a password, then press <Enter>.
3. Confirm the password when prompted.

To change a user password:

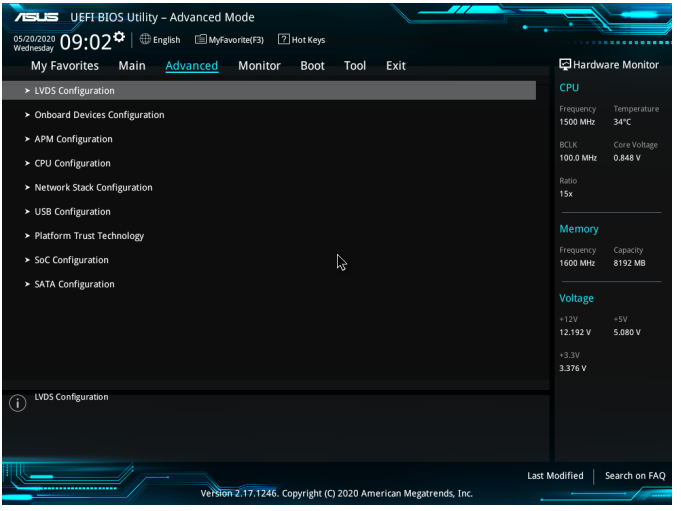
1. Select the **User Password** item and press <Enter>.
2. From the **Enter Current Password** box, key in the current password, then press <Enter>.
3. From the **Create New Password** box, key in a new password, then press <Enter>.
4. Confirm the password when prompted.

To clear the user password, follow the same steps as in changing a user password, but press <Enter> when prompted to create/confirm the password. After you clear the password, the **User Password** item on top of the screen shows **Not Installed**.

3.4 Advanced menu

The Advanced menu items allow you to change the settings for the CPU and other system devices.

Be cautious when changing the settings of the Advanced menu items. Incorrect field values can cause the system to malfunction.



3.4.1 LVDS Configuration

The items in this menu show the LVDS-related information that the BIOS automatically detects.

IGD Flat Panel [Auto]

Allows you to enable or disable IGD video output to onboard LVDS. Configuration options: [Auto] [Disable] [Enabled]

All-in-One Chassis [Auto (19.5\x22]

Allows you to select All-in-One (AiO) chassis (if applicable) for simplified AiO configuration. Configuration options: [None] [ECS (21.5\x22)] [Mitac Maestro (21.5\x22)] [Gigabyte (18.5\x22)] [LP-215x (21.5\x22)] [Wibtek A21 (21.5\x22)] [Wibtek A23 (23.6\x22)] [Jumper Sail (21.5\x22)] [Pixxo HP-A206D (21.5\x22)] [22AM33NB (21.5\x22)] [AUO (19.5\x22)]

Improper selection of AiO chassis may result in incorrect operation or potential damage to AiO chassis hardware.

EDID Data Source [Flat Panel Display]

Allows you to select the EDID data source. Configuration options: [Pre-defined] [Flat Panel Display]

Inverter Polarity [Normal]

Allows you to select the inverter board polarity. Configuration options: [Inverted] [Normal]

Screen Brightness [Neutral]

Allows you to select screen brightness. Configuration options: [Dimmest] [Dimmer] [Dim] [Neutral] [Bright] [Brighter] [Brightest]

Channel Select [Normal]

Allows you to select the channel. Configuration options: [Dual Channel] [Single Channel]

Mode Select [Normal]

Allows you to select the mode. Configuration options: [8bit Mode (JEIDA)] [8bit Mode (VESA)] [6bit Mode (VESA and JEIDA)]

Panel Power Sequence Control [Enabled]

Allows you to enable or disable panel power sequence control. Configuration options: [Enabled] [Disabled]

Panel_Vcc ON to Video_Data ON (T8) [20ms]

Allows you to select the Panel_Vcc ON to Video_Data ON (T8). Configuration options: [10ms] [20ms] [30ms] [40ms]

Video_Data ON to BKLT_PWM ON (T9) [250ms]

Allows you to select the Video_Data ON to BKLT_PWM ON (T9). Configuration options: [100ms] [200ms] [250ms] [300ms]

BKLT_PWM ON to BKLT_Enable ON (T10) [15ms]

Allows you to select the BKLT_PWM ON to BKLT_Enable ON (T10). Configuration options: [10ms] [15ms] [20ms] [25ms]

BKLT_Enable OFF to BKLT_PWM OFF (T11) [10ms]

Allows you to select the BKLT_Enable OFF to BKLT_PWM OFF (T11). Configuration options: [5ms] [10ms] [15ms] [20ms]

BKLT_PWM OFF to Video_Data OFF (T12) [250ms]

Allows you to select the BKLT_PWM OFF to Video_Data OFF (T12). Configuration options: [100ms] [200ms] [250ms] [300ms]

Video_Data OFF to Panel_Vcc OFF (T13) [20ms]

Allows you to select the Video_Data OFF to Panel_Vcc OFF (T13). Configuration options: [10ms] [20ms] [30ms] [40ms]

Min Panel_Vcc OFF Time (T15) [600ms]

Allows you to select the minimum Panel_Vcc OFF time (T15). Configuration options: [600ms] [700ms] [800ms] [1000ms]

LVDS Spread Spectrum Control [+/-0.5%% Center Spread]

Allows you to configure the LVDS spread spectrum clocking. Configuration options: [Disabled] [+/- 1%% Center Spread] [+/- 0.5%% Center Spread]

3.4.2 Onboard Devices Configuration

HD Audio Controller [Enabled]

[Enabled] Enables the HD Audio Device.

[Disabled] Disables the HD Audio Device.

The following item appears only when you set the **HD Audio Controller** item to [Enabled].

Front Panel Type [HD]

Allows you to set the front panel audio connector (AAFP) mode to legacy AC'97 or high-definition audio depending on the audio standard that the front panel audio module supports.

[HD] Sets the front panel audio connector (AAFP) mode to high definition audio.

[AC97] Sets the front panel audio connector (AAFP) mode to legacy AC'97

Asmedia USB 3.0 Controller [Enabled]

Allows you to enable or disable the Asmedia USB 3.0 controller. Configuration options: [Enabled] [Disabled]

The following two items appear only when you set the **Asmedia USB 3.0 Controller** item to [Enabled].

U32G1_E1 [Enabled]

[Enabled] Enables U32G1_E1 port.

[Disabled] Disables U32G1_E1 port.

U32G1_E2 [Enabled]

[Enabled] Enables U32G1_E2 port.

[Disabled] Disables U32G1_E2 port.

Realtek LAN Controller [On]

[On] Enables the Realtek LAN controller.

[Off] Disables the controller.

Realtek PXE Option ROM [Off]

This item appears only when you set the previous item to [On] and allows you to enable or disable the PXE OptionRom of the Realtek LAN controller. Configuration options: [On] [Off]

Serial Port Configuration

The sub-items in this menu allow you to set the serial port configuration.

Serial Port [On]

Allows you to enable or disable the serial port (COM). Configuration options: [On] [Off]

Change Settings [IO=3F8h; IRQ=4]

Allows you to select the Serial Port base address. Configuration options: [IO=3F8h; IRQ=4] [IO=2F8h; IRQ=3] [IO=3E8h; IRQ=4] [IO=2E8h; IRQ=3]

Serial Port 1 Configuration

The sub-items in this menu allow you to set the serial port configuration.

Serial Port [On]

Allows you to enable or disable the serial port (COM). Configuration options: [On] [Off]

Change Settings [IO=3F8h; IRQ=4]

Allows you to select the Serial Port base address. Configuration options: [IO=3F8h; IRQ=4] [IO=2F8h; IRQ=3] [IO=3E8h; IRQ=4] [IO=2E8h; IRQ=3]

Parallel Port Configuration

The sub-items in this menu allow you to set the parallel port configuration.

Parallel Port [On]

Allows you to enable or disable the parallel port (LPT/LPTE). Configuration options: [On] [Off]

Change Settings [Auto]

Allows you to select an optimal setting for Super I/O devices. Configuration options: [Auto] [IO=378h; IRQ=5;] [IO=378h; IRQ=5, 6, 7, 9, 10, 11, 12;] [IO=278h; IRQ=5, 6, 7, 9, 10, 11, 12;] [IO=3BCh; IRQ=5, 6, 7, 9, 10, 11, 12;]

Device Mode [STD Printer Mode]

Allows you to select the Printer Port mode. Configuration options: [STD Printer Mode] [SPP Mode] [EPP-1.9 and SPP Mode] [EPP-1.7 and SPP Mode] [ECP Mode] [ECP and EPP 1.9 Mode] [ECP and EPP 1.7 Mode]

3.4.3 APM

ErP Ready [Disabled]

Allows BIOS to switch off some power at S4/S5 to get the system ready for ErP requirement. When enabled, all other PME options will be switched off. Configuration options: [Disabled] [Enable(S4+S5)] [Enable(S5)]

Restore AC Power Loss [Power Off]

[Power On]	The system goes into on state after an AC power loss.
[Power Off]	The system goes into off state after an AC power loss.
[Last State]	The system goes into either off or on state, whatever the system state was before the AC power loss.

Power On By PCI-E [Disabled]

[Disabled]	Disables the PCI-E devices to generate a wake-on-LAN feature of the Intel®/Realtek LAN device.
[Enabled]	Enables the PCI-E devices to generate a wake-on-LAN feature of the Intel®/ Realtek LAN device.

Power On By RTC [Disabled]

[Disabled] Disables RTC to generate a wake event.

[Enabled] When set to [Enabled], the items RTC Alarm Date (Days) and Hour/Minute/Second will become user-configurable with set values.

3.4.4 CPU Configuration

The items in this menu show the CPU-related information that the BIOS automatically detects.

The items shown in the submenu may be different due to the CPU you installed.

Intel Virtualization Technology [Disabled]

[Disabled] Disables this function.

[Enabled] Allows a hardware platform to run multiple operating systems separately and simultaneously, enabling one system to virtually function as several systems.

VT-d [Enabled]

Allows you to enable the virtualization technology function on the memory controller hub (MCH). Configuration options: [Enabled] [Disabled]

PPM Configuration

The sub-items in this menu allow you to set the PPM configuration parameters.

EIST [Enabled]

When enabled, it allows the system operation system to dynamically adjust the processor voltage and core frequency, which will lead to decreased average power consumption and heat production.

[Disabled] The CPU runs at its default speed.

[Enabled] The operating system controls the CPU speed.

Turbo Mode [Enabled]

Allows you to set the processor cores to run faster than the marked frequency in a specific condition. Configuration options: [Enabled] [Disabled]

Turbo Mode is only available on selected CPU models only.

CPU C states [Enabled]

[Auto] Automatic configuration.

[Enabled] Enables the CPU C states.

[Disabled] Disables the CPU C states.

The following item appears only when you set the CPU C states to **[Enabled]**.

Enhanced C-state [Enabled]

[Enabled] Enables enhanced C-state.

[Disabled] Disables enhanced C-state.

Max package C State Support [Auto]

Allows you to control the maximum Package C State that the processor supports. Configuration options: [PC2] [PC1] [C0]

Max Core C State Support [Core C6]

Allows you to control the maximum Core C State that the processors support. Configuration options: [Fused value] [Core C10] [Core C9] [Core C8] [Core C7] [Core C6] [Core C1] [Unlimited]

3.4.5 Network Stack Configuration

Network Stack [Disabled]

This item allows user to disable or enable the UEFI network stack. Configuration options: [Disabled] [Enabled]

The following two items appear only when you set the previous item to [Enabled].

Ipv4 PXE Support [Enabled]

This item allows user to disable or enable the Ipv4 PXE Boot support. Configuration options: [Disabled] [Enabled]

Ipv6 PXE Support [Enabled]

This item allows user to disable or enable the Ipv6 PXE Boot support. Configuration options: [Disabled] [Enabled]

3.4.6 USB Configuration

The items in this menu allow you to change the USB-related features.

The USB Devices item shows the auto-detected values. If no USB device is detected, the item shows None.

Legacy USB Support [Enabled]

[Enabled] Enables the support for USB devices on legacy operating systems (OS).

[Disabled] The USB devices can be used only for the BIOS setup program.

[Auto] Allows the system to detect the presence of USB devices at startup. If detected, the USB controller legacy mode is enabled. If no USB device is detected, the legacy USB support is disabled.

EHCI Hand-off [Disabled]

[Enabled] Enables the support for operating systems without an EHCI hand-off feature.

[Disabled] Disables the function.

USB Single Port Control

U32G1_1/2 [Enabled]

Allows you to enable or disable an individual USB port. Configuration options: [Enabled] [Disabled].

LAN_U32G1_3/4 [Enabled]

Allows you to enable or disable an individual USB port. Configuration options: [Enabled] [Disabled].

USBE12, USB5/6 [Enabled]

Allows you to enable or disable an individual USB port. Configuration options: [Enabled] [Disabled].

3.4.7 Platform Trust Technology

The items in this menu allow you to configure the Platform Trust Technology.

TPM Device Selection [Discrete TPM]

This item allows you to select the firmware TPM or discrete TPM.

[Firmware TPM]	Enables PTT in SkuMgr.
[Discrete TPM]	Disables PTT in SkuMgr.

When PTT or Discrete TPM is disabled, all the data saved on it will be cleared.

3.4.8 SoC Configuration

OS Selection [Windows]

This item allows you to select the target OS. Configuration options: [Windows] [Linux]

Intel IGD Configuration

This item allows you to select the target OS. Configuration options: [Windows] [Linux]

Primary Display [Auto]

Allows you to select which of the iGPU/PCIE Graphics device should be the Primary Display. Configuration options: [Auto] [iGD] [PCI-E]

RC6 (Render Standby) [Auto]

Allows you to enable or disable Intel® Graphics Render Standby support to reduce iGPU power use when the system is idle. Configuration options: [Disable] [Enable]

iGPU Memory [64M]

Allows you to select the amount of system memory allocated to DVMT 5.0 used by the iGPU. Configuration options: [64M] [96M] [128M] [160M] [192M] [224M] [256M] [288M] [320M] [352M] [384M] [416M] [448M] [512M] [1024M]

iGPU Multi-Monitor [Disable]

Allows you to enable the iGPU Multi-Monitor. Configuration options: [Disable] [Enable]

3.4.9 SATA Configuration

While entering Setup, the BIOS automatically detects the presence of SATA devices. The SATA Port items show Not Present if no SATA device is installed to the corresponding SATA port.

SATA Controller [Enable]

Allows you to enable or disable the chipset SATA controller. Configuration options: [Enable] [Disable]

Aggressive LPM Support [Disabled]

This item appears only when you set the previous item to [Enable] and is designed for LPM (link power management) support with a better energy saving condition. Configuration options: [Disabled] [Enabled]

S.M.A.R.T. Status Check [On]

S.M.A.R.T. (Self-Monitoring, Analysis and Reporting Technology) is a monitor system. When read/write of your hard disk errors occur, this feature allows the hard disk to report warning messages during the POST. Configuration options: [On] [Off]

SATA6G_1/2 (Gray) [Enabled]

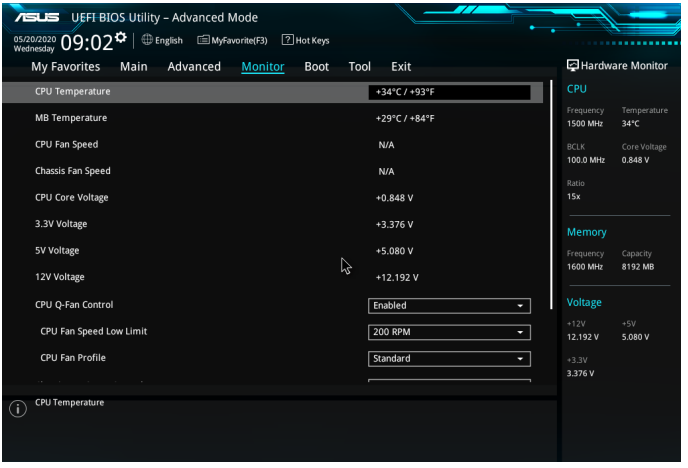
These items allow you to enable or disable SATA6G ports. Configuration options: [Disabled] [Enabled]

Hot Plug [Disabled]

These items appear only when you set the SATA6G_1/2 to [Enabled] and allow you to enable/disable SATA Hot Plug Support. Configuration options: [Disabled] [Enabled]

3.5 Monitor menu

The Monitor menu displays the system temperature/power status, and allows you to change the fan settings.



3.5.1 CPU/MB/ Temperature [xxxºC/xxxºF]

The onboard hardware monitor automatically detects and displays the CPU temperature. Select **Ignore** if you do not wish to display the detected temperature.

3.5.2 CPU / Chassis Fan Speed [xxxx RPM] or [Ignore] / [N/A]

The onboard hardware monitor automatically detects and displays the CPU / chassis fan speeds in rotations per minute (RPM). If the fan is not connected to the motherboard, the field shows N/A. Select Ignore if you do not wish to display the detected speed.

3.5.3 CPU Core Voltage, 3.3V Voltage, 5V Voltage, 12V Voltage

The onboard hardware monitor automatically detects the voltage output through the onboard voltage regulators. Select Ignore if you do not want to detect this item.

3.5.4 CPU Q-Fan Control [Enabled]

[Disabled] Disables the CPU Q-Fan control feature.

[Enabled] Enables the CPU Q-Fan control feature.

CPU Fan Speed Low Limit [200 RPM]

This item appears only when you enable the CPU Q-Fan Control feature and allows you to disable or set the CPU fan warning speed. Configuration options: [Ignore] [100RPM] [200RPM] [300 RPM] [400 RPM] [500 RPM]

CPU Fan Profile [Standard]

This item appears only when you enable the CPU Q-Fan Control feature and allows you to set the appropriate performance level of the CPU fan.

[Standard] Sets to [Standard] to make the CPU fan automatically adjust depending on the CPU temperature.

[Silent] Sets to [Silent] to minimize the fan speed for quiet CPU fan operation.

[Turbo] Sets to [Turbo] to achieve maximum CPU fan speed.

[Manual] Sets to [Manual] to assign detailed fan speed control parameters.

The following four items appear only when you set **CPU Fan Profile** to [Manual].

CPU Upper Temperature

Use the <+> and <-> keys to adjust the upper limit of the CPU temperature. The CPU fan will operate at the maximum duty cycle when the CPU temperature is higher than the limit.

CPU Fan Max. Duty Cycle(%)

Use the <+> and <-> keys to adjust the maximum CPU fan duty cycle. When the CPU temperature reaches the upper limit, the CPU fan will operate at the maximum duty cycle.

CPU Middle Temperature

Use the <+> and <-> keys to adjust the CPU middle temperature.

CPU Fan Middle. Duty Cycle(%)

Use the <+> or <-> keys to adjust the CPU fan middle duty cycle.

CPU Lower Temperature

Use the <+> or <-> keys to adjust the lower limit of the CPU temperature. The CPU fan will operate at the minimum duty cycle when the CPU temperature is lower than the limit.

CPU Fan Min. Duty Cycle(%)

Use the <+> and <-> keys to adjust the minimum CPU fan duty cycle. When the CPU temperature is lower than the lower limit, the CPU fan will operate at the minimum duty cycle.

3.5.5 Chassis Q-Fan Control [Enabled]

[Disabled] Disables the Chassis Q-Fan control feature.

[Enabled] Enables the Chassis Q-Fan control feature.

Chassis Fan Speed Low Limit [600 RPM]

This item appears only when you enable the Chassis Q-Fan Control feature and allows you to disable or set the chassis fan warning speed. Configuration options: [Ignore] [200RPM] [300 RPM] [400 RPM] [500 RPM] [600 RPM]

Chassis Fan Profile [Standard]

This item appears only when you enable the Chassis Q-Fan Control feature and allows you to set the appropriate performance level of the chassis fan.

[Standard] Sets to [Standard] to make the chassis fan automatically adjust depending on the chassis temperature.

[Silent] Sets to [Silent] to minimize the fan speed for quiet chassis fan operation.

[Turbo] Sets to [Turbo] to achieve maximum chassis fan speed.

[Manual] Sets to [Manual] to assign detailed fan speed control parameters.

The following items appear only when you set **Chassis Fan Profile** to **[Manual].**

Chassis Fan Upper Temperature

Use the <+> or <-> keys to adjust the upper limit of the Chassis Fan temperature. The Chassis Fan will operate at the maximum duty cycle when the temperature source is higher than the limit.

Chassis Fan Max. Duty Cycle (%)

Use the <+> or <-> keys to adjust the maximum Chassis Fan duty cycle. When the temperature source reaches the upper limit, the Chassis Fan will operate at the maximum duty cycle.

Chassis Fan Middle Temperature

Use the <+> or <-> keys to adjust the middle limit of the Chassis Fan temperature.

Chassis Fan Middle. Duty Cycle (%)

Use the <+> or <-> keys to adjust the Chassis Fan middle duty cycle.

Chassis Fan Lower Temperature

Use the <+> or <-> keys to adjust the lower limit of the Chassis Fan temperature. The Chassis Fan will operate at the minimum duty cycle when the temperature source is lower than the limit.

Chassis Fan Min. Duty Cycle(%)

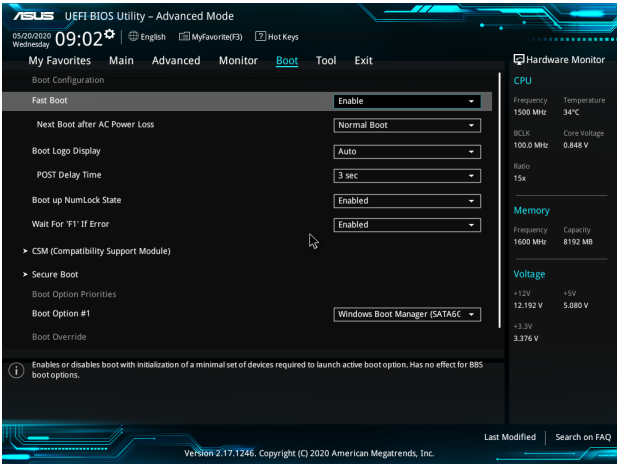
Use the <+> or <-> keys to adjust the minimum Chassis Fan duty cycle. When the temperature source is under the limit, the Chassis Fan will operate at the minimum duty cycle.

3.5.6 Chassis Intrude Detect Support [Off]

This item allows you to enable or disable the chassis intrusion detect function.
Configuration options: [On] [Off]

3.6 Boot menu

The Boot menu items allow you to change the system boot options.



3.6.1 Fast Boot [Enabled]

[Enabled] Select to accelerate the boot speed.

[Disabled] Select to go back to normal boot.

The following item appears when you set **Fast Boot** to [Enabled].

Next Boot after AC Power Loss [Normal Boot]

[Normal Boot] Returns to normal boot on the next boot after AC power loss.

[Fast Boot] Accelerates the boot speed on the next boot after AC power loss.

3.6.2 Boot Logo Display [Enabled]

[Auto] Adjusts logo automatically based on Windows® display requirements.

[Full Screen] Maximize the boot logo size.

[Disabled] Hide the logo during POST.

POST Delay Time [3 sec]

This item appears only when you set **Boot Logo Display** to [Enabled]. This item allows you to select the desired additional POST waiting time to easily enter the BIOS setup. You can only execute the POST delay time during Normal Boot. The values range from 0 to 10 seconds.

This feature will only work under normal boot.

Post Report [5 sec]

This item appears only when you set **Boot Logo Display** to [Disabled]. This item allows you to select a desired post report waiting time. Configuration options: [1 sec] ~ [10 sec] [Until Press ESC].

3.6.3 Bootup NumLock State [On]

[On] Sets the power-on state of the NumLock to [On].

[Off] Sets the power-on state of the NumLock to [Off].

3.6.4 Wait for 'F1' If Error [Enabled]

When this item is set to [Enabled], the system waits for the F1 key to be pressed when error occurs. Configuration options: [Disabled] [Enabled]

3.6.5 CSM (Compatibility Support Module)

Allows you to configure the CSM (Compatibility Support Module) items to fully support the various VGA, bootable devices and add-on devices for better compatibility.

Launch CSM [Enabled]

[Auto] The system automatically detects the bootable devices and the add-on devices.

[Enabled] For better compatibility, enable the CSM to fully support the non-UEFI driver add-on devices or the Windows® UEFI mode.

[Disabled] Disable the CSM to fully support the Windows® Security Update and Security Boot.

The following four items appear when you set Launch CSM to [Enabled].

Boot Devices Control [UEFI and L...]

Allows you to select the type of devices that you want to boot up. Configuration options: [UEFI and Legacy OPROM] [Legacy OPROM only] [UEFI only]

Boot from Network Devices [Legacy OPR...]

Allows you to select the type of network devices that you want to launch. Configuration options: [Legacy OPROM first] [UEFI driver first] [Ignore]

Boot from Storage Devices [Legacy OPR...]

Allows you to select the type of storage devices that you want to launch. Configuration options: [Both, Legacy OPROM first] [Both, UEFI first] [Legacy OPROM first] [UEFI driver first] [Ignore]

Boot from PCI-E Expansion Devices [Legacy OPR...]

Allows you to select the type of PCIe/PCI expansion devices that you want to launch. Configuration options: [Legacy OPROM first] [UEFI driver first]

3.6.6 Secure Boot

Allows you to configure the Windows® Secure Boot settings and manage its keys to protect the system from unauthorized access and malwares during POST.

OS Type [Windows UEFI mode]

Allows you to select your installed operating system.

[Windows UEFI mode] Executes the Microsoft® Secure Boot check. Only select this option when booting on Windows® UEFI mode or other Microsoft® Secure Boot compliant OS.

[Other OS] Get the optimized function when booting on Windows® non-UEFI mode, Windows® Vista/XP, or other Microsoft® Secure Boot non-compliant OS. Only on Windows® UEFI mode that Microsoft® Secure Boot can function properly.

The following item appears when **OS Type** is set to [**Windows UEFI mode**].

Key Management

This item appears only when you set OS Type to [Windows UEFI mode]. It allows you to manage the Secure Boot keys.

Clear Secure Boot keys

This item appears only when you load the default Secure Boot keys. This item allows you to clear all default Secure Boot keys.

Save Secure Boot keys

This item appears only when you load the default Secure Boot keys. This item allows you to save all default Secure Boot keys.

PK Management

The Platform Key (PK) locks and secures the firmware from any non-permissible changes. The system verifies the PK before your system enters the OS.

Delete PK
Allows you to delete the PK from your system. Once the PK is deleted, all the system's Secure Boot keys will not be active. Configuration options: [Yes] [No]

Load PK from File
Allows you to load the downloaded PK from a USB storage device.

The PK file must be formatted as a UEFI variable structure with time-based authenticated variable.

KEK Management

The KEK (Key-exchange Key or Key Enrollment Key) manages the Signature database (db) and Revoked Signature database (dbx).

Key-exchange Key (KEK) refers to Microsoft® Secure Boot Key-Enrollment Key (KEK).

Delete the KEK
Allows you to delete the KEK from your system. Configuration options: [Yes] [No]

Load KEK from File
Allows you to load the downloaded KEK from a USB storage device.

Append KEK from file
Allows you to load the additional KEK from a storage device for an additional db and dbx loaded management.

The KEK file must be formatted as a UEFI variable structure with time-based authenticated variable.

DB Management

The db (Authorized Signature database) lists the signers or images of UEFI applications, operating system loaders, and UEFI drivers that you can load on the single computer.

Delete the db
Allows you to delete the db file from your system. Configuration options: [Yes] [No]

Load db from File
Allows you to load the downloaded db from a USB storage device.

Append db from file
Allows you to load the additional db from a storage device so that more images can be loaded securely.

The DB file must be formatted as a UEFI variable structure with time-based authenticated variable.

DBX Management

The dbx (Revoked Signature database) lists the forbidden images of db items that are no longer trusted and cannot be loaded.

Delete the DBX
Allows you to delete the DBX file from your system. Configuration options: [Yes] [No]

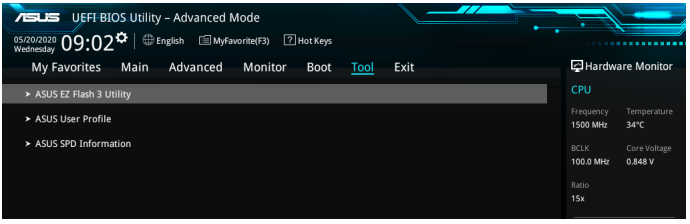
Load DBX from File
Allows you to load the downloaded DBX from a USB storage device.

Append DBX from file
Allows you to load the additional DBX from a storage device so that more db's images cannot be loaded.

The DBX file must be formatted as a UEFI variable structure with time-based authenticated variable.

3.7 Tool menu

The Tool menu items allow you to configure options for special functions. Select an item then press <Enter> to display the submenu.



3.7.1 ASUS EZ Flash 3 Utility

Allows you to run ASUS EZ Flash 3. Press [Enter] to launch the ASUS EZ Flash 3 screen.

3.7.2 ASUS User Profile

This item allows you to store or load multiple BIOS settings.

The user profile status items show Not Assigned if no profile is created.

Profile Name

Allows you to key in a profile name.

Save to Profile

Allows you to save the current BIOS settings to the BIOS Flash, and create a profile. Key in a profile number from one to eight, press <Enter>, and then select **Yes**.

Load/Save Profile from/to USB Drive

Allows you to load the previous profiles saved in the BIOS Flash or save profiles to a USB drive. Key in the profile number that saved your CMOS settings, press <Enter>, and then select **Yes**.

- DO NOT shut down or reset the system while updating the BIOS to prevent the system boot failure!
- We recommend that you update the BIOS file only coming from the same memory/ CPU configuration and BIOS version.

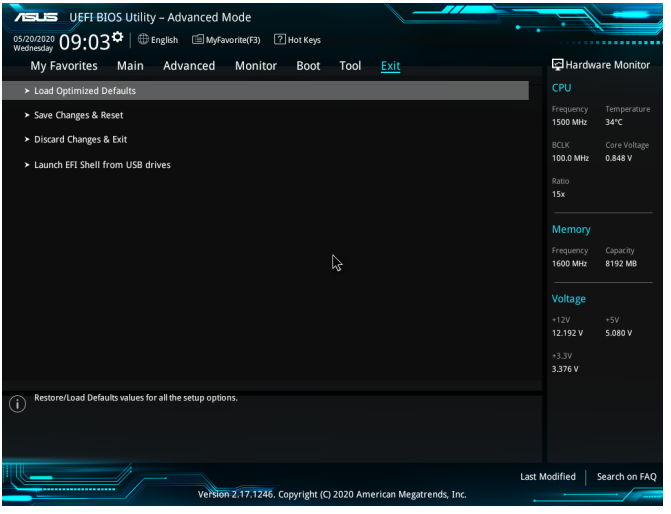
3.7.3 ASUS SPD Information

DIMM Slot Number [DIMM_A2]

Displays the Serial Presence Detect (SPD) information of the DIMM module installed on the selected slot. Configuration options: [DIMM_A1] [DIMM_B1]

3.8 Exit menu

The Exit menu items allow you to load the optimal default values for the BIOS items, and save or discard your changes to the BIOS items. You can access the EZ Mode from the Exit menu.



Load Optimized Defaults

This option allows you to load the default values for each of the parameters on the Setup menus. When you select this option or if you press <F5>, a confirmation window appears. Select Yes to load the default values.

Save Changes & Reset

Once you are finished making your selections, choose this option from the Exit menu to ensure the values you selected are saved. When you select this option or if you press <F10>, a confirmation window appears. Select Yes to save changes and exit.

Discard Changes & Exit

This option allows you to exit the Setup program without saving your changes. When you select this option or if you press <Esc>, a confirmation window appears. Select Yes to discard changes and exit.

Launch EFI Shell from filesystem device

This option allows you to attempt to launch the EFI Shell application (shellx64.efi) from one of the available devices that have a filesystem.

Appendix

Notices

FCC Compliance Information

Responsible Party:	Asus Computer International
Address:	48720 Kato Rd., Fremont, CA 94538, USA
Phone / Fax No:	(510)739-3777 / (510)608-4555

This device complies with part 15 of the FCC Rules. 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 the 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 into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Compliance Statement of Innovation, Science and Economic Development Canada (ISED)

This device complies with Innovation, Science and Economic Development Canada licence exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

CAN ICES-003(B)/NMB-003(B)

Déclaration de conformité de Innovation, Sciences et Développement économique Canada (ISED)

Le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

CAN ICES-003(B)/NMB-003(B)

VCCI: Japan Compliance Statement

Class B ITE

この装置は、クラスＢ情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。

取扱説明書に従って正しい取り扱いをして下さい。

ＶＣＣＩ－Ｂ

KC: Korea Warning Statement

B급 기기 (가정용 방송통신기자재)
이 기기는 가정용(B급) 전자파적합기기로서 주로 가정에서 사용하는 것을 목적으로 하며, 모든 지역에서 사용할 수 있습니다.

HDMI Compliance Statement

The terms HDMI, HDMI High-Definition Multimedia Interface, and the HDMI Logo are trademarks or registered trademarks of HDMI Licensing Administrator, Inc.

Google™ License Terms

Declaration of compliance for product environmental regulation

ASUS follows the green design concept to design and manufacture our products, and makes sure that each stage of the product life cycle of ASUS product is in line with global environmental regulations. In addition, ASUS disclose the relevant information based on regulation requirements.

Please refer to http://csr.asus.com/Compliance.htm for information disclosure based on regulation requirements ASUS is complied with:

EU REACH and Article 33

Complying with the REACH (Registration, Evaluation, Authorisation, and Restriction of Chemicals) regulatory framework, we published the chemical substances in our products at ASUS REACH website at http://csr.asus.com/english/REACH.htm.

EU RoHS

This product complies with the EU RoHS Directive. For more details, see http://csr.asus.com/english/article.aspx?id=35

India RoHS

This product complies with the “India E-Waste (Management) Rules, 2016” and prohibits use of lead, mercury, hexavalent chromium, polybrominated biphenyls (PBBs) and polybrominated diphenyl ethers (PBDEs) in concentrations exceeding 0.1% by weight in homogenous materials and 0.01% by weight in homogenous materials for cadmium, except for the exemptions listed in Schedule II of the Rule.

Vietnam RoHS

ASUS products sold in Vietnam, on or after September 23, 2011,meet the requirements of the Vietnam Circular 30/2011/TT-BCT.

Các sản phẩm ASUS bán tại Việt Nam, vào ngày 23 tháng 9 năm2011 trở về sau, đều phải đáp ứng các yêu cầu của Thông tư 30/2011/TT-BCT của Việt Nam.

Turkey RoHS

AEEE Yönetmeliğine Uygundur

ASUS Recycling/Takeback Services

ASUS recycling and takeback programs come from our commitment to the highest standards for protecting our environment. We believe in providing solutions for you to be able to responsibly recycle our products, batteries, other components as well as the packaging materials. Please go to http://csr.asus.com/english/Takeback.htm for detailed recycling information in different regions.

DO NOT throw the motherboard in municipal waste. This product has been designed to enable proper reuse of parts and recycling. This symbol of the crossed out wheeled bin indicates that the product (electrical and electronic equipment) should not be placed in municipal waste. Check local regulations for disposal of electronic products.

DO NOT throw the mercury-containing button cell battery in municipal waste. This symbol of the crossed out wheeled bin indicates that the battery should not be placed in municipal waste.

Regional notice for California

WARNING

Cancer and Reproductive Harm -
www.P65Warnings.ca.gov

Service and Support

Visit our multi-language website at https://www.asus.com/support/