Thank you for purchasing the MSI® motherboard **H110M PRO-VD/ H110M PRO-VH/ H110M PRO-D**. This User Guide gives information about board layout, component overview and BIOS setup.

Contents

Safety Information

- The components included in this package are prone to damage from electrostatic discharge (ESD). Please adhere to the following instructions to ensure successful computer assembly.
- Ensure that all components are securely connected. Loose connections may cause the computer to not recognize a component or fail to start.
- Hold the motherboard by the edges to avoid touching sensitive components.
- It is recommended to wear an electrostatic discharge (ESD) wrist strap when handling the motherboard to prevent electrostatic damage. If an ESD wrist strap is not available, discharge yourself of static electricity by touching another metal object before handling the motherboard.
- Store the motherboard in an electrostatic shielding container or on an anti-static pad whenever the motherboard is not installed.
- Before turning on the computer, ensure that there are no loose screws or metal components on the motherboard or anywhere within the computer case.
- Do not boot the computer before installation is completed. This could cause permanent damage to the components as well as injury to the user.
- If you need help during any installation step, please consult a certified computer technician.
- Always turn off the power supply and unplug the power cord from the power outlet before installing or removing any computer component.
- Keep this user guide for future reference.
- Keep this motherboard away from humidity.
- Make sure that your electrical outlet provides the same voltage as is indicated on the PSU, before connecting the PSU to the electrical outlet.
- Place the power cord such a way that people can not step on it. Do not place anything over the power cord.
- All cautions and warnings on the motherboard should be noted.
- If any of the following situations arises, get the motherboard checked by service personnel:
  - ▸ Liquid has penetrated into the computer.
  - ▸ The motherboard has been exposed to moisture.
  - ▸ The motherboard does not work well or you can not get it work according to user guide.
  - ▸ The motherboard has been dropped and damaged.
  - ▸ The motherboard has obvious sign of breakage.
- Do not leave this motherboard in an environment above 60°C (140°F), it may damage the motherboard.

Specifications

CPU	Supports 6th Gen Intel® Core™ i3/i5/i7 processors, and Intel® Pentium® and Celeron® processors for Socket LGA1151
Chipset	• Intel® H110 Chipset
Memory	• 2x DDR4 memory slots, support up to 32GB 　▶ Supports DDR4 2133 MHz • Dual channel memory architecture • Supports non-ECC, un-buffered memory • Supports Intel® Extreme Memory Profile (XMP)
Expansion Slots	• 1x PCIe 3.0 x16 slot • 2x PCIe 2.0x1 slots
Onboard Graphics	• 1x HDMI™ port, supports a maximum resolution of 4096x2160@24Hz, 2560x1600@60Hz (H110M PRO-VH) • 1x DVI-D port, supports a maximum resolution of 1920x1200@60Hz (H110M PRO-VD/ H110M PRO-D) • 1x VGA port, supports a maximum resolution of 2048x1536@50Hz, 2048x1280@60Hz, 1920x1200@60Hz (H110M PRO-VH/ H110M PRO-VD)
Storage	Intel® H110 Chipset • 4x SATA 6Gb/s ports
USB	• Intel® H110 Chipset 　▶ 4x USB 3.1 Gen1 (SuperSpeed USB) ports (2 ports on the back panel, 2 ports available through the internal USB connector) 　▶ 6x USB 2.0 (High-speed USB) ports (4 ports on the back panel, 2 ports available through the internal USB connectors)
Audio	• Realtek® ALC887 Codec • 7.1-Channel High Definition Audio
LAN	1x Realtek® RTL8111H Gigabit LAN controller

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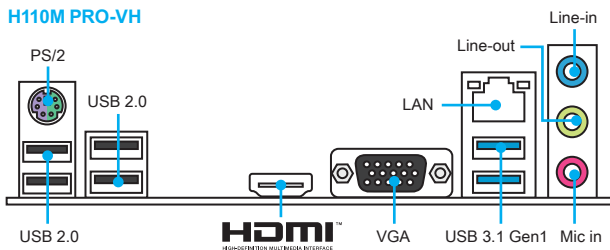|	
Back Panel Connectors	• 1x PS/2 keyboard/ mouse combo port • 4x USB 2.0 ports • 1x HDMI™ port (H110M PRO-VH) • 1x DVI-D port (H110M PRO-VD/ H110M PRO-D) • 1x VGA port (H110M PRO-VH/ H110M PRO-VD) • 1x LAN (RJ45) port • 2x USB 3.1 Gen1 ports • 3x audio jacks
Internal Connectors	• 1x 24-pin ATX main power connector • 1x 4-pin ATX 12V power connector • 4x SATA 6Gb/s connectors • 1x USB 2.0 connector (supports additional 2 USB 2.0 ports) • 1x USB 3.1 Gen1 connector (supports additional 2 USB 3.1 Gen1 ports) • 1x 4-pin CPU fan connector • 1x 4-pin system fan connector • 1x Front panel audio connector • 2x Front panel connectors • 1x TPM module connector • 1x Serial Port connector • 1x Chassis Intrusion connector • 1x Clear CMOS jumper
I/O Controller	NUVOTON NCT5563D Controller Chip
Hardware Monitor	• CPU/System temperature detection • CPU/System fan speed detection • CPU/System fan speed control
Form Factor	• Micro-ATX Form Factor • 9.3 in. x 7.1 in. (23.5 cm x 18.0 cm)
BIOS Features	• 1x 64 Mb flash • UEFI AMI BIOS • ACPI 5.0, PnP 1.0a, SM BIOS 2.8 • Multi-language

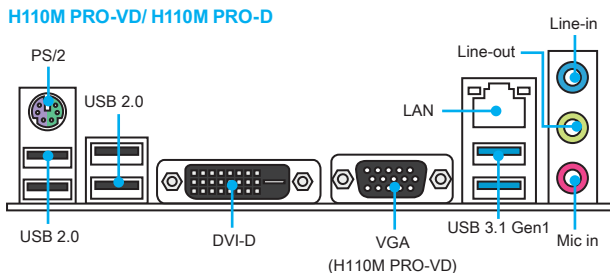| Software	- Drivers - COMMAND CENTER - LIVE UPDATE 6 - FAST BOOT - SUPER CHARGER - M-CLOUD - RAMDISK - Intel® Small Business Basics - NETWORK GENIE - Intel® Extreme Tuning Utility - Norton™ Security - Google Chrome™,Google Toolbar, Google Drive - CPU-Z

Rear I/O Panel

H110M PRO-VH

PS/2
USB 2.0
USB 2.0
HDMI HIGH-DEFINITION MULTIMEDIA INTERFACE
VGA
LAN
Line-out
Line-in
USB 3.1 Gen1
Mic in

H110M PRO-VD/ H110M PRO-D

PS/2
USB 2.0
USB 2.0
DVI-D
VGA
(H110M PRO-VD)
LAN
Line-out
Line-in
USB 3.1 Gen1
Mic in

LAN Port LED Status Table

Link/ Activity LED	
Status	Description
Off	No link
Yellow	Linked
Blinking	Data activity

Speed LED	
Status	Description
Off	10 Mbps connection
Green	100 Mbps connection
Orange	1 Gbps connection

Overview of Components
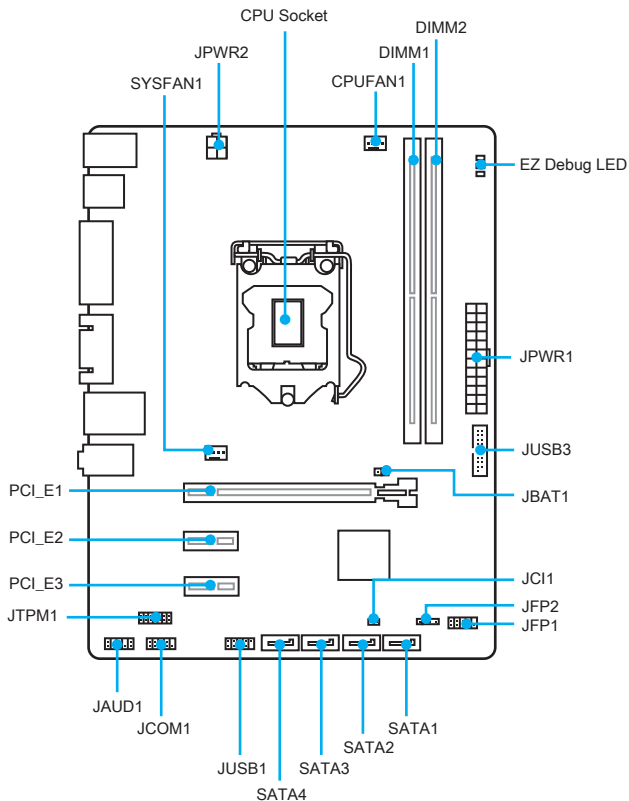
CPU Socket

Please install the CPU into the CPU socket as shown below.
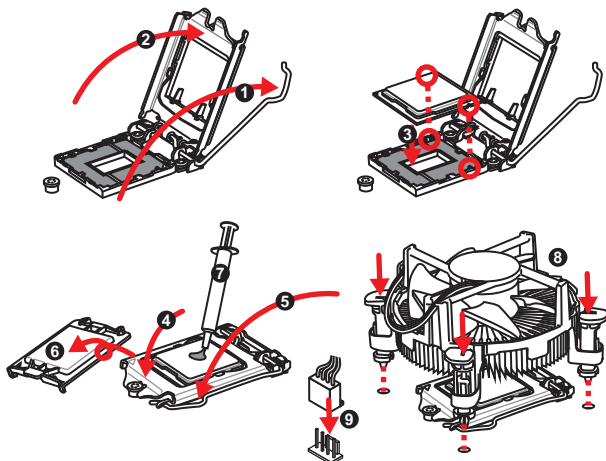
⚠ Important

- Always unplug the power cord from the power outlet before installing or removing the CPU.

- Please retain the CPU protective cap after installing the processor. MSI will deal with Return Merchandise Authorization (RMA) requests if only the motherboard comes with the protective cap on the CPU socket.

- When installing a CPU, always remember to install a CPU heatsink. A CPU heatsink is necessary to prevent overheating and maintain system stability.

- Confirm that the CPU heatsink has formed a tight seal with the CPU before booting your system.

- Overheating can seriously damage the CPU and motherboard. Always make sure the cooling fans work properly to protect the CPU from overheating. Be sure to apply an even layer of thermal paste (or thermal tape) between the CPU and the heatsink to enhance heat dissipation.

- Whenever the CPU is not installed, always protect the CPU socket pins by covering the socket with the plastic cap.

- If you purchased a separate CPU and heatsink/ cooler, Please refer to the documentation in the heatsink/ cooler package for more details about installation.

DIMM Slots

Please install the memory module into the DIMM slot as shown below.
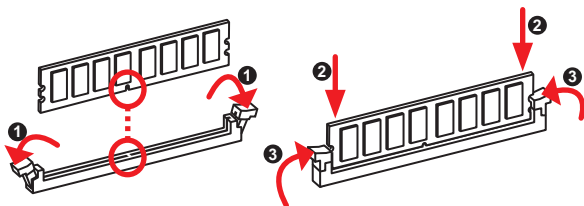
⚠ Important

- *Due to chipset resource usage, the available capacity of memory will be a little less than the amount of installed.*

- *Please note that the maximum capacity of addressable memory is 4GB or less for 32-bit Windows OS due to the memory address limitation. Therefore, we recommended that you to install 64-bit Windows OS if you want to install more than 4GB memory on the motherboard.*

PCI_E1~3: PCIe Expansion Slots

PCI_E1: PCIe 3.0 x16 slot

PCI_E2: PCIe 2.0x1 slot

PCI_E3: PCIe 2.0x1 slot
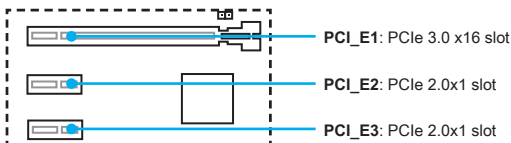
⚠ Important

When adding or removing expansion cards, always turn off the power supply and unplug the power supply power cable from the power outlet. Read the expansion card's documentation to check for any necessary additional hardware or software changes.

SATA1~4: SATA 6Gb/s Connectors

These connectors are SATA 6Gb/s interface ports. Each connector can connect to one SATA device.

SATA4

SATA3

SATA2

SATA1
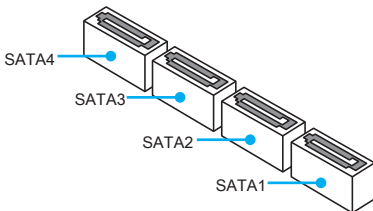
⚠ *Important*

- *Please do not fold the SATA cable at a 90-degree angle. Data loss may result during transmission otherwise.*
- *SATA cable has identical plugs on either sides of the cable. However, it is recommended that the flat connector be connected to the motherboard for space saving purposes.*

JFP1, JFP2: Front Panel Connectors

These connectors connect to the switches and LEDs on the front panel.
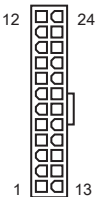
2 10	1	HDD LED +	2	Power LED +
	3	HDD LED -	4	Power LED -
1 9	5	Reset Switch	6	Power Switch
JFP1	7	Reset Switch	8	Power Switch
	9	Reserved	10	No Pin
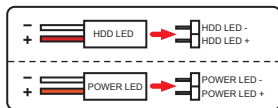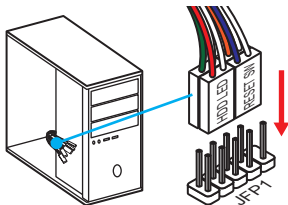
1	Speaker -	2	Buzzer +
3	Buzzer -	4	Speaker +

JFP2

JPWR1~2: Power Connectors

These connectors allow you to connect an ATX power supply.

	1	+3.3V	13	+3.3V
	2	+3.3V	14	-12V
	3	Ground	15	Ground
	4	+5V	16	PS-ON#
	5	Ground	17	Ground
	6	+5V	18	Ground
JPWR1	7	Ground	19	Ground
	8	PWR OK	20	Res
	9	5VSB	21	+5V
	10	+12V	22	+5V
	11	+12V	23	+5V
	12	+3.3V	24	Ground

	1	Ground	3	+12V
JPWR2	2	Ground	4	+12V

⚠️ **Important**

Make sure that all the power cables are securely connected to a proper ATX power supply to ensure stable operation of the motherboard.

JUSB1: USB 2.0 Connector

This connector allows you to connect USB 2.0 ports on the front panel.
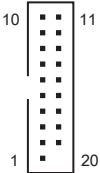
	1	VCC	2	VCC
	3	USB0-	4	USB1-
	5	USB0+	6	USB1+
	7	Ground	8	Ground
	9	No Pin	10	NC

⚠️ **Important**

- *Note that the VCC and Ground pins must be connected correctly to avoid possible damage.*

- *In order to recharge your iPad,iPhone and iPod through USB ports, please install MSI® SUPER CHARGER utility.*

JUSB3: USB 3.1 Gen1 Connector

This connector allows you to connect USB 3.1 Gen1 ports on the front panel.

1	Power	11	USB2.0+
2	USB3_RX_DN	12	USB2.0-
3	USB3_RX_DP	13	Ground
4	Ground	14	USB3_TX_C_DP
5	USB3_TX_C_DN	15	USB3_TX_C_DN
6	USB3_TX_C_DP	16	Ground
7	Ground	17	USB3_RX_DP
8	USB2.0-	18	USB3_RX_DN
9	USB2.0+	19	Power
10	Ground	20	No Pin

⚠ *Important*

Note that the Power and Ground pins must be connected correctly to avoid possible damage.

JAUD1: Front Audio Connector

This connector allow you to connect audio jacks on the front panel.

1	MIC L	2	Ground
3	MIC R	4	NC
5	Head Phone R	6	MIC Detection
7	SENSE_SEND	8	No Pin
9	Head Phone L	10	Head Phone Detection

JCOM1: Serial Port Connector

This connector allows you to connect the optional serial port with bracket.

1	DCD	2	SIN
3	SOUT	4	DTR
5	Ground	6	DSR
7	RTS	8	CTS
9	RI	10	No Pin

CPUFAN1, SYSFAN1: Fan Connectors

Fan connectors can be classified as PWM (Pulse Width Modulation) Mode and Voltage Mode. PWM Mode fan connectors provide constant 12V output and adjust fan speed with speed control signal. Voltage Mode fan co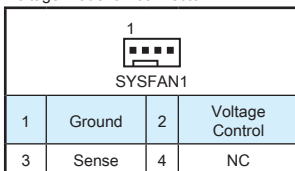nnectors control fan speed by changing voltage. Therefore, when you plug a 3-pin (Non-PWM) fan to a PWM Mode fan connector, the fan speed will be always maintained at 100%, and that could be noisy.

PWM Mode fan connector

CPUFAN1

1	Ground	2	+12V
3	Sense	4	Speed Control Signal

Voltage Mode fan connector

SYSFAN1

1	Ground	2	Voltage Control
3	Sense	4	NC
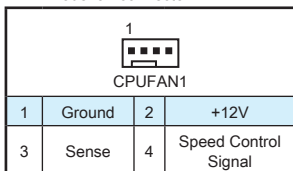
Controlling the fan speed

There are two ways to manage fan speed. One is to go to **BIOS > Advanced > Hardware Monitor**. The other is to use **COMMAND CENTER** application.

BIOS > Advanced > Hardware Monitor
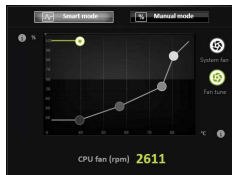
COMMAND CENTER

BIOS Hardware Monitor sub-menu allows you to set the temperature levels and the corresponding fan speed levels.

COMMAND CENTER offers gradient points of the fan speed that allow you to adjust fan speed in relation to CPU temperature.

JTPM1: TPM Module Connector

This connector is for TPM (Trusted Platform Module). Please refer to the TPM security platform manual for more details and usages.

1	LPC Clock	2	3V Standby power
3	LPC Reset	4	3.3V Power
5	LPC address & data pin0	6	Serial IRQ
7	LPC address & data pin1	8	5V Power
9	LPC address & data pin2	10	No Pin
11	LPC address & data pin3	12	Ground
13	LPC Frame	14	Ground

JCI1: Chassis Intrusion Connector

This connector allows you to connect the chassis intrusion switch cable.

Normal
(default)

Trigger the chassis
intrusion event

Using chassis intrusion detector

1. Connect the **JCI1** connector to the chassis intrusion switch/ sensor on the chassis.
2. Close the chassis cover.
3. Go to **BIOS > Security > Chassis Intrusion Configuration**.
4. Set **Chassis Intrusion** to **Enabled**.
5. Press **F10** to save and exit and then press the **Enter** key to select **Yes**.
6. Once the chassis cover is opened again, a warning message will be displayed on screen when the computer is turned on.

Resetting the chassis intrusion warning

1. Go to **BIOS > Security > Chassis Intrusion Configuration**.
2. Set **Chassis Intrusion** to **Reset**.
3. Press **F10** to save and exit and then press the **Enter** key to select **Yes**.

JBAT1: Clear CMOS (Reset BIOS) Jumper

There is CMOS memory onboard that is external powered from a battery located on the motherboard to save system configuration data. If you want to clear the system configuration, set the jumpers to clear the CMOS memory.

Keep Data
(default)

Clear CMOS/
Reset BIOS

Resetting BIOS to default values

1. Power off the computer and unplug the power cord
2. Use a jumper cap to short **JBAT1** for about 5-10 seconds.
3. Remove the jumper cap from **JBAT1**.
4. Plug the power cord and power on the computer.

EZ Debug LED: Debug LED indicators

These LEDs indicate the status of the motherboard.

CPU - indicates CPU is not detected or fail.

DRAM - indicates DRAM is not detected or fail.

VGA - indicates GPU is not detected or fail.

BIOS Setup

The default settings offer the optimal performance for system stability in normal conditions. You should **always keep the default settings** to avoid possible system damage or failure booting unless you are familiar with BIOS.

⚠ Important

- *BIOS items are continuous update for better system performance. Therefore, the description may be slightly different from the latest BIOS and should be held for reference only. You could also refer to the **HELP** information panel for BIOS item description.*

- *The pictures in this chapter are for reference only and may vary from the product you purchased.*

Entering BIOS Setup

Please refer the following methods to enter BIOS setup.

- Press **Delete** key, when the **Press DEL key to enter Setup Menu, F11 to enter Boot Menu** message appears on the screen during the boot process.
- Use MSI FAST BOOT application. Click on **GO2BIOS** button and choose **OK**. The system will reboot and enter BIOS setup directly.

Click on **GO2BIOS**

- Enable the **GO2BIOS** item (**Boot > GO2BIOS**) in BIOS setup. It allows the system to enter BIOS setup directly by pressing the power button for 4 seconds upon bootup.

Function key

Key	Function	Key	Function
F1	General Help	F4	Enter CPU Specifications menu
F5	Enter Memory-Z menu	F6	Load optimized defaults
F10	Save Change and Reset*	F12	Take a screenshot and save it to USB flash drive (FAT/ FAT32 format only).

* When you press F10, a confirmation window which provides the modification information appears. Select between **Yes** or **No** to confirm your choice.

Resetting BIOS

You might need to restore the default BIOS setting to solve certain problems. There are several ways to reset BIOS:

- Go to BIOS and press **F6** to load optimized defaults.
- Short the **Clear CMOS** jumper on the motherboard.

⚠ *Important*

*Please refer to the **Clear CMOS Jumper** section for resetting BIOS.*

Updating BIOS

Updating BIOS with M-FLASH

Before updating:

Please download the latest BIOS file that matches your motherboard model from MSI website. And then save the BIOS file into the USB flash drive.

Updating BIOS:

1. Insert the USB flash drive that contains the update file into the computer.
2. Reboot the system, and then press **Del** key to enter the BIOS Setup during POST.
3. Go to **BIOS > M-FLASH > Select one file to update BIOS and ME**, select a BIOS file to perform the BIOS update process.
4. After the flashing process is 100% complete, the system will reboot.

Updating the BIOS with Live Update 6

Before updating:

Make sure the LAN driver is already installed and the internet connection is set properly.

Updating BIOS:

1. Install and launch MSI LIVE UPDATE 6.
2. Select **Manual scan**.
3. Check **MB BIOS** box and click on **Scan** button.
4. Select the **MB BIOS** and click on icon to download and install the latest BIOS file.
5. Click **Next** and choose **In Windows mode**. And then click **Next** and **Start** to start updating BIOS.
6. After the flashing process is 100% completed, the system will restart automatically.

Software Description

Installing Windows® 7/ 8.1/ 10

1. Power on the computer.
2. Insert the Windows® 7/ 8.1/ 10 disc into your optical drive.

   Note: Due to chipset limitation, during the Windows® 7 installation process, USB optical drives or USB pen drives are not supported.

3. Press the **Restart** button on the computer case.
4. For windows 8.1/ 10, skip this step. For Windows 7, access the BIOS menu **Advanced > Windows OS Configuration > Windows 7 Installation** and set the item to enabled, save changes and restart.

   Note: It is suggested to plug in your USB Keyboard/USB Mouse to the leftmost USB port when installing Windows 7.

5. Press **F11** key during the computer POST (Power-On Self Test) to get into Boot Menu.
6. Select your optical drive from the Boot Menu.
7. Press any key when screen shows **Press any key to boot from CD or DVD...** message.
8. Follow the instructions on the screen to install Windows® 7/ 8.1/ 10.

Installing Drivers

1. Start up your computer in Windows® 7/ 8.1/ 10.
2. Insert MSI® Driver Disc into your optical drive.
3. The installer will automatically appear and it will find and list all necessary drivers.
4. Click **Install** button.
5. The software installation will then be in progress, after it has finished it will prompt you to restart.
6. Click **OK** button to finish.
7. Restart your computer.

Installing Utilities

Before you install utilities, you must complete drivers installation.

1. Insert MSI® Driver Disc into your optical drive.
2. The installer will automatically appear.
3. Click **Utilities** tab.
4. Select the utilities you want to install.
5. Click **Install** button.
6. The utilities installation will then be in progress, after it has finished it will prompt you to restart.
7. Click **OK** button to finish.
8. Restart your computer.