ASRock® Industrial

IMB-R1000

User Manual

Version 1.0

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Disclaimer:

FCC

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.

CALIFORNIA, USA ONLY

The Lithium battery adopted on this motherboard contains Perchlorate, a toxic substance controlled in Perchlorate Best Management Practices (BMP) regulations passed by the California Legislature. When you discard the Lithium battery in California, USA, please follow the related regulations in advance.
"Perchlorate Material-special handling may apply, see www.dtsc.ca.gov/hazardouswaste/perchlorate"

ASRockInd Website: http://www.asrockind.com

Contents

1. Introduction

Thank you for purchasing ASRockInd *IMB-R1000* motherboard, a reliable motherboard produced under ASRockInd's consistently stringent quality control. It delivers excellent performance with robust design conforming to ASRockInd's commitment to quality and endurance.

In this manual, chapter 1 and 2 contains the introduction of the motherboard and step-by-step hardware installation guide. Chapter 3 and 4 contains the configuration guide of UEFI setup and information of the Support CD.

> Because the motherboard specifications and the BIOS software might be updated, the content of this manual will be subject to change without notice. In case any modifications of this manual occur, the updated version will be available on ASRockInd website without further notice. You may find the latest CPU support lists on ASRockInd website as well.
> ASRockInd website https://www.asrockind.com/
> If you require technical support related to this motherboard, please visit our website for specific information about the model you are using.
> https://www.asrockind.com/support/index.asp

1.1 Package Contents

ASRockInd *IMB-R1000* Motherboard
   (Mini-ITX Form Factor: 6.7-in x 6.7-in, 17.0 cm x 17.0 cm)
ASRockInd *IMB-R1000* Quick Installation Guide
ASRockInd *IMB-R1000* Support CD
1 x I/O Panel Shield

1.2 Specifications

Form Factor	Dimensions	Mini-ITX (6.7-in x 6.7-in)
Processor System	CPU	AMD Ryzen FP5 BGA package, 14nm process, with CPU option 12W~25W (IMB-R1000M(R1606G), R1000V(R1505G))
	Chipset	SoC
Expansion Slot	PCIe	1 x PCIe x 4
	Mini-PCIe	1 x Full/Half mini-PCIe with PCIe x1 and USB 2.0
	M.2	1 x M.2 (Key E, 2230) with PCIe x1 and USB2.0 for Wireless 1 x M.2 (Key M, 2242/2260/2280) with SATA for SSD
Memory	Technology	Dual Channel DDR4 2400 MT/s
	Max.	32 GB
	Socket	2 x SO-DIMM
Graphics	VGA	Supports max resolution up to 1920x1200
	DVI	N/A
	LVDS	Dual Channel 24-bit, max resolution up to 1920x1200@60Hz (Shared with DP1)
	HDMI	N/A
	DisplayPort	Max resolution up to 3840x2160@60Hz
	MultiDisplay	Triple Display (Support AMD Eyefinity multidisplay technology)
	eDP	Max resolution up to 3840x2160@60Hz
Ethernet	Ethernet	10/100/1000 Mbps
	Controller	2 x R8111G
Rear I/O	VGA	N/A
	DVI	N/A
	HDMI	N/A
	DisplayPort	2 x DP 1.3 (Support DP++)
	Ethernet	2
	USB	2 x USB3.1 (Gen 2), 2 x USB2.0
	Audio	2 (Mic-in, Line-out)
	Serial	2 x COM (RS-232/422/485)

Internal Connector	USB	4 x USB2.0, 1 x USB 2.0 (Type A)
	LVDS/ inverter	1
	eDP	1 (Shared with DP0)
	VGA	1
	Serial	4 x COM (RS-232, COM6 shared with ccTalk)
	SATA	2 x SATA3 (6.0Gb/s)
	GPIO	8 x GPI, 8 x GPO (Shared with LPT)
	SATA PWR Output	1
	Speaker Header	1
	LPT Header	1
	ccTalk	1
Watchdog Timer	Output	From Super I/O to drag RESETCON#
	Interval	256 Segments, 0, 1, 2, ...255sec
Power Requirements	Input PWR	12V/19V~28V DC-in (DC Jack/ 4-pin ATX PWR Con.)
	Power On	AT/ATX Supported AT: Directly PWR on as Power input ready ATX: Press Button to PWR on after Power input ready
Environment	Operating Temp	0ºC – 60ºC

* For detailed product information, please visit our website: http://www.asrockind.com

1.3 Motherboard Layout
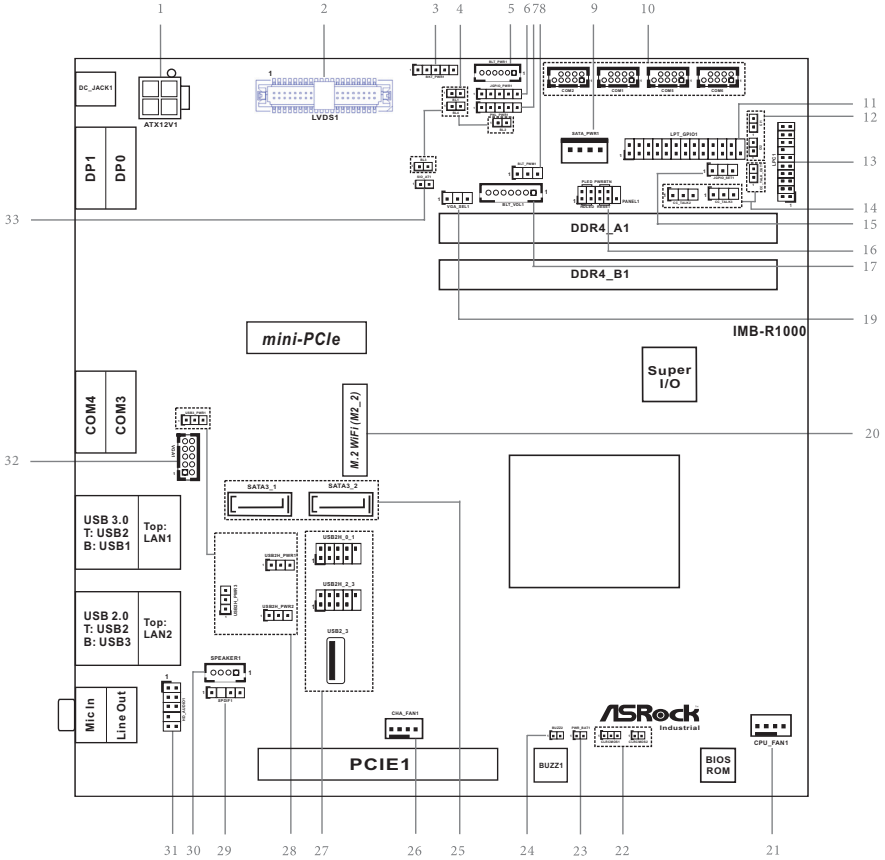
1 : ATX Power Connector
2 : LVDS Panel Connector
   * eDP Connector (on the Backside of PCB)
3 : Backlight Power Select (LCD_BLT_VCC) (BKT_PWR1)
4 : BL1, BL2
5 : Inverter Power Control Wafer (BLT_PWR1)
6 : Digital Input / Output Power Select (JGPIOPWR) (JGPIO_PWR1)
7 : Panel Power Select (R_LVDD) (PNL_PWR1)
8 : Backlight Control Level (CON_LBKLT_CTL) (BLT_PWM1)
9 : SATA Power Output Connector
10 : COM Port Headers (COM1, 2, 5, 6) (RS232)
11 : Printer Port / GPIO Header (LPT_GPIO1)
12 : Chassis Intrusion Headers (CI1, CI2)
13 : LPC Header
14 : CC_TALK_OUT1, CC_TALK2, CC_TALK3
15 : Digital Input / Output Power Select (JGPIO_SET1)
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19 : VGA_SEL1
20 : Key-E M.2 Socket (M2_2)
21 : CPU FAN Connector (+12V)
22 : Clear CMOS Headers (CLRCMOS1, CLRCMOS2)
23 : PWR_BAT1
24 : Buzzer (BUZZ2)
25 : SATA3 Connectors (SATA3_1, SATA3_2)
26 : Chassis FAN Connector (+12V)
27 : USB 2.0 Headers (USB2H_0_1, USB2H_2_3)
     USB 2.0 Port (5VSB Only) (USB2_3)
28 : USB Power Setting Jumpers
     USB2H_PWR1 (For USB2H_0_1)
     USB2H_PWR2 (For USB2H_2_3)
     USB2H_PWR3 (For USB2H_2_3 on rear I/O)
     USB3_PWR1 (For USB3_1_2 on rear I/O)
29 : SPDIF Header
30 : 3W Audio AMP Output Wafer
31 : Front Panel Audio Header
32 : VGA Header
33 : ATX/AT Mode Jumper (SIO_AT1)

Back Siode :
Key-M M.2 Socket (M2)

1.4 I/O Panel
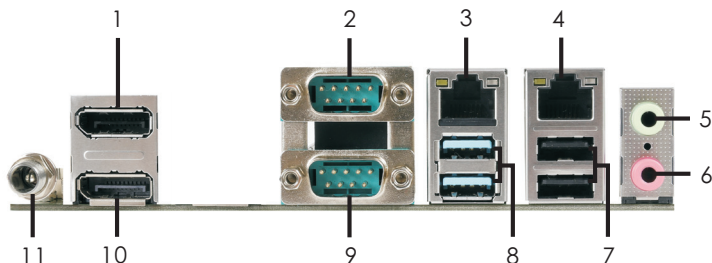
1 DisplayPort (DP0)	**7**	USB 2.0 Ports (USB2H_2_3)
2 Serial Port (COM3)*	**8**	USB 3.0 Ports (USB3_1_2)
3 LAN RJ-45 Port (LAN1)**	**9**	Serial Port (COM4)*
4 LAN RJ-45 Port (LAN2)**	**10**	DisplayPort (DP1)
5 Front Speaker (Lime)	**11**	DC Jack (DC_JACK1)***
6 Microphone (Pink)		

* This motherboard supports RS232/422/485 on COM3, 4 ports. Please refer to below table for the pin definition. In addition, COM3, 4 ports (RS232/422/485) can be adjusted in BIOS setup utility > Advanced Screen > Super IO Configuration. You may refer to page 31 for details.

COM3, 4 Port Pin Definition

PIN	RS232	RS422	RS485
1	DCD, Data Carrier Detect	TX-	RTX-
2	RXD, Receive Data	RX+	N/A
3	TXD, Transmit Data	TX+	RTX+
4	DTR, Data Terminal Ready	RX-	N/A
5	GND	GND	GND
6	DSR, Data Set Ready	N/A	N/A
7	RTS, Request To Send	N/A	N/A
8	CTS, Clear To Send	N/A	N/A
9	N/A	N/A	N/A

** There are two LED next to the LAN port. Please refer to the table below for the LAN port LED indications.

LAN Port LED Indications

Activity/Link LED		SPEED LED	
Status	Description	Status	Description
Off	No Link	Off	10Mbps connection
Blinking	Data Activity	Yellow	100Mbps connection
On	Link	Green	1Gbps connection

ACT/LINK LED   SPEED LED

LAN Port
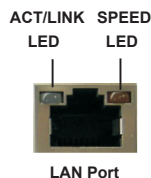
*** Please refer to below pictures for DC jack specifications.
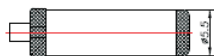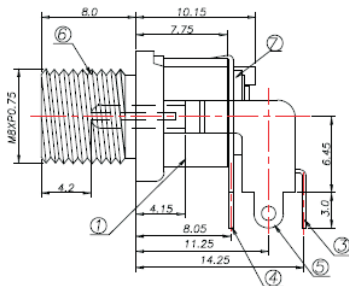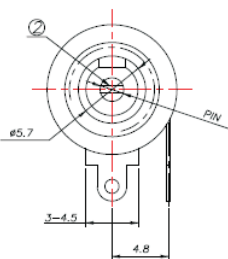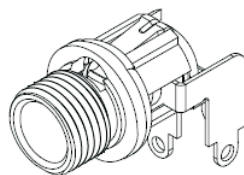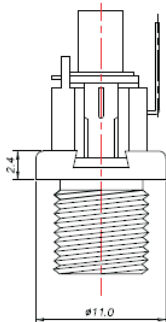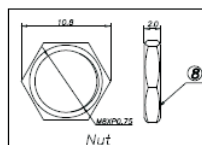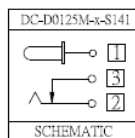
Chapter 2: Installation

This is a Mini-ITX form factor motherboard. Before you install the mother-board, study the configuration of your chassis to ensure that the mother-board fits into it.

Pre-installation Precautions

Take note of the following precautions before you install motherboard com-ponents or change any motherboard settings.

1. Make sure to unplug the power cord before installing or removing the motherboard. Failure to do so may cause physical injuries to you and damages to motherboard com-ponents.
2. In order to avoid damage from static electricity to the moth-erboard's components, NEVER place your motherboard directly on a carpet. Also remember to use a grounded wrist strap or touch a safety grounded object before you handle the components.
3. Hold components by the edges and do not touch the ICs.
4. Whenever you uninstall any components, place them on a grounded anti-static pad or in the bag that comes with the components.
5. When placing screws to secure the motherboard to the chassis, please do not over-tighten the screws! Doing so may damage the motherboard.

2.1 Installing Memory Modules (DIMM)

This motherboard provides two DDR4 (Double Data Rate 4) SO-DIMM slots.

Step 1. Unlock a DIMM slot by pressing the retaining clips outward.

Step 2. Align a DIMM on the slot such that the notch on the DIMM matches the break on the slot.
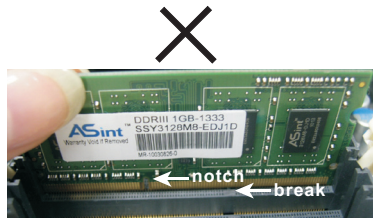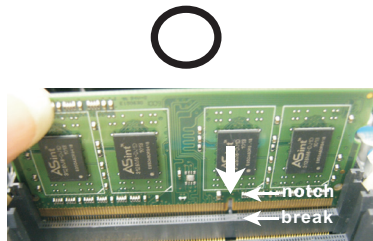
> The DIMM only fits in one correct orientation. It will cause permanent damage to the motherboard and the DIMM if you force the DIMM into the slot at incorrect orientation.

Step 3. Firmly insert the DIMM into the slot until the retaining clips at both ends fully snap back in place and the DIMM is properly seated.

2.2 Expansion Slots (mini-PCIe, PCI Express and M.2 Slots)

There is 1 PCI Express slot and 1 mini PCI Express slot on this motherboard.

mini-PCIE Slot: MINI_PCIE1 is used for mini PCIE cards.
PCIE Slot: The x4 lane width PCIE1 (PCIE 3.0 x8 slot) is used for PCI Express expansion cards.
M.2 Sockets: M.2 (Key E, 2230) Supports PCIe x1 and USB2.0 for Wireless.
M.2 (Key M, 2242/2260/2280) Supports SATA for SSD.

Key-E M.2 Socket (M2_2)

Pin	Signal	Signal	Pin
1	GND	+3.3V	2
3	USB_D+	+3.3V	4
5	USB_D-	NA	6
7	GND	NA	8
9	NA	NA	10
11	NA	NA	12
13	NA	NA	14
15	NA	NA	16
17	NA	GND	18
19	NA	NA	20
21	NA	NA	22
23	NA		
33	GND	NA	32
35	PETp	NA	34
37	PETn	NA	36
39	GND	NA	38
41	PERp	NA	40
43	PERn	NA	42
45	GND	NA	44
47	PEFCLKp	NA	46
49	PEFCLKn	NA	48
51	GND	NA	50
53	CLKREQ#	PERST0#	52
55	WAKE#	W_DISABLE1#	54
57	GND	W_DISABLE2#	56
59	NA	SMB_DATA	58
61	NA	SMB_CLK	60
63	GND	NA	62
65	NA	NA	64
67	NA	NA	66
69	GND	NA	68
71	NA	NA	70
73	NA	+3.3V	72
75	GND	+3.3V	74

Key-M M.2 Socket (M2)

Pin	Signal	Signal	Pin
1	GND	+3.3V	2
3	GND	+3.3V	4
5	NA	NA	6
7	NA	NA	8
9	GND	SATA_LED	10
11	NA	+3.3V	12
13	NA	+3.3V	14
15	GND	+3.3V	16
17	NA	+3.3V	18
19	NA	NA	20
21	GND	NA	22
23	NA	NA	24
25	NA	NA	26
27	GND	NA	28
29	NA	NA	30
31	NA	NA	32
33	GND	NA	34
35	NA	NA	36
37	NA	NA	38
39	GND	SMB_CLK	40
41	SATA-B+	SMB_DATA	42
43	SATA-B-	NA	44
45	GND	NA	46
47	SATA-A-	NA	48
49	SATA-A+	PERST#	50
51	GND	CLKREQ#	52
53	PEFCLKn	WAKE#	54
55	PEFCLKp	NA	56
57	GND	NA	58
67	NA	NA	68
69	PEDET	+3.3V	70
71	GND	+3.3V	72
73	GND	+3.3V	74
75	GND		

Installing an Expansion Card

Step 1.   Before installing an expansion card, please make sure that the power supply is switched off or the power cord is unplugged. Please read the documentation of the expansion card and make necessary hardware settings for the card before you start the installation.

Step 2.   Remove the bracket facing the slot that you intend to use. Keep the screws for later use.

Step 3.   Align the card connector with the slot and press firmly until the card is completely seated on the slot.

Step 4.   Fasten the card to the chassis with screws.

2.3 Jumpers Setup

The illustration shows how jumpers are setup. When the jumper cap is placed on pins, the jumper is "Short". If no jumper cap is placed on pins, the jumper is "Open". The illustration shows a 3-pin jumper whose pin1 and pin2 are "Short" when jumper cap is placed on these 2 pins.

Short   Open
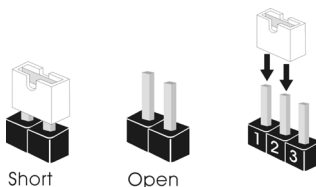
Jumper	Setting	Description
Clear CMOS Jumpers (3-pin CLRCMOS1) (see p.7, No. 22)	**1_2** Default **2_3** Clear CMOS	CLRCMOS1 : 1-2 : Normal 2-3 : Clear CMOS

Note: CLRCMOS1 allows you to clear the data in CMOS. To clear and reset the system parameters to default setup, please turn off the computer and unplug the power cord from the power supply. After waiting for 15 seconds, use a jumper cap to short pin2 and pin3 on CLRCMOS1 for 5 seconds. However, please do not clear the CMOS right after you update the BIOS. If you need to clear the CMOS when you just finish updating the BIOS, you must boot up the system first, and then shut it down before you do the clear-CMOS action. Please be noted that the password, date, time, user default profile and MAC address will be cleared only if the CMOS battery is removed.

(2-pin CLRCMOS2) (see p.7, No. 22)	1 ○ ○	CLRCMOS2 : Open : Normal Short : Auto Clear CMOS (Power Off)
Digital Input / Output Power Select (JGPIOPWR) (5-pin JGPIO_PWR1) (see p.7, No. 6)	1 ○○○○○	1-2 : +12V 2-3 : +5V 3-4 : +5V 4-5 : GND
Digital Input / Output Power Select (3-pin JGPIO_SET1) (see p.7, No. 15)	◻ ○ ○ 1 2 3	1-2 : Pull-High 2-3 : Pull-Low

Backlight Power Select (LCD_BLT_VCC)
(5-pin BKT_PWR1)
(see p.7, No. 3)

1 ⦿⦿⦿⦿⦿

1-2 : LCD_BLT_VCC : +5V
2-3 : LCD_BLT_VCC : +12V
4-5 : LCD_BLT_VCC : DC_IN

Panel Power Select (R_LVDD)
(5-pin PNL_PWR1)
(see p.7, No. 7)

1 ⦿⦿⦿⦿⦿

1-2 : R_LVDD: +3V
2-3 : R_LVDD: +5V
4-5 : R_LVDD: +12V

BL1, BL2
(2-pin BL1)
(see p.7 No. 4)

1 ⦿⦿

Open : Protect LCD_BLT_VCC
Short : No Protect LCD_BLT_VCC

(2-pin BL2)
(see p.7 No. 4)

Open : Protect R_LVDD
Short : No Protect R_LVDD

PWR_BAT1
(2-pin PWR_BAT1)
(see p.7, No. 23)

1 ⦿⦿

Open : Normal
Close : Charge Battery

Backlight Control Level (CON_LBKLT_CTL)
(3-pin BLT_PWM1)
(see p.7, No. 8)

⦿⦿⦿
1 2 3

1-2 : From eDP PWM to
      CON_LBKLT_CTL (+3V)
2-3 : From LVDS PWM to
      CON_LBKLT_CTL (+5V)

Chassis Intrusion Headers
(2-pin CI1: see p.7, No. 12)
(2-pin CI2: see p.7, No. 12)

GND —— ⦿
Signal —— ⦿ 1

This motherboard supports
CASE OPEN detection feature
that detects if the chassis cover
has been removed. This feature
requires a chassis with chassis
intrusion detection design.
CI1 :
Close : Active Case Open
Open : Normal
CI2 :
Close : Normal
Open : Active Case Open

CC_TALK_OUT1

(2-pin CC_TALK_OUT1)

(see p.7, No. 14)

GND —
Signal —
1
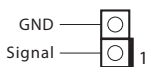
CC_TALK2, CC_TALK3

(3-pin CC_TALK2, CC_TALK3)

(see p.7, No. 14)

1 2 3

1-2 : CCTALK

2-3 : COMF

VGA_SEL1

(3-pin VGA_SEL1)

(see p.7, No. 19)

1 2 3

1-2 : DP3

2-3 : VGA1

USB Power Setting Jumpers

(3-pin USB2H_PWR1 (For USB2H_0_1))

(3-pin USB2H_PWR2 (For USB2H_2_3))

(3-pin USB2H_PWR3 (For USB2H_2_3 on rear I/O))

(3-pin USB3_PWR1 (For USB3_1_2 on rear I/O))

(see p.7, No. 28)

3 2 1

1 2 3

1-2 : +5V

2-3 : +5VSB

ATX/AT Mode Jumper

(2-pin SIO_AT1)

(see p.7, No. 33)

1

Open : ATX Mode

Short : AT Mode

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2.4 Onboard Headers and Connectors

Onboard headers and connectors are NOT jumpers. Do NOT place jumper caps over these headers and connectors. Placing jumper caps over the headers and connectors will cause permanent damage of the motherboard!

CPU Fan Connector

(4-pin CPU_FAN1)

(see p.7 No. 21)

+12V
CPU_FAN_SPEED
GND   FAN_SPEED_CONTROL

1 2 3 4
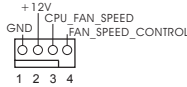
Please connect the CPU fan cable to the connector and match the black wire to the ground pin.

Though this motherboard provides 4-Pin CPU fan (Quiet Fan) support, the 3-Pin CPU fan still can work successfully even with the fan speed control function. If you plan to connect the 3-Pin CPU fan to the CPU fan connector on this motherboard, please connect it to Pin 1-3.

Chassis Fan Connector

(4-pin CHA_FAN1)

(see p.7 No. 26)

GND
+12V
CHA_FAN_SPEED
FAN_SPEED_CONTROL

1 2 3 4
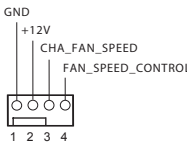
Please connect the chassis fan cable to the connector and match the black wire to the ground pin.

Though this motherboard provides 4-Pin chassis fan (Quiet Fan) support, the 3-Pin chassis fan still can work successfully even with the fan speed control function. If you plan to connect the 3-Pin chassis fan to the chassis fan connector on this motherboard, please connect it to Pin 1-3.

System Panel Header

(9-pin PANEL1)

(see p.7, No. 16)

PLED+
PLED-
PWRBTN#
GND

1

GND
RESET#
GND
HDLED-
HDLED+
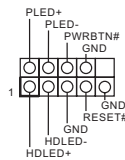
This header accommodates several system front panel functions.

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.

PWRBTN (Power Switch):
Connect to the power switch on the chassis front panel. You may configure the way to turn off your system using the power switch.

RESET (Reset Switch):

Connect 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.

PLED (System Power LED):

Connect to the power status indicator on the chassis front panel. The LED is on when the system is operating. The LED keeps blinking when the system is in S1/S3 sleep state. The LED is off when the system is in S4 sleep state or powered off (S5).

HDLED (Hard Drive Activity LED):

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

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, speaker and etc. When connecting your chassis front panel module to this header, make sure the wire assignments and the pin assign-ments are matched correctly.

COM Port Headers (RS232)

(10-pin COM1, 2, 5, 6: see p.7, No. 10)
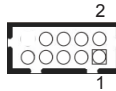
PIN	Signal Name	PIN	Signal Name	PIN	Signal Name	PIN	Signal Name	PIN	Signal Name
		8	CCTS#	6	DDSR#	4	DDTR#	2	RRXD
9	NA	7	RRTS#	5	GND	3	TTXD	1	DDCD#

Buzzer

(2-pin BUZZ2)

(see p.7 No. 24)

SATA3 Connectors

(SATA3_1~2: see p.7, No. 25)

SATA3_1   SATA3_2

These two Serial ATA3 (SATA3) connectors support SATA data cables for internal storage devices. The current SATA3 interface allows up to 6.0 Gb/s data transfer rate.

USB 2.0 Headers

(9-pin USB2H_0_1, USB2H_2_3)

(see p.7, No. 27)

USB_PWR
-B
+B
GND
DUMMY
GND
+A
-A
USB_PWR
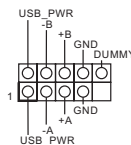
There are two headers and one port on this motherboard.

(USB 2.0 Port (USB2_3) (5VSB Only))

(see p.7, No. 27)

Front Panel Audio Header

(9-pin HD_AUDIO1)

(see p.7 No. 31)

```
              1
MIC2_L  ─── ○ ○ ─── GND
MIC2_R  ─── ○ ○ ─── NA
OUT2_R  ─── ○ ○ ─── MIC_RET
J_SENSE ─── ○
OUT2_L  ─── ○ ○ ─── OUT_RET
```
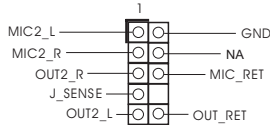
This is an interface for front panel audio cable that allows convenient connection and control of audio devices.

1. High Definition Audio supports Jack Sensing, but the panel wire on the chassis must support HDA to function correctly. Please follow the instruction in our manual and chassis manual to install your system.
2. If you use AC'97 audio panel, please install it to the front panel audio header as below:
   A. Connect Mic_IN (MIC) to MIC2_L.
   B. Connect Audio_R (RIN) to OUT2_R and Audio_L (LIN) to OUT2_L.
   C. Connect Ground (GND) to Ground (GND).
   D. MIC_RET and OUT_RET are for HD audio panel only. You don't need to connect them for AC'97 audio panel.
   E. To activate the front mic.
      Go to the "FrontMic" Tab in the Realtek Control panel. Adjust "Recording Volume".

3W Audio AMP Output Wafer

(4-pin SPEAKER1)

(see p.7 No.30)

PIN	Signal Name	PIN	Signal Name	PIN	Signal Name	PIN	Signal Name
4	OUTRN	3	OUTRP	2	OUTLP	1	OUTLN

ATX Power Connector

(4-pin ATX12V1)

(see p.7 No. 1)
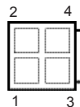
Please connect a DC power supply to this connector.

1-2 : GND

3-4 : DC Input

SATA Power Connector

(SATA_PWR1)

(see p.7 No. 9)

GND   +12V

+5V   GND

Please connect a SATA power cable to this connector.

LVDS Connector

(40-pin LVDS1)

(see p.7 No. 2)

PIN	Signal Name	PIN	Signal Name
1	R_LVDD	2	R_LVDD
3	+3V	4	NA
5	NA	6	LVDS_A_DATA0#
7	LVDS_A_DATA0	8	GND
9	LVDS_A_DATA1#	10	LVDS_A_DATA1
11	GND	12	LVDS_A_DATA2#
13	LVDS_A_DATA2	14	GND
15	LVDS_A_DATA3#	16	LVDS_A_DATA3
17	GND	18	LVDS_A_CLK#
19	LVDS_A_CLK	20	GND
21	LVDS_B_DATA0#	22	LVDS_B_DATA0
23	GND	24	LVDS_B_DATA1#
25	LVDS_B_DATA1	26	GND
27	LVDS_B_DATA2#	28	LVDS_B_DATA2
29	DPLVDD_EN	30	LVDS_B_DATA3#
31	LVDS_B_DATA3	32	GND
33	LVDS_B_CLK#	34	LVDS_B_CLK
35	GND	36	CON_LBKLT_EN
37	CON_LBKLT_CTL	38	LCD_BLT_VCC
39	LCD_BLT_VCC	40	LCD_BLT_VCC

*eDP Connector (on the Backside of PCB)

(40-pin EDP1)

EDP1

PIN	Signal Name
40	NA
39	GND
38	eDP_TX#3_CON
37	eDP_TX3_CON
36	GND
35	eDP_TX#2_CON
34	eDP_TX2_CON
33	GND
32	eDP_TX#1_CON
31	eDP_TX1_CON
30	GND
29	eDP_TX#0_CON
28	eDP_TX0_CON
27	GND
26	eDP_AUX_CON
25	eDP_AUX#_CON
24	GND
23	+3V
22	+3V
21	+3V
20	+3V
19	NA
18	GND
17	GND
16	GND
15	GND
14	eDP_HPD_CON
13	GND
12	GND
11	GND
10	GND
9	eDP_LBKLT_EN
8	eDP_LBKLT_CTL
7	SMB_DATA
6	SMB_CLK
5	+12V
4	+12V
3	+12V
2	+12V
1	NA

Inverter Power Control Wafer

(6-pin BLT_PWR1)

(see p.7 No. 5)

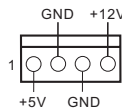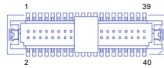| PIN	Signal Name	PIN	Signal Name	PIN	Signal Name	PIN	Signal Name	PIN	Signal Name	PIN	Signal Name
6	LCD_BLT_VCC	5	LCD_BLT_VCC	4	CON_LBKLT_EN	3	CON_LBKLT_CTL	2	GND	1	GND

LPC Header

(19-pin LPC1)

(see p.7, No. 13)

```
48MHz          +5V
GND            GND
SERIRQ#        +3.3V STANDBY
S_PWRDWN#
GND            LAD0
LAD1           +3.3V
LAD2           LAD3
SMB_DATA_MAIN  PCIRST#
SMB_CLK_MAIN   FRAME
GND            PCICLK
```
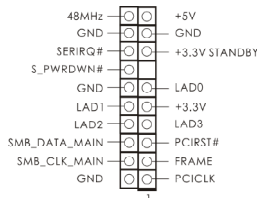
This connector supports a Trusted Platform Module (TPM) system, which can securely store keys, digital certificates, passwords, and data. A TPM system also helps enhance network security, protects digital identities, and ensures platform integrity.

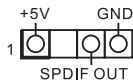## Backlight & Amp Volume Control

(7-pin BLT_VOL1)

(see p.7 No. 17)

PIN	Signal Name	PIN	Signal Name	PIN	Signal Name	PIN	Signal Name	PIN	Signal Name	PIN	Signal Name	PIN	Signal Name
7	GND	6	GND	5	GPIO_BLT_DW	4	GPIO_BLT_UP	3	PWRDN	2	GPIO_VOL_DW	1	GPIO_VOL_UP

* To make the backlight level work properly, please make sure that the interval on button clicks is more than one second.

SPDIF Header

(3-pin SPDIF1)

(see p.7, No. 29)

+5V   GND

SPDIF OUT

SPDIF header, providing SPDIF audio output to HDMI VGA card, allows the system to connect HDMI Digital TV/ projector/LCD devices. Please connect the SPDIF connector of HDMI VGA card to this header.

VGA Connector

(10-pin VGA_H1)

(see p.7 No. 32)
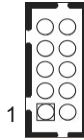
PIN	Signal Name	PIN	Signal Name
9	DDC_CLK	10	DDC_DATA
7	HSYNC	8	VSYNC
5	BLUE	6	GND
3	GREEN	4	GND
1	RED	2	GND

Printer Port / GPIO Header

(25-pin LPT_GPIO1)

(see p.8 No. 11)

Printer Port:

AFD# ERROR# PINIT# SLIN# GND GND GND GND GND GND GND GND SLCT
STB# SPD0 SPD1 SPD2 SPD3 SPD4 SPD5 SPD6 SPD7 ACK# BUSY PE
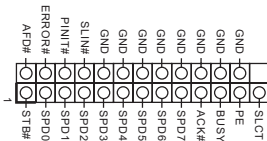
GPIO:

PIN	Signal Name	PIN	Signal Name
2	SIO_GP46	1	SIO_GP47
4	SIO_GP45	3	SIO_GP42
6	SIO_GP44	5	SIO_GP41
8	SIO_GP43	7	SIO_GP40
10	JGPIOPWR	9	SIO_GP37
12	JGPIOPWR	11	SIO_GP36
14	GND	13	SIO_GP35
16	GND	15	SIO_GP34
18	GND	17	SIO_GP33
20	GND	19	SIO_GP32
22	GND	21	SIO_GP31
24	GND	23	SIO_GP30
26	NC	25	NA

* If you want to use the printer port function, please short pin4 and pin5 on Digital Input / Output Power Select (JGPIO_PWR1).

Chapter 3: UEFI SETUP UTILITY

3.1 Introduction

This section explains how to use the UEFI SETUP UTILITY to configure your system. The UEFI chip on the motherboard stores the UEFI SETUP UTILITY. You may run the UEFI SETUP UTILITY when you start up the computer. Please press <F2> or <Del> during the Power-On-Self-Test (POST) to enter the UEFI SETUP UTILITY, otherawise, POST will continue with its test routines.

If you wish to enter the UEFI SETUP UTILITY after POST, restart the system by pressing <Ctl> + <Alt> + <Delete>, or by pressing the reset button on the system chassis. You may also restart by turning the system off and then back on.

> Because the UEFI software is constantly being updated, the following UEFI setup screens and descriptions are for reference purpose only, and they may not exactly match what you see on your screen.

3.1.1 UEFI Menu Bar

The top of the screen has a menu bar with the following selections:

Main	For setting system time/date information
Advanced	For advanced system configurations
H/W Monitor	Displays current hardware status
Security	For security settings
Boot	For configuring boot settings and boot priority
Exit	Exit the current screen or the UEFI Setup Utility

3.1.2 Navigation Keys

Use < ← > key or < → > key to choose among the selections on the menu bar, and use < ↑ > key or < ↓ > key to move the cursor up or down to select items, then press <Enter> to get into the sub screen. You can also use the mouse to click your required item.

Please check the following table for the descriptions of each navigation key.

Navigation Key(s)	Description
+ / -	To change option for the selected items
<F1>	To display the General Help Screen
<F7>	Discard changes and exit the SETUP UTILITY
<F9>	Load optimal default values for all the settings
<F10>	Save changes and exit the SETUP UTILITY
<F12>	Print screen
<ESC>	Jump to the Exit Screen or exit the current screen

3.2 Main Screen

When you enter the UEFI SETUP UTILITY, the Main screen will appear and display the system overview.
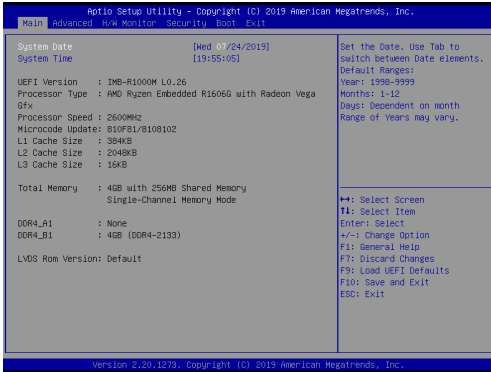
3.3 Advanced Screen

In this section, you may set the configurations for the following items: CPU Configuration, Chipset Configuration, Storage Configuration, Super IO Configuration, ACPI Configuration, USB Configuration and Trusted Computing.

Setting wrong values in this section may cause the system to malfunction.

Instant Flash

Instant Flash is a UEFI flash utility embedded in Flash ROM. This convenient UEFI update tool allows you to update system UEFI without entering operating systems fir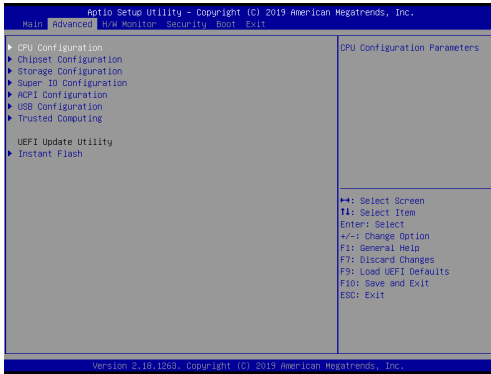st like MS-DOS or Windows®. Just launch this tool and save the new UEFI file to your USB flash drive, floppy disk or hard drive, then you can update your UEFI only in a few clicks without preparing an additional floppy diskette or other complicated flash utility. Please be noted that the USB flash drive or hard drive must use FAT32/16/12 file system. If you execute Instant Flash utility, the utility will show the UEFI files and their respective information. Select the proper UEFI file to update your UEFI, and reboot your system after UEFI update process completes.

3.3.1 CPU Configuration

Cool 'n' Quiet

Use this item to enable or disable AMD's Cool 'n' Quiet™ technology. The default value is [Enabled]. Configuration options: [Enabled] and [Disabled]. If you install Windows® OS and want to enable this function, please set this item to [Enabled]. Please note that enabling this function may reduce CPU voltage and memory frequency, and lead to system stability or compatibility issue with some memory modules or power supplies. Please set this item to [Disable] if above issue occurs.
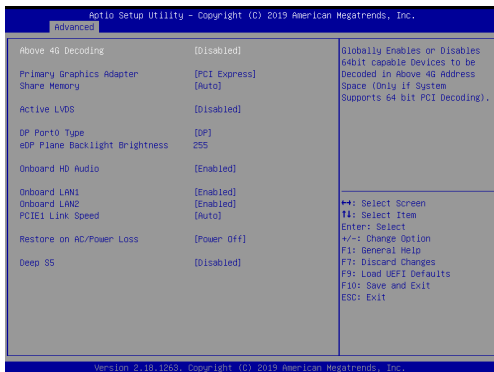
SVM Mode

When this is set to [Enabled], a VMM (Virtual Machine Architecture) can utilize the additional hardware capabilities provided by AMD-V. The default value is [Enabled]. Configuration options: [Enabled] and [Disabled].

Core Performance Boost

The default value is [Auto].

3.3.2 Chipset Configuration

Above 4G Decoding

Enable or disable 64bit capable Devices to be decoded in Above 4G Address Space (only if the system supports 64 bit PCI decoding).

Primary Graphics Adapter

This item will switch the PCI Bus scanning order while searching for video card. It allows you to select the type of Primary VGA in case of multiple video controllers. The default value of this feature is [PCI Express].

Share Memory

Configure the size of memory that is allocated to the integrated graphics processor when the system boots up.

Active LVDS

Use this to enable or disable the LVDS. The default value is [Disabled]. Set the item to [enable]. Then press <F10> to save the setting and restart the system. Now the default value of Active LVDS is changed to ENABLE (F9 load default is also set to ENABLE) Change the setting from [Enable] to [Disable], and then press <F10> to save the setting and restart the system. Likewise, the default value of Active LVDS is changed to DISABLE (F9 load default is also set to DISABLE)

DP Port0 Type

Select DP Port0 Type. The default value is [DP].

eDP Panel BackLight Brightness

Use this to adjust eDP panel backlight brightness. You are allowed to adjust this item only when CSM is disabled.

Onboard HD Audio

Select [Enabled] or [Disabled] for the onboard HD Audio feature.

Onboard LAN 1

This allows you to enable or disable the Onboard LAN 1.

Onboard LAN 2

This allows you to enable or disable the Onboard LAN 2.

PCIE1 Link Speed

Select the link speed for PCIE1.

Restore on AC/Power Loss

This allows you to set the power state after an unexpected AC/power loss. If [Power Off] is selected, the AC/power remains off when the power recovers. If [Power On] is selected, the AC/power resumes and the system starts to boot up when the power recovers.

Deep S5

[Auto] will disable the deep S5 configuration if RTC/LAN/USB device power on settings are enabled. The default value is [Disabled].

3.3.3 Storage Configuration
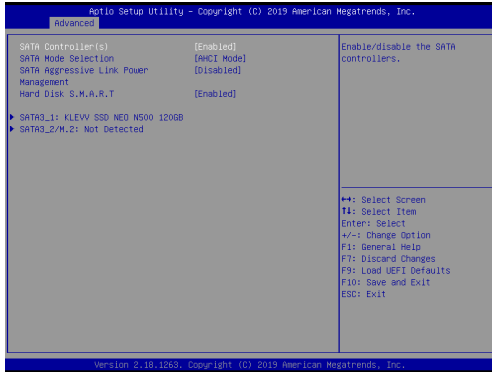
SATA Controller

Use this item to enable or disable the SATA Controller feature.

SATA Mode Selection

Use this to select SATA mode. The default value is [AHCI Mode].

AHCI (Advanced Host Controller Interface) supports NCQ and other new features that will improve SATA disk performance but IDE mode does not have these advantages.

Hard Disk S.M.A.R.T.

Use this item to enable or disable the S.M.A.R.T. (Self-Monitoring, Analysis, and Reporting Technology) feature. Configuration options: [Disabled] and [Enabled].

3.3.4 Super IO Configuration

COM1 Configuration

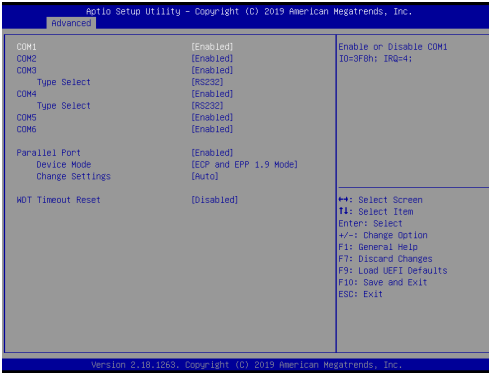Use this to set the parameters of COM1.

COM2 Configuration

Use this to set the parameters of COM2.

COM3 Configuration

Use this to set the parameters of COM3.

Type Select

Use this to select COM3 port type: [RS232], [RS422] or [RS485].

COM4 Configuration

Use this to set the parameters of COM4.

Type Select

Use this to select COM4 port type: [RS232], [RS422] or [RS485].

COM5 Configuration

Use this to set the parameters of COM5.

COM6 Configuration

Use this to set the parameters of COM6.

Parallel Port

Enable or disable the Parallel port.

Device Mode

Select the device mode according to your connected device.

Change Settings

Select the address of the Parallel port.

WDT Timeout Reset

This allows users to enable/disable the Watch Dog Timer timeout to reset the system. The default value is [Disabled].

3.3.5 ACPI Configuration
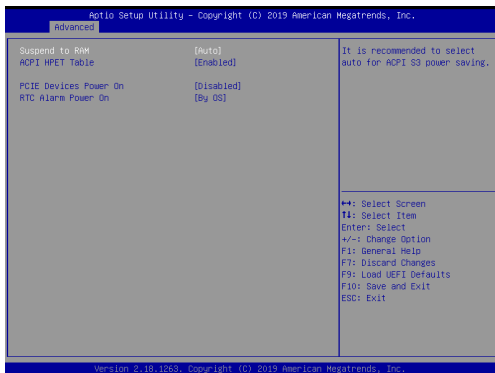
Suspend to RAM

Select disable for ACPI suspend type S1. It is recommended to se-
lect auto for ACPI S3 power saving.

ACPI HPET Table

Enable the High Precision Event Timer for better performance.

PCIE Devices Power On

Use this to enable or disable the PCIE devices to turn on the sys-
tem from power-soft-off mode.

RTC Alarm Power On

Use this to enable or disable the RTC (Real Time Clock) to power
on the system.

3.3.6 USB Configuration

Legacy USB Support

Use this option to select legacy support for USB devices. There are two configuration options: [Enabled] and [UEFI Setup Only]. The default value is [Enabled]. Please refer to below descriptions for the details of these two options:

[Enabled] - Enables support for legacy USB.

[UEFI Setup Only] - USB devices are allowed to use only under UEFI setup and Windows / Linux OS.

3.3.7 Trusted Computing
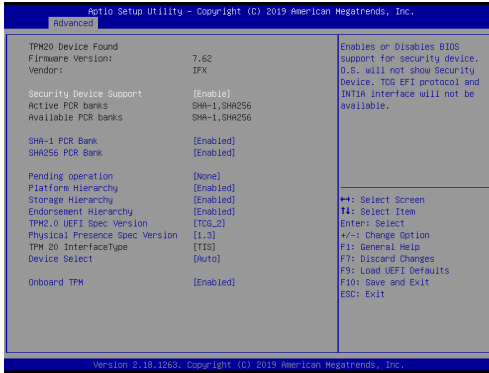
Security Device Support

Enable or disable BIOS support for security device.

3.4 Hardware Health Event Monitoring Screen

This section allows you to monitor the status of the hardware on your system, including the parameters of the CPU temperature, motherboard temperature, fan speed and voltage.
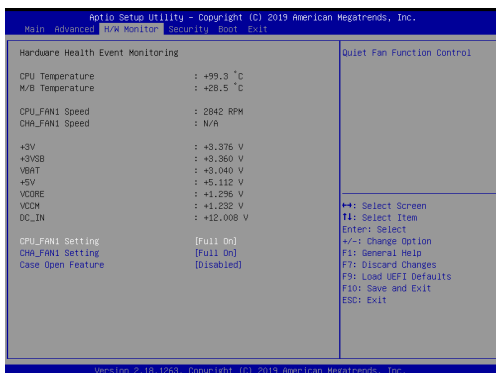
CPU FAN1 Setting

This allows you to set CPU FAN1's speed. The default value is [Full On].

Chassis FAN1 Setting

This allows you to set Chassis FAN1's speed. The default value is [Full On].

Case Open Feature

Enable or disable Case Open Feature to detect whether the chassis cover has been removed.

3.5 Security Screen

In this section you may set or change the supervisor/user password for the system. You may also clear the user password.

```
                    Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
      Main  Advanced  H/W Monitor  Security  Boot  Exit

   Supervisor Password              Not Installed              Set or change the password
   User Password                    Not Installed              for the administrator
                                                               account. Only the
   Supervisor Password                                         administrator has authority
   User Password                                               to change the settings in the
                                                               UEFI Setup Utility. Leave it
   ▶ Secure Boot                                               blank and press enter to
                                                               remove the password.


                                                               ↔: Select Screen
                                                               ↑↓: Select Item
                                                               Enter: Select
                                                               +/-: Change Option
                                                               F1: General Help
                                                               F7: Discard Changes
                                                               F9: Load UEFI Defaults
                                                               F10: Save and Exit
                                                               ESC: Exit


                    Version 2.18.1263. Copyright (C) 2019 American Megatrends, Inc.
```
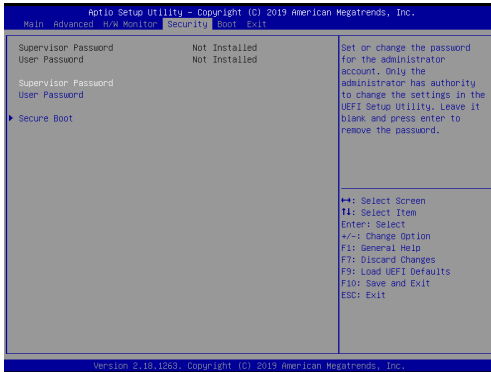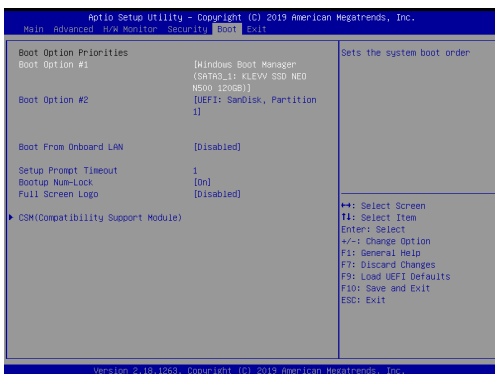
Secure Boot

Use this to enable or disable support for Secure Boot.

3.6 Boot Screen

This section displays the available devices on your system for you to con-figure the boot settings and the boot priority.

Boot From Onboard LAN

Use this to enable or disable Boot From Onboard LAN.

Setup Prompt Timeout

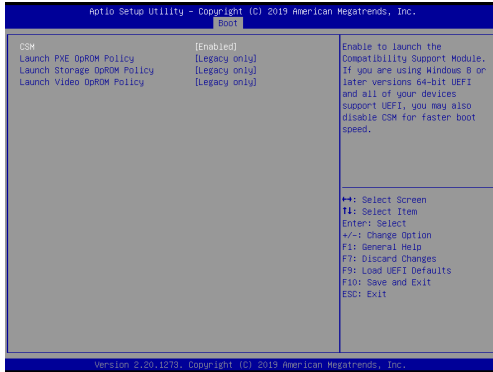This shows the number of seconds to wait for the setup activation key.

Bootup Num-Lock

If this is set to [On], it will automatically activate the Numeric Lock after boot-up.

Full Screen Logo

Use this item to enable or disable OEM Logo. The default value is [Enabled].

CSM (Compatibility Support Module)

CSM

Enable to launch the Compatibility Support Module. If you are using Windows 8.1 / 8 64-bit UEFI and all of your devices support UEFI, you may also disable CSM for faster boot speed.

Launch PXE OpROM Policy

Select UEFI only to run those that support UEFI option ROM only. Select Legacy only to run those that support legacy option ROM only. Select Do not launch to not execute both legacy and UEFI option ROM.

Launch Storage OpROM Policy

Select UEFI only to run those that support UEFI option ROM only. Select Legacy only to run those that support legacy option ROM only. Select Do not launch to not execute both legacy and UEFI option ROM.
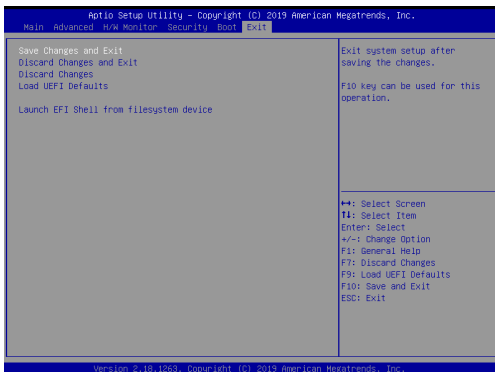
Launch Video OpROM Policy

Select UEFI only to run those that support UEFI option ROM only. Select Legacy only to run those that support legacy option ROM only. Select Do not launch to not execute both legacy and UEFI option ROM.

3.7 Exit Screen

Save Changes and Exit

When you select this option the following message, "Save configuration changes and exit setup?" will pop out. Select [OK] to save changes and exit the UEFI SETUP UTILITY.

Discard Changes and Exit

When you select this option the following message, "Discard changes and exit setup?" will pop out. Select [OK] to exit the UEFI SETUP UTILITY without saving any changes.

Discard Changes

When you select this option the following message, "Discard changes?" will pop out. Select [OK] to discard all changes.

Load UEFI Defaults

Load UEFI default values for all options. The F9 key can be used for this operation.

Launch EFI Shell from filesystem device

Copy shellx64.efi to the root directory to launch EFI Shell.

Chapter 4: Software Support

4.1 Install Operating System

This motherboard supports various Microsoft® Windows® operating systems: 10 64-bit. Because motherboard settings and hardware options vary, use the setup procedures in this chapter for general reference only. Refer your OS documentation for more information.

4.2 Support CD Information

The Support CD that came with the motherboard contains necessary drivers and useful utilities that enhance the motherboard's features.

4.2.1 Running The Support CD

To begin using the support CD, insert the CD into your CD-ROM drive. The CD automatically displays the Main Menu if "AUTORUN" is enabled in your computer. If the Main Menu did not appear automatically, locate and double click on the file "ASRSETUP.EXE" from the BIN folder in the Support CD to display the menus.

4.2.2 Drivers Menu

The Drivers Menu shows the available device's drivers if the system detects installed devices. Please install the necessary drivers to activate the devices.

4.2.3 Utilities Menu

The Utilities Menu shows the application software that the motherboard supports. Click on a specific item then follow the installation wizard to install it.

4.2.4 Contact Information

If you need to contact ASRockInd or want to know more about ASRockInd, you're welcome to visit ASRockInd's website at http://www.asrockind.com; or you may contact your dealer for further information.

4.3 AMD Eyefinity Multidisplay Technology Setting

Arrange Eyefinity Display Group

1. Arrange the display in a 4x1 or 2x2 configuration under Windows 10 Display setting.

2. Set up AMD Eyefinity with Quick Setup.

3. Click Eyefinity once AMD Radeon Settings opens.

4. Click Quick Setup to automatically create an AMD Eyefinity display group based on the current (default) display configuration.