EMP-100 Series

Fanless Embedded Computer

User's Manual



Manual Rev.: 1.0

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Part No: 50M-G1000-1000

LEADING EDGE COMPUTING

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Revision History

Revision	Release Date	Description of Change(s)
1.0	2024-09-17	Initial release

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Preface

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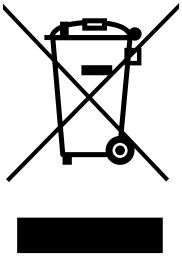
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WARNING: This product can expose you to chemicals including acrylamide, arsenic, benzene, cadmium, Tris(1,3-dichloro-2-propyl) phosphate (TDCPP), 1,4-Dioxane, formaldehyde, lead, DEHP, styrene, DINP, BBP, PVC, and vinyl materials, which are known to the State of California to cause cancer, and acrylamide, benzene, cadmium, lead, mercury, phthalates, toluene, DEHP, DIDP, DnHP, DBP, BBP, PVC, and vinyl materials, which are known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

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Conventions

Take note of the following conventions used throughout this manual to make sure that users perform certain tasks and instructions properly.

NOTE: Additional information, aids, and tips that help users perform tasks.

CAUTION: Information to prevent ***minor*** physical injury, component damage, data loss, and/or program corruption when trying to complete a task.
ATTENTION: Informations destinées à prévenir les blessures corporelles mineures, les dommages aux composants, la perte de données et/ou la corruption de programme lors de l'exécution d'une tâche.

WARNING: Information to prevent ***serious*** physical injury, component damage, data loss, and/or program corruption when trying to complete a specific task.
AVERTISSEMENT: Informations destinées à prévenir les blessures corporelles graves, les dommages aux composants, la perte de données et/ou la corruption de programme lors de l'exécution d'une tâche spécifique.

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1 Introduction

The EMP-100 Series fanless media players/embedded computers feature a powerful and cost-efficient Intel® Elkhart Lake SoCs with low power consumption. The EMP-100 Series supports Microsoft® Windows® or Linux® Ubuntu operating system, and 2 video-out connectors in a compact, durable, and fanless package, ideal for high-quality and optimal display experiences in advertising, digital menu board, and digital billboard applications.

1.1 Features

- Palm-sized slim design
- Intel® Celeron® N6210/J6412 SoC
- 1x DDR4 SODIMM up to 16GB
- 2x HDMI outputs, with up to 60Hz refresh rate @4K resolution
- 1x GbE, 1x COM, 3x USB ports
- M.2 2280 SSD
- M.2 2230 E key for Wi-Fi/Bluetooth compatibility
- OS support
  - Windows 10 IoT Enterprise/LTSC 64-bit
  - Ubuntu Linux

1.2 Optional Accessories

- M.2 SATA SSD
  - up to 1TB
- Wireless Module
  - WiFi kit (w/ antenna)
- AC/DC Adapter
  - 60W
- Mounting Bracket
  - VESA mount (optional)

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1.3 Specifications

Model	EMP-100-N6210	EMP-100-J6412
System Core		
Processor	Intel® Celeron™ N6210	Intel® Celeron™ J6412
TDP	6.5W	10W
# of Cores	2	4
Base Frequency	2.0 GHz	1.2 GHz
Max. Turbo Frequency	2.6 GHz	2.6 GHz
Memory	1x 260-pin DDR4 SODIMM, supports 3200MHz SDRAM up to 16GB	
Storage	1x M-key 2280 (PCIe x1+SATA3) for SSD, up to 1TB 1x 2.5” SSD/HDD SATA 6Gbps (Optional)	
I/O Interface		
Display output	1x HDMI 1.4, max. resolution up to 3840x2160@30Hz 1x HDMI 2.0b, max. resolution up to 3840x2160@60Hz	
Ethernet	1x GbE RJ45	
USB Ports	3x USB 3.2 Gen.1 Power Output: 5V/0.9A per port	
Audio	1x Headphone	
DC input	12V DC	
Antennas	2x Antenna holes for SMA-type antennas (Wi-Fi/Bluetooth)	
Expansion	1x M.2 E-key 2230 (PCIe+USB2.0) for optional Wi-Fi/Bluetooth module	
Mechanical		
Dimensions	130 (W) x 107 (D) x 28 (H) mm	
Weight	550 g	

Table 1-1: EMP-100 Series Specifications

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Model	EMP-100-N6210	EMP-100-J6412
Mounting	VESA mount (optional)	
Environmental		
Operating Temperature	Standard: 0°C to 40°C (with 0.6 m/s air flow)	
Storage Temperature	-10°C to 55°C	
Humidity	95% @ 40°C (non-condensing)	
Vibration	Operating: 1 Grms, 5-500 Hz, 3 axes (w/ SSD)	
Shock	Operating: 20 Grms, half sine 11ms duration (w/ SSD)	
ESD	Contact ±4KV, Air ±8KV	
EMC	EN 55032/55035, CE, FCC Class B	
Safety	Compliant with IEC 62368-1:2014 **Note:** EMP-100 has passed pre-compliance testing of EMI, EMS, EMC and Safety.	

Table 1-1: EMP-100 Series Specifications

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1.4 Power Consumption

Power consumption is based on lab data in which 12V DC is applied and current is measured by the DC power supply. The power consumption (W) is calculated as the product of applied voltage (V) and the current (A). Platforms tested for this data have available external I/O interfaces and are attached to supported devices such as keyboard/mouse, USB dummy load, COM loop-back, LAN port, and with an internal SSD driver installed. Information is presented for reference only. Actual power consumption will vary with different attached devices and operating systems.

	EMP-100-N6210	EMP-100-J6412
System Idle (S0)	2W	10W
System Full Load	28W	36W

Table 1-2: Power Consumption

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1.5 Block Diagram

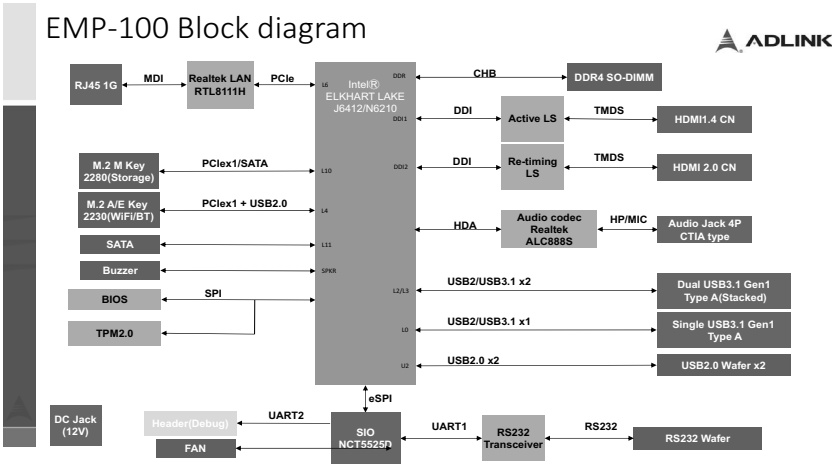


Figure 1-1: EMP-100 Series Block Diagram

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1.6 Mechanical Dimensions

NOTE:

All dimensions shown in millimeters (mm).

1.6.1 Base Device

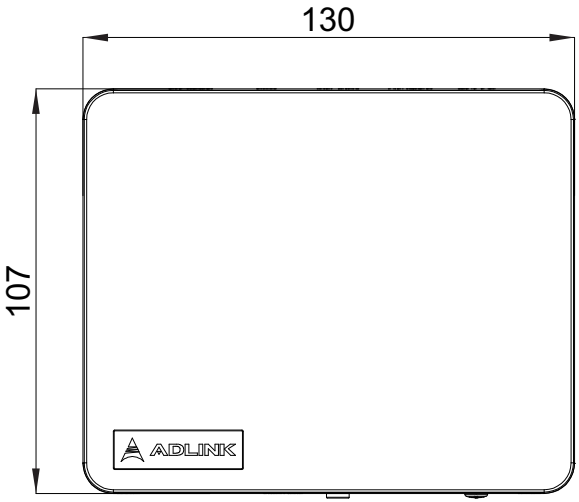


Figure 1-2: Base Device Top View

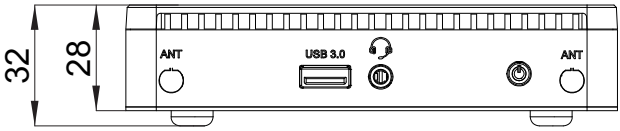


Figure 1-3: Base Device Front View

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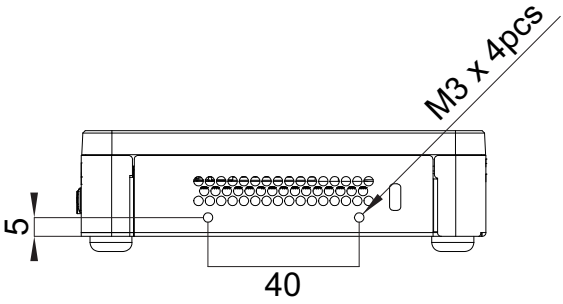


Figure 1-4: Base Device Side View

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1.6.2 Device with Optional VESA Mount

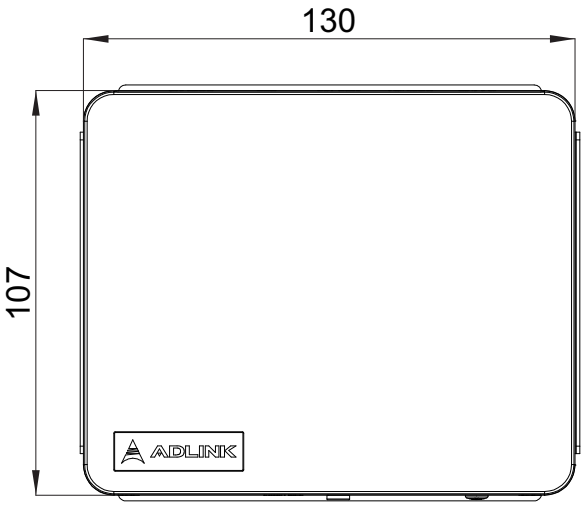


Figure 1-5: Device with VESA Mount Top View

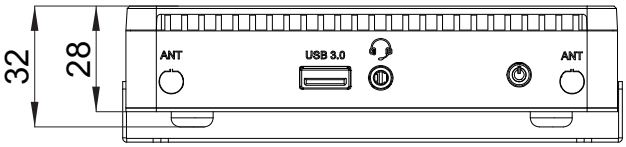


Figure 1-6: Device with VESA Mount Front View

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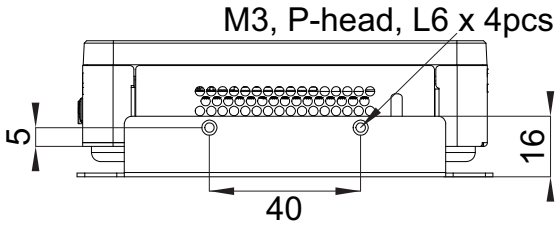


Figure 1-7: Device with VESA Mount Side View

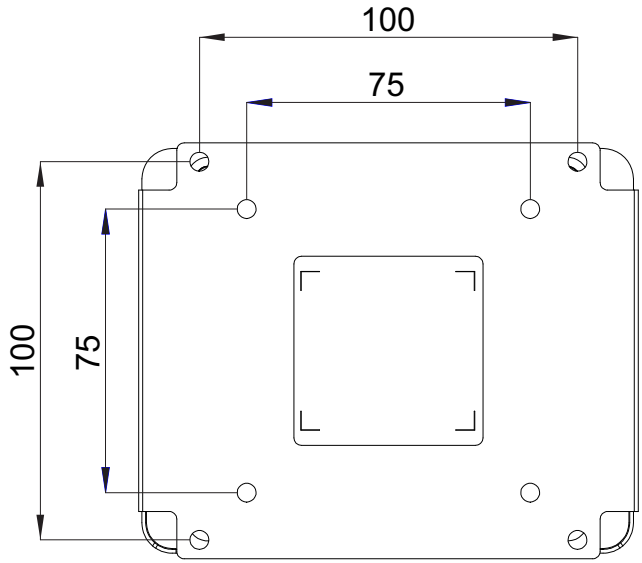


Figure 1-8: Device with VESA Mount Bottom View

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2 Getting Started

2.1 Packing List

Before unpacking, check the shipping carton for any damage. If the shipping carton and/or contents are damaged, inform your dealer immediately. Retain the shipping carton and packing materials for inspection. Obtain authorization from your dealer before returning any product to ADLINK. Ensure that the following items are included in the package.

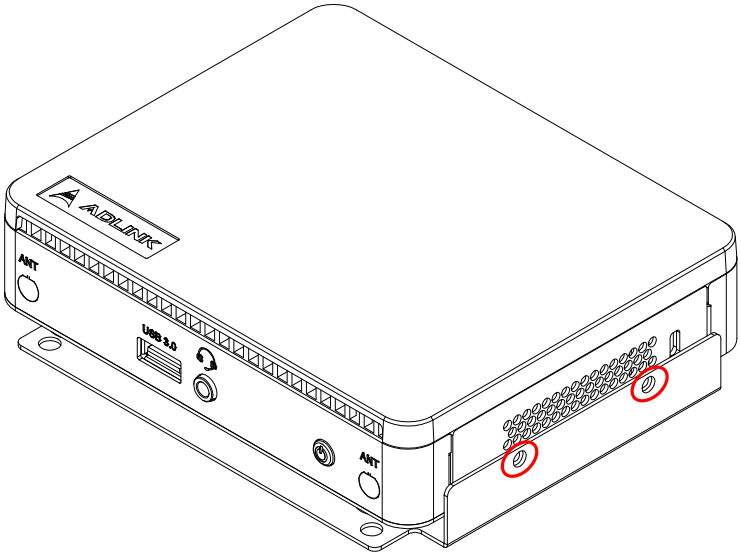
- EMP-100 controller

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2.2 Mounting

2.2.1 Installing the Optional VESA Mounting Brackets

Attach the mounting bracket to the intended mounting location first. Once the bracket is secure, use the 4 screws included in the package contents to attach the VESA mounting bracket to the chassis the chassis with 6kgf/cm of torque.



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3 System Layout

3.1 External I/O Connectors

The EMP-100 Series provides the following external I/O connectors.

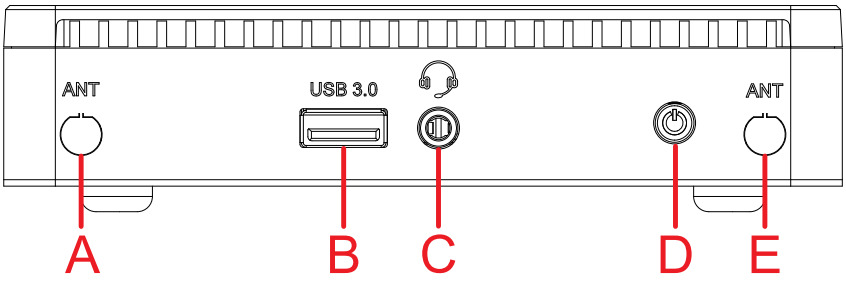


Figure 3-1: EMP-100 Series Front Panel External I/O

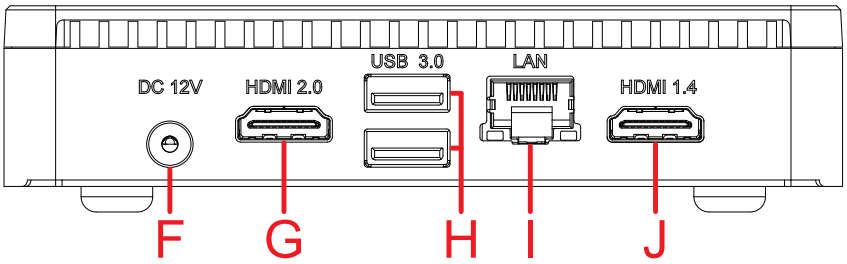


Figure 3-2: EMP-100 Series Back Panel External I/O

A	1x Antenna Hole (Right)
B	1x USB 3.2 Gen1 (5Gbps) Type-A
C	1x Headphone Jack
D	1x Power Button
E	1x Antenna Connector (Right)

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F	1x DC Power
G	1x HDMI 2.0
H	2x USB 3.2 Gen1 (5Gbps) Type-A
I	1x RJ45 GbE LAN
J	1x HDMI 1.4

Table 3-1: External I/O Legend

3.1.1 Wireless Antenna Holes

SMA-type antenna holes are reserved for use with a wireless, WiFi, or LTE module. Wireless antennas should be attached to the holes when a wireless, Wi-Fi, or LTE module has been installed in the EMP-100 Series.

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3.1.2 USB 3.2 Gen1 Connector

Four USB 3.2 Gen1 (5 Gbps with 1600 mA power and OCP protection) Type-A connectors are provided compatible with SuperSpeed, Hi-Speed, Full-speed, and Low-speed USB devices suitable for USB peripherals.

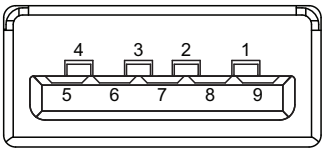


Figure 3-3: USB 3.0 Type-A Connector Pin Definition

Pin No.	Signal
1	VBUS
2	D-
3	D+
4	GND
5	StdA_SSRX−
6	StdA_SSRX+
7	GND_DRAIN
8	StdA_SSTX−
9	StdA_SSTX+

Table 3-2: USB 3.0 Type-A Connector Pin Definition

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3.1.3 HDMI Connectors

The EMP-100 Series supports 2 independent display output ports under Windows 10/11 and Ubuntu Linux, and 2 independent display output ports in the UEFI shell, as shown in the following table.

System	Maximum Number of Independent Displays	Notes
Windows	2	
Ubuntu Linux	2	
UEFI Shell	2	Priority 1: HDMI 1.4 Priority 2: HDMI 2.0b

Table 3-3: Maximum Number of Independent Displays

Each port supports up to 3840 x 2160 resolution on up to two displays at a time.

.

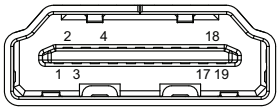


Figure 3-4: HDMI Connector Pin Definition

Pin #	Signal	Pin #	Signal
1	TMDS Data2+	2	TMDS Data2 Shield
3	TMDS Data2–	4	TMDS Data1+
5	TMDS Data1 Shield	6	TMDS Data1–
7	TMDS Data0+	8	TMDS Data0 Shield
9	TMDS Data0–	10	TMDS Clock+
11	TMDS Clock Shield	12	TMDS Clock–
13	CEC	14	Reserved
15	SCL	16	SDA
17	DDC/CEC Ground	18	+5 V Power
19	Hot Plug Detect		

Table 3-4: HDMI Connector Pin Definition

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3.1.4 RJ45 GbE LAN

One Gigabit Intel® Ethernet Controller Realtek RTL8111H RJ-45 connector supports up to 1000/100/10 Mbit/s connections.

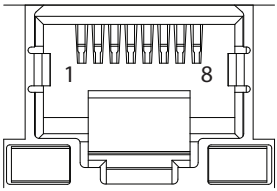


Figure 3-5: Ethernet Port and LEDs

Pin	10BASE-T/100BASE-TX	1000BASE-T
1	TX+	TX0+
2	TX-	TX0-
3	RX+	TX1+
4	-	TX1-
5	-	TX2+
6	RX-	TX2-
7	-	TX3+
8	-	TX3-

Table 3-5: Ethernet Port Pin Definition

LED Color	Status	Description
Yellow	OFF	Ethernet port is disconnected.
	ON	Ethernet port is connected with no activity.
	Flashing	Ethernet port is connected and active.
Green	OFF	10/100 Mbps
	Green	1000 Mbps

Table 3-6: Active/Link and Speed LED Indicators

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3.1.5 DC-in Power Connector

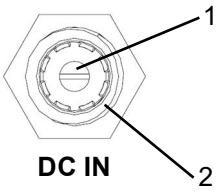


Figure 3-6: DC-in Power Connector

Pin	Function	Description
1	Power	Power input
2	Ground	Reference ground

Table 3-7: DC-in Power Connector Pin Definitions

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3.2 Internal I/O Connectors

WARNING:

Installation of add-on devices must be carried out by ADLINK service personnel only. Users must not disassemble the device themselves.

L'installation de périphériques complémentaires doit être effectuée uniquement par le personnel de service ADLINK. Les utilisateurs ne doivent pas démonter l'appareil eux-mêmes.

3.2.1 Mainboard Connector Locations

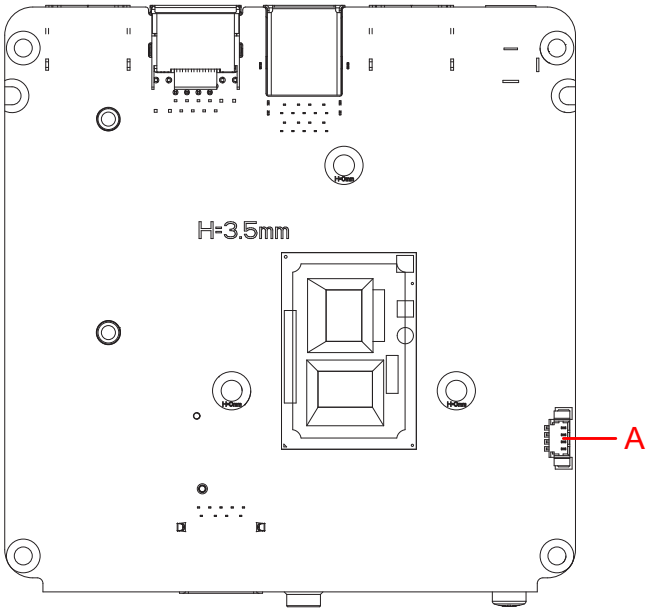


Figure 3-7: Mainboard Connectors (top)

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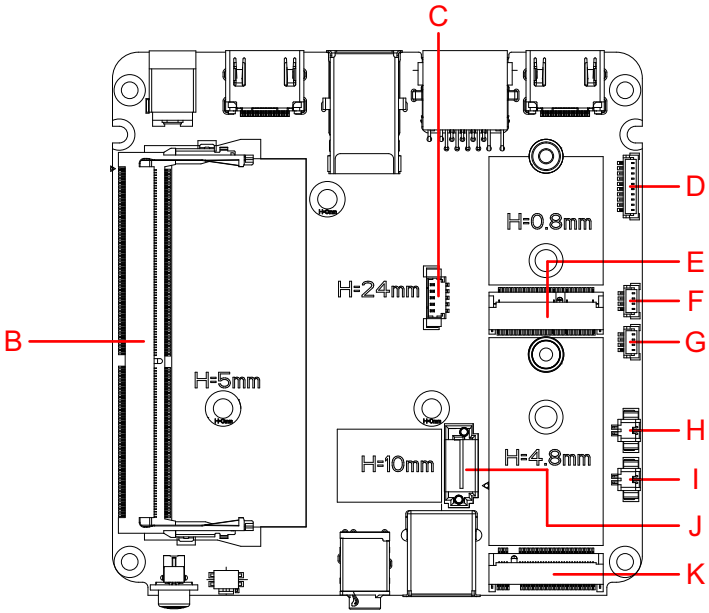


Figure 3-8: Mainboard Connectors (bottom)

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A	Fan Connector	**G**	USB 2.0 Wafer
B	260-pin DDR4 SO-DIMM	**H**	Buzzer Wafer
C	SATA Power Connector	**I**	RTC Battery Wafer
D	COM 1 Connector	**J**	SATA Data Connector
E	M.2 2230, E Key for Wi-Fi/Bluetooth Modules	**K**	M-key 2242/2280 (PCIe x1+SATA3) for SSD
F	USB 2.0 Wafer		

Figure 3-9: Mainboard Connector Legend Mainboard Connectors (bottom)

3.2.2 Fan Connector

This internal USB 2.0 connector facilitates connection of a camera to the device.

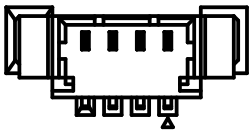


Figure 3-10: Fan Connector Pin Definition

Pin	Signal
1	GND
2	FAN_PWR_IN (12V)
3	SIO_FANIN1_CN
4	SIO_PWM_DAC1_CN

Table 3-8: Fan Connector Pin Definition

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3.2.3 SATA Power Connector

The SATA power connector provides a power connection for an internal 2.5” HDD.

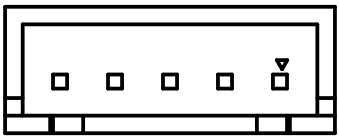


Figure 3-11: SATA Power Connector Pin Definition

Pin	Signal
1	NC
2	GND
3	P+5V_S0
4	GND
5	P+3V3_S0

Table 3-9: SATA Power Connector Pin Definition

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3.2.4 COM1 Connector

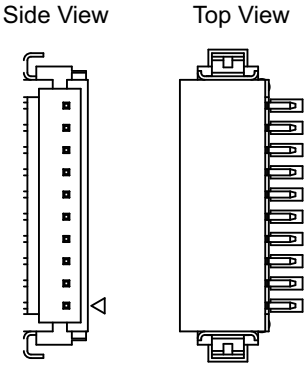


Figure 3-12: COM1 Connector Pin Definition

Pin	Signal	RS232	RS422	RS485
1	COM1_DCD-L_CN	DCD#	TXD422-	485DATA-
2	COM1_RXD_CN	RXD	TXD422+	485DATA+
3	COM1_TXD_CN	TXD	RXD422+	NC
4	COM1_DTR-L_CN	DTR#	RXD422-	NC
5	GND	GND	NC	NC
6	COM1_DSR-L_CN	DSR#	NC	NC
7	COM1_RTS-L_CN	RTS#	NC	NC
8	COM1_CTS-L_CN	CTS#	NC	NC
9	COM1_RI-L_CN	RI#	NC	NC
10	NC	NC	NC	NC

Table 3-10: COM1 Connector Pin Definition

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3.2.5 M.2 2230, E Key for Wi-Fi/Bluetooth Modules

Connects to power, reset button, and power LED via cable.

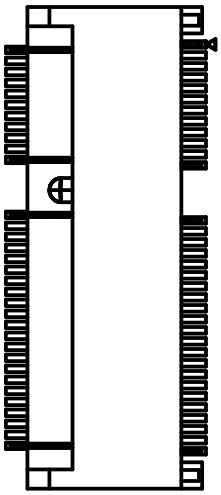


Figure 3-13: E Key Connector Pin Definition

Pin	Signal	Pin	Signal
1	GND	2	P_+3V3_NGFF_E
3	M2E_USB_P	4	P_+3V3_NGFF_E
5	M2E_USB_N	6	NC
7	GND	8	NC
9	NC	10	NC
11	NC	12	NC
13	NC	14	NC
15	NC	16	NC
17	NC	18	GND
19	NC	20	NC
21	NC	22	NC
23	NC	32	NC
33	GND	34	NC

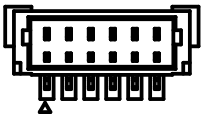
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Pin	Signal	Pin	Signal
35	PCIE2_M2E_TX_P	36	NC
37	PCIE2_M2E_TX_N	38	NC
39	GND	40	NC
41	PCIE2_RX_P	42	NC
43	PCIE2_RX_N	44	NC
45	GND	46	NC
47	PCIECLK1_100M_P	48	NC
49	PCIECLK1_100M_N	50	NC
51	GND	52	M2E_PLTRST_BUF-L
53	PCH_CLK_REQ1-L	54	NC
55	M2_E_PEWAKE_N	56	W_DISABLE1
57	GND	58	PCH_SMB_DAT_A
59	NC	60	PCH_SMB_CLK_A
61	NC	62	GP_C02_SMB_ALERT-
63	GND	64	NC
65	NC	66	NC
67	NC	68	NC
69	GND	70	NC
71	NC	72	P_+3V3_NGFF_E
73	NC	74	P_+3V3_NGFF_E
75	GND		

Table 3-11: Key Connector Connector Pin Definition

3.2.6 USB 2.0 Connector

The USB 2.0 wafer facilitates connection of peripherals to the device.



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Figure 3-14: USB 2.0 Connector Pin Definition

Pin	Signal
1	P5V_U2_INTUSB
2	CN_U2_P9_N
3	CN_U2_P9_P
4	GND
5	NC
6	NC

Table 3-12: USB 2.0 Connector Pin Definition

3.2.7 USB 2.0 Connector

The USB 2.0 wafer facilitates connection of peripherals to the device.

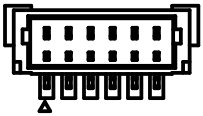


Figure 3-15: USB 2.0 Connector Pin Definition

Pin	Signal
1	P5V_U2_INTUSB
2	CN_U2_P9_N
3	CN_U2_P9_P
4	GND
5	NC
6	NC

Table 3-13: USB 2.0 Connector Pin Definition

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3.2.8 SATA Data Connector

The SATA data connector provides a data connection for aninternal 2.5” HDD.

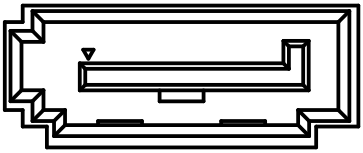


Figure 3-16: SATA Data Connector Pin Definition

Pin	Signal
1	GND
2	SATA_TX1_P
3	SATA_TX1_N
4	GND
5	SATA_RX1_N
6	SATA_RX1_P
7	GND

Table 3-14: SATA Data Connector Pin Definition

3.2.9 Buzzer Connector

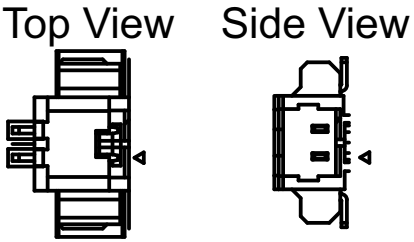


Figure 3-17: Buzzer Connector Pin Definition

Pin	Signal
1	P_+5V_S0
2	N40235133

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Table 3-15: Buzzer Connector Pin Definition

3.2.10 RTC Battery Connector

The Real Time Clock battery connector allows connection of a backup battery to sustain the system clock in the event of a power outage.

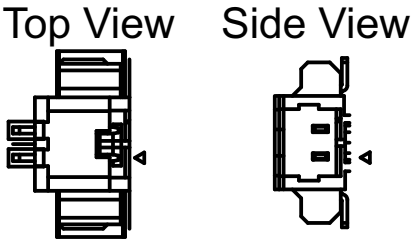


Figure 3-18: RTC Battery Wafer Pin Definition

Pin	Signal
1	P_+VCC_RTC_CN_A
2	GND

Table 3-16: RTC Battery Wafer Pin Definition

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3.2.11 M.2 M Key Connector

The M.2 M key supports an SSD.

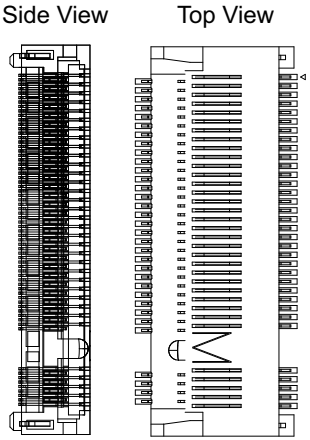


Figure 3-19: M.2 M Key Connector Pin Definition

Pin	Signal	Pin	Signal
1	NGFF_CONFIG3	2	P_+3V3_NGFF_M
3	GND	4	P_+3V3_NGFF_M
5	NC	6	NC
7	NC	8	NC
9	GND	10	NC
11	NC	12	P_+3V3_NGFF_M
13	NC	14	P_+3V3_NGFF_M
15	GND	16	P_+3V3_NGFF_M
17	NC	18	P_+3V3_NGFF_M
19	NC	20	NC
21	NGFF_CONFIG0	22	NC
23	NC	24	NC
25	NC	26	NC
27	GND	28	NC
29	PCIE5_RX_N	30	NC
31	PCIE5_RX_P	32	NC

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Pin	Signal	Pin	Signal
33	GND	34	NC
35	M2_PCIE5_TX_N	36	NC
37	M2_PCIE5_TX_P	38	PCH_DEVSLP0
39	GND	40	NC
41	M2_PCIE_SATA_RX_P_R	42	NC
43	M2_PCIE_SATA_RX_N_R	44	NC
45	GND	46	NC
47	M2_PCIE_SATA_TX_N_R	48	NC
49	M2_PCIE_SATA_TX_P_R	50	M2M_PLTRST_BUF-L
51	GND	52	PCH_CLK_REQ3-L
53	C_PCIECLK3_100M_N	54	PCH_PCIE_M2M_WAKE-
55	C_PCIECLK3_100M_P	56	NC
57	GND	58	NC
67	NC	68	NC
69	NGFF_CONFIG1	70	P_+3V3_NGFF_M
71	GND	72	P_+3V3_NGFF_M
73	GND	74	P_+3V3_NGFF_M
75	NGFF_CONFIG2		

Table 3-17: M.2 M Key Connector Pin Definition

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4 BIOS Setup

The Basic Input/Output System (BIOS) is a program that provides a basic level of communication between the processor and peripherals. In addition, the BIOS also contains codes for various advanced features applied to the EMP-100 Series. The BIOS setup program includes menus for configuring settings and enabling features of the EMP-100 Series. Most users do not need to use the BIOS setup program, as the EMP-100 Series ships with default settings that work well for most configurations.



BIOS options used in this manual are for reference only, and are subject to change. Users can download the latest BIOS version from the ADLINK website.



Changing BIOS settings may lead to unexpected system behavior and the possible inability to boot.

4.1 BIOS Setup Menu

The BIOS Setup Utility is invoked by pressing <ESC> or <DEL> when the system boots. A system reboot is required when changes are made in the BIOS Setup Utility.

The BIOS Setup Utility includes the following hotkeys.

- <F1>: General help
- <F8>: Load previous BIOS values
- <F9>: Load BIOS default values
- <F10>: Save & Exit the Setup Utility

Menu Selection Bar

The Menu Selection Bar is located at the top of the screen. It displays the top level menus available to the user.

- Main Menu
- Advanced Menu
- Chipset Menu
- Security Menu
- Boot Menu
- Save & Exit Menu

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4.2 Menu Structure

This section presents the six primary menus of the BIOS Setup Utility. Use the following tables as a quick reference for the contents of the BIOS Setup Utility. The remainder of this chapter describe the submenus and options for each menu item. The default settings are presented in bold, and the function of each setting is described in the right hand column of the table.

NOTE:

- ► indicates a submenu
- Gray text indicates info only
- **Bold text** indicates a default setting

Main	Advanced
- BIOS Information - System Information - Board Information ►	- CPU Configuration ► - Power Management ► - Hardware Monitor ► - Watchdog Timer ► - Super IO Configuration ► - Serial Console Redirection ► - Trusted Computing ► - Miscellaneous ► - Network Stack Configuration ►

Chipset	Security
- System Agent (SA) Configuration ► - PCH-IO Configuration ►	Password Description - Administrator Password - User Password - Secure Boot ►

Boot	Save & Exit
- Boot Configuration ► - UEFI Application Boot Priorities	- Save Options ► - Default Options ► - Boot Override ►

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4.3 Main Menu

This menu provides read-only information about your system and also allows you to set the System Date and Time. Refer to the tables below for details of the submenus and settings.

4.3.1 Main > BIOS Information

Feature	Options	Description
BIOS Vendor	Info only	BIOS Vendor
BIOS Version	Info only	BIOS Version
Build Date	Info only	BIOS build date
MRC Version	Info only	MRC Version
GOP Version	Info only	GOP Version
ME FW Version	Info only	ME FW Version

4.3.2 Main > System Information

Feature	Options	Description
Project Name	Info only	EMP-100
CPU Board Version	Info only	CPU Board Version
CPU Brand String	Info only	CPU Brand String
CPU Frequency	Info only	CPU Frequency
Total Memory	Info only	Total Memory
Memory Frequency	Info only	Memory Frequency
PCH SKU	Info only	PCH SKU
System Date	Weekday, MM/DD/ YYYY	Set the date. Use Tab to switch between Date elements. Default Ranges: Year: 1998-9999 Months: 1-12 Days: Dependent on month Range of years may vary.
System Time	HH/MM/SS	Set the time. Use Tab to switch between time elements.
Access Level	Administrator	Access Level

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4.3.3 Main > Board Information

Feature	Options	Description
Serial Number	Info only	Serial Number
Manufacturing Date	Info only	Manufacturing Date
Last Repair Date	Info only	Last Repair Date

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4.4 Advanced Menu

This menu contains the settings for most of the user interfaces in the system.

4.4.1 Advanced > CPU Configuration

Feature	Options	Description
Turbo Mode	Disabled **Enabled**	Enable/Disable processor Turbo Mode (requires EMTTM enabled too). AUTO means enabled.
C states	**Disabled** Enabled	Enable/Disable CPU Power Management. Allows CPU to go to C states when it's not 100% utilized.

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4.4.2 Advanced > Power Management

Feature	Options	Description
Enable ACPI Auto Configuration	**Disabled** Enabled	Enables or Disables BIOS ACPI Auto Configuration.
Enable Hibernation	Disabled **Enabled**	Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may not be effective with some operating systems.
ACPI Sleep State	Suspend Disabled **S3 (Suspend to RAM)**	Select the highest ACPI sleep state the system will enter when the SUSPEND button is pressed.
Emulate AT Mode	**Emulate AT** ATX	Select Emulation AT or ATX function. If this option set to [Emulation AT], BIOS will report no suspend functions (S3 & S4) to ACPI OS. In windows XP, it will make OS show shutdown message during system shutdown. ATX: OS will turn off system power when shutdown.
ERP	Disabled **Enabled**	Energy-Related Products

4.4.3 Advanced > Hardware Monitor

Feature	Options	Description
System temperature	Info only	System temperature
C states	Info only	C states
Description	Info only	Description
CPU temperature	Info only	CPU temperature
Fan Speed	Info only	Fan Speed
VIN0	Info only	VIN0

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Feature	Options	Description
VIN2	Info only	VIN2
VCC3V	Info only	VCC3V
VSB3V	Info only	VSB3V
VBAT	Info only	VBAT
AVSB	Info only	AVSB

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4.4.4 Advanced > Watchdog Timer

Feature	Options	Description
BIOS POST Watchdog	**Disabled** Second Mode Minute Mode	1. Disable: Disable WatchDog Timer; 2. Second Mode: Enable Watchdog Timer in second mode; 3. Minute Mode: Enable Watchdog Timer in minute mode.
Minute Mode	[Max-Value, Min-Value, Step-Value] = [0xFF, 0x01, 0x01]	Range: 1 to 60 minutes. System would restart after count down
Second Mode	[Max-Value, Min-Value, Step-Value] = [0xFF, 0x0F, 0x01]	Range: 15 to 60 minutes. System would restart after count down

4.4.5 Advanced > Super IO Configuration

Feature	Options	Description
Super IO Chip	Info only	
Serial Port 1 Configuration ►	Sub-Menu	
Serial Port	Disabled **Enabled**	Enables/Disables Serial Port (COM)
Device Settings	IO=3F8h IRQ=4	
Change Settings	**Auto** IO=3F8h; IRQ=4 IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12 IO=2F8h; IRQ=3,4,5,6,7,9,10,11,12 IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12 IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12	Select an optimal setting for Super IO Device.

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4.4.6 Advanced > Serial Port Console Redirection

Feature	Options	Description
Console Redirection	**Disabled** Enabled	Enables/Disables Console Redirection
Console Redirection Settings ►	Sub-Menu	
Terminal Type	VT100 VT100+ VT-UTF8 **ANSI**	ANSI: Extended ASCII char set. - VT100: ASCII char set. - VT100+: Extends VT100 to support color, function keys, etc. - VT-UTF8: Uses UTF8 encoding to map Unicode chars onto 1 or more bytes.
Bits per second	9600 19200 38400 57600 **115200**	Selects serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds.
Data Bits	7 **8**	Data Bits
Parity	**None** Even Odd Mark Space	A parity bit can be sent with the data bits to detect some transmission errors. - Even: parity bit is 0 if the num of 1's in the data bits is even. - Odd: parity bit is 0 if num of 1's in the data bits is odd. - Mark: parity bit is always 1. - Space: Parity bit is always 0. Mark and Space Parity do not
Stop Bits*	**1** 2	Stop bits indicate the end of a serial data packet. (A start bit indicates the beginning). The standard setting is 1 stop bit. Communication with slow devices may require more than 1 stop bit.

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Feature	Options	Description
Flow Control*	**None** Hardware RTS/CTS	Flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a 'stop' signal can be sent to stop the data flow. Once the buffers are empty, a 'start' signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop
VT-UTF8 Combo Key Support	Disabled **Enabled**	Enables/Disables VT-UTF8 Combination Key Support for ANSI/VT100 terminals
Recorder Mode	**Disabled** Enabled	With this mode enabled only text will be sent. This is to capture Terminal data.
Resolution 100x31	**Disabled** Enabled	Enables/Disables extended terminal resolution
Putty KeyPad	**VT100** LINUX XTERMR6 SCO ESCN VT400	Select FunctionKey and KeyPad on Putty.

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4.4.7 Advanced > Miscellaneous

Feature	Options	Description
TPM 2.0 Device Found		
Firmware version	Info only	7.85
Vendor	Info only	IFX
Security Device support	**Enabled** Disabled	Enable or Disables BIOS support for security device. OS will not show Security Device. TCG EFI protocol and INT1A interface will not be available.

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4.4.8 Advanced > Trusted Computing

Feature	Options	Description
BIOS Lock	Enabled **Disabled**	Enable/Disable the PCH BIOS Lock Enable feature. Required to be enabled to ensure SMM protection of flash.

4.4.9 Advanced > Network Stack Configuration

Feature	Options	Description
Network Stack	**Disabled** Enabled	Enables/Disables UEFI Network Stack
Ipv4 PXE Support	**Disabled** Enabled	Enables/Disables IPv4 PXE boot support. If disabled, IPv4 PXE boot support will not be available.
Ipv6 PXE Support	**Disabled** Enabled	Enables/Disables IPv6 PXE boot support. If disabled, IPv6 PXE boot support will not be available.
PXE boot wait time	[Max-Value, Min-Value, Step-Value] = [0x05, **0x00**, 0x01]	Wait time in seconds to press ESC key to abort PXE boot. Use either +/- or numeric keys to set the value.

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4.5 Chipset

4.5.1 Chipset > System Agent (SA) Configuration

Feature	Options	Description
Memory Configuration ►		
Graphics Configuration ►		
VT-d	**Enabled** Disabled	VT-d
Above 4GB MMIO BIOS assignment	**Enabled** Disabled	Enable/Disable above 4GB Memory Mapped IO BIOS assignment
	Sub-Menu	

4.5.2 Chipset > System Agent (SA) Configuration > Memory Configuration

Feature	Options	Description
Fast Boot	Disabled **Enabled**	Enable/Disable fast path through the MRC Memory Remap
Memory Remap	**Enabled** Disabled	Enable/Disable Memory Remap above 4GB
SPD Write Disable	**TRUE** FALSE	Enable/Disable setting SPD Write Disable. For security recommendations, SPD write disable bit must be set.

4.5.3 Chipset > System Agent (SA) Configuration > Graphics Configuration

Feature	Options	Description
Primary Display	**Auto** IGFX PEG PCI	Select which of IGFX/PEG/PCI Graphics device should be Primary Display Or select HG for Hybrid Gfx.
Internal Graphics	**Auto** Disabled Enabled	Keep IGFX enabled based on the setup options.

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4.5.4 Chipset > PCH-IO Configuration > PCI Express Configuration

Feature	Options	Description
PCIe function swap	Disabled **Enabled**	When Disabled, prevents PCIE rootport function swap. If any function other than 0th is enabled, 0th will become visible.

4.5.5 Chipset > PCH-IO Configuration > SATA Configuration

Feature	Options	Description
Serial ATA Port 0		
Port 0	Disabled **Enabled**	Enables/Disables SATA Port
Hot Plug	**Disabled** Enabled	Designates this port as Hot Pluggable.
Serial ATA Port 1		
Port 1	Disabled **Enabled**	Enables/Disables SATA Port
Hot Plug	**Disabled** Enabled	Designates this port as Hot Pluggable.
Configured as eSATA	Hot Plug supported	

4.5.6 Chipset > PCH-IO Configuration > USB Configuration

Feature	Options	Description
USB Port Disable Override	Select Per-Pin **Disabled**	Selectively Enable/Disable the corresponding USB port from reporting a Device Connection to the controller.

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Feature	Options	Description
USB SS Physical Connector #0	**Enabled** Disabled	Enable/Disable this USB Physical Connector (physical port). Once disabled, any USB devices plug into the connector will not be detected by BIOS or OS.
USB SS Physical Connector #1	**Enabled** Disabled	Enable/Disable this USB Physical Connector (physical port). Once disabled, any USB devices plug into the connector will not be detected by BIOS or OS.
USB SS Physical Connector #2	**Enabled** Disabled	Enable/Disable this USB Physical Connector (physical port). Once disabled, any USB devices plug into the connector will not be detected by BIOS or OS.
USB SS Physical Connector #3	**Enabled** Disabled	Enable/Disable this USB Physical Connector (physical port). Once disabled, any USB devices plug into the connector will not be detected by BIOS or OS.
USB SS Physical Connector #4	**Enabled** Disabled	Enable/Disable this USB Physical Connector (physical port). Once disabled, any USB devices plug into the connector will not be detected by BIOS or OS.
USB SS Physical Connector #5	**Enabled** Disabled	Enable/Disable this USB Physical Connector (physical port). Once disabled, any USB devices plug into the connector will not be detected by BIOS or OS.
USB SS Physical Connector #6	**Enabled** Disabled	Enable/Disable this USB Physical Connector (physical port). Once disabled, any USB devices plug into the connector will not be detected by BIOS or OS.
USB SS Physical Connector #7	**Enabled** Disabled	Enable/Disable this USB Physical Connector (physical port). Once disabled, any USB devices plug into the connector will not be detected by BIOS or OS.
USB SS Physical Connector #8	**Enabled** Disabled	Enable/Disable this USB Physical Connector (physical port). Once disabled, any USB devices plug into the connector will not be detected by BIOS or OS.

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Feature	Options	Description
USB SS Physical Connector #9	**Enabled** Disabled	Enable/Disable this USB Physical Connector (physical port). Once disabled, any USB devices plug into the connector will not be detected by BIOS or OS.

4.5.7 Chipset > PCH-IO Configuration > USB Configuration

Feature	Options	Description
HD Audio	**Enabled** Disabled	Control Detection of the HD-Audio device.

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4.6 Security

Password Description	
If ONLY the Administrator's password is set, then this only limits access to Setup and is only asked for when entering Setup. If ONLY the User's password is set, then this is a power on password and must be entered to boot or enter Setup. In Setup the User will have Administrator rights.	
The password length must be in the following range:	
Minimum length	3
Maximum length	20
Administrator Password	
User Password	
Secure Boot ►	Sub-Menu

4.6.1 Security > Secure Boot

Feature	Options	Description
System Mode	User	
Secure Boot*	Info only	Enables/Disables Secure Boot feature,
Secure Boot Mode	Info only	Secure Boot mode options:
Key Management ►		

4.6.2 Security > Secure Boot > Key Management

Feature	Options	Description
Key Management	Info only	
Factory Key Provision	Disabled **Enabled**	Install factory default Secure Boot keys after the platform reset and while the System is in Setup mode.
Restore Factory Keys	Yes No	Force System to User Mode. Install factory default Secure Boot key databases.

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Feature	Options	Description
Reset To Setup Mode	Yes No	Delete all Secure Boot key databases from NVRAM
Export Secure Boot variables		Copy NVRAM content of Secure Boot variables to files in a root folder on a file system device
Enroll EFI Image	Yes No	Allow the image to run in Secure Boot mode. Enroll SHA256 Hash certificate of a PE image into Authorized Signature Database (db)
Secure Boot variable | Size| Keys| Key Source	Info only	Enroll Factory Defaults or load certificates from a file: 1.Public key Certificate: a)EFI_SIGNATURE_LIST b)EFI_CERT_X509(DER) c)EFI_CERT_RSA2048(bin) d)EFI_CERT_SHAXXX 2.Authenticated UEFI Variable 3.EFI PE.COFF image(SHA256) Key Source: Factory, External. Mixed Key Exchange Keys (From this to OsRecovery Signatures, Description is same with Platform Key(PK)) Authorized Signatures Forbidden Signatures Authorized TimeStamps OsRecovery Signatures

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4.7 Boot

4.7.1 Boot > Boot Configuration

Feature	Options	Description	
Setup Prompt Timeout	[Max-Value, Min-Value, Step-Value] = [0xFFFF, **0x0001**, **0x0001**]	Number of seconds to wait for setup activation key. 65535 (0xFFFF) means indefinite waiting.	
Bootup NumLock State	On **Off**	Selects the keyboard NumLock state.	
Quiet Boot	Disabled **Enabled**	Enables/Disables Quiet Boot option.	
Fast Boot	**Disabled** Enabled	Enables/Disables boot with initialization of a minimal set of devices required to launch active boot option. Has no effect for BBS boot options.	
Boot Option #1	Hard Disk NVME UEFI AP CD/DVD SD USB Hard Disk USB CD/DVD USB Key USB Floppy USB LAN Network Disabled	**Hard Disk**	Sets the system boot order
Boot Option #2		**NVME**	
Boot Option #3		**CD/DVD**	
Boot Option #4		**SD**	
Boot Option #5		**USB Hard Disk**	
Boot Option #6		**USB CD/DVD**	
Boot Option #7		**USB Key**	
Boot Option #8		**USB Floppy**	
Boot Option #9		**USB LAN**	
Boot Option #10		**Network**	
UEFI Application Boot Priorities			

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4.8 Save & Exit

Feature	Options	Description
Save Options	Info only	
Save Changes and Exit	Yes No	Exits system setup after saving the changes.
Discard Changes and Exit	Yes No	Exits system setup without saving any changes.
Save Changes and Reset	Yes No	Resets the system after saving the changes.
Discard Changes and Reset	Yes No	Resets system setup without saving any changes.
Save Changes	Yes No	Saves changes done so far to any of the setup options.
Discard Changes	Yes No	Discards changes done so far to any of the setup options.
Default Options	Info only	
Restore Defaults	Yes No	Restores/Loads default values for all the setup options.
Save as User Defaults	Yes No	Saves the changes done so far as User Defaults.
Restore User Defaults	Yes No	Restores the User Defaults to all the setup options.
Boot Override	Info only	
UEFI: Built-in EFI Shell		
Launch EFI Shell from filesystem device		

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5 Driver & Application Installation

After installing the operating system, all related drivers must be installed for the system to function properly. This section describes the drivers needed for Windows operating systems and the procedures to install them. For other OS support, contact ADLINK for further information.

Install drivers as follows.

1. Fully install Microsoft Windows OS before installing any drivers. Most standard I/O device drivers have been included in Microsoft Windows OS. For Windows 10 IoT Enterprise users, please note that you need Administrator privilege to install the drivers properly.

2. Install the chipset driver.

3. Install the graphics driver.

4. Install the Ethernet driver.

5. Install the USB 3.0 driver.

6. Install the I/O driver.

7. Install the SEMA utility, WDT and DI/O drivers.

The driver can be downloaded from the ADLINK website.

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Important Safety Instructions

For user safety, please read and follow all instructions, Warnings, Cautions, and Notes marked in this manual and on the associated device before handling/operating the device, to avoid injury or damage.

- Read these safety instructions carefully.
- Keep the User's Manual for future reference.
- Read the Specifications section of this manual for detailed information on the recommended operating environment.
- It is recommended that the device be installed in Information Technology Rooms that are in accordance with Article 645 of the National Electrical Code and NFPA 75.
- When installing/mounting or uninstalling/removing device is required:
  - Turn off power and unplug any power cords/cables.
  - Reinstall all chassis covers before restoring power.
- To avoid electrical shock and/or damage to device:
  - Keep device away from water or liquid sources.
  - Keep device away from high heat or humidity.
  - Keep device properly ventilated (do not block or cover ventilation openings).
  - Always use recommended voltage and power source settings.
  - Always install and operate device near an easily accessible electrical outlet.
  - Secure the power cord (do not place any object on/over the power cord).
  - Only install/attach and operate device on stable surfaces and/or recommended mountings.
  - The device is powered by an adapter or DC source. Ensure that the adapter or DC source is properly grounded.
- If the device will not be used for long periods of time, turn off and unplug from its power source.
- Never attempt to repair the device, which should only be serviced by qualified technical personnel using suitable tools.

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- A Lithium-type battery may be provided for uninterrupted backup or emergency power.



Risk of explosion if battery is replaced with one of an incorrect type; please dispose of used batteries appropriately.

- The device must be serviced by authorized technicians when:
  - The power cord or plug is damaged
  - Liquid has entered the device interior
  - The device has been exposed to high humidity and/or moisture
  - The device is not functioning or does not function according to the User's Manual
  - The device has been dropped and/or damaged and/or shows obvious signs of breakage
- Disconnect the power supply cord before loosening the thumbscrews and always fasten the thumbscrews with a screwdriver before starting the system up.
- It is recommended that the device be installed only in a server room or computer room where access is:
  - Restricted to qualified service personnel or users familiar with restrictions applied to the location, reasons therefor, and any precautions required
  - Only afforded by the use of a tool or lock and key, or other means of security, and controlled by the authority responsible for the location.
- This equipment is intended to be supplied by a Certified Power Adapter rated for 12 VDC with a minimum of 5 A, minimum temperature rating of 40°C, minimum altitude rating of 5000 m; or a Certified DC with an ES1 output rated 12 VDC and 5 A.

	**BURN HAZARD** Touching this surface could result in bodily injury. To reduce risk, allow the surface to cool before touching.

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Consignes de Sécurité Importante

Pour la sécurité de l'utilisateur, veuillez lire et suivre toutes les instructions, avertissements, mises en garde et notes marqués dans ce manuel et sur l'appareil associé avant de manipuler/d'utiliser l'appareil, afin d'éviter toute blessure ou tout dommage.

- *Lisez attentivement ces consignes de sécurité*
- *Conservez le manuel de l'utilisateur pour pouvoir le consulter ultérieurement*
- *Lisez la section Spécifications de ce manuel pour des informations détaillées sur l'environnement d'exploitation recommandé*
- *Il est recommandé d'installer l'appareil dans Information Salles technologiques conformes à l'article 645 du Code national de l'électricité et NFPA 75.*
- *Lorsque l'installation/le montage ou la désinstallation/le retrait du périphérique est requis:*
  - *Mettez l'appareil hors tension et débranchez tous les cordons/câbles d'alimentation*
  - *Réinstallez tous les couvercles de châssis avant de rétablir l'alimentation*
- *Pour éviter les chocs électriques et/ou d'endommager l'appareil:*
  - *Tenez l'appareil à l'écart de toute source d'eau ou de liquide.*
  - *Tenez l'appareil à l'écart d'une forte chaleur ou d'une humidité élevée.*
  - *Maintenez l'appareil correctement ventilé (n'obstruer ou ne couvrez pas les ouvertures de ventilation).*
  - *Utilisez toujours les réglages de tension et de source d'alimentation recommandés.*
  - *Installez et utilisez toujours l'appareil près d'une prise de courant facilement accessible.*
  - *Fixez le cordon d'alimentation (ne placez aucun objet sur le cordon d'alimentation).*

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- *Installez/fixez et utilisez l'appareil uniquement sur des surfaces stables et/ou sur les fixations recommandées.*
- *L'ordinateur Smart Touch est alimenté par un adaptateur ou une source CC. Veuillez vous assurer que l'adaptateur ou la source CC doit conserver la connexion à la terre s'il est doté d'une protection.*

- *Si l'appareil ne doit pas être utilisé pendant de longues périodes, éteignez-le et débranchez-le de sa source d'alimentation*
- *N'essayez jamais de réparer l'appareil, qui ne doit être réparé que par un personnel technique qualifié à l'aide d'outils appropriés*
- *Une batterie de type Lithium peut être fournie pour une alimentation de secours ininterrompue ou d'urgence.*



ATTENTION: Risque d'explosion si la pile est remplacée par une autre de type incorrect. Veuillez jeter les piles usagées de façon appropriée.

- *L'appareil doit être entretenu par des techniciens agrees lorsque:*
  - *Le cordon d'alimentation ou la prise est endommagé(e)*
  - *Un liquide a pénétré à l'intérieur de l'appareil.*
  - *L'appareil a été exposé à une forte humidité et/ou de la buée.*
  - *L'appareil ne fonctionne pas ou ne fonctionne pas selon le manuel de l'utilisateur.*
  - *L'appareil est tombé et/ou a été endommagé et/ou présente des signes évidents de dommage.*
- *Débranchez le cordon d'alimentation avant de desserrer les vis à oreilles et serrez toujours les vis à oreilles avec un tournevis avant de mettre le système en marche.*

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- *Il est recommandé d'installer l'appareil uniquement dans une salle de serveurs ou une salle informatique où l'accès est:*
  - *Réservé au personnel de service qualifié ou aux utilisateurs familiarisés avec les restrictions appliquées à l'emplacement, aux raisons de ces restrictions et toutes les précautions requises*
  - *Uniquement autorisé par l'utilisation d'un outil, d'une serrure et d'une clé, ou d'un autre moyen de sécurité, et contrôlé par l'autorité responsable de l'emplacement.*

	***RISQUE DE BRÛLURES*** ***Partie chaude!*** *Ne touchez pas cette surface, cela pourrait entraîner des blessures. Pour éviter tout danger, laissez la surface refroidir avant de la toucher.*

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EMC Compliance

CE Warning

This is a Class B product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

FCC Warning

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.

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Getting Service

Ask an Expert: http://askanexpert.adlinktech.com

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Please visit the Contact page at www.adlinktech.com for information on how to contact the ADLINK regional office nearest you.

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