

Industrial Motherboard

Fanless Touch Panel-PC Series with Apollo Lake CPU and PCT

Manual

Contents

Chapter 1: Product overview

1.1	Package contents.....	1-1
1.2	Features	1-1
1.3	Specifications.....	1-2

Chapter 2: Motherboard information

2.1	Before you proceed	2-1
2.2	Motherboard layout.....	2-2
2.3	Screw size.....	2-4
2.3.1	Component side	2-4
2.3.2	Solder side	2-5
2.4	Central Processing Unit (CPU)	2-6
2.5	System memory	2-6
2.6	Jumpers	2-8
2.7	Connectors	2-10
2.7.1	Rear panel connectors.....	2-10
2.7.2	Internal connectors	2-11

Chapter 3: BIOS setup

3.1	BIOS setup.....	3-1
3.2	Main menu	3-2
3.2.1	System Date [Day MM/DD/YYYY]	3-2
3.2.2	System Time [HH:MM:SS]	3-2
3.3	Advanced menu	3-2
3.3.1	Trusting Computing.....	3-2
3.3.2	CPU Configuration	3-4
3.3.3	SATA Configuration	3-4
3.3.4	USB Configuration	3-4
3.3.5	Hardware Monitor	3-5
3.3.6	SIO Configuration	3-5
3.3.7	Power Management.....	3-6
3.3.8	Digital IO Port Configuration	3-7
3.4	Chipset menu	3-7
3.5	Security menu	3-8
3.5.1	Administrator Password.....	3-8
3.5.2	User Password.....	3-8

3.6	Boot menu	3-9
3.6.1	Boot Configuration	3-9
3.6.2	Boot Option Priorities	3-9
3.7	Save & Exit menu	3-10
 Appendix		
	Notices	A-1
	mSATA / MiniPCle Rework	A-2
	FAQs	A-3

Chapter 1

Product overview

1.1 Package contents

Check your industrial motherboard package for the following items.

- ☒ 1 x Industrial Motherboard



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

1.2 Features

- Intel® Celeron/Pentium® processor
Apollo Lake N4200, 4C @ 2.50GHz CPU (Burst Mode), 750MHz GFX (Turbo), ~6W TDP
Apollo Lake N3350, 2C @ 2.40GHz CPU (Burst Mode), 650MHz GFX (Turbo), ~6W TDP
- 1 x SO-DIMM, max. 4GB, DDR3L 1333/1600/1867 MHz
- SATA 6.0 Gb/s x 1, USB 3.0 x 4, USB 2.0 x 2
- 1 x PCIe [x1] straddle type, 1 x Mini Card + mSATA (with SIM card) full/ half size optional by BOM, 1 x M.2 E-key (22 x 30mm) for wireless devices
- HDMI, DisplayPort, LVDS, and eDP support

1.3 Specifications

SYSTEM	
CPU	Intel® Celeron / Pentium® processor Apollo Lake N4200, 4C @ 2.50GHz CPU (Burst Mode), 750MHz GFX (Turbo), ~6W TDP Apollo Lake N3350, 2C @ 2.40GHz CPU (Burst Mode), 650MHz GFX (Turbo), ~6W TDP
Memory	1 x SO-DIMM, max. 4GB, DDR3L 1333/1600/1867 non-ECC Singal channel memory
Graphics	Intel® HD Graphics
I/O chipset	NUVOTON NCT6116D
LAN	1 x LAN1 connector (POE LAN RJ-45 connector, POE power connect to 2x2 2.54mm pin header) 1 x LAN2 connector (Realtek PCIe Gb LAN 8111G shares ASM1182E IC with PCIe x1)
Audio	1 x Realtek ALC3236 Audio CODEC
TPM	1 x Nuvoton NPCT652ABCYX TPM 2.0
Expansion slots	1 x PCIe x1 straddle type 1 x Mini Card + mSATA (with SIM card) full/ half size optional by BOM 1 x M.2 E-key (22 x 30mm) for wireless devices
BIOS	16MB Flash ROM, AMI BIOS
Wake on LAN/PXE	Yes (WOL/PXE)
Watchdog Timer	1~255 steps by software program
H/W Status Monitor	Monitors CPU/System temperature Monitors Vcore/5V/3.3V/12V voltages
Smart Fan Control	Yes
Power State	S3, S4, S5
Graphics	
Graphics chipset	Intel® HD Graphics
Graphics multi display	eDP or LVDS +DP, eDP or LVDS +HDMI, HDMI+DP, HDMI+DP+eDP or LVDS
HDMI	Up to 3840 x 2160 (HDMI 1.4b)
eDP	Up to 3840 x 2160 (colay LVDS, optional by BOM)
DP	Up to 4096 x 2160 @60 Hz (support DP1.2)
LVDS	Up to 1920 x 1200 @ 60Hz, resolution read from EEPROM
LVDS Inverter Control	Voltage / PWM, 1 x DC 5V/12V for LCD backlight inverter board
Environement & Power & ME	
Battery	Lithium battery
Power requirement	1 x 2-pin onboard power input connector (12 VDC ±10%)
Operating temperature	32°F~140°F (0°C~60°C)

(continued on the next page)

Environement & Power & ME	
Operating humidity	0%~90% relative humidity, non-condensing
Certificate	CE & FCC class A
Form factor	EPIC Form Factor, 4.53"x6.5" (115mmx165mm)
I/O	
Storage	1 x Serial ATA 6.0 Gb/s connector 1 x 5V/12V SATA power connector
USB	4 x USB 3.0 ports (2 ports at back panel, 2 ports at mid-board) 2 x USB 2.0 ports (2 ports at back panel)
Display I/O	1 x HDMI, 1 x eDP or LVDS, 1 x DP
Audio I/O	1 x Line-out / Mic-In on board header 1 x SPDIF output box header
LAN I/O	1 x RJ-45 (POE), 1 x RJ-45
Serial port	1 x RS-232/422/485 (COM1 supports 5V/12V/RI option), 3 x RS-232
DIO	8-bit digital I/O interface (4-in / 4-out)
Placement	
Rear I/O (low profile)	1 x DP (vertical) 1 x POE LAN (RJ-45) port 1 x LAN (RJ-45) port 2 x Stack type USB 3.0 ports (blue) 2 x Stack type USB 2.0 ports (black) 1 x HDMI port 1 x COM (COM1, RS232/422/485; RI / 5V / 12V)
Internal I/O	1 x 12V DC-IN power connector (2-pin) 1 x PCIe x1 straddle type (optional) 1 x SATA 6.0 Gb/s connector (standard, 7-pin) 1 x Front panel box header (2 x 5 pin, k10, 2.00mm) 1 x eDP/LVDS box header (2 x 15 pin, 2.00mm) 1 x MIPI CSI connector 1 x M.2 E-key slot (NGFF2230, 22 x 30mm) for wireless devices 1 x Default full size Mini card slot (support mSATA BOM OPTION) 2 x USB 3.0 box headers (2 x 5 pin, 2.00mm) 1 x 4-pin SATA power connector (wafer, 4-pin, 2.50mm) 3 x RS232 box headers (COM 2 & COM 3 & COM 4, 2 x 5 pin, 2.00mm) 1 x SPDIF output box header (2 x 5 pin, k4, 2.00mm) 1 x Line-out / Mic-in header (2 x 5 pin, k8, 2.00mm) 1 x SIM card connector (2 x 5pin, 2.00mm) 1 x DIO connector (2 x 5 pin, 2.00mm) 2 x LCD Backlight control/ LCD panel voltage box header (2 x 5 pin, 2.00mm) (1 x 6 pin, 2.00mm)
Others	
OS supported	Windows® 10 64-bit Ubuntu16.04



Chapter 2

Motherboard information

2.1 Before you proceed

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

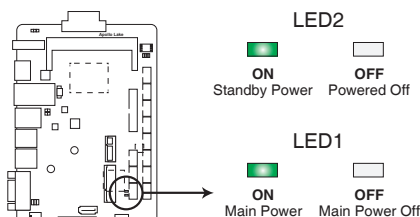


CAUTION!

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

Main and Standby Power LEDs

The motherboard comes with one standby power LED and main power LED that light up to indicate that the system is ON, in sleep mode, or in soft-off mode. This is a reminder that you should shut down the system and unplug the power cable before removing or plugging in any motherboard component. The illustration below shows the location of the onboard LEDs.

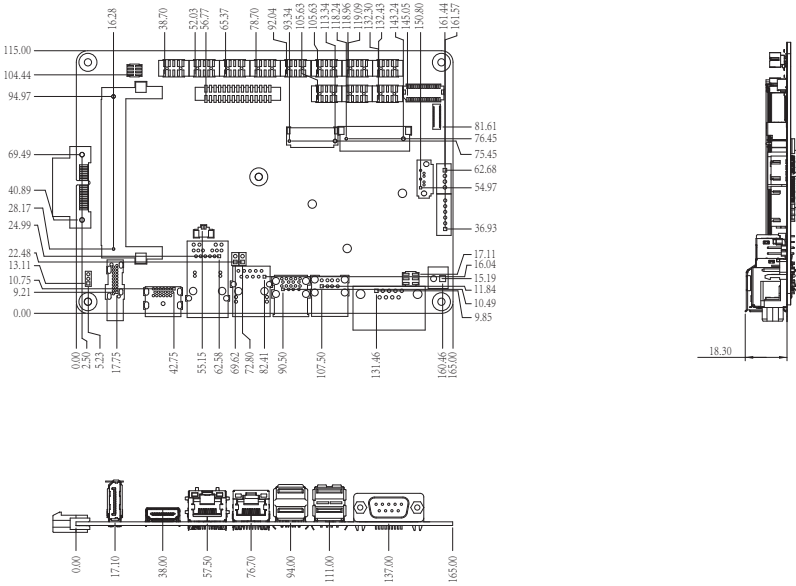


Apollo Lake Onboard LEDs

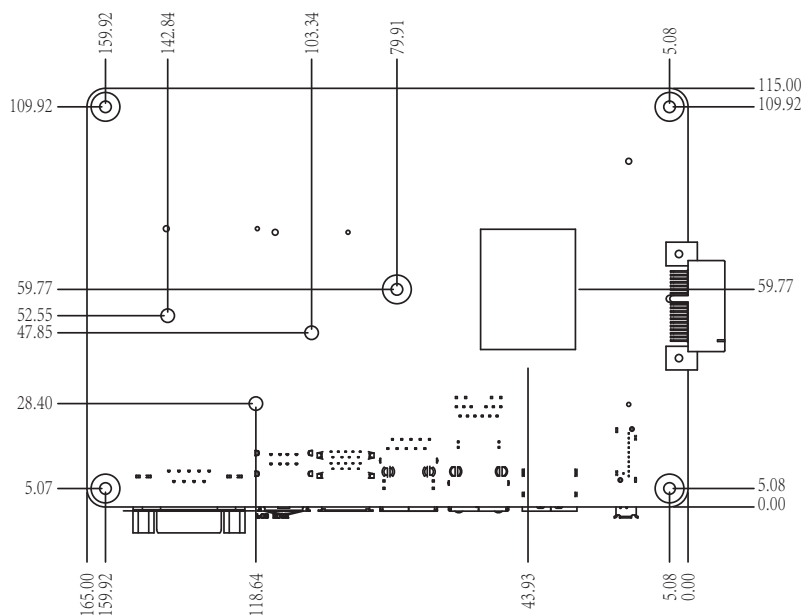
Connectors/Jumpers/Slots	Page
1. Clear RTC RAM (3-pin CLRTC1)	2-8
2. DDR3L SO-DIMM memory slot	2-6
3. PCIe x1 slot	--
4. LVDS/EDP connector (30-pin LVDS/EDP)	2-14
5. BIOS programming header for Aaon (8-pin SPI1)	2-14
6. Audio amplifier and digital audio connector (10-pin SPDIF_AMP)	2-16
7. USB 3.0 connectors (10-pin USB3_1, USB3_3)	2-15
8. LVDS panel voltage selection (10-pin LVDS_CTL)	2-9
9. Backlight inverter power connectors (10-pin INV1, 6-pin INV2)	2-17
10. Digital I/O connector (10-pin DIO)	2-14
11. Front panel audio connector (10-pin AAFP)	2-12
12. Serial port connectors (10-pin COM2, COM34)	2-16
13. System panel connector (10-pin F_PANEL1)	2-13
14. SIM card connector (10-pin SIM1)	2-11
15. Camera Serial Interface connector (31-pin CSI1)	2-17
16. Main and standby power LEDs (LED1, LED2)	2-1
17. Serial ATA 6.0Gb/s connector (7-pin SATA6G1)	2-13
18. SATA power connector (4-pin SATA_PWR1)	2-12
19. COM1 RI/+5V/+12V selection (6-pin COM1_V1)	2-9
20. 12V DC power connector (2-pin DC_PWR)	2-11
21. Mini PCIe x1 slot (MINI_CARD1)	2-15
22. M.2 E-key connector (2230_M2E)	2-18
23. Internal POE LAN connectors (2-pin JL1, JL2)	2-11
24. Battery connector (2-pin BATTERY1)	2-18
25. Integrated Intel® processor	2-6

2.3 Screw size

2.3.1 Component side

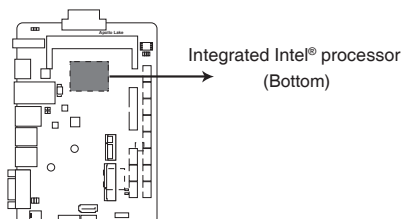


2.3.2 Solder side



2.4 Central Processing Unit (CPU)

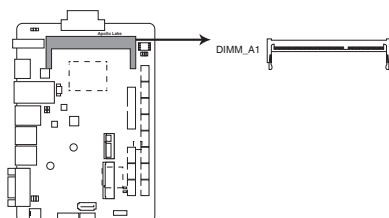
This motherboard comes with an integrated Intel® processor.



Apollo Lake CPU onboard

2.5 System memory

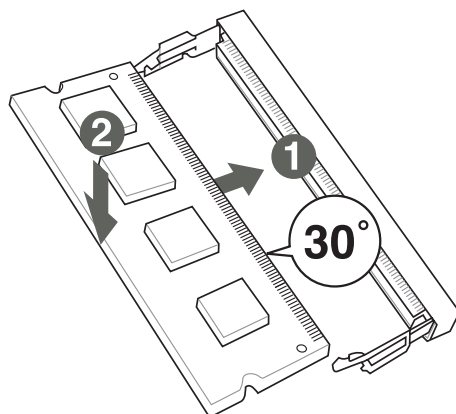
This motherboard comes with one Double Data Rate 3 Low Voltage (DDR3L) Small Outline Dual Inline Memory Module (SO-DIMM) socket. The figure illustrates the location of the DDR3L DIMM socket:



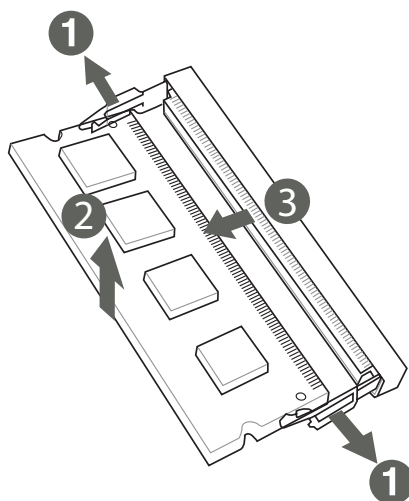
Apollo Lake 204-pin DDR3L DIMM socket

Installing a DIMM

To install a SO-DIMM



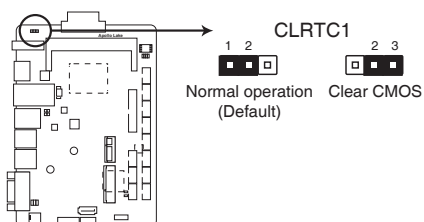
To remove a SO-DIMM



2.6 Jumpers

1. Clear RTC RAM (3-pin CLRTC1)

This jumper allows you to clear the Real Time Clock (RTC) RAM in CMOS. You can clear the CMOS memory of system setup parameters by erasing the CMOS RTC RAM data. The onboard button cell battery powers the RAM data in CMOS, which include system setup information such as system passwords.



Apollo Lake Clear RTC RAM To erase the RTC RAM:

1. Turn OFF the computer and unplug the power cord.
2. Move the jumper cap from pins 1-2 (default) to pins 2-3. Keep the cap on pins 2-3 for about 5~10 seconds, then move the cap back to pins 1-2.
3. Plug the power cord and turn ON the computer.
4. Hold down the key during the boot process and enter BIOS setup to reenter data.



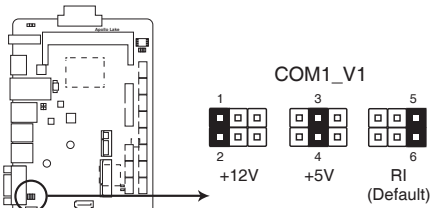
CAUTION! Except when clearing the RTC RAM, never remove the cap on CLRTC jumper default position. Removing the cap will cause system boot failure!



NOTES:

- If the steps above do not help, remove the onboard battery and move the jumper again to clear the CMOS RTC RAM data. After clearing the CMOS, reinstall the battery.
- You do not need to clear the RTC when the system hangs due to overclocking. For system failure due to overclocking, use the CPU Parameter Recall (C.P.R) feature. Shut down and reboot the system so the BIOS can automatically reset parameter settings to default values.

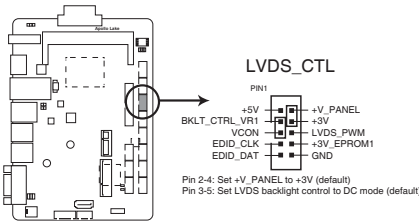
2. COM1 RI/+5V/+12V selector (6-pin COM1_V1)



Apollo Lake COM1 RI/+5V/+12V selection

Setting	Pins
+12V	1-2
+5V	3-4
RI (Default)	5-6

3. LVDS panel voltage selection (10-pin LVDS_CTL)

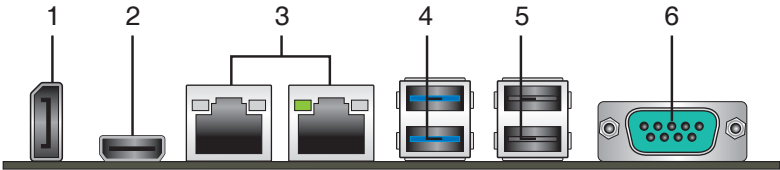


Apollo Lake LVDS panel voltage selection

Setting	Pins
Set +V_PANEL to +3V (Default)	2-4
Set LVDS backlight control to DC mode (Default)	3-5

2.7 Connectors

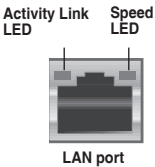
2.7.1 Rear panel connectors



- 1. DisplayPort connector.** This port connects a device with DisplayPort connector.
- 2. HDMI port.** This port is for a High-Definition Multimedia Interface (HDMI) connector, and is HDCP compliant allowing playback of HD DVD, Blu-Ray, and other protected content.
- 3. LAN (RJ-45) ports.** These ports allow Gigabit connection to a Local Area Network (LAN) through a network hub. Refer to the table below for the LAN port LED indications.

LAN port LED indications

ACT/LINK LED		SPEED LED	
Status	Description	Status	Description
Off	No link	Off	10 Mbps connection
Orange	Linked	Orange	100 Mbps connection
Orange (Blinking)	Data activity	Green	1 Gbps connection
Orange (Blinking then steady)	Ready to wake up from S5 mode	—	—



- 4. USB 3.0 port.** This 9-pin Universal Serial Bus (USB) port connects to USB 3.0/2.0 devices.



NOTES:

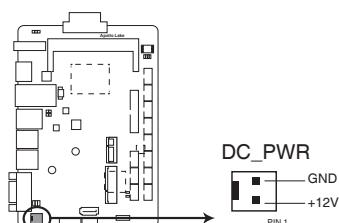
- USB 3.0 devices can be used for data storage only.
- Due to the design of the Intel® 300 series chipset, all USB devices connected to the USB 2.0 and USB 3.0 ports are controlled by the xHCI controller. Some legacy USB devices must update their firmware for better compatibility.
- We strongly recommend that you connect USB 3.0 devices to USB 3.0 ports for a faster and better performance from your USB 3.0 devices.

- 5. USB 2.0 ports.** These three 4-pin Universal Serial Bus (USB) ports are available for connecting USB 2.0/1.1 devices.
- 6. COM port.** This 9-pin COM port is for pointing devices or other serial devices

2.7.2 Internal connectors

1. 12V DC power connector (2-pin DC_PWR)

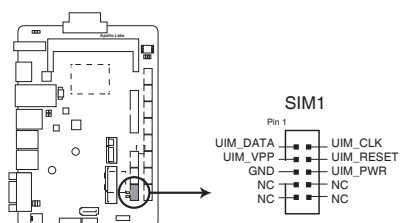
This port connects to a 12V DC power adapter.



Apollo 12V DC power connector

2. SIM card connector (10-pin SIM1)

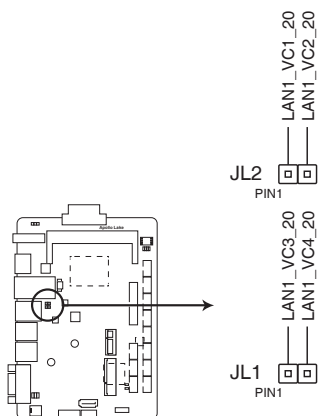
This port connects to a SIM card reader module.



Apollo Lake Internal SIM card connector

3. Internal POE LAN connectors (2-pin JL1, JL2)

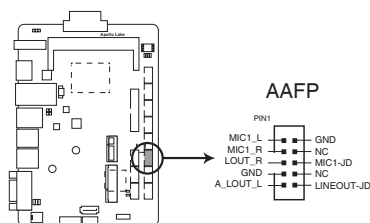
Connect the POE LAN power cables to this connector.



Apollo Lake Internal POE LAN connectors

4. Front panel audio connector (10-pin AAFP)

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



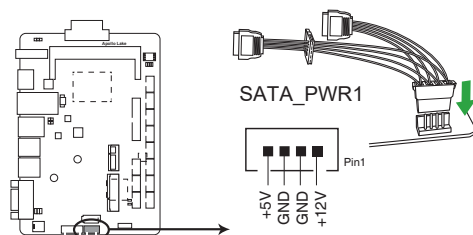
Apollo Lake Front panel audio connector



IMPORTANT: We recommend that you connect a high-definition front panel audio module to this connector to avail of the motherboard's high-definition audio capability.

5. SATA power connector (4-pin SATA_PWR1)

This connector is for the SATA power cable. The power cable plug is designed to fit this connector in only one orientation. Find the proper orientation and push down firmly until the connector completely fit.



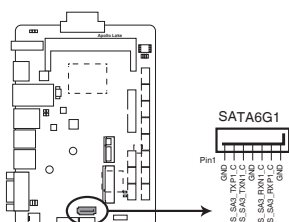
Apollo Lake SATA power connector



IMPORTANT: The SATA power connector supports 1A current to the maximum.

6. Serial ATA 6.0Gb/s connectors (7-pin SATA6G1)

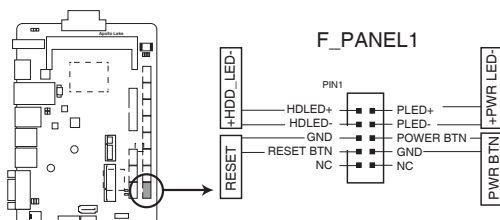
These connectors connect to Serial ATA 6.0 Gb/s hard disk drives and optical drives via Serial ATA 6.0 Gb/s signal cables.



Apollo Lake SATA 6.0Gb/s connector

7. System panel connector (10-pin F_PANEL1)

This connector supports several chassis-mounted functions.



Apollo Lake System panel connector

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

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

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

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

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

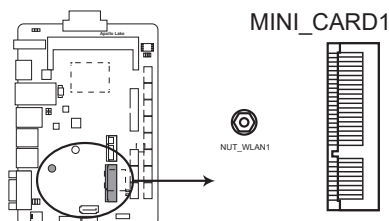
This 2-pin connector is for the system power button.

- Reset button (2-pin RESET)**

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

11. mSATA / Mini PCIe x1 slot

Use this connector to connect Minicard readers.



Apollo Lake mSATA / Mini PCIe x1 slot

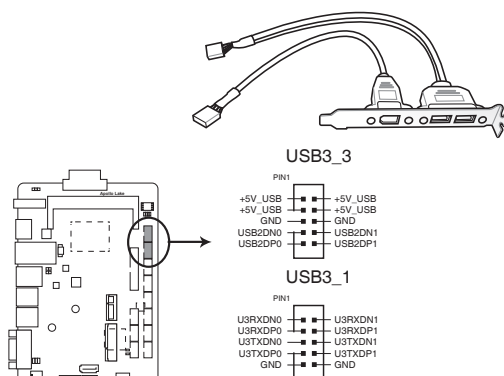


NOTES:

- The Mini-card module is purchased separately.
- Choice between mSATA or MiniPCle depends on customer's demand
- See Appendix for rework SOP

12. USB 3.0 connectors (10-pin USB3_1, USB3_3)

Connect a USB 3.0 module to any of these connectors for additional USB 3.0 front or rear panel ports. These connectors comply with USB 3.0 specifications and provide faster data transfer speeds of up to 5 Gbps, faster charging time for USB-chargeable devices, optimized power efficiency, and backward compatibility with USB 2.0.



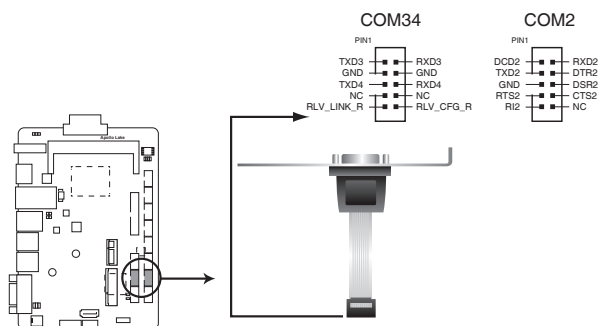
Apollo Lake USB3.0 connectors



NOTE: The USB module cable is purchased separately.

13. Serial port connectors (10-1 pin COM2, COM34)

These connectors are for serial (COM) ports. Connect the serial port module cable to this connector, then install the module to a slot opening at the back of the system chassis.



Apollo Lake Serial port connectors



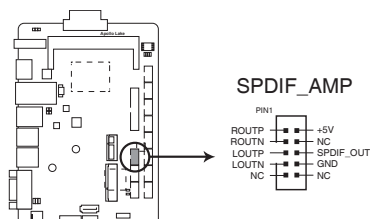
NOTES:

- The COM module is purchased separately.
- These COM ports support RS-232.

14. Audio amplifier and digital audio connector (10-pin SPDIF_AMP)

The upper line of pins, close to the edge of the motherboard, are for an external audio amplifier.

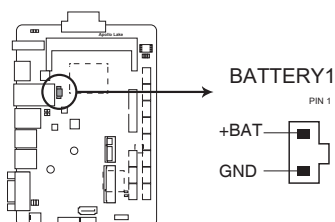
The lower line of pins are for an additional Sony/Philips Digital Interface (S/PDIF) port. Connect the S/PDIF Out module cable to this connector, then install the module to a slot opening at the back of the system chassis.



Apollo Lake Audio amplifier and digital audio connector

17. Battery connector (2-pin BATTERY1)

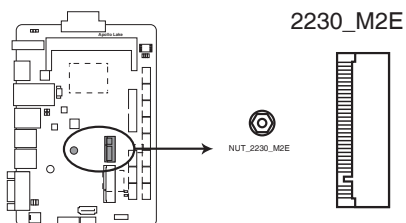
This connector is for the lithium CMOS battery.



Apollo Lake Battery connector

18. M.2 E-key connector (2230_M2E)

This connector is for M.2 E-key (22 x 30mm) wireless devices.



Apollo Lake M.2 E-key connector

Chapter 3

BIOS setup

3.1 BIOS setup

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

Entering BIOS Setup at startup

To enter BIOS Setup at startup:

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

Entering BIOS Setup after POST

To enter BIOS Setup after POST:

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



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



IMPORTANT:

- The default BIOS settings for this motherboard apply to most working conditions and ensures optimal performance. If the system becomes unstable after changing any BIOS settings, load the default settings to regain system stability. Select the option **Restore Defaults** under the Save & Exit Menu. See section 3.7 **Save & Exit Menu**.
 - The BIOS setup screens shown in this section are for reference purposes only, and may not exactly match what you see on your screen.
-

Menu bar

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

Main	For changing the basic system configuration.
Advanced	For changing the advanced system settings.
Chipset	For viewing and changing chipset settings.
Security	For setting up BIOS security settings.
Boot	For changing the system boot configuration.
Save & Exit	For selecting the exit options and loading default settings.

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

3.2 Main menu

The Main menu provides you an overview of the basic system information, and allows you to set the system date, time, language, and security settings.

3.2.1 System Date [Day MM/DD/YYYY]

Allows you to set the system date.

3.2.2 System Time [HH:MM:SS]

Allows you to set the system time.

3.3 Advanced menu

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



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

3.3.1 Trusting Computing

Security Device Support [Enable]

Allows you to enable or disable BIOS support for security devices. Configuration options: [Disable] [Enable]

SHA-1 PCR Bank [Enabled]

Allows you to enable or disable SHA-1 PCR Bank. Configuration options: [Enabled] [Disabled]

SHA256 PCR Bank [Enabled]

Allows you to enable or disable SHA256 PCR Bank. Configuration options: [Enabled] [Disabled]

Pending operation [None]

Allows you to schedule an operation for security devices. Reboot your system for the changes to take effect. Configuration options: [None] [TPM Clear]

Platform Hierarchy [Enabled]

Allows you to enable or disable Platform Hierarchy. Configuration options: [Enabled] [Disabled]

Storage Hierarchy [Enabled]

Allows you to enable or disable Storage Hierarchy. Configuration options: [Enabled] [Disabled]

Endorsement Hierarchy [Enabled]

Allows you to enable or disable Endorsement Hierarchy. Configuration options: [Enabled] [Disabled]

TPM2.0 UEFI Spec Version [TCG_2]

Allows you to select the TCG2 spec version support.

[TCG_1_2] Compatible mode for Windows® 8 / Windows® 10.

[TCG_2] Newer TCG2 protocol and event format for Windows® 10 or later.

Physical Presence Spec Version [1.3]

Allows you to select which TCG Physical Presence Interface Specification Version is supported by the OS. Configuration options: [1.2] [1.3]

Device Select [Auto]

Allows you to schedule an operation for security devices. Reboot your system for the changes to take effect. Configuration options: [Auto] [TPM 1.2] [TPM 2.0]

[Auto] Select this item to support both TPM 1.2 and TPM 2.0 devices with default support of TPM 2.0 devices. If TPM 2.0 devices are not found, TPM 1.2 devices will be enumerated.

3.3.2 CPU Configuration

The items in this menu show CPU-related information.

Intel Virtualization Technology [Enabled]

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

[Disabled] Disables this function.

Power Limit 1 Enable [Enabled]

Allows you to enable or disable Power Limit 1. Configuration options: [Enabled] [Disabled]

Power Limit 1 Clamp Mode [Enabled]

Allows you to enable or disable Power Limit 1 Clamp Mode. Configuration options: [Enabled] [Disabled]

Power Limit 1 Power [Auto]

Allows you to set Power Limit 1 in watts. When Auto is selected, Power Limit 1 is decided by the default silicon support value. Configuration options: [Auto] [6] ~ [25]

Power Limit 1 Time Window [Auto]

Allows you to set Power Limit 1 Time Window in seconds. When Auto is selected, Power Limit 1 Time Window is decided by the default silicon support value.

Configuration options: [Auto] [1] [2] [3] [4] [5] [6] [7] [8] [10] [12] [14] [16] [20] [24] [28] [32] [40] [48] [56] [64] [80] [96] [112] [128]

3.3.3 SATA Configuration

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

Chipset SATA [Enable]

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

3.3.4 USB Configuration



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

Legacy USB Support [Enabled]

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

[Disabled] USB devices are only available when running BIOS Setup.

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

3.3.5 Hardware Monitor

This menu displays the system/CPU temperatures and power status.

3.3.6 SIO Configuration

The items in this menu allow you to configure Super IO settings.

[*Active*] Serial Port 1

Use this device [Enabled]

Allows you to enable or disable this logical device. Configuration options: [Enabled] [Disabled]



The following two items appear only when you set **Use this device** to [Enabled].

Possible [Use Automatic Settings]

Allows you to select an optimal setting for Super I/O devices. Configuration options: [Use Automatic Settings] [IO=3F8h; IRQ=4;] [IO=2F8h; IRQ=12]

Mode [RS232]

Allows you to select the Serial Port mode. Configuration options: [RS232] [RS422] [RS485]

[*Active*] Serial Port 2

Use this device [Enabled]

Allows you to enable or disable this logical device. Configuration options: [Enabled] [Disabled]

Possible [Use Automatic Settings]

This item appears only when you set **Use this device** to [Enabled] and allows you to select an optimal setting for Super I/O devices. Configuration options: [Use Automatic Settings] [IO=2F8h; IRQ=12] [IO=3F8h; IRQ=4;]

[*Active*] Serial Port 3

Use this device [Enabled]

Allows you to enable or disable this logical device. Configuration options: [Enabled] [Disabled]

Possible [Use Automatic Settings]

This item appears only when you set **Use this device** to [Enabled] and allows you to select an optimal setting for Super I/O devices. Configuration options: [Use Automatic Settings] [IO=2F0h; IRQ=6;] [IO=2E0h; IRQ=6;]

[*Active*] Serial Port 4

Use this device [Enabled]

Allows you to enable or disable this logical device. Configuration options: [Enabled] [Disabled]

Possible [Use Automatic Settings]

This item appears only when you set **Use this device** to [Enabled] and allows you to select an optimal setting for Super I/O devices. Configuration options: [Use Automatic Settings] [IO=2E8h; IRQ=7;] [IO=3E8h; IRQ=7;]

3.3.7 Power Management

Power Mode [ATX Type]

Select power supply mode. Configuration options: [ATX Type] [AT Type]



The following items appear when you set Power Mode to [ATX Type].

Restore AC Power Loss [Always Off]

[Last State] The system goes into either off or on state, whatever the system state was.

[Always On] The system goes into on state after an AC power loss.

[Always Off] The system goes into off state after an AC power loss.

RTC Wake system from S5 [Disabled]

[Disabled] Disables system wake up from S5.

[Fixed Time] The system will wake up at the specified hr::min::sec. Configuration options: [Disabled] [Enabled] .

[Dynamic Time] The system will wake up at the current time plus a specified number of minutes.



The following items appear when Fixed Time is enabled.

Wake up day/hour/minute/second [0]

Specify the values for day/hour/minute/second.



The following item appears when Wake System with Dynamic Time is enabled.

Wake up minute increase [1]

Specify the number of minutes added to the current time before waking up system. Input value range: [1~5]

3.3.8 Digital IO Port Configuration

The items listed in this screen configure Digital IO settings.

DIO Port1~Port4 [Output], DIO Port5~Port8 [Input]

Configuration options: [Input] [Output]



The following item appears only when you set **DIO Port1~8** to [Output].

Output Level [High]

Configuration options: [High] [Low]

3.4 Chipset menu

The Chipset menu items allow you to change configuration options for the North Bridge and South Bridge.

North Bridge

Primary Display [IGD]

Allows you to decide which graphics controller to use as the primary boot device.

Configuration options: [IGD] [PCIe]

Primary IGFX Boot Display [Auto]

Select the video device which will be activated during POST. This setting has no effect if an external graphics device is present. The secondary boot display selection appears based on your selection and the VGA mode is supported only on primary display. Configuration options: [Auto] [HDMI] [eDP/LVDS] [DP]

LVDS Panel Support [Enabled]

Enables or disables LVDS panel support. Configuration options: [Disabled] [Enabled]

LVDS Color Depth [Auto]

Select the color depth of the LCD panel to be used as display. Configuration options: [Auto] [24-bit] [18-bit]

LVDS Channel Type [Auto]

Select the channel type of the LCD panel to be used as display. Configuration options: [Auto] [Single] [Dual]

LVDS Brightness Type [Normal]

Allows you to select the LVDS brightness type. Configuration options: [Normal] [Inverted]

LVDS Brightness Level [80%]

Allows you to select the LVDS brightness level. Configuration options: [0%] ~ [80%] [90%] [100%]

IGD Flat Panel [1024x768]

Configuration options: [640x480] [800x600] [1024x768] [1280x1024] [1440x1050] [1440x1050] [1600x1200] [1366x768] [1680x1050] [1920x1200] [1440x900] [1600x900] [1024x768] [1280x800] [1920x1080] [2048x1536]

MIPI Camera [Disabled]

Allows you to configure the camera settings. Configuration options: [Disabled] [13M] [8M]

3.5 Security menu

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

3.5.1 Administrator Password

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

To set an administrator password:

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

To change an administrator password:

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

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

3.5.2 User Password

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

To set a user password:

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

To change a user password:

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

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

3.6 Boot menu

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

3.6.1 Boot Configuration

Quiet Boot [Enabled]

This item enables/disables Quiet Boot. Configuration options: [Disabled] [Enabled]

Network Stack [Enabled]

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

3.6.2 Boot Option Priorities

These items specify the boot device priority sequence from the available devices. The number of device items that appears on the screen depends on the number of devices installed in the system.



- To select the boot device during system startup, press <F7> during POST.
- To access Windows OS in Safe Mode, press <F8> after POST.

3.7 Save & Exit menu

Save Changes and Reset

Once you are finished making your selections, choose this option from the Save & Exit menu to ensure the values you selected are saved. When you select this option, a confirmation window appears. Select Yes to save changes and reset.

Discard Changes and Exit

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

Restore Defaults

Save or restore User Defaults to all setup options.

Appendix

Notices

Federal Communications Commission Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with manufacturer's instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.



WARNING! The use of shielded cables for connection of the monitor to the graphics card is required to assure compliance with FCC regulations. Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.



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

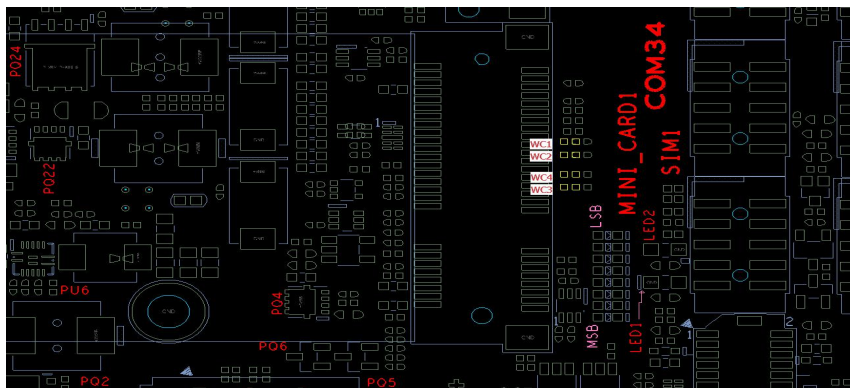


DO NOT throw the mercury-containing button cell battery in municipal waste. This symbol of the crossed out wheeled bin indicates that the battery should not be placed in municipal waste.

mSATA to MINIPCIe rework SOP

Remove

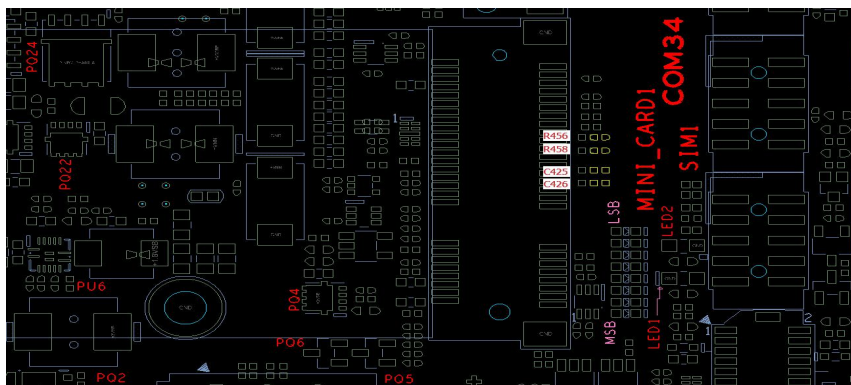
WC1,WC2,WC3,WC4 (11G232110302070 : MLCC 10NF/25V (0402) X7R 5%)



ADD

R456,R458 (10G212000004020 : RES 0 OHM 1/16W(0402)JUMP 5%)

C425,C426 (11G232110411150 : MLCC 0.1UF/16V(0402) X7R 10%)



NOTE: We strongly urges you not to attempt any modifications by yourself as it will lead to the termination of the warranty of the product and may damage the product itself.

FAQs

To be added in later versions.