

# Motherboard APL35

## User Manual V1.1

Edition Statement:		
Version	Version Description	Release date
V1.0	Initial version	2018/03/06
V1.1	1. Add CPU. 2. Update memory support.	2018/08/20

# Chapter 1 Product Introduction

## 1.1 Main Information

The APL35 is a motherboard which is based on Intel Apollo Lake. This board features small form factor, low power consumption and high performance.

## 1.2 Parameters

### Intel Apollo Lake SoC platform:

N3350, dual-core, Processor Base Frequency 1.1GHz, Burst Frequency 2.4GHz, TDP 6W, supports EIST technology,

N3450, quad-core, Processor Base Frequency 1.1GHz, Burst Frequency 2.2GHz, TDP 6W, supports EIST technology,

N4200, quad-core, Processor Base Frequency 1.1GHz, Burst Frequency 2.5GHz, TDP 6W, supports EIST technology,

J4205, quad-core, Processor Base Frequency 1.5GHz, Burst Frequency 2.6GHz, TDP 10W, supports EIST technology.

J3355, dual-core, Processor Base Frequency 2.0GHz, Burst Frequency 2.5GHz, TDP 10W, supports EIST technology.

J3455, quad-core, Processor Base Frequency 1.5GHz, Burst Frequency 2.3GHz, TDP 10W, supports EIST technology.

**Memory:** 1 × SO-DIMM DDR3L-1333MHZ up to 8GB.

**GPU:** Integrated, 1 × HDM 1.4, 1 × DP 1.2, 1 × eDP, 1 × eDP to LVDS module(optional).

**Storage:** 1 × SATA3.0, 1 × M.2 Key B (for 2242 SSD, supports NGFF 3G/4G module with Micro SIM), 1 × eMMC(capacity optional).

**USB:** 4 × USB 3.0(at rear panel), 4 × USB 2.0(internal header 2.0mm spacing).

**Ethernet:** 2 × Gigabit LAN(intel).

**Audio:** ALC662 audio chip, Line\_out/Mic-in 2-in-1 jack at rear panel, amplifier.

**Expansion:** 1 × M.2 Key E(for 2230 Wifi)

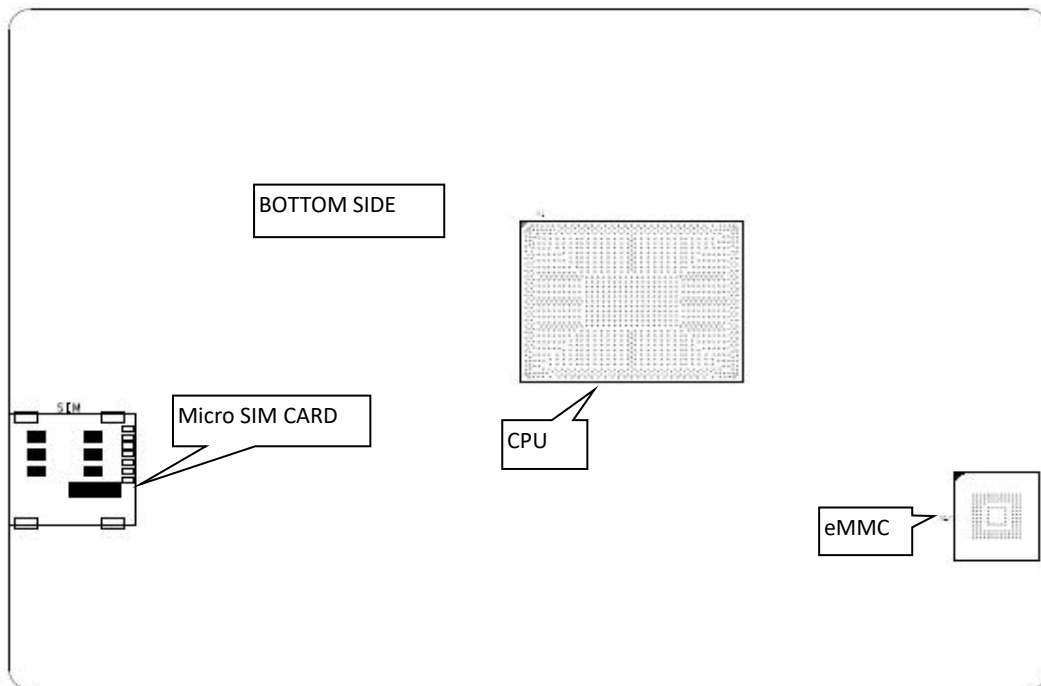
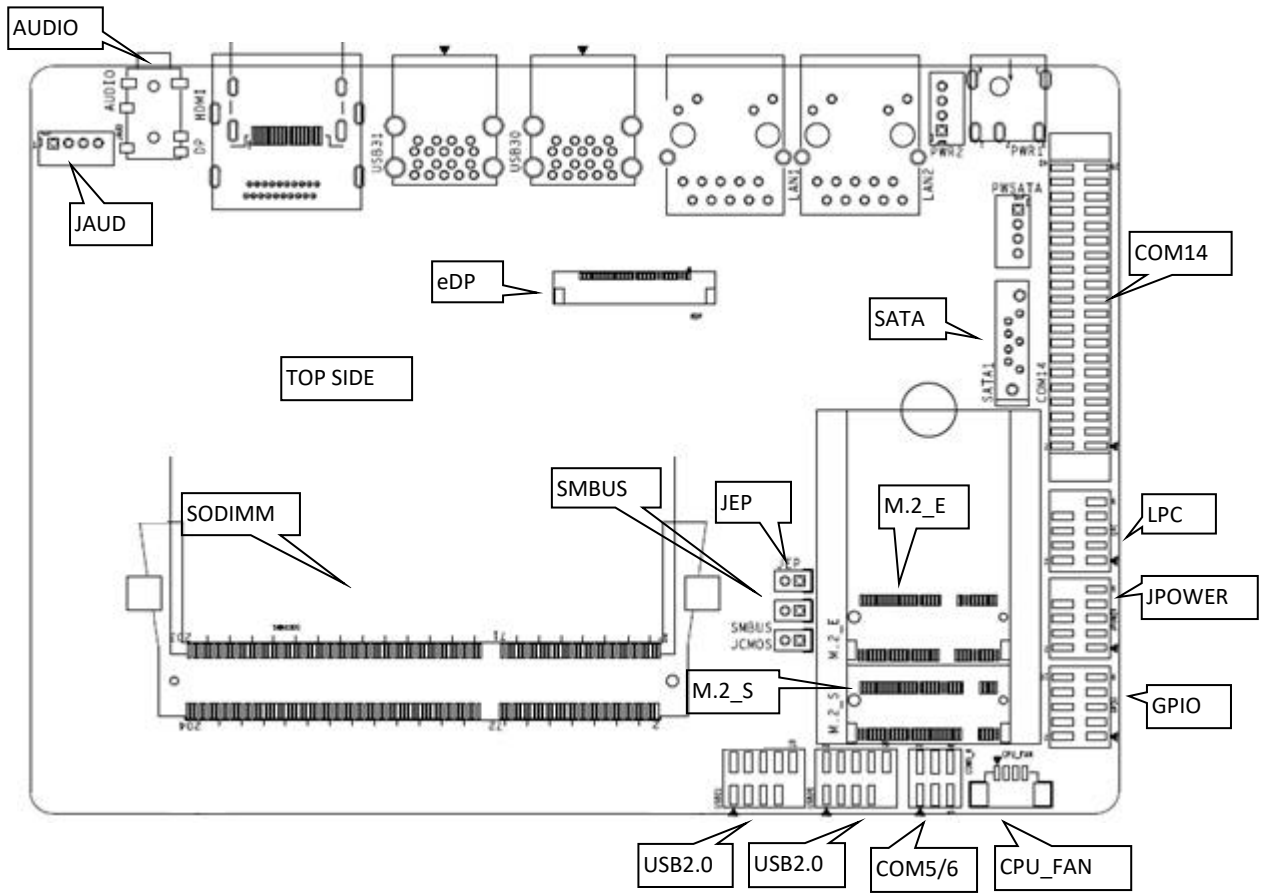
**Other I/O:** 8 × GPIO header(2.0mm spacing), 1 × LPC header(2.0mm spacing), 4 × RS232, 2 × RS485. 1 × CPU smart fan socket.

**Size:** 146mm × 102mm (3.5").

**Power:** 9V~24V DC\_IN

**Operating temperature:** -40°C~60°C.

### 2.1 Connector Diagram



## Chapter 2 Hardware

### 2.1 Jumper Setting

Tips about how to identify the first header of jumpers and interfaces: 1. Observe the mark beside plugs, the first header is usually marked by “1” or bold line or triangular symbol; 2. The first header is the square pad of pads on the back.

### 2.2 Memory Slots

Onboard 1 × SO-DIMM DDR3L 1333GHz slot up to 32GB.

### 2.3 Display Interfaces

1 × HDMI 1.4,

1 × DP 1.2,

1 × eDP 1.3 (4 LANES), 3.3V power for screen power supply by default, 5V power optional.

1 × eDP to LVDS adapter module (optional), supports up to dual-channel 24bit LVDS display.

#### eDP(silk-print: EDP):

Pin	Signal	Pin	Signal
1	BL_VCC	16	AUX_N
2	BL_VCC	17	AUX_P
3	BL_VCC	18	GND
4	BL_VCC	19	LANE0P
5	BL_PWM	20	LANE0N
6	BL_EN	21	GND
7	GND	22	LANE1P
8	GND	23	LANE1N
9	GND	24	GND
10	GND	25	LANE2P
11	HPD	26	LANE2N
12	GND	27	GND
13	LCD_VCC	28	LANE3P
14	LCD_VCC	29	LANE3N
15	GND	30	GND

**Attention:** Keep the jumper “JEP” open when it functions as eDP.

### 2.4 Storage Slot(silk-print: M.2\_S、SATA1、PWSATA)

1 × SATA3.0, 1 × M.2 Key B (for 2242 SSD, supports NGFF 3G/4G module with Micro SIM),

1 × eMMC(capacity optional),

**PWSATA:** 1 × PWSATA (only for 2.5” hard disk).

**PWSATA:**

Pin	Signal
1	5V
2	GND
3	GND
4	5V

## 2.5 USB

4 × USB3.0 at rear panel, 4 × internal USB2.0 header (2.0mm spacing).

The USB3.0 at rear panel are powered by 5V standby voltage and are able to supply power for peripheral equipment (5V/1A) by the USB K/S wake up system when the board is not in use or under sleep mode.

**Internal USB2.0 Header (silk-print: USB20, USB21):**

Signal	Pin		Signal
5V	1	2	5V
USB DATA-	3	4	USB DATA-
USB DATA+	5	6	USB DATA+
GND	7	8	GND
(NUL)	9	10	NUL

## 2.6 LAN

Onboard 2 × high-performance RJ45 interfaces, adopting intel gigabit control chip i211 (LAN) respectively, supports Magic packet wake-up and PXE functions.

**LED indicator light:**

LILED (orange)	Function	ACTLED (green)	Function
On	Connected	Flicker	Data Transmission

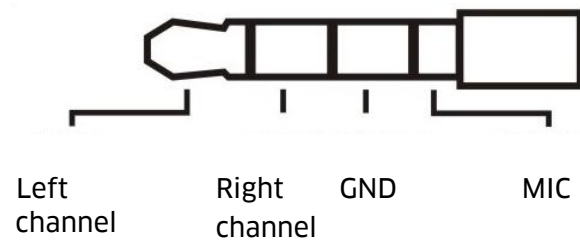
## 2.7 Expansion Slots (Silk-print: M.2\_E)

**M.2\_E:** M.2 Key E, supports 2230 WIFI card and Bluetooth function.

## 2.8 Audio

ALC662 audio control chip. Line\_out and Mic in one, 1 × 3.5-mm Line\_out/Mic-in 2-in-1 jack (CTIA American standard), 1 × internal dual-channel amplifier output socket for passive speaker.

**Two-in-one headphone jack:**



**Amplifier Output Socket (silk-print: JAUD):**

Pin	Signal
1	L+
2	L-
3	R-
4	R+

**2.9 Serial Ports**

There are 4 × RS232(COM1-4) and 2 × RS485(COM5-6).

RS232 interfaces are charged under the input voltage of 12V(DC\_IN).

**RS232 (silk-print: COM14):**

Signal	Pin		Signal
DCD#	1	2	RXD
TXD	3	4	DTR#
GND	5	6	DSR#
RTS#	7	8	CTS#
RI#	9	10	VCC_12V (DC_IN:12V)
DCD#	11	12	RXD
TXD	13	14	DTR#
GND	15	16	DSR#
RTS#	17	18	CTS#
RI#	19	20	VCC_12V (DC_IN:12V)
DCD#	21	22	RXD
TXD	23	24	DTR#
GND	25	26	DSR#
RTS#	27	28	CTS#
RI#	29	30	VCC_12V (DC_IN:12V)
DCD#	31	32	RXD
TXD	33	34	DTR#
GND	35	36	DSR#
RTS#	37	38	CTS#
RI#	39	40	VCC_12V (DC_IN:12V)

**RS485 (silk-print: COM5\_6):**

Signal	Pin		Signal
COM5_DATA-	1	2	COM6_DATA-
COM5_DATA+	3	4	COM6_DATA+
GND	5	6	GND

**2.10 Power Supply (silk-print: DCIN, PWR2)**

DC\_IN power supply socket(PWR2, optional),  
Supports 9V~24V DC\_IN adapter.

**PWR1:**



**PWR2(optional):**

Pin	Signal
1	VIN
2	VIN
3	GND
4	GND

**2.11 GPIO (silk-print: GPIO)**

Onboard 2×5Pin JGPIO header (2.0mm spacing), 8 × programmable GPIO input and output.

**GPIO:**

Signal	Pin		Signal
SIO_GP70	1	2	3.3V
SIO_GP71	3	4	SIO_GP74
SIO_GP72	5	6	SIO_GP75
SIO_GP73	7	8	SIO_GP76
GND	9	10	SIO_GP77

**2.12 LPC Header (optional)**

1 × LPC (Low Pin Count Interface, 2.0 mm spacing) to connect peripheral LPC equipment, optional.

**LPC:**

Signal	Pin		Signal
L_FRAME_N	1	2	LPC_AD3
LPC_AD2	3	4	LPC_AD1



LPC_ADO	5	6	GND
PLTRST	7	8	CLK_LPC
3.3V	9	10	SERIRQ

**2.13 Power Button/Indicator Light Header (silk-print: JPOWER)**

1 × header (2.0 mm spacing), connects 1 × power button, 1 × system reset button, 1 × disk read-write indicator and 1 × power on indicator.

1 × disk read-write indicator(red) and 1 × power on indicator(blue) at rear IO panel.

**JPOWER:**

Signal	Pin		Signal
HDD_LED+	1	2	PWR_LED+
HDD_LED-	3	4	PWR_LED-
RSTBTN+	5	6	PWR_ON+
RSTBTN-	7	8	PWR_ON-
(NC)	9	10	(NUL)

**2.14 CPU Fan Socket (silk-print: CPU\_FAN)**

There is a CPU cooling fan socket to offer better cooling effect for the board when it is necessary.

**CPU\_FAN:**

Pin	Signal
1	VCC(default is 5V, 12V optional)
2	GND
3	CPUFAN_TAC
4	CPUFAN_CTL

**2.15 CMOS (silk-print: CLR\_CMOS)**

CMOS is powered by the button battery on the board. Clearing CMOS will permanently clear previous system setting and restore it to factory setting.

Steps: 1. Turn off the computer and disconnect power;

2. Connect the jumper cap to the 1<sup>ST</sup> and 2<sup>nd</sup> pin of JCMOS pin for 10 secs, and disconnect;

3. Turn on the computer, and press <Del> to enter BIOS setting, overload the best default value;

4. Save and exit.

**CLR\_CMOS:**

Setting	JCMOS
Short circuit	Clear CMOS and all BIOS setting will restore to factory setting.

Close	Normal working condition by default.
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 Don't clear COMS when the computer is connected to power to avoid damage to the board.