

# User Manual

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## APL-35 Disk Size SBC Motherboard

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# APL35 Motherboard

## User Manual

(Version 1.5)

Version:		
NO.	Description	Issue Date:
V1.0	Initial Version	2018/03/06
V1.1	1. Updated the list of supported CPUs. 2. Updated the RAM info.	2018/08/20
V1.5	3. Updated the power to 12V/19V DC-in	2021/10/28

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## Chapter 1 Product Introduction

### 1.1 Brief Introduction

The APL-35 motherboard is a 3.5" SBC (Single Board Computer) based on the Intel Apollo Lake platform, features small form factor, low power consumption and high performance.

### 1.2 Parameters

#### Apollo Lake SoC:

- Celeron N3350, dual-core, 1.1GHz - 2.4GHz, TDP 6W, supports EIST
- Celeron N3450, quad-core, 1.1GHz - 2.2GHz, TDP 6W, supports EIST
- Pentium N4200, quad-core, 1.1GHz - 2.5GHz, TDP 6W, supports EIST
- Pentium J4205, quad-core, 1.5GHz – 2.6GHz, TDP 10W, supports EIST
- Celeron J3355, dual-core, 2.0GHz – 2.5GHz, TDP 10W, supports EIST
- Celeron J3455, quad-core, 1.5GHz – 2.3GHz, TDP 10W, supports EIST

**Memory:** Single Channel SO-DIMM DDR3L 1333 up to 8GB.

**GPU:** Integrated Graphics based on CPU, Display via 1x HDMI (1.4), 1x standard DP (1.2), 1x eDP (1.3) and eDP/LVDs optional.

**Storage:** 1x SATA3.0, 1xM.2 Key\_B for 2242 SSD (SATA definition, supports NGFF 3G/4G module with Micro SIM Slot), eMMC optional.

**USB:** 4x USB3.0 standard ports, 4x USB2.0 pin onboard 2.0mm.

**Ethernet:** Two Gigabyte Intel Network Controllers

**Audio:** ALC662 High-Definition Audio Codecs, 2in1 Audio Jack: Mic-in + Line-out, supports power amplifier.

**Expansion:** 1xM.2 Key\_E, supports 2230 Wi-Fi card.

**Other I/O:** a set of GPIO (Pin onboard 2.0mm), a set of LPC (2.0mm), 4xRS232, 2xRS485, 1x CPU Fan socket.

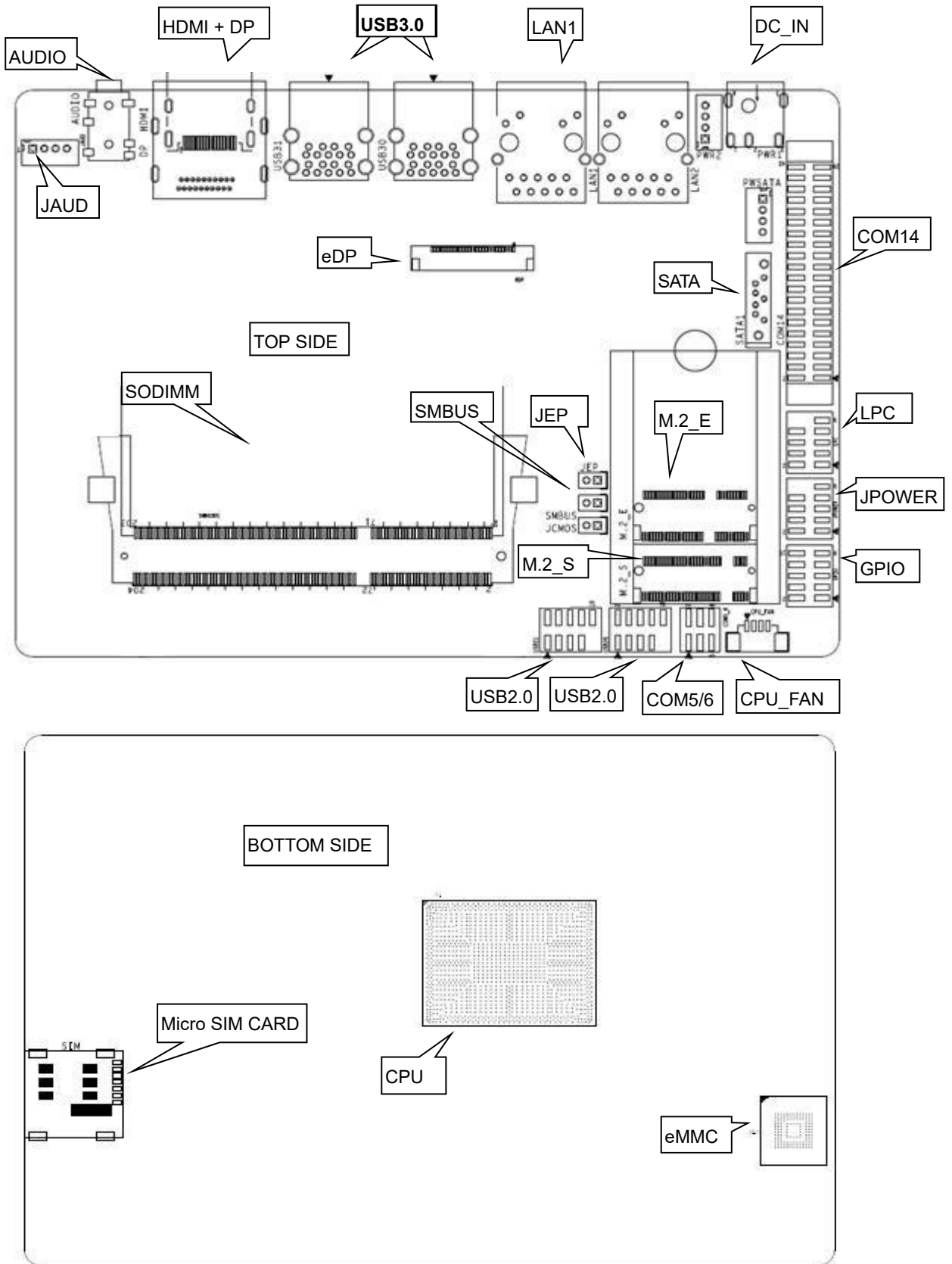
1x mini-PCIe, Micro SIM, support WIFI/BT/3G/4G module; 4xRS232, 2xRS485

**Dimension:** 146mm x 102mm

**Power:** 12V/19V DC-in

**Working Temperature:** -20°C~60°C

### 1.3 Connector Diagram



## Chapter 2 Hardware

### 2.1 Jumper Setting

Please configure the jumpers according to your requirements before installing the hardware.

How to identify the first header of jumpers and pins: Observe the mark beside the jumper or pins and find the header marked by "1" or bold line or triangular symbol. Or observe the rear panel and the header with a square solder pad is the first header.

### 2.2 Memory

The board has 1x SO-DIMM DDR3L/1333 Slot, maximum capacity 8GB.

### 2.3 Display Interfaces

Supports 1xHDMI (1.4) standard port, 1xDP (1.2), 1x eDP (1.3) 4 LANES. Screen power voltage default:3.3V, 5V optional. 1x eDP/LVDS convert module, optional choice, the LVDS is 24bit supports dual channel.

**eDP** (Screen Printing: 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

**Note:** Please ensure the jumper "JEP" is open while using it as eDP functions.

### 2.4 Storage (Screen Printing: M.2\_S, SATA1, PWSATA)

The board has 1xSATA3.0, 1xM.2 Key\_B for 2242 SSD (SATA definition), supports NGFF 3G/4G module with Micro SIM Slot), eMMC optional. It offers one disk power supply (PWSATA). The jumper PWSATA is for 2.5" HDD only.

**Hard Disk Power Supply** (Screen Printing: PWSATA)

Pin	Signal
1	5V

2	GND
3	GND
4	5V

## 2.5 USB Interface

The board supports 4x USB3.0 rear ports and 4x USB2.0(headers onboard, 2.0mm spacing).

The rear USB3.0 ports are powered by 5V Standby voltage, which can wake up the system through the USB keyboard/mouse on the corresponding interface during shutdown (non-power off), sleep, and other states; it also can charge external devices (5V/1A).

**Internal USB2.0 Pin** (Screen Printing: 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
N/A	9	10	NUL

## 2.6 LAN

The board is equipped with two Intel i211 Gigabit Network Controller, RJ45 interface, supports Magic packet wake-up and PXE network boot.

**LED Status Indicators:**

LI_LED Status (Orange)	Function	ACT_LED Status (Green)	Function
Always on	Network Connected	Blinking	Data transfer

## 2.8 Audio Interface

The board features Realtek HD audio codec ALC662 supports a 3.5mm Line-out/MIC two-in-one combo jack (CTIA American standard), and a built-in dual-channel power amplifier output socket for connecting passive speakers.

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



**JAUD** (Screen Printing: JAUD)

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



## 2.9 COM (Screen Printing: COM14, COM5\_6)

The board provides 4x RS232 and 2xRS485 onboard serial port headers. The RS232 serial port headers are electrified; in order to use this function, the board's input voltage (DC-IN) needs to be set at 12V.

### RS232 COM (Screen Printing: 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 (Requires DC_IN to be 12V)
DCD#	11	12	RXD
TXD	13	14	DTR#
GND	15	16	DSR#
RTS#	17	18	CTS#
RI#	19	20	VCC_12V (Requires DC_IN to be 12V)
DCD#	21	22	RXD
TXD	23	24	DTR#
GND	25	26	DSR#
RTS#	27	28	CTS#
RI#	29	30	VCC_12V (Requires DC_IN to be 12V)
DCD#	31	32	RXD
TXD	33	34	DTR#
GND	35	36	DSR#
RTS#	37	38	CTS#
RI#	39	40	VCC_12V (Requires DC_IN to be 12V)

### RS485 (Screen: COM5\_6)

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

## 2.10 Board Power Supply (Screen Printing: PWR1, PWR2)

The board supports a 12V/19V DC-in power supply.

### PWR1:



### PWR2 Optional (Screen Printing: PWR2)

Pin	Signal
1	VIN

2	VIN
3	GND
4	GND

### 2.11 GPIO (Screen Printing: GPIO)

The board provides a set of 2x5Pin GPIO (2.0mm spacing), 8 lanes of programmable I/O in total.

**GPIO** (Screen Printing: 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 (optional)

The board provides 1 x 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_AD0	5	6	GND
PLTRST	7	8	CLK_LPC
3.3V	9	10	(NULL)

### 2.13 Switch Button/ Indicator Pin (Screen Printing: JPOWER)

The board has a set of 2.0mm spacing pins that can be connected to a switch button, a system reset button, a hard disk read/write indicator, a power-on indicator.

In addition, there is a hard disk read/write indicator (red) and a power-on indicator (blue) on the rear IO panel of the board.

**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	(NULL)

### 2.14 CPU FAN Socket (Screen Printing: CPU\_FAN)

The board offers a CPU fan socket for cooling, which provides better heat dissipation.

**CPU\_FAN:**

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

**2.15 CMOS Clearance/Retention (Screen Printing: JCMOS)**

CMOS is powered by onboard button batteries. Clearing CMOS will permanently remove the previous system settings and restore the board system to original settings (factory settings).

**Step 1:** Turn off the PC and disconnect the power adapter.

**Step 2:** Connect the 1st and 2nd pin of JCMOS for 10 seconds through the jumper cap then disconnect.

**Step 3:** Restart the device, press the <DEL> button to enter the BIOS, load the optimal default value, save, and exit the settings.

**JCMOS:**

Setting	JCMOS
Short Circuit	Clear CMOS and all BIOS Setting, restore it to factory setting.
Close	Normal Working Status by default settings.

 Please do not clear COMS when the PC is connected to power in case of board damages.