

Motherboard KL35

User Manual V1.2

Edition Statement:		
Version	Version Description	Release date
V1.0	Initial version	2017/07/31
V1.1	<ol style="list-style-type: none">1. Update GPIO description2. Add the description of eDP to LVDS conversion3. Add the description of CPU vPRO technology	2017/10/10
V1.2	<ol style="list-style-type: none">1. Update AUDIO description2. Add the description of USB3.03. Delete the description of eDP to LVDS conversion.	2017/11/22

Chapter 1 Product Introduction

1.1 Main Information

The KL35 is a 3.5" motherboard which is based on Intel KabyLake-U (Skylake-U optional), supporting Core i3, i5, i7 and Celeron processors. This board features small form factor, low power consumption and high performance.

1.2 Parameters

KabyLake-U platform:

Celeron 3865U, dual core, 1.8GHz, TDP 15W, supports EIST technology,
i3-7100U, dual core, 2.4GHz, TDP 15W, supports EIST technology,
i5-7200U, dual core, 2.5GHz, TDP 15W, supports turbo frequency and EIST technology,
i5-7300U, dual core, 2.6GHz, TDP 15W, supports turbo frequency, EIST and vPRO technology,
i7-7500U, dual core, 2.7GHz, TDP 15W, supports turbo frequency , EIST technology.

SkyLake-U platform:

Celeron 3855U, dual core, 1.6GHz, TDP 15W, supports EIST technology,
i3-6100U, dual core, 2.3GHz, TDP 15W, supports EIST technology,
i5-6200U, dual core, 2.3GHz, TDP 15W, supports turbo frequency and EIST technology,
i5-6300U, dual core, 2.4GHz, TDP 15W, supports turbo frequency, EIST and vPRO technology;
i7-6500U, dual core, 2.5GHz, TDP 15W, supports turbo frequency and EIST technology.

Memory: 2 × SO-DIMM DDR4 up to 32GB, supports dual channel.

GPU: Integrated, 1 × HDMI, 1 × DP, 1 × eDP(optional: eDP can be converted into LVDS).

Storage: 1 × M.2 Key B (for 2242 SSD, NGFF 3G/4G module); 2 × SATA3.0 at most.
USB: 4 × USB 3.0, 4 × USB 2.0.

Ethernet: 2 × Gigabit LAN(intel).

Audio: Onboard High resolution audio chip, supports Speaker_out, MIC_in and amplifier.

Other I/O: 1×M.2 Key E (for 2230 WIFI card), 1 × LPC header (optional), 1 × GPIO header, 4 × RS232, 2 × RS485.

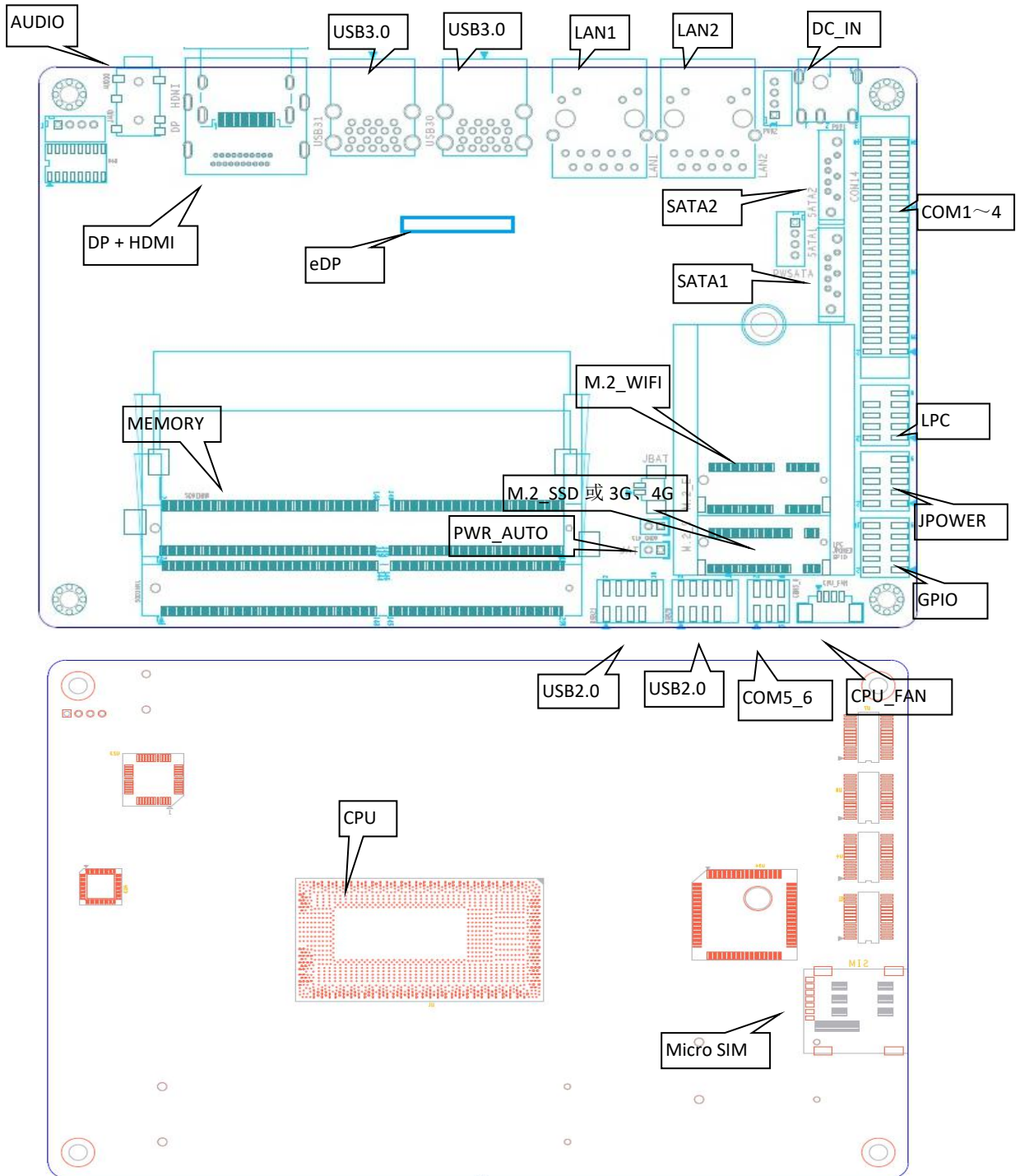
Size: 146mm × 102mm (3.5").

Power: 9V~24V DC_IN adapter.

Operating temperature: -20℃~60℃.

Chapter 2 Hardware

2.1 Connector Diagram



2.2 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.

2.3 Memory Slots

Onboard 2 × SO-DIMM DDR4 slots up to 32GB.

2.4 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:

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

2.5 Expansion Slots (Silk-print: M.2_E)

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

2.6 Storage slots (Silk-print: M.2_S, SATA1, SATA2, PWSATA)

M.2_S: M.2 Key B, supports 2242 SSD, onboard Micro SIM slot, supports 3G/4G module.

SATA1, SATA2: if Core CPU onboard, the board supports two SATA3.0 connectors, If Celeron or Pentium CPU onboard, the board supports one SATA3.0 connector(SATA1).

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

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

2.7 USB

4 × USB3.0; 4 × internal USB2.0 by header (2.0mm space).

The USB3.0 interfaces at rear panel are powered by 5V standby voltage and are able to supply power for peripheral equipment (5V/1A) by corresponding to 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
VCC 5V	1	2	VCC 5V
USB DATA-	3	4	USB DATA-
USB DATA+	5	6	USB DATA+
GND	7	8	GND
(NUL)	9	10	(NC)

2.8 LAN

Onboard 2 × high performance RJ45 LAN interfaces, adopting intel gigabit control chip i219 (LAN1) and i211 (LAN) respectively, supporting Magic packet wake-up and PXE functions.

LAN1(i219) supports vPRO function if the boards is equipped with CPU i5-7300U/i5-6300U processor.

LED indicator light:

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

2.9 Audio

ALC662 audio control chip. Line_out and Mic in one, 1 × dual channel amplifier output socket for passive speaker.

Amplifier Output Socket (silk-print: JAUD):

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

2.10 Serial Ports

4 × RS232 and 2 × RS485 by header. RS232 interfaces are charged, and their voltage is the same as the input voltage of the board.

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(same as board input)
DCD#	11	12	RXD
TXD	13	14	DTR#
GND	15	16	DSR#
RTS#	17	18	CTS#
RI#	19	20	VCC(same as board input)
DCD#	21	22	RXD
TXD	23	24	DTR#
GND	25	26	DSR#
RTS#	27	28	CTS#
RI#	29	30	VCC(same as board input)
DCD#	31	32	RXD
TXD	33	34	DTR#
GND	35	36	DSR#
RTS#	37	38	CTS#
RI#	39	40	VCC(same as board input)

RS485 (silk-print: COM5_6):

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

2.11 Power Supply (silk-print: PWR1, PWR2)

9V~24V DC_IN adapter

PWR1:



PWR2:

Pin	Signal
1	VIN
2	VIN
3	GND
4	GND

2.12 GPIO (silk-print: GPIO)

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

Signal	PinPin		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

2.13 LPC Header (optional)

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

LPC:

Signal	PinPin		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	(NUL)

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

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

1 × disk read-write indicator on the rear panel I/O.

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)

2.15 CPU FAN Socket (silk-print: CPU_FAN)

1 × CPU fan socket for better cooling performance when necessary.

CPU_FAN:

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

2.16 Auto Power on by Hardware (silk-print: JAT)

JAT:

Setting	PWR_AUTO
Close	On

Attention: This jumper functions like "Restore AC Power Loss" on BIOS, and if the latter is set to be "Power on", this function will automatically work.

2.17 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 the computer off and disconnect power;

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

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

4. Save and exit.

CLR_CMOS:

Setting	JCMOS
Close	Clear CMOS

 **Don't clear COMS when the computer is connected to power to avoid damage to the board.**