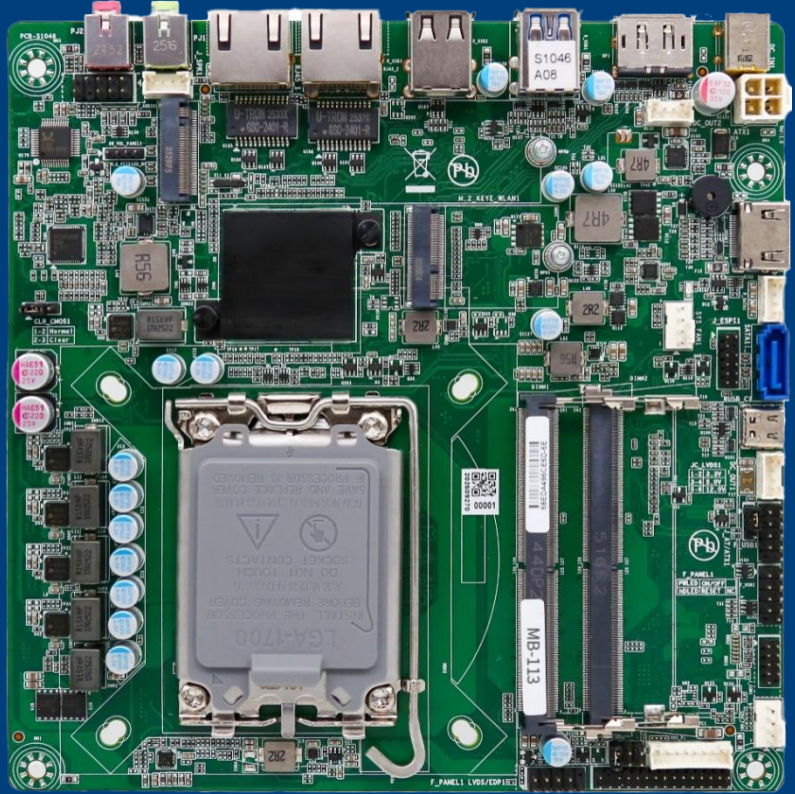


User Manual



Aicotek Motherboard | MB-113 User Manual

AICOTEK

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1 Models and Attentions

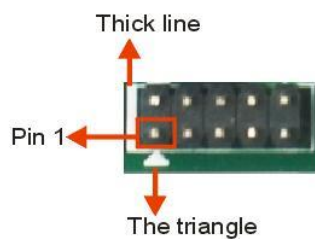
1.1 Model

This manual is applied to following models:

Model	PCH	COM	USB	Type-C	LAN	LVDS /EDP	HDMI	DP	M.2 KEY-E	M.2 KEY-M	SATA 3.0
MB-113	H610	1	8	1	2	LVDS	1	1	PCIe+ USB2.0	PCIe 4X/SATA	1

1.2 Attentions

- 1) Notes under a table or figure indicate the difference of models, or alternative definition of specific pin of the header (jumper/connector).
- 2) How to identify the first pin of a header or jumper
 - Usually, there is a thick line or a triangle near the header's or jumper's pin 1.



- Square pad, which you can find on the back of the motherboard, is usually used for pin 1.



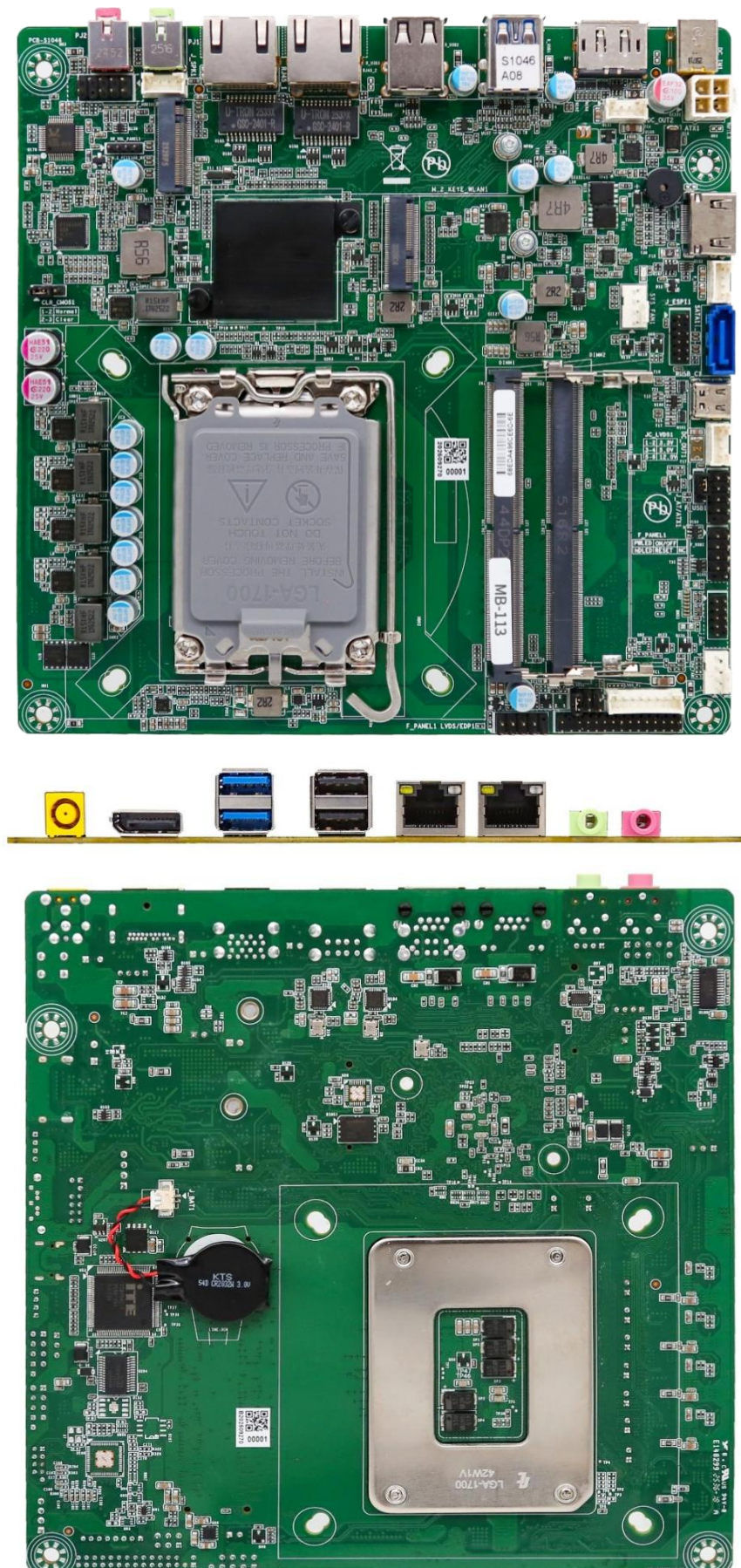
2 Specification

Specifications		
Model	Model	MB-113
Processor System	Processor	Intel® 12/13/14 th Gen Core™ /Pentium®/Celeron® Processors Support MAX CPU TDP: 65W
	PCH	H610
	TDP	6W
	BIOS	AMI UEFI BIOS
Memory	Slot Type	2, DDR5 non-ECC SO-DIMM
	Memory Type	DDR5 4800MHz
	Max Memory	64 GB
Display	DP	1, DP, max 3840*2160@60Hz
	HDMI	1, HDMI, max 3840*2160@30Hz
	LVDS/eDP	1, LVDS max 1920*1080@60Hz
	Multi-Display	Triple
Audio	Codec	Realtek HAD codec
	Audio	1, Line-Out Phone 1, MIC Phone 1, Line-Out + MIC Header
	Amplifier	1, L+R Amplifier, 3W8 Ω /CH <i>Notes: Amplifier max 5W8 Ω/CH.</i>
Type-C	USB-C	1, Standard Type-C, Support USB3.0 + USB2.0
Storage	SATA	1, SATA Gen3 6Gbps
	M.2 SSD	1, M.2 M-Key 2280, PCIe 4x NVMe /SATA SSD Auto Detect
Expansion Slot	M.2	1, M.2 E-Key 2230, PCIe+USB2.0, WiFi + BlueTooth, support CNVI
Ethernet	Chipset	2, Realtek® RTL8111H GbE Ethernet Controller <i>Note: RJ45_2 use the same position with R_USB3.They cannot be used at the same time</i>
	PXE/RPL Boot	Yes
	Wake On LAN	Yes
USB	USB3.0	2, USB3.2 5Gbps
	USB2.0	6, USB2.0 <i>Note: R_USB3 use the same position with RJ45_2. They cannot be used at the same time</i>

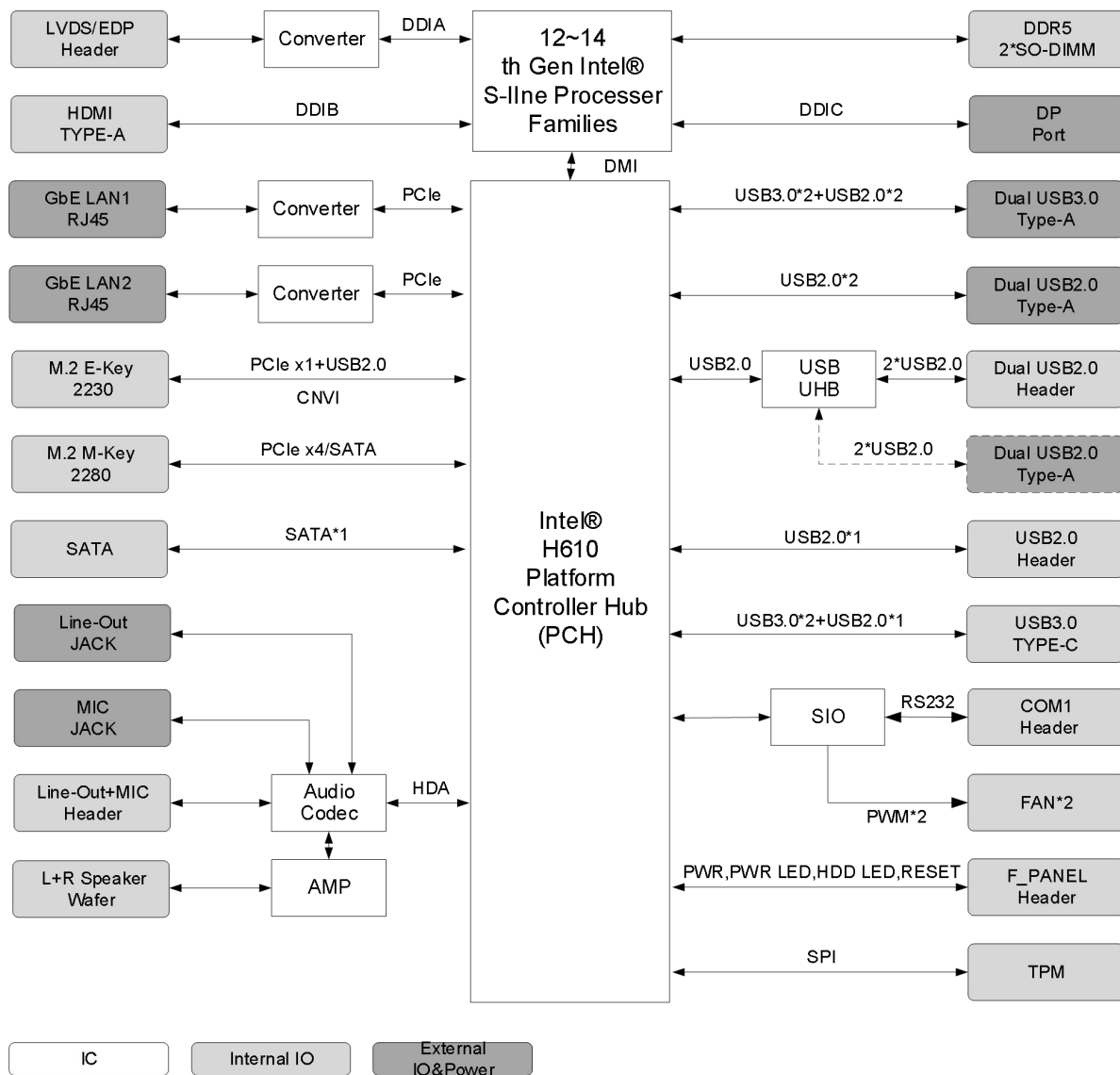
I/O	Serials	1, RS232, COM1
	PANEL	1, Power On +Reset +Power LED +HDD LED
	FAN	1, CPU FAN 1, System FAN
	AT/ATX Select	1, default ATX mode
	CMOS Clear	1, default normal
Power	Power in	1, Rear IO Φ 5525mm Jack 12V 1, Internal ATX 4P 12V
	Power out	1, Internal 5V 1, Internal 12V@1.5A
	RTC	1, CR2032 Li Battery
Others	TPM	fTPM2.0
	Watch Dog Timer	System reset, programmable 1-255 sec or min,
	HW Monitor	System-temp, CPU-temp, Voltage-12V,5V,3.3V, Vcpu, Vddr
OS	OS Supported	Windows 10/11 64bit, Linux
Environment	Temperature	Operation: 0 ~ 60°C Storage: -20 ~ 75°C
	Humidity	5 ~ 95%, non-condensing
Mechanical	Dimension	170mm * 170mm
	Thickness	PCB: 1.6mm

Interfaces

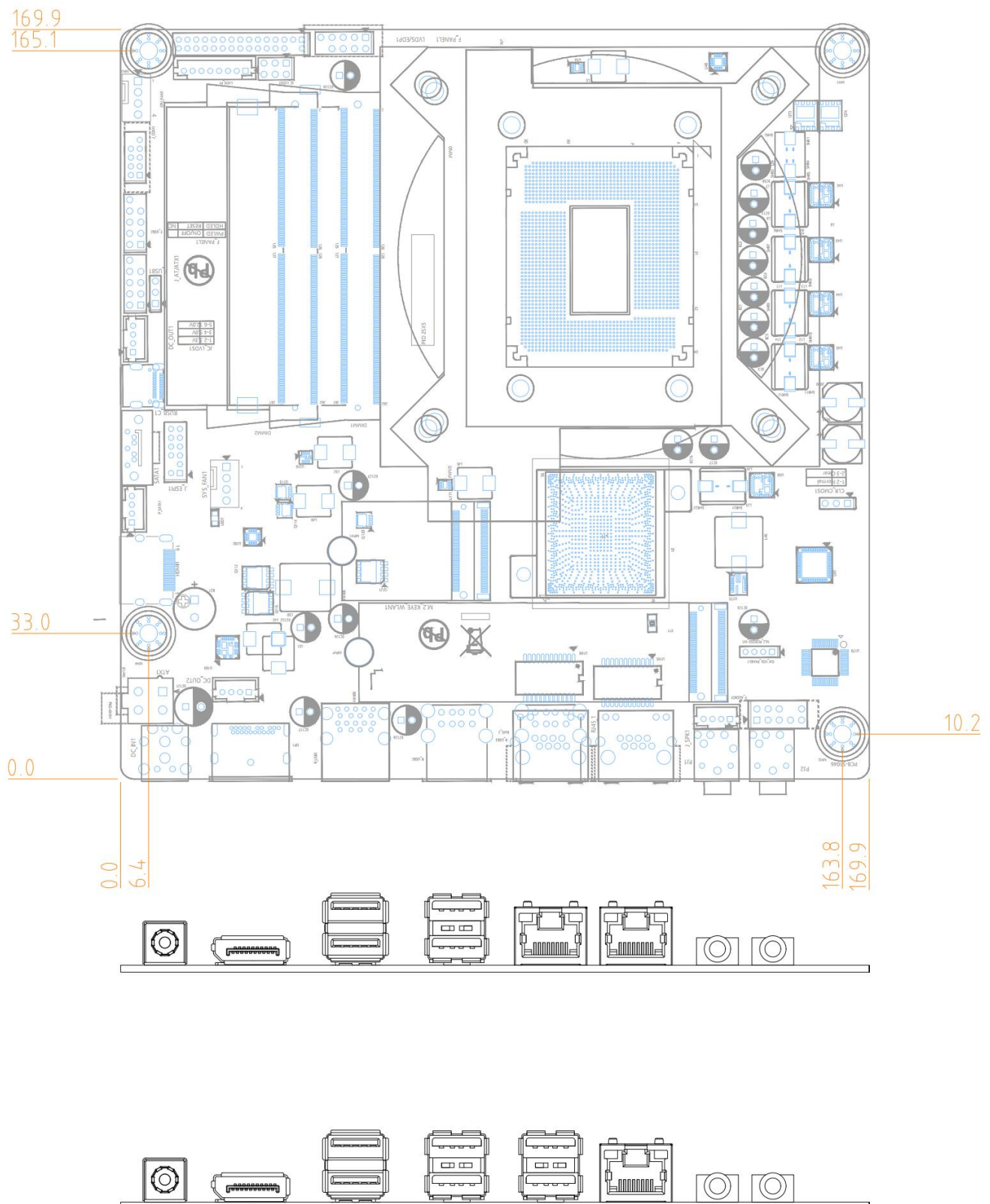
Model	Model	MB-113
Rear I/O	Power in	1, Φ 5525 Jack
	DP	1, Port
	LAN	2, RJ45
	USB3.0	2, Type-A
	USB2.0	2, Type-A
	Audio	1, Line-Out Φ 3.5mm Jack 1, MIC Φ 3.5mm Jack
Internal I/O	Power out	2, Wafer
	Audio AMP	1, Wafer, L/R Amplifier
	HDMI	1, Type-A
	eDP/LVDS	1, Header, with Backlight Control Wafer
	Storage	1, SATA 7P Port 1, M.2 M-Key 2280, NVMe/SATA
	Expansion	1, M.2 E-Key 2230, PCIe+USB2.0
	USB2.0	4, Header
	USB3.0	1, TYPE-C
	Serial	1, Header, COM1
	Front Panel	1, Header
	FAN	2, Wafer
Others	Buzzer	1



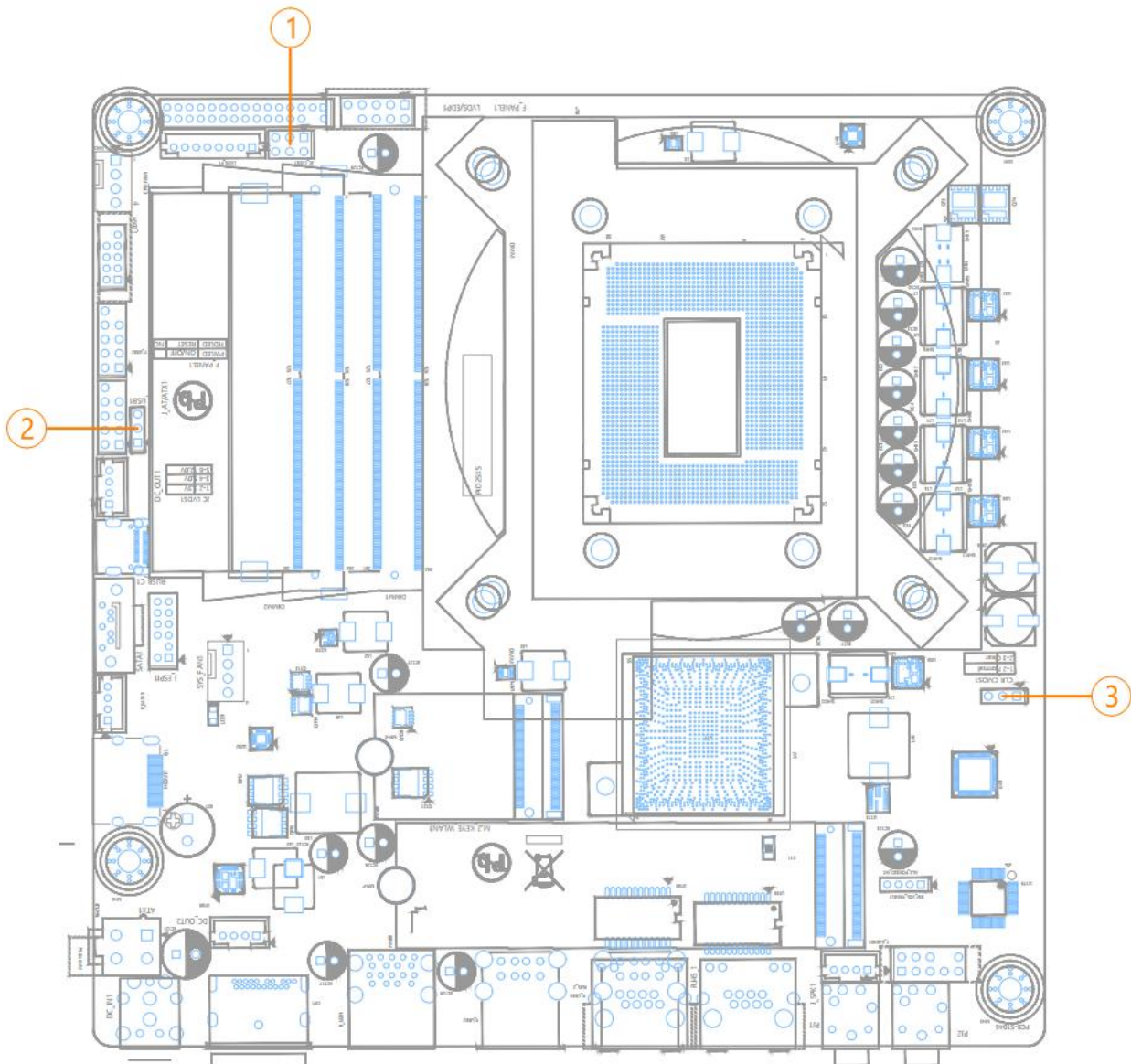
3 Block Diagram



4 Mechanical Drawing



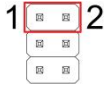
5 Jumper



Jumpers		
①	JV_LVDS1	eDP/LVDS Power VCC3.3/VCC5/VCC12 Select Jumper
②	J_AT/ATX1	AT or ATX mode Select Jumper
③	CLR_CMOS	CMOS Clear Select Jumper

6 Definition of Jumpers

6.1 eDP/LVDS Power VCC3.3/VCC5/VCC12 Select: Jumper, 3*2P, 2.54mm (Mark No.1, JV_LVDS1)

Graphic	Setting	Function
	1-2(Default)	VCC3.3
	3-4	VCC5
	5-6	VCC12

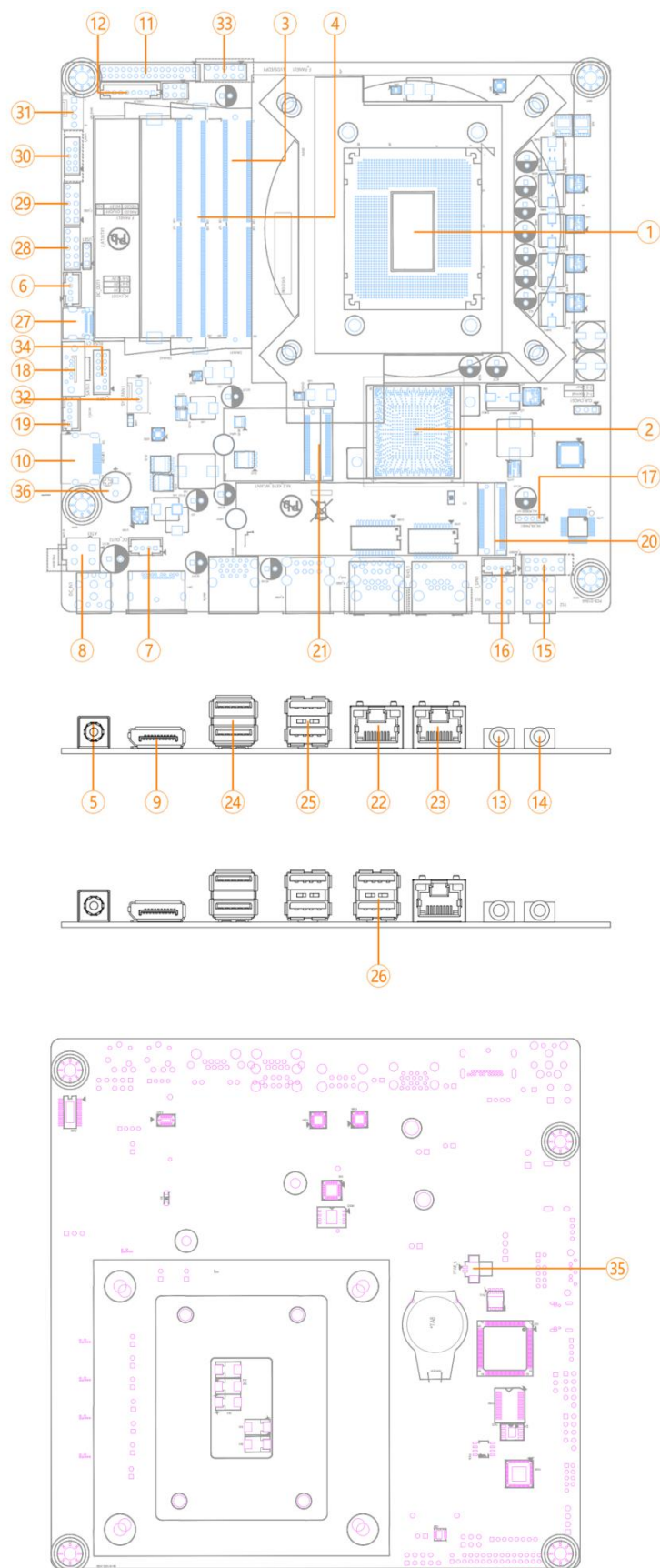
6.2 AT or ATX Mode Select: Jumper, 3*1P, 2.54mm (Mark No.2, J_AT/ATX)

Graphic	Setting	Function
	1-2(Default)	ATX MODE
	2-3	AT MODE

6.3 CMOS Clear Select: Jumper, 3*1P, 2.54mm (Mark No.3, CLR_CMOS1)

Graphic	Setting	Function
	1-2(Default)	Normal
	2-3	Clear CMOS

7 Headers / Wafers and Connectors



Headers / Wafers and Connectors

①	U1	CPU
②	U2	PCH
③	DIMM1	DDR5 SO-DIMM Slot1
④	DIMM1	DDR5 SO-DIMM Slot2
⑤	DC_IN1	DC 12V Power Input Φ5525 Jack
⑥	DC_OUT1	DC 5V Power Output Wafer
⑦	DC_OUT2	DC 12V Power Output Wafer
⑧	ATX1	DC 12V ATX Power Input Connector
⑨	DP1	DP Port Connector
⑩	HDMI1	HDMI TYPE-A Connector
⑪	LVDS/EDP1	eDP/LVDS Signal Header
⑫	LVDS_P1	eDP/LVDS Backlight Control Wafer
⑬	PJ1	Line-In 3.5mm Jack
⑭	PJ2	MIC 3.5mm Jack
⑮	F_AUDIO1	Front Audio Header (Line-Out + MIC)
⑯	J_SPK1	Left+ Right Amplifier Wafer
⑰	SW_VOL_PANEL1	Volume Control Header
⑱	SATA1	SATA3.0 7P Connector
⑲	P_SATA1	SATA Power Header
⑳	M.2_PCISSD_M1	M.2 M-Key Slot (PCIe x4/SATA, 2280)
㉑	M.2_KEYE_WLAN1	M.2 E-Key Slot (PCIe+USB2.0, 2230)
㉒	RJ45_1	GbE LAN RJ45 Connector1
㉓	RJ45_2	GbE LAN RJ45 Connector22
㉔	R_USB1	Dual USB3.0 TYPE-A Connector
㉕	R_USB2	Dual USB2.0 TYPE-A Connector
㉖	R_USB3	Dual USB2.0 TYPE-A Connector
㉗	RUSB_C1	USB3.0 TYPE-C Connector
㉘	F_USB1	Front Dual USB2.0 Header
㉙	F_USB2	Front USB2.0 Header
㉚	J_COM1	COM1 Header
㉛	CPU_FAN1	CPU FAN Wafer
㉜	SYS_FAN1	System FAN Wafer
㉝	F_PANEL1	Front Panel Header
㉞	J_ESPI1	ESPI Header

③⑤	J_BAT1	CMOS Battery Wafer
③⑥	BZ1	Buzzer

8 Definition of Connectors

8.1 DC 5V Power Output: Wafer, 4*1P, 2.00 mm (Mark No.6, DC_OUT1)

Graphic	Pin	Definition	Pin	Definition
	1	VCC5	3	GND
	2	VCC5	4	GND

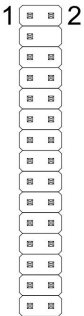
8.2 DC 12V Power Output: Wafer, 4*1P, 2.00mm (Mark No.7, DC_OUT2)

Graphic	Pin	Definition	Pin	Definition
	1	VCC12	3	GND
	2	VCC12	4	GND

8.3 DC 12V ATX Power Input: 4P (Mark No.8, ATX1)

Graphic	Pin	Definition	Pin	Definition
	1	GND	3	VCC12
	2	GND	4	VCC12

8.4 eDP/LVDS: Header, 15*2P, 2.00mm (Mark No.11, LVDS1/EDP1)

Graphic	Pin	Definition	Pin	Definition
	1	VCC3.3/VCC5/VCC12 ^[1]	2	VCC3.3/VCC5/CC12 ^[1]
	3	VCC3.3/VCC5/VCC12 ^[1]	4	
	5	EDP_HPD/ LVDS_PRSENT# ^[2]	6	EDP_HPD/ LVDS_PRSENT# ^[2]
	7	LVDS_A_DATA0-	8	LVDS_A_DATA0+
	9	LVDS_A_DATA1-	10	LVDS_A_DATA1+
	11	LVDS_A_DATA2-	12	LVDS_A_DATA2+
	13	GND	14	GND
	15	LVDS_A_CLK-	16	LVDS_A_CLK+
	17	LVDS_A_DATA3-	18	LVDS_A_DATA3+
	19	EDP_TX0-/ LVDS_B_DATA0- ^[2]	20	EDP_TX0+/ LVDS_B_DATA0+ ^[2]
	21	EDP_TX1-/ LVDS_B_DATA1- ^[2]	22	EDP_TX1+/ LVDS_B_DATA1+ ^[2]
	23	DDIO_TX2-/ LVDS_B_DATA2- ^[2]	24	DDIO_TX2+/ LVDS_B_DATA2+ ^[2]
	25	GND	26	GND
	27	DDIO_TX3-/ LVDS_B_CLK- ^[2]	28	DDIO_TX3+/ LVDS_B_CLK+ ^[2]

	29	EDP_AUX-/ LVDS_B_DATA3- ^[2]	30	EDP_AUX+/ LVDS_B_DATA3+ ^[2]
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Notes:

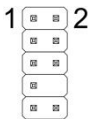
[1]: Panel Power VDD is 3.3V by default, 5V is selectable by “eDP/LVDS Power 3.3V/5V12V Select Jumper” (JC_LVDS1).

[2]: It supports LVDS by default and can support eDP if specified. (resistor selectable).

8.5 eDP/LVDS Backlight Control: Wafer, 8*1P, 2.00mm (Mark No.12, LVDS_P1)

Graphic	Pin	Definition	Pin	Definition
	1	LVDS_EN_BKLT	5	GND
	2	LVDS_CTL_BKLT	6	GND
	3	VCC12	7	BKLT_UP
	4	VCC12	8	BKLT_DOWN

8.6 Front Audio: Header 5*2P, 2.54mm (Mark No.15, F_AUDIO1)

Graphic	Pin	Definition	Pin	Definition
	1	MIC_IN_L	2	GND_AUD
	3	MIC_IN_R	4	VCC3.3
	5	LINE_OUT_R	6	MIC_RET
	7	GND_AUD		
	9	LINE_OUT_L	10	LINE_OUT_RET

8.7 Left+ Right Amplifier: Wafer 4*1P, 2.00mm (Mark No.16, J_SPK1)

Graphic	Pin	Definition	Pin	Definition
	1	SPK_OUT_L-	3	SPK_OUT_R-
	2	SPK_OUT_L+	4	SPK_OUT_R+

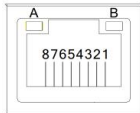
8.8 Volume Control: Header 4*1P, 2.54mm (Mark No.17, SW_VOL_PANEL1)

Graphic	Pin	Definition	Pin	Definition
	1	SW	3	VOL+
	2	GND	4	VOL-

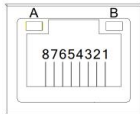
8.9 SATA Power: Wafer, 4*1P, 2.00mm (Mark No.19, P_SATA1)

Graphic	Pin	Definition	Pin	Definition
	1	VCC12	3	GND
	2	GND	4	VCC5

8.10 GbE LAN: RJ45, 8P (Mark No.22, RJ45_1)

Graphic	Pin	Definition	Pin	Definition
	1	MDI0+	5	MDI2-
	2	MDI0-	6	MDI1-
	3	MDI1+	7	MDI3+
	4	MDI2+	8	MDI3-
	A	Active LED	B	Speed LED
		ACT: Twinkling Yellow		1000M: Turn Yellow
		Only LINK: Lights On		100M: Turn Green
		NO LINK: Lights Off		10M: Lights Off

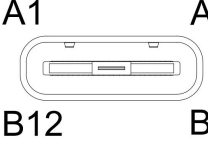
8.11 GbE LAN: RJ45, 8P (Mark No.23, RJ45_2)

Graphic	Pin	Definition	Pin	Definition
	1	MDI0+	5	MDI2-
	2	MDI0-	6	MDI1-
	3	MDI1+	7	MDI3+
	4	MDI2+	8	MDI3-
	A	Active LED	B	Speed LED
		ACT: Twinkling Yellow		1000M: Turn Yellow
		Only LINK: Lights On		100M: Turn Green
		NO LINK: Lights Off		10M: Lights Off

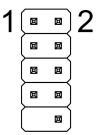
Notes:

[*]: RJ45_2 and R_USB3 on rear I/O share the same position. The Motherboard supports RJ45_2 by default.

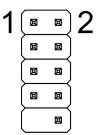
8.12 USB3.0: TYPE-C (Mark No.27, RUSB_C1)

Graphic	Pin	Definition	Pin	Definition
	A1	GND	B1	GND
	A2	USB3.0_TX2+	B2	USB3.0_TX3+
	A3	USB3.0_TX2-	B3	USB3.0_TX3-
	A4	VBUS_ERAR2	B4	VBUS_ERAR2
	A5	UC_CC1	B5	UC_CC2
	A6	USB2.0+	B6	USB2.0+
	A7	USB2.0-	B7	USB2.0-
	A8	N/C	B8	N/C
	A9	VBUS_ERAR2	B9	VBUS_ERAR2
	A10	USB3.0_RX3-	B10	USB3.0_RX2-
	A11	USB3.0_RX3+	B11	USB3.0_RX2+
	A12	GND	B12	GND

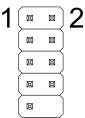
8.13 Front Dual USB2.0: Header, 5*2P, 2.54mm (Mark No.28, F_USB1)

Graphic	Pin	Definition	Pin	Definition
	1	VCC5	2	VCC5
	3	USB2.0_1-	4	USB2.0_2-
	5	USB2.0_1+	6	USB2.0_2+
	7	GND	8	GND
			10	GND

8.14 Front USB2.0: Header, 5*2P, 2.54mm (Mark No.29, F_USB2)

Graphic	Pin	Definition	Pin	Definition
	1	VCC5	2	VCC5
	3	USB2.0_1-	4	USB2.0_2-
	5	USB2.0_1+	6	USB2.0_2+
	7	GND	8	GND
			10	GND

8.15 COM1: Header, 5*2P, 2.00mm (Mark No.30, J_COM1)

Graphic	Pin	Definition	Pin	Definition
	1	DCD/VCC5 ^[1]	2	RXD
	3	TXD	4	DTR
	5	GND	6	DSR
	7	RTS	8	CTS
	9	RIVCC12 ^[1]		

Notes:

[1]: PIN1 can be DCD#/5V SEL by RES, support DCD# by default.

[2]: PIN8 can be RI#/12V SEL by RES, support RI# by default.

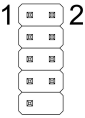
8.16 CPU FAN: Wafer 4*1P, 2.54mm (Mark No.31, CPU_FAN1)

Graphic	Pin	Definition	Pin	Definition
	1	GND	3	FAN Speed Detection
	2	VCC12	4	FAN Speed Control

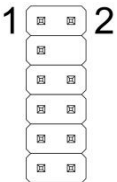
8.17 System FAN: Wafer 4*1P, 2.54mm (Mark No.32, SYS_FAN1)

Graphic	Pin	Definition	Pin	Definition
	1	GND	3	FAN Speed Detection
	2	VCC12	4	FAN Speed Control

8.18 Front Panel: Header, 5*2P, 2.54mm (Mark No.33, F_PANEL1)

Graphic	Pin	Definition	Pin	Definition
	1	HDD_LED+	2	PWR_LED+
	3	HDD_LED-	4	PWR_LED-
	5	RESET-	6	PWR_ON+
	7	RESET+	8	PWR_ON-
	9	N/C		

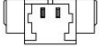
8.19 ESPI: Header, 6*2P, 2.00mm (Mark No.34, J_ESPI1)

Graphic	Pin	Definition	Pin	Definition
	1	ESPI_I00	2	VCC3.3
	3	ESPI_IO1		
	5	ESPI_I02	6	ESPI_CLK
	7	ESPI_I03	8	GND
	9	ESPI_CS0-	10	VCC3.3
	11	ESPI_ALERT0_N	12	PLTRST_N ^[1]

Notes:

[1]: Signal on this Pin is PLT_RST_N by default, ESPI_RST0_N is available if specified. (resistor selectable).

8.20 CMOS Battery: Wafer, 2*1P, 2.00mm (Mark No.35, J_BAT1)

Graphic	Pin	Definition	Pin	Definition
1 	1	VCC_BAT	2	GND

【End】



Empowering the world with AI solutions

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