IPCTECH Motherboard
User's Manual
用户手册

QY-ZX6780A-XB

Ver 0.0

IPCTECH
启阳工控

Contents

1. Models and Attentions

1.1 Models

This manual is applied to following models:

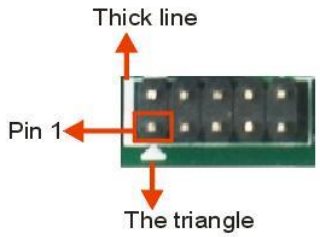
Model	CPU	COM	LAN	USB	VGA	eDP /HDMI	DVI	M.2 KEY-E	M.2 KEY-M	Mini-PCIe	SATA
QY-ZX 6580A-XB	KX-U6580	6	2	15	1	HDMI	1	USB2.0	SATA SSD	PCIE+ USB2.0	3
QY-ZX 6780A-XB	KX-U6780A	6	2	15	1	HDMI	1	USB2.0	SATA SSD	PCIE+ USB2.0	3

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

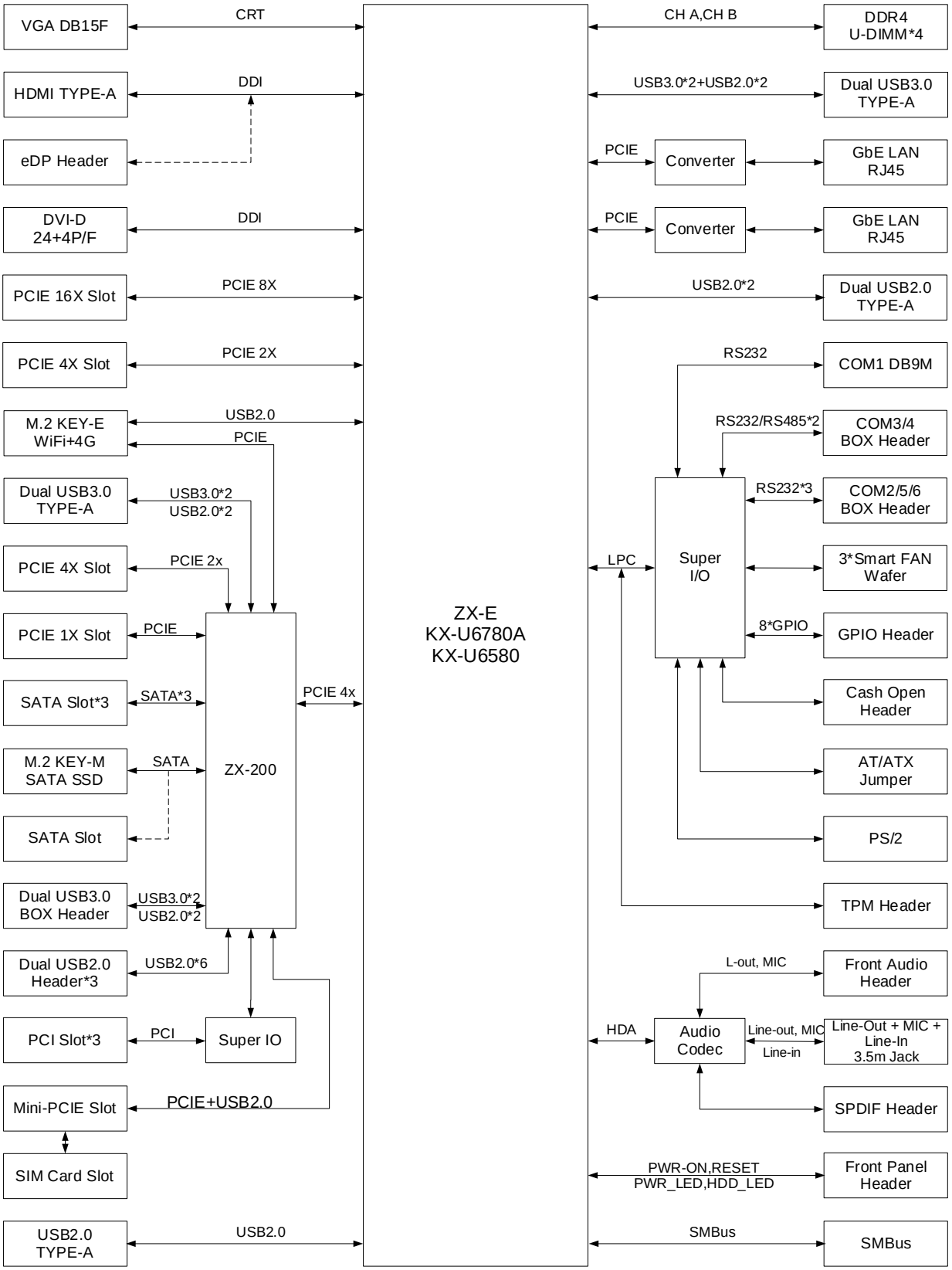
Model	QY-ZX6580A-XB	QY-ZX6780A-XB
CPU [1]	Supports KX-U6580, Octa-Core, clock speed 2.5G, TDP 70W	Supports KX-U6780A, Octa-Core, clock speed 2.7G, TDP 70W
Display [2]	1 * VGA (DB15F): max resolution up to 1920x1200@60Hz 1 * HDMI (CONN) / eDP (Header): HDMI max resolution up to 4096*2160@60Hz (Default) eDP max resolution up to 2560x1440@60Hz 1 * DVI-D (24+4P/F): max resolution up to 2560x1440@60Hz	
Memory	Support DDR4-2666 MHz, 4 * U-DIMM Slot, up to 64GB	
Storage [3]	3 * SATA3.0 7P Connector 1 * M.2 Key-M Slot (SATA SSD, 2230/2242/2280)	
Ethernet	2 * Intel® GbE LAN Chip (10/100/1000 Mbps, RJ45)	
Audio	Realtek AUDIO HDA Codec, 1 * Front Audio Header (MIC +Line Out) 1 * Line-Out + MIC + Line-In 3.5mm Jack 1 * SPDIF Header	
Expansion Slots [4]	1 * Mini PCI-E Slot (PCIE+USB2.0, support WIFI+4G/3G, with 1* Full-Size SIM Card Slot) 1 * M.2 Key-E Slot (PCIE+USB2.0, default USB2.0, support Bluetooth, 2230) 1 * PCI-E 16x Slot (PCIE 8x signal) 2 * PCI-E 4x Slot (PCIE 2x signal) 1 * PCI-E 1x Slot 3 * PCI Slot	
COM	1 * RS232 (COM1, DB9/M) 3 * RS232 (COM2/5/6, BOX Header) 2 * RS232/RS485 (COM3/4, BOX Header)	
USB	2 * USB2.0(TYPE-A, Rear IO) 1 * USB2.0(TYPE-A, Internal) 6 * USB2.0(Header, Internal) 2 * USB3.0(BOX Header, Internal) 4 * USB3.0(TYPE-A, Rear IO)	
Other Ports	8 * GPIO Header 3 * Smart FAN Wafer 1 * Front Panel Header 1 * Case Open Header 1 * ATX or AT Mode Select Jumper 1 * SMBus Wafer 1 * Debug Header 1 * CMOS Clear Select Jumper 1 * PS/2 Connector (Keyboard & Mouse)	
System	Support Windows 7/8.1/10 and Domestic/General Linux OS	
TPM	SLB 9665VQ2.0, TPM2.0 (Not onboard by default)	
Temperature	Storage: -20~75℃ Operating: 0~60℃	
BIOS	Byosoft BIOS (Support Watchdog Timer)	

Power Supply	ATX Standard (24P + 4P) 1 * ATX 4P CPU Power Input Connector 1 * ATX 24P Power Input Connector
Factor	305*244mm

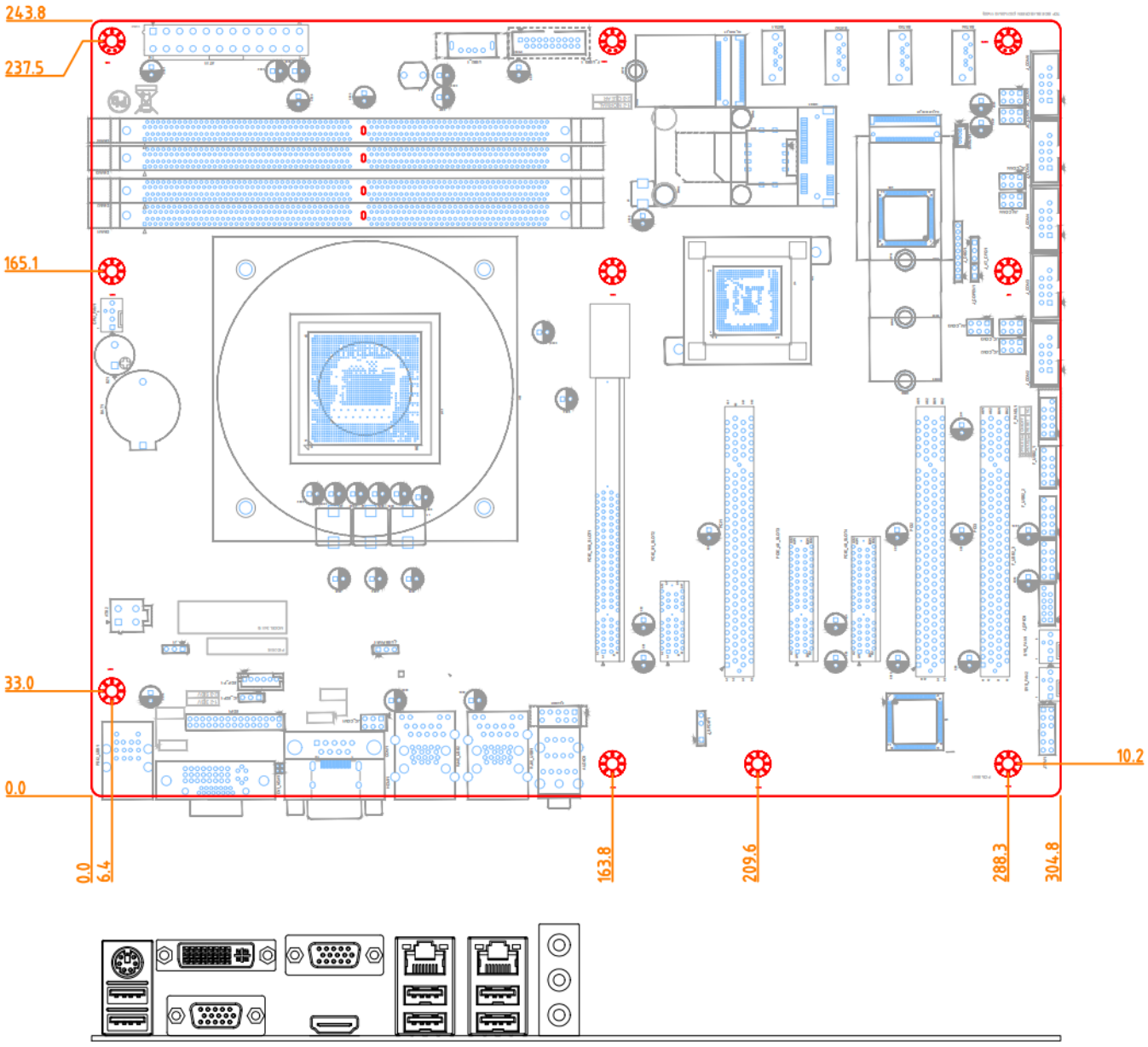
Notes:

[1]: Also supports other KaiXian KX-6000 series CPU, include: KX-U6780, KX-U6580, KX-6740A, KX-6640A, KX-6640MA.
[2]: HDMI and eDP use the same signal, they cannot be used at the same time
[3]: SATA signal for M.2 Key-M Slot colay with SATA1 Port, default support M.2 Key-M Slot.
[4]: PCIE signal for M.2 Key-E Slot colay with Mini-PCIE Slot, default support Mini-PCIE Slot.

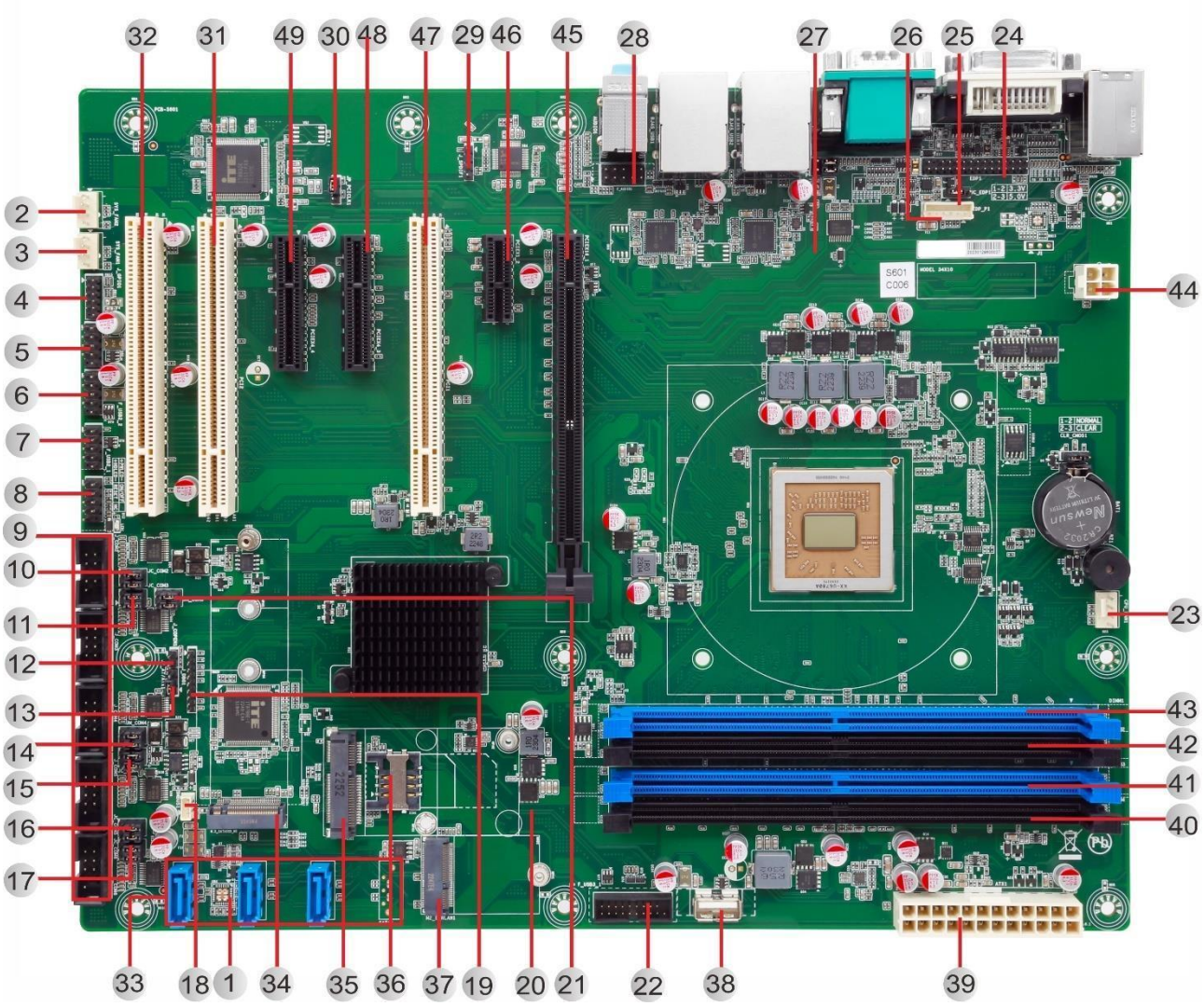
3. Functional Block Diagram

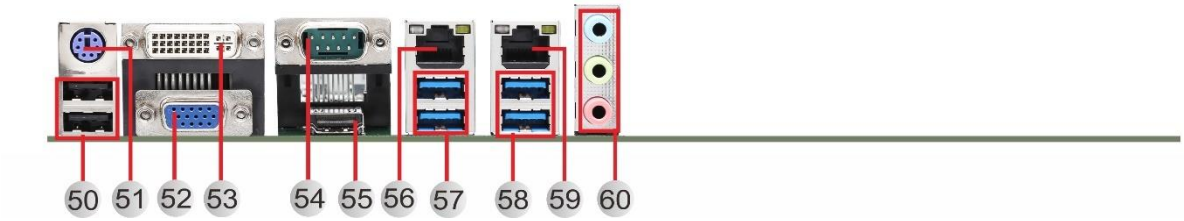


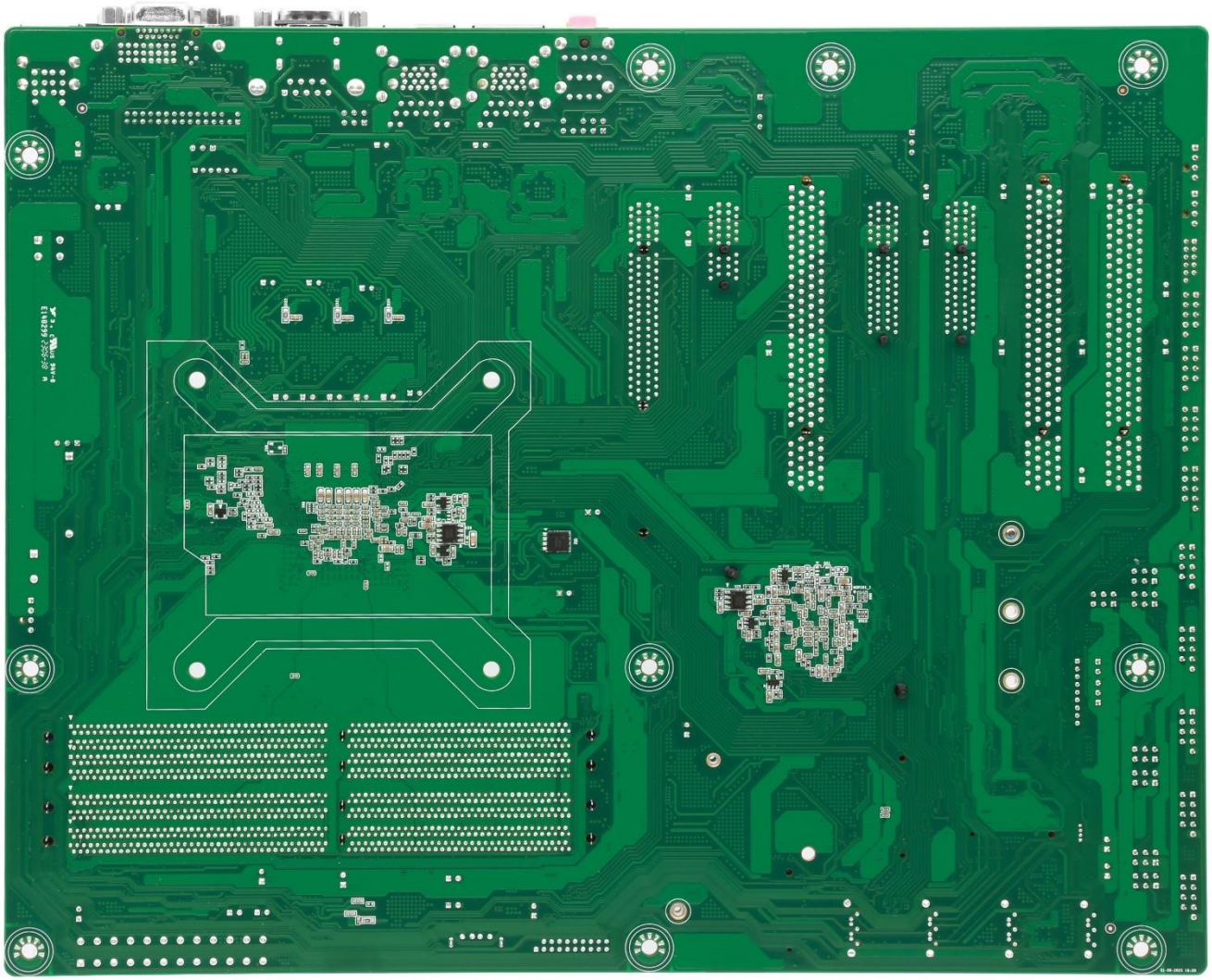
4. Mechanical Drawing



5. Jumpers / Headers and Connectors







Jumpers / Headers and Connectors		
1	U94	TPM Module
2	SYS_FAN2	System FAN Wafer2
3	SYS_FAN1	System FAN Wafer1
4	J_GPIO1	GPIO Header
5	F_USB2_3	Front Dual-USB2.0 Header3
6	F_USB2_2	Front Dual-USB2.0 Header2
7	F_USB2_1	Front Dual USB2.0 Header1
8	F_PANEL1	Front Panel Header
9	J_COM2-6	COM2-6 Box Header
10	JC_COM2	COM2 VCC5/DCD + VCC12/PI Select Jumper
11	JC_COM3	COM3 VCC5/DCD + VCC12/PI Select Jumper
12	J_COPEN1	Case Open Header
13	J_AT_CFG1	ATX or AT Mode Select Jumper
14	JM_COM4	COM4 RS232/RS485 Select Jumper

15	JC_COM4	COM4 VCC5/DCD + VCC12/PI Select Jumper
16	JC_COM5	COM5 VCC5/DCD + VCC12/PI Select Jumper
17	JC_COM6	COM6 VCC5/DCD + VCC12/PI Select Jumper
18	SMBUS1	SMBus Wafer
19	J_DBG1	Debug Header
20	CLR_CMOS1	CMOS Clear Select Jumper
21	JM_COM3	COM3 RS232/RS485 Select Jumper
22	F_USB3_1	Front Dual-USB3.0 Box Header
23	CPU_FAN1	CPU FAN Wafer
24	EDP1	eDP Signal Header
25	JC_EDP1	eDP VDD Select Jumper
26	EDP_P1	eDP Backlight Control Wafer
27	J_USBPWR1	USB Power Standby/ System Power Select Jumper
28	F_AUDIO1	Front Audio Header (MIC +Line OUT)
29	J_SPDIF1	SPDIF Header
30	JP_PCICLK_66M	PCI CLK 33M/66M Select Jumper
31	PCI2	PCI Slot2
32	PCI3	PCI Slot3
33	SATA1-4	SATA3.0 7P Connector1-4
34	M.2_SATASSD_M1	M.2 Key-M Slot (SATA SSD, 2230/2242/2280)
35	MPCIE1	Mini PCI-E Slot (PCIE+USB2.0, support WIFI+4G/3G)
36	SIM1	Full-Size SIM Card Slot
37	M.2_WLAN_E1	M.2 Key-E Slot (PCIE+USB2.0, Support WIFI+BT, 2230)
38	USB2_1	USB2.0 TYPE-A Connector
39	ATX1	ATX 24P Power Input Connector
40	DIMM4	DDR4 CHB DIMM Slot4
41	DIMM3	DDR4 CHB DIMM Slot3
42	DIMM2	DDR4 CHA DIMM Slot2
43	DIMM1	DDR4 CHA DIMM Slot1
44	ATX2	ATX 4P CPU Power Input Connector
45	PCIE_16X_SLOT1	PCI-E 16x Slot
46	PCIE_X1_SLOT2	PCI-E 1x Slot
47	PCI1	PCI Slot1
48	PCIE_4X_SLOT3	PCI-E 4x Slot
49	PCIE_4X_SLOT4	PCI-E 4x Slot
50	PS/2_USB1(USB)	Dual USB2.0 TYPE-A Connector
51	PS/2_USB1(PS/2)	PS/2 Connector (Keyboard & Mouse)
52	DVI_VGA1(VGA)	VGA DB15/F Connector
53	DVI_VGA1(DVI)	DVI-I 24+4P/F Connector (Support DVI-D)
54	COM1	COM1 DB9/M Connector
55	HDMI1	HDMI TYPE-A Connector
56	RJ45_USB2(LAN)	GBE LAN RJ45 Connector2

57	RJ45_USB2(USB)	Dual USB3.0 TYPE-A Connector2
58	RJ45_USB1(USB)	GBE LAN RJ45 Connector1
59	RJ45_USB1(LAN)	Dual USB3.0 TYPE-A Connector1
60	AUDIO1	Line-Out + MIC + Line-In 3.5mm Jack

6. Definition of Jumpers /Headers and Connectors

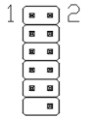
2) SYS_FAN2 (System FAN Wafer2 4*1 Pin 2.54mm)

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

3) SYS_FAN1 (System FAN Wafer1 4*1 Pin 2.54mm)

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

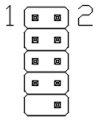
4) J_GPIO1 (GPIO Header 6*2 Pin 2.00mm)

Graphic	Pin	Definition	Pin	Definition
	1	SIO_GP70 (0X0A06 BIT0, H) [1]	2	SIO_GP71 (0X0A06 BIT1, H) [1]
	3	SIO_GP72 (0X0A06 BIT2, H) [1]	4	SIO_GP73 (0X0A06 BIT3, H) [1]
	5	GND	6	SIO_GP74 (0X0A06 BIT4, H) [1]
	7	SIO_GP75 (0X0A06 BIT5, H) [1]	8	SIO_GP76 (0X0A06 BIT6, H) [1]
	9	SIO_GP77 (0X0A06 BIT7, H) [1]	10	VCC5
			12	N/C

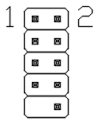
Notes:

[1]: “H” or “L” means the default voltage is High or Low level (5V GPIO).

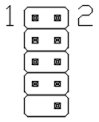
5) F_USB2_3 (Front Dual-USB2.0 Header3 5*2 Pin 2.54mm)

Graphic	Pin	Definition	Pin	Definition
	1	VCC5	2	VCC5
	3	HUB_USB2.0_1-	4	HUB_USB2.0_2-
	5	HUB_USB2.0_1+	6	HUB_USB2.0_2+
	7	GND	8	GND
			10	N/C

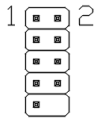
6) F_USB2_2 (Front Dual-USB2.0 Header2 5*2 Pin 2.54mm)

Graphic	Pin	Definition	Pin	Definition
	1	VCC5	2	VCC5
	3	HUB_USB2.0_1-	4	HUB_USB2.0_2-
	5	HUB_USB2.0_1+	6	HUB_USB2.0_2+
	7	GND	8	GND
			10	N/C

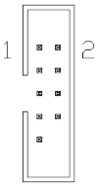
7) F_USB2_1 (Front Dual-USB2.0 Header1 5*2 Pin 2.54mm)

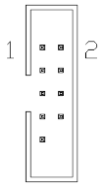
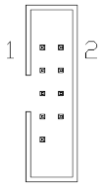
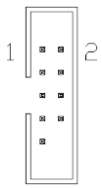
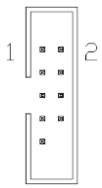
Graphic	Pin	Definition	Pin	Definition
	1	VCC5	2	VCC5
	3	HUB_USB2.0_1-	4	HUB_USB2.0_2-
	5	HUB_USB2.0_1+	6	HUB_USB2.0_2+
	7	GND	8	GND
			10	N/C

8) F_PANEL1 (Front Panel Header 5*2 Pin 2.54mm)

Graphic	Pin	Definition	Pin	Definition
	1	HDD 3.3V LED+	2	POWER 3.3V LED+
	3	HDD 3.3V LED-	4	POWER 3.3V LED-
	5	RESET-	6	POWER+
	7	RESET+	8	POWER-
	9	N/C		

9) J_COM2-6 (COM2-6 Box Header 5*2 Pin 2.54mm)

Graphic	Pin	Definition	Pin	Definition
 COM2	1	PIN1 [1]	2	DSR
	3	RXD	4	RTS
	5	TXD	6	CTS
	7	DTR	8	PIN9 [2]
	9	GND		

 COM3	1	PIN1 [2][3]	2	DSR
	3	RXD/RS485_TX+ [2]	4	RTS
	5	TXD	6	CTS
	7	DTR	8	PIN9 [3]
	9	GND		
 COM4	1	PIN1 [4][5]	2	DSR
	3	RXD/RS485_TX+ [4]	4	RTS
	5	TXD	6	CTS
	7	DTR	8	PIN9 [5]
	9	GND		
 COM5	1	PIN1 [6]	2	DSR
	3	RXD	4	RTS
	5	TXD	6	CTS
	7	DTR	8	PIN9 [6]
	9	GND		
 COM6	1	PIN1 [7]	2	DSR
	3	RXD	4	RTS
	5	TXD	6	CTS
	7	DTR	8	PIN9 [7]
	9	GND		

Notes:

[1]: PIN1 and PIN9 of COM2 can be DCD# (default) /5V+ RI# (default) /12V selecting by “COM2 VCC5/DCD + VCC12/PI Select Jumper”. (JC_COM2, Location 10).

[2]: COM3 can be RS232 (default) / RS485 selecting by “COM3 RS232/RS485 Select Jumper”. (JM_COM3 Location 21).

[3]: PIN1 and PIN9 of COM3 can be DCD# (default) /5V+ RI# (default) /12V selecting by “COM3 VCC5/DCD + VCC12/PI Select Jumper”. (JC_COM3, Location 11).

[4]: COM4 can be RS232 (default) / RS485 selecting by “COM4 RS232/RS485 Select Jumper”. (JM_COM4 Location 14).

[5]: PIN1 and PIN9 of COM4 can be DCD# (default) /5V+ RI# (default) /12V selecting by “COM4 VCC5/DCD + VCC12/PI Select Jumper”. (JC_COM4, Location 15).

[6]: PIN1 and PIN9 of COM5 can be DCD# (default) /5V+ RI# (default) /12V selecting by “COM5 VCC5/DCD + VCC12/PI Select Jumper”. (JC_COM5, Location 16).

[7]: PIN1 and PIN9 of COM6 can be DCD# (default) /5V+ RI# (default) /12V selecting by “COM6 VCC5/DCD + VCC12/PI Select Jumper”. (JC_COM6, Location 17).

10) JC_COM2 (COM2 VCC5/DCD + VCC12/PI Select Jumper 3*2 Pin 2.54 mm)

Graphic	Setting	Function
	1-3、2-4	COM2_PIN1: VCC5 COM2_PIN9: VCC12
	3-5、4-6(Default)	COM2_PIN1: DCD COM2_PIN9: RI

11) JC_COM3 (COM3 VCC5/DCD + VCC12/PI Select Jumper 3*2 Pin 2.54 mm)

Graphic	Setting	Function
	1-3、2-4	COM3_PIN1: VCC5 COM3_PIN9: VCC12
	3-5、4-6(Default)	COM3_PIN1: DCD/RS485_TX- COM3_PIN9: RI

12) J_COPEN1 (Case Open Header 2*1 Pin 2.54mm)

Graphic	Pin	Definition	Pin	Definition
	1	SIO_COPEN_N	2	GND

13) J_AT_CFG1 (ATX or AT Mode Select Jumper 3*1 Pin 2.54mm)

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

14) JM_COM4 (COM4 RS232/RS485 Select Jumper 3*2 Pin 2.54mm)

Graphic	Setting	Function
	1-3、2-4	COM4: RS485
	3-5、4-6(Default)	COM4: RS232

15) JC_COM4 (COM4 VCC5/DCD + VCC12/PI Select Jumper 3*2 Pin 2.54mm)

Graphic	Setting	Function
	1-3、2-4	COM4_PIN1: VCC5 COM4_PIN9: VCC12
	3-5、4-6(Default)	COM4_PIN1: DCD/RS485_TX-

		COM4_PIN9: RI

16) JC_COM5 (COM5 VCC5/DCD + VCC12/PI Select Jumper 3*2 Pin 2.54mm)

Graphic	Setting	Function
	1-3、2-4	COM5_PIN1: VCC5 COM5_PIN9: VCC12
	3-5、4-6(Default)	COM5_PIN1: DCD COM5_PIN9: RI

17) JC_COM6 (COM6 VCC5/DCD + VCC12/PI Select Jumper 3*2 Pin 2.54mm)

Graphic	Setting	Function
	1-3、2-4	COM6_PIN1: VCC5 COM6_PIN9: VCC12
	3-5、4-6(Default)	COM6_PIN1: DCD COM6_PIN9: RI

18) SMBUS1 (SMBus Wafer 4*1 Pin 1.25mm)

Graphic	Pin	Definition	Pin	Definition
	1	VCC5 [1]	3	SMB_DATA
	2	SMB_CLK	4	GND

Notes:

[1]: Power on this Pin is VCC5 by default, VCC3.3 is available if specified. (resistor selectable)

19) J_DBG1 (Debug Header 9*1 Pin 2.00mm)

Graphic	Pin	Definition	Pin	Definition
	1	LFRAME_N	6	GND
	2	LPC_AD3	7	SIO_PCIRST_N
	3	LPC_AD2	8	LPC_SIO_CLK
	4	LPC_AD1	9	VCC3.3
	5	LPC_AD0		

20) CLR_CMOS1 (CMOS Clear Select Jumper 3*1 Pin 2.54mm)

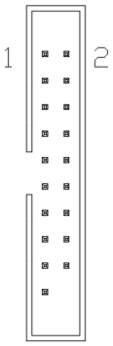
Graphic	Setting	Function
	1-2(Default)	Normal

	2-3	Clear CMOS

21) JM_COM3 (COM3 RS232/RS485 Select Jumper 3*2 Pin 2.54 mm)

Graphic	Setting	Function
	1-3、2-4	COM3: RS485
	3-5、4-6(Default)	COM3: RS232

22) F_USB3_1 (Front Dual-USB3.0 Box Header 10*2 Pin 2.00mm)

Graphic	Pin	Definition	Pin	Definition
	1	N/C	2	HUB_USB2.0_2+
	3	HUB_USB2.0_1+	4	HUB_USB2.0_2-
	5	HUB_USB2.0_1-	6	GND
	7	GND	8	USB3.0_TX2+
	9	USB3.0_TX1+	10	USB3.0_TX2-
	11	USB3.0_TX1-	12	GND
	13	GND	14	USB3.0_RX2+
	15	USB3.0_RX1+	16	USB3.0_RX2-
	17	USB3.0_RX1-	18	VCC5
	19	VCC5		

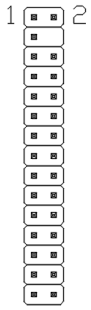
Notes:

[1]: Only one USB3.0_1 can be used. (Version 0.0 only)

23) CPU_FAN1 (CPU FAN Wafer 4*1 Pin 2.54mm)

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

24) EDP1 (eDP Signal Header 15*2 Pin 2.00mm)

Graphic	Pin	Definition	Pin	Definition
	1	VDD_PANEL [1]	2	VDD_PANEL [1]
	3	VDD_PANEL [1]		
	5	HPD_N	6	HPD_N
	7	N/C	8	N/C
	9	N/C	10	N/C
	11	N/C	12	N/C
	13	GND	14	GND
	15	N/C	16	N/C
	17	N/C	18	N/C
	19	EDP_TX0-	20	EDP_TX0+
	21	EDP_TX1-	22	EDP_TX1+
	23	N/C	24	N/C
	25	GND	26	GND
	27	N/C	28	N/C
	29	EDP_AUX-	30	EDP_AUX+

Notes:

[1]: Power on this PIN can be VCC3.3 (default) /VCC5 selecting by “eDP VDD Select Jumper”. (JC_EDP1, Location 25).

25) JC_EDP1 (eDP VDD Select Jumper 3*1 Pin 2.54mm)

Graphic	Setting	Function
	1-2(Default)	VCC3.3
	2-3	VCC5

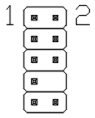
26) EDP_P1 (eDP Backlight Control Wafer 6*1 Pin 2.00mm)

Graphic	Pin	Definition	Pin	Definition
	1	GND	4	EDP_BKL_EN
	2	GND	5	VCC12
	3	EDP_BKL_CTL	6	VCC12

27) J_USBPWR1 (USB Power Standby/ System Power Select Jumper 3*1 Pin 2.54mm)

Graphic	Setting	Function
	1-2(Default)	Standby
	2-3	System Power

28) F_AUDIO1 (Front Audio Header 5*2 Pin 2.54mm)

Graphic	Pin	Definition	Pin	Definition
	1	MIC_L	2	GND
	3	MIC_R	4	VCC3.3
	5	LINE OUT_R	6	MIC_RET
	7	GND		
	9	LINE OUT_L	10	LINE OUT_RET

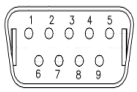
29) J_SPDIF1 (SPDIF Header 4*1 Pin 2.54mm)

Graphic	Pin	Definition	Pin	Definition
	1	VCC5	3	SPDIF_OUT
			4	GND

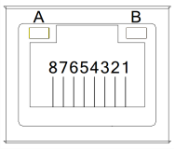
30) JP_PCICLK_66M (PCI CLK 33M/66M Select Jumper 3*1 Pin 2.54mm)

Graphic	Setting	Function
	1-2(Default)	66MHz
	2-3	33MHz

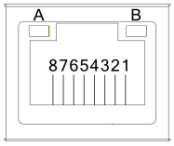
54) COM1 (COM1 DB9/M Connector)

Graphic	Pin	Definition	Pin	Definition
	1	PIN1	6	DSR
	2	RXD	7	RTS
	3	TXD	8	CTS
	4	DTR	9	PIN9
	5	GND		

56) RJ45_USB2(LAN) (GBE LAN RJ45 Connector2 22*2 Pin 2.00/2.54mm)

<table>
<tr><th>Graphic</th><th>Pin</th><th colspan="2">Definition</th><th>Pin</th><th colspan="2">Definition</th></tr>
<tr><td rowspan="7"> 
</td><td>1</td><td colspan="2">MDI0_2+</td><td>5</td><td colspan="2">MDI2_2+</td></tr>
<tr><td>2</td><td colspan="2">MDI0_2-</td><td>6</td><td colspan="2">MDI2_2-</td></tr>
<tr><td>3</td><td colspan="2">MDI1_2+</td><td>7</td><td colspan="2">MDI3_2+</td></tr>
<tr><td>4</td><td colspan="2">MDI1_2-</td><td>8</td><td colspan="2">MDI3_2-</td></tr>
<tr><td rowspan="3">A</td><td rowspan="3">Speed LED</td><td>1000M: Turn Orange</td><td rowspan="3">B</td><td rowspan="3">Active LED</td><td>ACT: Twinkling Yellow</td></tr>
<tr><td>100M: Turn Green</td><td>Only LINK: Lights Off</td></tr>
<tr><td>10M: Lights Off</td><td>Stop: Lights Off</td></tr>
</table>

58) RJ45_USB1(LAN) (GBE LAN RJ45 Connector1 25*2 Pin 2.00/2.54mm)

<table>
<tr><th>Graphic</th><th>Pin</th><th colspan="2">Definition</th><th>Pin</th><th colspan="2">Definition</th></tr>
<tr><td rowspan="7"> 
</td><td>1</td><td colspan="2">MDI0_1+</td><td>5</td><td colspan="2">MDI2_1+</td></tr>
<tr><td>2</td><td colspan="2">MDI0_1-</td><td>6</td><td colspan="2">MDI2_1-</td></tr>
<tr><td>3</td><td colspan="2">MDI1_1+</td><td>7</td><td colspan="2">MDI3_1+</td></tr>
<tr><td>4</td><td colspan="2">MDI1_1-</td><td>8</td><td colspan="2">MDI3_1-</td></tr>
<tr><td rowspan="3">A</td><td rowspan="3">Speed LED</td><td>1000M: Turn Orange</td><td rowspan="3">B</td><td rowspan="3">Active LED</td><td>ACT: Twinkling Yellow</td></tr>
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</table>

7. BIOS setup

See “BIOS Spec for QY-ZX6780A-XB Series” for detail information of BIOS setup.

【End】