

IPCTECH Motherboard User's Manual

QY-MB-H610-ATX

1.Models and Attentions

1.1 Models

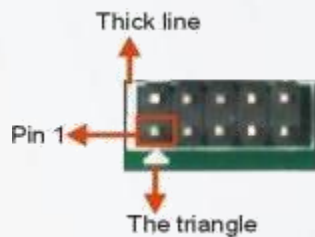
This manual is applied to following models:

Chipset	COM	LAN	USB	PCIE	PCI	DVI	HDMI	VGA	M.2 Key-M	SATA 3.0
H610	6	2	10	1*16X 3*2X	3	1	1	1	SATA	4

1.2 Attentions

- Notes under a table or figure indicate the difference of models, or alternative definition of specific pin of the header (jumper/connector).
- 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-MB-H610-ATX
CPU	Support Intel® 12/13/14th Generation Core / Pentium/ Celeron Desktop CPU, LGA1700 Support MAX CPU TDP: 8+4 Core 65 W
Chipset	Intel H610,TDP 6W
Dispaly	1*DVI-D (DVI-I): Support max resolution up to 1920*1200@60Hz 1*HDMI (type-A): Support max resolution up to 4090*2160@ 30Hz 1*VGA (DB15/F): Support max resolution to 1920*1200@60Hz
Memory	Support DDR4-3200MHz, 2* Non-ECC U-DIMM Slot, Up to 2* 32 GB
Storage	3 * SATA3.0 7P Upright Connector 1 * M.2 Key-M Slot (PCIe 2x/SATA, Default SATA, Support SATASSD, 2242/2280)
Ethernet	RJ45-USB1 (RJ45): 1 * Intel I219-V GBE LAN Chip (10/100/1000 Mbps) RJ45-USB2 (RJ45): 1 * Intel I225-V GBE LAN Chip (10/100/1000Mbps)
Audio	Realtek Audio HDA Codec, 1 * Front Audio Header (Line-Out + MIC) 1 * SPDIF Out Header 1 * Line-out + Line-in + MIC 3.5mm Jack
Expansion Slots	1 * PCI-E 16x Slot (PCIe 16X, GEN4) 2 * PCI-E 4x Slot (PCIe 2X, GEN3) [6] 1 * PCI-E 4x Slot (PCIe 2X, GEN3, PCIE-4X-SLOT3) [4] 3 * PCI Slot 1 * PCI CLK 66MHz Enable/Disable Select Jumper
COM	1 * RS232 (COM1, DB9/M) 3 * RS232 (COM2/5/6, BOX Header) 2 * RS232/RS485 (COM3-4, BOX Header) [8]
USB	4 * USB3.0 (TYPE-A, Rear IO) 2 * USB2.0 (Header, Internal) 1 * USB2.0 (Vertical TYPE-A, Internal) 3 * USB2.0 (Header, Internal))

Other Ports	8 * GPIO 1 * PS/2 Connector (Keyboard & Mouse) 1 * Front Panel Header (HDD LED+ PWR LED+ PWR-ON+ RESET) 1 * ESPI Header (Debug Only) 1 * SMBUS Header 2 * System FAN Header 1 * CPU FAN Header 1 * Case Open Header 1 * CMOS Clear Jumper 1 * AT or ATX Select Jumper 1 * ME Flash Header 1 * Power Monitor wafer
TPM	1 * TPM2.0 (Not onboard by default), Support Intel PTT Default
System	Windows 10 IoT Enterprise 2021 LTSC, Windows 10 (21H2), Windows 11 (21H2) or later, Linux Kernel 5.17 or later
Temperature	Storage: -20 ~75°C Operating: 0 ~ 60°C
BIOS	AMI UEFI BIOS (Support Watchdog Timer)
Power Supply	ATX Standard (24P + 8P) 1 * ATX 8P CPU Power Input Connector 1 * ATX 24P Power Input Connector
Size	305mm * 220mm

Notes:

[1]: Intel H610 supports three independent displays.

[2]: The maximum memory frequency depends on CPU.

[3]: SATA signal of M.2-PCISSD-M1 colay with SATA. (BOM selectable)

[4]: PCIE 2X signal of M.2-PCISSD -M1 colay with PCIE-4X -SLOT3. (BOM selectable)

[5]: RJ45-USB1 (RJ45) I219-V does not support Intel AMT 12.0 and Intel vPro competent by default.

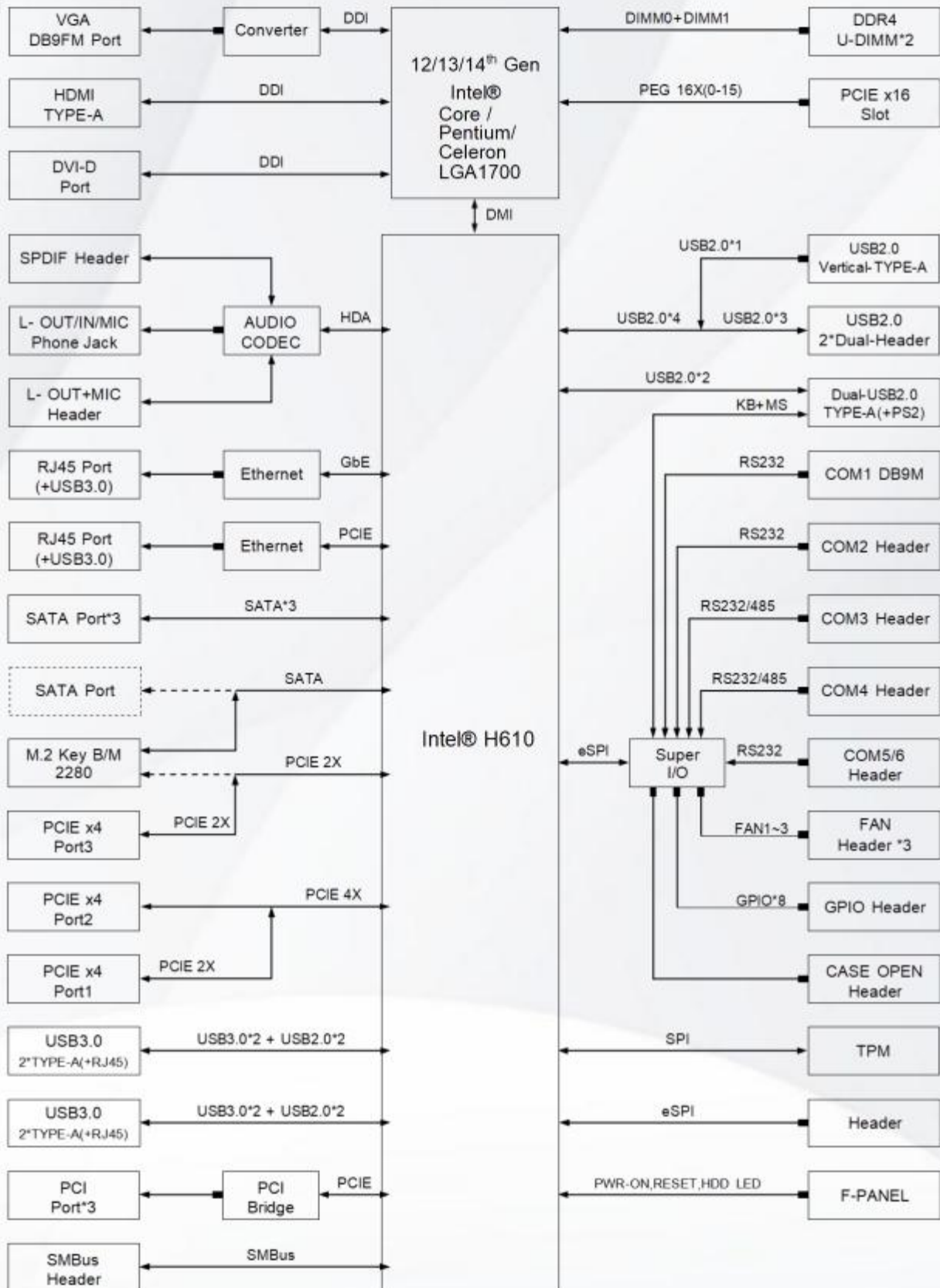
[6]: PCIE-4X -SLOT1 and PCIE-4X-SLOT2 can support 2*PCIE 2x(default) or 1*PCIE 4X. (BOM and BIOS selectable)

[7]: COM3 and COM4 are RS232 by default. COM3 can be RS485 selecting by jumper and setting BIOS to RTS mode. COM4 can be RS485 selecting by jumper and setting BIOS to RTS mode.

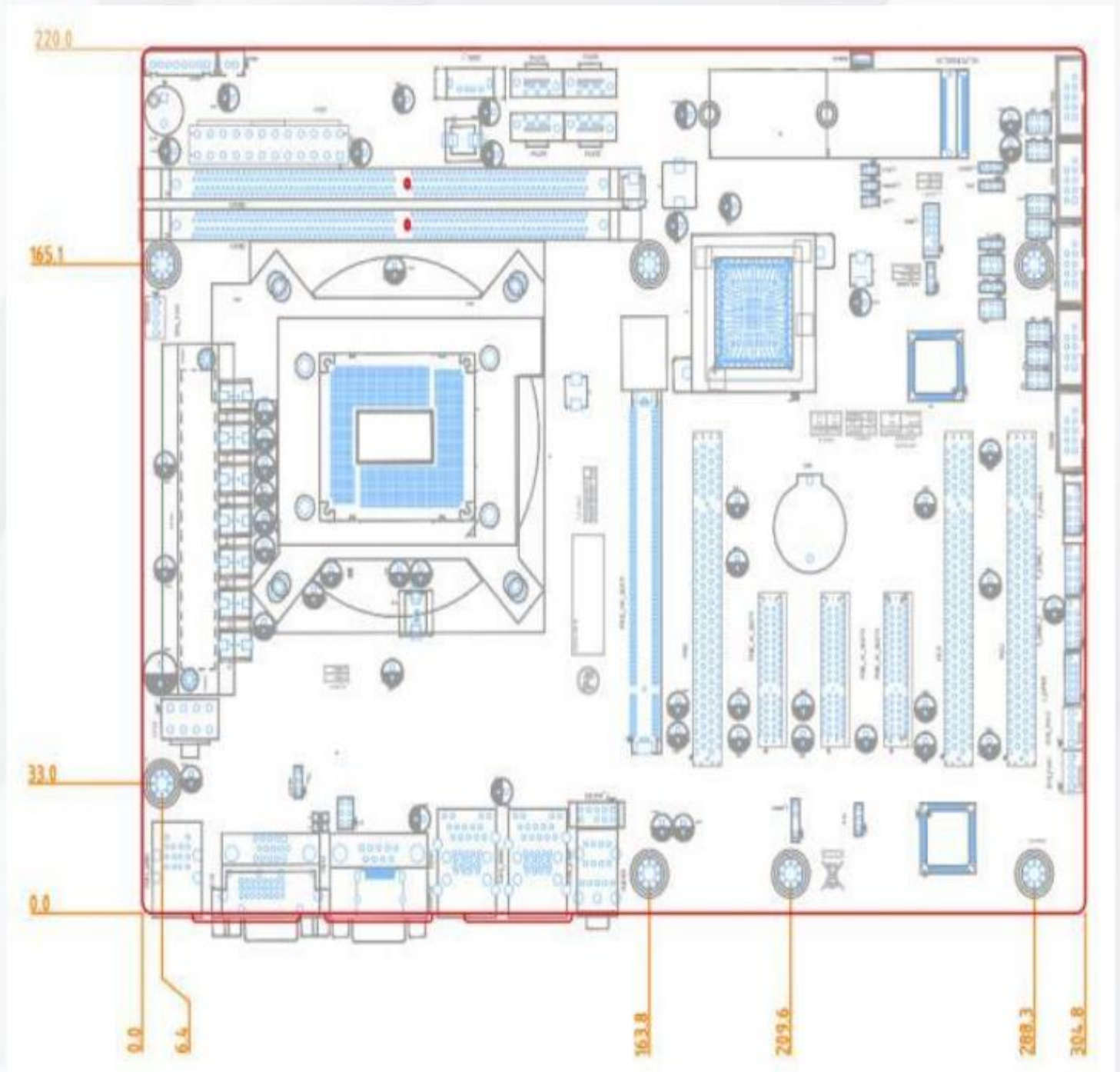
[8]: One of USB2.0 signal for F-USB2 -1 colay with USB2-1 TYPE-A connector, support USB2 -1 by default.

[9]: Intel® Kiosk Peripheral Management Utility (Intel® KPM Utility) function selection support, not on board by default.

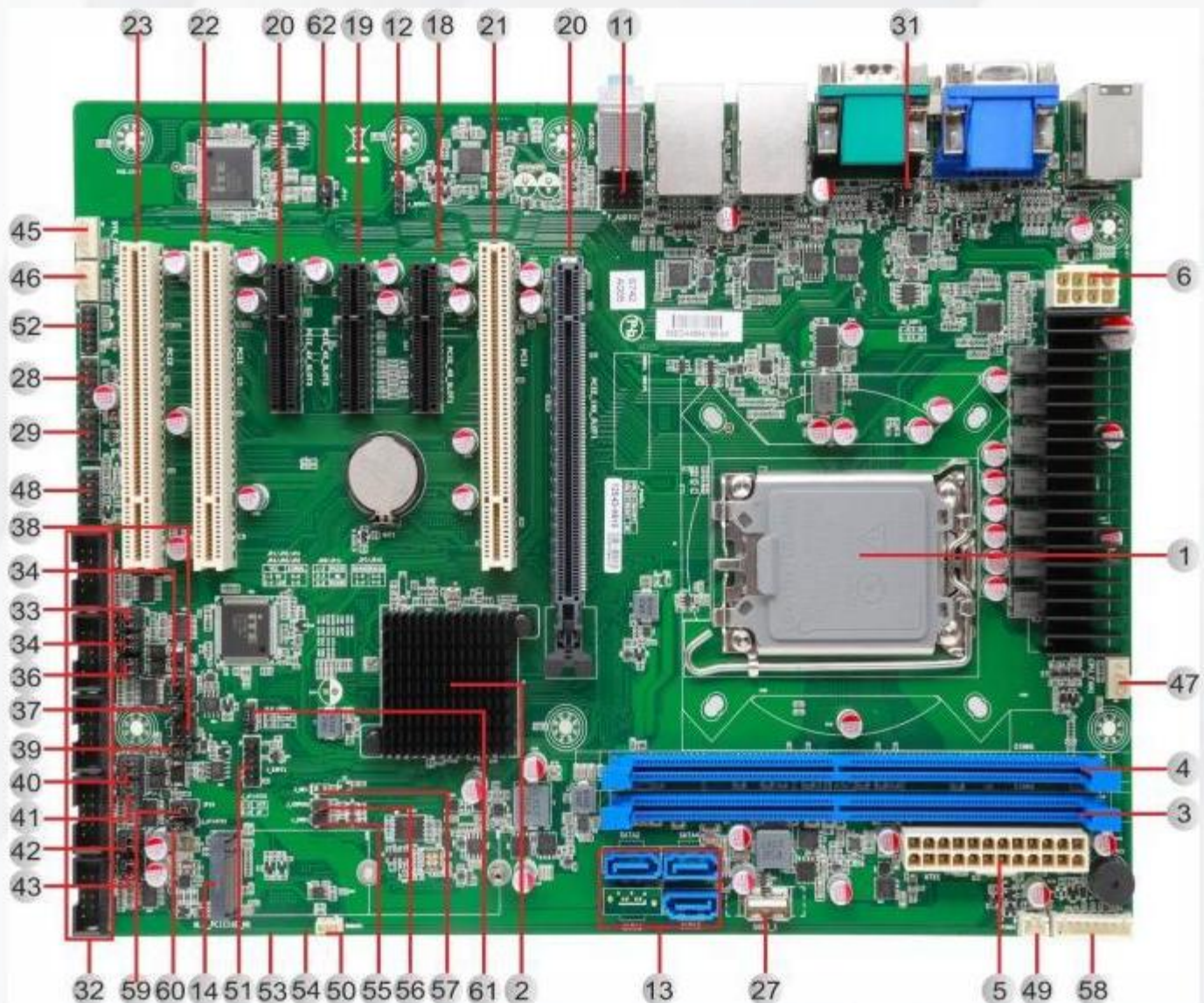
3.Functional Block Diagram



4.Mechanical Drawing



5.Jumpers / Headers and Connectors





Jumpers / Headers and Connectors

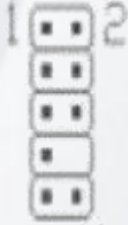
1	U1	CPU
2	U2	Chipset
3	DIMM2	DDR4 CHB DIMM Slot
4	DIMM1	DDR4 CHA DIMM Slot
5	ATX1	ATX 24P Power Input Connector
6	ATX2	ATX 8P CPU Power Input Connector
7	DVI-VGA1(VGA)	VGA DB15 Connector
8	DVI-VGA1(DVI)	DVI-I 24+4P/F Connector (Support DVI-D)
9	HDMI1	HDMI TYPE-A Connector
10	AUDIO1	Line-Out + MIC + Line-In 3.5mm Jack
11	F-AUDIO1	Front Audio Header
12	J-SPDIF1	SPDIF Out Header
13	SATA1-4	SATA3.0 Connector1-4
14	M.2-PCIESSD-M1	M.2 Key-M Slot (PCIE 2x/SATA, Support PCIE 2x NVMe/SATA SSD, 2242/2280)
15	RJ45-USB2(RJ45)	GbE LAN RJ45 Connector2
16	RJ45-USB1(RJ45)	GbE LAN RJ45 Connector1
17	PCIE-16X-SLOT1	PCI-E 16x Slot

18	PCIE-4X-SLOT1	PCIE4X Slot1
19	PCIE-4X-SLOT2	PCIE4X Slot2
20	PCIE-4X-SLOT3	PCIE4X Slot3
21	PCI3	PCI Slot3
22	PCI1	PCI Slot1
23	PCI2	PCI Slot2
24	RJ45-USB2(USB2)	Dual USB3.0 TYPE-A Connector
25	RJ45-USB1(USB1)	Dual USB3.0 TYPE-A Connector
26	PS/2-USB1(USB1)	Dual USB2.0 TYPE-A Connector
27	USB2-1	USB2.0 Internal Vertical TYPE-A Connector
28	F-USB2-2	Front Dual-USB2.0 Header
29	F-USB2-1	Front Dual-USB2.0 Header
30	COM1	COM1 Connector
31	JP1	COM1 DCD/5V+ RI/12V Select Jumper
32	COM2-6	COM2-6 Headers
33	JP2	COM2 DCD/5V+ RI/12V Select Jumper
34	JP3	COM3 DCD/5V+ RI/12V Select Jumper
35	JP7	COM3 RS232/RS485 Select Jumper1
36	JP8	COM3 RS232/RS485 Select Jumper2
37	JP9	COM3 RS485 Signal 120Ω Resistive Termination Select Jumper
38	JP10	COM4 RS232/RS485 Select Jumper1
39	JP12	COM4 RS485 Signal 120Ω Resistive Termination Select Jumper
40	JP4	COM4 DCD/5V+ RI/12V Select Jumper
41	JP11	COM4 RS232/RS485 Select Jumper2
42	JP5	COM5 DCD/5V+ RI/12V Select Jumper
43	JP6	COM6 DCD/5V+ RI/12V Select Jumper
44	PS/2-USB1(PS/2)	PS/2 Connector (keyboard & mouse)
45	SYS-FAN1	System FAN1 Wafer
46	SYS-FAN2	System FAN2 Wafer
47	CPU-FAN1	CPU Fan Wafer
48	F-PANEL1	Front Panel Header
49	PSON1	Power On Wafer
50	SMBUS1	SMBus Wafer
51	J-ESPI1	ESPI Header
52	J-GPIO1	GPIO Header
53	J1	MCU Debug Header
54	JUSBPWR2	USB Power Power System/Standby
55	J-DNX1	DNX Force Reload Disable/Enable Select Jumper
56	J-COPEN1	Case Open Header

57	J-ME1	ME Flash Header
58	VOLT1	Power Monitor Wafer
59	JP19	Watch Dog Reset Enable/Disable Select Jumper
60	J-AT/ATX1	AT or ATX Select Jumper
61	CLR-CMOS1	CMOS Clear Select Jumper
62	JP14	PCI CLK 66MHz Disable/ Enable Select Jumper

6.Definition of Jumpers / Headers and Connectors

11) F-AUDIO1 (Front Audio Header 5*2 Pin 2.54mm)

Graphic	Pin	Definition	Pin	Definition
	1	MIC-IN-L	2	GND
	3	MIC-IN-R	4	VCC3.3
	5	LINE-OUT-R	6	MIC-RET
	7	GND		
	9	LINE-OUT-L	10	LINE-OUT-RET

12) J-SPDIF1 (SPDIF Out Header 4*1 Pin 2.54mm)

Graphic	Pin	Definition	Pin	Definition
	1	VCC5	3	SPDIF-OUT
			4	GND

15) RJ45-USB2(LAN) (Gb E LAN RJ45 Connector2)

Graphic	Pin	Definition		Pin	Definition	
	1	MDI2-0+		5	MDI2-2+	
	2	MDI2-0-		6	MDI2-2-	
	3	MDI2-1+		7	MDI2-3+	
	4	MDI2-1-		8	MDI2-3-	
	A	Active LED	ACT: Twinkling Green	B	Speed LED	1000M/2.5G: Turn Orange
			Only LINK: Lights On			100M: Turn Green
			Stop: Lights Off			10M: Lights Off

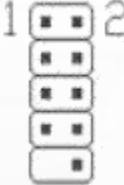
16) RJ45-USB1(LAN) (GbE LAN RJ45 Connector1)

Graphic	Pin	Definition		Pin	Definition	
	1	MDI1-0+		5	MDI1-2+	
	2	MDI1-0-		6	MDI1-2-	
	3	MDI1-1+		7	MDI1-3+	
	4	MDI1-1-		8	MDI1-3-	
	A	Active LED	ACT: Twinkling Green	B	Speed LED	1000M/2.5G: Turn Orange
			Only LINK: Lights On			100M: Turn Green
			Stop: Lights Off			10M: Lights Off

28) F-USB2-2 (Front Dual-USB2.0 Header 5*2 Pin 2.54mm)

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	N/C

29) F-USB2-1 (Front Dual-USB2.0 Header 5*2 Pin 2.54mm)

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	N/C

30) COM1(COM1 DB9/M Connector)

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

Notes:

[1]: PIN1 of COM1 can be DCD (default) /5V and Pin9 of COM1 can be RI(Default) / 12V, selectable by “COM1 DCD/RI Select Jumper” . (JP1, Location 35)

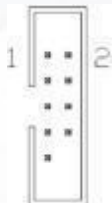
31) JP1 (COM1 DCD/5V+ RI/12V Select Jumper 3*2 Pin 2.54mm)

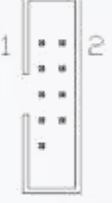
Graphic	Setting	Function
	1-3, 2-4	COM1 - PIN1: VCC5 COM1 - PIN9: VCC12
	3-5, .4-6(Default)	COM1 - PIN1: DCD COM1 - PIN9: RI

Notes:

*: Jumper 1-3/3-5 select the PIN1 signal. Jumper 2-4/4-6 select the PIN8 signal.

32) COM2-6 (COM2-6 Pin Headers 5*2 Pin 2.54mm)

Graphic	Pin	Definition	Pin	Definition
 COM2	1	COM2-PIN1 [1]	2	COM2-DSR
	3	COM2-RXD	4	COM2-RTS
	5	COM2-TXD	6	COM2-CTS
	7	COM2-DTR	8	COM2-PIN8 [1]
	9	GND		

 COM3	1	COM3-PIN1 [2] [3]	2	COM3-DSR
	3	COM3-PIN3 [3]	4	COM3-RTS
	5	COM3-PIN5 [3]	6	COM3-CTS
	7	COM3-PIN7 [3]	8	COM3-PIN8 [2] [3]
	9	GND		
 COM4	1	COM4-PIN1 [4] [5]	2	COM4-DSR
	3	COM4-PIN3 [4]	4	COM4-RTS
	5	COM4-TXD	6	COM4-CTS
	7	COM4-DTR	8	COM4-PIN8 [5]
	9	GND		
 COM5	1	COM5-PIN1 [6]	2	COM5-DSR
	3	COM5-RXD	4	COM5-RTS
	5	COM5-TXD	6	COM5-CTS
	7	COM5-DTR	8	COM-_PIN8 [6]
	9	GND		
 COM6	1	COM6-PIN1 [7]	2	COM6-DSR
	3	COM6-RXD	4	COM6-RTS
	5	COM6-TXD	6	COM6-CTS
	7	COM6-DTR	8	COM6-PIN8 [7]
	9	GND		

Notes:

[1]: PIN1 of COM2 can be DCD (default) /5V and Pin8 of COM2 can be RI (Default) / 12V, selectable by "COM2 VCC5/DCD+VCC12/RI Select Jumper" . (JP2, Location 37)

[2]: PIN1 of COM3 can be DCD (default) /5V and Pin8 of COM3 can be RI(Default) / 12V, selectable by "COM3 VCC5/DCD+VCC12/RI Select Jumper" . (JP3, Location 38)

[3]: COM3 can be RS232 (default) / RS485 selecting by JP7, JP8 Jumper, check Location 10/11/30 for detail. COM3 can be RS485 selecting by jumper and setting BIOS to RTS mode.

[4]: COM4 can be RS232 (default) / RS485 selecting by JP10, JP11 Jumper, check Location 14/15 for detail. COM4 can be RS485 selecting by jumper and setting BIOS to RTS mode.

[5]: PIN1 of COM4 can be DCD (default) /5V and Pin8 of COM4 can be RI(Default) / 12V, selectable by "COM4 VCC5/DCD+VCC12/RI Select Jumper" . (JP4, Location 44)

[6]: PIN1 of COM5 can be DCD (default) /5V and Pin8 of COM5 can be RI(Default) / 12V, selectable by "COM5 VCC5/DCD+VCC12/RI Select Jumper" . (JP10, Location 46)

[7]: PIN1 of COM6 can be DCD (default) /5V and Pin8 of COM6 can be RI(Default) / 12V, selectable by "COM5 VCC5/DCD+VCC12/RI Select Jumper" . (JP11, Location 47)

33) JP2 (COM2 DCD/5V+ RI/12V Select Jumper 3*2 Pin 2.54mm)

Graphic	Setting	Function
	1-3, 2-4	COM2- PIN1: VCC5 COM2 - PIN8: VCC12
	3-5, 4-6 (Default)	COM2- PIN1: DCD COM2 - PIN8: RI

Notes:

*: Jumper 1-3/3-5 select the COM2-PIN1 signal. Jumper 2-4/4-6 select the COM2-PIN8 signal.

34) JP3 (COM3 DCD/5V+ RI/12V Select Jumper 3*2 Pin 2.54mm)

Graphic	Setting	Function
	1-3, 2-4	COM3- PIN1: VCC5 COM3 - PIN8: VCC12
	3-5, 4-6 (Default)	COM3- PIN1: DCD/ RS485- COM3- PIN8: RI

35) 36)JP7/JP8 (COM3 RS232/RS485 Select Jumper 3*2 Pin 2.54mm)

Graphic	Setting	Function
	JP7: 1-2 JP8: 3-5 、 4-6(Default)	COM3: RS232 (COM3-PIN1: DCD/ VCC5 COM3-PIN3: RXD)
	JP7: 5-6 JP8: 1-3 、 2-4	COM3: RS485 (COM3-PIN1: RS485- COM3-PIN3: RS485+)

37) JP9 (COM3 RS485 Signal 120Ω Resistive Termination Select Jumper 3*1 Pin 2.54mm)

Graphic	Setting	Function
	1-2 (Default)	Disable
	2-3	Enable

38) 41) JP10/JP11 (COM4 RS232/RS485 Select Jumper1 3*2 Pin 2.54mm)

Graphic	Setting	Function
	JP10: 1-2 JP11: 3-5 、 4-6(Default)	COM4: RS232 (COM4-PIN1: DCD/ VCC5 COM4-PIN3: RXD)
	JP10: 5-6 JP11: 1-3 、 2-4	COM4: RS485 (COM4-PIN1: RS485- COM4-PIN3: RS485+)

39) JP12 (COM4 RS485 Signal 120Ω Resistive Termination Select Jumper 3*1 Pin 2.54mm)

Graphic	Setting	Function
	1-2 (Default)	Disable
	2-3	Enable

40) JP4 (COM4 DCD/5V+ RI/12V Select Jumper 3*2 Pin 2.54mm)

Graphic	Setting	Function
	1-3, 2-4	COM4-PIN1: VCC5 COM4-PIN8: VCC12
	3-5, 4-6(Default)	COM4-PIN1: DCD/ RS485- COM4-PIN8: RI

Notes:

*: Jumper 1-3/3-5 select the COM4_PIN1 signal. Jumper 2-4/4-6 select the COM4-PIN8 signal.

42) JP5 (COM5 DCD/5V+ RI/12V Select Jumper 3*2 Pin 2.54mm)

Graphic	Setting	Function
	1-3, 2-4	COM5-PIN1: VCC5 COM5-PIN8: VCC12
	3-5, 4-6(Default)	COM5-PIN1: DCD COM5-PIN8: RI

43) JP6 (COM6 DCD/5V+ RI/12V Select Jumper 3*2 Pin 2.54mm)

Graphic	Setting	Function
	1-3, 2-4	COM5-PIN1: VCC5 COM5-PIN8: VCC12
	3-5, 4-6(Default)	COM5-PIN1: DCD COM5-PIN8: RI

Notes:

*: Jumper 1-3/3-5 select the COM5-PIN1 signal. Jumper 2-4/4-6 select the COM5-PIN8 signal.

45) SYS-FAN1 (System FAN Wafer 4*1 Pin 2.54mm)

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

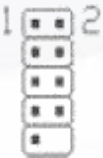
46) SYS-FAN2 (System FAN Wafer 4*1 Pin 2.54mm)

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

47) 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

48) F-PANEL1 (Front Pane 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		

Notes:

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

49) PSON1 (Power On Wafer 2*1 Pin 2.54mm)

Graphic	Pin	Definition	Pin	Definition
	1	PSON-N	2	GND

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

Graphic	Pin	Definition	Pin	Definition
	1	GND	3	SMB-CLK
	2	SMB-DATA	4	VCC5 [1]

51) J-ESPI1 (ESPI Header 6*2 Pin 2.00mm)

Graphic	Pin	Definition	Pin	Definition
	1	ESPI-IO0	2	VCC3.3 - Dual
	3	ESPI-IO1		
	5	ESPI-IO2	6	ESPI-CLK
	7	ESPI-IO3	8	GND
	9	ESPI-CS0	10	VCC3.3S
	11	ESPI-ALERT0_N	12	PLT-RST-N [1]

Notes:

[1]: Signal on this Pin is PLT-RST-N by default, ESPI-RST0-N is available if specified.
(resistor selectable)

52) J-GPIO1 (GPIO Header 6*2 Pin 2.00mm)

Graphic	Pin	Definition	Pin	Definition
	1	SIO-GPI70 (0xA06 Bit0, H [1])	2	SIO-GPI71 (0xA06 Bit1, H)
	3	SIO-GPI72 (0xA06 Bit2, H)	4	SIO-GPI73 (0xA06 Bit3, H)
	5	GND	6	SIO-GPO74 (0xA06 Bit4, H)
	7	SIO-GPO75 (0xA06 Bit5, H)	8	SIO-GPO76 (0xA06 Bit6, H)
	9	SIO-GPO77 (0xA06 Bit7, H)	10	VCC5
			12	N/C

Notes:

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

55) J-DNX1 (MCU Debug Header 2*1 Pin 2.54mm)

Graphic	Setting	Function
	1-2: Connected	Enable
	1-2: Open	Disable

56) J-COPEN1 (Case Open Header 2*1 Pin 2.54mm)

Graphic	Setting	Function
	1-2: Connected	Active Case Open
	1-2: Open	Normal

57) J-ME1 (ME Flash Header 2*1 Pin 2.54mm)

Graphic	Setting	Function
	1-2: Open (Default)	ME Protect Enable
	1-2: Connected	ME Protect Disable

58) VOLT1 (Power Monitor Wafer 8*1 Pin 2.54mm)

Graphic	Pin	Definition	Pin	Definition
	1	VCC5A	5	VCC5S
	2	GND	6	VCC3.3S
	3	GND	7	VCC12-N
	4	VCC5PS	8	VCC12S

59) JP19(Watch Dog Reset Enable/Disable Select Jumper 3*1 Pin 2.54mm)

Graphic	Setting	Function
	1-2	Normal
	2-3(Default)	Reset

60) J-AT/ATX1 (AT or ATX Select Jumper 3*1 Pin 2.54mm)

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

61) CLR-CMOS1 (CMOS Clear Select Jumper 3*1 Pin 2.54mm)

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

62) JP14 (PCI CLK 66MHz Enable/Disable Select Jumper 3*1 Pin 2.54mm)

Graphic	Setting	Function
	1-2(Default)	Disable PCI CLK 66MHz
	2-3	Enable PCI CLK 66MHz

[END]