

uATX-W48EA (MW48EAM)

Micro-ATX Motherboard
User's Manual 1st Ed

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Packing List

Before setting up your product, please make sure the following items have been shipped:

Item	Quantity
uATX-W48EA (MW48EAM)	1
IO Shield	1
SATA Cable	2

If any of these items are missing or damaged, please contact your distributor or sales representative immediately.

About this Document

This User's Manual contains all the essential information, such as detailed descriptions and explanations on the product's hardware and software features (if any), its specifications, dimensions, jumper/connector settings/definitions, and driver installation instructions (if any), to facilitate users in setting up their product.

Users may refer to the GIGAIPC.com for the latest version of this document.

Safety Precautions

Please read the following safety instructions carefully. It is advised that you keep this manual for future references

1. All cautions and warnings on the device should be noted.
2. Make sure the power source matches the power rating of the device.
3. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
4. Always completely disconnect the power before working on the system's hardware.
5. No connections should be made when the system is powered as a sudden rush of power may damage sensitive electronic components.
6. If the device is not to be used for a long time, disconnect it from the power supply to avoid damage by transient over-voltage.
7. Always disconnect this device from any AC supply before cleaning.
8. While cleaning, use a damp cloth instead of liquid or spray detergents.
9. Make sure the device is installed near a power outlet and is easily accessible.
10. Keep this device away from humidity.
11. Place the device on a solid surface during installation to prevent falls
12. Do not cover the openings on the device to ensure optimal heat

dissipation.

13. Watch out for high temperatures when the system is running.
14. Do not touch the heat sink or heat spreader when the system is running
15. Never pour any liquid into the openings. This could cause fire or electric shock.
16. As most electronic components are sensitive to static electrical charge, be sure to ground yourself to prevent static charge when installing the internal components. Use a grounding wrist strap and contain all electronic components in any static-shielded containers.
17. If any of the following situations arises, please the contact our service personnel:
 - i. Damaged power cord or plug
 - ii. Liquid intrusion to the device
 - iii. Exposure to moisture
 - iv. Device is not working as expected or in a manner as described in this manual
 - v. The device is dropped or damaged
 - vi. Any obvious signs of damage displayed on the device
- 18. DO NOT LEAVE THIS DEVICE IN AN UNCONTROLLED ENVIRONMENT WITH TEMPERATURES BEYOND THE DEVICE'S PERMITTED STORAGE TEMPERATURES (SEE CHAPTER 1) TO PREVENT DAMAGE.**

FCC Statement

Warning!



This device complies with Part 15 FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received including interference that may cause undesired operation.

Caution:

There is a danger of explosion if the battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions and your local government's recycling or disposal directives.

Attention:

Il y a un risque d'explosion si la batterie est remplacée de façon incorrecte. Ne la remplacer qu'avec le même modèle ou équivalent recommandé par le constructeur. Recycler les batteries usées en accord avec les instructions du fabricant et les directives gouvernementales de recyclage.

China RoHS Requirements (CN)

产品中有毒有害物质或元素名称及含量

GIGAIPC Main Board/ Daughter Board/ Backplane

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯 醚 (PBDE)
印刷电路板 及其电子组件	○	○	○	○	○	○
外部信号 连接器及线材	○	○	○	○	○	○

○: 表示该有毒有害物质在该部件所有均质材料中的含量均在 SJ/T 11363-2006 标准规定的限量要求以下。

X: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出

SJ/T 11363-2006 标准规定的限量要求。

备注: 此产品所标示之环保使用期限, 系指在一般正常使用状况下。

China RoHS Requirement (EN)

Poisonous or Hazardous Substances or Elements in Products GIGAIPC Main Board/ Daughter Board/ Backplane

Component	Poisonous or Hazardous Substances or Elements					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (Cr(VI))	Polybrominated Biphenyls (PBB)	Polybrominated Diphenyl Ethers (PBDE)
PCB & Other Components	O	O	O	O	O	O
Wires & Connectors for External Connections	O	O	O	O	O	O

O : The quantity of poisonous or hazardous substances or elements found in each of the component's parts is below the SJ/T 11363-2006-stipulated requirement.
X: The quantity of poisonous or hazardous substances or elements found in at least one of the component's parts is beyond the SJ/T 11363-2006-stipulated requirement.
Note: The Environment Friendly Use Period as labeled on this product is applicable under normal usage only

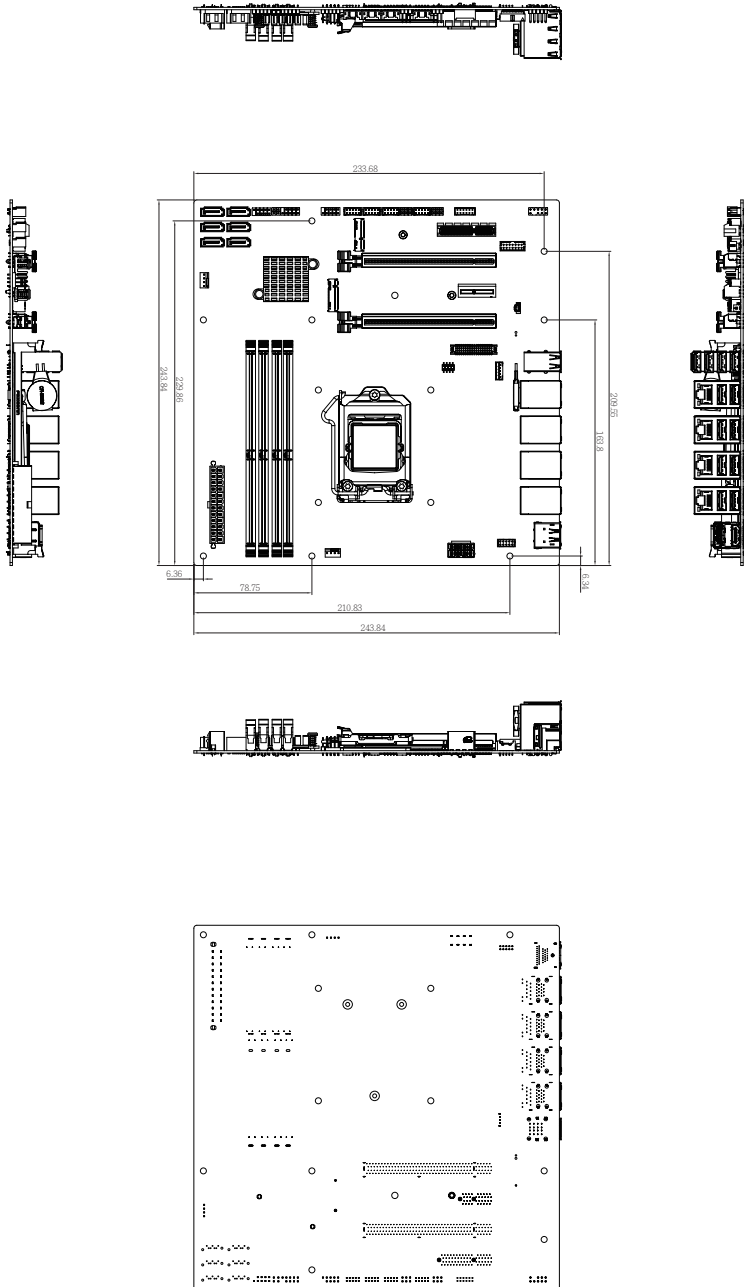
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Chapter 1

Chapter1 - Product Specifications



1.1 Specifications

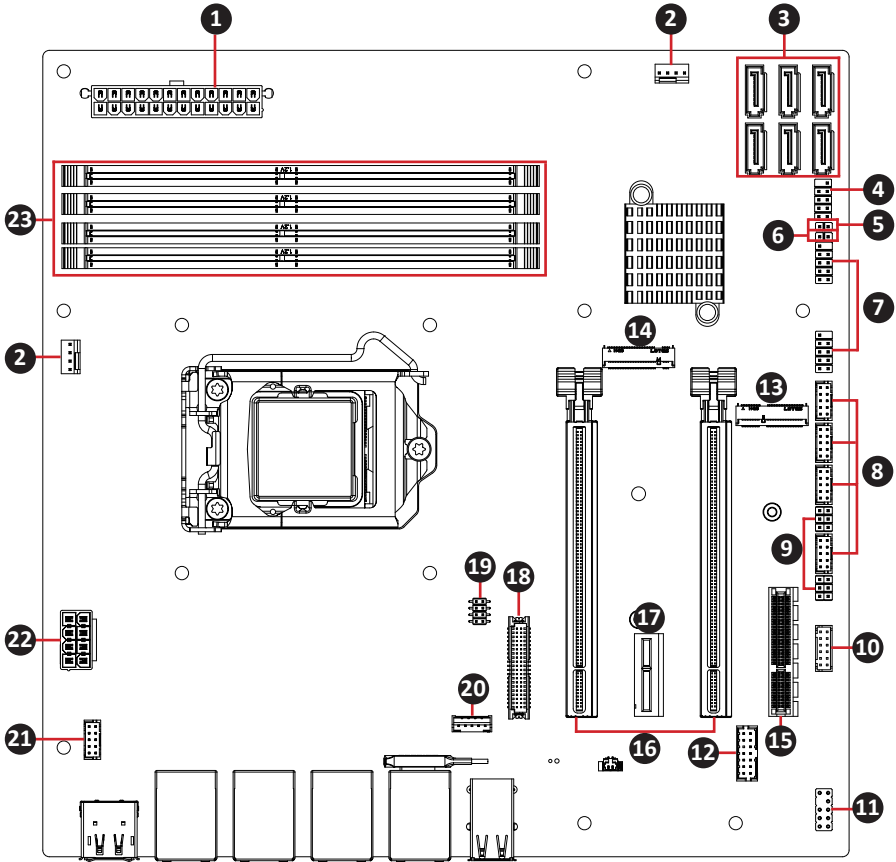
Motherboard	uATX-W48EA (MW48EAM)
Form Factor	Micro ATX 244W x 244D(mm)
CPU	Support for 11th/10th Generation Intel® Xeon® W-1200 series/ Core™ i3/ Pentium® & Celeron® processors in the LGA1200 package TDP under 95W
Socket	1 x LGA 1200
Chipset	Intel® W480E Express Chipset
Memory	4 x DDR4 DIMM sockets, Max. Capacity 128 GB, Support Dual channel DDR4 2933/2666 MHz memory modules
Ethernet	4 x GbE LAN Ports (1 x Intel® I219LM and 3 x Intel® I211AT)
Video	Integrated Graphics Processor - depends on CPU : 1 x HDMI 1.4 port, supporting a maximum resolution of 4096x2160 @30Hz 1 x Display port, supporting a maximum resolution of 4096x2160 @60Hz 1 x VGA port, supporting a maximum resolution of 1920x1200 @60Hz 1 x LVDS port, supporting a maximum resolution of 1920x1080 @60Hz (3 independent display outputs)
Audio	Realtek® Audio Codec
Storage	6 x SATA 6Gb/s Ports
Raid	RAID 0/1/5/10
Expansion Slots	2 x PCIe Gen3 x8 (or only 1 x PCIe Gen3 x16 on PCIe x16_A slot as optional) 1 x PCIe x4 (Gen3 x4) 1 x PCIe x1 (Gen3 x1) 1 x 2230 M.2 E-Key (PCIe x1 + USB2.0) 1 x 2280/2242 M.2 M-Key (PCIe x4, SATA 6Gb/s)

Motherboard	uATX-W48EA (MW48EAM)
Internal I/O	1 x 24-pin ATX main power connector 1 x 8-pin ATX 12V power connector 1 x CPU fan header 1 x System fan header 1 x Front panel header 1 x Front panel audio header 1 x VGA header 1 x Backlight Control header 1 x AT/ATX mode select jumper 4 x USB 2.0 headers 1 x COM header (RS-232/422/485 & RI/5V/12V) 1 x COM header (RS-232 & RI/5V/12V) 2 x COM headers (RS-232) 1 x GPIO (8 bits) & SMBUS header 1 x Buzzer 1 x Clear CMOS jumper
Rear I/O	1 x HDMI 1 x Display Port 4 x RJ45 LAN Ports 8 x USB 3.2 Gen 1 4 x USB 2.0
TPM	1 x TPM header
OS Compatibility	Windows 10 (x64)
Operating Properties	Operating temperature: 0°C to 60°C Operating humidity: 0-90% (non-condensing) Non-operating temperature: -40°C to 85°C Non-operating humidity: 0%-95% (non-condensing)

Chapter 2

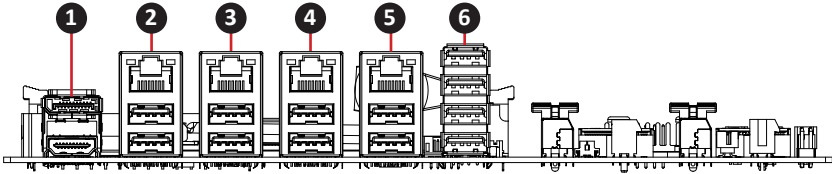
Chapter 2 – Hardware Information

2.1 Jumpers and Connectors



No	Code	Description
1	ATX	24-pin ATX main power connector
2	SYS_FAN, CPU_FAN	Fan connector
3	SATA2, SATA3 SATA4, SATA5 SATA6, SATA7	SATA 6 Gb/s Connector x 6
4	F_PANEL	Front panel header
5	CLR_CMOS	Clear CMOS jumper
6	ME_EN	ME Enable jumper
7	FUSB2_1, FUSB2_2	USB 2.0 Header
8	COM1, COM2 COM3, COM4	Serial Port Header COM1 : RS-232/422/485 & RI/5V/12V COM2 : RS-232 & RI/5V/12V COM3, COM4 : RS-232
9	JCOM1, JCOM2	COM1 & COM2 RI pin RI/5V/12V Select jumper
10	GPIO_CNT	General Purpose input/output header
11	FP_AUDIO	Front audio header
12	LPC_CN	TPM header
13	M2E	M.2 2230 E Key slot
14	M2M	M.2 Slot 2242/2280 Storage SATA
15	PCIEX4	PCIe x4 (Gen3 x2) Slot
16	PCIEX16_A, PCIEX16_B	PCIe x16 (Gen3 x16) Slot
17	PCIEX1	PCIe x1 (Gen3 x1) Slot
18	LVDS	LVDS connector
19	LSW	LVDS resolution jumper
20	BKL_CN	Backlight Control connector
21	VGA	VGA header
22	ATX_12V	8-pin ATX 12V power connector (for CPU)
23	DDR4_1, DDR4_2 DDR4_3, DDR4_4	DDR4 DIMM Sockets x 4

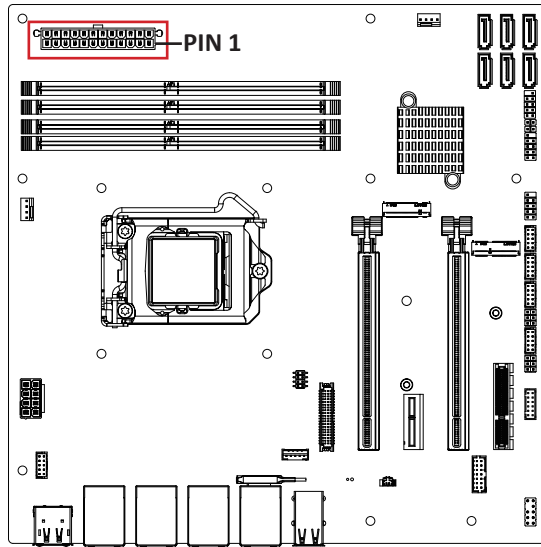
2.1.1 Rear I/O Connector



No	Code	Description
1	HDMI_DP	1 x Display Port (top) 1 x HDMI (bottom)
2	USB31_LAN4	1 x RJ45 LAN Port (top) 2 x USB 3.2 Gen 1 (bottom)
3	USB31_LAN3	1 x RJ45 LAN Port (top) 2 x USB 3.2 Gen 1 (bottom)
4	USB31_LAN2	1 x RJ45 LAN Port (top) 2 x USB 3.2 Gen 1 (bottom)
5	USB31_LAN1	1 x RJ45 LAN Port (top) 2 x USB 3.2 Gen 1 (bottom)
6	USB20	4 x USB 2.0 Ports

2.2.1 ATX (24-pin ATX main power connector)

1



ATX power connector

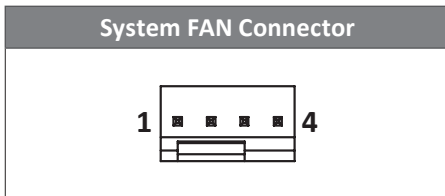
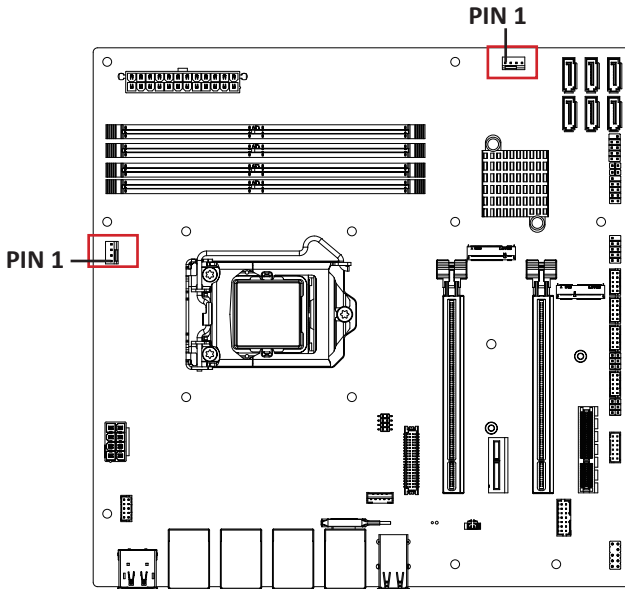


Connector PN	Vendor
740-41-24TW46	PINREX
ABA-POW-013-K08	LOTES

Pin No.	Definition	Pin No.	Definition
1	3.3V	13	3.3V
2	3.3V	14	-12V
3	GND	15	GND
4	+5V	16	PS_ON
5	GND	17	GND
6	+5V	18	GND
7	GND	19	GND
8	Power Good	20	-5V
9	5VSB	21	+5V
10	+12V	22	+5V
11	+12V	23	+5V
12	3.3V	24	GND

2.2.2 SYS_FAN, CPU_FAN (Fan connector)

2

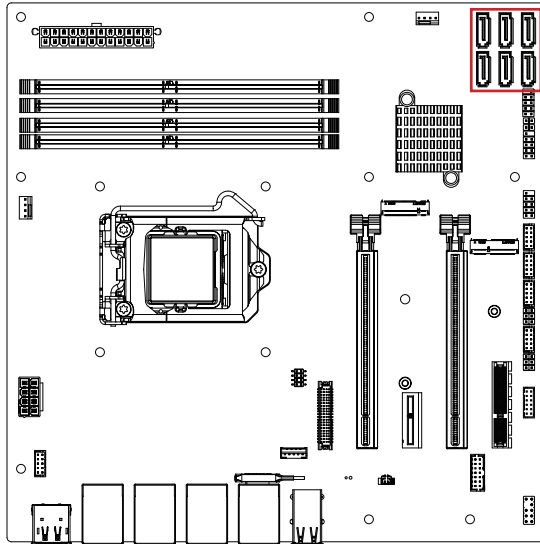


Connector PN	Vendor
744-81-045R11	PINREX
WF04R22RJQ105	HORNGTONG

Pin No.	Definition
1	GND
2	12V
3	Detect
4	Speed control

2.2.3 SATA2, SATA3, SATA4, SATA5, SATA6, SATA7 (SATA 6Gb/s Connector)

3



SATA 6Gb/s Connector



Connector PN

WATM-07ABNB2BAUW3

770-83-07SW19

Vendor

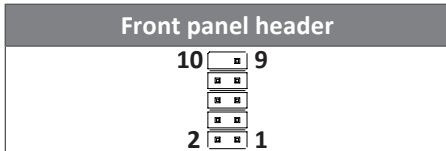
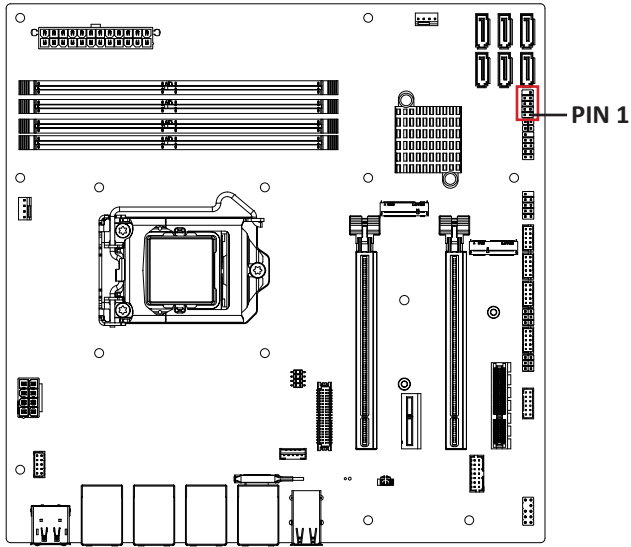
WINWIN

PINREX

Pin No.	Definition
1	GND
2	TXP
3	TXN
4	GND
5	RXN
6	RXP
7	GND

2.2.4 F_PANEL (Front panel header)

4

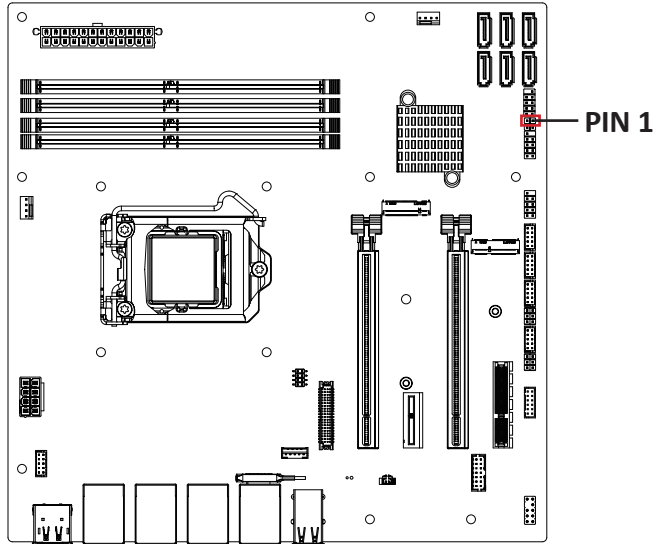


Connector PN	Vendor
210-92-05GB02	PINREX
PH10R53BAZ010	HORNGTONG

Pin No.	Definition
1	HDD LED+
2	Power LED+
3	HDD LED-
4	Power LED-
5	GND
6	Power button+
7	Reset button
8	Power button-
9	No connect
10	No pin

2.2.5 CLR_CMOS (Clear CMOS jumper)

5



Clear CMOS connector



Connector PN	Vendor
210-91-02GBK2	PINREX
PH02R23BAZE11	HORNGTONG

Clear CMOS Jumper



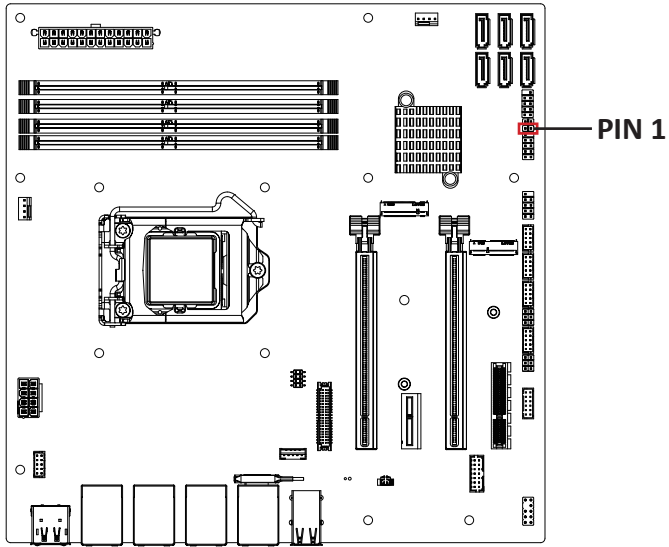
Disable






Enable

2.2.6 ME_EN (ME Enable jumper)

6



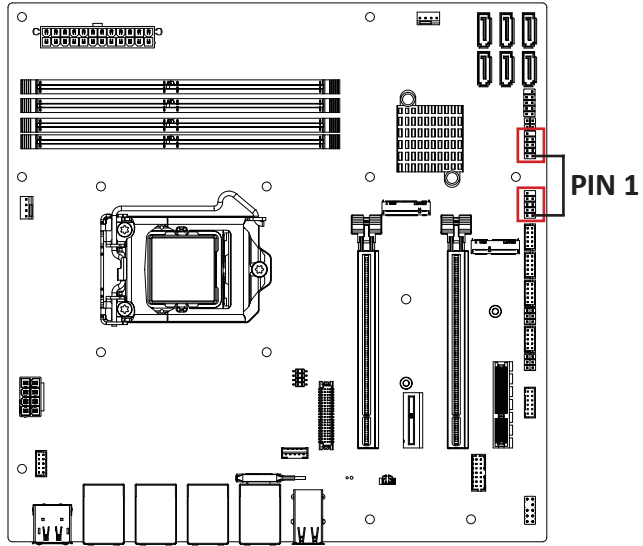
ME Enable connector	
	

ME Enable Jumper	
	Enable
	Disable

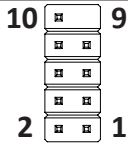
Connector PN	Vendor
210-91-02GBK2	PINREX
PH02R23BAZE11	HORNGTONG

2.2.7 FUSB2_1, F_USB2_2 (USB 2.0 header)

7



USB 2.0 Header



Connector PN

210-92-05GB04

PH10R53BAZ009

Vendor

PINREX

HORNGTONG

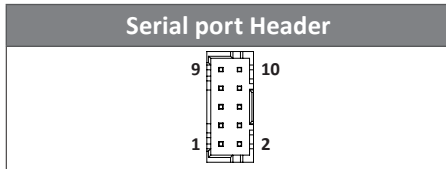
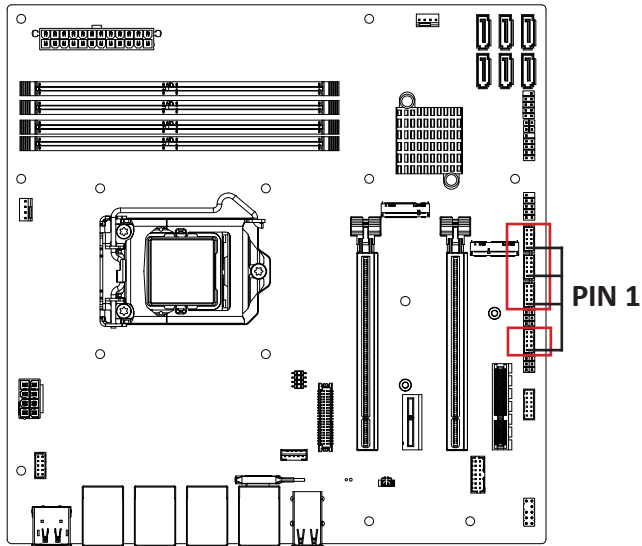
Pin No.

Definition

Pin No.	Definition
1	5V
2	5V
3	DX-
4	DY-
5	DX+
6	DY+
7	GND
8	GND
9	No Pin
10	No Connect

2.2.8 COM1, COM2, COM3, COM4 (Serial Port header)

8

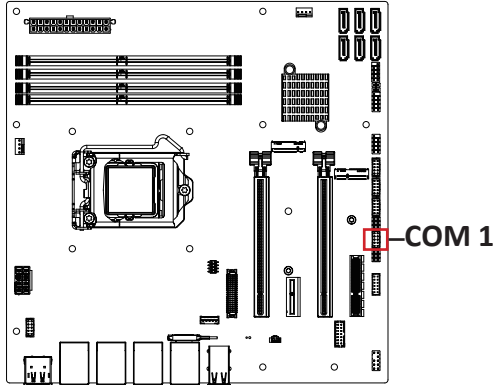


Connector PN	Vendor
725-81-10TW00	PINREX
A2004WV-2X05P46	JOINT-TECH

Note :

COM1 : Support RS-232/422/485 & RI/5V/12V
 COM2 : Support RS-232 & RI/5V/12V
 For RI/5V/12V jumper setting, please see **P. 30**
 COM3, COM4 : Support RS-232 only

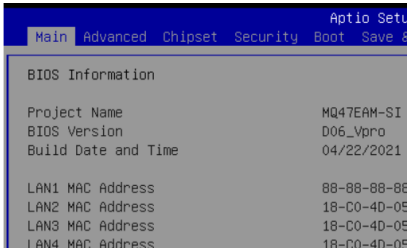
Pin No.	RS-232	RS-422/485 Full Duplex	RS-485 Half Duplex
1	RX	TX-	Data-(RX)
2	DCD	TX+	Data+(TX)
3	DTR	RX+	-
4	TX	RX-	-
5	DSR	-	-
6	GND	-	-
7	CTS	-	-
8	RTS	-	-
9	No Connect	-	-
10	RI/5V/12V	-	-



RS422, RS485 Select steps for COM1 port

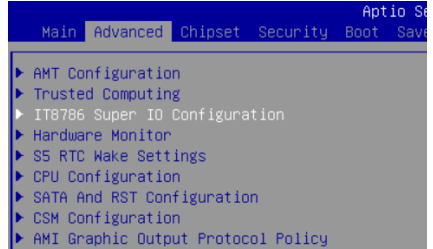
Step 1 :

Press “DEL” button to enter BIOS menu



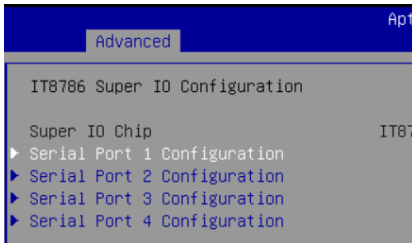
Step 2 :

Select “Advanced” menu, and Choose “IT8786 Super IO Configuration”



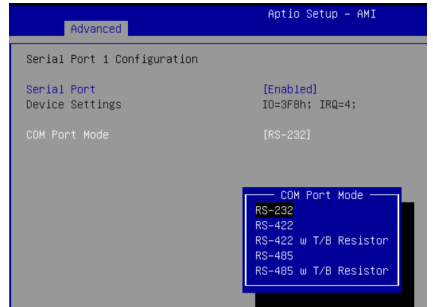
Step 3 :

Select “Serial Port 1 Configuration”



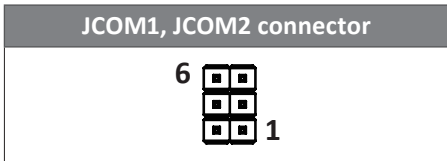
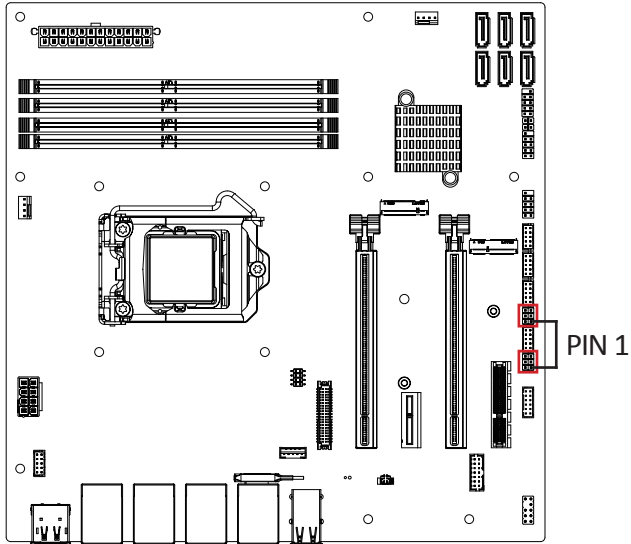
Step 4 :

Choose “COM Port Mode” for RS422, RS485 function setting



2.2.9 JCOM1, JCOM2 (COM1 & COM2 RI pin RI/5V/12V Select jumper)

9

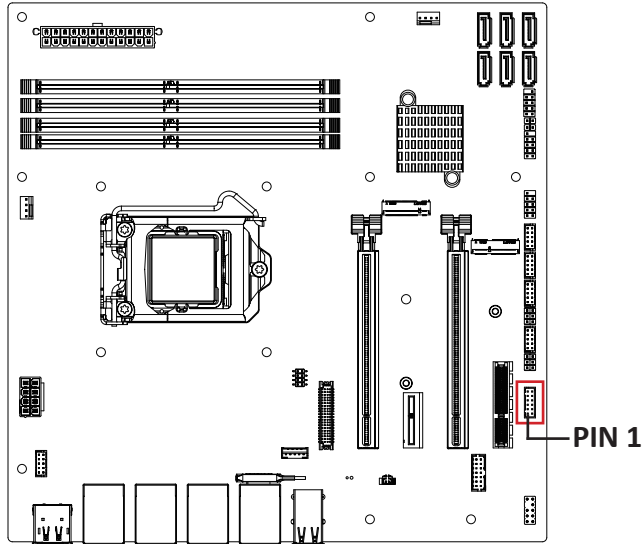


Connector PN	Vendor
210-92-03GB01	PINREX
PH06R53BAZ000	HORNGTONG

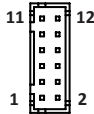
JCOM1, JCOM2 Jumper	
	1-2 Close: 5V (Power COM)
	3-4 Close: RI (Stand COM)
	5-6 Close: 12V (Power COM)

2.2.10 GPIO_CNT (General Purpose input/output header)

10



GPIO header



Connector PN

725-81-12TW00

A2004WV-2X06P46

Vendor

PINREX

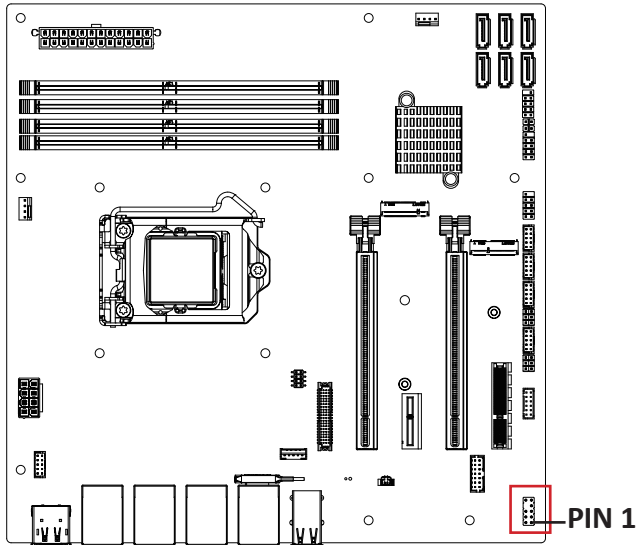
JOINT-TECH

Pin No. Definition

Pin No.	Definition
1	GPO1
2	GPI1
3	GPO2
4	GPI2
5	GPO3
6	GPI3
7	GPO4
8	GPI4
9	SMB_CLK
10	SMB_DATA
11	5V
12	GND

2.2.11 FP_AUDIO (Front Audio header)

11



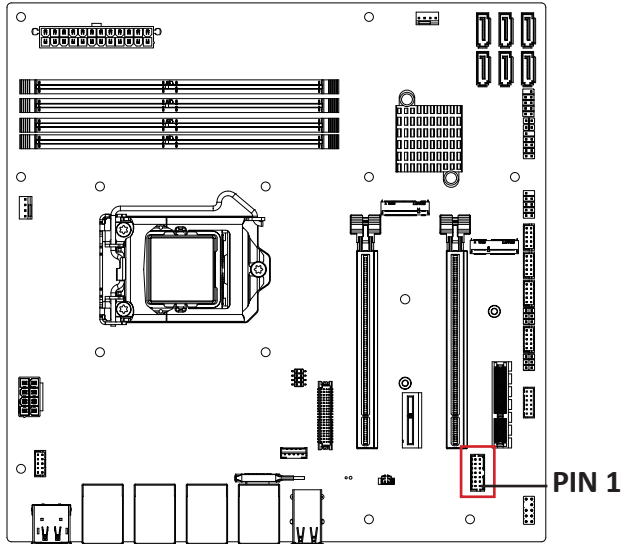
Front Audio header	
10	9
2	1

Connector PN	Vendor
210-92-05GE05	PINREX

Pin No.	Definition
1	MIC_L
2	GND
3	MIC_R
4	Detect
5	HPOUT_R
6	GND
7	JD
8	No connect
9	HPOUT_L
10	GND

2.2.12 LPC_CN (TPM header)

12



TPM header



Connector PN

52M-90-14GBE7

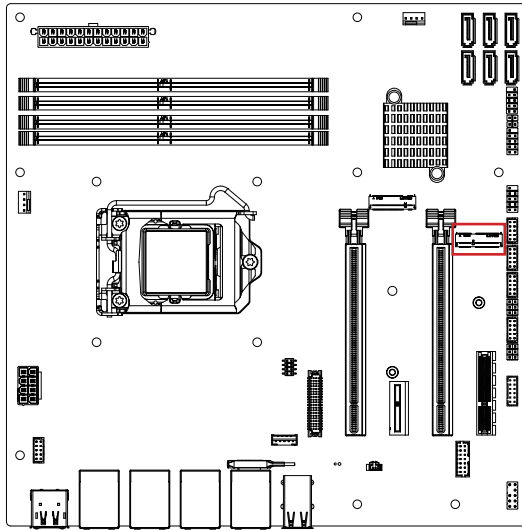
Vendor

PINREX

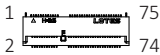
Pin No.	Definition
1	LPCCLK
2	3.3V
3	PFM RST
4	Reset
5	LAD0
6	Serial IRQ
7	LAD1
8	detect
9	LAD2
10	No connect
11	LAD3
12	GND
13	Frame
14	GND

2.2.13 M2E (M.2 2230 E Key slot)

13



M.2 E Key Connector



Pin No.	Definition	Pin No.	Definition
1	GND	2	3.3V
3	D1p	4	3.3V
5	D1n	6	NC
7	GND	8	NC
9	NC	10	NC
11	NC	12	NC
13	GND	14	NC
15	NC	16	NC
17	NC	18	GND
19	GND	20	NC
21	NC	22	NC
23	NC		

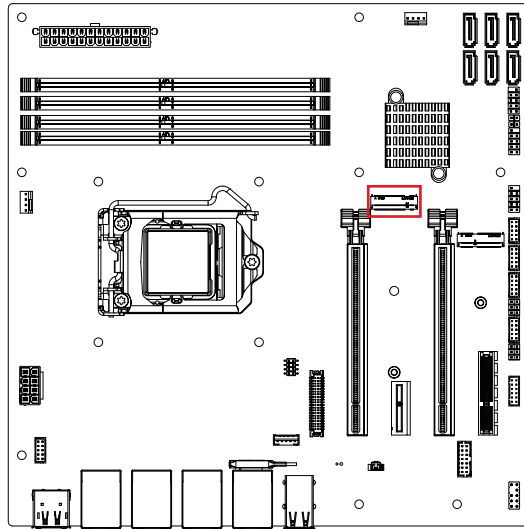
Pin No.	Definition	Pin No.	Definition
33	GND	32	NC
35	PCIE TXp	34	NC
37	PCIE TXn	36	NC

39	GND	38	NC
41	PCIE RXp	40	NC
43	PCIE RXn	42	NC
45	GND	44	NC
47	PCIE CLOCKp	46	NC
49	PCIE CLOCKn	48	NC
51	GND	50	SUSCLK
53	PCIE Clock Request	52	Reset
55	PCIE Wakeup	54	BT_Disable
57	GND	56	WIFI_Disable
59	NC	58	NC
61	NC	60	NC
63	GND	62	NC
65	NC	64	NC
67	NC	66	NC
69	GND	68	NC
71	NC	70	NC
73	NC	72	3.3V
75	GND	74	3.3V

Connector PN	Vendor
APCI0095-P002A	LOTES
80152-8521	BELLWETHER

2.2.14 M2M (M.2 slot 2242/2280 Storage SATA x 1)

14



M.2 M Key Connector



Pin No.	Definition	Pin No.	Definition
1	GND	2	3.3V
3	GND	4	3.3V
5	PCI E3 RXn	6	NC
7	PCI E3 RXp	8	NC
9	GND	10	NC
11	PCI E3 TXn	12	3.3V
13	PCI E3 TXp	14	3.3V
15	GND	16	3.3V
17	PCI E2 RXn	18	3.3V
19	PCI E2 RXp	20	NC
21	GND	22	NC
23	PCI E2 TXn	24	NC
25	PCI E2 TXp	26	NC
27	GND	28	NC
29	PCI E1 RXn	30	NC
31	PCI E1 RXp	32	NC
33	GND	34	NC
35	PCI E1 TXn	36	NC

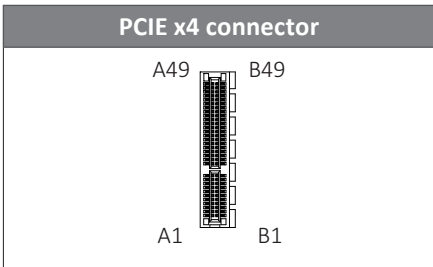
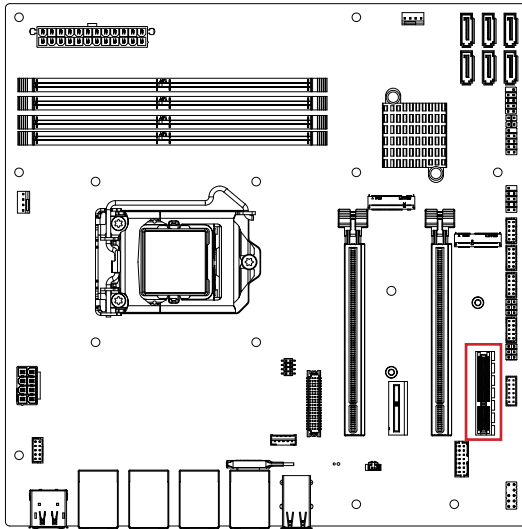
Pin No.	Definition	Pin No.	Definition
37	PCI E1 TXp	38	Device Sleep
39	GND	40	SMB Clock
41	PCI E0 RXn	42	SMB DATA
43	PCI E0 RXp	44	SMB Alternative
45	GND	46	NC
47	PCI E0 TXn	48	NC
49	PCI E0 TXp	50	PCI Reset
51	GND	52	PCI E Clock Request
53	PCI E Clock-	54	PCI E Wakeup
55	PCI E Clock+	56	NC
57	GND	58	NC

Pin No.	Definition	Pin No.	Definition
67	NC	68	SUSCLK
69	Detect	70	3.3V
71	GND	72	3.3V
73	GND	74	3.3V
75	GND		

Connector PN	Vendor
80159-8521	BELLWETHER
2E0BC21-S85BM-7H	FOXCONN
APCI0096-P002A	LOTES

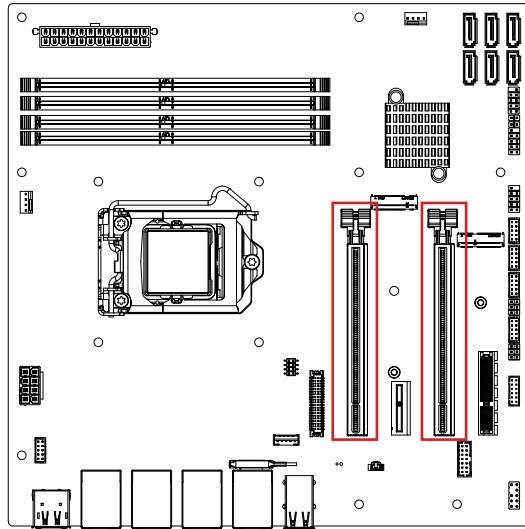
2.2.15 PCIEX4 (PCIe x4 (Gen3 x4) Slot)

15

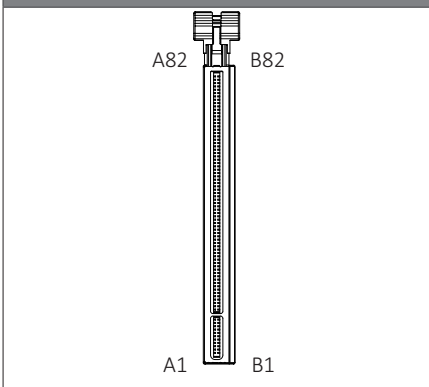


2.2.16 PCIE16_A, PCIE16_B (PCIe x16 (Gen3 x16) Slot)

16

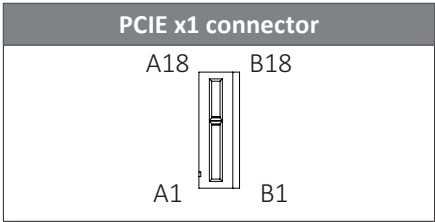
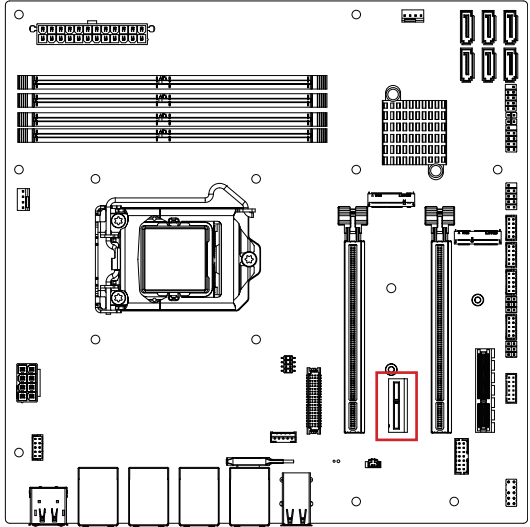


PCIe x16 connector



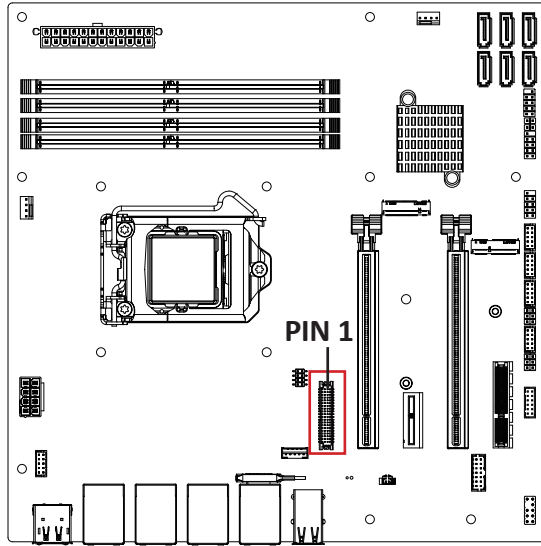
2.2.17 PCIE X1 (PCIe x1 (Gen3 x1) Slot)

17

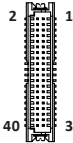


2.2.18 LVDS (LVDS connector)

18



LVDS Connector



Pin No.	Definition	Pin No.	Definition
1	3.3V	21	A5+
2	5V	22	A4+
3	3.3V	23	A5-
4	5V	24	A4-
5	SPECO	25	GND
6	SPEDO	26	GND
7	GND	27	A7+
8	GND	28	A6+
9	A1+	29	A7-
10	A0+	30	A6-
11	A1-	31	GND

Pin No.	Definition	Pin No.	Definition
12	A0-	32	GND
13	GND	33	CLK2+
14	GND	34	CLK1+
15	A3+	35	CLK2-
16	A2+	36	CLK1-
17	A3-	37	GND
18	A2-	38	GND
19	GND	39	12V
20	GND	40	12V

Connector PN	Vendor
712-76-40GWE0	PINREX
A1252WV-SF-2X20PD01	JOINT-TECH

For each model support LVDS function.

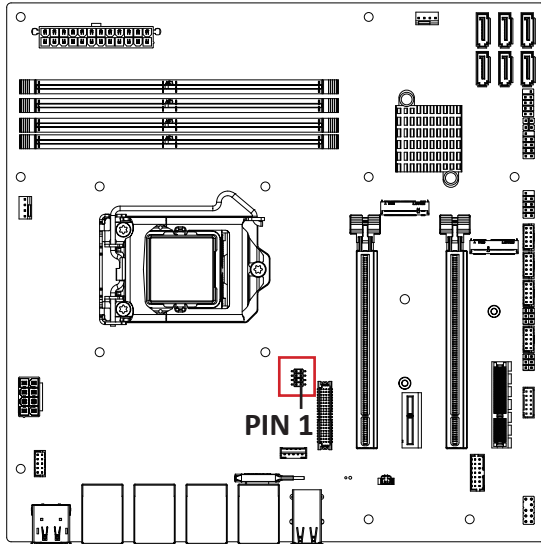
But below model no need to add.

A0~A3 is odd channel 0~3, A4~A7 is even channel.

Note: *The LVDS output connector of the unit is only intended to be connected to an UL/IEC/EN approval equipment with fire enclosure.

2.2.19 LSW (LVDS resolution jumper)

19

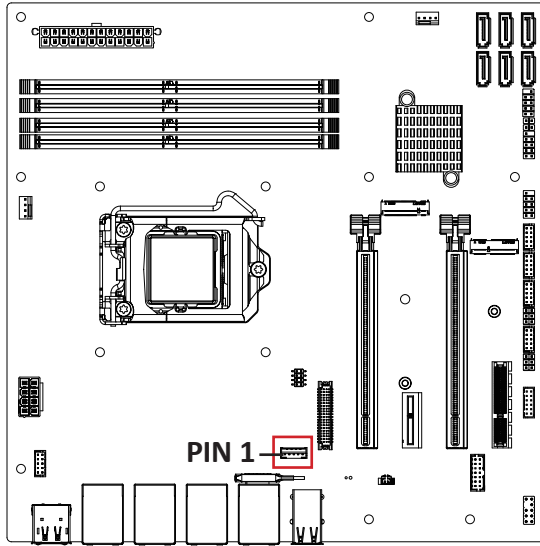


LVDS Resolution jumper			
Jumper setting	Resolution	Jumper setting	Resolution
	800 x 600 18bit		1366 x 768 24bit
	1024 x 768 18bit		1440 x 900 24bit
	1024 x 768 24bit		1400 x 1050 24bit
	1024 x 600 18bit		1600 x 900 24bit
	1280 x 800 18bit		1680 x 1050 24bit
	1280 x 960 18bit		1600 x 1200 24bit
	1280 x 1024 24bit		1920 x 1080 24bit
	1366 x 768 18bit		1920 x 1200 24bit

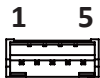
Connector PN	Vendor
222-97-04GBE1	PINREX

2.2.20 BKL_CN (Backlight Control connector)

20



Backlight Control Connector



Connector PN

721-81-05TW00

Vendor

PINREX

A2001WV-05P146

JOINT-TECH

Pin No.

Definition

1

5V

2

PWM

3

Back Light Enable

4

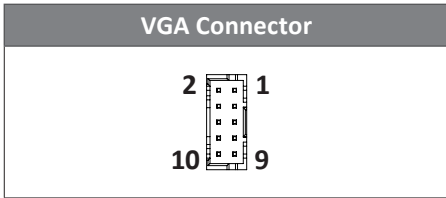
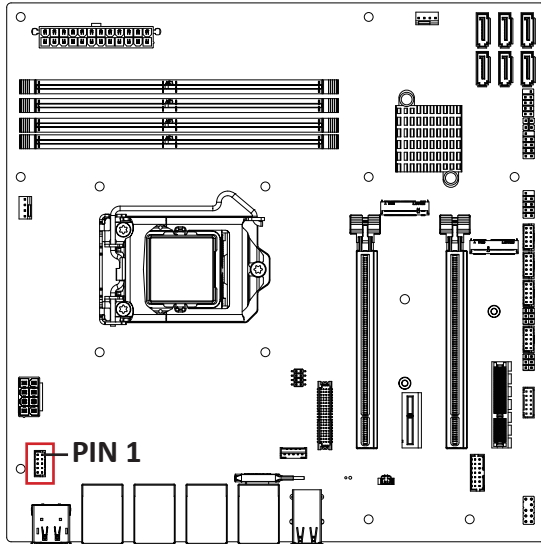
GND

5

12V

2.2.21 VGA (VGA connector)

21

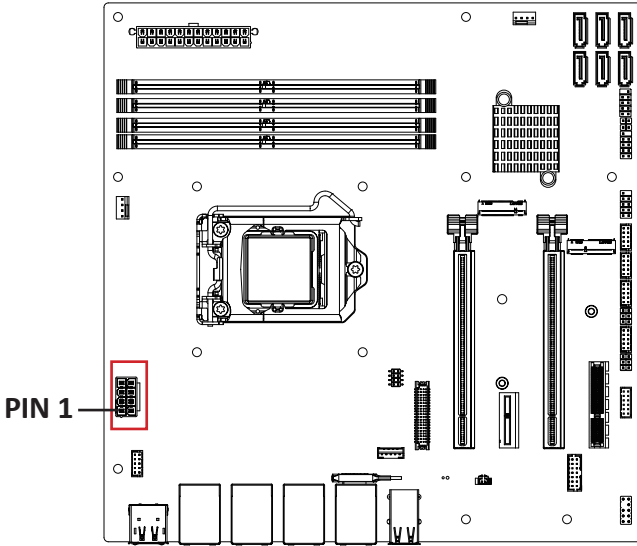


Connector PN	Vendor
725-81-10TW00	PINREX
A2004WV-2X05P46	JOINT-TECH

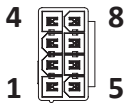
Pin No.	Definition
1	VSYNC
2	HSYNC
3	GND
4	GND
5	R
6	GND
7	G
8	SCL
9	B
10	SDA

2.2.22 ATX_12V (8-pin ATX 12V power connector (for CPU))

22



ATX 12V Connector



Connector PN

740-41-08TWIB
25114A0800B3-9LF

Vendor

PINREX
ATRC

Pin No.

Definition

Pin No.	Definition
1	GND
2	GND
3	GND
4	GND
5	+12V
6	+12V
7	+12V
8	+12V

2.2.23 DDR4_1, DDR4_2, DDR4_3, DDR4_4 (DDR4 DIMM Sockets)

23

