

iTXL-6100B (MKLP3CI)

Thin Mini-ITX 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
iTXL-6100B Motherboard	1
SATA power cable	1
I/O Bracket	1

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						

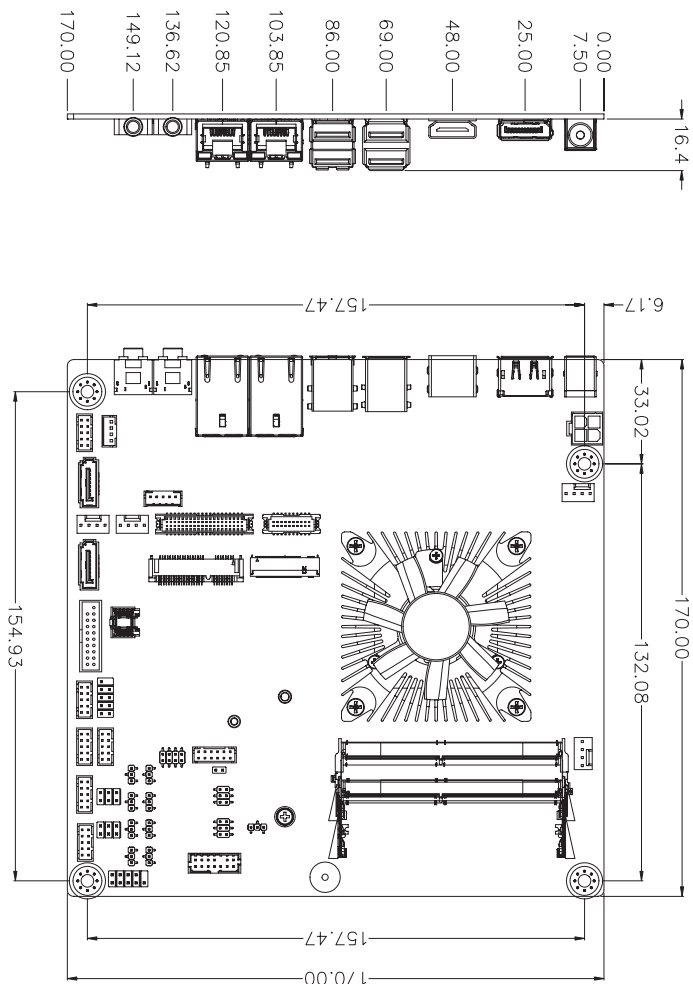
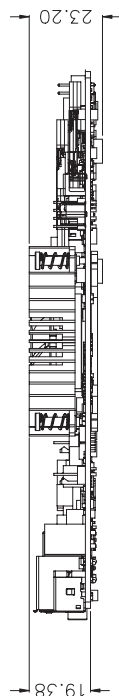
Table Contents

Thin Mini-ITX Motherboard	1
User's Manual 1st Ed	1
Copyright Notice	2
Acknowledgement	3
Packing List.....	4
About this Document	5
Safety Precautions	6
FCC Statement.....	8
China RoHS Requirements (CN).....	9
China RoHS Requirement (EN)	10
 Chapter 1 - Product Specifications	 13
1.1 Specifications	15
 Chapter 2 – Hardware Information	 17
2.1 Jumpers and Connectors	18
2.2.1 DC_IN1 (DC In Jack).....	21
2.2.2 DC_IN2 (ATX 2x2 pin power connector).....	22
2.2.3 SYS_FAN	23
2.2.4 CPU_FAN	24
2.2.5 AT_CN (AT/ATX power mode select jumper)	25
2.2.6 TPM_LPC (Trusted Platform Module Connector).....	26
2.2.7 SYS_PANEL (Front panel header)	27
2.2.8 GPIO_CNT (General Propose input/output header)	28
2.2.9 LSW (LVDS resolution jumper)	29

2.2.10	CLR_CMOS (Clear CMOS jumper)	30
2.2.11	COM1, COM2 (Serial port for RS-232)	31
2.2.12	COM3, COM4 (Serial port fpr RS-232/422/485 and RI/5V/12V).....	32
2.2.13	JCOM31, JCOM41 (COM3 & COM4, RI pin RI/5V/12V Select)	33
2.2.14	JCOM32, JCOM42 (COM 3 & COM 4, RS-232/RS-422/RS- 485 select)	34
2.2.15	JRS31-34 (COM3, RS31-34 select jumper for serial port)	35
2.2.16	JRS41-44 (COM4, RS41-44 select jumper for serial port)	36
2.2.17	F_USB2_1, F_USB2_2 (USB 2.0 header)	37
2.2.18	FUSB30 (USB 3.0 header)	38
2.2.19	SATAIII_0, SATAIII_1 (SATA 6Gb/s Connector)	39
2.2.20	SATAPW1~2 (SATA 6Gb/s power connector)	40
2.2.21	LVDS (LVDS connector).....	41
2.2.22	EDP (Embedded Display Port Connector)	42
2.2.23	BKL_CN (Back light brightness control connector)	43
2.2.24	F_Audio (Front audio header)	44
2.2.25	SPK_OUT	45

Chapter 1

Chapter 1 - Product Specifications



1.1 Specifications

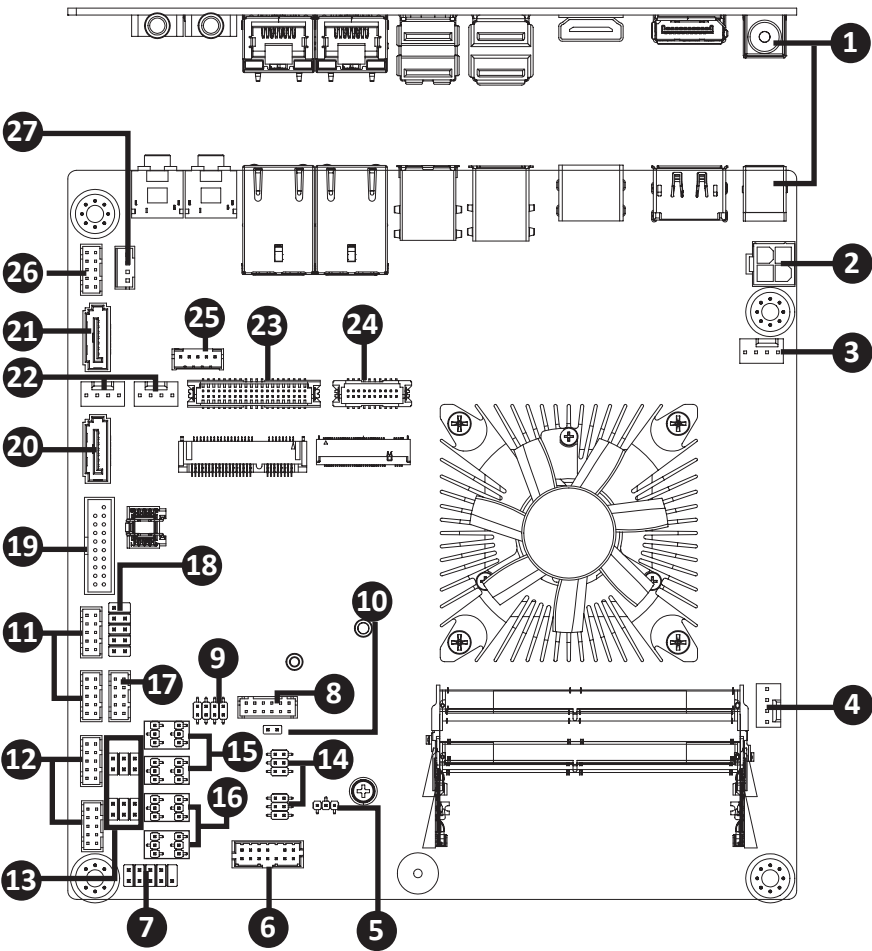
Motherboard	iTXL-6100B (MKLP3CI)
Form Factor	Thin Mini-ITX form factor 170W x 170D (mm)
CPU	Intel® Core™ i3-6100U Processor 14nm, 2 cores, 2 threads 2.30 GHz TDP 15W 3 MB SmartCache
Socket	1 x FCBGA1356
Chipset	—
Memory	2 x DDR4 SO-DIMM sockets supporting up to 32 GB of system memory Dual channel memory architecture Support for DDR4 2133 MHz memory modules
Ethernet	2 x GbE LAN ports (Intel® i219V and Intel® i211AT)
Video	Integrated Graphics Processor - Intel® HD Graphics 520 1 x HDMI port, supporting a maximum resolution of 4096 x 2160@24 Hz 1 x DP port, supporting a maximum resolution of 4096 x 2160@60 Hz 1 x LVDS port, supporting a maximum resolution of 1920 x 1080@60Hz 1 x eDP port, supporting a maximum resolution of 1920 x 1080@60 Hz * Support for HDMI 1.4 version
Audio	Realtek ALC269 High Definition Audio
Storage	2 x SATA 6Gb/s ports (1 x SATA support SATA DOM) RAID (0/1/5)
Raid	—
Expansion Slots	1 x Mini PCIe (Full Size) 1 x M.2 slot: - M-key - SATA 6Gb/s PCIe x2 - Supports NGFF- 2242/2280 cards

Motherboard	iTXL-6100B (MKLP3CI)
Internal I/O	1 x 2-pin ATX main power connector 2 x SATA 6Gb/s connectors 2 x USB 3.0 headers or 2 x USB header 2 x USB 2.0 headers 1 x Front panel header 1 x Front panel audio header 1 x 2W Speaker out header 1 x LVDS connector 1 x LCD_VCC Pin header 1 x Back Light Switch 1 x System fan header 1 x CPU fan header 2 x COM Headers (RS-232) 2 x COM headers (RS-232/422/485 and RI/5V/12V) 2 x SATA Power connector 1 x eDP 1 x GPIO (8 bits) & SMBUS
Rear I/O	2 x Audio jacks (Line out, Mic in) 1 x HDMI 1 x Display Port 2 x RJ45 2 x USB2.0 2 x USB3.0 1 x DC Jack (+12VDC)
TPM	1 x TPM Header
OS Compatibility	Windows 10 (x64)
PSU Connectors	1 x DC-in +12VDC 1 x 4-pin ATX power connector
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)
Packing Content	BOX Packing Capacity: 10pcs Carton size: 460 x 345 x 203 (mm) Content: IO Shield x 1 (12AIO-MKLPC0-00R) SATA Power cable x 1 (25CRI-200B02-K1R)
Order Information	Motherboard: 9MKLPCCIMR-SI
Optional kit:	TPM 1.2 module: 9CMUFLNR-00 TPM 2.0 module: 9CTM000NR-00

Chapter 2

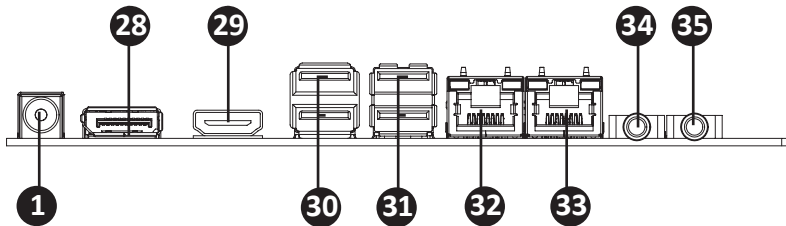
Chapter 2 – Hardware Information

2.1 Jumpers and Connectors

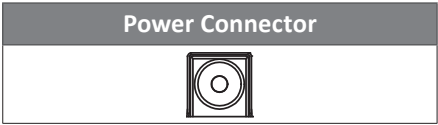
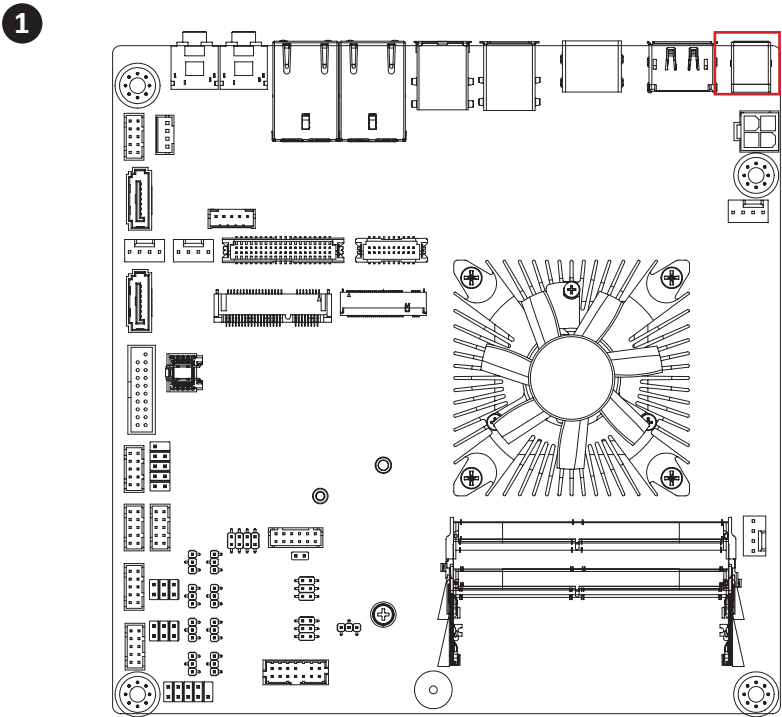


No	Code	Description
1	DC_IN1	DC In Jack
2	DC_IN2	ATX 2x2 pin power connector
3	SYS_FAN	System fan connector
4	CPU_FAN	CPU fan connector
5	AT_CN	AT/ATX power mode select jumper
6	TPM_LPC	Trusted Platform Module Connecto
7	SYS_PANEL	Front panel header
8	GPIO_CNT	General Purpose input/output header
9	LSW	LVDS resolution jumper
10	CLR_CMOS	Clear CMOS jumper
11	COM1, COM2	Serial port for RS-232
12	COM3, COM4	Serial port fpr RS-232/422/485 and RI/5V/12V
13	JCOM31/41	Default COM3/COM4 is RI pin, can select RI/5V/12V
14	JCOM32/42	Default COM3/COM4 RS-232/RS-422/RS-485 Select
15	JRS31~34	COM3, RS31~RS41 select jumper for serial port
16	JRS41~44	COM4, RS31~RS41 select jumper for serial port
17	F_USB2_2	USB 2.0 header
18	F_USB2_1	USB 2.0 header
19	F_USB30	USB 3.0 header
20	SATAIII_1	SATA 6Gb/s connector
21	SATAIII_0	SATA 6Gb/s connector

No	Code	Description
22	SATAPW1~2	SATA 6Gb/s power connector
23	LVDS	LVDS connector
24	EDP	Embedded Display Port connector
25	BKL_CN	Back light brightness control connector
26	F_AUDIO	Front audio header
27	SPK_OUT	Front Speaker out header
28	DP	DP Display Port
29	HDMI	HDMI Port
30	USB30	USB 3.0 port x 2
31	USB20	USB 2.0 port x 2
32	LAN1	GbE LAN port
33	LAN2	GbE LAN port
34	MIC_IN	Mic in
35	LINE_OUT	Line out



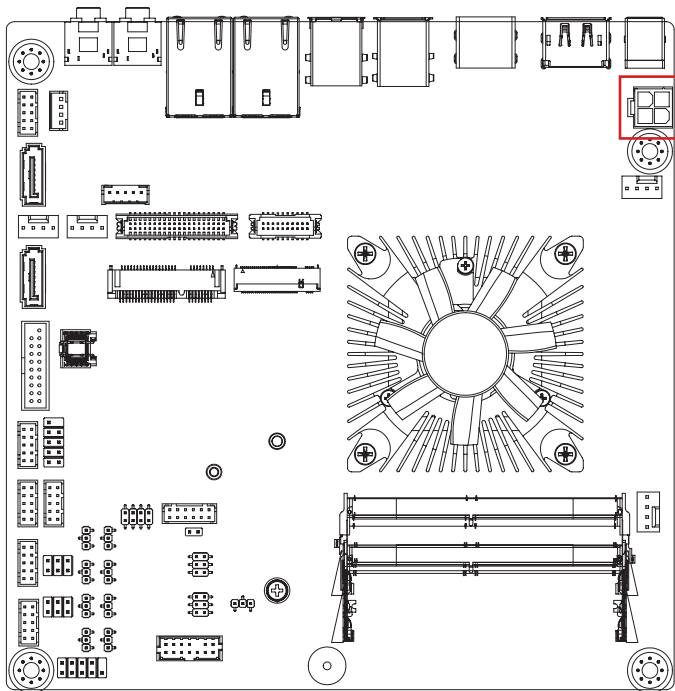
2.2.1 DC_IN1 (DC In Jack)



Connector PN	Vendor
WTJ-020-88JSB	KYOYAKU

2.2.2 DC_IN2 (ATX 2x2 pin power connector)

2



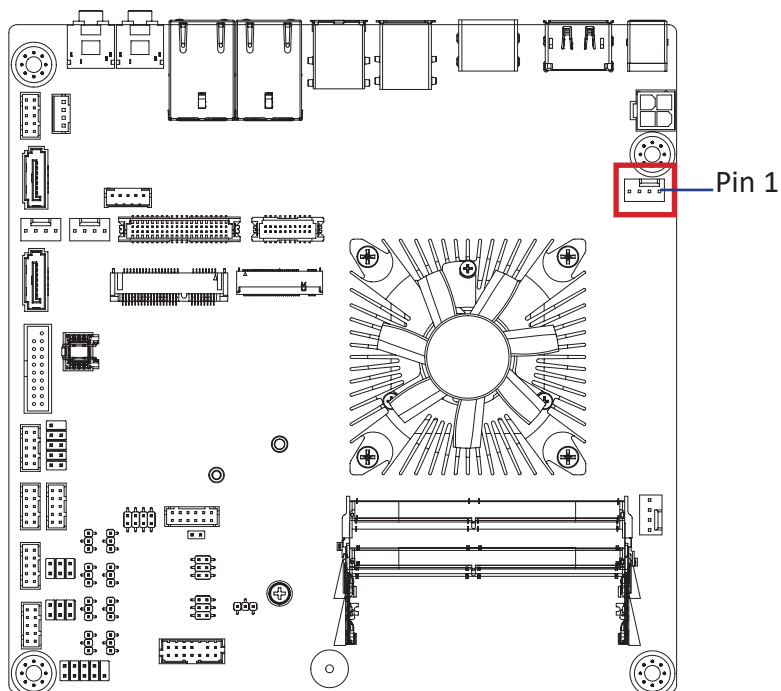
Power Connector	

Pin No.	Definition
1	GND
2	GND
3	+12V
4	+12V

Connector PN	Vendor
740-81-04TW56	PINREX
25104A0400B3-93LF	ATRC

2.2.3 SYS_FAN

3



System FAN

4



1

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

Connector PN

744-81-045R11

WF04R22RJQ105

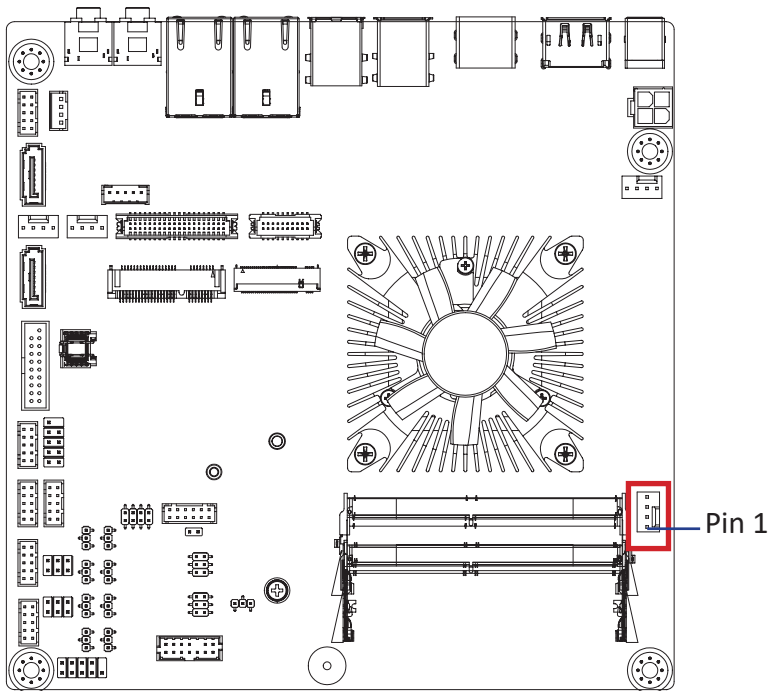
Vendor

PINREX

HORNGTONG

2.2.4 CPU_FAN

4



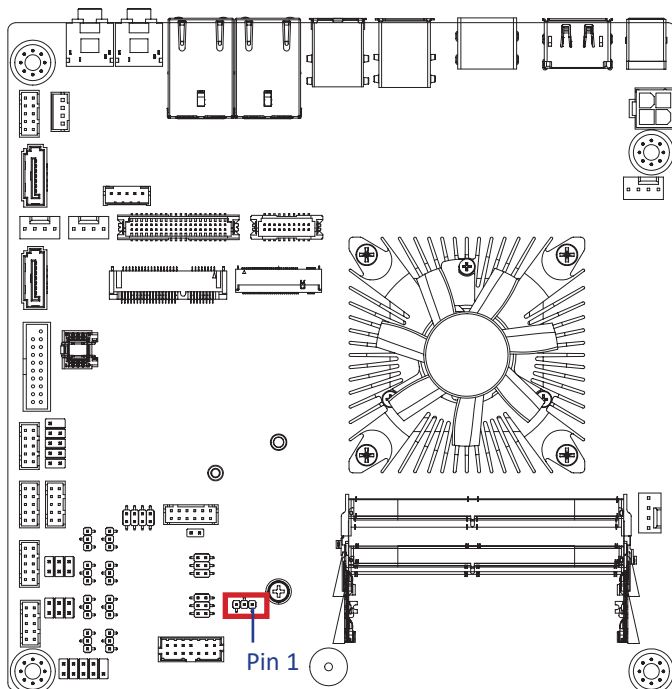
System FAN	
4	
	
1	

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

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

2.2.5 AT_CN (AT/ATX power mode select jumper)

5



AT/ATX power mode select jumper



Connector PN

PH03N33BAAA00

Vendor

HORNGTONG

Pin No.

Definition

1

AT MODE

2

Detect

3

ATX MODE

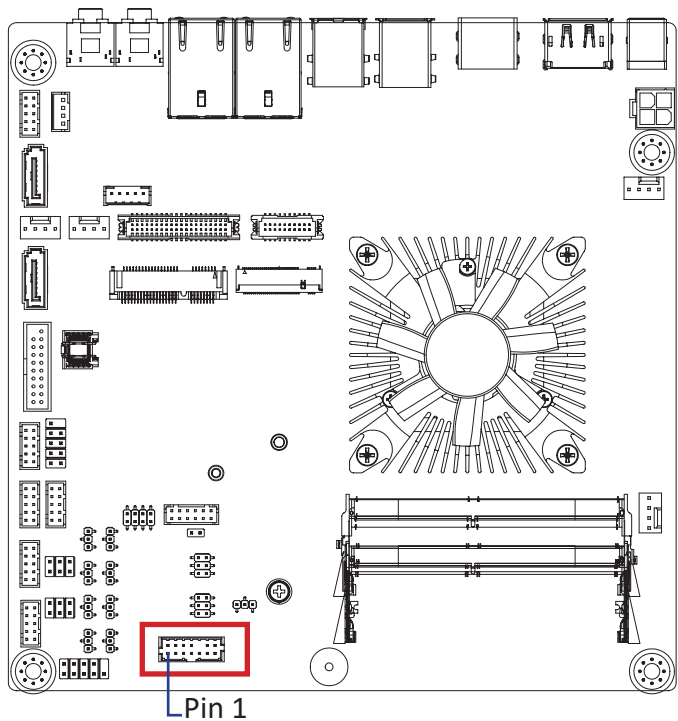
Jumper setting

1-2 Close : AT mode.

2-3 Close : ATX mode.(Default setting)

2.2.6 TPM_LPC (Trusted Platform Module Connector)

6



TPM Module Connector		
2		14
1		13

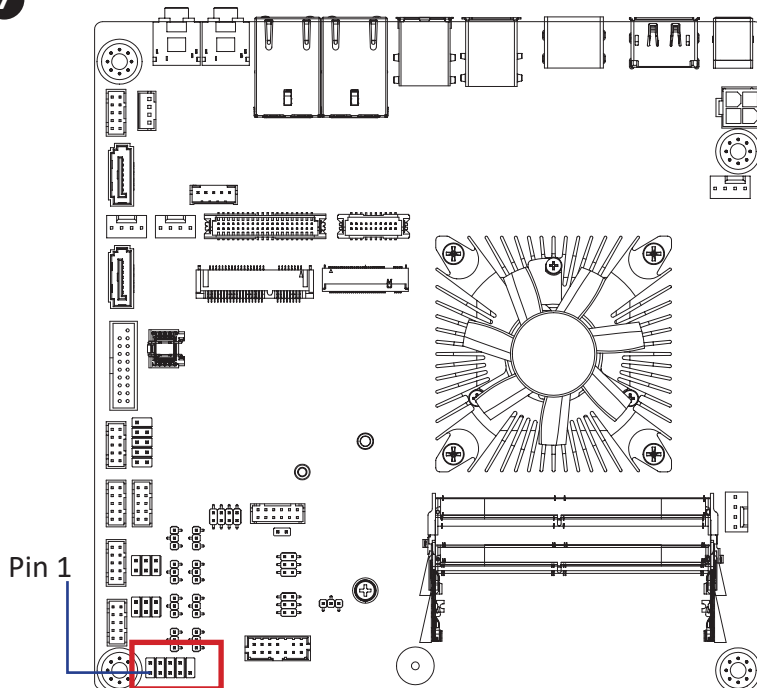
Pin No.	Definition
1	LPCCLK
2	3VDUAL
3	PFM RST
4	VCC3
5	LAD0
6	IRQ_SERIAL
7	LAD1
8	TPM_DET
9	LAD2
10	NC

Pin No.	Definition
11	LAD3
12	GND
13	LFRAME
14	GND

Connector PN	Vendor
52M-90-14GBE7	PINREX

2.2.7 SYS_PANEL (Front panel header)

7



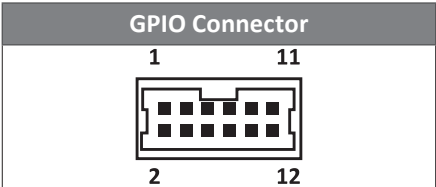
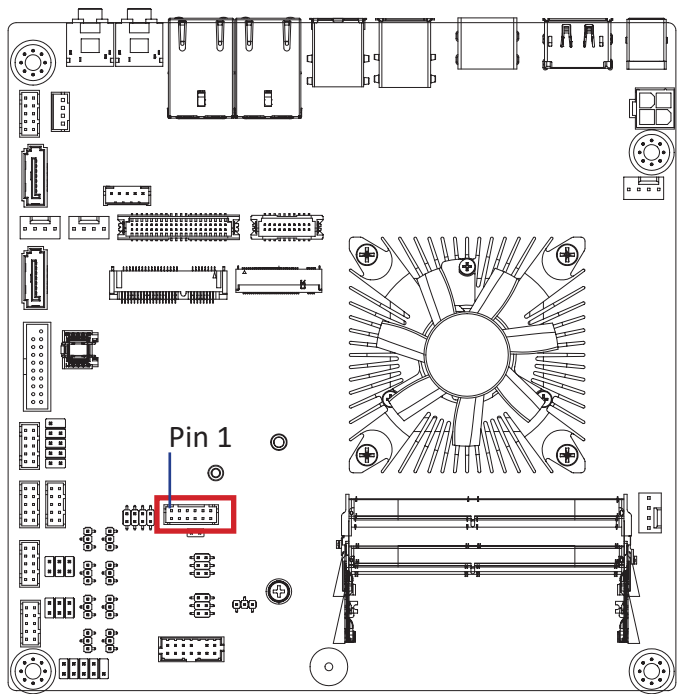
System Panel Header	
2	10
1	9

Connector PN	Vendor
210-92-05G111	PINREX

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

2.2.8 GPIO_CNT (General Propose input/output header)

8

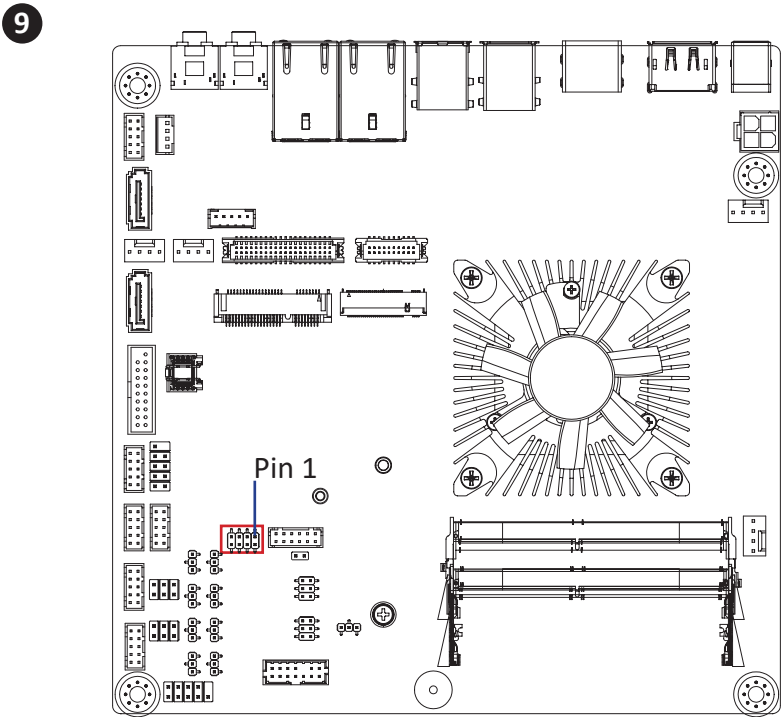


Pin No.	Definition
1	GPO1
2	GPI1
3	GPO2
4	GPI2
5	GPO3
6	GPI3
7	GPO4
8	GPI4

Pin No.	Definition
9	SMB_CLK
10	SMB_DATA
11	5V
12	GND

Connector PN	Vendor
725-81-12TW00	PINREX
A2004WV-2X06P46	JOINT-TECH

2.2.9 LSW (LVDS resolution jumper)

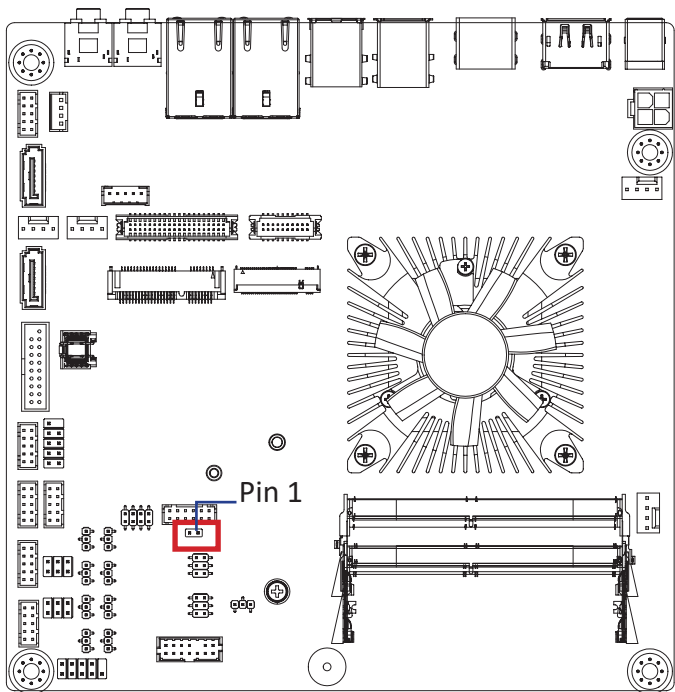


LVDS Resolution Jumper			
Jumper Setting	Resolution	Jumper Setting	Resolution
1 8 8 8 8 8	800 x 600 18bit	1 8 8 8 8 8	1366 x 768 24bit
1 8 8 8 8 8	1024 x 768 18bit	1 8 8 8 8 8	1440 x 900 24bit
1 8 8 8 8 8	1024 x 768 24bit	1 8 8 8 8 8	1400 x 1050 24bit
1 8 8 8 8 8	1024 x 600 18bit	1 8 8 8 8 8	1600 x 900 24bit
1 8 8 8 8 8	1280 x 800 18bit	1 8 8 8 8 8	1680 x 1050 24bit
8 8 8 8 8 1	1024 x 600 18bit	1 8 8 8 8 8	1600 x 1200 24bit
1 8 8 8 8 8	1280 x 1024 24bit	1 8 8 8 8 8	1920 x 1080 24bit
1 8 8 8 8 8	1366 x 768 18bit	1 8 8 8 8 8	1920 x 1200 24bit

Connector PN	Vendor
222-97-04GBE1	PINREX

2.2.10 CLR_CMOS (Clear CMOS jumper)

10



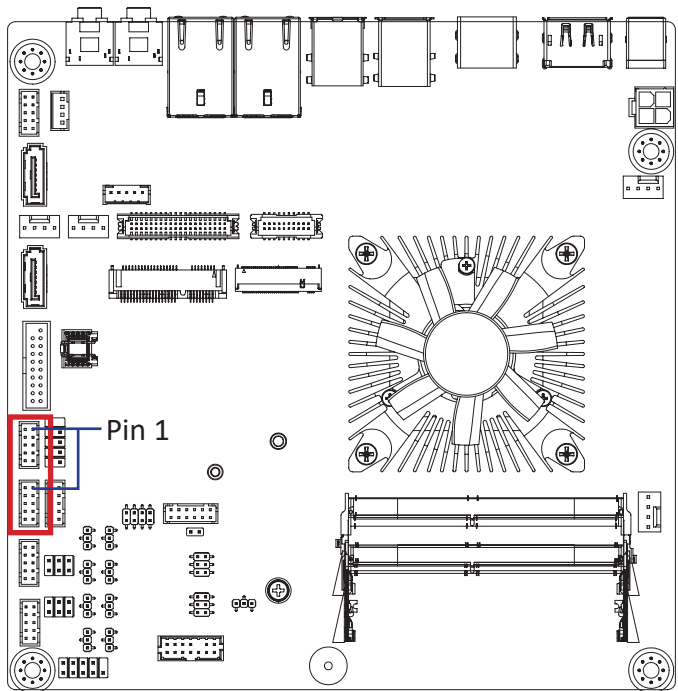
Clear COMS Jumper	
2	1

Connector PN	Vendor
210-91-02GB01	PINREX
PH02R23BAZ000	HORNGTONG

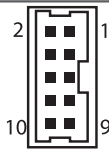
Pin No.	Definition
1	Clear CMOS
2	GND
Open: Normal Operation (Default setting)	
Close: Clear COMS data.	

2.2.11 COM1, COM2 (Serial port for RS-232)

11



Serial Port Cable Connector



Connector PN

725-81-10TW00
A2004WV-2X05P46

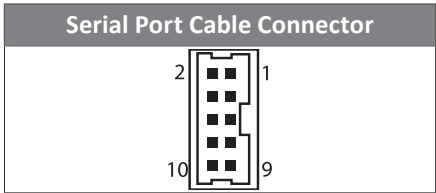
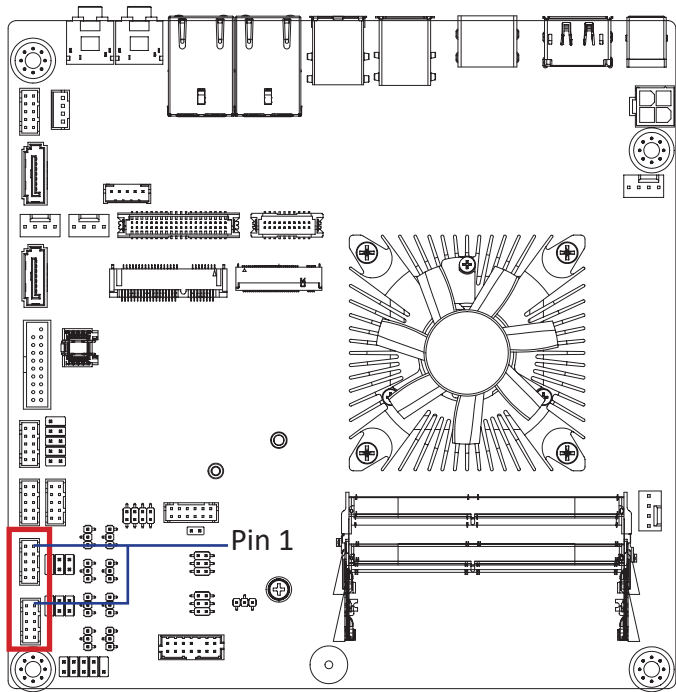
Vendor

PINREX
JOINT-TECH

Pin No.	Definition	Pin No.	Definition
1	RX	6	GND
2	DCD	7	CTS
3	DTR	8	RTS
4	TX	9	No Connect
5	DSR	10	RI

2.2.12 COM3, COM4 (Serial port fpr RS-232/422/485 and RI/5V/12V)

12

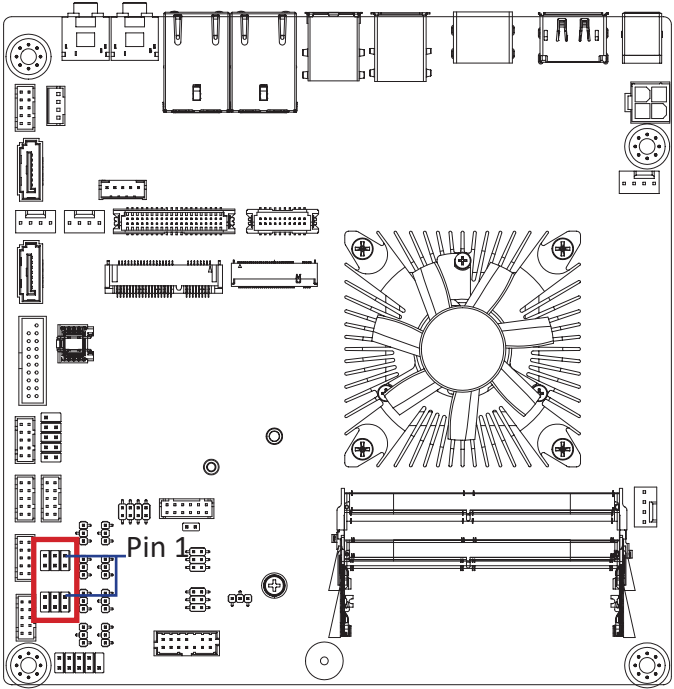


Connector PN	Vendor
725-81-10TW00	PINREX
A2004WV-2X05P46	JOINT-TECH

Pin No.	Definition	Pin No.	Definition
1	RX	6	GND
2	DCD	7	CTS
3	DTR	8	RTS
4	TX	9	No Connect
5	DSR	10	RI/ 5V/ 12V

2.2.13 JCOM31, JCOM41 (COM3 & COM4, RI pin
RI/5V/12V Select)

13

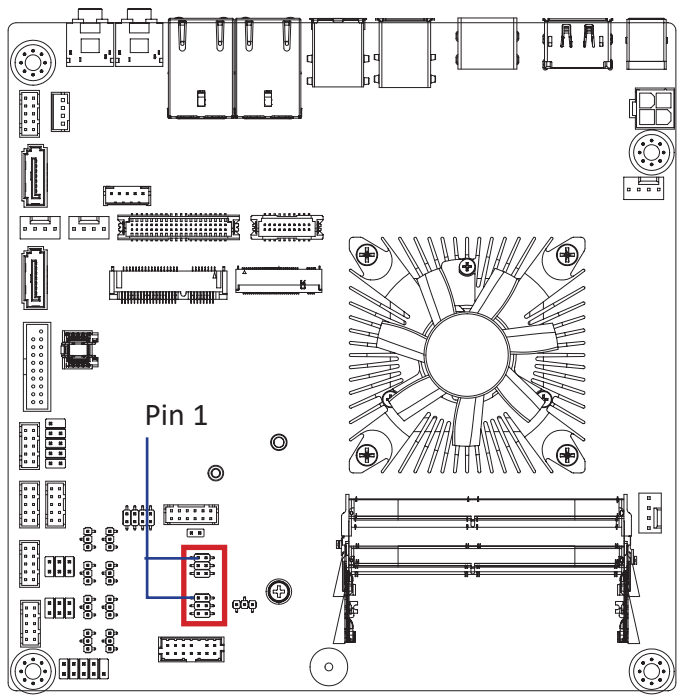


JCOM31, JCOM41 Jumper	
	1-2 Close: 5V (Power COM)
	3-4 Close: RI (Stand COM)
	5-6 Close: 12V (Power COM)
Connector PN	Vendor
220-97-03GB01	PINREX

Connector PN	Vendor
PH06N53BAZ000	HORNGTONG

2.2.14 JCOM32, JCOM42 (COM 3 & COM 4, RS-232/RS-422/RS-485 select)

14



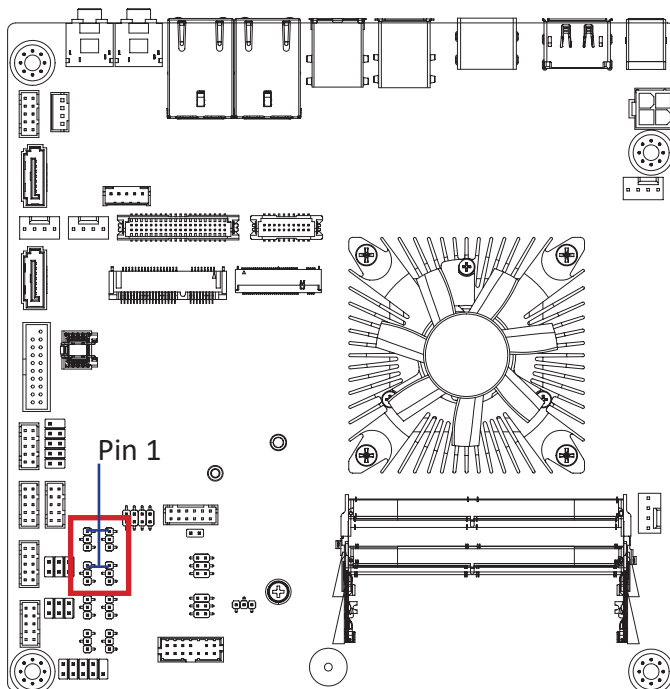
JCOM32, JCOM42 Jumper	
	1-2 Close: RS-232
	3-4 Close: RS-422
	5-6 Close: RS-485

Pin No.	Definition
1	RX232
2	RX
3	RX422
4	RX
5	RX485
6	RX

Connector PN	Vendor
222-97-03GBE1	PINREX

2.2.15 JRS31-34 (COM3, RS31-34 select jumper for serial port)

15



JRS 31-34 Jumper

JRS32  1 2 3 JRS31

JRS34  1 2 3 JRS33

RS-232 (Default-setting)

Connector PN

220-96-03GB01
PH03N2-7BAN000

Vendor

PINREX
HORNGTONG

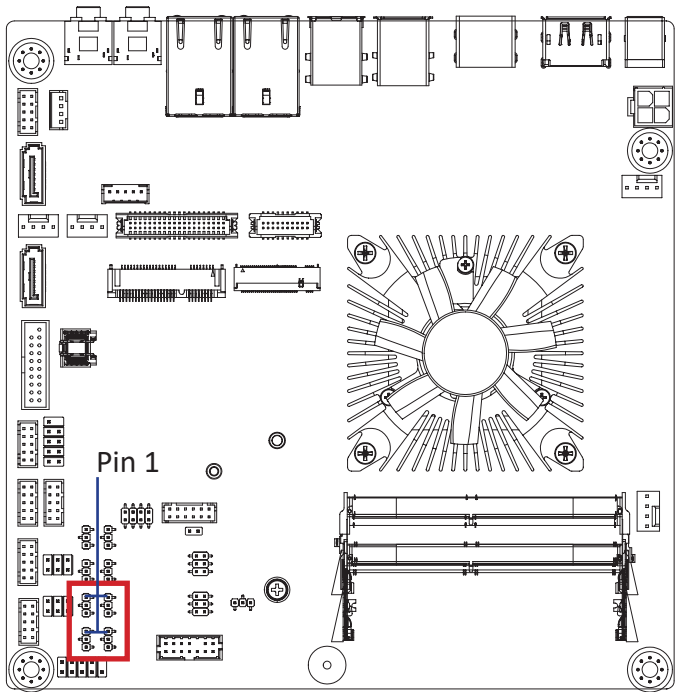
HW jump Configuration

Pin1, Pin2 Close is 1,
Pin2, Pin3 Close is 0.
JRS31=M0, JRS32=M1, JRS33=M2,
JRS34=SLEW (Default 1)

M0 (JRS31)	M1 (JRS32)	M2 (JRS33)	SLEW (JRS34)	Mode	Status
0	0	0	1	RS-422 Full Duplex	1T/1R RS-422
0	0	1	1	Pure RS-232	3T/5R RS-232 (Default)
0	1	0	1	RS-485 Half Duplex	1T/1R RS-485, TX ENABLE Low Active
0	1	1	1	RS-485 Half Duplex	1T/1R RS-485, TX ENABLE High Active
1	0	0	1	RS-422 Full Duplex	1T/1R RS-422 with termination resistor and bias resistor.
1	1	0	1	RS-485 Half Duplex	1T/1R RS-485 with termination resistor and bias resistor. TX ENABLE Low Active

2.2.16 JRS41-44 (COM4, RS41-44 select jumper for serial port)

16



JRS 41-44 Jumper			
JRS42		JRS41	
JRS44		JRS43	
RS-232 (Default-setting)			

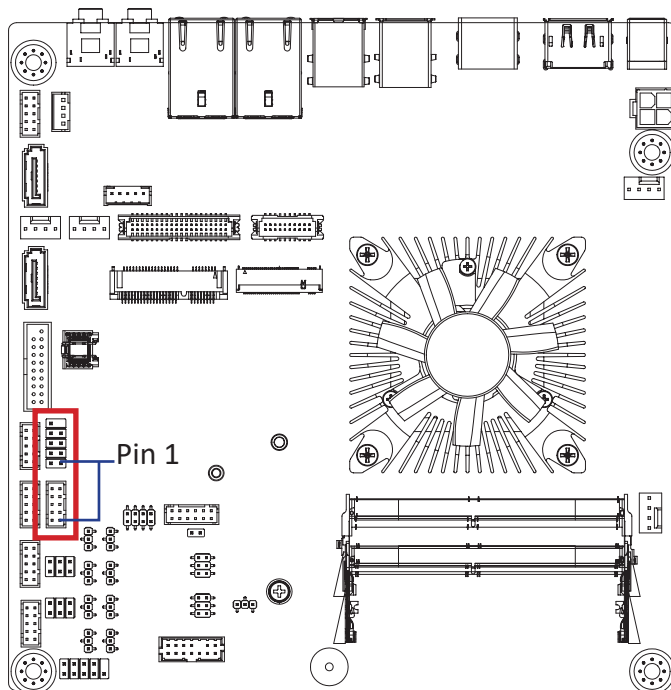
Connector PN	Vendor
220-96-03GB01	PINREX
PH03N2-7BAN000	HORNGTONG

HW jump Configuration
Pin1, Pin2 Close is 1, Pin2, Pin3 Close is 0. JRS41=M0, JRS42=M1, JRS43=M2, JRS44=SLEW (Default 1)

M0 (JRS41)	M1 (JRS42)	M2 (JRS43)	SLEW/ (JRS44)	Mode	Status
0	0	0	1	RS-422 Full Duplex	1T/1R RS-422
0	0	1	1	Pure RS-232	3T/5R RS-232 (Default)
0	1	0	1	RS-485 Half Duplex	1T/1R RS-485, TX ENABLE Low Active
0	1	1	1	RS-485 Half Duplex	1T/1R RS-485, TX ENABLE High Active
1	0	0	1	RS-422 Full Duplex	1T/1R RS-422 with termination resistor and bias resistor.
1	1	0	1	RS-485 Half Duplex	1T/1R RS-485 with termination resistor and bias resistor. TX ENABLE Low Active

2.2.17 F_USB2_1, F_USB2_2 (USB 2.0 header)

17 18



USB 2.0 Header



Connector PN

210-92-05GB04
PH10R53BAZ009

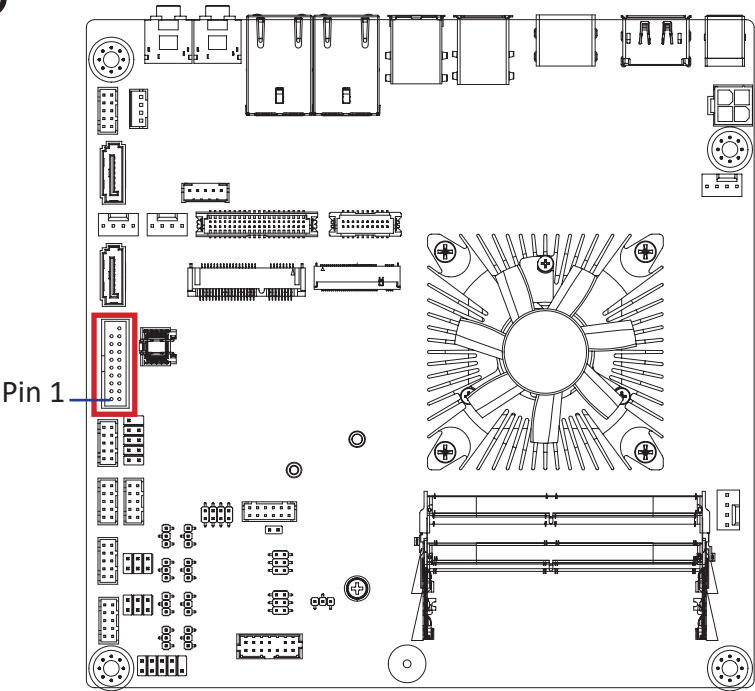
Vendor

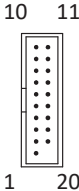
PINREX
HORNGTONG

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

2.2.18 FUSB30 (USB 3.0 header)

19



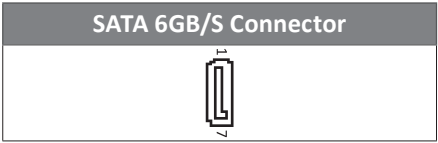
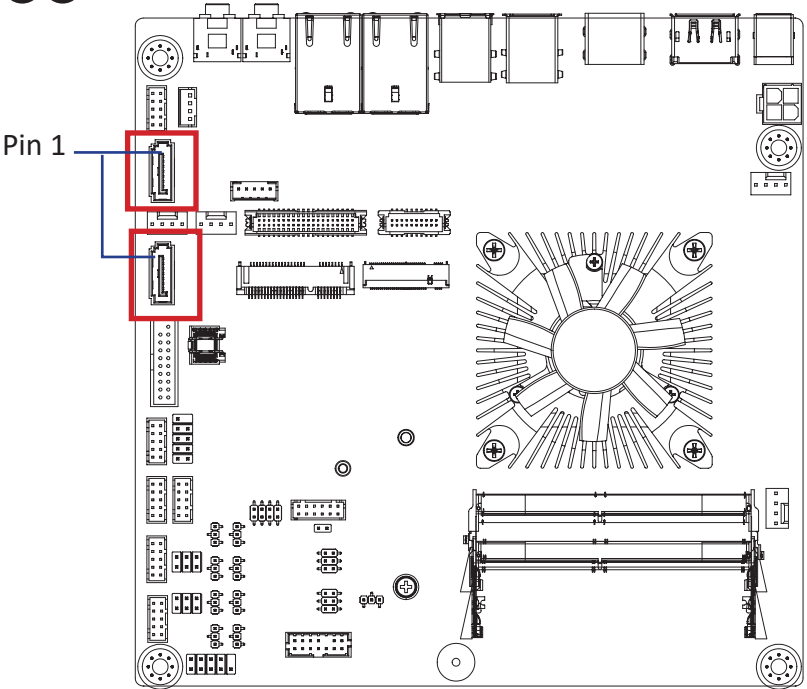
USB 3.0 Header	
	
Pin No.	Definition
1	Power
2	P1_RX-
3	P1_RX+
4	GND
5	P1_TX-
6	P1_TX+
7	GND
8	P1_D-

Pin No.	Definition
9	P1_D+
10	OC
11	P2_D+
12	P2_D-
13	GND
14	P2_TX+
15	P2_TX-
16	GND
17	P2_RX+
18	P2_RX-
19	Power
20	No Pin

Connector PN	Vendor
52X-80-20GU65	PINREX
WUIR-19A9N4BU3W	WINWIN

2.2.19 SATAIII_0, SATAIII_1 (SATA 6Gb/s Connector)

20 21

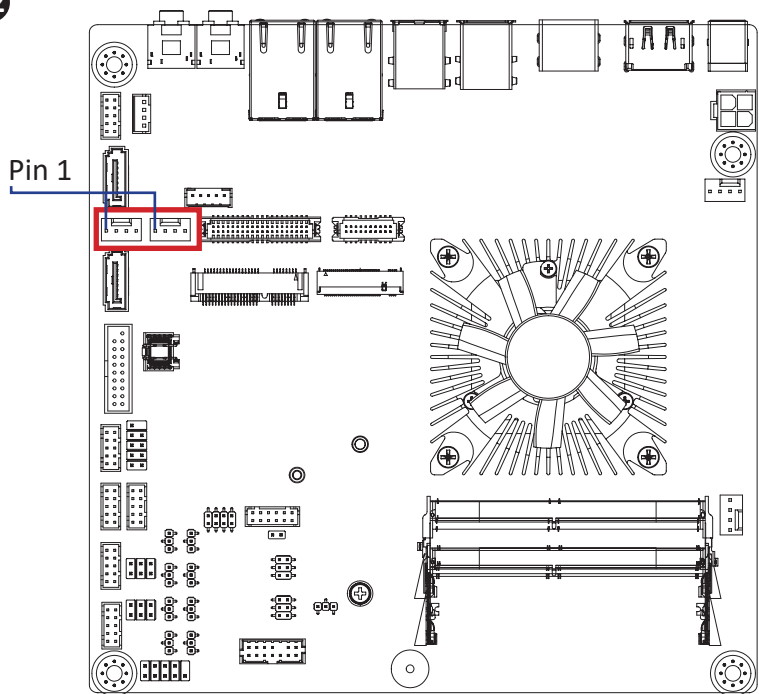


SATAIII	
Connector PN	Vendor
WAT3M-07A1G3BU4W	WINWIN
ABA-SAT-054-S15	LOTES

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

2.2.20 SATAPW1~2 (SATA 6Gb/s power connector)

22



Hard Disk Power Connector

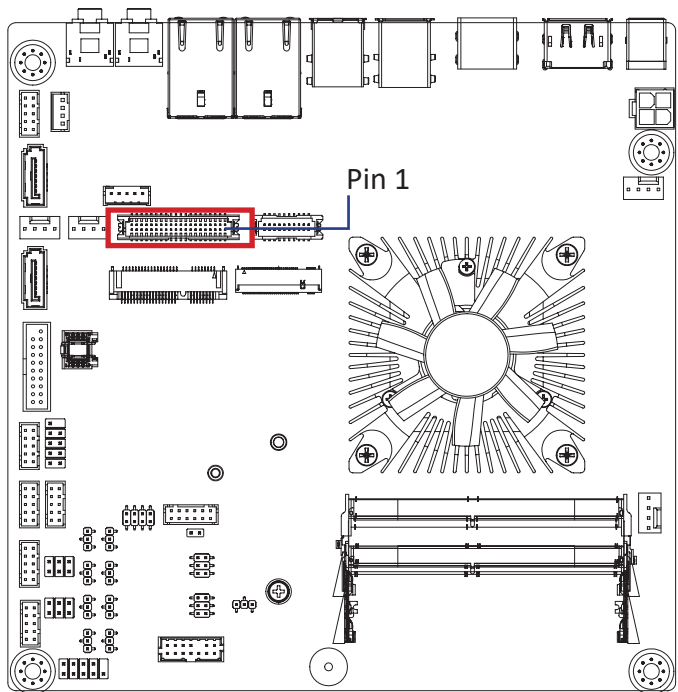


Pin No.	Definition	Pin No.	Definition
1	12V	2	GND
3	GND	4	5V

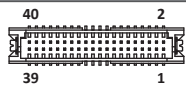
Connector PN	Vendor
743-81-04TW00	PINREX
WF04Q2-3BJQ000	HORNGTONG

2.2.21 LVDS (LVDS connector)

23



LVDS Connector



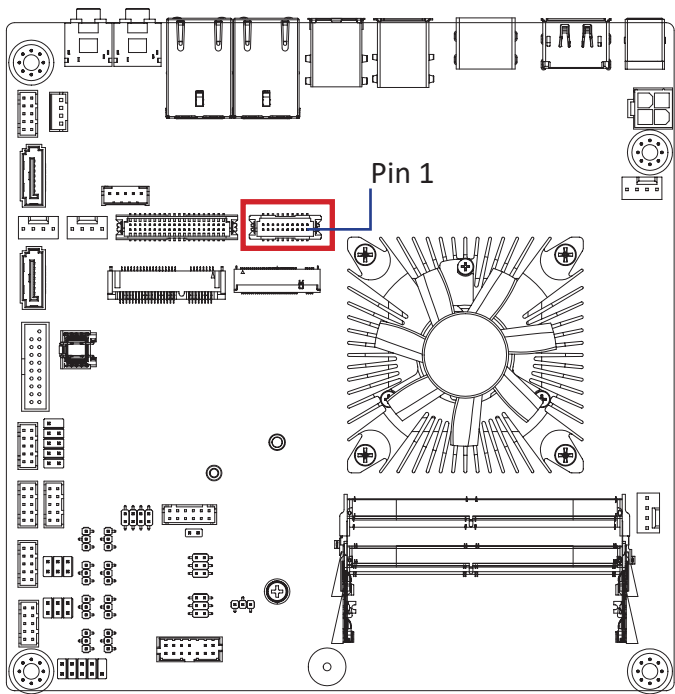
Pin No.	Definition	Pin No.	Definition
1	3.3V	21	A5+
2	5V	22	A4+
3	3.3V	23	A5-
4	5V	24	A4-
5	SPECO	25	GND
6	SPEDO	26	GND
7	GND	27	A7+
8	GND	28	A6+
9	A1+	29	A7-
10	A0+	30	A6-
11	A1-	31	GND
12	A0-	32	GND
13	GND	33	CLK2+
14	GND	34	CLK1+

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

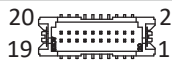
Connector PN	Vendor
712-76-40GWE0	PINREX
A1252WV-SF-2X20PD01	JOINT-TECH

2.2.22 EDP (Embedded Display Port Connector)

24



Embedded Display Port connector



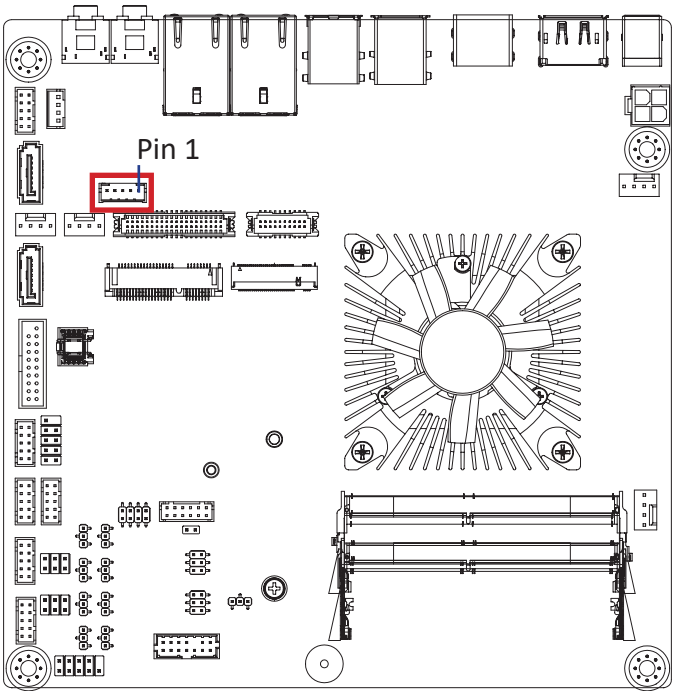
Pin No.	Definition	Pin No.	Definition
1	GND	11	eDP_1+
2	GND	12	eDPAUX-
3	eDP_0-	13	GND
4	eDP_3-	14	eDPAUX+
5	eDP_0+	15	eDP_2-
6	eDP_3+	16	GND
7	GND	17	eDP_2+
8	eDPSW	18	HDP
9	eDP_1-	19	5V
10	GND	20	3.3V

Note:Please ensure pin 8 is connected to Ground.

Connector PN	Vendor
A1252WV-SF-2X10PN6BG1G00L	JOINT-TECH
50286-02071-001	ACES

2.2.23 BKL_CN (Back light brightness control connector)

24

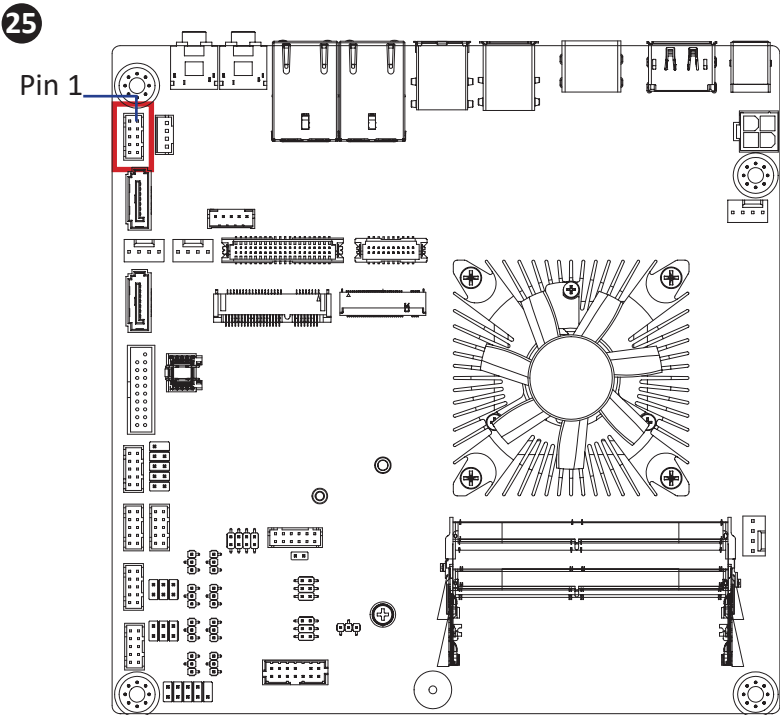


Back light brightness control connector
5 1

Connector PN	Vendor
85205-0270L	ACES
A1250WV-S-02PC	JOINT-TECH

Pin No.	Definition
1	5V
2	PWM
3	Back Light Enable
4	GND
5	12V

2.2.24 F_Audio (Front audio header)



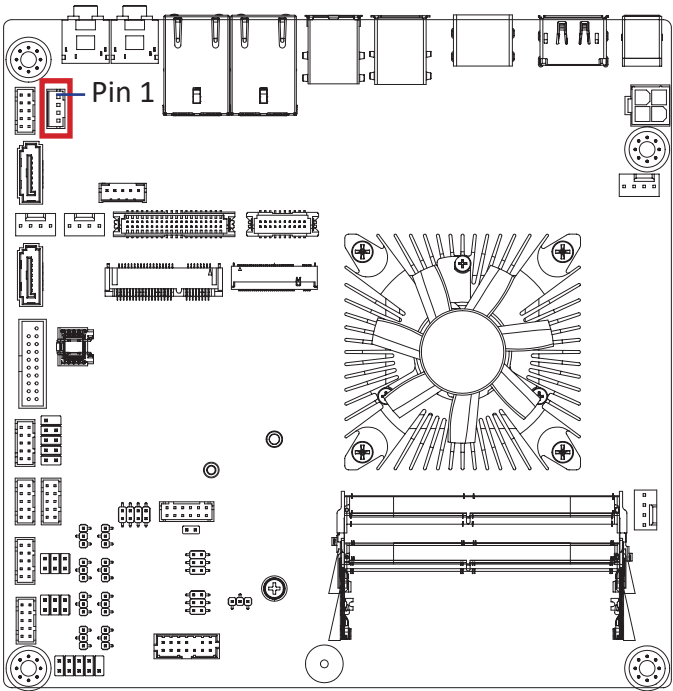
Front Audio Connector	
2	1
10	9

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

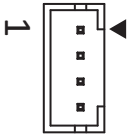
Pin No.	Definition	Pin No.	Definition
1	MIC_L	6	GND
2	GND	7	FAUDIO_JD
3	MIC_R	8	No Connect
4	Detect	9	HPOUT_L
5	HPOUT_R	10	GND

2.2.25 SPK_OUT

26



Audio Amplifie Connector



Pin No.	Definition
1	Speaker Out L+
2	Speaker Out L-
3	Speaker Out R-
4	Speaker Out R+

Connector PN	Vendor
721-81-045W00	PINREX
A2001WV-04P146	JOINT-TECH