

PICO-G700A PICO-G510A

Pico-ITX Boards

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- Yocto Project® is a trademark of The Linux Foundation.

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Packing List

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

Item	Quantity
PICO-G700A or PICO-G510A MB	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						

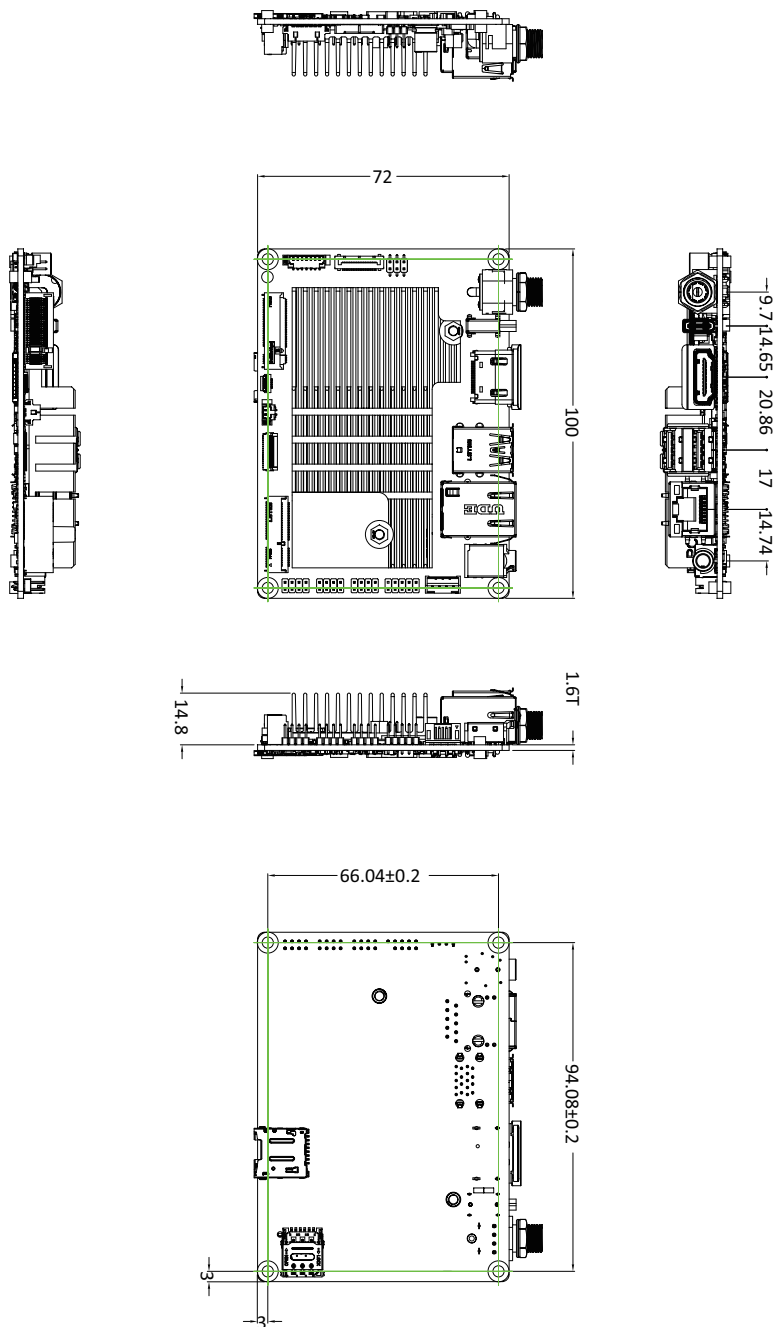
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Chapter 1

Chapter 1 - Product Specifications



1.1 Specifications

Motherboard	PICO-G700A	PICO-G510A
Form Factor	PICO-ITX 100W x 72Dmm	
CPU	MediaTek Genio 700 (MT8390) : 2 x Arm Cortex-A78, 2.2GHz 6 x Arm Cortex-A55, 2.0GHz	MediaTek Genio 510 (MT8370) : 2 x Arm Cortex-A78, 2.0GHz 6 x Arm Cortex-A55, 2.0GHz
AI Inference Computing Power	MediaTek 5th-Gen NPU 4.0 TOPS (1x MDLA3.0 + 1x Tensilica VP6)	MediaTek 5th-Gen NPU 3.2 TOPS (1x MDLA3.0 + 1x Tensilica VP6)
Memory	Onboard 8GB LPDDR4X	
Ethernet	Realtek® RTL8211F-CG (10/100/1000 Mbps)	
Video	PICO-G700A: Arm Mali-G57 MC3 GPU PICO-G510A: Arm Mali-G57 MC2 GPU Support OpenGL ES 1.1/2.0/3.2, and Vulkan 1.0/1.1 : 1 x HDMI 2.0, supporting a maximum resolution of 4096x2160 @60Hz (Android only 1920x1200 @60Hz) 1 x MIPI-DSI (DSI 7" 1920x1200) (supports panel model : SHENZHEN STARTEK KD070FHFID078-01-C021A) 1 x eDP (2 x Lan), supporting a maximum resolution of 1920x1080 @60Hz (supports panel model : BOE PV156FHM-N20) * (2 independent display outputs)	
Audio	MT6365 (Integrated)	
Storage	eMMC v5.1 64GB (on board)	
Expansion Slots	1 x 2230 M.2 E-key slot (PCIe x1, USB2.0), support WiFi6 : Azurewave AW-XB468NF (IC:MT7921L) 1 x 3052 M.2 B-Key slot (USB3.0), support 5G : QUECTEL RM500K-CN / RM520N-GL / RM500Q-GL	
Internal I/O	1 x Front panel header 1 x Speaker header 2 x UART 1 x GPIO (8 bits) header 1 x MIPI-DSI 2 x USB 2.0 headers 1 x eDP power header 1 x Nano SIM card slot 1 x Micro SD card slot	

Motherboard	PICO-G700A	PICO-G510A
Rear I/O	1 x DC In power jack - System adapter 12~24V 2 x USB 3.0 Ports (Host) 1 x USB Type C (OTG) 1 x RJ45 LAN Port 1 x HDMI 1 x Combo audio jack (Headphone & Headset)	
OS Compatibility	Yocto 24.1 * Ubuntu 22.04 * Android 13 (by demand)	
Operating Properties	Operating temperature: -20°C to 60°C Operating humidity: 60°C @ 20-95% (non-condensing) Non-operating temperature: -40°C to 85°C Non-operating humidity: 85°C @ 95% (non-condensing)	

* If other eDP panel supported is needed, please contact with your sales representatives for more information.

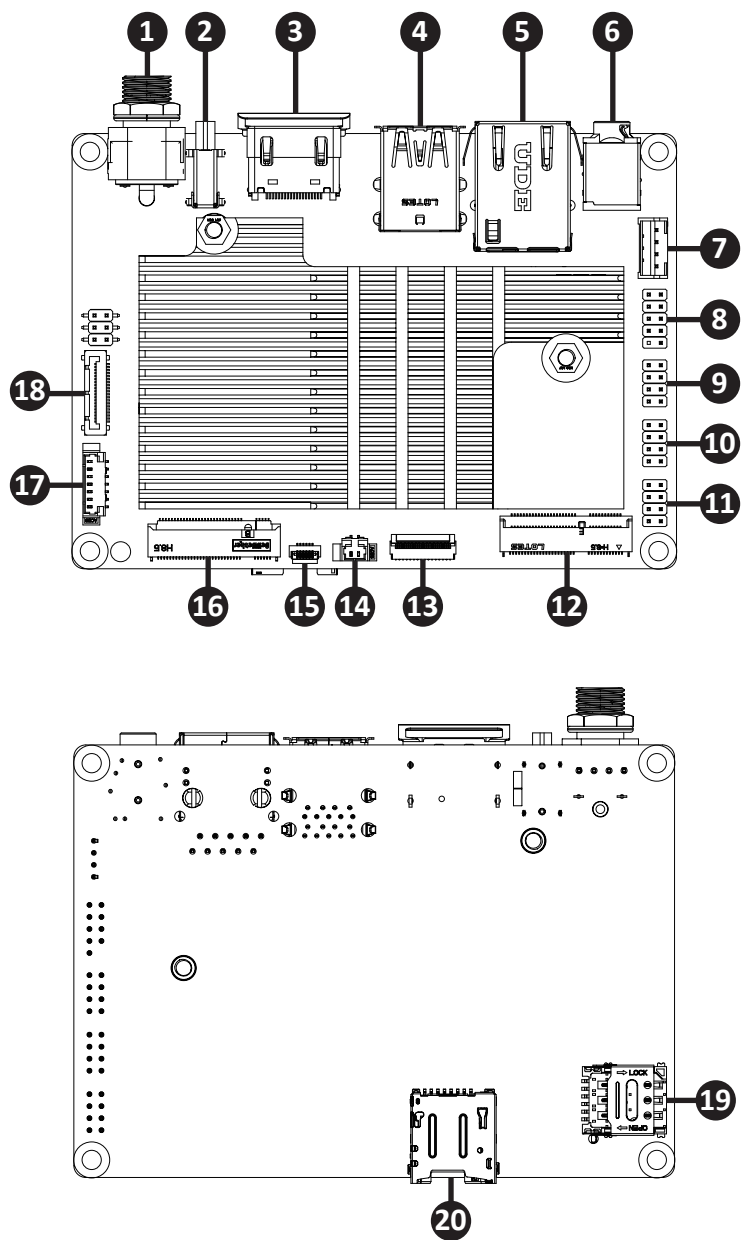
* Yocto OS does not support hot-plug.
Please make sure to plug-in Headset before booting up the system.

* Ubuntu OS supports single audio channel only.

Chapter 2

Chapter 2 – Hardware Information

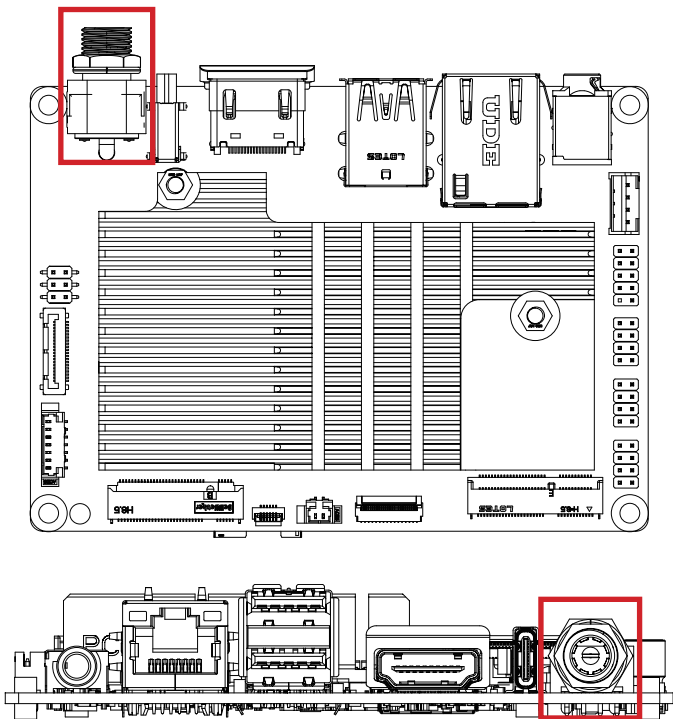
2.1 Jumpers and Connectors



No	Code	Description
1	DC_IN4	DC IN connector
2	USB3C	USB Type C connector
3	HDMI	HDMI connector
4	USB3	USB 3.0 connector
5	LAN	LAN connector
6	HP	Combo audio jack (Headphone & Headset)
7	SPK_OUT	Speaker out connector
8	FUSB	USB 2.0 headers
9	SYS_PANEL	Front panel header
10	GPIO	General purpose input / ouput header
11	UART	UART connector
12	M2E	M.2 Slot, 2230 E-key, Secure digital input/output interface (SDIO)
13	MIPI	Mobile Industry Processor Interface
14	BAT	Battery cable connector
15	MIPI_CON	MIPI touch connector
16	M2B	M.2 Slot, 3052 B-key
17	EDP_PWR	eDP power header
18	EDP	eDP connector
19	SIM_CARD	Nano SIM card slot
20	SD	Micro SD card slot

2.2.1 DC_IN4 (DC IN connector)

1



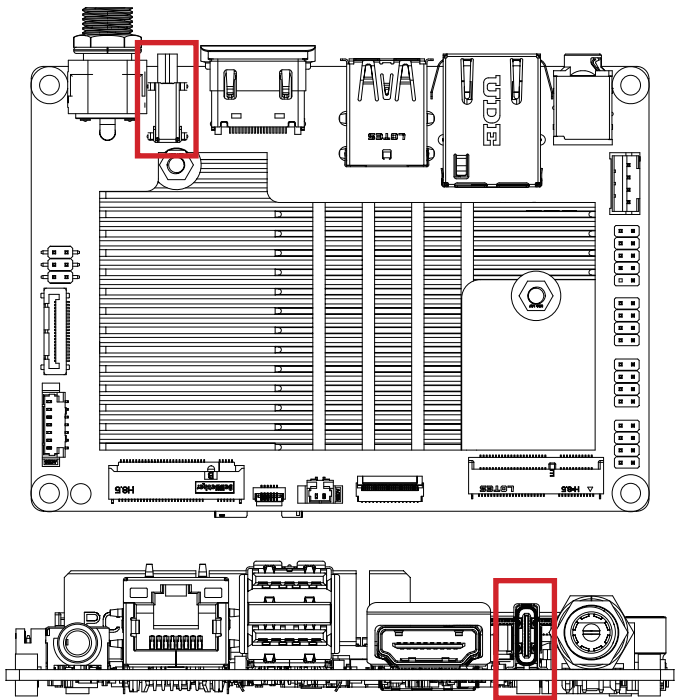
DC IN Connector



Connector PN	Vendor
655-360-000	SHEN-MING

2.2.2 USB3C (USB Type C connector)

2



USB Type C Connector



Connector PN

WU3CR-24A5L1CU5T41

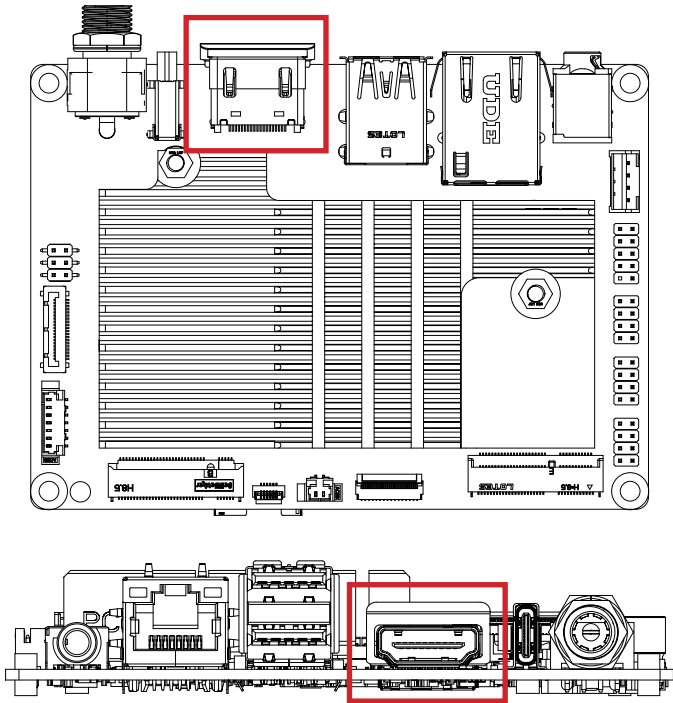
Vendor

WINWIN

Pin No.	Definition	Pin No.	Definition
A1	GND	B1	GND
A2	TX1+	B2	TX2+
A3	TX1-	B3	TX2-
A4	VBUS	B4	VBUS
A5	CC1	B5	CC2
A6	D+	B6	D+
A7	D-	B7	D-
A8	NC	B8	NC
A9	VBUS	B9	VBUS
A10	RX2-	B10	RX1-
A11	RX2+	B11	RX1+
A12	GND	B12	GND

2.2.3 HDMI (HDMI connector)

3



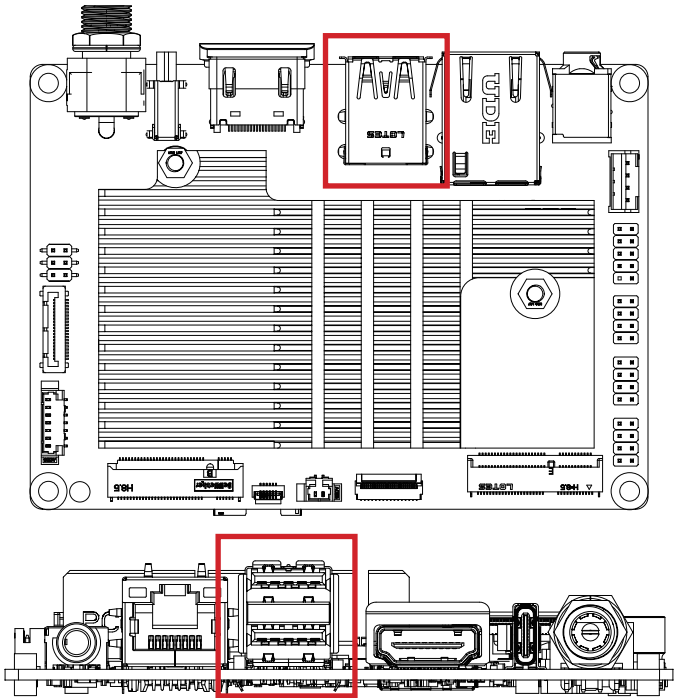
HDMI Connector	

Connector PN	Vendor
1165-2CG04-24P	TCONN

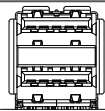
Pin No.	Definition	Pin No.	Definition
1	HDMI_D2p	11	GND
2	GND	12	HDMI_CLKn
3	HDMI_D2n	13	CEC
4	HDMI_D1p	14	NC
5	GND	15	HDMI_SCL
6	HDMI_D1n	16	HDMI_SDA
7	HDMI_D0p	17	GND
8	GND	18	5V
9	HDMI_D0n	19	HDMI_HPD
10	HDMI_CLKp		

2.2.4 USB3 (USB 3.0 connector)

4



USB 3.0 Connector



Connector PN

UEA11121-8FS6-4F
ABA-USB-079-K01

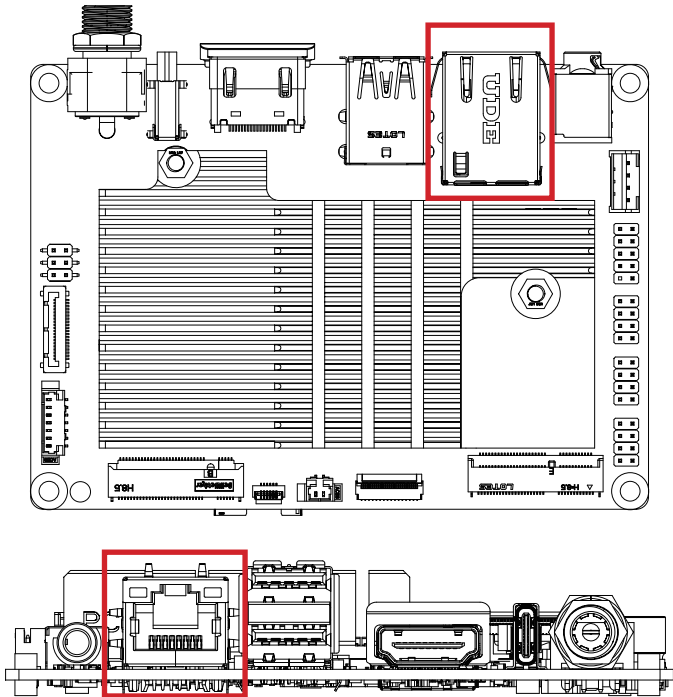
Vendor

FOXCONN
LOTES

Pin No.	Definition	Pin No.	Definition
1	5V	10	5V
2	USB_D-	11	USB_D-
3	USB_D+	12	USB_D+
4	GND	13	GND
5	USB3_RX-	14	USB3_RX-
6	USB3_RX+	15	USB3_RX+
7	GND	16	GND
8	USB3_TX-	17	USB3_TX-
9	USB3_TX+	18	USB3_TX+

2.2.5 LAN (LAN connector)

5



LAN Connector

18

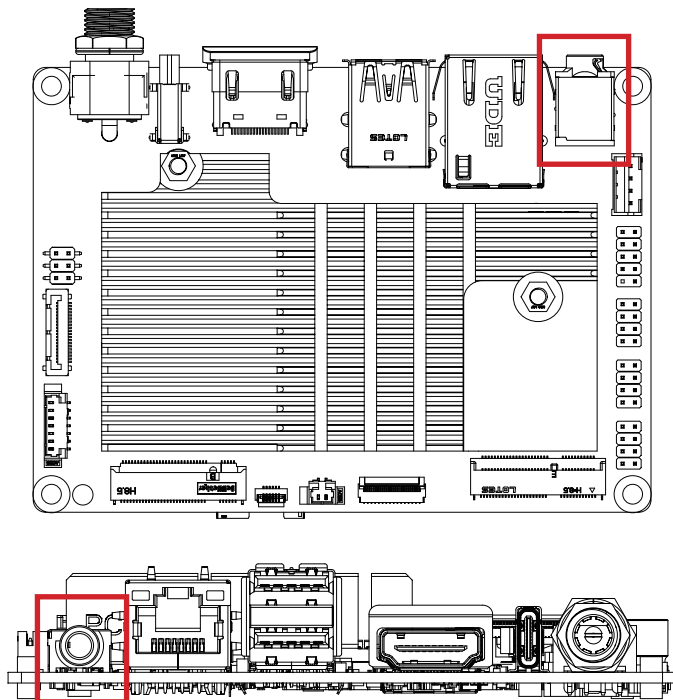
Link / Activity LEDConnection/ Speed LED

Pin No.	Definition
1	MD0p
2	MD0n
3	MD1p
4	GND
5	GND
6	MD1n
7	GND
8	GND

State	Description
Orange On	1Gbps data rate
Green On	100Mbps data rate
Off	10Mbps data rate

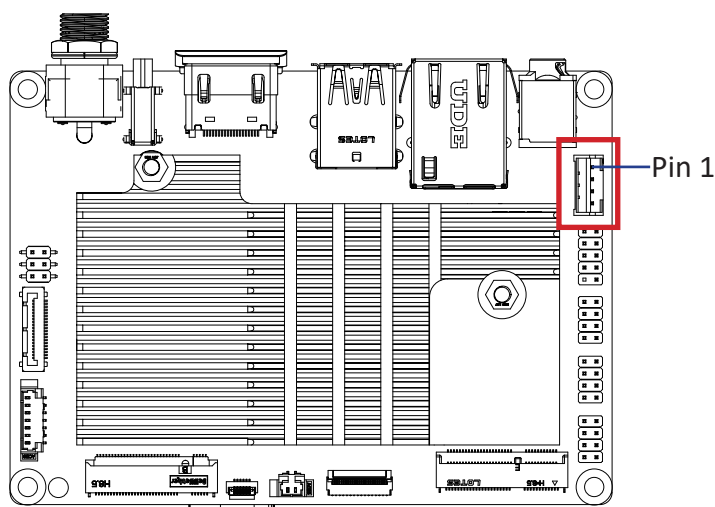
Connector PN	Vendor
RT7-GB-0002	UDE

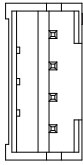
2.2.6 HP (Combo audio jack (Headphone & Headset))

6

2.2.7 SPK_OUT (Speaker out connector)

7



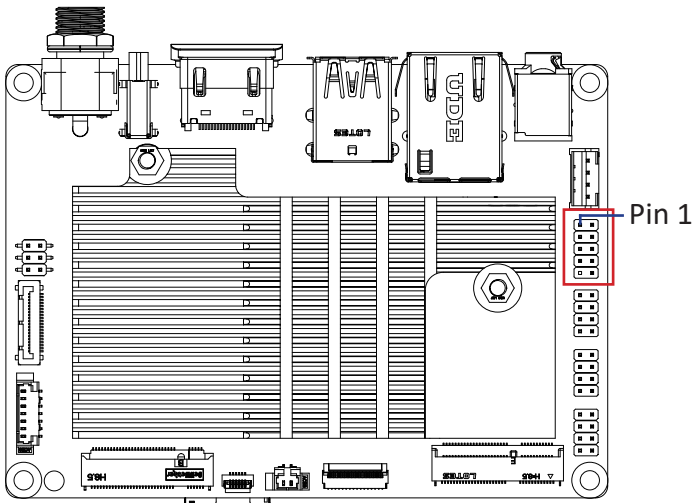
Speaker out Connector	
	1 4

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

Connector PN	Vendor
A2001WV-04P146	JOINT-TECH
Connector type	
1x4pin header, pitch 2.0mm	

2.2.8 FUSB (USB 2.0 headers)

8

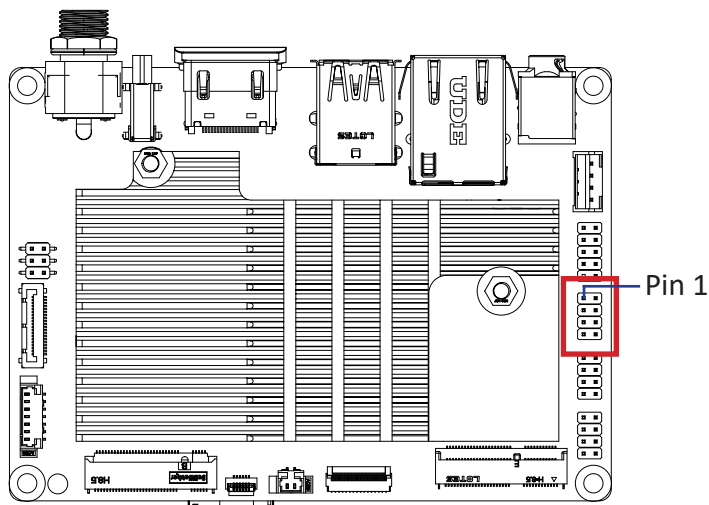


USB 2.0 Header	
	
Pin No.	Definition
1	5V
2	5V
3	DXn
4	DYn
5	DXp
6	DYp
7	GND
8	GND
9	No Connect
10	No Pin

Connector PN	Vendor
220-97-05GB19	PINREX
PH10N53BAZ009	HORNGTONG
Connector type	
2x5pin header, pitch 2.0mm	

2.2.9 SYS_PANEL (Front panel header)

9



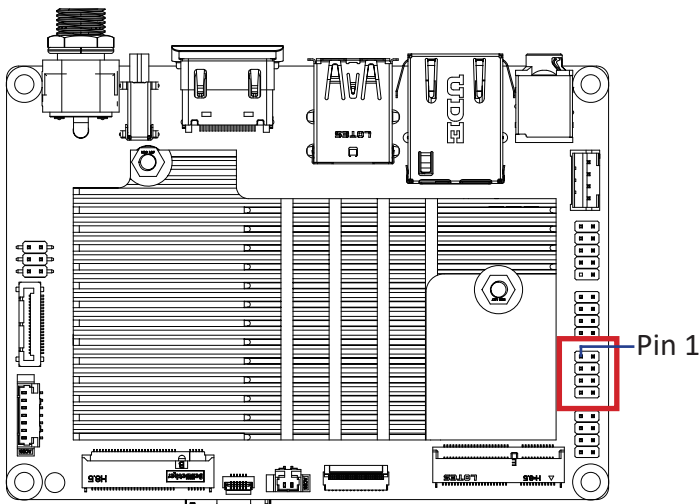
System Panel Header	
1	2
3	4
5	6
7	8

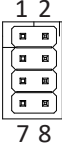
Pin No.	Definition
1	Power key
2	GND
3	System reset
4	GND
5	Download Key
6	GND
7	HOME Key
8	Power LED

Connector PN	Vendor
220-97-04GB01	PINREX
Connector type	
2x4pin header, pitch 2.0mm	

2.2.10 GPIO_CNT (General Purpose input/output header)

10



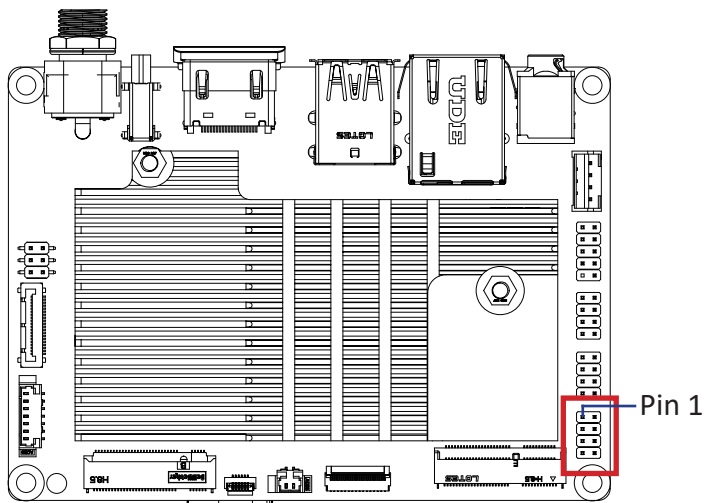
GPIO Connector	
	

Pin No.	Definition
1	GPIO0
2	GPIO4
3	GPIO1
4	GPIO5
5	GPIO2
6	GPIO6
7	GPIO3
8	GPIO7

Connector PN	Vendor
220-97-04GB01	PINREX
Connector type	
2x4pin header, pitch 2.0mm	

2.2.11 UART (UART connector)

11



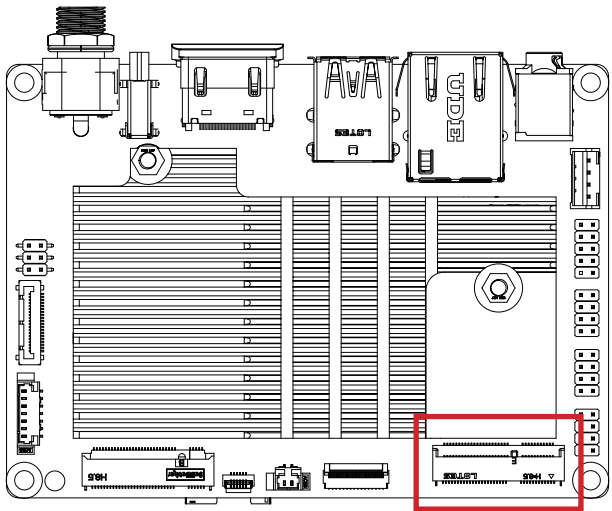
UART Connector	
1	2
3	4
5	6
7	8

Pin No.	Definition
1	+3.3V
2	+3.3V
3	TXD0
4	TXD1
5	RXD0
6	RXD1
7	GND
8	GND

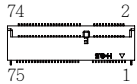
Connector PN	Vendor
220-97-04GB01	PINREX
Connector type	
2x4pin header, pitch 2.0mm	

2.2.12 M2E (M.2 Slot, 2230 E-key, Secure digital input/output interface (SDIO))

12



M.2 E Key Connector



Pin No.	Definition	Pin No.	Definition
1	GND	2	3V
3	NC	4	3V
5	NC	6	NC
7	GND	8	NC
9	NC	10	NC
11	NC	12	NC
13	NC	14	NC
15	NC	16	NC
17	NC	18	GND
19	NC	20	1.8V
21	NC	22	1.8V
23	SDIO_DS		

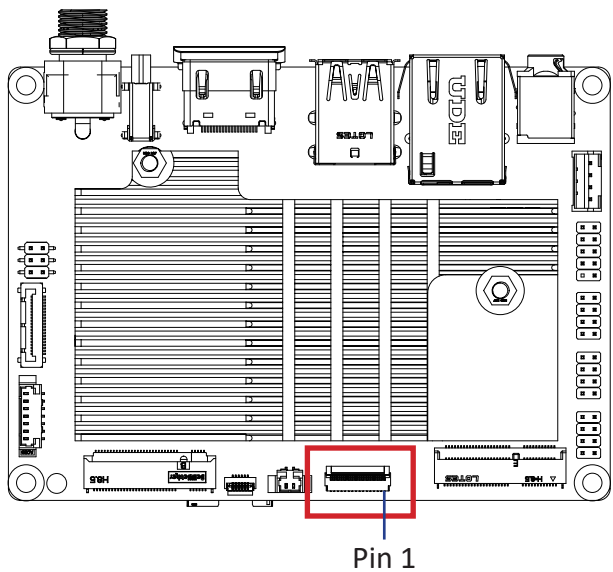
Pin No.	Definition	Pin No.	Definition
33	GND	32	NC
35	SDIO_D1	34	NC
37	SDIO_D0	36	NC
39	GND	38	NC

41	SDIO_Clock	40	NC
43	SDIO_Command	42	NC
45	GND	44	I2S_DI
47	SDIO_D3	46	I2S_D0
49	SDIO_D2	48	I2S_Bitclock
51	GND	50	I2S_LRCK
53	Clock request	52	I2S_PERST
55	WiFi_INT	54	NC
57	GND	56	NC
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	3V
75	GND	74	3V

Connector PN	Vendor
APCI0095-P002A	OTES
80152-8521	BELLWETHER
2E0BC21-S85BE-LH	FOXCONN

2.2.13 MIPI (Mobile Industry Processor Interface)

13

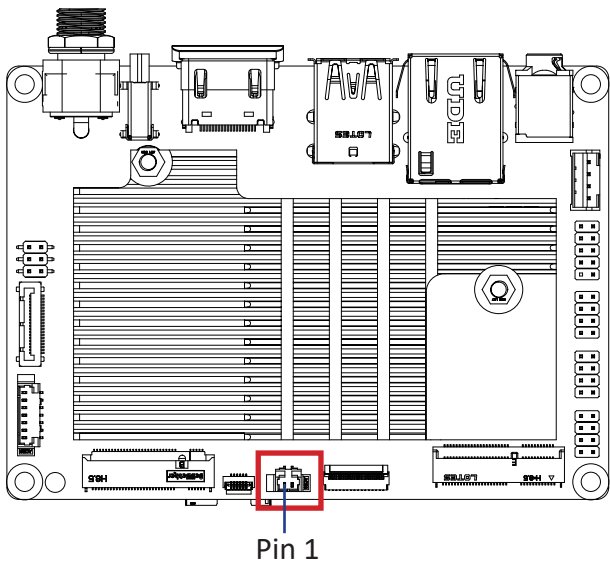


MIPI Connector			
Pin No.	Definition	Pin No.	Definition
1	1.8V	17	CKN
2	BL_EN	18	GND
3	GND	19	D0P
4	GND	20	D0N
5	+5V	21	GND
6	+5V	22	D3P
7	NC	23	D3N
8	LCM_RST	24	GND
9	GND	25	NC

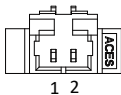
Pin No.	Definition	Pin No.	Definition
10	D2P	26	LCM_BL_EN
11	D2N	27	GND
12	GND	28	+5V
13	D1P	29	+5V
14	D1N	30	+5V
15	GND	31	+5V
16	CKP		
Connector PN		Vendor	
FH35C-31S-0.3SHW(50)		HRS	
Connector type			
1x31pin header, pitch 0.3mm			

2.2.14 BAT (Battery cable connector)

14



Battery cable Connector



Pin No.	Definition
1	3.3V
2	GND

Connector PN

Vendor

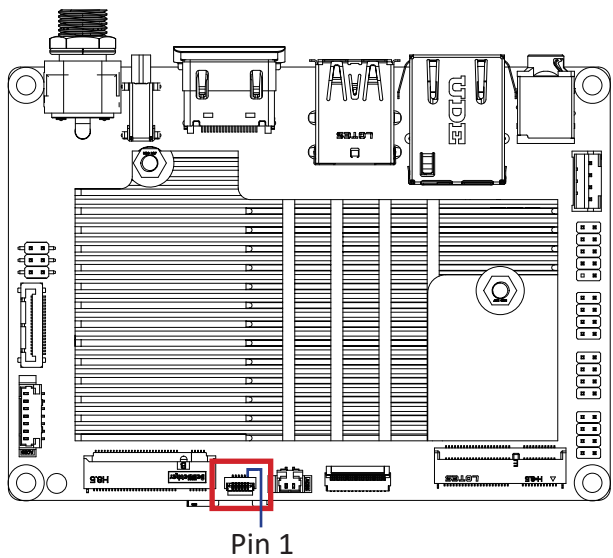
85205-0270L	ACES
A1250WV-S-02PC	JOINT-TECH

Connector type

1x2pin header, pitch 1.25mm

2.2.15 MIPI_CON (MIPI touch connector)

15



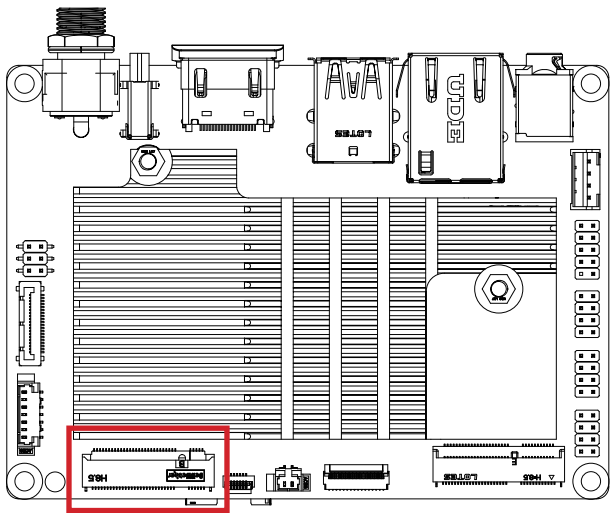
MIPI touch Connector	
6	1

Pin No.	Definition
1	GND
2	SDA
3	SCL
4	EINT_CTP
5	GPIO_CTP_RSTB
6	+3.3V

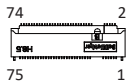
Connector PN	Vendor
51536-00641-001	ACES
Connector type	
1x6pin header, pitch 0.5mm	

2.2.16 M2B (M.2 Slot, 3052 B-key)

16



M.2 B Key Connector



Pin No.	Definition	Pin No.	Definition
1	3.3V	2	3.3V
3	GND	4	3.3V
5	GND	6	3.3V
7	USB D+	8	NC
9	USB D-	10	LED
11	GND		

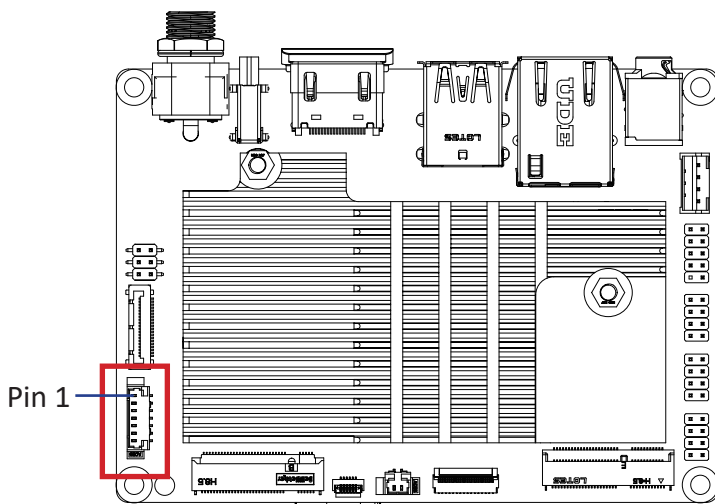
Pin No.	Definition	Pin No.	Definition
21	NC	20	NC
23	M2B_WAKE	22	NC
25	M2B_DRP	24	NC
27	GND	26	WWAN_Disable2
29	USB3_RXN	28	NC
31	USB3_RXP	30	SIM_RST#
33	GND	32	SIM_CLK
35	USB3_TXN	34	SIM_DATA
37	USB3_TXP	36	SIM_PWR
39	GND	38	BootSelect

Pin No.	Definition	Pin No.	Definition
41	NC	40	NC
43	NC	42	NC
45	GND	44	NC
47	NC	46	GNSS_CLK
49	NC	48	GNSS_TX_BLANK
51	GND	50	PLT_RST
53	NC	52	CK_REQ
55	NC	54	PCIE_WAKE
57	GND	56	NC
59	NC	58	NC
61	NC	60	COEX3
63	NC	62	COEX2
65	NC	64	COEX1
67	1.8V	66	UMI_DET
69	M2B_DET	68	NC
71	GND	70	3.3V
73	GND	72	3.3V
75	NC	74	3.3V

Connector PN	Vendor
80149-8521	BELLWETHER
2E0BC21-S85BB-7H	FOXCONN

2.2.17 EDP_PWR (eDP power header)

17



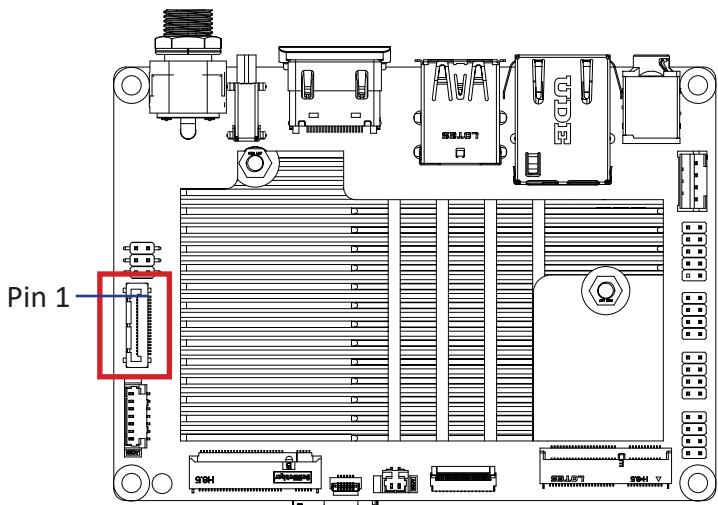
eDP power connector

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

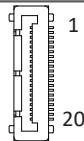
Connector PN	Vendor
85205-0770N	ACES
Connector type	
1x7pin header, pitch 1.25mm	

2.2.18 EDP (eDP connector)

18



Embedded Display Port Connector



Pin No.	Definition	Pin No.	Definition
1	GND	11	NC
2	EDP_TX0-	12	NC
3	EDP_TX0+	13	GND
4	GND	14	EDP_AUX-
5	EDP_TX1-	15	EDP_AUX+
6	EDP_TX1+	16	GND
7	GND	17	Hotplug Detect

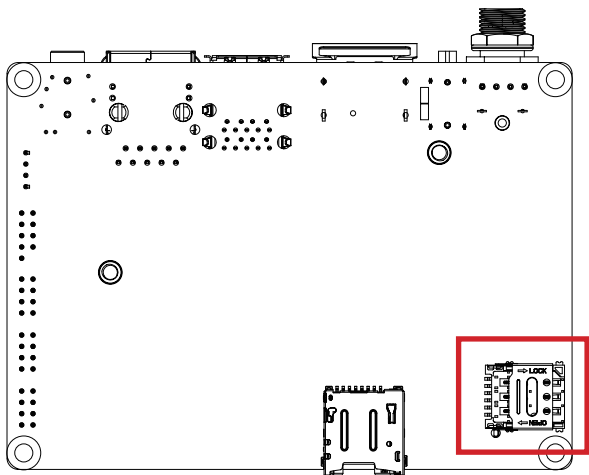
Pin No.	Definition	Pin No.	Definition
8	NC	18	Backlight Enable
9	NC	19	GND
10	GND	20	Backlight cotrol

Connector PN	Vendor
115B20-100020-G4-R	STARCONN

Connector type
1x20pin header, pitch 0.5mm

2.2.19 SIM_CARD (Nano SIM card slot)

19



2.2.20 SD (Micro SD card slot)

20

