UP Squared Pro 710H

Maker Board
UPS-ASLH01

User's Manual 1st Ed

Last Updated: October 7, 2024

Copyright Notice

Acknowledgement

Packing List

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

Item	Quantity
● UPS-ASLH01 (UP Squared Pro 710H) with Heatsink	1
● DC in Phoenix Connector	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 product page at AAEON.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

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

AAEON 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	X	X	O	O	O	O
外部信号连接器及线材	X	X	O	O	O	O

O：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

AAEON 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	X	X	O	O	O	O
Wires & Connectors for External Connections	X	X	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 of Contents

Chapter 1

Product Specifications

1.1 Specifications

System	
Processor	Intel® Core™ i3-N305 (8C, 1.80 GHz, 15W)
	Intel® Processor N97 (4C, 2.00 GHz, 12W)
	Onboard Hailo-8™ edge AI processor
Graphics	Intel® UHD Graphics for 12th Gen Intel® Processors
Memory	Up to 16GB onboard LPDDR5
Storage	Up to 128GB onboard eMMC
I/O	HDMI 2.0b x 1
	DP 1.4 x 1
	RS-232/422/485 via 10 Pin Header x 2
Camera	MIPI-CSI via 61-Pin FPC Connector x 1
USB	USB 2.0 x 2 (from 10 Pin Header x 1)
	USB 3.2 Gen 2 (Type-A) x 2
Expansion	40-pin GPIO x 1
	M.2 2230 E-Key x 1 (CNVi, PCIe Gen 3 [x1], USB 2.0)
	M.2 2280 M-Key x 1 (PCIe Gen 3 [x2], colay with M.2 3052 B-Key x 1)
	M.2 3052 B-Key x 1 (USB 3.2 Gen 2 only) (Optional)
Display Interface	HDMI 2.0b x 1
	DP 1.4 x 1
Ethernet	2.5GbE x 2 (Intel® Ethernet Controller I226-IT)
Security	Onboard TPM 2.0
RTC	Yes
OS Support	Windows 10 IoT Enterprise
	Ubuntu 22.04 LTS
	Yocto 4.0

Power Supply

Power Requirement	12V ~ 36V DC-in Phoenix connector (Optional: Lockable Plug)
Power Supply Type	AT/ATX
Power Consumption	50W~55W

Mechanical

Dimension	4" x 4" (101.6mm x 101.6mm)
Net Weight	0.44 lb. (0.20Kg)
Gross Weight	0.77 lb. (0.35Kg)

Environment

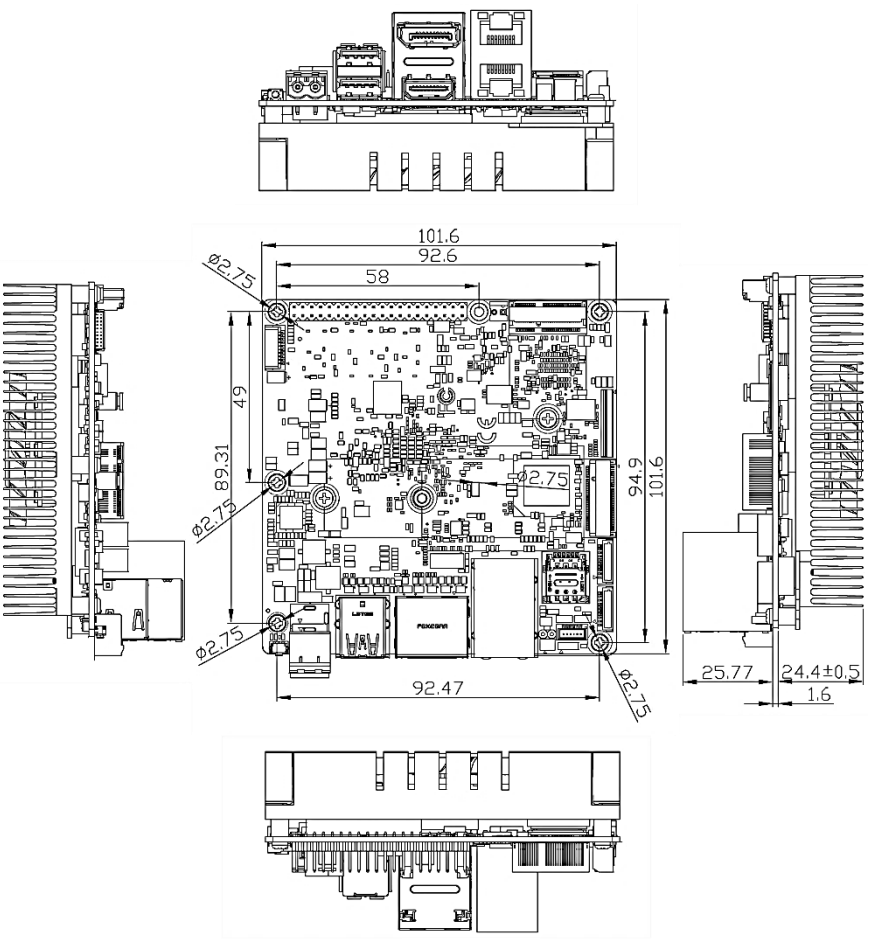
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C), 0.5m/s airflow
Operation Humidity	0% ~ 90% relative humidity, non-condensing
MTBF	422,053 Hours
Certification	CE/FCC Class A, RoHS Compliant, REACH

Chapter 2

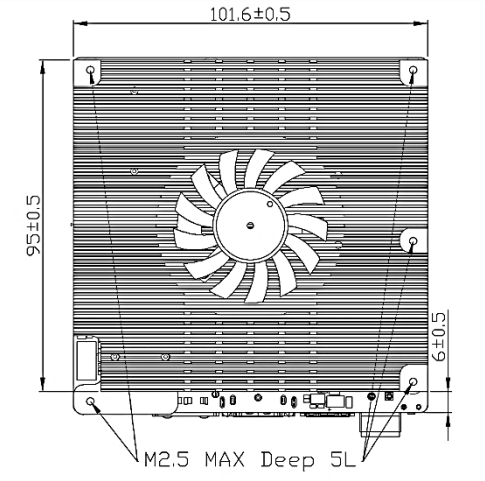
Hardware Information

2.1 Dimensions

Component Side

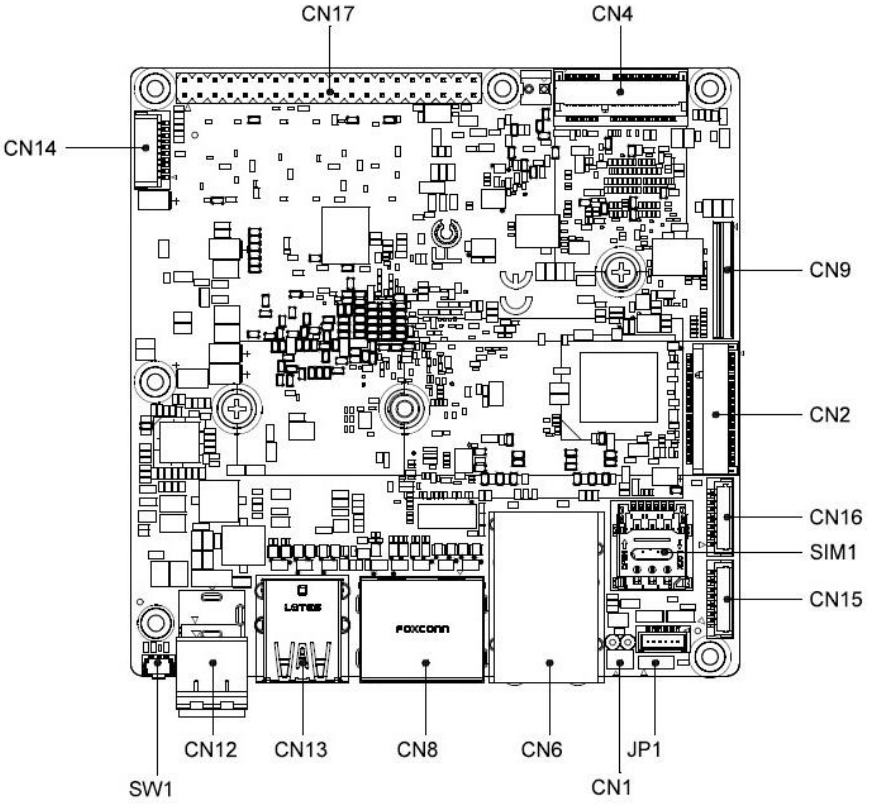


Solder Side

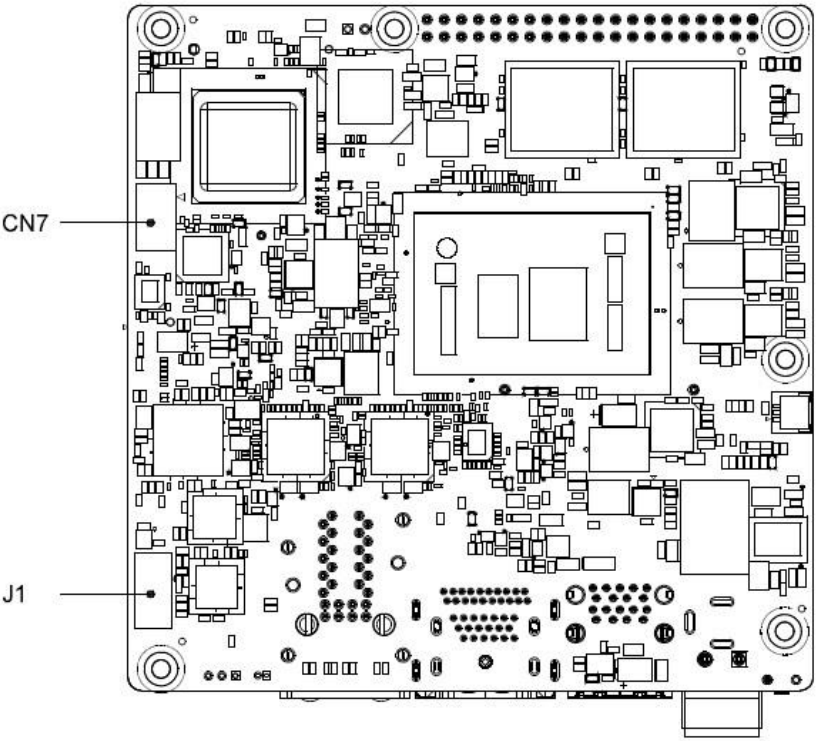


2.2 Jumpers and Connectors

Component Side



Solder Side

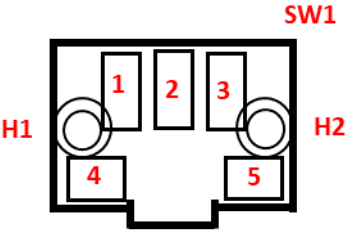


2.3 List of Jumpers and Connectors

Please refer to the table below for all of the board's jumpers and connectors that you can configure for your application

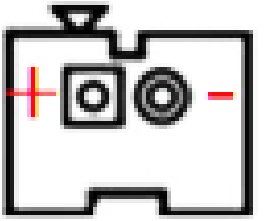
Label	Function
SW1	Power Button
CN1	RTC
CN2	M.2 2280 M-Key Slot
CN4	M.2 2230 E-Key Slot
CN6	Dual LAN
CN7	BIOS Update connector
CN8	HDMI/DP
CN9	MIPI Connector
CN12	DC Input
CN13	Dual USB Type-A
CN14	USB 2.0 & UART
CN15	COM Wafer
CN16	COM Wafer
CN17	40 Pin HAT
CN21	Front Panel
J1	Fan Connector
JP1	AT/ATX Mode Selection

2.3.1 Power Button (SW1)



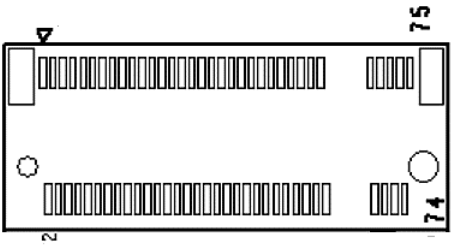
Pin	Signal	Pin	Signal
1	GND	2	Power Button
3	GND	4	GND
5	GND	H1	GND
H2	GND		

2.3.2 RTC (CN1)



Pin	Signal	Pin	Signal
1	RTC_VCC(3.3V)	2	GND

2.3.3 M.2 2280 M-Key Slot (CN2)

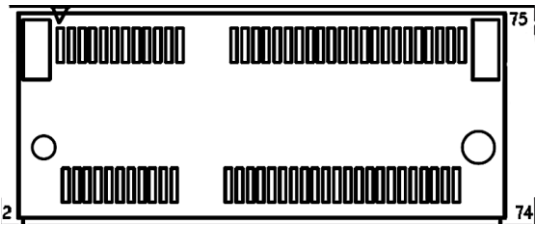


Pin	Signal	Pin	Signal	Pin	Signal
1	GND	2	+3.3V/2.5A	3	GND
4	+3.3V/2.5A	5	NC	6	NC
7	NC	8	NC	9	NC
10	NC	11	NC	12	+3.3V/2.5A
13	NC	14	+3.3V/2.5A	15	GND
16	+3.3V/2.5A	17	NC	18	+3.3V/2.5A
19	NC	20	NC	21	GND
22	NC	23	NC	24	NC
25	NC	26	NC	27	GND
28	NC	29	NC	30	NC
31	NC	32	NC	33	GND
34	NC	35	NC	36	NC
37	NC	38	NC	39	GND
40	NC	41	PCIE_RX-	42	NC
43	PCIE_RX+	44	NC	45	GND
46	NC	47	PCIE_TX-	48	NC
49	PCIE_TX+	50	Platform Reset	51	GND
52	NC	53	PCIE_REFCLK-	54	PCIE_WAKE#
55	PCIE_ REFCLK +	56	NC	57	GND
58	NC	59	Key-M	60	Key-M
61	Key-M	62	Key-M	63	Key-M
64	Key-M	65	Key-M	66	Key-M
67	NC	68	NC	69	NC

Pin	Signal	Pin	Signal	Pin	Signal
70	+3.3V/2.5A	71	GND	72	+3.3V/2.5A
73	GND	74	+3.3V/2.5A	75	GND

Note: M.2 M-Key Max 2.5A.

2.3.4 M.2 2230 E-Key Slot (CN4)

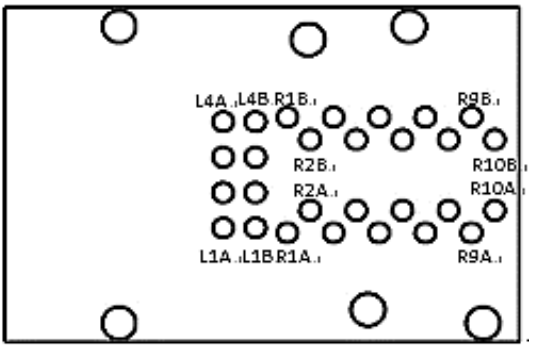


Pin	Signal	Pin	Signal	Pin	Signal
1	GND	2	+3.3V/2A	3	USB2_D+
4	+3.3V/2A	5	USB2_D-	6	NC
7	GND	8	NC	9	CNV_WR_LANE1_D-
10	CNV_RF_RESET	11	CNV_WR_LANE1_D+	12	NC
13	GND	14	CNV_MODEM_CLKREQ	15	CNV_WR_LANE0_D-
16	NC	17	CNV_WR_LANE0_D+	18	GND
19	GND	20	NC	21	CNV_WR_CLK_D-
22	CNV_BRI_RSP	23	CNV_WR_CLK_D+	24	Key-E
25	Key-E	26	Key-E	27	Key-E
28	Key-E	29	Key-E	30	Key-E
31	Key-E	32	CNV_RGI_DT	33	GND
34	CNV_RGI_RSP	35	PCIE_TX+	36	CNV_BRI_DT
37	PCIE_TX-	38	NC	39	GND
40	NC	41	PCIE_RX+	42	NC
43	PCIE_RX-	44	NC	45	GND
46	NC	47	PCIE_CLK2_D+	48	NC

Pin	Signal	Pin	Signal	Pin	Signal
49	PCIE_CLK2_D-	50	Suspend clock	51	GND
52	Platform reset	53	NC	54	BT Enable
55	PCIE_WAKE#	56	Wi-Fi Enable	57	GND
58	NC	59	CNV_WT_LANE1_D-	60	NC
61	CNV_WT_LANE1_D+	62	NC	63	GND
64	NC	65	CNV_WT_LANE0_D-	66	NC
67	CNV_WT_LANE0_D+	68	NC	69	GND
70	NC	71	CNV_WT_CLK_D-	72	+3.3V/2A
73	CNV_WT_CLK_D+	74	+3.3V/2A	75	GND

Note: M.2 E-Key Max 2A.

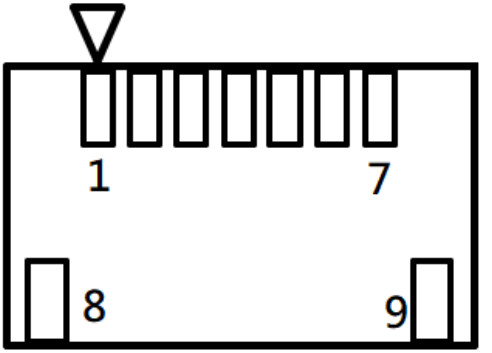
2.3.5 Dual LAN (CN6)



Pin	Signal	Pin	Signal	Pin	Signal
R1A	LAN1_MDI0+	R1B	LAN2_MDI0+	L1A	LAN1_ACTLED-
R2A	LAN1_MDI0-	R2B	LAN2_MDI0-	L2A	LAN1_ACTLED+
R3A	LAN1_MDI1+	R3B	LAN2_MDI1+	L3A	LAN1_LINK100#
R4A	LAN1_MDI1-	R4B	LAN2_MDI1-	L4A	LAN1_LINK1000#
R5A	LAN1_MDI2+	R5B	LAN2_MDI2+	L1B	LAN2_ACTLED-

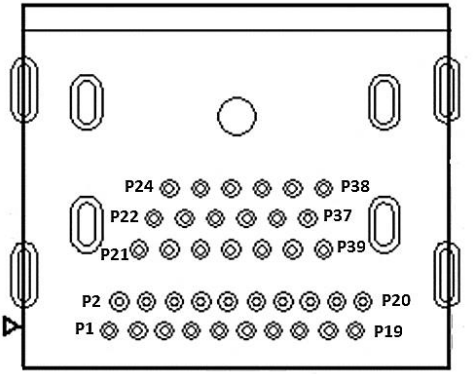
Pin	Signal	Pin	Signal	Pin	Signal
R6A	LAN1_MDI2-	R6B	LAN2_MDI2-	L2B	LAN2_ACTLED+
R7A	LAN1_MDI3+	R7B	LAN2_MDI3+	L3B	LAN2_LINK100#
R8A	LAN1_MDI3-	R8B	LAN2_MDI3-	L4B	LAN2_LINK1000#
R9A	GND	R9B	GND		
R10A	GND	R10B	GND		

2.3.6 BIOS Update Connector (CN7)



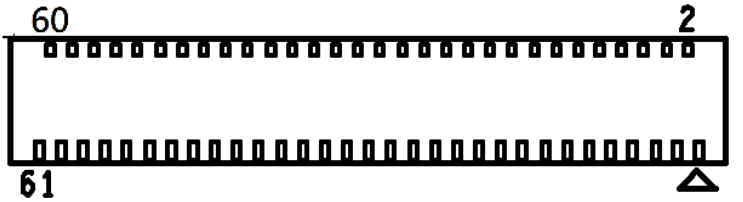
Pin	Signal	Pin	Signal	Pin	Signal
1	SPI_MISO	2	GND	3	SPI_CLK
4	+1.8V	5	SPI_MOSI	6	SPI_CS0#
7	NC	8	GND	9	GND

2.3.7 HDMI/DP (CN8)



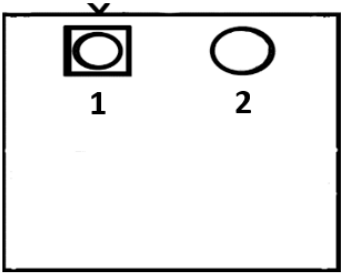
Pin	Signal	Pin	Signal	Pin	Signal
P1	DP_TX0+	P2	GND	P3	DP_TX0-
P4	DP_TX1+	P5	GND	P6	DP_TX1-
P7	DP_TX2+	P8	GND	P9	DP_TX2-
P10	DP_TX3+	P11	GND	P12	DP_TX3-
P13	CONFIG1	P14	CONFIG2	P15	DP_AUX+
P16	GND	P17	DP_AUX-	P18	DP_HPD
P19	GND	P20	+3.3V/1A	P21	HDMI_TX2+
P22	GND	P23	HDMI_TX2-	P24	HDMI_TX1+
P25	GND	P26	HDMI_TX1-	P27	HDMI_TX0+
P28	GND	P29	HDMI_TX0-	P30	HDMI_CLK+
P31	GND	P32	HDMI_CLK-	P33	NC
P34	NC	P35	HDMI_SCL	P36	HDMI_SDA
P37	GND	P38	+5V/1A	P39	HDMI_HPD

2.3.8 FPC/FFC Connector (CN9)



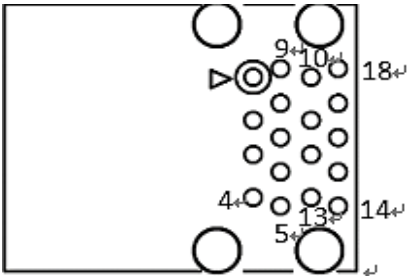
Pin	Signal	Pin	Signal	Pin	Signal
1	GND	2	CSI_A_D0_D-	3	CSI_A_D0_D+
4	GND	5	CSI_A_D1_D+	6	CSI_A_D1_D-
7	GND	8	CSI_A_CK_D-	9	CSI_A_CK_D+
10	GND	11	CSI_B_D0_D+	12	CSI_B_D0_D-
13	GND	14	CSI_B_D1_D-	15	CSI_B_D1_D+
16	GND	17	CSI_B_CK_D+	18	CSI_B_CK_D-
19	GND	20	CSI_C_D0_D-	21	CSI_C_D0_D+
22	GND	23	CSI_C_D1_D+	24	CSI_C_D1_D-
25	GND	26	CSI_C_CK_D-	27	CSI_C_CK_D+
28	GND	29	CSI_D_D0_D+	30	CSI_D_D0_D-
31	GND	32	CSI_D_D1_D-	33	CSI_D_D1_D+
34	GND	35	CSI_D_CK_D+	36	CSI_D_CK_D-
37	GND	38	MGCLKOUT0	39	MGCLKOUT1
40	GND	41	MGCLKOUT3	42	MGCLKOUT2
43	CRD1_Power Enable	44	STROBE_CAM	45	CRD2_ Power Enable
46	CAM1_Reset#	47	GPPC_CAM_CLK	48	CAM2_Reset#
49	GPPC_PRIVACY_CAM2	50	I2C1_SCL	51	ISH_INT_GP_CRD_GSB
52	I2C1_SDA	53	CPLD_TIME_SYNC0	54	I2C5_SCL
55	I2C5_SCL	56	I2C5_SDA	57	SUSCLK
58	PM_SLP_S3#	59	INT_IO_GPIO5	60	Platform Reset
61	GPPC_H4_CSI_RST_N				

2.3.9 DC Input (CN12)



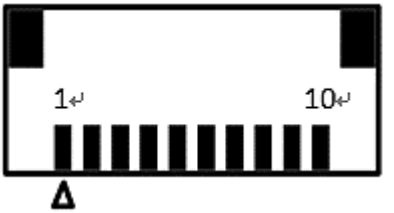
Pin	Signal	Pin	Signal
1	DC_IN (9~36V)	2	GND

2.3.10 Dual USB 3.2 Gen 2 (Type-A) Port (CN13)



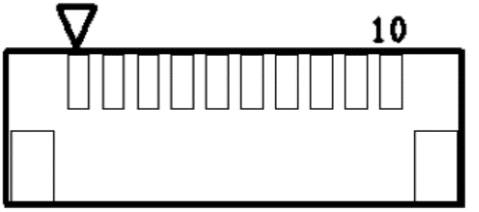
Pin	Signal	Pin	Signal	Pin	Signal
1	+5V/0.9A	2	USB2_D1-	3	USB2_D1+
4	GND	5	USB3_RX1-	6	USB3_RX1+
7	GND	8	USB3_TX1-	9	USB3_TX1+
10	+5V/0.9A	11	USB2_D2-	12	USB2_D2+
13	GND	14	USB3_RX2-	15	USB3_RX2+
16	GND	17	USB3_TX2-	18	USB3_TX2+

2.3.11 USB 2.0 & UART (CN14)



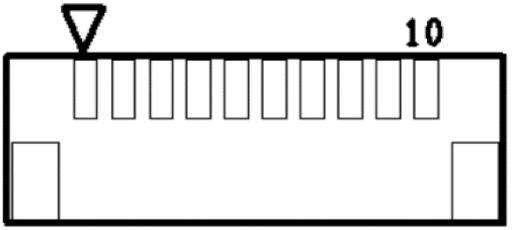
Pin	Signal	Pin	Signal	Pin	Signal
1	+5V/1A	2	USB2_P3-	3	USB2_P3+
4	GND	5	+5V/1A	6	USB2_P4-
7	USB2_P4+	8	GND	9	UART1_RX
10	UART1_TX				

2.3.12 RS-232/422/485 1x10P Wafer (COM 1) (CN15)



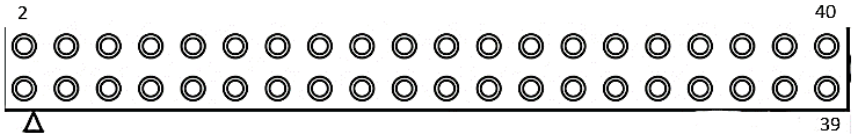
Pin	Signal	Pin	Signal
1	DCD / RS422TX- / RS485-	2	RX / RS422TX+ / RS485+
3	TX / RS422RX+	4	DTR / RS422RX-
5	GND	6	DSR
7	RTS	8	CTS
9	RI	10	NC

2.3.13 RS-232/422/485 1x10P Wafer (COM 2) (CN16)



Pin	Signal	Pin	Signal
1	DCD / RS422TX- / RS485-	2	RX / RS422TX+ / RS485+
3	TX / RS422RX+	4	DTR / RS422RX-
5	GND	6	DSR
7	RTS	8	CTS
9	RI	10	NC

2.3.14 40 Pin HAT (CN17)

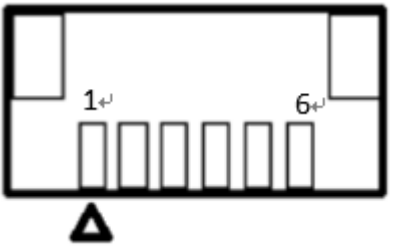


Pin	Signal	Pin	Signal
1	+3.3V/2A	2	+5V/2A
3	I2C1_SDA	4	+5V/2A
5	I2C1_SCL	6	GND
7	GPIO3_ADC	8	UART_TX
9	GND	10	UART_RX
11	RTS	12	I2S_CLK
13	GPIO4	14	GND
15	GPIO5	16	GPIO19

Pin	Signal	Pin	Signal
17	+3.3V/2A	18	GPIO20
19	SPI_MOSI	20	GND
21	SPI_MISO	22	GPIO21
23	SPI_CLK	24	SPI_CS0
25	GND	26	GPIO23
27	I2C0_SDA	28	I2C0_SCL
29	GPIO11	30	GND
31	GPIO12	32	PWM0
33	PWM1	34	GND
35	I2S_FRM	36	CTS
37	GPIO15	38	I2S_RX
39	GND	40	I2S_TX

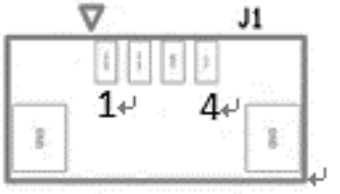
Note: Total 2A(5V) and 2A(3.3V) for 40 pin HAT.

2.3.15 Front Panel (CN21)



Pin	Signal	Pin	Signal
1	GND	2	Reset button
3	GND	4	Power button
5	GND	6	+5V

2.3.16 Fan Connector (J1)



Pin	Signal	Pin	Signal
1	PWM	2	TACH
3	GND	4	12V/1A

2.3.17 AT/ATX Mode (JP1)

Pin	Signal
1-2	ATX_MODE
2-3	AT_MODE (default)

Chapter 3

Software Installation

3.1 Linux Setup

The UP Squared Pro 710H supports Linux operating systems (see Chapter 1 for specifications). For instructions on how to install a Linux OS onto your UP Squared Pro 710H, you can find several guides and tutorials in the wiki section of the UP website at https://up-board.org for both installing supported distributions as well as porting your own Linux build.

3.2 Windows Drivers Installation

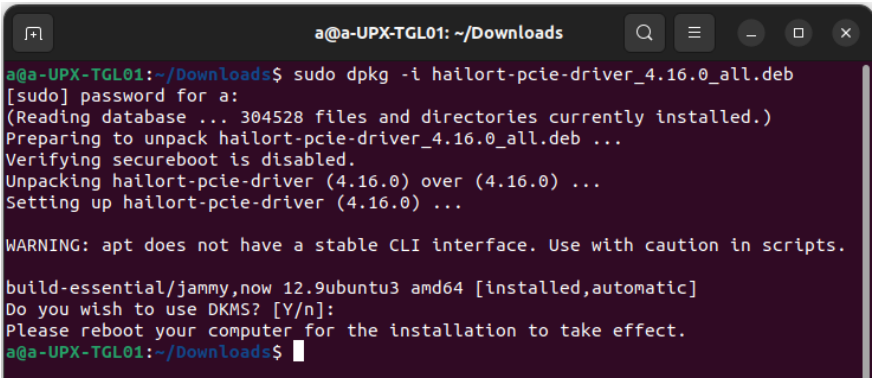
Drivers for the UP Squared Pro 710H can be downloaded from the UP website by following the link https://up-board.org and navigating to the Downloads section, then clicking on the UP Squared Pro 710H to find all relevant drivers.

3.3 Hailo Driver Information

3.3.1 Installing Hailo on Ubuntu

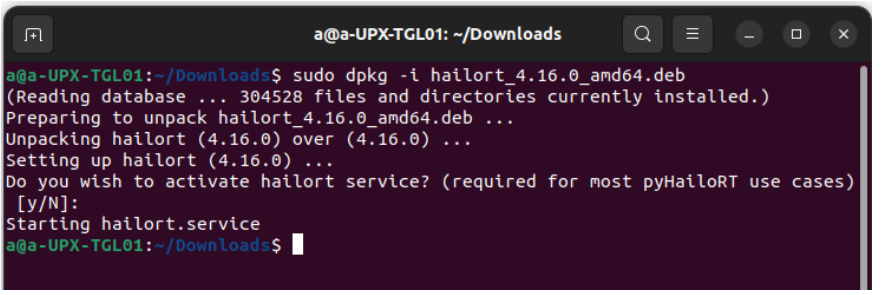
Command:

```
$sudo dpkg -i hailort-pcie-driver_4.16.0_all.deb
```



Command:

```
$sudo dpkg -i hailort_4.16.0_amd64.deb
```



Appendix A

Cables and Connectors

A.1 Cables and Connectors

This table provides detailed information about the cables and connectors used by the UPN-ASLH01 (UP Squared Pro 710H). If you have any questions about the configuration of your board, please contact your AAEON sales representative.

Location	Function	Mating Cable PN	Mating Cable Description
CN9	MIPI Connector	170X000600	(TF)Cable.61P.Pitch=0.3mm.76.29*18.6*0.2mm.SUNFUN.AE-2S6748
CN15/CN16	COM Port Wafer	1701100180	(TF)COM Cable.D-SUB 9P(M).10P.1.0mm Housing.15cm
CN21	Front Panel	170X000306	(TF)Cable.to 6P 1.00mm housing.Power switch cable.SW w/green LED.20cm.FLYINGWAY.FWAA-1348