UP Xtreme 71

Maker

UPX

User's Manua

Copyright Notice

Acknowledgement

Packing List

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

- UPX-ASL01 (UP Xtreme 7100) with heatsink 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 instal 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.

17. If any of the following situations arises, please the contact our service personn

    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 i 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 TEMPERAT (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 cause harmful interference, and (2) this device must accep interference received including interference that may caus 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 construct
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

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

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 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

	Poisonous or Hazardous Substances or Elements					
Component	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (Cr(VI))	Polybrominated Biphenyls (PBB)	Polyb Diphe
PCB & Other Components	X	X	O	O	O	
Wires & Connectors for External Connections	X	X	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 norma usage only

Table of Contents

Chapte

Product Specifi

1.1 Specifications

Processor	Intel® Processor N97
	Intel® Core™ i3-N305
Graphics	Intel® UHD Graphics for 12th Gen Intel® Processo
Memory	Up to 16GB LPDDR5
Storage	Up to 64GB onboard eMMC
	M.2 2280 M-Key x 1 (PCIe Gen 3 [x2])
	SATA 6Gb/s x 1
I/O	RS-232/422/485 x 1 (Terminal Block) (Default RS-
	30-pin Board-to-Board Connector x 1
	UART x 1 (via 10-pin Header x 1)
Camera	—
USB	USB 2.0 (Type A) x 2
	USB 3.2 Gen 2 (Type A) x 2
	USB 3.2 Gen 2 (Type C) x 1 (Supports DP alt mode)
Expansion	M.2 3052 B-Key x 1 with Nano SIM slot (USB 3.0)
	M.2 2230 E-Key x 1 (USB 2.0/PCIe)
	M.2 2280 M-Key x 1 (PCIe Gen 3 [x2])
	24V 8-in/8-out Digital I/O x 1 via Terminal Block
	(Output current: 500mA per channel)
	6 pin GPIO x 1 via Terminal Block
	6 pin 2-channel CAN 2.0B x 1 via Terminal Block (10

Display Interface	DP 1.4a x 1 (via USB Type-C)
	eDP 1.3 x 1
Ethernet	2.5GbE x 2 (Intel® I226-IT)
Security	Onboard TPM 2.0
RTC	Yes
OS Support	Ubuntu 22.04 LTS (Kernel 5.15 and Kernel 5.19)

Power	9 ~ 36V
Power Supply Type	AT/ATX (AT as default)
Power Consumption (Typical)	52W ~ 55W

Dimension	4.74" x 4.82" (120.35mm x 122.5mm)
Net Weight	1.11.lb. (0.5Kg)
Gross Weight	1.76 lb. (0.8Kg)

Operating Temperature	With Heatsink: -4°F ~ 158°F (0°C ~ 60°C)/0.5m/s airfl
Operation Humidity	0% ~ 90% relative humidity, non-condensing
MTBF	421,998
Certification	CE/FCC Class A, RoHS Compliant, REACH

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Hardware Infor

2.1 Dimensions

2.2 Jumpers and Connectors

Top:

Bottom:

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

SW1	DIP Switch
SW2	Power Button
CN1	RTC
CN2	M.2 2280 M-Key
CN3	M.2 3052 B-Key
CN4	M.2 2230 E-Key
CN6	LAN 1
CN7	LAN 2
CN8	USB 3.2
CN9	USB 2.0
CN12	eDP
CN13	MCU Debug
CN14	CANBus
CN15	DIO/GPIO
CN16	COM Port
CN18	SATA
CN19	SATA Power
CN20	BIOS Update
CN23	Front Panel
CN24	DC Input

CN30	DIO Board Connector
CN31	UART Wafer
J1	Fan Connector
JP1	MCU Bootloader
JP2	AT/ATX Mode
JP9	Digital Input Selection
SIM1	SIM Card Slot

2.3.1 DIP Switch (SW1)

1	CAN1_L	2	CAN2_L
3	CAN2_H (120 ohm)	4	CAN1_H (120 ohm)

2.3.2 Power Button (SW2)

1	GND	2	PWR_SW#_CTL

2.3.3 **RTC (CN1)**

1	+VCC _RTC	2	GND

2.3.4 M.2 2280 M-Key (CN2)

1	GND	2	3.3V	3	NC
4	3.3V	5	NC	6	3.3V or 1.8V
7	NC	8	NC	9	GND
10	NC	11	NC	12	3.3V
13	NC	14	3.3V	15	GND

28	NC	29	PCIE10_RXN	30	NC
31	PCIE10_RXP	32	NC	33	GND
34	NC	35	PCIE10_TXN	36	NC
37	PCIE10_TXP	38	NC	39	GND
40	NC	41	PCIE9_RXN	42	SMB_CLK_
43	PCIE9_RXP	44	SMB_DATA_1V8	45	GND
46	NC	47	PCIE9_TXN	48	NC
49	PCIE9_TXP	50	BUF_PLT_RST#	51	GND
52	PCIE_CLKREQ#3	53	PCIE_ CLK3_DN	54	PCIE_WAK
55	PCIE_ CLK3_DP	56	NC	57	GND
58	NC	59	NC	60	NC
61	NC	62	NC	63	NC
64	NC	65	NC	66	NC
67	NC	68	NC	69	NC
70	3.3V	71	GND	72	3.3V
73	GND	74	3.3V	75	GND

2.3.5 M.2 3052 B-Key (CN3)

7	USB2_P6_DP	8	3GPW_EN	9	USB2_P6_
10	NC	11	GND	12	NC
13	NC	14	NC	15	NC
16	NC	17	NC	18	NC
19	NC	20	NC	21	NC
22	NC	23	NC	24	NC
25	NC	26	NC	27	GND
28	NC	29	USB3_P3_RXN	30	UIM_RST
31	USB3_P3_RXP	32	UIM_CLK	33	GND
34	UIM_DAT	35	USB3_P3_TXN	36	UIM_PWR
37	USB3_P3_TXP	38	NC	39	GND
40	NC	41	NC	42	NC
43	NC	44	NC	45	GND
46	NC	47	NC	48	NC
49	NC	50	5G_WWAN_PERST	51	GND
52	NC	53	NC	54	PCIE_WAK
55	NC	56	NC	57	GND
58	NC	59	NC	60	CNV_PA_E
61	NC	62	NC	63	NC
64	NC	65	NC	66	NC
67	BUF_PLT_RST_1.8_N	68	SUSCLK	69	NC
70	3.3V	71	GND	72	3.3V
73	GND	74	3.3V	75	GND

2.3.6 M.2 2230 E-Key (CN4)

1	GND	2	3.3V	3	USB2_P8_
4	3.3V	5	USB2_ P8_DN	6	NC
7	GND	8	NC	9	CNV_WR_
10	CNV_RF_RESET	11	CNV_WR_LANE1_DP	12	NC
13	GND	14	CNV_MODEM_CLKREQ	15	CNV_WR_
16	NC	17	CNV_WR_LANE0_DP	18	GND
19	GND	20	CNV_UART_WAKE	21	CNV_WR_
22	CNV_BRI_RSP	23	CNV_WR_CLK_DP	24	NC
25	NC	26	NC	27	NC
28	NC	29	NC	30	NC
31	NC	32	CNV_RGI_DT	33	GND
34	CNV_RGI_RSP	35	PCIE11_TXP	36	CNV_BRI_
37	PCIE11_TXN	38	NC	39	GND
40	NC	41	PCIE11_RXP	42	NC
43	PCIE11_RXN	44	NC	45	GND
46	NC	47	PCIE_CLK2_DP	48	NC

61	CNV_WT_LANE1_DP	62	NC	63	GND
64	NC	65	CNV_WT_LANE0_DN	66	NC
67	CNV_WT_LANE0_DP	68	NC	69	GND
70	NC	71	CNV_WT_CLK_DN	72	3.3V
73	CNV_WT_CLK_DP	74	3.3V	75	GND

2.3.7 **LAN 1 (CN6)**

1	NC	2	LAN1_MDI0P
3	LAN1_MDI0N	4	LAN1_MDI1P
5	LAN1_MDI1N	6	LAN1_MDI2P
7	LAN1_MDI2N	8	LAN1_MDI3P
9	LAN1_MDI3N	10	GND
11	LAN1_LED_1000#	12	LAN1_LED_100#
13	+V3P3_LAN1	14	LAN1_LED_LNK#_AC

2.3.8 **LAN 2 (CN7)**

1	NC	2	LAN2_MDI0P
3	LAN2_MDI0N	4	LAN2_MDI1P
5	LAN2_MDI1N	6	LAN2_MDI2P
7	LAN2_MDI2N	8	LAN2_MDI3P
9	LAN2_MDI3N	10	GND
11	LAN2_LED_1000#	12	LAN2_LED_100#
13	+V3P3_LAN2	14	LAN2_LED_LNK#_AC
H1	NC	H2	NC
H3	GND_CHASSIS2	H4	GND_CHASSIS2

2.3.9 **Dual USB 3.2 Port (CN8)**

1	5V	2	USB2_P1 _DN	3	USB2_P1_
4	GND	5	USB3_ P1_RXN	6	USB3_ P1_
7	GND	8	USB3_ P1_TXN	9	USB3_ P1_
10	+5V	11	USB2_P2 _DN	12	USB2_P2_
13	GND	14	USB3_ P2_RXN	15	USB3_ P2_
16	GND	17	USB3_ P2_TXN	18	USB3_ P2_
H1	GND	H2	GND	H3	GND
H4	GND				

2.3.10 **Dual USB 2.0 Port (CN9)**

1	5V	2	USB2_P3_DN
3	USB2_P3_DP	4	GND
5	5V	6	USB2_P4_DN
7	USB2_P4_DP	8	GND
H1	GND	H2	GND
H3	GND	H4	GND

2.3.11 **eDP (CN12)**

7	GND	8	EDP_TX1_DN	9	EDP_TX1_
10	GND	11	EDP_TX0_DN	12	EDP_TX0_
13	GND	14	EDP_TX3_DN	15	EDP_TX3_
16	GND	17	EDP_AUX_DN	18	EDP_AUX
19	GND	20	EDP_BKLT_CTRL	21	NC
22	EDP_BKLT_EN	23	EDP_HPD_CONN	24	GND
25	GND	26	GND	27	12V
28	12V	29	12V	30	12V

2.3.12 **MCU Debug (CN13)**

1	TARGET_RESETN	2	+VDD_DBG
3	GND	4	SWO-
5	SWCLK	6	NC
7	NC	8	SWDIO
9	NC	10	NC
11	GND	12	GND

2.3.13 **CAN (CN14)**

1	CAN1_H	2	CAN2_H
3	CAN1_L	4	CAN2_L
5	GND	6	GND
H1	NC	H2	NC

LED Name	LED Color	Description
CAN1	Green	LED flashing while CAN transmission

2.3.14 **DIO/GPIO (CN15)**

1	24V (External)	2	24V (External)	3	DOUT1
4	DIN1	5	DOUT2	6	DIN2
7	DOUT3	8	DIN3	9	DOUT4
10	DIN4	11	DOUT5	12	DIN5
13	DOUT6	14	DIN6	15	DOUT7
16	DIN7	17	DOUT8	18	DIN8
19	GND (External)	20	GND (External)	21	GND (Exte
22	GND (External)	23	GPIO1	24	GPIO2
25	GPIO3	26	GPIO4	27	GPIO5
28	GPIO6	29	GND	30	GND

2.3.15 **COM Port (CN16)**

1	DCDA/RS422TX-/RS485-	2	RXA/RS422TX+/ RS48
3	TXA / RS422RX+	4	DTRA / RS422RX-
5	DSRA	6	RTSA
7	CTSA	8	GND

2.3.16 **SATA Connector (CN18)**

1	GND	2	SATA1_TXP
3	SATA1_TXN	4	GND

2.3.17 **SATA Power (CN19)**

1	+V5S	2	GND

2.3.18 **BIOS Update (CN20)**

1	SPI_MISO	2	GND
3	SPI_CLK	4	+VCC_SPI
5	SPI_MOSI	6	SPI_CS0#
7	SPI_SOCK_HOLD_N		

2.3.19 **Front Panel (CN23)**

1	GND	2	HWRST#
3	GND	4	PWR_SW#_CTL
5	GND	6	3.3V

2.3.20 **DC Input (CN24)**

2.3.21 **Buzzer (CN25)**

1	5V	2	SPK

2.3.22 **PWM Controller I2C (CN26)**

1	PM_SCL	2	PM_SDA
3	GND		

2.3.23 **USB Type-C (CN27)**

A1	GND	A2	TCP0_ TX0_ DP	A3	TCP0_ TX0
A4	5V	A5	TCP0_CC1	A6	USB2_P5_
A7	USB2_P5_DN	A8	TCP0_SBU1	A9	5V
A10	TCP0_ TXRX1_ DN	A11	TCP0_ TXRX1_ DP	A12	GND
B1	GND	B2	TCP0_ TX1_ DP	B3	TCP0_ TX1
B4	5V	B5	TCP0_CC2	B6	USB2_P5_
B7	USB2_P5_DN	B8	TCP0_SBU2	B9	5V
B10	TCP0_ TXRX0_ DN	B11	TCP0_ TXRX0_ DP	B12	GND
H1	NC	H2	NC	H3	GND
H4	GND	H5	GND	H6	GND
H7	GND	H8	GND		

2.3.24 **GPIO Voltage Level (CN29)**

1	V3P3_GPIO	2	VGPIO
3	V5_GPIO	4	VGPIO
5	V12_GPIO	6	VGPIO

Note: The GPIO voltage level is set by jumper. The default is 3.3V (pin 1-2).

2.3.25 **DIO Board Connector (CN30)**

7	DGPIO10(EMERG_GPIO4)	8	BOT_SPI_MOSI	9	DGPIO11(
10	BOT_SPI_CS#	11	DGPIO12(PWM2)	12	DGPIO1
13	DGPIO13(PWM3)	14	DGPIO2(HDA_RST#)	15	DGPIO14(
16	DGPIO3(HDA_SYNC)	17	DGPIO15(BAT_UART1_TXD)	18	DGPIO4(H
19	DGPIO16(BAT_UART1_RXD)	20	DGPIO5(HDA_BCLK)	21	GND
22	DGPIO6(HDA_SDO)	23	GND	24	3.3V
25	GND	26	3.3V	27	GND
28	5V	29	GND	30	5V

2.3.26 **UART Wafer (CN31)**

1	DCDB#	2	RXB#
3	TXB#	4	DTRB#
5	GND	6	DSRB#
7	RTSB#	8	CTSB#
9	RIB#	10	NC
11	GND	12	GND

2.3.27 **Fan Connector (J1)**

1	PWM	2	TACH
3	GND	4	12V

2.3.28 **MCU Bootloader (JP1)**

1	3.3V	2	INIT
3	GND		

2.3.29 **AT/ATX Mode (JP2)**

1	ATX_MODE	2	AT/ATX select
3	AT_MODE (default)		

2.3.30 **Digital Input Selection (JP9)**

1	GND (External)	2	COM
3	24V		

Note: Default sink type. Need BOM change for source type selection.

2.3.31 **SIM Card Slot (SIM1)**

C1	P_UIM_PWRF	C2	P_UIM_RSTC
C3	P_UIM_CLKC	C5	GND
C6	NC	C7	P_UIM_DATC
P1	GND	P2	GND
P3	GND	P4	GND

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Enable CAN Fu

3.1 Enable CAN Function

For Linux Ubuntu 22.04, please refer to the below interface and device name mapping table to enable CAN 1 and CAN 2 functions.

CAN 1	UART	ttyS4
CAN 2	USB	ttyACM0

Appendi

Cables and Conn

A.1 Cables and Connectors

This table provides detailed information about the cables and connectors used by UPX-ASL01 (UP Xtreme 7100) If you have any questions about the configuration, plea contact your AAEON sales representative.

DC In	165260210A	Block.2P .90D(M).DIP .5.00mm
RS232/422/485	16522X0055	Phoenix Connector. DIP .90D.4*2P .Pitch=3.5mm.H= mm.FEMALE.PLUG IN Black
DIO/GPIO	16522X0064	Phoenix Connector.DIP .90D.15*2P .Pitch=2.54mm. H=19.7mm.FEMALE.BLACK.PLUG IN
CAN	16522X0063	Phoenix Connector.DIP .90D.3P .Pitch=3.50mm .H=22.9mm.FEMALE.BLACK.W/ Screw Flange.PLU
DIO cable	170X000773	Cable.2*15P to 2*15P .Wafer Box Cable.60mm

Appendi

Power Adapter Configu

B.1 Connecting 2 pin DC Connector with DC Adapter

Step 1: Locate DC connector with 2-pin Phoenix DC connector provided in the UP Xtreme 7100 packing box.

Pin Definition:

Step 2: Connect the cable from the adapter (note that power cable must connect to the red "+" " and ground cable must be inserted to black "–")

Step 3: Affix both cable and 2-pin DC connector together.

Step 4: Connect adapter and power cord with the UP Xtreme 7100 to power up device