UP Squared i12 Edge

Maker Board System
UPS-EDGE-ADLP01

User's Manual 1st Ed

Copyright Notice

Acknowledgement

All other products' name or trademarks are properties of their respective owners.

- Microsoft®, Windows® and Windows® 10 IoT Enterprise are registered trademarks of Microsoft Corp.

- Intel® and Celeron® are registered trademarks of Intel Corporation

- Core™ is a trademark of Intel Corporation

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

- Linux® is a registered trademark of Linus Torvalds in the U.S. and other countries.

- Ubuntu and Canonical are registered trademarks of Canonical Ltd.

- Realtek is a trademark of Realtek Semiconductor Corporation

All other product names or trademarks are properties of their respective owners.

Packing List

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

Item	Quantity
● UPS-EDGE-ADLP01 (UP Squared i12 Edge)	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

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

AAEON System   QO4-381 Rev.A0

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	×	○	○	○	○	○
外壳	○	○	○	○	○	○
中央处理器 与内存	×	○	○	○	○	○
硬盘	×	○	○	○	○	○
液晶模块	×	○	○	○	○	○
光驱	×	○	○	○	○	○
触控模块	×	○	○	○	○	○
电源	×	○	○	○	○	○
电池	×	○	○	○	○	○

本表格依据 SJ/T 11364 的规定编制。

○：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
GB/T 26572标准规定的限量要求以下。

×：表示该有害物质的某一均质材料超出了GB/T 26572的限量要求，然而该部件
仍符合欧盟指令2011/65/EU 的规范。

备注：

一、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。

二、上述部件物质中央处理器、内存、硬盘、光驱、电源为选购品。

三、上述部件物质液晶模块、触控模块仅一体机产品适用。

China RoHS Requirement (EN)

Hazardous and Toxic Materials List

AAEON System   QO4-381 Rev.A0

Component Name	Hazardous or Toxic Materials or Elements					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (Cr(VI))	Polybrominated biphenyls (PBBs)	Polybrominated diphenyl ethers (PBDEs)
PCB and Components	X	O	O	O	O	O
Wires & Connectors for Ext.Connections	X	O	O	O	O	O
Chassis	O	O	O	O	O	O
CPU & RAM	X	O	O	O	O	O
HDD Drive	X	O	O	O	O	O
LCD Module	X	O	O	O	O	O
Optical Drive	X	O	O	O	O	O
Touch Control Module	X	O	O	O	O	O
PSU	X	O	O	O	O	O
Battery	X	O	O	O	O	O

This form is prepared in compliance with the provisions of SJ/T 11364.

O: The level of toxic or hazardous materials present in this component and its parts is below the limit specified by GB/T 26572.

X: The level of toxic of hazardous materials present in the component exceed the limits specified by GB/T 26572, but is still in compliance with EU Directive 2011/65/EU (RoHS 2).

Notes:

1.   The Environment Friendly Use Period indicated by labelling on this product is applicable only to use under normal conditions.

2.   Individual components including the CPU, RAM/memory, HDD, optical drive, and PSU are optional.

3.   LCD Module and Touch Control Module only applies to certain products which feature these components.

Table of Contents

Chapter 1

Product Specifications

1.1 Specifications

System	
Processor	12th Generation Intel® Core™/Celeron® Processor 7000 Series SoC
	Intel® Core™ i7-1270PE (28W)
	Intel® Core™ i7-1260P (28W)
	Intel® Core™ i5-1250PE (28W)
	Intel® Core™ i5-1240P (28W)
	Intel® Core™ i3-1220PE (28W)
	Intel® Celeron® Processor 7305E (15W)
Graphics	Intel® UHD Graphics
Memory	Up to 16GB Onboard LPDDR5
Storage	Up to 128GB Onboard SSD
	M.2 2280 M-Key x 1 for NVMe (PCIe Gen 4.0 [x4])
	SATA III x 1
Ethernet	1GbE RJ-45 x 2 (Dual Stacked) (Realtek RTL8111H-CG)
Wi-Fi/BT	Optional: M.2 2230 E-Key
Expansion	M.2 2230 E-Key x 1 (CNVi & PCIe)
	M.2 2280 M-Key x 1 for NVMe (PCIe Gen 4.0 [x4])
	SATA III x 1
Security	Onboard TPM 2.0
OS Support	Windows® 10 IoT Enterprise
	Ubuntu 22.04 LTS
	Yocto 4

I/O

USB	USB 3.2 Gen 2 (Type-A) x 2
	USB 3.2 Gen 2 (Type-C for DP 1.4) x 1
Display Port	HDMI 1.4b/DP 1.2 STACK Connector x 1
	DP 1.4a x 1 (via USB Type-C)
Ethernet	1GbE RJ-45 x 2 (Dual Stacked) (Realtek RTL8111H-CG)
COM	-
Audio	Audio Jack x 1 (Line-out + Mic-in)
GPIO	-

Power Supply

Power Requirement	12V DC-in
Power Supply Type	AT/ATX (AT as default)
Power Consumption	26W~39W (Typical)

Mechanical

Mounting	VESA Mount/Wall Mount (Optional)
Dimensions (W x H x D)	5.12" x 3.7" x 2.68" (130mm x 94mm x 68mm)
Net Weight	1.87 lb. (0.85Kg)
Gross Weight	2.34 lb. (1.06Kg)

Environmental

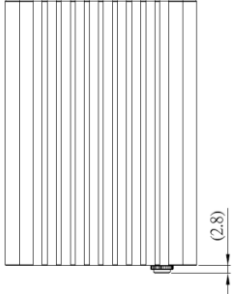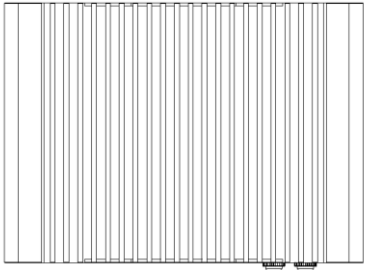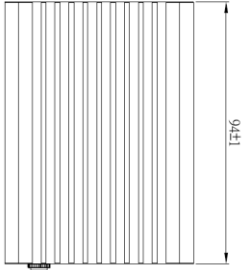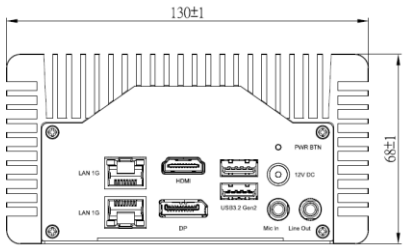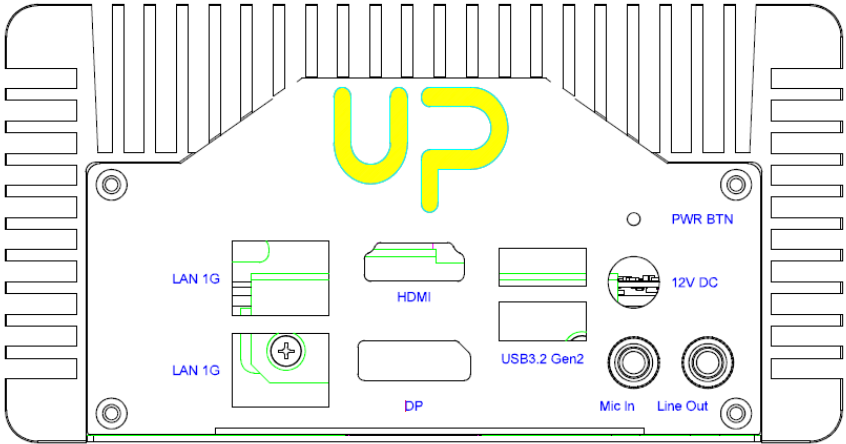|	
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C) / 0.5 airflow
Storage Temperature	-4°F ~ 158°F (-20°C ~ 70°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF	522,716 Hours
Certification	CE/FCC Class A, RoHS Compliant, REACH

Chapter 2

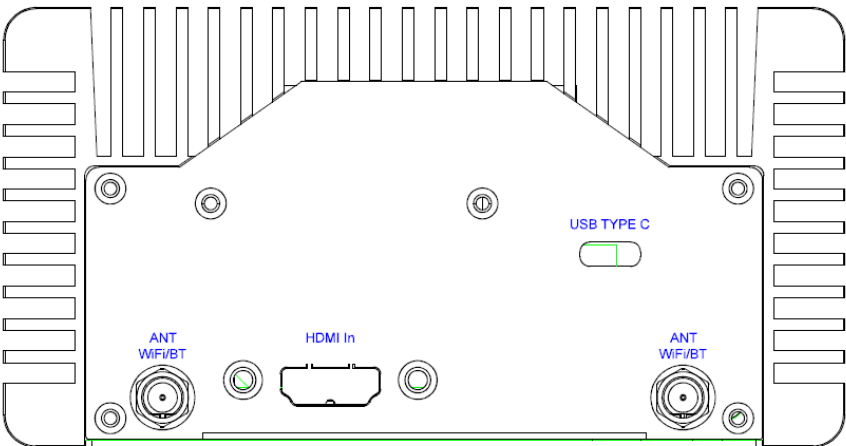Hardware Information

2.1 Dimensions
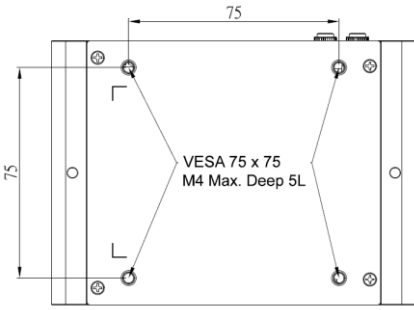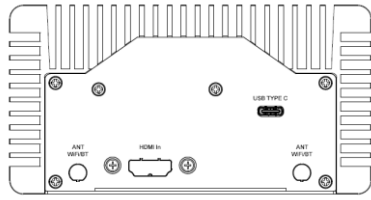
2.2   Jumpers and Connectors
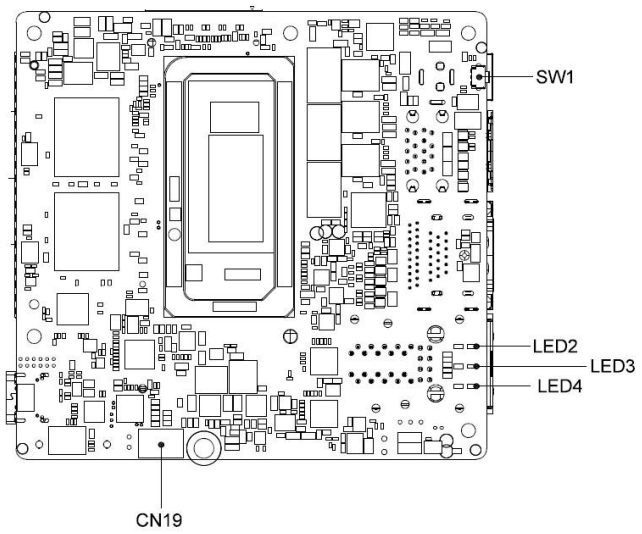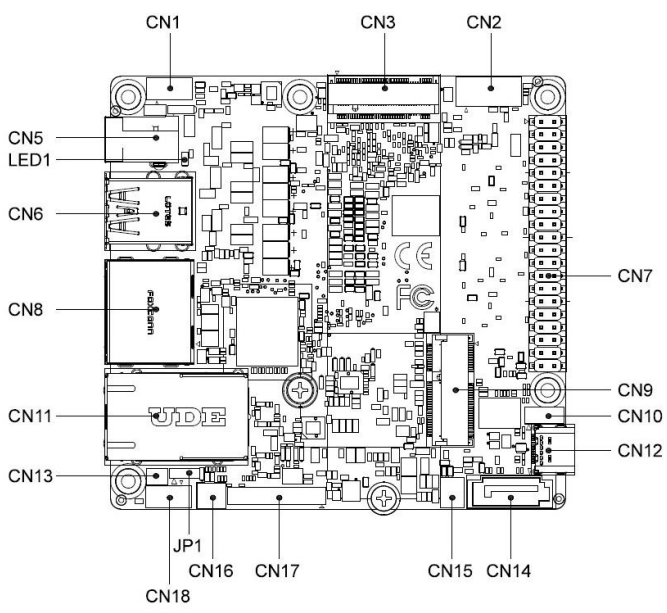
Chassis

Front I/O

Rear I/O

Board

Note: Not all PCBA-level internal connector pins are accessible via edge system external ports.

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	Audio
CN5	Power Input
CN6	USB 3.0 Port (Type-A)
CN8	DP/HDMI
CN11	LAN
CN12	USB Type-C Port
CN14	SATA

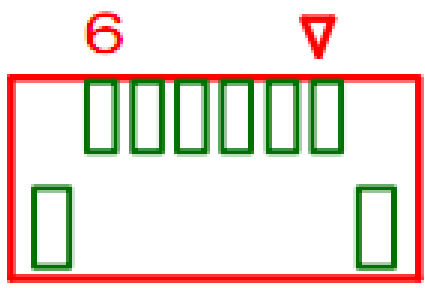Note: Please refer to the user manual of UP Squared i12 for the detailed PCBA-level

internal connector pin definition.

2.3.1　Power Button (SW1)
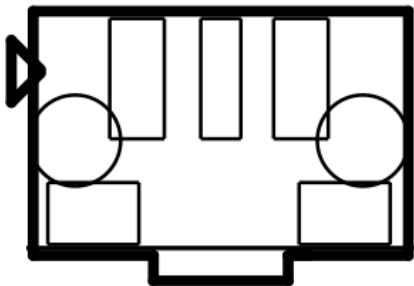
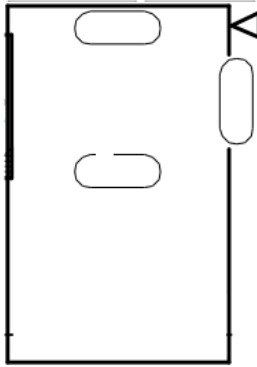| Pin	Signal	Pin	Signal
1	GND	2	PWRBTN_N
3	GND		

2.3.2　Audio (CN1)

Pin	Signal	Pin	Signal
1	LOUT_R	2	LOUT_L
3	AUD_GND	4	NC
5	NC	6	MIC_L_CN

2.3.3   Power Input (CN5)

Pin	Signal	Pin	Signal
1	VCC_12V	**2**	GND
3	GND		

2.3.4   USB 3.0 Port (CN6)
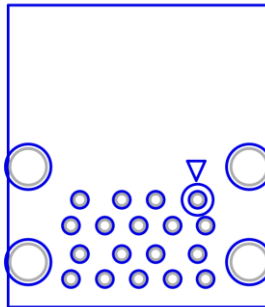
Pin	Signal	Pin	Signal
1	+V5	**2**	USB2_C_DN1
3	USB2_C_DP1	**4**	GND
5	USB3_RXN_CON_P1	**6**	USB3_RXP_CON_P1

Pin	Signal	Pin	Signal
7	GND	8	USB3_TXN_CON_P1
9	USB3_TXP_CON_P1	10	+V5
11	USB2_C_DN2	12	USB2_C_DP2
13	GND	14	USB3_RXN_CON_P2
15	USB3_RXP_CON_P2	16	GND
17	USB3_TXN_CON_P2	18	USB3_TXP_CON_P2

2.3.5   DP/HDMI (CN8)
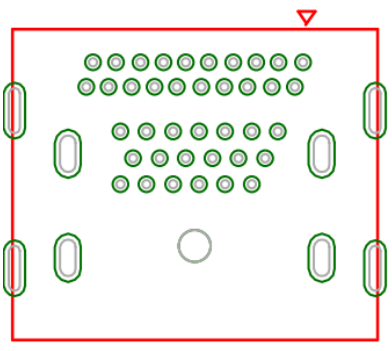
Pin	Signal	Pin	Signal
P1	DDI0_TXP_DP_0	P2	GND
P3	DDI0_TXN_DP_0	P4	DDI0_TXP_DP_1
P5	GND	P6	DDI0_TXN_DP_1
P7	DDI0_TXP_DP_2	P8	GND
P9	DDI0_TXN_DP_2	P10	DDI0_CLK_DP_DP
P11	GND	P12	DDI0_CLK_DP_DN
P13	GND	P14	GND
P15	DP_AUX_P	P16	GND

Pin	Signal	Pin	Signal
P17	DP_AUX_N	**P18**	DDI0_TYPE_C_HPD
P19	GND	**P20**	+3.3V
P21	DDI1_TXP_HDMI_2	**P22**	GND
P23	DDI1_TXN_HDMI_2	**P24**	DDI1_TXP_HDMI_1
P25	GND	**P26**	DDI1_TXN_HDMI_1
P27	DDI1_TXP_HDMI_0	**P28**	GND
P29	DDI1_TXN_HDMI_0	**P30**	DDI1_CLK_HDMI_DP
P31	GND	**P32**	DDI1_CLK_HDMI_DN
P33	HDMI_CEC_D	**P34**	NC
P35	HDMI_SCL	**P36**	HDMI_SDA
P37	GND	**P38**	5V
P39	HDMI_HPD_R		

2.3.6   LAN (CN11)
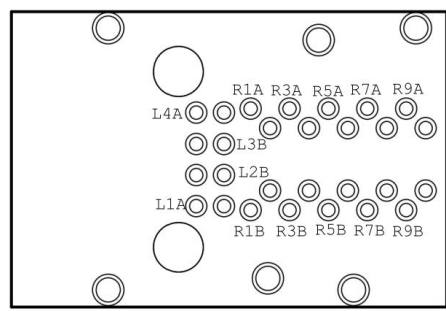
Pin	Signal	Pin	Signal
L1A	LAN1_ACTLEDN	**L1B**	LAN2_ACTLEDN
L2A	LAN1_ACTLEDP	**L2B**	LAN2_ACTLEDP
L3A	LAN1_LINK1000#	**L3B**	LAN2_LINK1000#

Pin	Signal	Pin	Signal
L4A	LAN1_LINK100#	L4B	LAN2_LINK100#
R1A	LAN1_MDI0+	R1B	LAN2_MDI0+
R2A	LAN1_MDI0-	R2B	LAN2_MDI0-
R3A	LAN1_MDI1+	R3B	LAN2_MDI1+
R4A	LAN1_MDI1-	R4B	LAN2_MDI1-
R5A	LAN1_MDI2+	R5B	LAN2_MDI2+
R6A	LAN1_MDI2-	R6B	LAN2_MDI2-
R7A	LAN1_MDI3+	R7B	LAN2_MDI3+
R8A	LAN1_MDI3-	R8B	LAN2_MDI3-
R9A	LAN1_DAC	R9B	LAN2_DAC
R10A	LAN1_GND	R10B	LAN2_GND

2.3.7   USB Type-C (CN12)
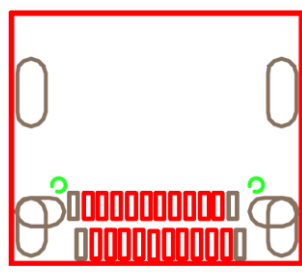
Pin	Signal	Pin	Signal
A1	GND	B1	GND
A2	TCP0_RT_TX0_C_DP	B2	TCP0_RT_TX1_C_DP
A3	TCP0_RT_TX0_C_DN	B3	TCP0_RT_TX1_C_DN
A4	+5V	B4	+5V
A5	+VTCPC0_CC1_CONN	B5	+VTCPC0_CC2_CONN

Pin	Signal	Pin	Signal
A6	USB2_P5_R_DP	B6	USB2_P5_R_DP
A7	USB2_P5_R_DN	B7	USB2_P5_R_DN
A8	TCP0_SBU1_CONN	B8	TCP0_SBU2_CONN
A9	+5V	B9	+5V
A10	TCP0_RT_TXRX1_C_DN	B10	TCP0_RT_TXRX0_C_DN
A11	TCP0_RT_TXRX1_C_DP	B11	TCP0_RT_TXRX0_C_DP
A12	GND	B12	GND

2.3.8 SATA (CN14)
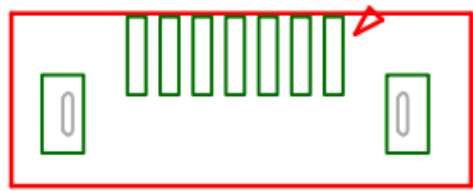
Pin	Signal	Pin	Signal
1	GND	2	SATA_C_TXP0
3	SATA_C_TXN0	4	GND
5	SATA_C_RXN0	6	SATA_C_RXP0
7	GND		

Chapter 3

Software Installation

3.1 Linux Setup

The UP Squared i12 Edge supports Linux operating systems (see Chapter 1 for specifications). For instructions on how to install a Linux OS onto your UP Squared i12 Edge, 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 i12 Edge 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 i12 Edge to find all relevant drivers.

Appendix A

UP Framework SDK Installation

A.1   Introduction

This section provides instructions for the installation of the UP Framework SDK. Instructions are provided for Windows 10. You can download the latest version of the UP Framework SDK from the UP community:

https://downloads.up-community.org/download/up-sdk-for-windows-10-and-windows-iot/

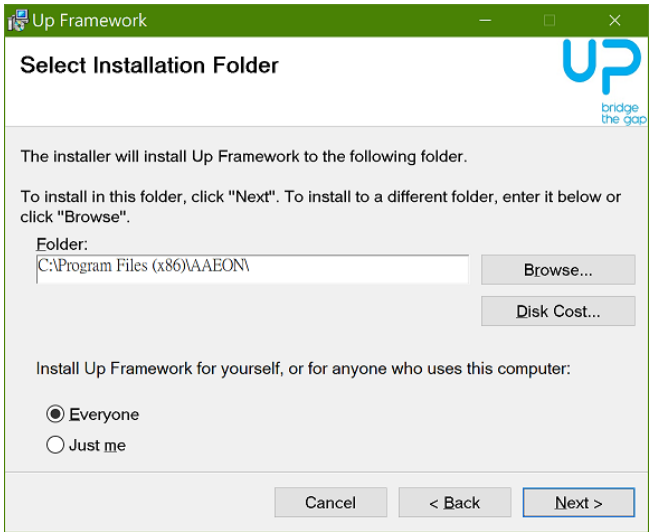## A.2   Installation for Windows 10

Step 1

Locate the downloaded file UpFrameworkSetup.msi and run the installer. Press "Next" to begin the setup process.
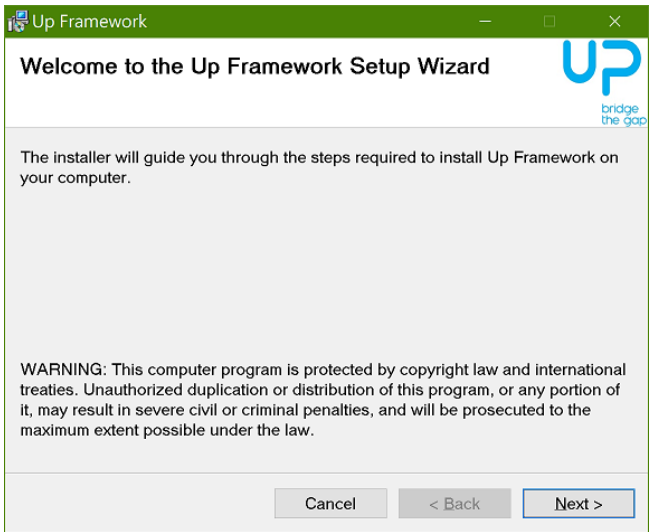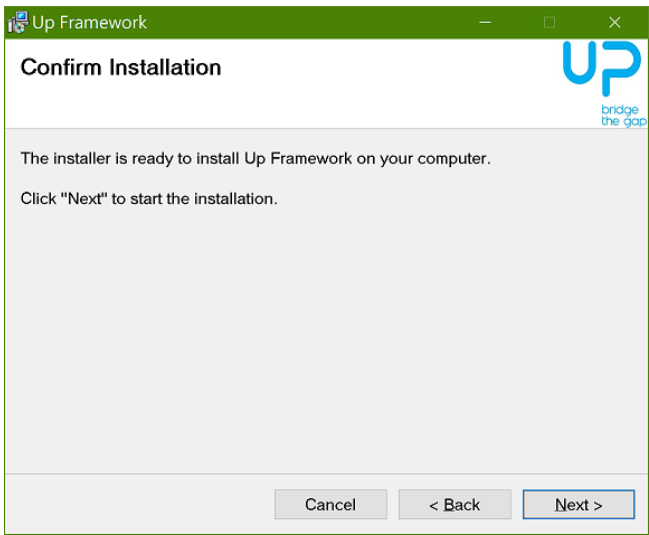
Step 2

Select the installation folder. Default destination path is C:\Program Files(x86)\AAEON\

You may also choose to install the UP Framework SDK for all users or only the current

user. Press "Next" to continue installation.

Step 3

Press "Next" to confirm the installation.

Step 4

Press "Close" to exit once setup is complete.