UPCR-HDMI

HDMI In Carrier Board

User's Manual 2nd Ed

Last Updated: February 13, 2025

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Packing List

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

Item	Quantity
● UPCR-HDMI (HDMI IN Carrier Board)	1
● FPC Cable	1
● Power Cable	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 主板/子板/背板 QO4-381 Rev.A2

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	×	○	○	○	○	○

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。

环保使用期限(EFUP (Environmental Friendly Use Period)) : 10年

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)

Name and content of hazardous substances in product

AAEON Main Board/Daughter Board/Backplane QO4-381 Rev.A2

Part Name	Hazardous Substances					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
PCB Assemblies	×	O	O	O	O	O
Connector and Cable	×	O	O	O	O	O

The table is prepared in accordance with the provisions of SJ/T 11364.

O：Indicates that said hazardous substance contained in all of the homogenous materials for this product is below the limit requirement of GB/T 26572.

×：Indicates that said hazardous substance contained in at least one of the homogenous materials used for this part is above the limit requirement of GB/T 26572. But this product still be compliance with 2011/65/EU Directive (allowed with 2011/65/EU Annex III of RoHS exemption with number 6(c),7(a),7(c)-1).

EFUP (Environment Friendly Use Period) value: 10 years

Notes: This product defined period of use is under normal condition.

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Chapter 1

Product Specifications

1.1 Specifications

System	
I/O	FPC 61-pin MIPI CSI x 1 (Lontium.LT6911UXC) 2-pin Power Wafer x 2 HDMI 2.0 x 1 Color Format: CSC Disabled: RGB565/666/888, YUV422 8/10-bit, Legacy YUV420 8-bit CSC Enabled: RGB565/666/888, YUV422 8-bit Video Resolutions: 3840 × 2160 @30fps 1920 × 1200 @30fps 1920 × 1080 @30fps 1680 × 1050 @30fps 1440 × 900 @30fps 1366 × 768 @30fps 1280 x 1024 @30fps 1280 x 960 @30fps 1280 x 800 @30fps 1280 × 768 @30fps 1280 × 720 @30fps 1280 × 600 @30fps 1152 × 864 @30fps 1024 × 768 @30fps 800 × 600 @30fps 720 × 576 @60fps *Following a change in resolution or frequency, please reboot or unplug and plug in HDMI IN carrier board.
Dimensions	1.9" x 0.9" (49mm x 23mm)
Net Weight	0.44 lb. (0.2Kg)

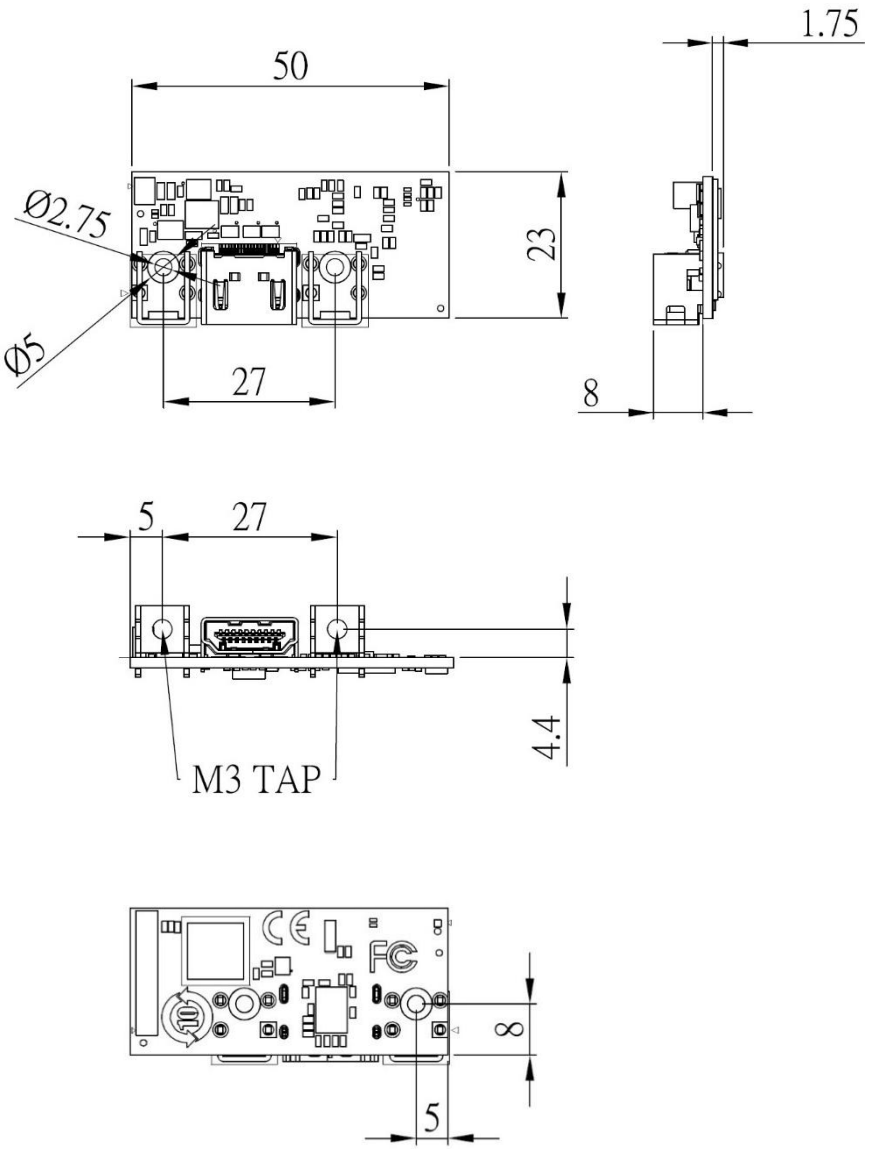
System

Gross Weight	0.88 lb. (0.4Kg)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C), 0.5m/s airflow
Operation Humidity	10% ~ 80% relative humidity, non-condensing
Certification	—
OS Support	Windows® 10
	Yocto

Chapter 2

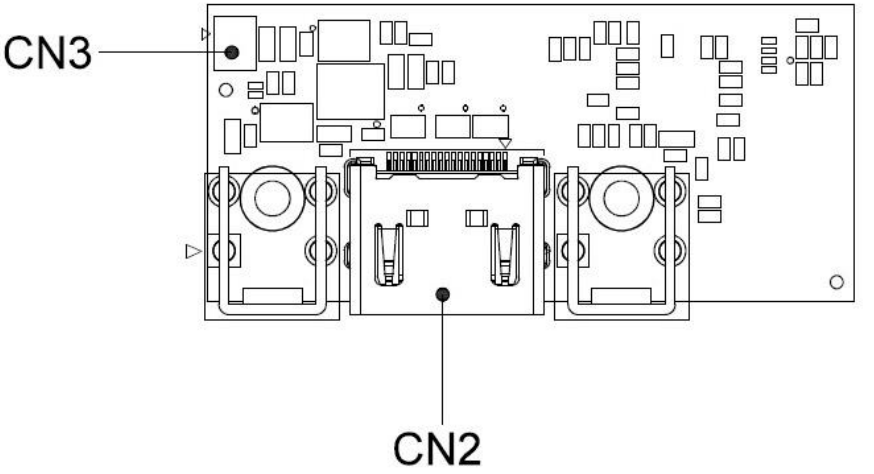
Hardware Information

2.1 Dimensions

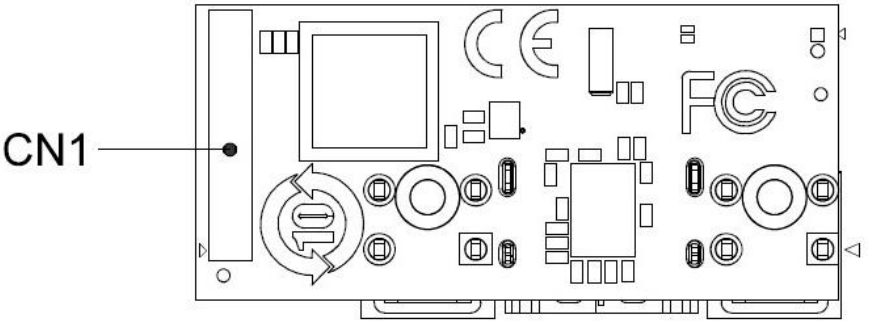


2.2 Jumpers and Connectors

Top



Bottom



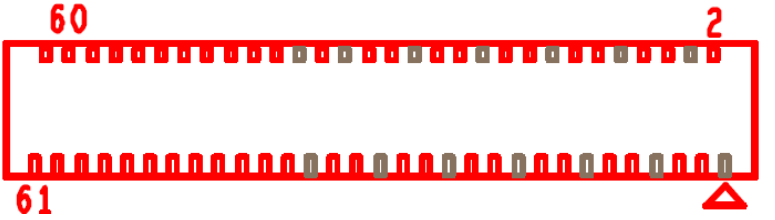
2.3 List of Jumpers and Connectors

Label	Functional Description
CN1	CSI
CN2	HDMI in
CN3	PWR

2.4 Connector Index

Reference	Functional Description	Connector Type
CN1	CSI	(TF).FPC/FFC Connector Pitch=0.3mm H=0.9mm.DualContact type.SMD.61P.90D.FEMALE.SHENG-DA.BL309P-61S31-TAH0
CN2	HDMI in	(TF)HDMI CONN..SMD.19P.90D.FEMALE.A TYPE.FOXCONN. QJ51191-LFB4-7F
CN3	PWR	(TF)WAFER BOX.2P.180D.(M).SMD.2.0mm.W/LOCK SMD.CATCH .1192-700-02SM

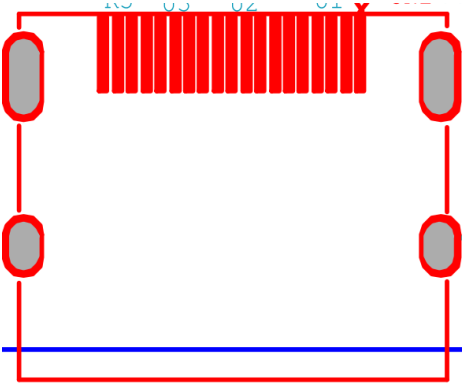
2.4.1 CSI (CN1)



Pin	Signal Description	Pin	Signal Description
1	GND	2	CSI_A_D0_DN
3	CSI_A_D0_DP	4	GND
5	CSI_A_D1_DP	6	CSI_A_D1_DN
7	GND	8	CSI_A_CK_DN
9	CSI_A_CK_DP	10	GND
11	CSI_B_D0_DP	12	CSI_B_D0_DN
13	GND	14	CSI_B_D1_DN
15	CSI_B_D1_DP	16	GND
17	CSI_B_CK_DP	18	CSI_B_CK_DN
19	GND	20	CSI_C_D0_DN
21	CSI_C_D0_DP	22	GND
23	CSI_C_D1_DP	24	CSI_C_D1_DN
25	GND	26	CSI_C_CK_DN
27	CSI_C_CK_DP	28	GND
29	CSI_D_D0_DP	30	CSI_D_D0_DN
31	GND	32	CSI_D_D1_DN
33	CSI_D_D1_DP	34	GND
35	NC	36	NC

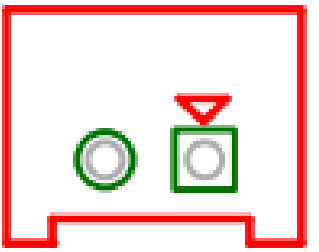
Pin	Signal Description	Pin	Signal Description
37	GND	38	GND
39	CSI_I2S_BCLK	40	CSI_I2S_SDO
41	CSI_I2S_FRM	42	CSI_I2S_SDI
43	NC	44	NC
45	NC	46	NC
47	HDMI_IN_DET	48	NC
49	NC	50	I2C1_SCL
51	NC	52	I2C1_SDA
53	NC	54	NC
55	NC	56	NC
57	NC	58	NC
59	INT_IO_GPIO5	60	NC
61	HDMI_IN_RST		

2.4.2 HDMI (CN2)



Pin	Signal Description	Pin	Signal Description
1	TMDS1_D2+	2	GND
3	TMDS1_D2-	4	TMDS1_D1+
5	TMDS1_D1-	6	GND
7	TMDS1_D0+	8	GND
9	TMDS1_D0-	10	TMDS1_CLK+
11	GND	12	TMDS1_CLK-
13	NC	14	NC
15	DDC_SCL	16	DDC_SDA
17	GND	18	5V
19	HPD		

2.4.3 Power (CN3)



Pin	Signal Description	Pin	Signal Description
1	TMDS1_D2+	2	GND

Chapter 3

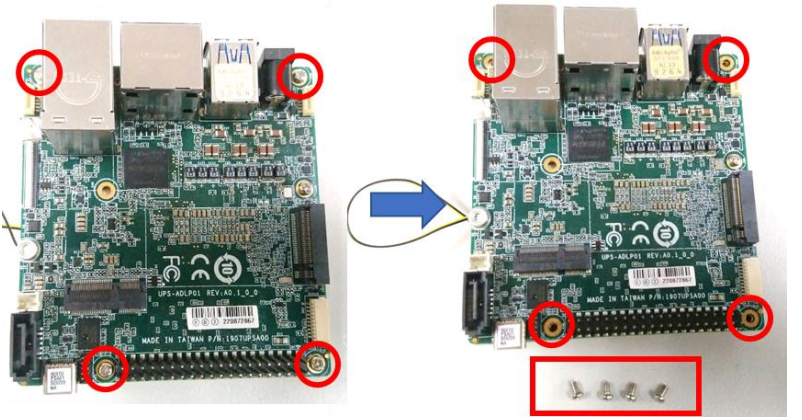
Hardware & Software Installation Guide

3.1 Hardware Installation

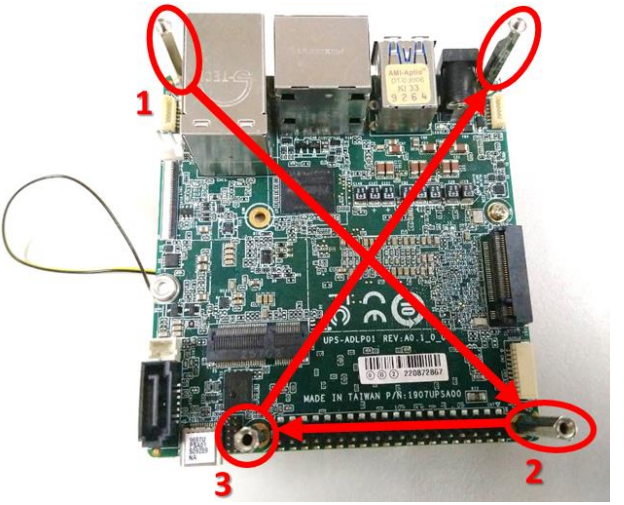
For this process you will need a Phillips head screwdriver.

3.1.1 UP Squared i12 UPCR-HDMI Installation

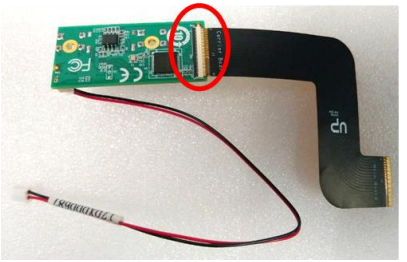
Step 1: Remove the four (4) screws from the outer edges of the board.

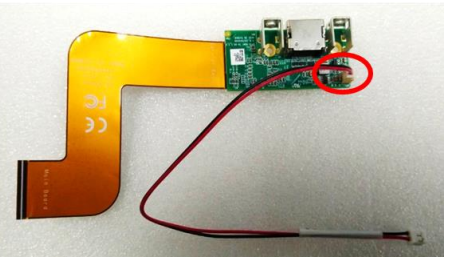


Step 2: Affix and lock the four (4) pillars to the board in the following sequence.

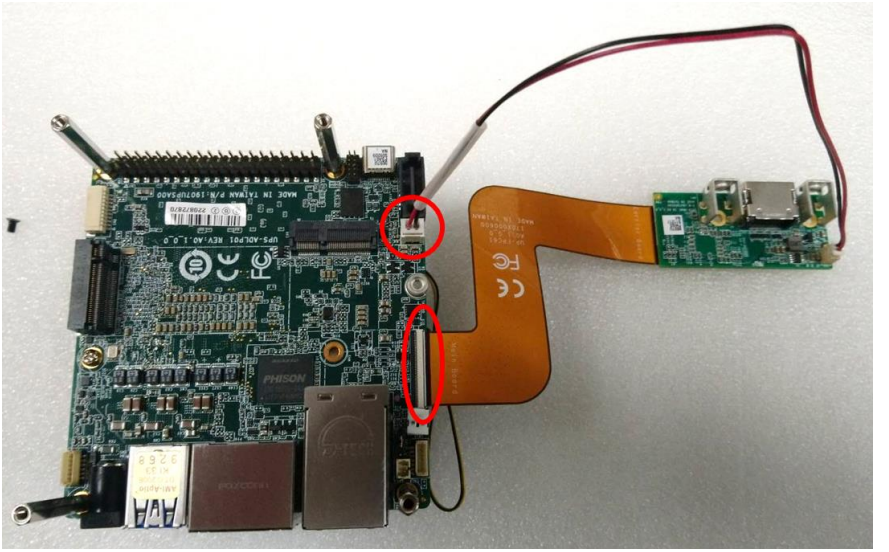


Step 3: Make sure to unlock the HDMI IN FPC connector, then plug the FPC cable into the FPC connector and power cable, noting the direction of the FPC cable.

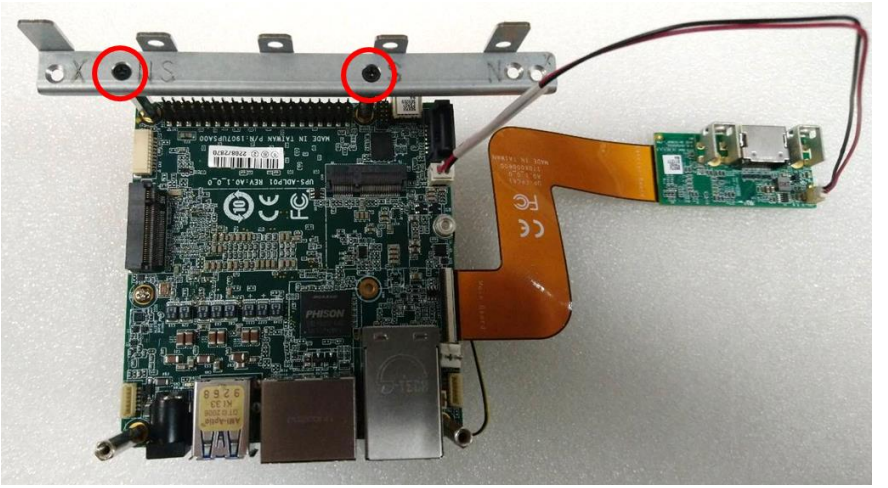




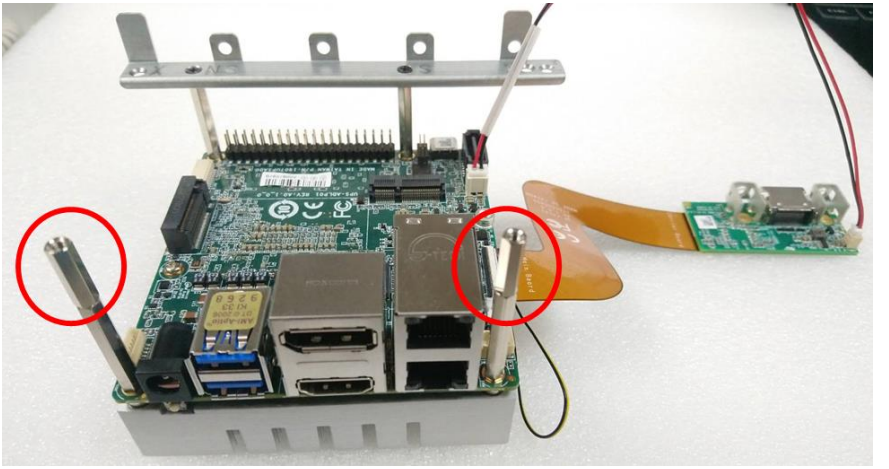
Step 4: Unlock the main board FPC connector, the plug the FPC cable and power cable into it.



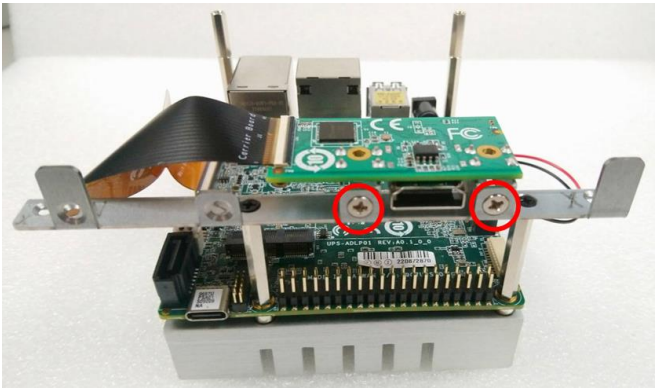
Step 5: Place bracket on top of the pillars, then affix and lock the two (2) black screws.



Step 6: Affix and lock the two (2) small pillars.

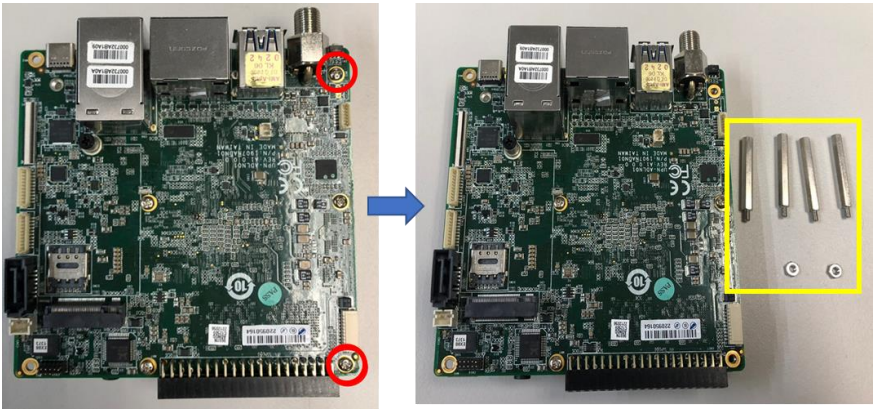


Step 7: Affix and lock the two (2) silver screws to the HDMI IN carrier board.



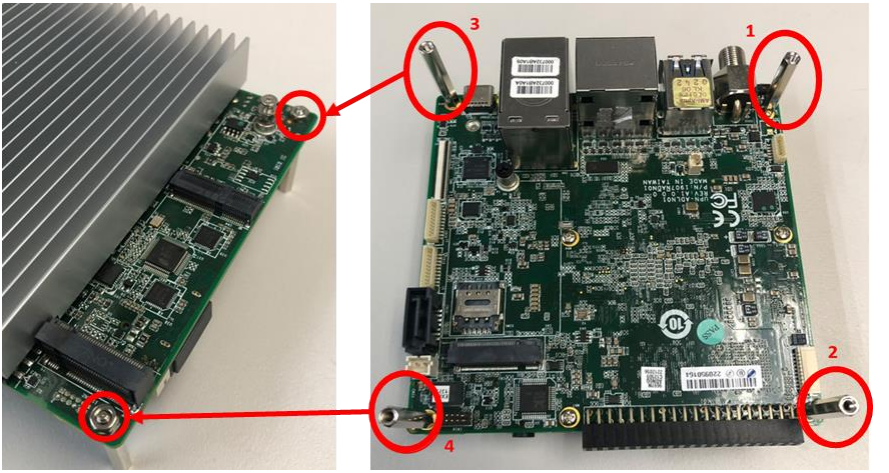
3.1.2 UP Squared Pro 7000 UPCR-HDMI Installation

Step 1: Remove the two (2) screws from the outer edges of the board.

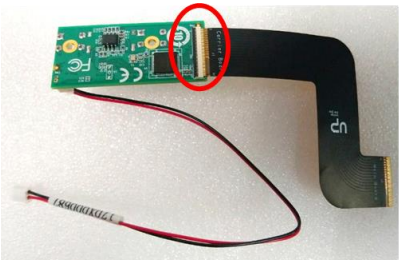


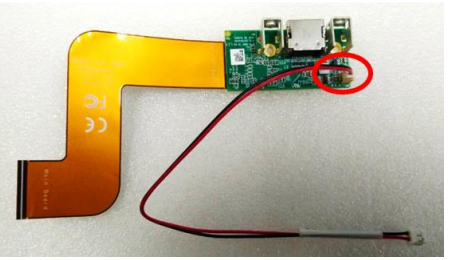
Note: Components marked in yellow can be found in the product accessories bag.

Step 2: Affix and lock the two (2) nuts (left figure) and four (4) pillars (right figure) to the board in the following sequence.

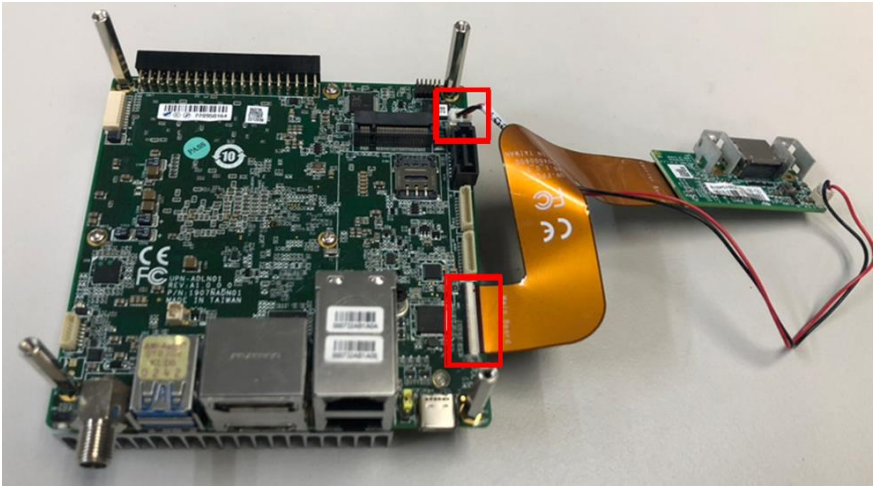


Step 3: Make sure to unlock the HDMI IN FPC connector, then plug the FPC cable into the FPC connector and power cable, noting the direction of the FPC cable.

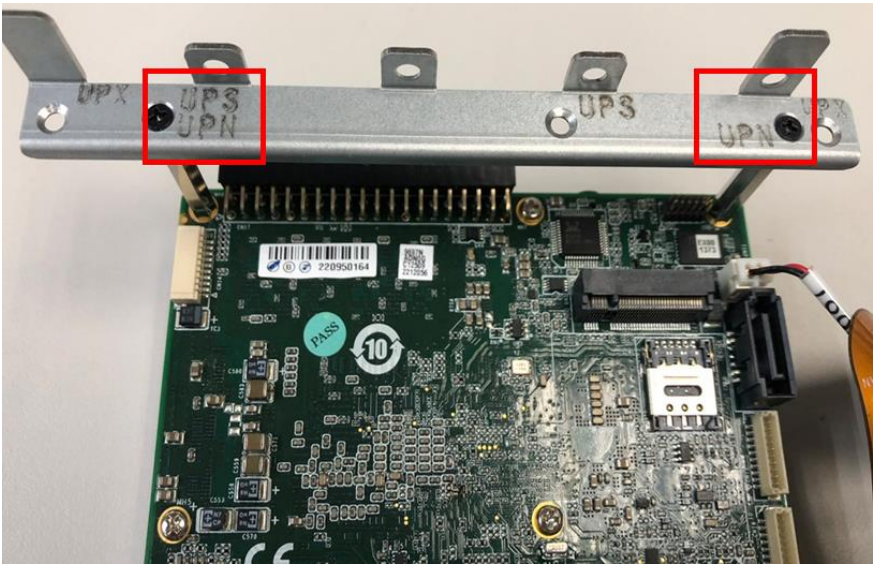




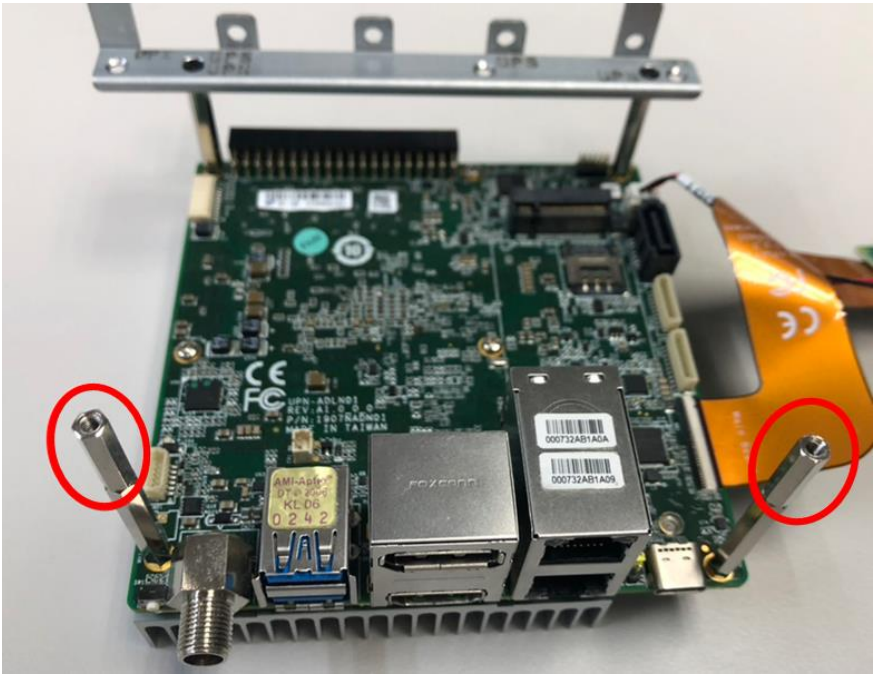
Step 4: Unlock the main board FPC connector, the plug the FPC cable and power cable into it.



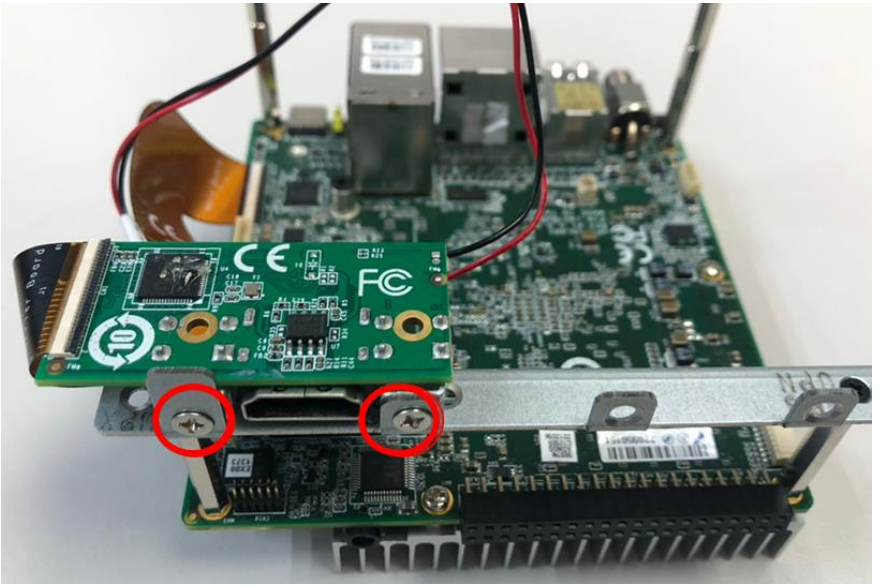
Step 5: Put bracket on top of the pillars and affix and lock the two (2) black screws.



Step 6: Affix and lock the two (2) short pillars.

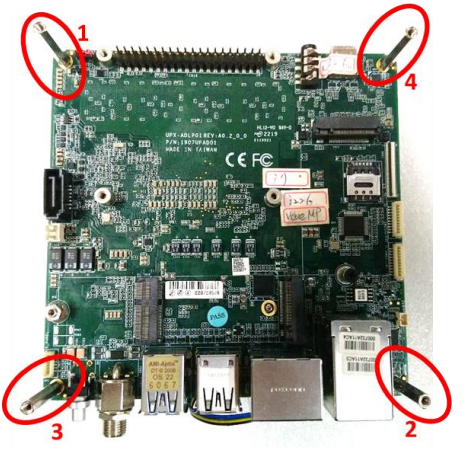


Step 7: Affix and lock the two (2) sliver screws to the HDMI IN carrier board.

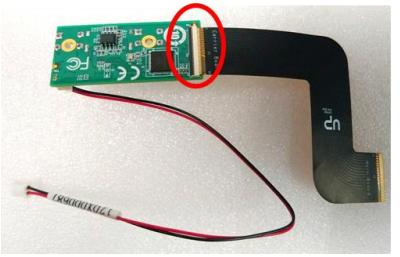


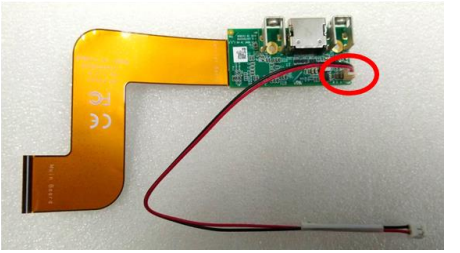
3.1.3 UP Xtreme i12 UPCR-HDMI Installation

Step 1: Affix and lock the four (4) screws and the four (4) pillars (28mm) to the board in the following sequence.

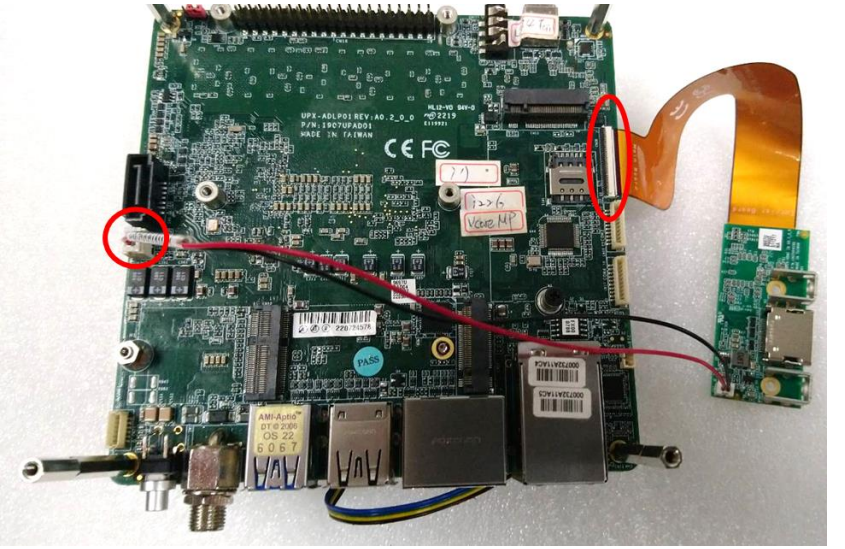


Step 2: Make sure to unlock the HDMI IN FPC connector, then plug the FPC cable into the FPC connector and power cable, noting the direction of the FPC cable.

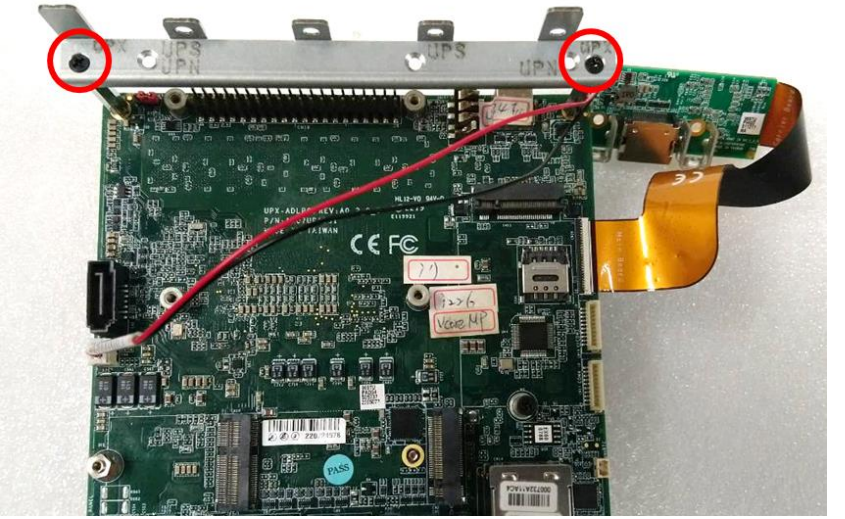




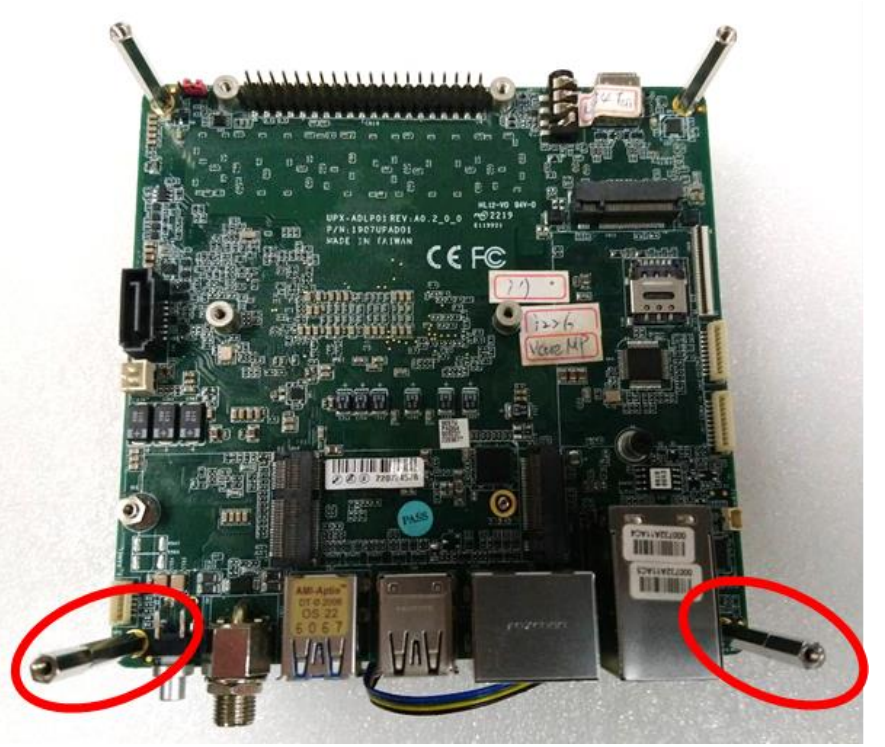
Step 3: Unlock the main board FPC connector, the plug the FPC cable and power cable into it.



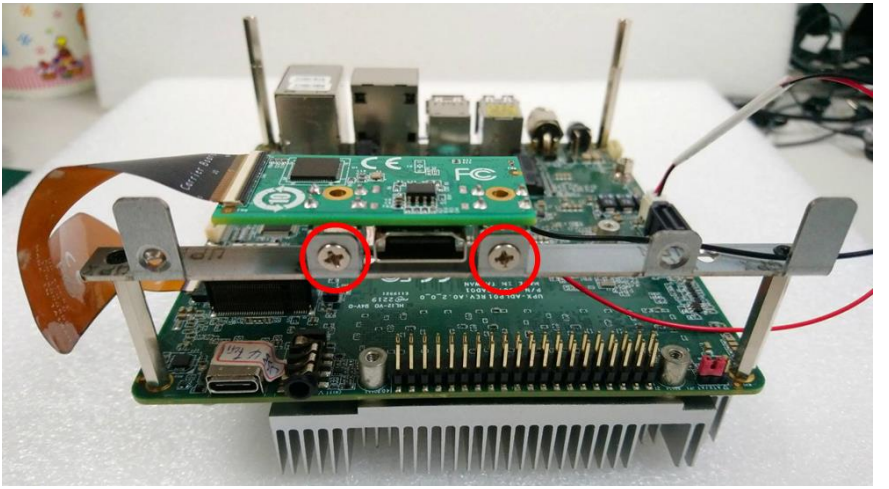
Step 4: Put bracket on top of the pillars and affix and lock the two (2) black screws.

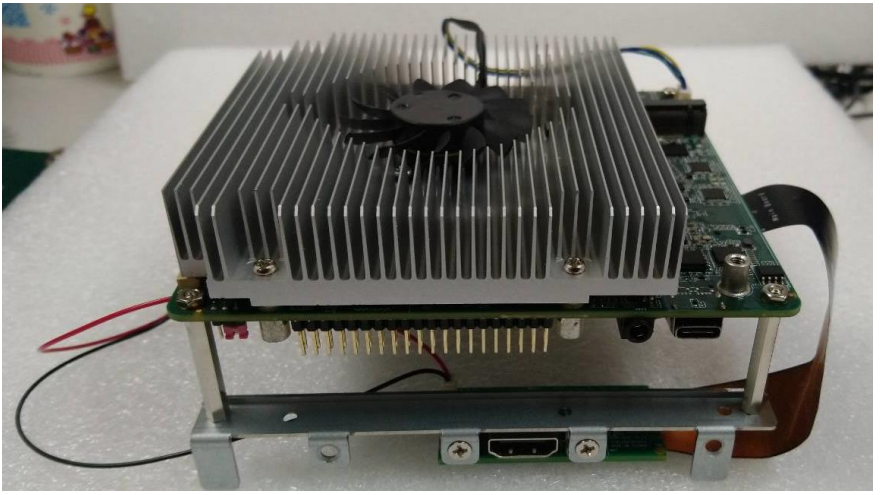


Step 5: Affix and lock the two (2) small pillars.



Step 6: Affix and lock the two (2) silver screws to the HDMI IN carrier board.





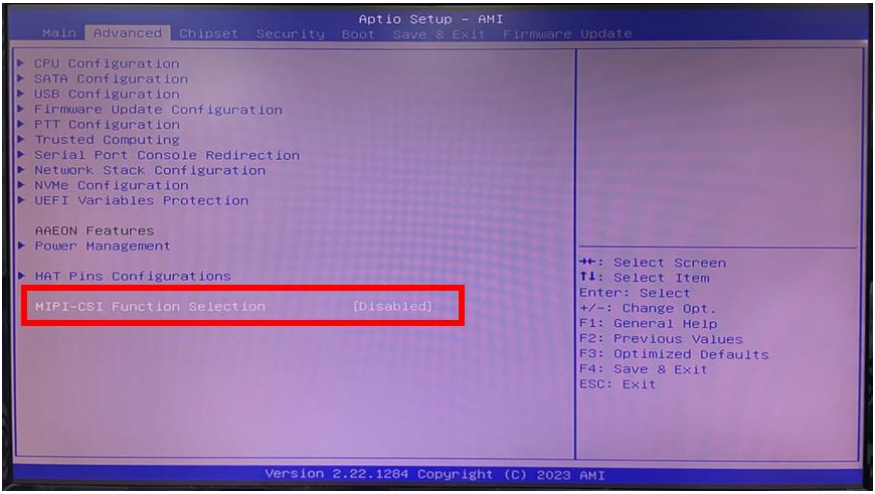
3.2 BIOS Settings

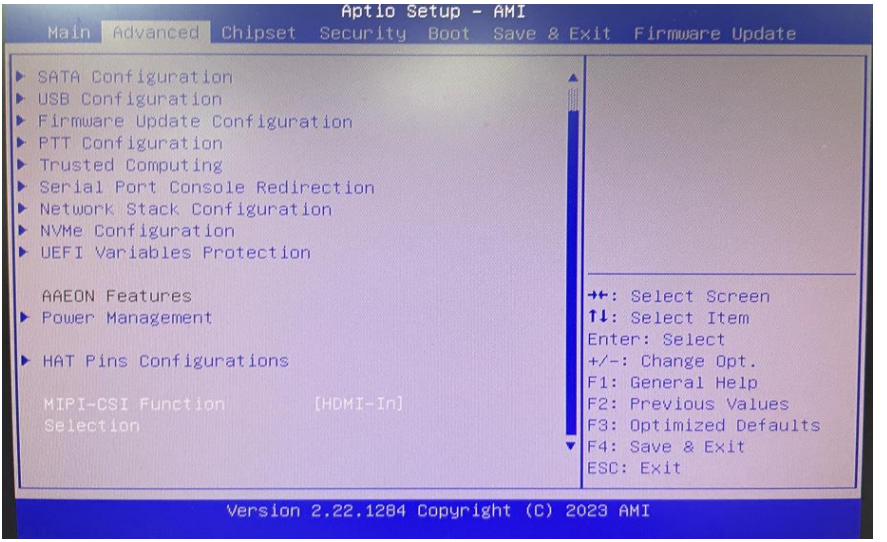
Enter the BIOS password: upassw0rd, then follow the below path:

➔ Advanced ➔ MIPI-CSI Function Selection ➔ HDMI-IN

Note the below table for each board version and its corresponding BIOS.

Product	Board Version	BIOS Version
UP Squared i12	A1.0	After USADAM11
UP Squared Pro 7000	A1.0	After UNADAM24
UP Xtreme i13	A1.1	After UXRPAM10




Aptio Setup – AMI
Main Advanced Chipset Security Boot Save & Exit Firmware Update
SATA Configuration
USB Configuration
Firmware Update Configuration
PTT Configuration
Trusted Computing
Serial Port Console Redirection
Network Stack Configuration
NVMe Configuration
UEFI Variables Protection
AAEON Features
Power Management
HAT Pins Configurations
MIPI-CSI Function Selection [HDMI-In]
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.22.1284 Copyright (C) 2023 AMI

3.3 OS Driver Settings

3.3.1 Windows 10

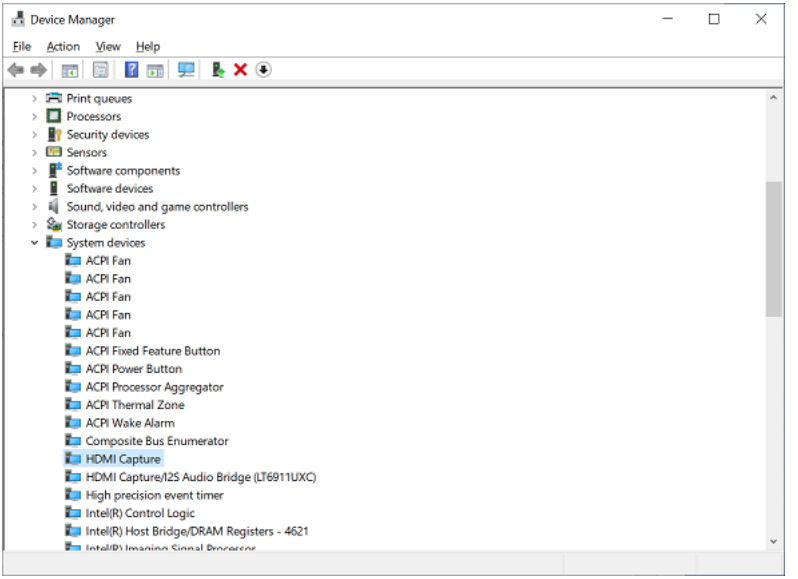
Step 1: Drivers can be downloaded from the UP Board website by following the link https://up-board.org and navigating to the Downloads section.

Step 2: Enter **BIOS -> Advanced -> MIPI-CSI Function Selection** and select **HDMI-In**.

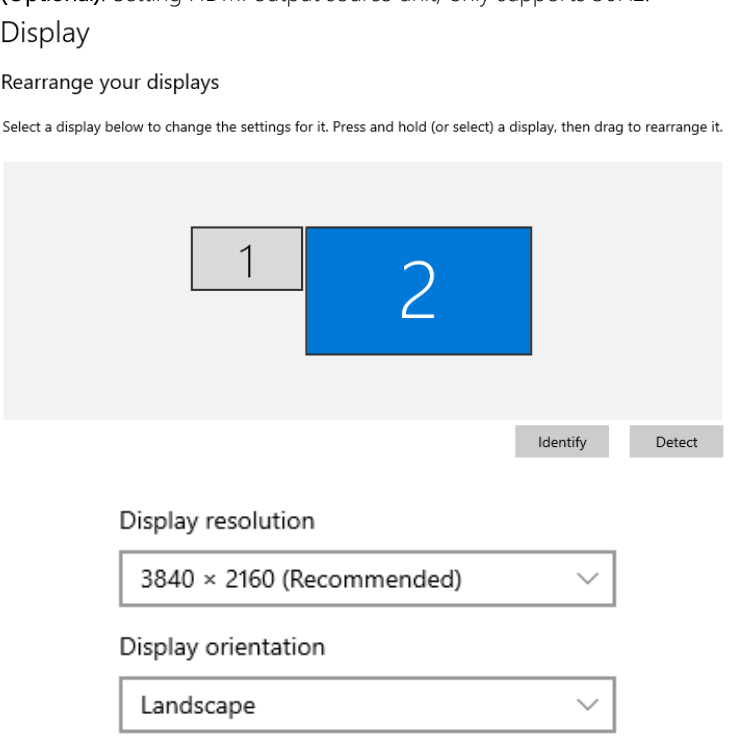
Step 3: Please install **Camera-63.22000.3.7652** driver for HDMI Capture.

Driver Link: https://up-shop.org/default/up-hdmi-in-carrier-board.html -> to choose the main board you have: UP Squared i12, UP Squared Pro 7000.

*Make sure to check the main board BIOS version.

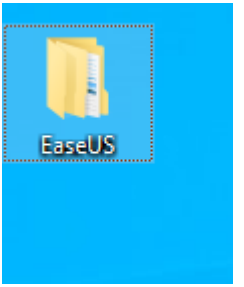


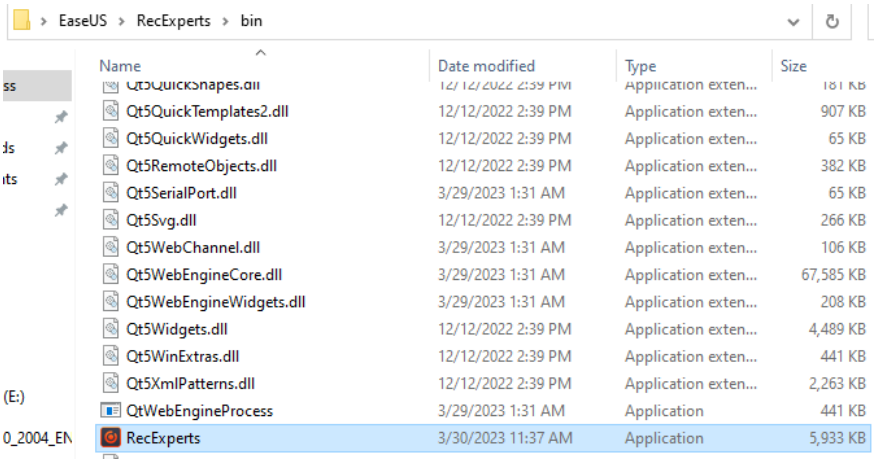
Step 4 (Optional): Setting HDMI output source unit, only supports 30Hz.

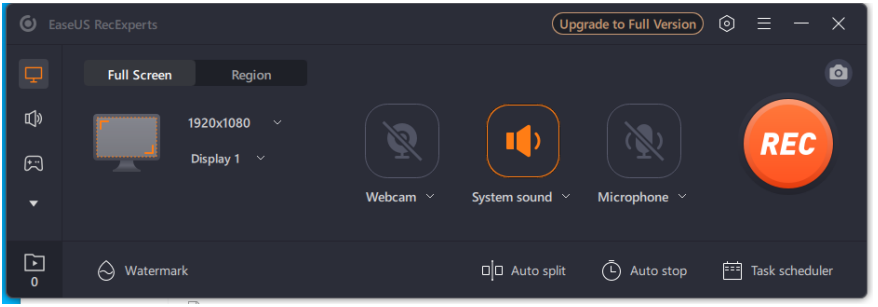


Step 5: From capture side, open the **RecExperts** app to capture HDMI input:

https://recorder.easeus.com/campaign/record-world-cup-qatar-2022.html?gclid=EAIaIQobChMIivC8v4vegAMVp2wPAh0QDAO2EAAYASAAEgKzz_D_BwE




EaseUS › RecExperts › bin
Name
Date modified
Type
Size
Qt5QuickTemplates2.dll 12/12/2022 2:39 PM Application exten... 907 KB
Qt5QuickWidgets.dll 12/12/2022 2:39 PM Application exten... 65 KB
Qt5RemoteObjects.dll 12/12/2022 2:39 PM Application exten... 382 KB
Qt5SerialPort.dll 3/29/2023 1:31 AM Application exten... 65 KB
Qt5Svg.dll 12/12/2022 2:39 PM Application exten... 266 KB
Qt5WebChannel.dll 3/29/2023 1:31 AM Application exten... 106 KB
Qt5WebEngineCore.dll 3/29/2023 1:31 AM Application exten... 67,585 KB
Qt5WebEngineWidgets.dll 3/29/2023 1:31 AM Application exten... 208 KB
Qt5Widgets.dll 12/12/2022 2:39 PM Application exten... 4,489 KB
Qt5WinExtras.dll 12/12/2022 2:39 PM Application exten... 441 KB
Qt5XmlPatterns.dll 12/12/2022 2:39 PM Application exten... 2,263 KB
QtWebEngineProcess 3/29/2023 1:31 AM Application 441 KB
RecExperts 3/30/2023 11:37 AM Application 5,933 KB
(E:)
0_2004_EN


EaseUS RecExperts
Upgrade to Full Version
Full Screen
Region
1920x1080
Display 1
Webcam
System sound
Microphone
REC
Watermark
Auto split
Auto stop
Task scheduler

3.3.2 Enable HDMI Capture on Yocto

Download Yocto pre-built image with IPU.

HDMI IN carrier board-> download-> Yocto pre-built image with IPU

https://up-shop.org/default/up-hdmi-in-carrier-board.html

Follow below command to restore from wic image:

Prior to entering command, check your USB device name is **/dev/sda** or **sdb…sdc…**

Download bmaptool

```
$curl -Lo ~/bin/bmaptool
https://github.com/01org/bmaptools/releases/download/v3.4/bmaptool  &&
chmod +x ~/bin/bmaptool
```

Make sure Python module six is installed

```
$pip3 install six
```

bamptool command

```
$sudo ~/bin/bmaptool copy --bmap
core-image-sato-sdk-intel-corei7-64-20230927054214.wic.bmap
core-image-sato-sdk-intel-corei7-64-20230927054214.wic /dev/sdx
```

Install IPU component for HDMI Capture

Install all-userspace-1.0.0-3017802.20230714.x86_64.rpm:

Download rpm package:

Install rpm package

```
$ sudo rpm -ivh
--force all-userspace-1.0.0-3017802.20230714.x86_64.rpm –nodeps
```

Device Detection

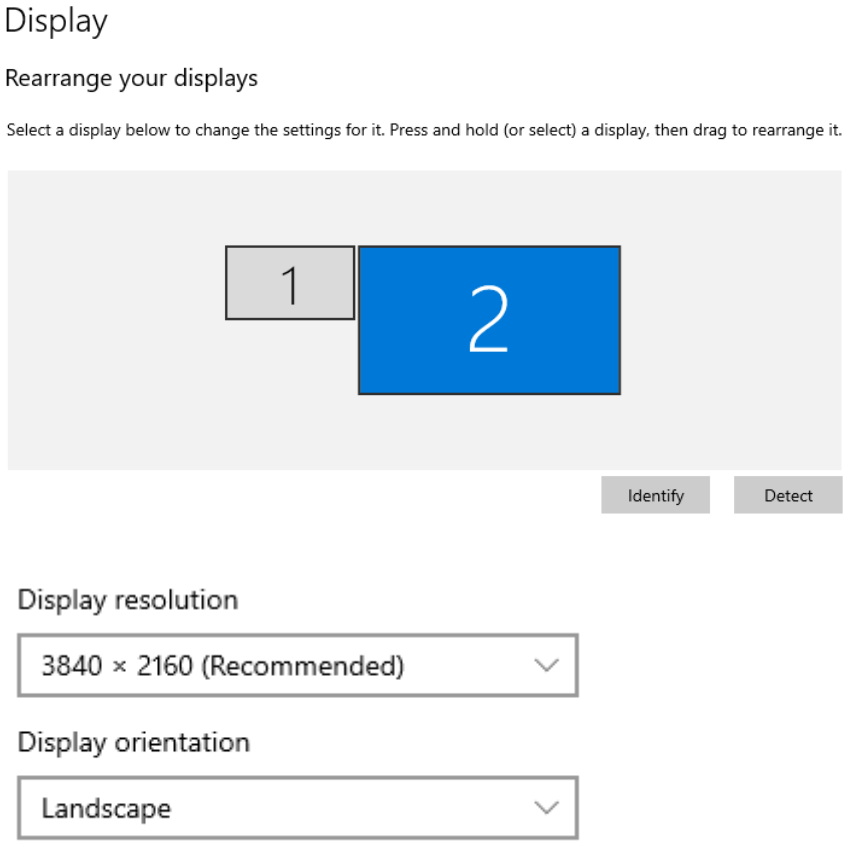
Run Dmesg log to check the LT6911UXC is detected on the system.

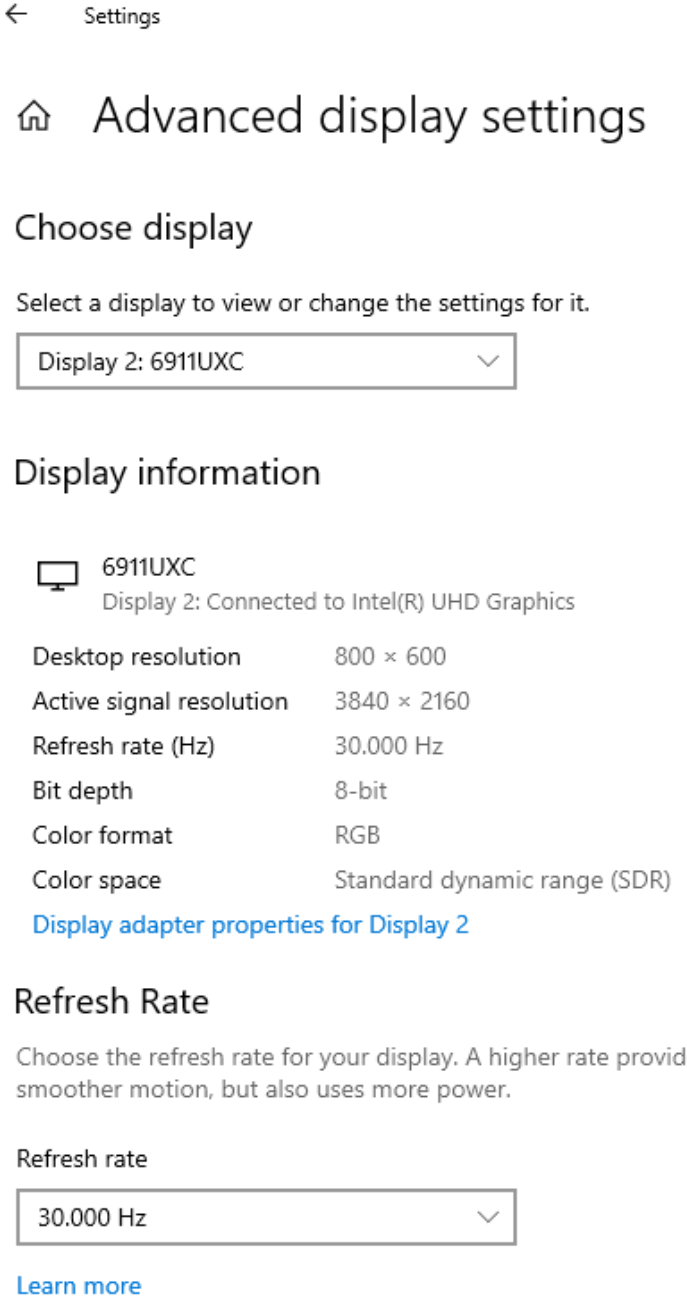
$ dmesg | grep lt6911uxc

$ media-ctl –p

$ lsmod | grep ipu

Setting HDMI output source unit




Settings
Advanced display settings
Choose display
Select a display to view or change the settings for it.
Display 2: 6911UXC
Display information
6911UXC
Display 2: Connected to Intel(R) UHD Graphics
Desktop resolution 800 × 600
Active signal resolution 3840 × 2160
Refresh rate (Hz) 30.000 Hz
Bit depth 8-bit
Color format RGB
Color space Standard dynamic range (SDR)
Display adapter properties for Display 2
Refresh Rate
Choose the refresh rate for your display. A higher rate provides smoother motion, but also uses more power.
Refresh rate
30.000 Hz
Learn more

Testing LT6911UXC Sensor(s)

1. Gstreamer Commands for Camera Streaming

   $ export GST_PLUGIN_PATH=/usr/lib/gstreamer-1.0

   $ export LD_LIBRARY_PATH=$LD_LIBRARY_PATH:/usr/lib

   $ export LIBVA_DRIVER_NAME=iHD

   $ export GST_GL_PLATFORM=egl

   $ export DISPLAY=:0

   $ rm -r ~/.cache/gstreamer-1.0

2. Sample Gstreamer command

   1920x1080

   $ gst-launch-1.0 icamerasrc num-buffers=-1 device-name=lt6911uxc scene-mode=normal printfps=true ! video/xraw,format=UYVY,width=1920,height=1080 ! videoconvert ! xvimagesink

   3840x2160

   $ gst-launch-1.0 icamerasrc num-buffers=-1 device-name=lt6911uxc scene-mode=normal printfps=true ! video/xraw,format=UYVY,width=3840,height=2160 ! videoconvert ! xvimagesink

Appendix A

Mating Connectors

A.1 List of Connectors

Label	Description	Connector Type
CN1	CSI	(TF).FPC/FFC Connector Pitch=0.3mm H=0.9mm.Dual Contact type .SMD.61P.90D.FEMALE.SHENG-DA.BL309P-61S31-TAH0
CN2	HDMI in	(TF)HDMI CONN..SMD.19P.90D.FEMALE.ATYPE.FOXCONN.QJ51191-LFB4-7F
CN3	PWR	(TF)WAFER BOX.2P.180D.(M).SMD.2.0mm.W/LOCK SMD.CATCH.1192-700-02SM