

EBOX-IMX8MM Series Mini PC

User's Guide



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Safety Information

WARNING

- Do not expose EBOX to rain or moisture, in order to prevent shock and fire hazard.
- Never install EBOX in wet locations.
- Do not open cabinet to avoid electrical shock. Refer to the nearest dealer for qualified personnel servicing.
- Never touch un-insulated terminals or wire unless power adaptor and display monitor are disconnected.
- Locate EBOX as close as possible to the socket outline for easy access and to avoid force caused by entangling of your arms with surrounding cables from the EBOX.
- When using EBOX, avoid using or installing the modem to the serial port during a storm or a lightning.
- Do not use the modem or a telephone to report a gas leak in the vicinity of the leak.
- USB connectors are supplied with Limited Power Sources.

**DO NOT ATTEMPT TO OPEN OR TO DISASSEMBLE THE CHASSIS (ENCASING)
OF THIS PRODUCT. PLEASE CONTACT YOUR NEAREST DEALER
FOR SERVICING FROM QUALIFIED TECHNICIAN.**

Regulatory

FCC Class A Note

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference in which the user will be required to correct interference at his own expense. Testing was done with shielded cables. Follow FCC regulations, user must use shielded cables with installation.

WARNING

This product complies with EN55032 class A. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with Part 15 of the 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.

This digital apparatus does not exceed Class A limits for radio noise emissions from digital apparatus as set out in interference - causing equipment standard "Digital Apparatus", ICES-003 of the Department of Communications.

Manufacturer's Declaration of Conformity

This equipment has been tested and found to comply with the requirements of European Community Council Directives 2014/30/EU & 2014/35/EU relating to electromagnetic compatibility and product safety respectively.

Attention

This product has been designed and certified to comply with certain regulatory requirements pertaining to Information Technology Equipment. This product has not been designed for use as a medical device. Without limitation of the foregoing, this product is not intended and has not been certified for use in a hospital or clinical environment to diagnose, treat, or monitor patients under medical supervision, and is not intended and has not been certified to make physical or electrical contact with patients, nor to transfer energy to or from patients and/or to detect such energy transfer to or from patients.

Purchase Agreement

Purpose:

In accordance to the general commercial conduct of Trust and Fair Trade, herewith below is the agreement for the protection for both parties, DMP and Users in pursuant of trading.

Product Description:

A small form factor fanless embedded PC based on NXP i.MX8M Mini ARM Cortex-A53 processor. Supports memory up to 4GB LPDDR4, eMMC from 8GB to 64GB, WiFi/BT onboard, RS-232/RS-485 up to 2 ports, Dual Giga LAN, VESA mount, DIN Rail, Wide Temperature range -40~+80°C and Auto Power On. OS support Android 9, Yocto and Mainline Linux kernel etc.

Distribution Convention:

1. This Product includes a PC and a power supply unit. Upon receiving this product, please refer to user manual to check for the contents and appearance of this product; contact the nearest dealer or DMP office for any defective or missing parts immediately. The supplier will not be responsible for any reported discrepancy there after the expiration period of 3-days from the received date.
2. In consideration of transportation and the cost of storage, the supplier provides to the distributors a warranty of 12 months. This warranty covers the failure caused by hardware breakdown. (excluding hard drives), but does not cover the act of misuse and mishandling.
3. The supplier will not accept unknown post, therefore if you wish to repair or to return your goods, please contact your nearest dealer to make your declaration, and apply for an RMA number. (RMA stands for Return Merchandise Authorization), and ask for RMA form then fill-up for authorization.
4. The freight for return goods for repair will follow the International customary practice and convention. Both parties is to pay for freight of one shipment each. The shipper is required to prepay the freight from the place of origin (This means that the returnee/user covers the freight for return goods, while the Supplier covers the freight for goods after the repair).
5. Obsolete warranty is referred to as: (1) Expiration of warranty or (2) Damage due to misuse within warranty. Supplier will be taken into consideration of circumstances, to provide repair service with charges expense for obsolete warranty. This expense includes the cost of material and the cost of labor.

Note: If there is other particular issue, not listed in the above conditions, both parties agreed to follow General Law of Commerce with fair and reasonable discussion in handling and resolving the argument.

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Chapter 1

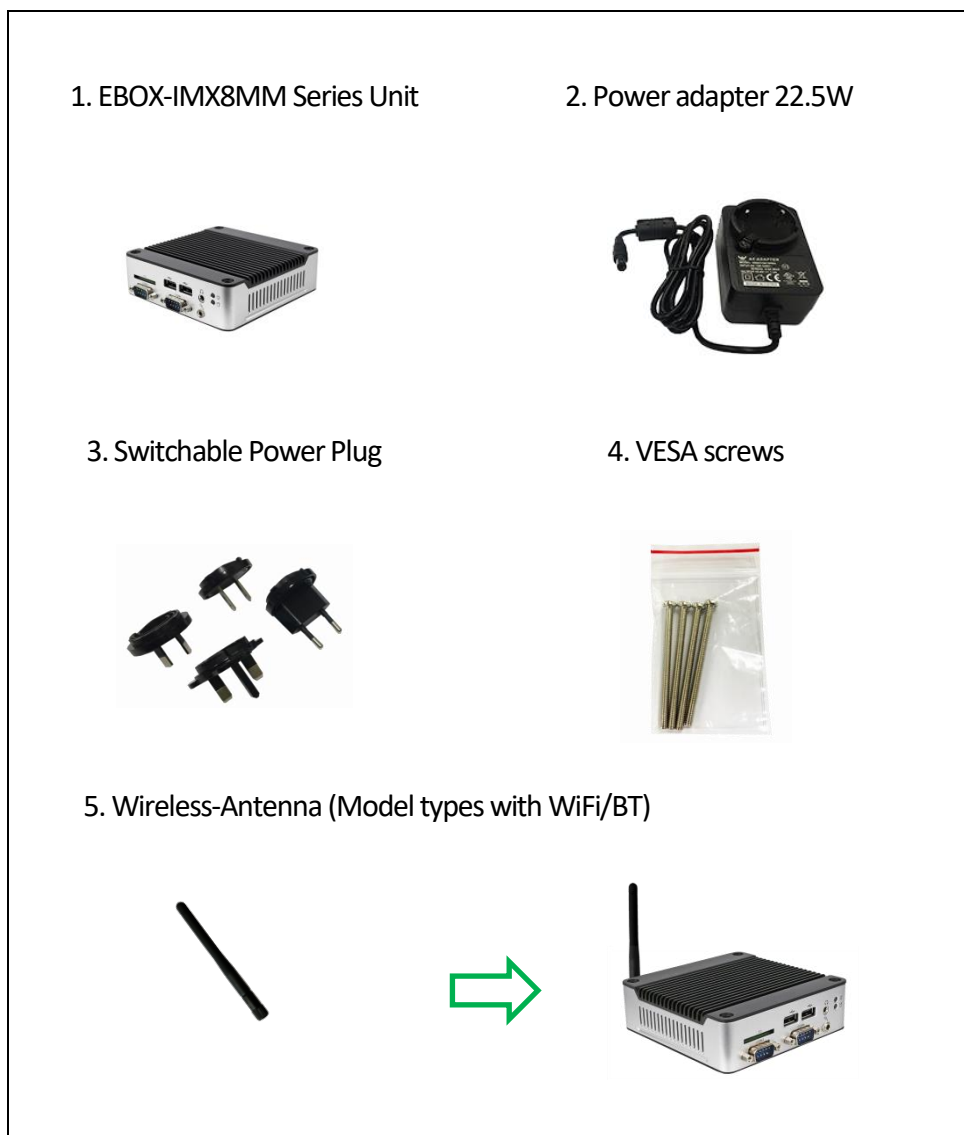
Unpacking EBOX Mini PC

Component List:

Item No.	Description	Quantity
1	EBOX-IMX8MM Series Mini PC	x1
2	Power Adaptor 22.5W; Vin: 100~240V, AC 50~60Hz	x1
3	Power plug (US, UK, EU, AU types)	x1
4	VESA screw	x4
5	Wireless-Antenna (Model types with WiFi/BT)	x1

Note: The accessories are subject to change without immediate notice.

Check before Use



Preface

EBOX-IMX8MM Series Mini PC



EBOX-IMX8MM Series equipped with an NXP i.MX8M Mini Quad-core 1.6GHz ARM Cortex-A53 processor. Unit supports 1GB to 4GB LPDDR4 of onboard memory, eMMC from 8GB to 64GB onboard, dual COM plus one console ports and a Fanless design.

Unit can be attached to LCD Monitor or any VESA mounting fixture to be securely mounted onto desks and walls, and thereby optimizes your work area, at trade shows, presentations, and promotions, etc.

FANLESS design is helpful to be used in the environment where temperature demand is critical.

Unit preinstalled Android 9, Yocto OS to meet ready-to-market demand and provide competitive advantages.

It is a perfect platform for IoT, M2M, Home Automation, Network security, Digital signage, Public transportation and many other industrial applications.

Chapter 2

EBOX-IMX8MM Series Overview

D-Sub 9-pin I/O	WiFi/BT
C2: RS-232 x2/ Console x1	B: Included
F4: RS-485 x2/ Console x1	N: Excluded (*)

Front Panel

A: Micro SD Card slot

Micro SD Card use

B: D-Sub 9-pin connectors

Type C2: RS-232 connections (RTS, CTS, TX, RX signals)

Type F4: RS-485 connections (TX, RX signals).

C: USB 2.0 ports

External USB devices use

D: Line out

Audio signal output

E: Mic in

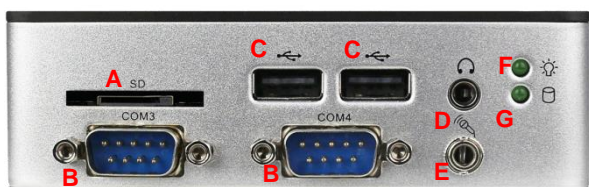
Microphone signal input

F: Power LED

Power On Green LED lights up

G: Micro SD/eMMC LED

Green LED indicates Micro SD or eMMC activated



Rear Panel

H: Power Jack

Volt: DC +12V~+36V

I: Power switch

With On " – " and Off "o" symbols

J: HDMI Output port

Support HDMI 1.3 display (Preinstalled Yocto OS default display resolution is 1920x1080, mandatory Monitor supports HDMI 1.4 FHD display)

K: RJ-45 Ethernet ports

Gigabit Ethernet

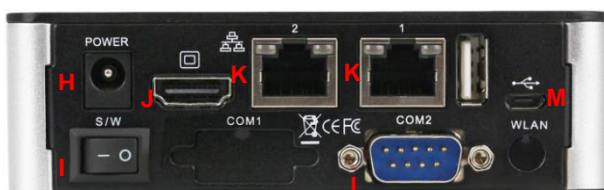
L: D-Sub 9-pin connectors

COM1: Seal off, IRQ preserved for WiFi/BT

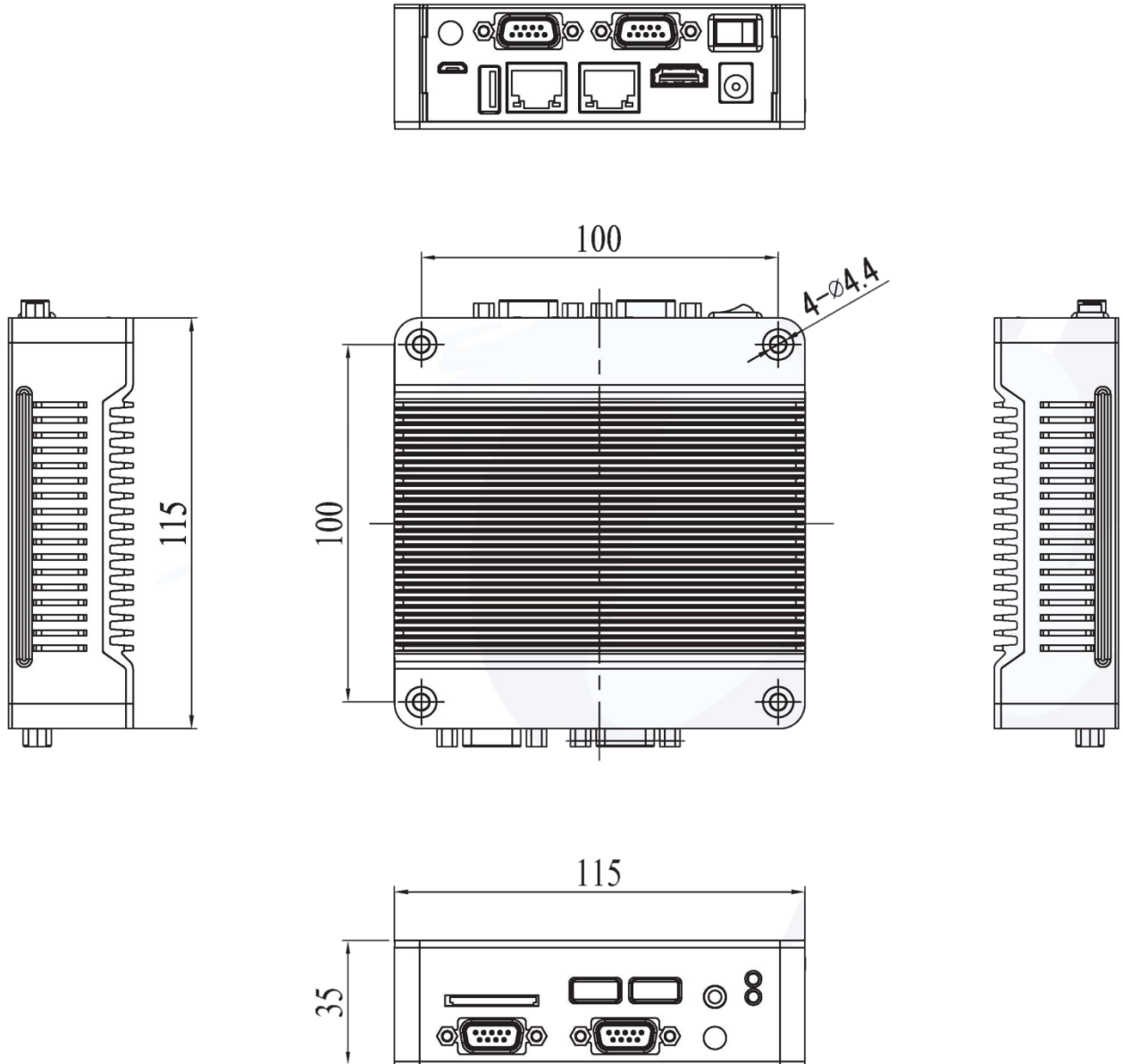
COM2: Default console port

M: Micro USB slot

Software update use only



Appearance Diagram



System Specifications

Processor	NXP i.MX8M Mini Quad-core 1.6 GHz ARM Cortex-A53 processor
Memory	1GB to 4GB LPDDR4 onboard
Storage	eMMC 8GB to 64GB MLC/SLC onboard
	Micro SD Card Micro SD Card Slot x1
Display	HDMI 1.3 (MAX.1920 × 1080 pixels)
USB	USB 2.0 x3 (Front x2 + Rear x1)
Micro USB	Micro USB x1 (Software update use only)
HD Audio	Mic-in & Line-out (WM8960)
Ethernet	RJ45 x2 (Intel I210 GbE x1/CPU GbE x1)
WiFi/BT	WiFi 802.11b/g/n + BT4.1 Combo 2.4G (Broadcom 43438)
COM	D-Sub 9-pin up to RS-232 x2/RS-485 x2 /Console x1
mPCIe	Full-size MiniPCIe x1
Power Requirement	DC +12V~+36V input
Dimension	115 x 115 x 35 mm
Mounting	VESA 100 x 100 mm/DIN Rail Support (Optional)
Net Weight	700g
Operating Temp	0 ~ 60°C/-40~+80°C (Optional)
Certifications	CE, FCC, VCCI
OS support	Android 9, Yocto, Mainline Linux Kernel Support

Order information

Model Type	CPU	DRAM	eMMC	MLC/SLC	LAN	D-Sub 9-pin I/O	WiFi/BT	Temperature
EB	8MM NXP i.MX8M Mini	1: 1GB 2: 2GB 3: 3GB 4: 4GB	08: 8GB 16: 16GB 32: 32GB 64: 64GB	M: MLC S: SLC (eMMC)	L1: LAN x1 L2: LAN x2	C2: RS-232 x2/ Console x1 F4: RS-485 x2/ Console x1	B: Included N: Excluded (*)	N: 0~60°C W: -40~+85°C

Power Adaptor — Power Plug

POWER-15V1.5A-2P-X	—	POWERHEAD-US POWERHEAD-EN POWERHEAD-EU POWERHEAD-AU
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Chapter 3

In EBOX-IMX8MM Series, there are two pre-installed OS Android 9 and Yocto available.
If your EBOX-IMX8MM unit pre-installed with Android 9, please follow below steps to install .apk file.

Android APK Installation

Method A: Install .apk file from Notebook/PC

Preparation:

1. Download Universal ADB Drivers from <https://adb.clockworkmod.com/>
Double click UniversalAdbDriverSetup installer Package to install on Notebook/PC.

2. Microsoft Windows ADB Setup:

A. Download below files:

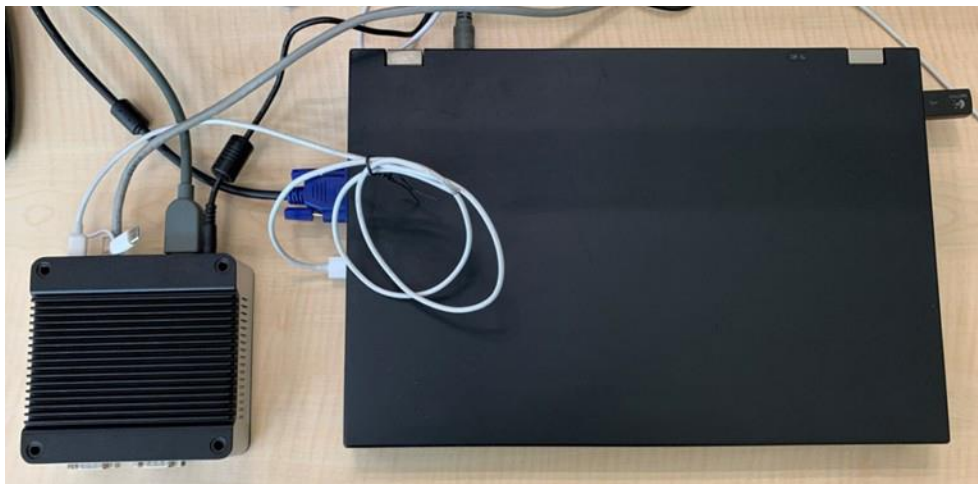
ADB ZIP file <https://dl.google.com/android/repository/platform-tools-latest-windows.zip>

APKPure 3.17.5 APK file <https://apkpure.com/apkpure/com.apkpure.aegon/download>

B. Unzip the ZIP file (Below example extract zip file to path C:\Users\Clint\download)

Steps:

1. Turn on EBOX-IMX8MM and connect to a notebook/PC with a Micro USB to USB cable.



2. Open up a Command Prompt from the same directory as ADB unzip file in step B.
Type `cd C:\Users\Clint\Downloads\platform-tools_r30.0.0-windows\platform-tools` and move to the path. (Change according to user's directory and download version)

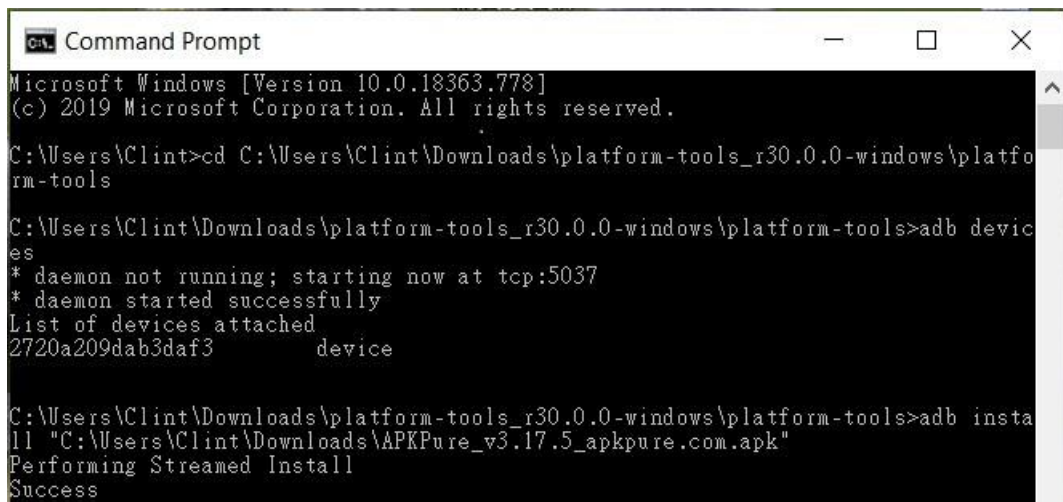
```
GA. Command Prompt
Microsoft Windows [Version 10.0.18363.778]
(c) 2019 Microsoft Corporation. All rights reserved.

C:\Users\Clint>cd C:\Users\Clint\Downloads\platform-tools_r30.0.0-windows\platform-tools

C:\Users\Clint\Downloads\platform-tools_r30.0.0-windows\platform-tools>adb devices
* daemon not running; starting now at tcp:5037
* daemon started successfully
List of devices attached
2720a209dab3daf3    device
```

3. Enter **adb devices** and then execute **.apk** file:

```
adb install "C:\Users\Clint\Downloads\APKPure_v3.17.5_apkpure.com.apk"
```



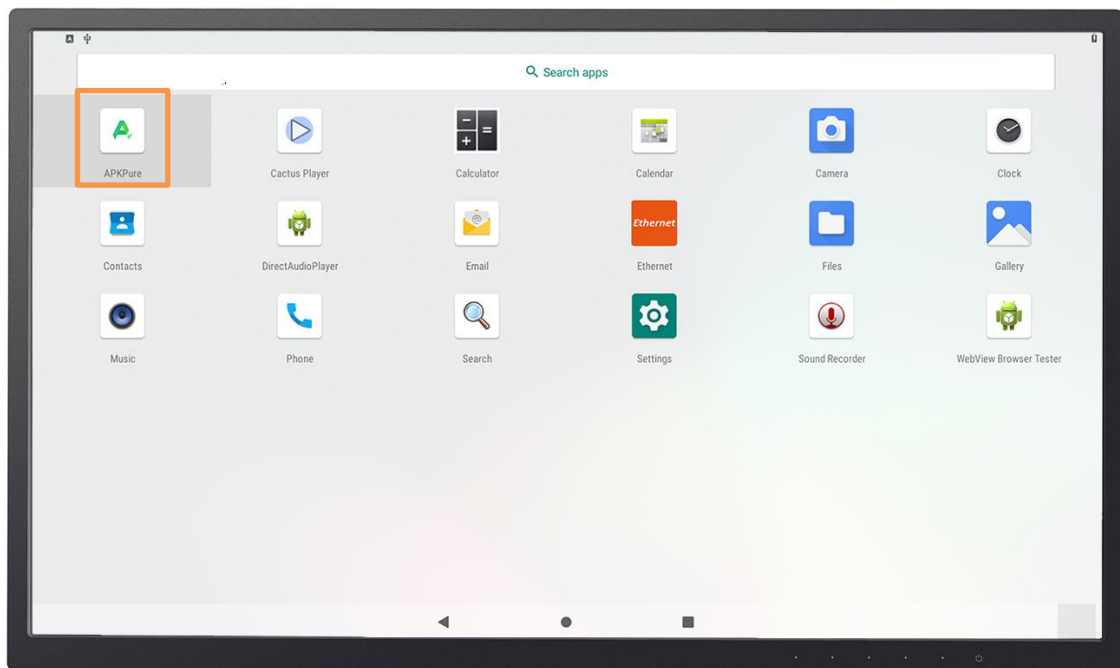
```
Command Prompt
Microsoft Windows [Version 10.0.18363.778]
(c) 2019 Microsoft Corporation. All rights reserved.

C:\Users\Clint>cd C:\Users\Clint\Downloads\platform-tools_r30.0.0-windows\platform-tools

C:\Users\Clint\Downloads\platform-tools_r30.0.0-windows\platform-tools>adb devices
* daemon not running; starting now at tcp:5037
* daemon started successfully
List of devices attached
2720a209dab3daf3    device

C:\Users\Clint\Downloads\platform-tools_r30.0.0-windows\platform-tools>adb install "C:\Users\Clint\Downloads\APKPure_v3.17.5_apkpure.com.apk"
Performing Streamed Install
Success
```

Then user can find the app after installed.



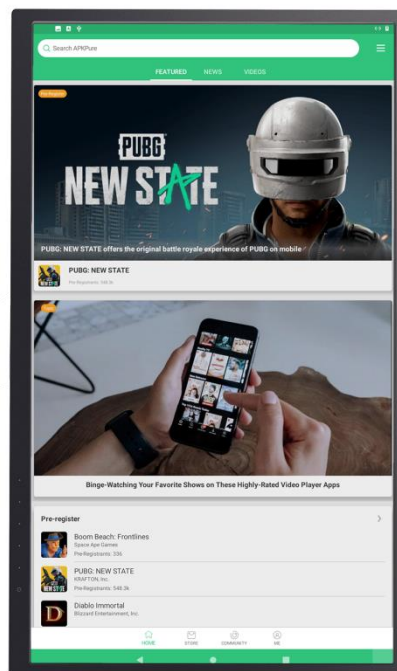
Method B: Install APK with installer app from EBOX-IMX8MM directly.

Preparation:

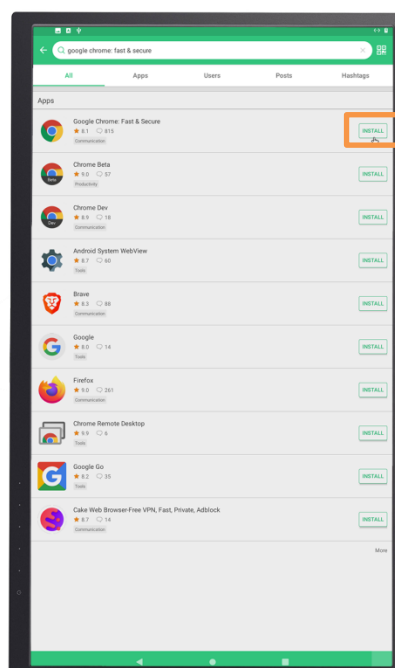
1. Download installer app such as [APKPure_v3.17.5_apkpure.com.apk](https://apkpure.com/apkpure/com.apkpure.aegon/download) from <https://apkpure.com/apkpure/com.apkpure.aegon/download>
2. Follow page 1 Method A and Install .apk file from Notebook/PC.

Steps:

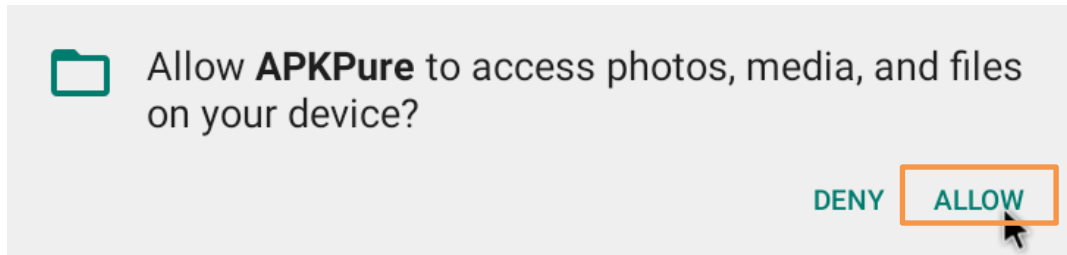
1. Boot up EBOX-IMX8MM and click installer app APKPure.



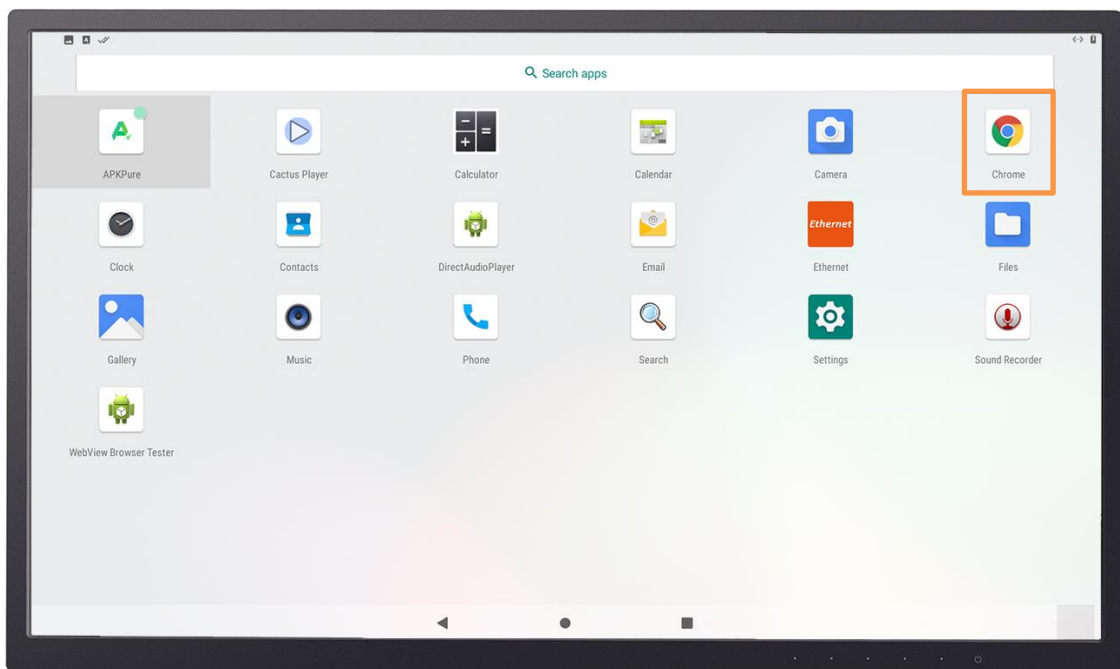
2. Search .apk file directly. (below example search google chrome APP)
3. Click the selected .apk file to install.



4. System will request permission for APKPure on your device? Click ALLOW.



After installation completed, user can find the app on the menu.



Chapter4

Onboard Connectors Summary


Summary Table for CPU Board

No.	Description	Type of Connections	Pin nbrs.
J1	DDR3L SO-DIMM Slot	SO-DIMM slot	204-pin
J2	Power DC Jack	DC Jack connector	2-pin
J3	HDMI	HDMI connector	19-pin
J4, J5	Ethernet	Intel 1210 GbE x1/CPU GbE x1	8-pin
J6	Line out	Audio Jack connector	2-pin
J7	Mic in	Audio Jack connector	2-pin
J8, J9, J10	USB 2.0 x3	USB 2.0 connector	9-pin
J11	Micro USB B Type	Data connector	5-pin
J13	Console (*)	9-pin D-Sub connector	9-pin
J14, J15	RS-232/RS-485 x2	9-pin D-Sub connector	9-pin

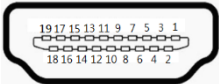
*EBOX-IMX8MM Series COM2 is default as console port.

Pin Assignments

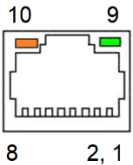



J2: DC-IN (+12V~+36V) - 2-pin Jack

	Pin #	Signal Name
	1	+12~+36V Input
	2	GND

J3: HDMI

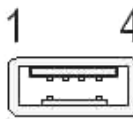
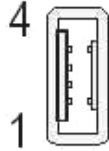
	Pin #	Signal Name	Pin #	Signal Name
	1	TMDS_Data2+	11	TMDS_CLK Shield
	2	TMDS_Data2_Shield	12	TMDS_CLK-
	3	TMDS_Data2-	13	CEC
	4	TMDS_Data1+	14	Reserved
	5	TMDS_Data1_Shield	15	SCL
	6	TMDS_Data1-	16	SDA
	7	TMDS_Data0+	17	DDC/CEC_GND
	8	TMDS_Data0_Shield	18	+5V Power
	9	TMDS_Data0-	19	Hot Plug Detect
10	TMDS_CLK+			

J4, J5: LAN: RJ-45 connector

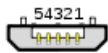
	Pin #	Signal Name	Pin #	Signal Name	LED	State	
	1	TP0+	5	TP2-	9		10/100 Mbps speed
	2	TP0-	6	TP1-			1 Gbps speed
	3	TP1+	7	TP3+	10		Ethernet Active
4	TP2+	8	TP3-				

J8, J9: USB 2.0 (180°)

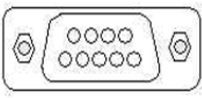
J10: USB 2.0 (90°)

Horizontal Type	Pin #	Signal Name	Vertical Type	Pin #	Signal Name
	1	VCC		1	VCC
	2	Data --		2	Data --
	3	Data +		3	Data +
	4	GND		4	GND




J11: Micro-B Type data transmit port (Cannot be used as power source)

	Pin #	Signal Name
	1	VCC
	2	Data --
	3	Data +
	4	ID
4	GND	

J12~J15: RS-232/RS-485 9-pin D-Sub connector

	Pin #	Signal Name	Pin #	Signal Name
	1	Not connected	6	RS485-
	2	RXD	7	RTS
	3	TXD	8	CTS
	4	RS-485+	9	Not connected
	5	GND	--	--

LEDS: POWER On/Off & SD Card or eMMC On/Off

	LED	State	
	1		Power On
	2		SD Card/eMMC On

Chapter 5

Taking Care of EBOX

This section provide guidelines on using EBOX-IMX8MM Series – Safe using, Storing and Handling.

Storing

- ▶ Do not place EBOX in a location that is subject to:
 - Heating sources, such as stove, oven, heater, radiator or air duct
 - Direct contact from sunlight
 - Rain or moisture area
 - Excessive dust accumulation area
 - High humidity place
 - Constant or occasional mechanical movement, vibration or shock
 - Strong magnets or magnetic fields or magnetically unshielded speakers
 - Out of the operating temperature
- ▶ Do not place other electronic device or electrical equipment near EBOX.
The electromagnetic field of EBOX may cause interference subjecting to malfunction.
- ▶ Provide adequate air ventilation (circulation) to prevent internal buildup of heat.
Do not place EBOX near behind the curtains, draperies, between books that block its ventilation slots.
Leave a space of at least 8 inches (20cm) behind the sides and back panel of the EBOX.
- ▶ Change of environmental temperature:
Problems may occur when there is a sudden change of environmental temperature.
If the EBOX is brought directly from a cold location to a warm one, moisture may condense inside EBOX.
Turn off the device, and contact your nearest dealer.
- ▶ Check the surrounding appliance(s) before using EBOX. Since the EBOX uses high-frequency radio signal and may interfere with radio or TV reception causing interference or poor signal display.
When happens, relocate the EBOX by a suitable distance away from it.
- ▶ Do not drop EBOX from working table nor place heavy objects on top of it.

Cleaning EBOX

- ▶ Clean EBOX with a soft, dry cloth or a soft cloth lightly moistened with a mild detergent solution.
- ▶ Do not use any type of abrasive pad, scouring powder, or solvent such as alcohol or benzene, as these may damage the finish of EBOX.
- ▶ When a solid object falls or a liquid spills onto EBOX, turn off EBOX immediately; unplug the LAN and power cables. Contact your dealer to check the EBOX before you use it again.
- ▶ Always disconnect the power cord from the power source before cleaning EBOX.

Troubleshooting

This section describes techniques of resolving some basic problems that you encounter when using EBOX. For more troubleshooting guidelines, please contact your nearest dealer for technical support.

Troubleshooting EBOX

A. EBOX does not start –

- ▶ Make sure EBOX is properly secured and plugged into a power source before it is turned on.
- ▶ Make sure the power indicator shows the power is on.
- ▶ When EBOX unit is plugged into a power strip or the UPS (Uninterruptible Power Supply), make sure the power strip or UPS is turned on and working normally.
- ▶ Check if your display monitor is properly plugged into a power source and turned on. Make sure the brightness and contrast controls are adjusted correctly. Refer to monitor manual for details.
- ▶ Check if power control button function well by removing the AC adaptor. Wait for one minute, and then reattach all power connection before pressing the power button.
- ▶ Condensation may cause EBOX malfunction for a while. If happens, do not use EBOX for at least one hour.
- ▶ When all above guidelines checked and EBOX unit still not work. Remove the power adaptor from EBOX, unplug the power supply, and plug it in again. Then turn on the power.

Chapter 6

Terms and Conditions

Warranty

The warranty terms for EBOX are twelve (12) months from the shipped month.

During warranty period, DMP Electronics will repair replace the product covered under this limited warranty.

Service and Support

DMP Electronics Inc. provides the technical support for hardware problems throughout the warranty period.

The technical support service is limited to configuration and operation of EBOX sold by DMP Electronics Inc.

The technical support service does not offer software tutoring or training.

Return Merchandise Authorization (RMA) policy

If the DMP staff or dealer determines that a part is defective. Purchaser must call our technical support service to obtain an RMA number before attempting to return any part.

To obtain an RMA number, Purchaser must follow procedures as below :

1. Complete the DMP Electronics Inc. standard RMA Form and fax back to the RMA Department.
2. The RMA Number must be used within 7 DAYS.
3. The RMA Number must be shown clearly on your shipping label.
4. DMP Electronics Inc. must receive all Returns before a replacement will be sent.
5. Repair cost depends on the parts, damage reasons, and whether under warranty period...etc. The Seller will charge the Purchaser in a reasonable price.
6. A copy of the invoice for the RMA product(s) will also be shipped to Purchaser.
7. The freight of return to DMP Electronics Inc. is charged to Purchaser and accompanied by an RMA number. Any Returns with freight collect will be refused and returned to sender. After Repairing, the cost of freight will be paid by Seller.
8. DMP Electronics Inc. must receive all returned goods within the warranty period.

Shipping Policy

The purchaser must pre-pay shipping for any defective system or parts returned under the warranty.

DMP Electronics Inc. shall not be liable for risk of loss or damage during shipment of the returned system or parts.

All products must be shipped back to DMP Electronics Inc. in original or equivalent packaging.

DMP Electronics Inc. will ship the repaired or replacement product(s) to the Purchaser by prepaid freight.

Purchaser assumes the risk of loss. DMP Electronics Inc. shall not be responsible for failure or on-time delivery.