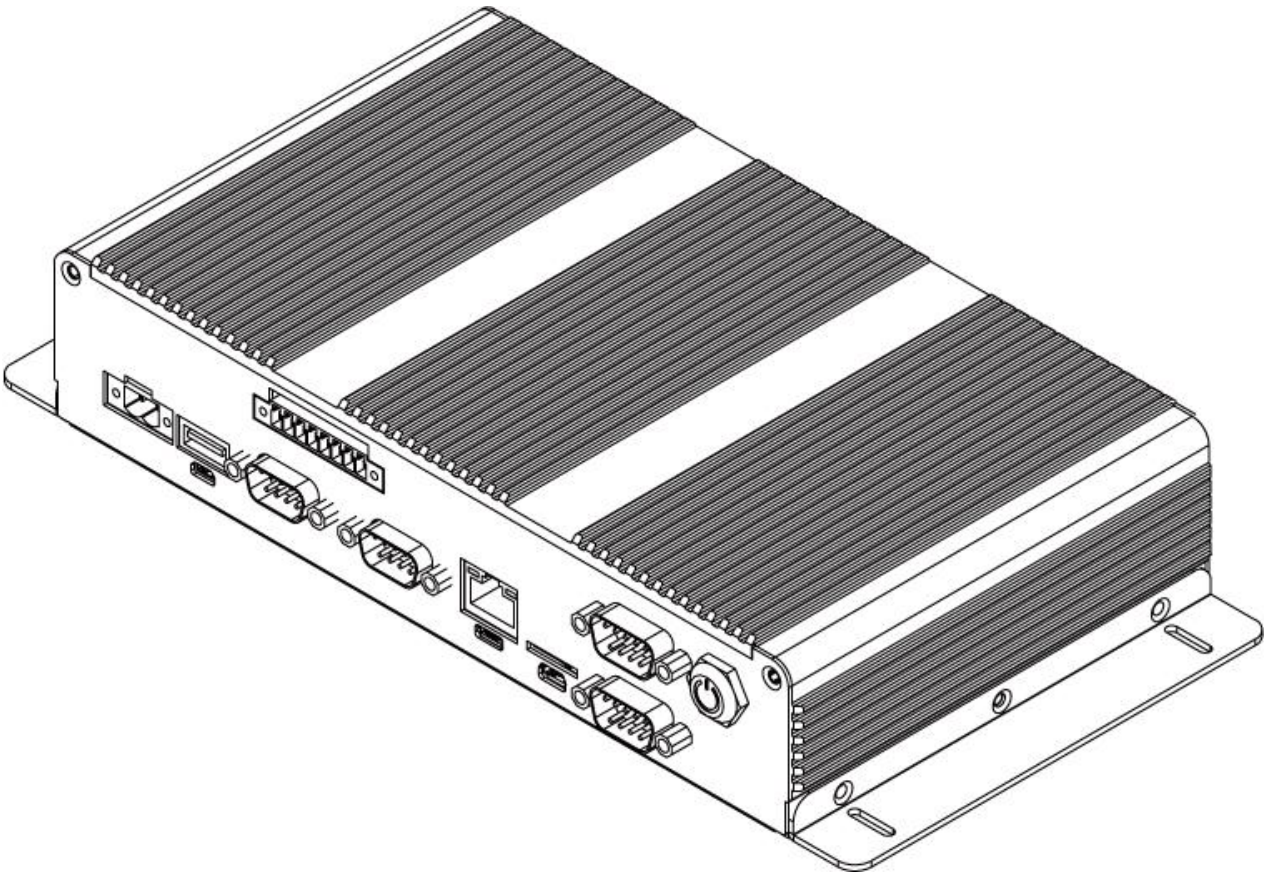
Arm-based Box PC

Freescale i.MX 6 Arm® Cortex®-A9 i.MX6 Dual Core, 1 GHz
Freescale i.MX 6 Arm® Cortex®-A9 i.MX6 Quad Core, 1 GHz (Option)



FA30SB3-210

Quick Start Guide

Document Version 1.0
Part No. 91521117100J

Please read these instructions carefully before using this product, and save this manual for future use.

Contents

Preface

Copyright Notice

Trademark Acknowledgement

Disclaimer

We reserve the right to make changes, without notice, to any product, including circuits and/or software described or contained in this manual in order to improve design and/or performance. We assume no responsibility or liability for the use of the described product(s) conveys no license or title under any patent, copyright, or masks work rights to these products, and make no representations or warranties that these products are free from patent, copyright, or mask work right infringement, unless otherwise specified. Applications that are described in this manual are for illustration purposes only. We make no representation or guarantee that such application will be suitable for the specified use without further testing or modification.

Warranty

Our warranty guarantees that each of its products will be free from material and workmanship defects for a period of one year from the invoice date. If the customer discovers a defect, we will, at his/her option, repair or replace the defective product at no charge to the customer, provide it is returned during the warranty period of one year, with transportation charges prepaid. The returned product must be properly packaged in its original packaging to obtain warranty service. If the serial number and the product shipping data differ by over 30 days, the in-warranty service will be made according to the shipping date. In the serial numbers the third and fourth two digits give the year of manufacture, and the fifth digit means the month (e. g., with A for October, B for November and C for December).

For example, the serial number 1W17Axxxxxxxx means October of year 2017.

Customer Service

We provide a service guide for any problem by the following steps: First, visit the website of our distributor to find the update information about the product. Second, contact with your distributor, sales representative, or our customer service center for technical support if you need additional assistance.

You may need the following information ready before you call:

- Product serial number
- Software (OS, version, application software, etc.)
- Detailed description of the problem
- The exact wording of error messages

In addition, free technical support is available from our engineers every business day. We are always ready to give advice on application requirements or specific information on the installation and operation of any of our products.

Advisory Conventions

Four types of advisories are used throughout the user manual to provide helpful information or to alert you to the potential for hardware damage or personal injury. These are Notes, Important, Cautions, and Warnings. The following is an example of each type of advisory.

Note:
A note is used to emphasize helpful information

Important:
An important note indicates information that is important for you to know.

Caution
A Caution alert indicates potential damage to hardware and explains how to avoid the potential problem.

Warning!
An Electrical Shock Warning indicates the potential harm from electrical hazards and how to avoid the potential problem.

Alternating Current
The Protective Conductor Terminal (Earth Ground) symbol indicates the potential risk of serious electrical shock due to improper grounding.

Safety Information

Warning!
Always completely disconnect the power cord from your chassis whenever you work with the hardware. Do not make connections while the power is on. Sensitive electronic components can be damaged by sudden power surges. Only experienced electronics personnel should open the PC chassis.

Warning!
During heavy loading in 50°C environment, the top side of the EAC Mini may be over 70°C. Please do not touch these parts with your bare hands.

Caution
Always ground yourself to remove any static charge before touching the CPU card. Modern electronic devices are very sensitive to static electric charges. As a safety precaution, use a grounding wrist strap at all times. Place all electronic components in a static-dissipative surface or static-shielded bag when they are not in the chassis.

Safety Precautions

For your safety carefully read all the safety instructions before using the device. All cautions and warnings on the equipment should be noted. Keep this user manual for future reference.

*__Let service personnel to check the equipment in case any of the following problems appear:__

- The power cord or plug is damaged.
- Liquid has penetrated into the equipment.
- The equipment has been exposed to moisture.
- The equipment does not work well or you cannot get it to work according to the user manual.
- The equipment has been dropped and damaged.
- The equipment has obvious signs of breakage.

- Do not leave this equipment in an uncontrolled environment where the storage temperature is below -20°C (-4°F) or above 60°C (140°F). It may damage the equipment.

Caution
Use the recommended mounting apparatus to avoid risk of injury.

Caution
Do not cover the openings!

Warning!
Only use the connection cords that come with the product. When in doubt, please contact the manufacturer.

Warning!
Always ground yourself against electrostatic damage to the device.

Important Information

Federal Communications Commission Radio Frequency Interface Statement

This device complies with part 15 FCC rules.
Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a class "B" 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 to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at him own expense.

European Union

This equipment is in conformity with the requirement of the following EU legislations and harmonized standards. Product also complies with the Council directions.

Electromagnetic Compatibility Directive (2014/30/EU)

- EN55024: 2010+A1: 2015
  - IEC61000-4-2: 2009
  - IEC61000-4-3: 2006+A1: 2007+A2: 2010
  - IEC61000-4-4: 2012
  - IEC61000-4-5: 2014
  - IEC61000-4-6: 2014
  - IEC61000-4-8: 2010
  - IEC61000-4-11: 2004
- EN 55032: 2015+AC: 2016
- EN61000-3-2:2014
- EN61000-3-3:2013

Low Voltage Directive (2014/35/EU)

- EN 60950-1:2006/A11:2009/A1:2010/A12:2011/ A2:2013

Chapter 1: Introduction

This chapter provides the FA30SB3-210 Arm-based Box PC product overview, describes its features and hardware specifications.

1.1 Overview

Congratulations on purchasing Winmate® FA30SB3-210 ARM-based Box PC.

The FA30SB3-210 is an industrial Box PC powered by ARM Freescale® Cortex® A9 i.MX6 Dual 1GHz processor with built-in 16GB eMMC of storage and one micro SD/SDHC card slot for storage expansion. The FA30SB3-210 supports Android 4.4, Linux 4.1.15 (QT 5.5 Browser) or Ubuntu 16.04 OS based on your choice.

Rich I/O interfaces include USB 2.0, USB ITG, one RS-232/422/485 and optional additional two serial interfaces RS-232, CANBus, RJ-45 connector for PoE/LAN, and HDMI port for connecting external display.

The FA30SB3-210 is suitable for machine-to-machine communications, kiosk, smart factory and machine automation applications.

1.2 Product Features

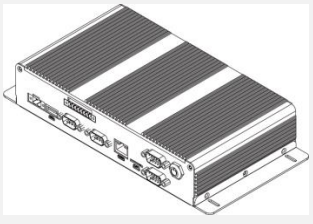
Winmate® FA30SB3-210 ARM-based Box PC offers the following features:

- Intel® Apollo Lake N3350 1.1 GHz
- Fanless cooling system
- Compact size 100 x 70 x 30 mm (w/o mounting bracket)
- Expansion module with 30+ combinations, including 4G/3G/Wi-Fi/ Bluetooth
- Various mounting options: desk, wall, VESA, din-rail, pole
- Suitable for smart factory applications

1.3 Package Contents

Carefully remove the box and unpack your device. Please check if all the items listed below are inside your package. If any of these items are missing or damaged contact us immediately.

Standard factory shipment list:



- **ARM-based Box PC**

Varies by product specifications

- **Quick Start Guide (Hardcopy)**

Part No. 91521117100J

- **Driver CD & User Manual**

Part No. 9171111I103L

- **Terminal Block 2 pin to 2.5Ø Female Adapter Cable**

Part No. 94J602G020K0

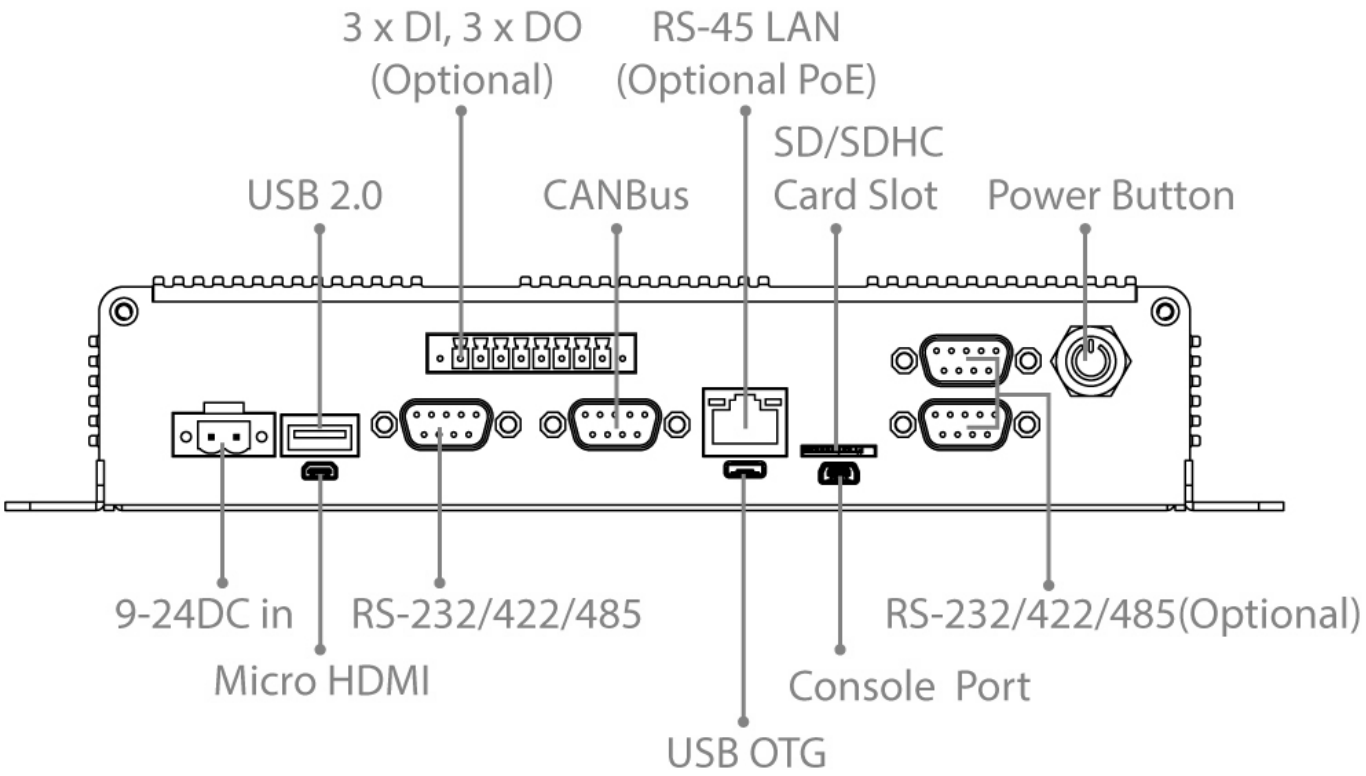
1.4 Hardware Specifications

		Model Name
		FA30SB3-210
System Specification	CPU	Freescale i.MX 6 Arm® Cortex®-A9 i.MX6 Dual Core, 1 GHz Freescale i.MX 6 Arm® Cortex®-A9 i.MX6 Quad Core, 1 GHz (Option)
	System Memory	1GB LPDDR3 (Optional 2GB)
	Storage	16GB eMMC
	Expansion	1 x Micro SD/SDHC card slot
Interface	USB	1 x USB A-Type (Host), 1 x USB OT
	Ethernet	1 x RJ-45 10/100 LAN (Optional PoE)
	HDMI	1 x Micro HDMI
	Serial	1 x RS232/422/485 (Optional other two RS232), 1 x CANBus
	Power Input	Terminal block
Power Management	Power Supply	9-24V DC
User Controls	Button	Power button (Optional)
Mechanical Specification	Dimensions	224 x 127 x 47 mm (8.82 x 5 x1.85 inches)
	Mounting	Desktop / Wall Mount
	Cooling	Fanless
	Enclosure	Aluminum Profile with Fin Housin
Environment	Operating Temp.	-20~60°C (-4~140°F)
	Storage Temp.	-30~70°C (-22~158°F)
	Operating Humidity	10% ~90% (non-condensing, RH)
	Shock	
Operating System	OS	Android 6.0 (Default) Linux 4.1.15 (QT 5.5 Browser) (Optional) Ubuntu 16.04 (Optional)
Certificate	EMC & Safety	CE, FCC

1.5 Appearance

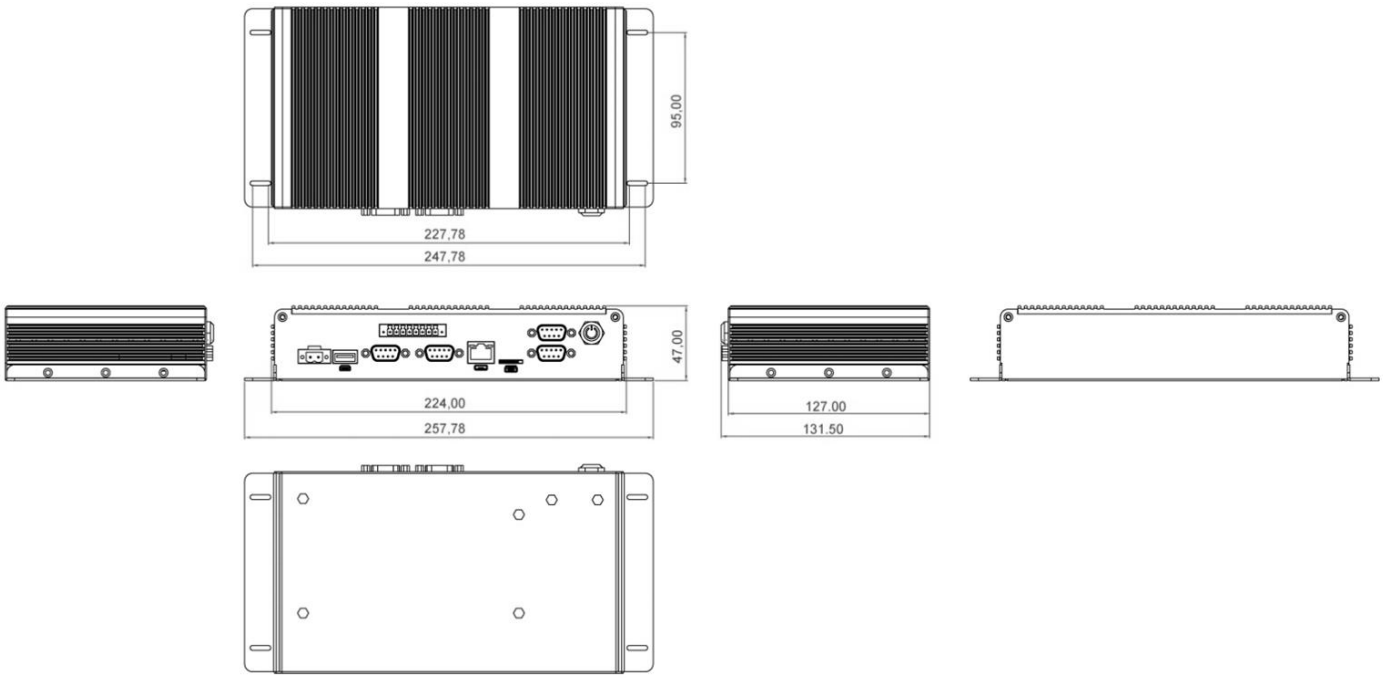
This section includes front and rear side I/O ports location of the FA30SB3-210 ARM-based Box PC.

Front Side



1.6 Dimensions

All dimensions shown in mm (millimeters).



Chapter 2: Hardware Installation

This chapter provides information on how to use external I/O and the installation of FA30SB3-210 Box PC hardware.

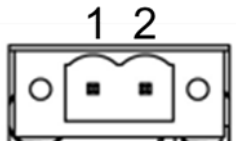
2.1 Connector Description

The following sections give you information about FA30SB3-210 standard connectors and pin assignments.

2.1.1 Power Connector

FA30SB3-210 uses 2-pin terminal block connector for DC in power input. Secure the connector to the motherboard with two screws.

Pin assignment and signal names of power connector



Pin №	Signal Name	Pin №	Signal Name
1	V+	2	V-

Voltage

Minimum Voltage 9V
Maximum Voltage 24V
Maximum Current 6.6A

2.1.2 USB Connector

The FA30SB3-210 provides one USB 2.0 connectors. Use USB 2.0 connector to connect external devices such as mouse or keyboard to the box computer.

Pin assignment and signal names of USB connector

0.5A @ 5 V

Pin №	Signal Name	Pin №	Signal Name
1	+5V	2	Data-
3	Data+	4	GND

2.1.3 Micro HDMI Connector

Plug HDMI signal cable to the micro HDMI connector of the FA30SB3-210, and plug the other end to the monitor.

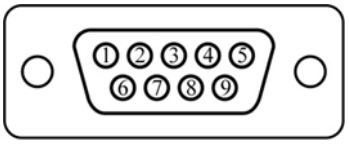
Pin assignment and signal names of HDMI connector

Pin №	Signal Name	Pin №	Signal Name
1	HP_DET_OUT	2	NC
3	HDMI_D2P	4	GND
5	HDMI_D2M	6	HDMI_D1P
7	GND	8	HDMI_D1M
9	HDMI_D0P	10	GND
11	HDMI_D0M	12	HDMI_CLKP
13	GND	14	HDMI_CLKM
15	HDMI_CEC_OUT	16	GND
17	H_CLK_OUT	18	H_DAT_OUT
19	HDMI_5V		

2.1.4 Serial Port Connector

The FA30SB3-210 uses D-Sub 9 RS-232/422/485 serial port connector. The connector secured to the motherboard with two screws. You can configure serial port settings by software.

Pin assignment and signal names of serial port



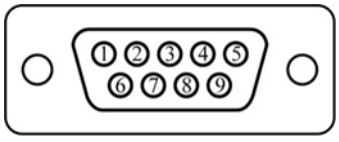
**Default setting: RS-232*

Pin №	RS-232	RS-422	RS-485
1	DCD	TxD-	D-
2	RXD	TxD+	D+
3	TXD	RxD+	NC
4	DTR	RxD-	NC
5	GND	GND	GND
6	DSR	NC	NC
7	RTS	NC	NC
8	CTS	NC	NC
9	RI	NC	NC

2.1.5 CANBus Connector

The FA30SB3-210 has CAN Bus (D-sub 9) connector for machine-to-machine communication and other applications. The connector secured to the motherboard with two screws.

Pin assignment and signal names of CANBus connector

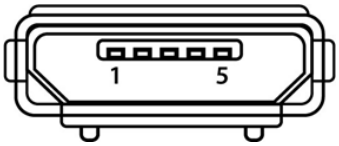


Pin №	Signal Name	Pin №	Signal Name
1	DOUT	2	CAN_L
3	GND	4	COM_I2C2_SCL
5	COM_I2C2_SDA	6	GND
7	CAN_H	8	DIN
9*	POWER(5V)		

2.1.6 USB OTG Connector

Use USB OTG host connector to connect USB flash drives, digital cameras, mice or keyboard to the FA30SB3-210.

Pin assignment and signal names of USB OTG connector

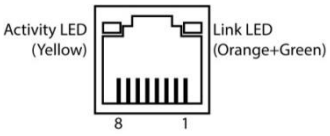


Pin №	Signal Name	Pin №	Signal Name
1	+5V	2	USB_OTG_D-
3	USB_OTG_D+	4	USB_OTG_ID
5	GND		

2.1.7 Ethernet Connector

The EAC Mini FA30SB3-210 has one Ethernet connector located on the front. Ethernet ports provide a standard RJ45 10/100/1000 Mbps jack connector with LED indicators on the front side to show its Active/ Link status and Speed status.

Pin assignment and signal names of Ethernet connector



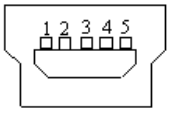
10/100 Mbps- Green
1G Mbps – Orange

Pin №	Signal Name	Pin №	Signal Name
1	TX1+	2	TX1-
3	TX2+	4	TX3+
5	TX3-	6	TX2-
7	TX4+	8	TX4-

2.1.8 Console Port Connector

The FA30SB3-210 uses Mini USB B type connector for debug purpose only.

Pin assignment and signal names of console port



Pin №	Signal Name	Pin №	Signal Name
1	DBUG_VBUS	2	RX
3	TX	4	GND(Reserved)
5	GND	6	GND
7	GND	8	GND
9	GND		

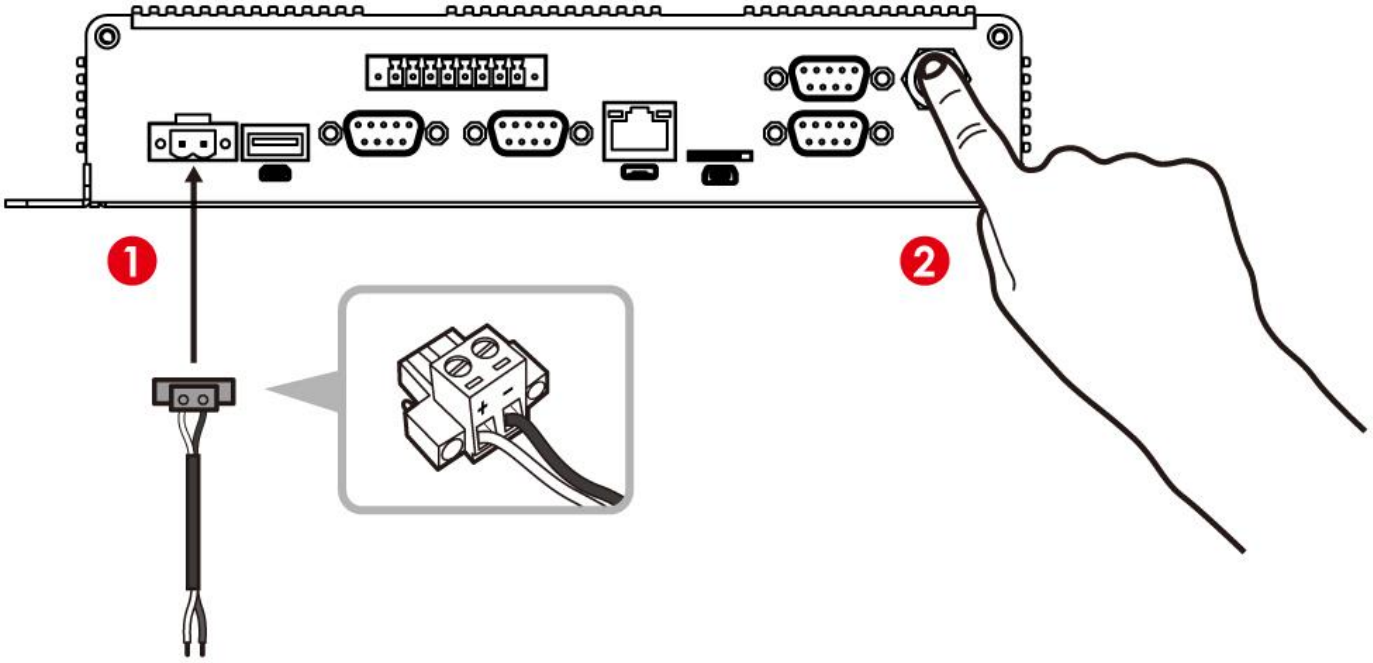
2.2 Connecting the Power

The DC power supply connector of the FA30SB3-210 ARM-based Box PC is on the front panel. The DC power input for the FA30SB3-210 allows a voltage input range from 9 V DC to 24 V DC.

Warning!
Ensure voltage and polarity is compliant with the DC input.
Improper input voltage or polarity can cause system damage.

To turn on the system:

1. Connect FA30SB3-210 to 9-24V DC. The power source can either be from a power adapter or an in-house power source.
2. Press Power button to turn on the system.



Chapter 3: Mounting

This chapter describes how to mount the FA30SB3-210 ARM-based Box PC.

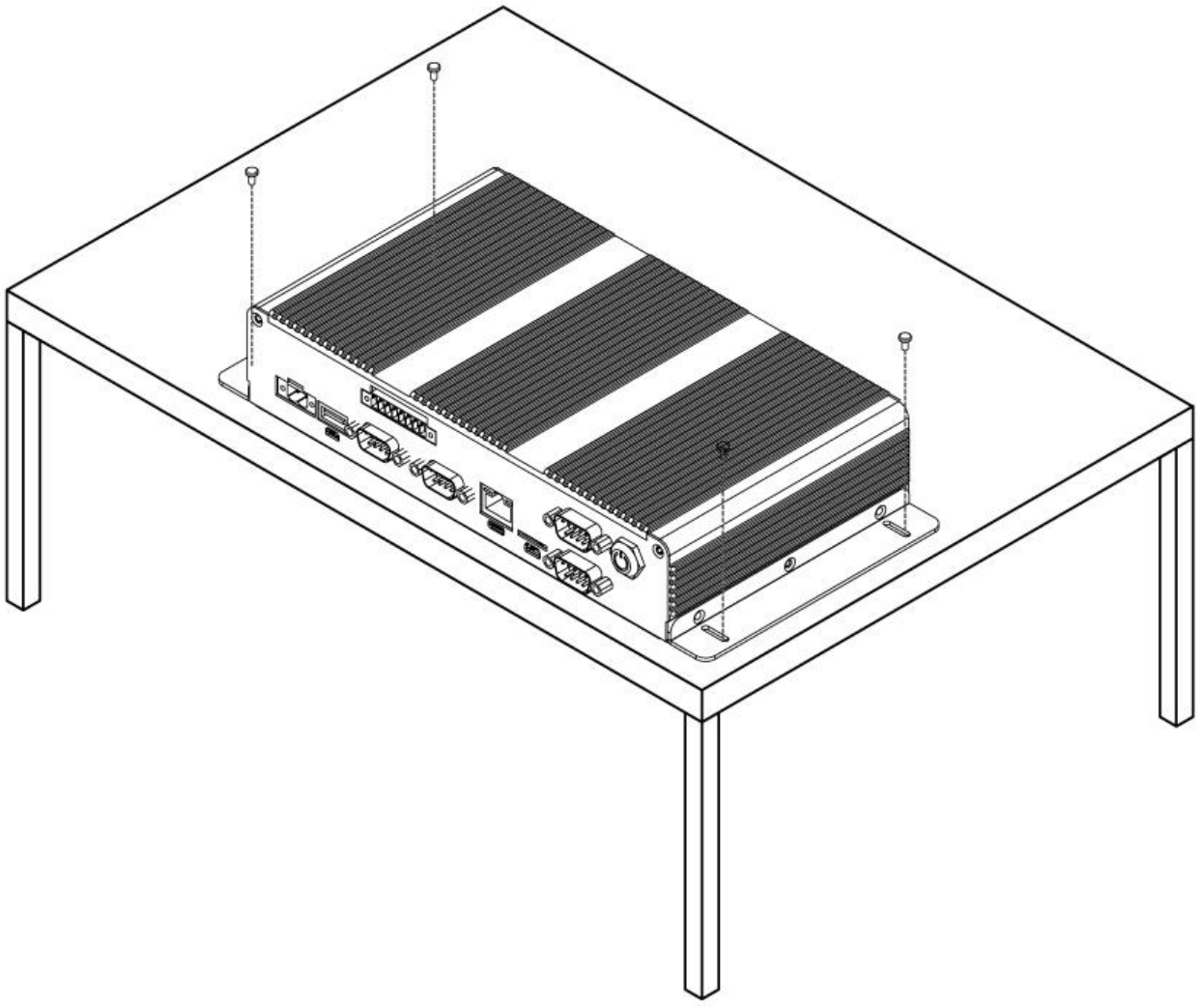
3.1 Wall and Desk Mounting

The FA30SB3-210 supports two types of mounting: wall and desk mounting.

Mounting Instruction:

1. Fasten screws to secure L-shape mounting brackets to the FA30SB3-210 (If bracket is not installed).

2. Place the FA30SB3-210 on the fixture (ex. table) and fasten screws to secure the unit to the fixture.



Chapter 4: Operating the Device

This chapter provides instructions on how to operate the FA30SB3-210 Box PC. Notice that pictures in this example are for Android 6.0 operating system.

4.1 Operating System

The FA30SB3-210 supports Android 6.0 operating systemby default.

Important:
The device is shipped with the OS System according to your order. Contact us if you have any questions regarding OS settings.

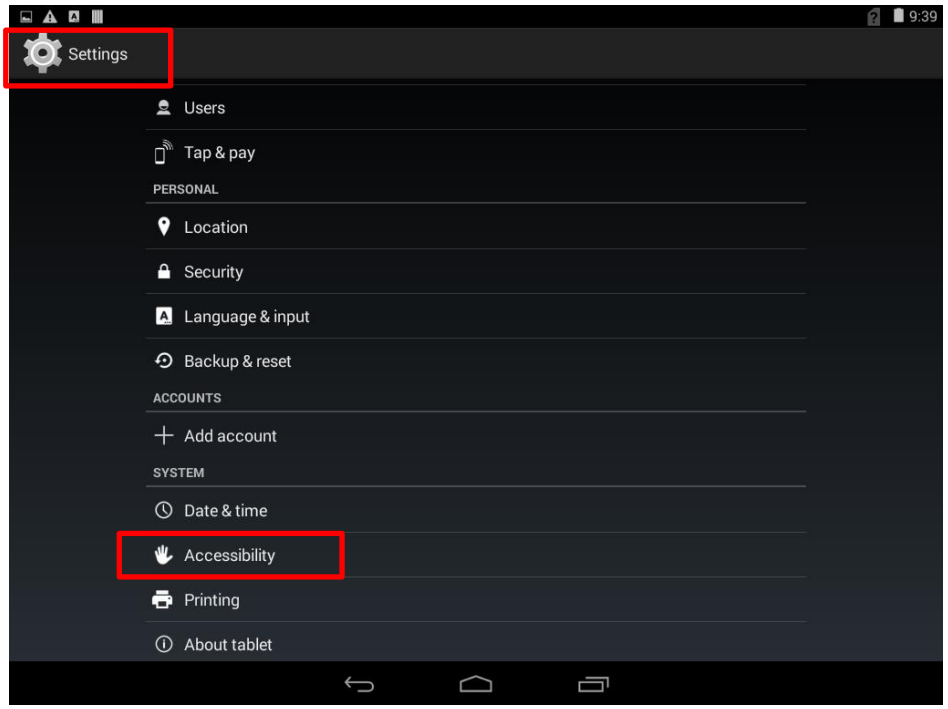
Important:
In Android OS the watchdog timer is set by default. The system will automatically reboot if it hangs after 30 seconds. If the app hangs, watchdog function will not be activated.

4.2 Configuring Serial COM Port Settings

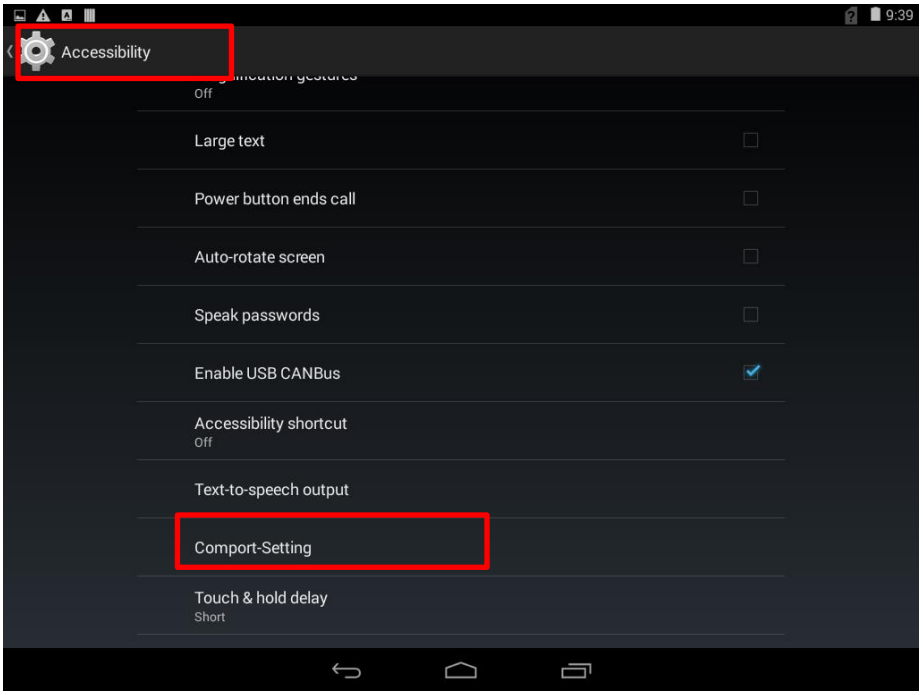
Serial COM Port can be configured for RS-232, RS-422 or RS-485 by software.

To configure serial COM port settings:

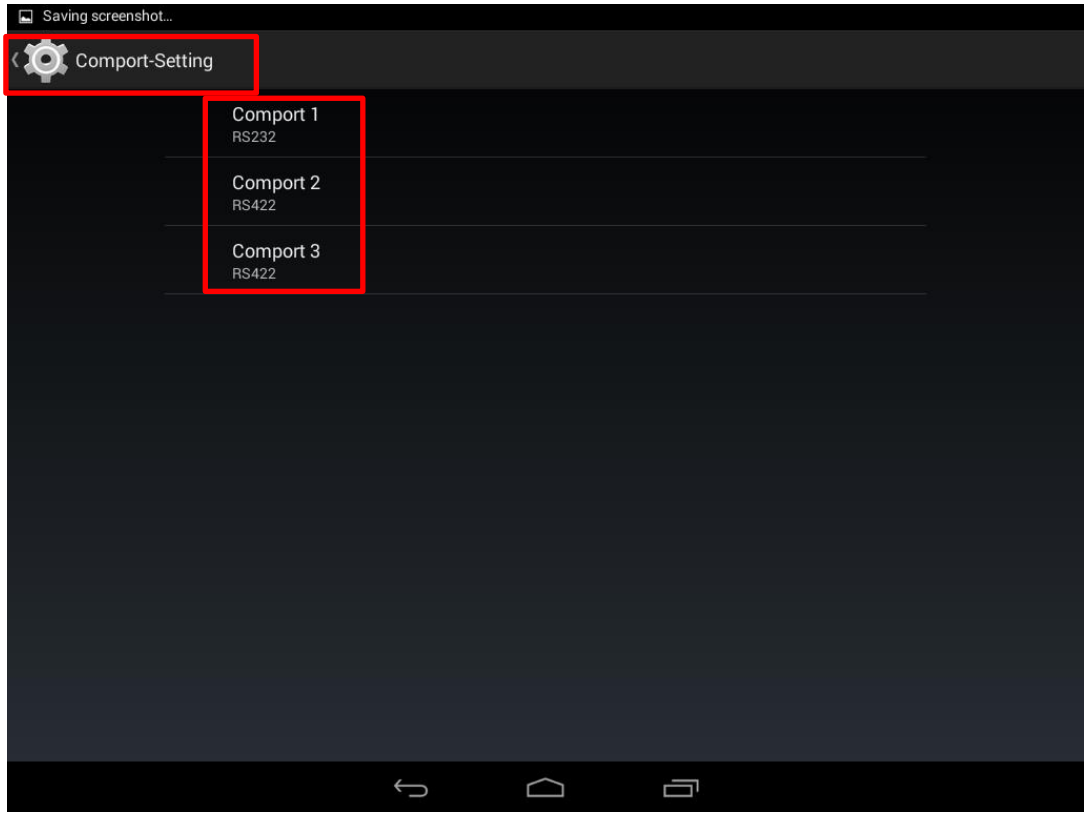
1. **Settings** > **Accessibility**.



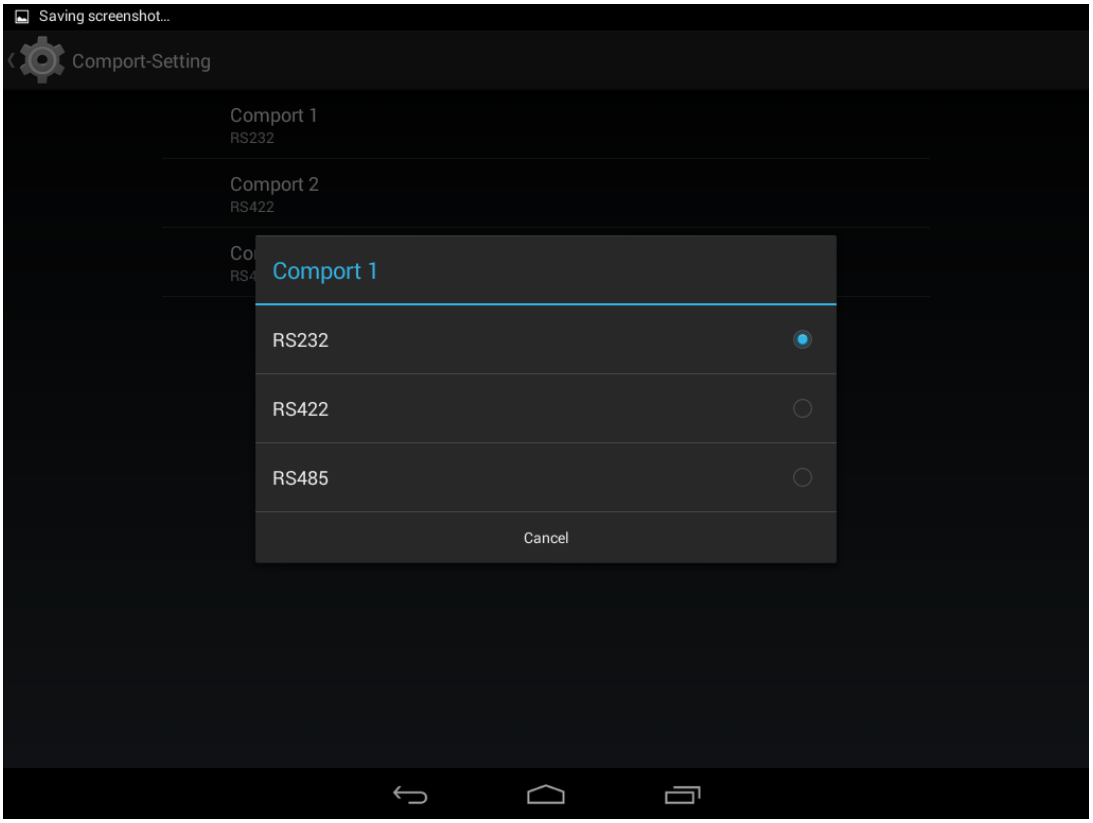
2. **Accessibility** > **Comport-Setting.**



3. **Comport-Setting** > **Comport 1/ Comport 2/ Comport 3.** Select COM port that you want to configure.

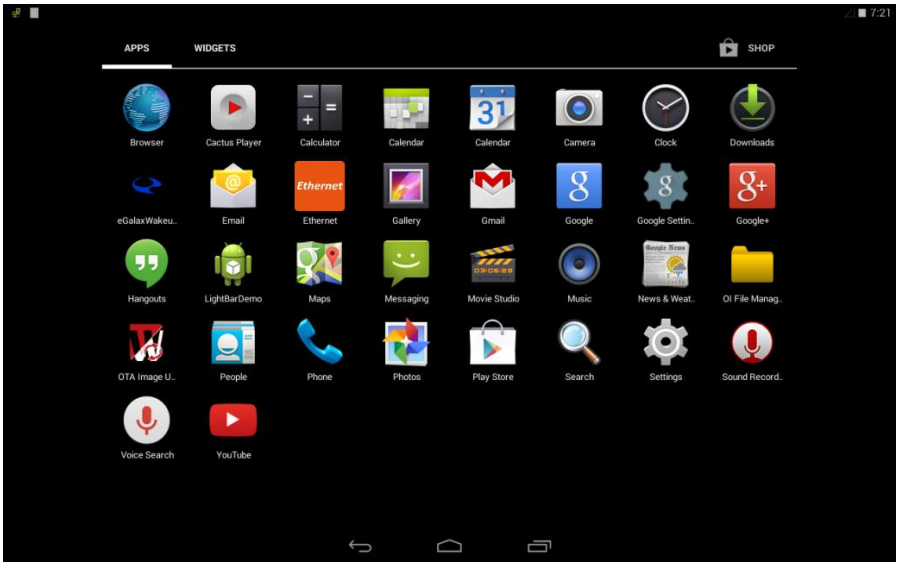


4. **Comport 1** > **RS232/RS422/RS485.** Configure serial port settings.

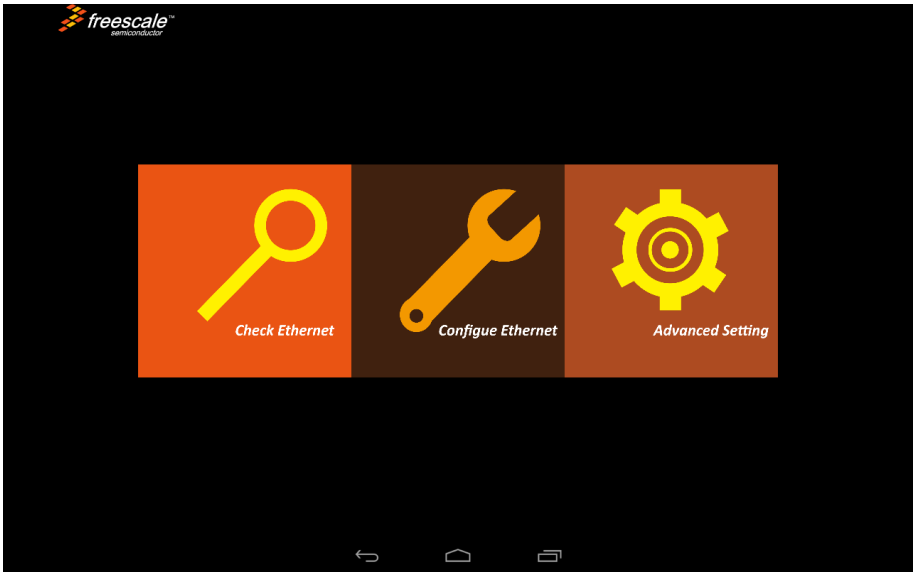


4.3 Ethernet

1. Connect Ethernet cable to the device.
2. Touch **All APPS** icon, and the open **Ethernet** application.



3. Ethernet APP main menu appears

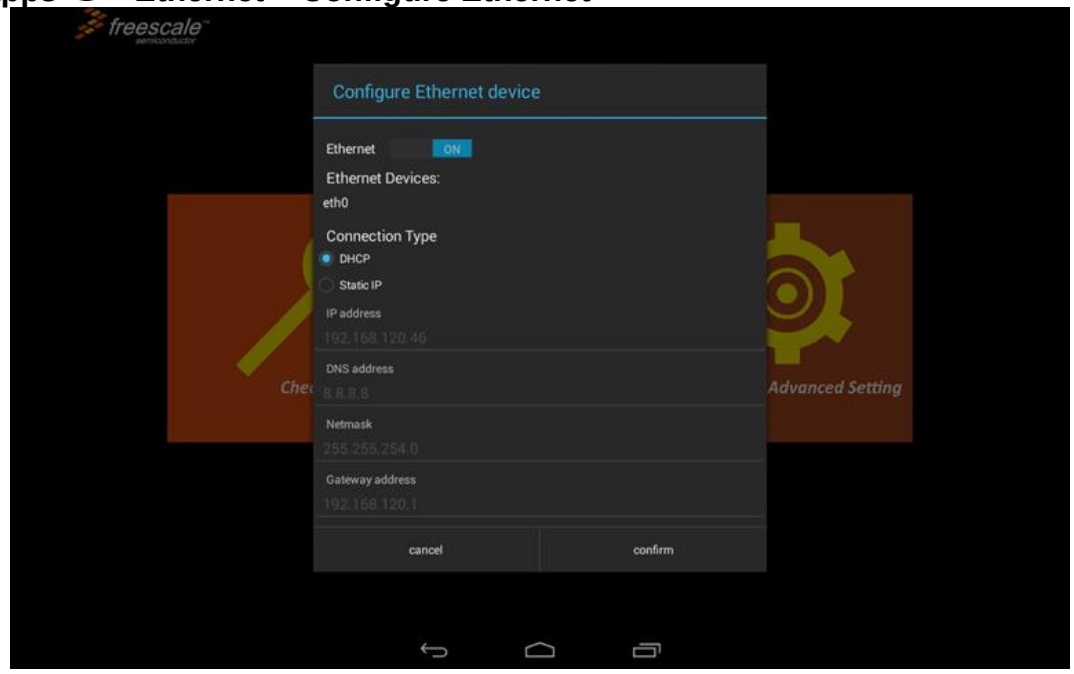


Setting	Description
Check Ethernet	Check Ethernet connection parameters: IP mode, IP address, DNS address and others
Configure Ethernet	Enable Ethernet connection and configure its such as connection type
Advanced Settings	Configure advanced parameters of the Ethernet

4.3.1 Configuring Ethernet Settings

To configure Ethernet:

Go to **All Apps** > **Ethernet > Configure Ethernet**



Ethernet OFF is set by default. Swipe **Ethernet ON to activate Ethernet connection.*

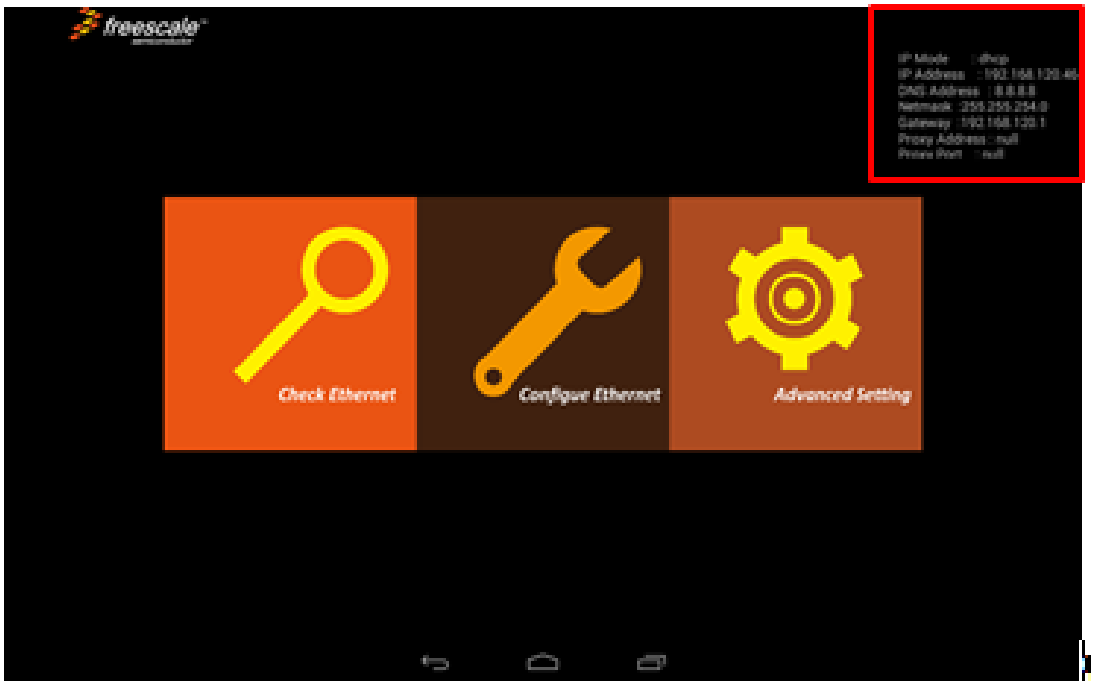
Connection Type

Setting	Description
DHCP (default)	The device automatically capture IP-address from the router
Static IP	Allows to manually set up IP-address, DNS, Network and Gateway

4.3.2 Checking Ethernet Settings

To check Ethernet settings:

Go to **APPS** > **Ethernet** > **Check Ethernet**



Ethernet settings menu appears on the top right side of the desktop.

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