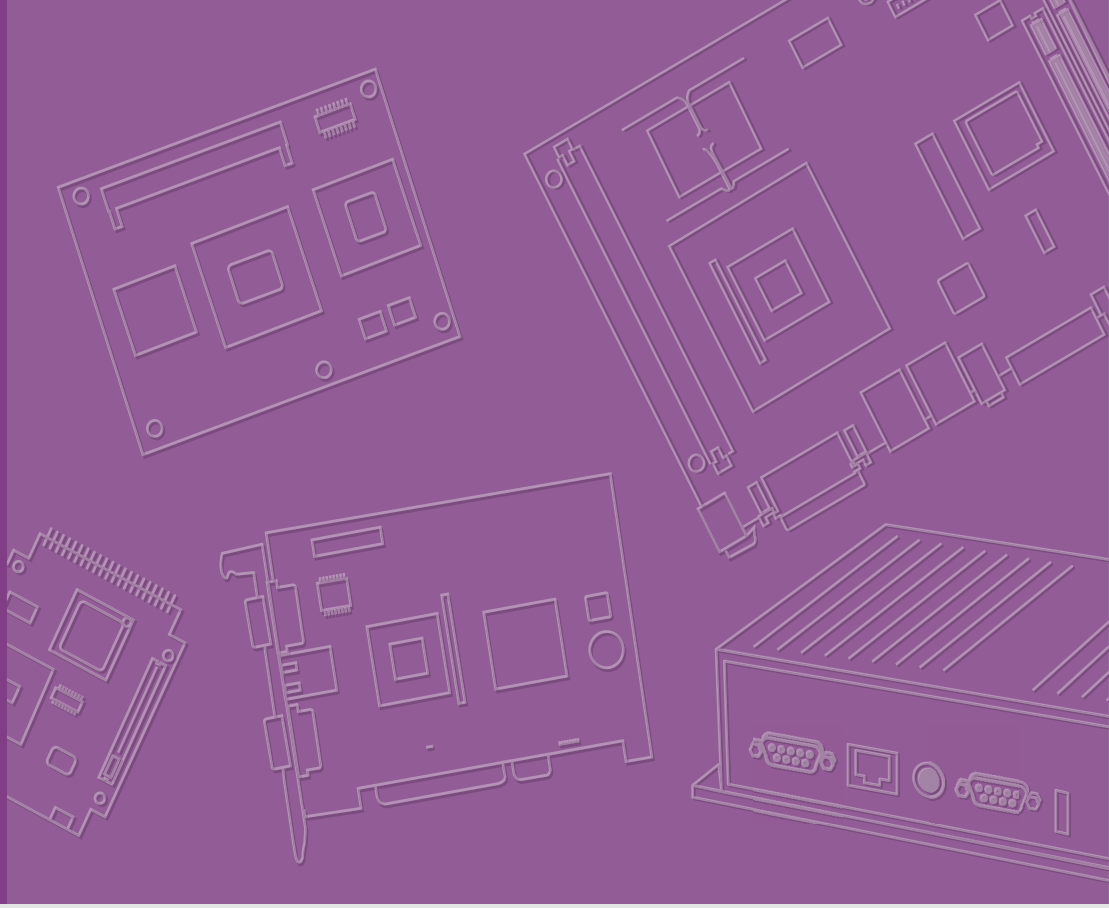

User Manual

RSB-3710

Rockchip ARM Cortex-A72 2.5” SBC

ADVANTECH

Enabling an Intelligent Planet

Copyright

Acknowledgments

ARM is a trademark of the ARM Corporation.

NXP is a trademark of the NXP Corporation.

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Product Warranty (2 years)

Advantech warrants to you, the original purchaser, that each of its products will be free from defects in materials and workmanship for two years from the date of purchase.

This warranty does not apply to any products which have been repaired or altered by persons other than repair personnel authorized by Advantech, or which have been subject to misuse, abuse, accident or improper installation. Advantech assumes no liability under the terms of this warranty as a consequence of such events.

Because of Advantech's high quality-control standards and rigorous testing, most of our customers never need to use our repair service. If an Advantech product is defective, it will be repaired or replaced at no charge during the warranty period. For out-of-warranty repairs, you will be billed according to the cost of replacement materials, service time and freight. Please consult your dealer for more details.

If you think you have a defective product, follow these steps:

1. Collect all the information about the problem encountered. (For example, CPU speed, Advantech products used, other hardware and software used, etc.) Note anything abnormal and list any onscreen messages you get when the problem occurs.
2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information readily available.
3. If your product is diagnosed as defective, obtain an RMA (return merchandise authorization) number from your dealer. This allows us to process your return more quickly.
4. Carefully pack the defective product, a fully-completed Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.
5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

Part No. 2006371000 Edition 1

Printed in China June 2021

Declaration of Conformity

FCC Class B

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 in a residential installation. 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. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for assistance.

Safety Precaution - Static Electricity

Follow these simple precautions to protect yourself from harm and the products from damage:

- To avoid electrical shock, always disconnect the power from your PC chassis before you work on it. Don't touch any components on the CPU card or other cards while the PC is on.
- Disconnect power before making any configuration changes. The sudden rush of power as you connect a jumper or install a card may damage sensitive electronic components.

Packing List

Before setting up the system, check that the items listed below are included and in good condition. If any item does not accord with the table, please contact your dealer immediately:

- 1 x RSB-3710
- 1 x Heatsink
- 1 x China RoHS

Ordering Information

Part No.	Description
RSB-3710CO-XNA1E	RSB-3710 2GDDR, 16GeMMC, 0 ~ 60 °C (32 ~ 140 °F)
RSB-3710WO-XNA1E	RSB-3710 2GDDR, 16GeMMC, -20 ~ 85 °C (-4 ~ 185 °F)

Optional Accessories

Part No.	Description
96PSA-A36W12R1-3 [03]	ADP A/D 100-240V 36W 12V C6 DC PLUG 90° 62368
1702002605	Power Cord 3P EU 10A 250V 183 cm
1702031801	Power Cord 3P UK 10A 250V 183 cm
1702002600	Power Cord UL 3P 10A 125V 183 cm
1700009652	Power Cord CCC 3P 10A 250V 187 cm
700021565-01	Debug cable
IDK-1107WR-40WVA1E	7" LED PANEL 400N with 4WR touch, 800x480(G)
1700031071-01	For IDK-1107WR LVDS and black light cable
IDK-1115R-40XGC1E	15" LED panel 1024x768(G) with 5W R-touch
1700031073-01	For IDK-1115R LVDS and black light cable
IDK-1121WR-30FHA1E	21.5",1920x1080,300nit,Part No. 97.21G01.001-S03
1700031072-01	For IDK-1121WR LVDS and black light cable
XUPOS-NT156FHM-N41	15.6" LCD, 220nits, 1920x1080
1700031102-01	For XUPOS-NT156FHM eDP and black light cable
XUTC-B156XTN07.1	AUO 15.6", 1366 x 768, 220nits, for UTC project
1700031103-01	For B156XTN07.1 eDP and black light cable
EXM-CMPF1-M2E01E	Mini PCIE-to-M.2 adapter board
EWM-W188M201E	WiFi 802.11ac/abgn 2T2R and BT4.2
1750007965-01	Antenna Cable R/P SMA (M) to MHF4, 300mm
1750008671-01	Dipole Ant.SMA/M-R 2.4/5G 2.5/4dBi BLK 109mm
968AD00479*	4G module LTE Cat 4 for China
1750006264	Antenna cable SMA(F)/MHF 15cm
1750007990-01	Antenna 4G/LTE full band L=11 cm 50 Ohm
SQF-MSDM1-8G-21C	SQF MICRO SD C10 MLC 8G (-25 ~ 85 °C/-13 ~ 185 °F)

* Please contact us to get suitable cellar module for your region.

Safety Instructions

1. Read these safety instructions carefully.
2. Keep this User Manual for later reference.
3. Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.
4. For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.
5. Keep this equipment away from humidity.
6. Put this equipment on a reliable surface during installation. Dropping it or letting it fall may cause damage.
7. The openings on the enclosure are for air convection. Protect the equipment from overheating. DO NOT COVER THE OPENINGS.
8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
9. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
10. All cautions and warnings on the equipment should be noted.
11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.
12. Never pour any liquid into an opening. This may cause fire or electrical shock.
13. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
14. If one of the following situations arises, get the equipment checked by service personnel:
    - 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's manual.
    - The equipment has been dropped and damaged.
    - The equipment has obvious signs of breakage.

DISCLAIMER: This set of instructions is given according to IEC 704-1. Advantech disclaims all responsibility for the accuracy of any statements contained herein.

Contents

Chapter 1

General Information

1.1 Introduction

Advantech's RSB-3710 is a RISC 2.5" single board computer (SBC) powered by high-performance Rockchip RK3399 ARM dual Cortex-A72 and quad Cortex-A53 processors. RSB-3710 supports 4K display via HDMI and offers dual HDMI/LVDS/ eDP. In addition, this innovative solution features diverse I/O — including dual GbE, 2 x serial ports, 2 x USB, and 12 x GPIO. RSB-3710 also features Mini-PCIe, and SIM card slots for integrating Wi-Fi, Bluetooth, and 3G/4G modules. RSB-3710 is an ideal solution for applications in healthcare, security, IoT gateways, and vending machines.

1.2 Product Features

Specification	Feature	Description
Form factor	2.5" SBC with UIO40-Express	100 x 72 mm (3.93 x 2.83 in)
Processor	CPU	RK3399/RK3399K dual-core Cortex-A72 and quad-core Cortex-A53 1.8 GHz
Storage	Memory	On-board LPDDR4 2GB
	NAND Flash	16GB of eMMC Flash
Display	HDMI	1 x Support HDMI 2.0, up to 4K, 60Hz
	eDP	1 x
	LVDS	1 x reused with eDP
Ethernet	Ethernet	2 x 10/100/1000 Mbps
IO	USB	1 x USB 3.0+1 USB 2.0, TypeA
	USB OTG	1 x
	Reset	1 x
	RS232	1 x RS232 by pin header, reused as debug port by jumper
	Audio	1 x Mic in; 1 x line out
UIO express	USB	4 x USB 2.0, UIO TypeA
	COM	2 x RS232 by UIO TypeB
	I2C	1 x w/3.3V
	GPIO	4 x UIO Type A, w/3.3V 8 x UIO Type B, w/3.3V
Expansion	SD	1 x Mirco SD
	MINI-PCIe	1 x USB 2.0 and PCIE signal
	M.2	NA
	SIM	1 x Nano SIM
Power	Power	12V DC-in
Environment	Operating temperature	0 ~ 60/-20 ~ 85 °C (32 ~ 140/-4 ~ 185 °F)
Operating System		Android\Linux Debian

1.3 Mechanical Specifications

- **Dimensions:** 100 x 72 x 19 mm (3.93 x 2.83 x 0.74 in)
- **Reference Weight:** 0.5 Kg (1.1 lb)

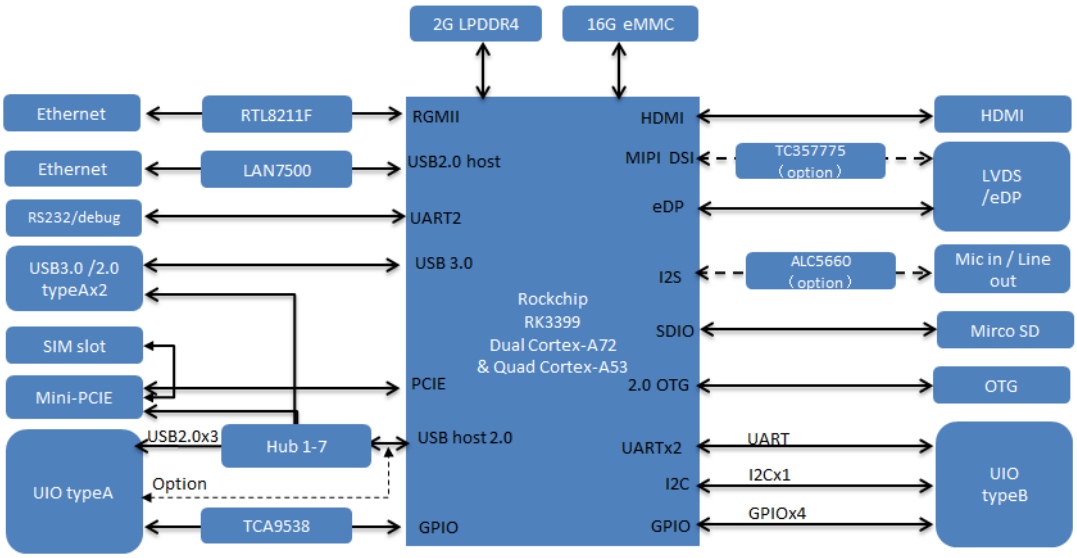
1.4 Electrical Specifications

- **Power supply type:** DC-in 12V
- **RTC Battery:**
  - Typical voltage: 3
  - Normal discharge capacity: 210Amh

1.5 Environmental Specifications

- **Operating temperature:** 0 ~ 60 °C/-20 ~ 85 °C (32 ~ 104/-4 ~ 185 °F)
- **Operating humidity:** 5 ~ 95% relative humidity, non-condensing
- **Storage temperature:** -40 ~ 85°C (-40 ~ 185 °F)
- **Storage humidity:** 60 °C (140 °F) @ 95% RH Non-condensing

1.6 Block Diagram

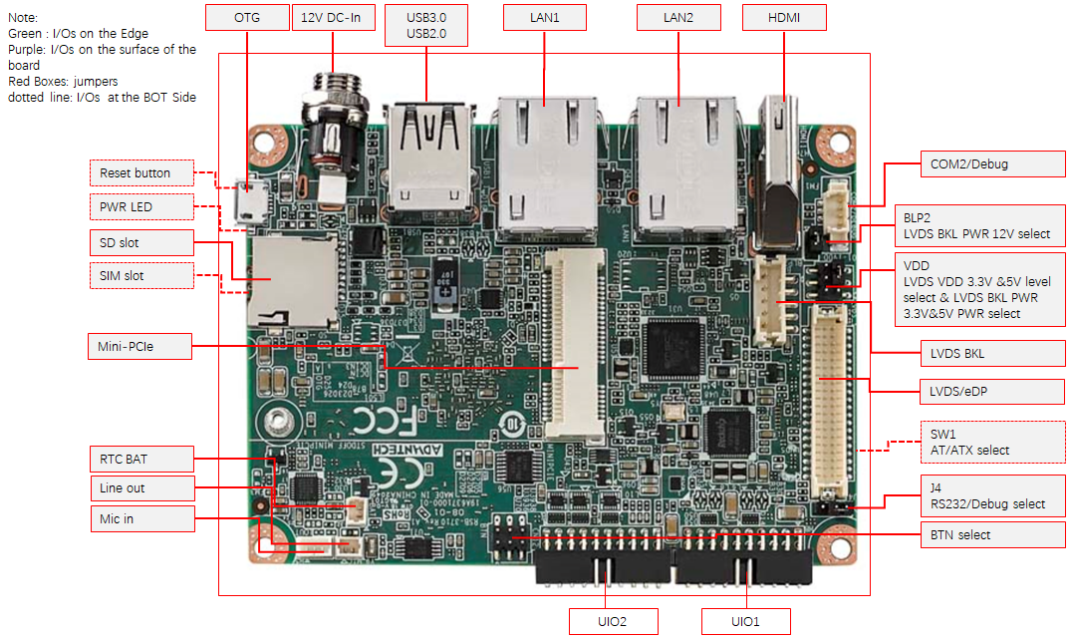


Chapter 2

H/W Installation

This chapter details RSB-3710 mechanical and connector information.

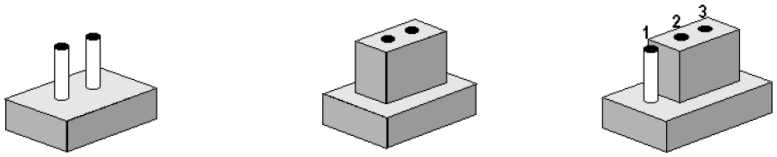
2.1 Jumper and Connector Locations



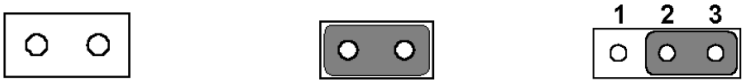
2.2 Jumpers

2.2.1 Jumper Description

Cards can be configured by setting jumpers. A jumper is a metal bridge used to close an electric circuit. It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To close a jumper, you connect the pins with the clip. To open a jumper, you remove the clip. Sometimes a jumper will have three pins, labeled 1, 2 and 3. In this case you would connect either pins 1 and 2 or 2 and 3.



The jumper settings are schematically depicted in this manual as follows.



A pair of needle-nose pliers may be helpful when working with jumpers. If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any changes.

Generally, you simply need a standard cable to make most connections.

Warning! *To avoid damaging the computer, always turn off the power supply before setting jumpers.*

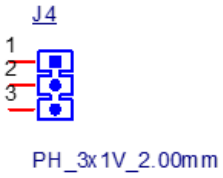
2.2.2 Jumper List

Table 2.1: Jumper List	
J4	COM2RS232 and debug mode select
VDD	LVDS VDD 3.3V &5V level select & LVDS BKL PWR 3.3V&5V PWR select
BLP2	LVDS BKL PWR 12V select
SW1	AT & ATX Mode Switch
BTN	Maskrom mode select

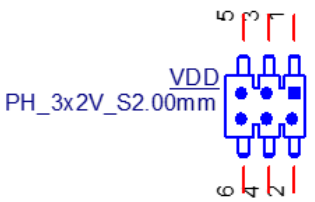
2.2.3 Jumper Settings

J4	Uart2 use for com port and debug mode select
Part number	1653003101
Footprint	HD_3x1P_79_D
Description	PIN HEADER 3x1P 2.0mm 180D(M) DIP 2000-13 WS
Setting	Function
(1-2)	Debug port
(2-3)	RS232

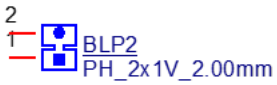
This pin header is designed for selecting the com port and debug mode select.



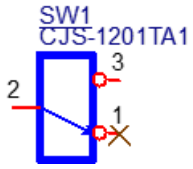
VDD	LVDS VDD 3.3V &5V level select & LVDS BKL PWR 3.3V&5V PWR select
Part number	1653003260
Footprint	HD_3x2P_79
Description	PIN HEADER 3x2P 2.0mm 180D(M) SMD 21N22050
Setting	Function
(1-3)	LVDS VDD 5V
(3-5)	LVDS VDD 3.3V
(4-6)	LVDS BKLT PWR 3.3V
(2-4)	LVDS BKLT PWR 5V



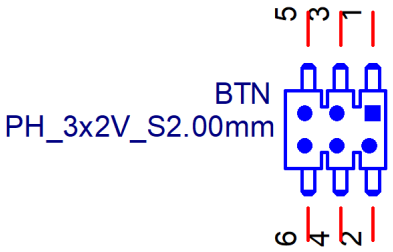
BLP2	LVDS BKLT PWR 12V level select
Part number	1653002101-02
Footprint	HD_2x1P_79_D
Description	PIN HEADER 2x1P 2.0mm 180D(M) DIP 21N12050
Setting	Function
(1-2)	LVDS BKLT PWR 12V



SW1	AT & ATX Mode Switch
Part Number	1600000071
Footprint	SW_3P_CJS-1201TA1
Description	SLIDE SW CJS-1201TA1 SMD 3P SPDT P=6.0mm W=2.5mm
Setting	Function
(2-1)	ATX Mode
(2-2)	Floating
(2-3)	AT Mode (default)



BTN	Maskrom mode select
Part number	1653003260
Footprint	HD_3x2P_79
Description	PIN HEADER 3x2P 2.0mm 180D(M) SMD 21N22050
Setting	Function
(3-5)	Maskrom mode
(5-6)	Normal mode
(1-2)	Power on system under ATX mode



Note! *Users who select ATX mode can power the system on using short BTN Pin 1 and BTN Pin 2.*

2.3 Connectors

2.3.1 Connector List

BAT	RTC CONN
HDMI1	HDMI1 CONN
BL	LVDS BKL CONN
LVDS	LVDS CONN
LAN1	LAN
LAN2	LAN
MINIPCIE	MINI PCIE 52P
SIM	Nano SIM Card
AUDIO	Audio PIN header
USB1	USB CONN
COM2/Debug	COM2
SD	SD slot
OTG	USB
BTN	Power BTN pin header
RST	Reset button
DCIN1	12V DC Jack
LED	LED
CN11	UIO1
CN12	UIO2

2.3.2 Connector Pin Definition

2.3.2.1 RTC Battery Connector (BAT)

RSB-3710 supports a lithium 3V_210mAH CR2032 battery with a wafer box.

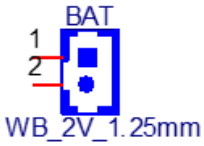


Figure 2.1 DC RTC Battery Connector

2.3.2.2 HDMI Connector (HDMI1)

RSB-3710 supports one HDMI port. The pin definition for HDMI1 is demonstrated below:

Pin	Description	Pin	Description
1	HDMI1_z_DATA2+	11	GND
2	GND	12	HDMI1_z_CLK-
3	HDMI1_z_DATA2-	13	HDMI1_z_CEC
4	HDMI1_z_DATA1+	14	NC
5	GND	15	HDMI1_DDC_CLK
6	HDMI1_z_DATA1-	16	HDMI1_DDC_DATA
7	HDMI1_z_DATA0+	17	GND
8	GND	18	+5V_HDMI
9	HDMI1_z_DATA0-	19	HDMI1_HPD
10	HDMI1_z_CLK+		

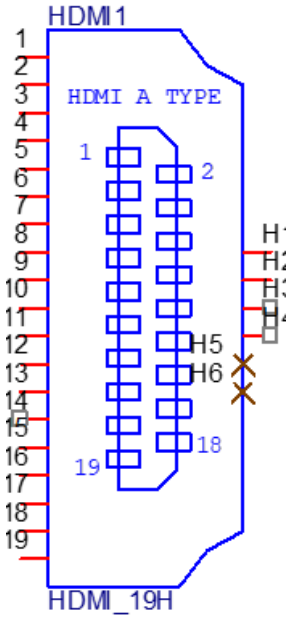


Figure 2.2 HDMI Connector

2.3.2.3 LVDS Inverter Power Connector (BL)

To avoid damage to LCD panel when connecting to an LVDS, please ensure the correct voltage level has been set before powering the device on (refer to jumper setting description for the BL and/or LCD datasheet used in the application).

Pin	Description
1	+5V
2	LVDS_PWM
3	LVDS_BLEN
4	GND
5	+VDD_BKLT

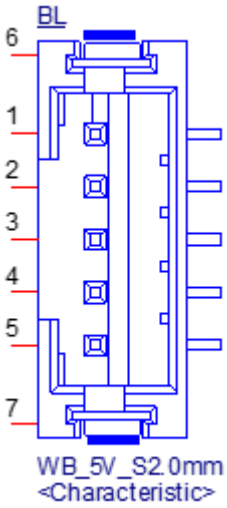


Figure 2.3 LVDS Inverter Power Connector

2.3.2.4 LVDS Connector (LVDS)

RSB-3710 features an LVDS 20x2-pin board-to-board connector for one port single channel 24 bit LVDS or one port dual channel 24 bit LVDS. To avoid damage to LCD panel when connecting to an LVDS, please ensure the correct voltage level has been set before powering the device on (refer to jumper setting description for the BL and/ or LCD datasheet used in the target application)

Pin	Description
1	VDD_LVDS
2	VDD_LVDS
3	GND
4	GND
5	VDD_LVDS
6	VDD_LVDS
7	LVDS1_Z_D0N
8	LVDS2_Z_D0N
9	LVDS1_Z_D0P
10	LVDS2_Z_D0P
11	GND
12	GND
13	LVDS1_Z_D1N
14	LVDS2_Z_D1N
15	LVDS1_Z_D1P
16	LVDS2_Z_D1P
17	GND
18	GND
19	LVDS1_Z_D2N
20	LVDS2_Z_D2N
21	LVDS1_Z_D2P
22	LVDS2_Z_D2P
23	GND
24	GND
25	LVDS1_Z_CLK0N
26	LVDS2_Z_CLK0N
27	LVDS1_Z_CLK0P
28	LVDS2_Z_CLK0P
29	GND
30	GND
31	NC
32	NC
33	GND
34	EDP_HPD(or LVDS GND)
35	LVDS1_Z_D3N
36	LVDS2_Z_D3N
37	LVDS1_Z_D3P
38	LVDS2_Z_D3P
39	LVDS_PIN39(PD 4.7Kohm to GND)
40	LVDS_CTRL

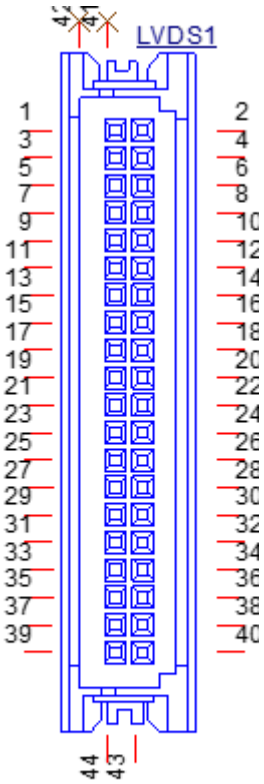


Figure 2.4 LVDS Connector

2.3.2.5 Ethernet Connector (LAN1)

RSB-3710 provides one RJ45 LAN interface connector. This connector is compliant with 1000 base-T IEEE 802.3ab, 100 base-TX IEEE 802.3u, and 10 base-T IEEE 802.3.The Ethernet ports use a standard RJ-45 jack connector with LED indicators on the front side. These LEDs display Active/Link and speed statuses.

Pin	Description
1	LAN1_MDI0+
2	LAN1_MDI0-
3	LAN1_MDI1+
4	LAN1_MDI1-
5	LAN1CONN
6	LAN1_GND
7	LAN1_MDI2+
8	LAN1_MDI2-
9	LAN1_MDI3+
10	LAN1_MDI3-
11	LAN1_LINK_ACT#
12	+V3.3
13	LAN1_LINK1000#
14	LAN1_LINK100#

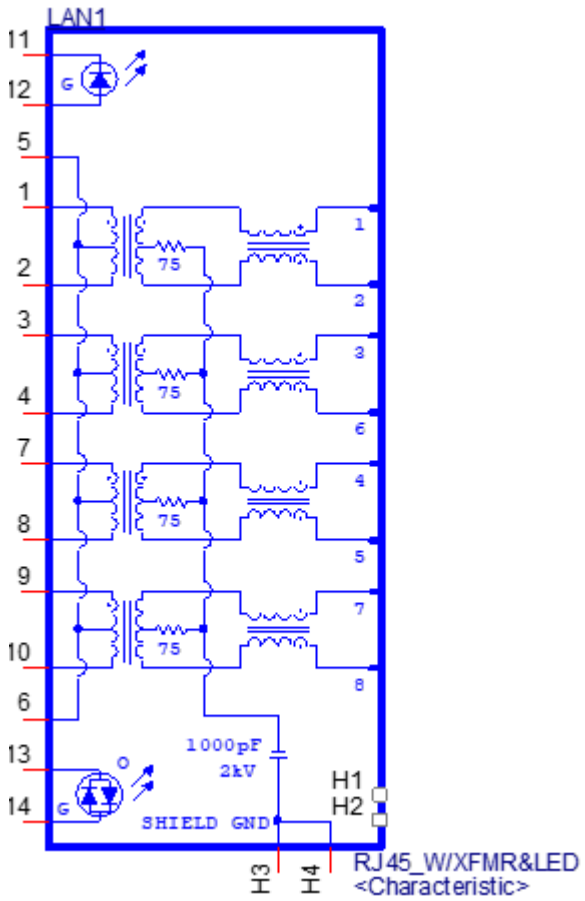


Figure 2.5 Ethernet Connector

2.3.2.6 Ethernet Connector (LAN2)

RSB-3710 provides one RJ45 LAN interface connector. This connector is compliant with 1000 base-T IEEE 802.3ab, 100 base-TX IEEE 802.3u, and 10 base-T IEEE 802.3.The Ethernet ports use a standard RJ-45 jack connector with LED indicators on the front side. These LEDs indicate Active/Link and speed statuses

Pin	Description
1	LAN2_MDI0+
2	LAN2_MDI0-
3	LAN2_MDI1+
4	LAN2_MDI1-
5	LAN2CONN
6	LAN2_GND
7	LAN2_MDI2+
8	LAN2_MDI2-
9	LAN2_MDI3+
10	LAN2_MDI3-
11	LAN2_LINK_ACT#
12	+V3.3A_LAN2
13	LAN2_LINK1000#
14	LAN2_LINK100#

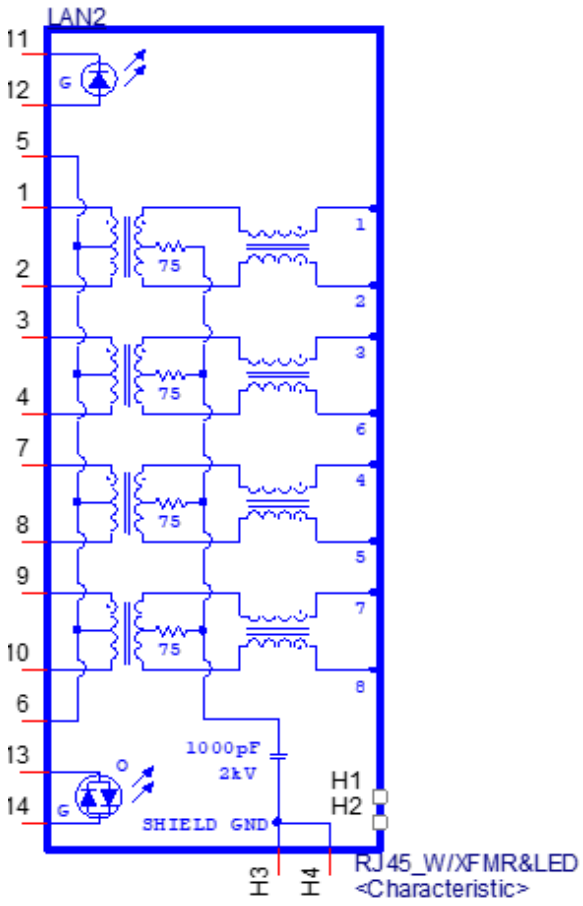


Figure 2.6 Ethernet Connector

2.3.2.7 Mini PCIE (MINIPCIE)

RSB-3710 supports mini-PCIE interface. Detailed Pin definitions are displayed below.

Pin	Signal Name	Pin	Signal Name
1	PCIE_z_WAKE#	2	+3.3V_PCIe
3	NC	4	GND
5	NC	6	NC
7	PCIE_z_REQ#	8	UIM_PWR
9	GND	10	UIM_DATA
11	CK_z_NGFF-	12	UIM_CLK
13	CK_z_NGFF+	14	UIM_RST
15	GND	16	NC
17	NC	18	GND
19	NC	20	W_DISABLE#
21	GND	22	PERST_M#
23	NGFF_PCIE_RX-	24	NC
25	NGFF_PCIE_RX+	26	GND
27	GND	28	NC
29	GND	30	NC
31	NGFF_PCIE_TX-	32	NC
33	NGFF_PCIE_TX+	34	GND
35	GND	36	USB_MINIPCIE_N
37	GND	38	USB_MINIPCIE_P
39	+3.3V_PCIe	40	GND
41	+3.3V_PCIe	42	LED_WWAN#
43	GND	44	NC
45	NC	46	NC
47	NC	48	NC
49	NC	50	GND
51	NC	52	+3.3V_PCIe

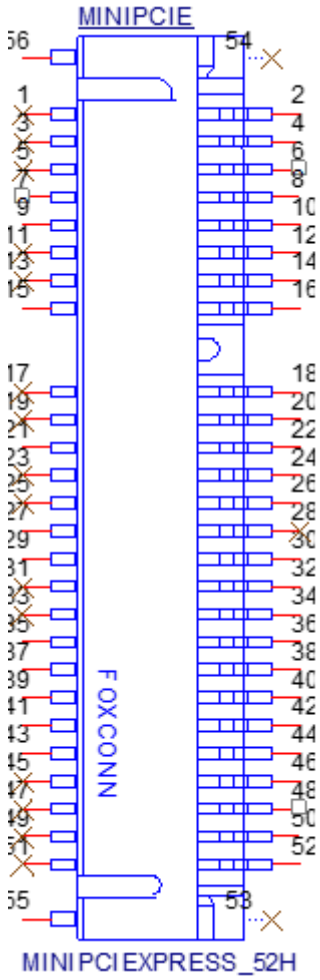


Figure 2.7 Mini PCIE Connector

2.3.2.8 NANO SIM Card Slot (SIM)

RSB-3710 supports on board NANO SIM socket is for 4G integration. Please insert valid SIM card to dial to 4G network.

Pin	Description
C1	SIM_VCC
C2	SIM_RST
C3	SIM_CLK
C5	GND
C6	NC
C7	SIM_DATA

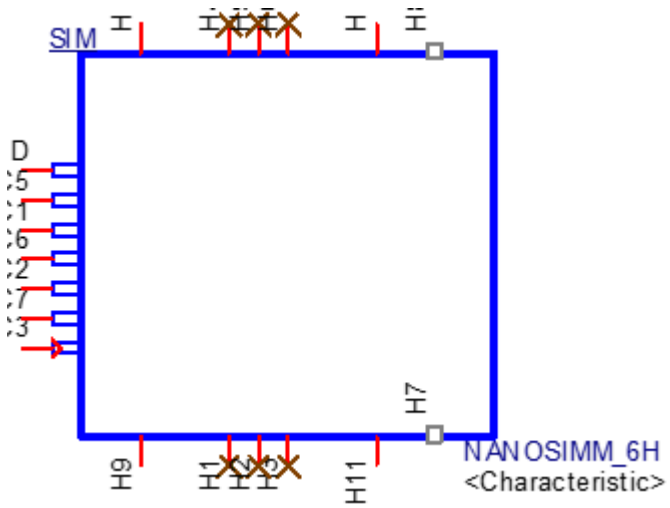


Figure 2.8 NANO SIM Card Slot

2.3.2.9 Audio (AUDIO)

RSB-3710 supports Line-out and Mic-in interface.

The LOUT pin definition is detailed below.

Pin	Description
1	LOUTLC_M
2	LOUTRC_M
3	GND_A

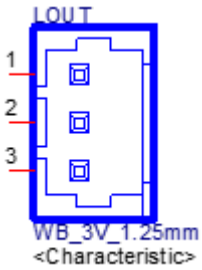


Figure 2.9 LOUT Connector

MIC — a detailed pin definition is displayed below.

Pin	Description
1	MIC_IN1_P
2	GND_A

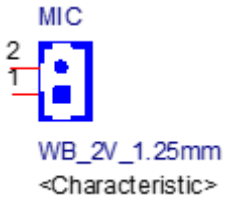


Figure 2.10 MIC Connector

2.3.2.10 USB Type A Connector (USB1)

RSB-3710 provides one standard USB 3.0 port, and one standard USB 2.0 Type A connector along the coastline.

Pin	Description
1	+USBV1
2	USB_D1-
3	USB_D1+
4	GND
5	USB3X0_z_RX-
6	USB3X0_z_RX+
7	GND
8	USB3X0_z_TX-
9	USB3X0_z_TX+
10	+V5_USB5
11	USB_D2-
12	USB_D2+
13	GND

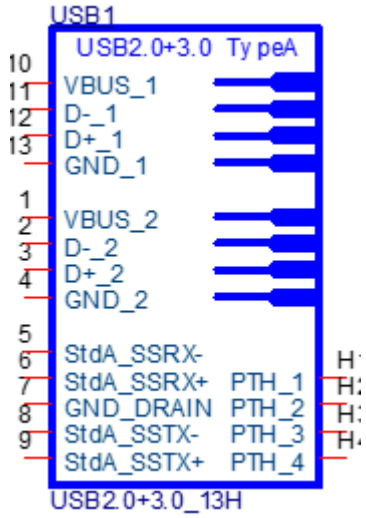


Figure 2.11 USB Port Connector

2.3.2.11 RS232 (COM1)

RRS232/Debug Port (COM2/DEBUG)

RSB-3710 can communicate with a host server (Windows or Linux) using a debug cable. (Advantech number: 1700021565-11).

Pin	Description
1	NC
2	COM2_TXD
3	COM2_RXD
4	GND

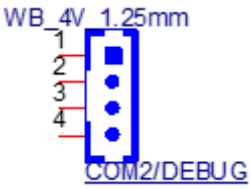


Figure 2.12 COM2/DEBUG Connector

2.3.2.12 Micro SD Slot (SD)

RSB-3710 supports SD/MMC card in Class 2, 4, 6, 8, and 10. Its supports a capacity of up to 64GB.

Pin	Signal Name
1	SDMMC0_z_D2
2	SDMMC0_z_D3
3	SDMMC0_z_CMD
4	+V3V_SD
5	SDMMC0_z_CLK
6	GND
7	SDMMC0_z_D0
8	SD_DAT1
CD	SDMMC0_z_D1

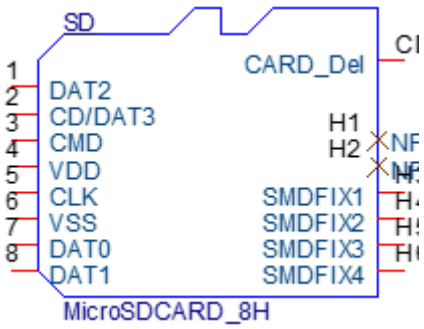


Figure 2.13 Micro SD Slot I2C Connector

2.3.2.13 Micro USB Connector (OTG)

RSB-3710 supports one USB OTG port on its coastline.

Pin	Description
1	+USB_OTG_5V
2	USB_OTG-_X
3	USB_OTG+_X
4	USB_OTG_ID_X
5	GND

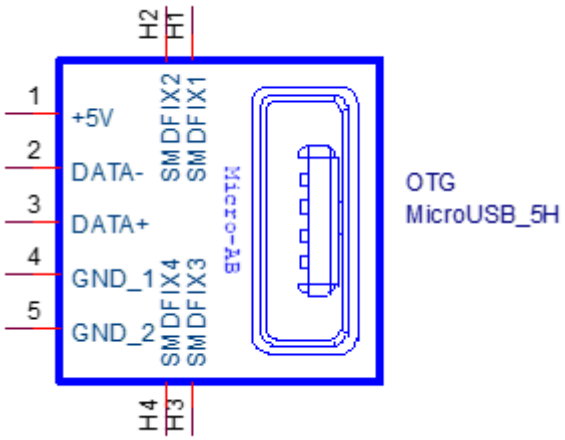


Figure 2.14 Micro USB Connector

2.3.2.14 Power Button and LED (BTN)

RSB-3710 uses a 2x3 pin header to support a power button, power LED lights, and 4G LED lights.

Pin	Pin Name
1	PWR_BTN (PWR_BTN+)
2	GND (PWR_BTN-)

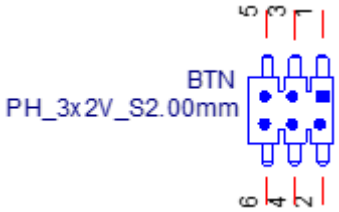


Figure 2.15 Power Button, Power LED, and 4G LED Pin Header

2.3.2.15 Reset Button (RST)

RSB-3710 features a reset button on its coastline.

Pin	Description
1	+V3.3A
2	+VPP_OTP
3	GND_F
4	GND_F

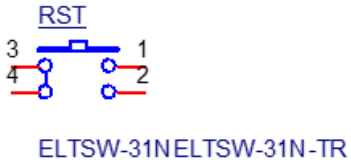


Figure 2.16 Reset Button

2.3.2.16 DC Power Jack (DCIN1)

RSB-3710 supports a DC-Jack header that can be connected $12V_{DC}$ external power input.

Pin	Description
1	+12V
2	GND
3	GND

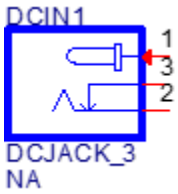


Figure 2.17 DC Jack

2.4 LED

Name	Description
PWR_LED	Power LED
LED_USER	USER LED

2.5 UIO1 and UIO2

RSB-3710 supports UIO-40 express UIO1. Their pin definitions are displayed below:

UIO1:

Pin	Signal Name	Pin	Signal Name
1	5V_USB1	2	GND
3	USB_z_P1_DM	4	USB_z_P2_DP
5	USB_z_P1_DP	6	USB_z_P2_DM
7	GND	8	+V5_USB2
9	GPIO1	10	GPIO2
11	GPIO3	12	GPIO4
13	+V5_USB3	14	GND
15	USB_z_P3_DM	16	USB_z_P4_DP
17	USB_z_P3_DP	18	USB_z_P4_DM
19	GND	20	+V5_USB4

UIO2:

Pin	Signal Name	Pin	Signal Name
1	+V5_OUT	2	GND
3	COM0_TX_B	4	COM4_TX_B
5	COM0_RX_B	6	COM4_RX_B
7	GPIO5	8	GPIO6
9	GPIO7	10	GPIO8
11	GPIO9	12	GPIO10
13	GPIO11	14	GPIO12
15	NC	16	I2C4_SDA_CONN
17	NC	18	I2C4_SCL_CONN
19	+V3.3_OUT	20	GND

2.6 Mechanical

2.6.1 Board Dimensions

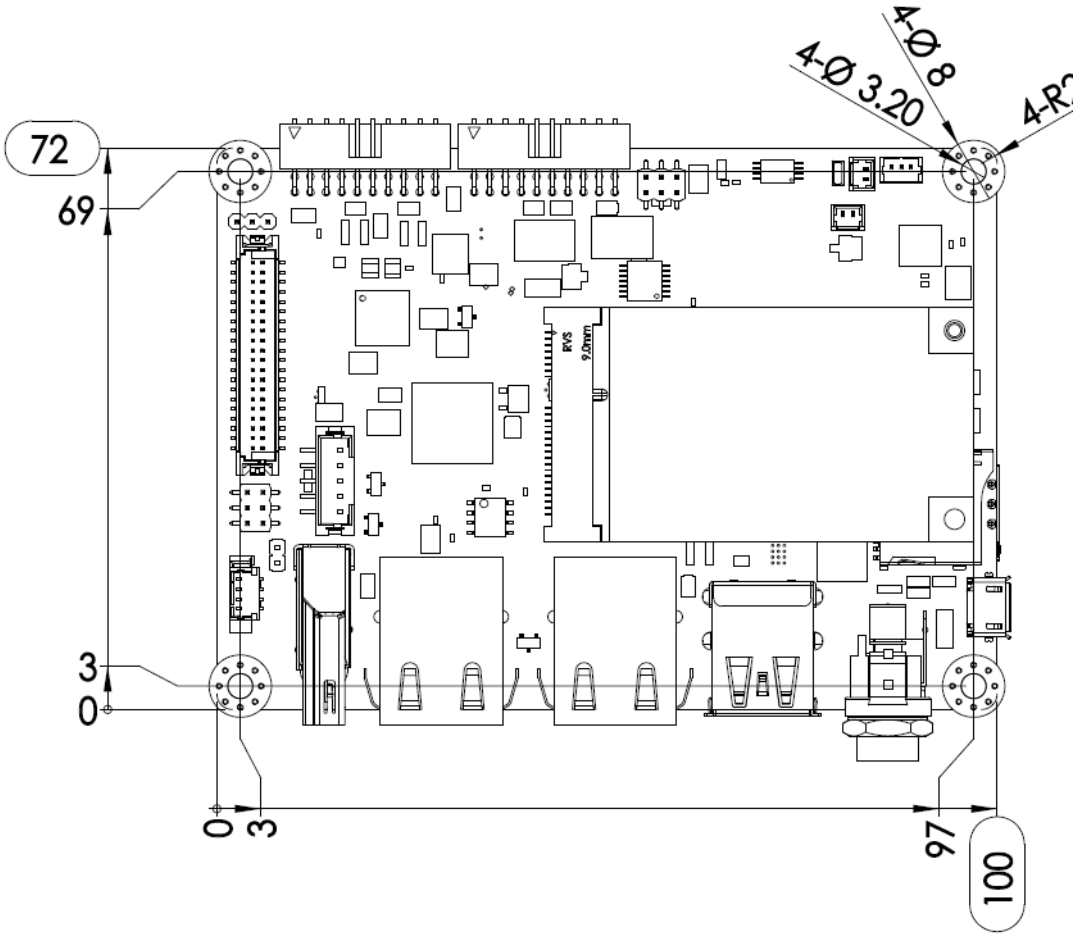


Figure 2.18 Board Dimensions (Top Side)

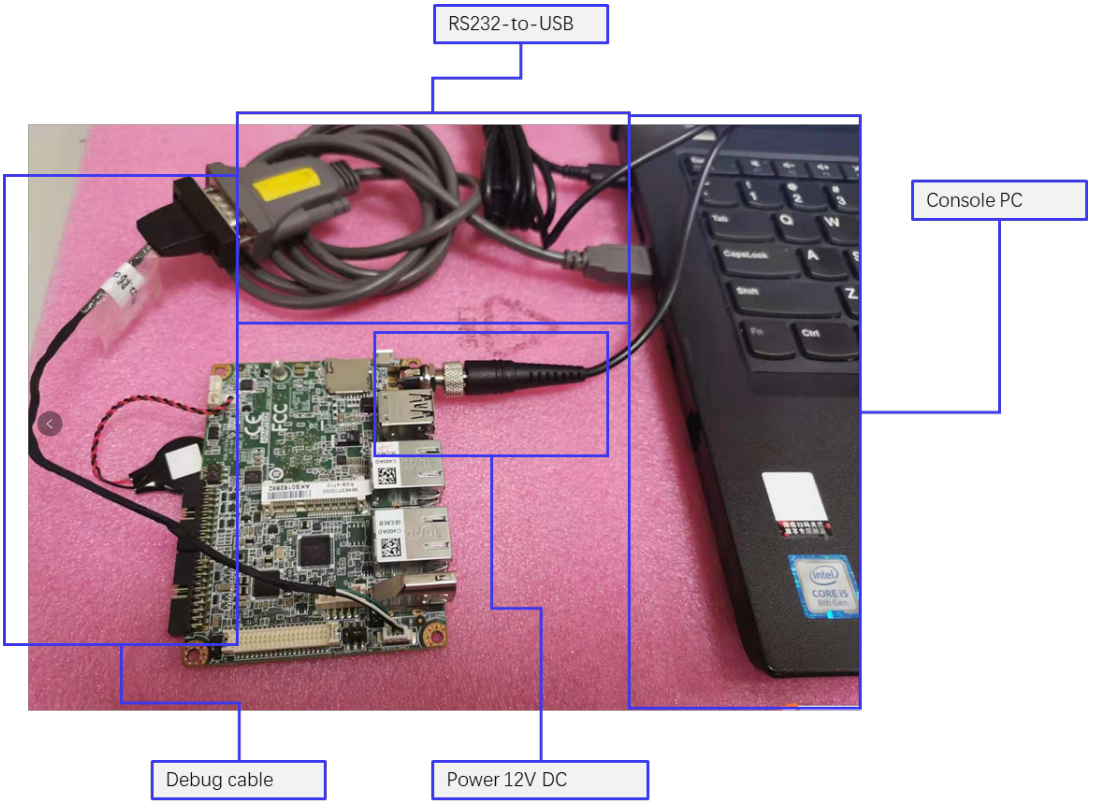
2.7 Quick Start Guide

2.7.1 Debug Port Connection

1. Connect the debug cable to RSB-3710 debug port.

Item	PN	Picture
debug cable	1700021565-11	
debug cable	1700026611-01	

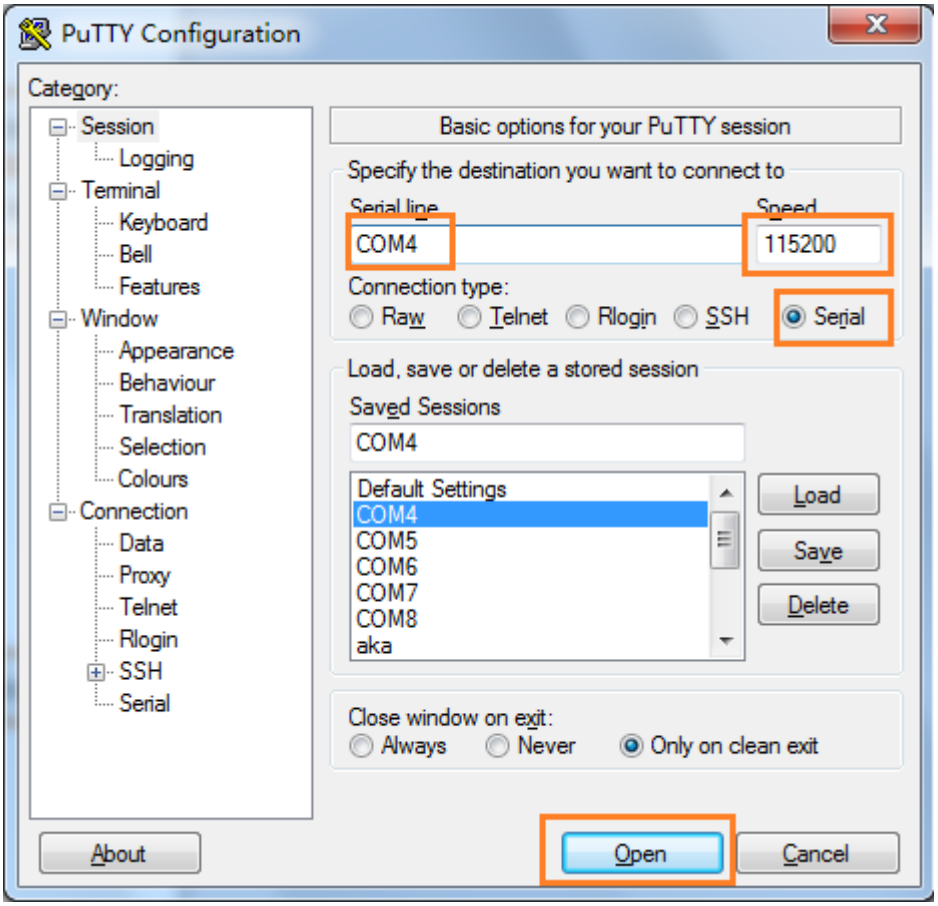
2. Connect the other side of the debug cable to your PC directly or via a USB-to-RS232 cable.



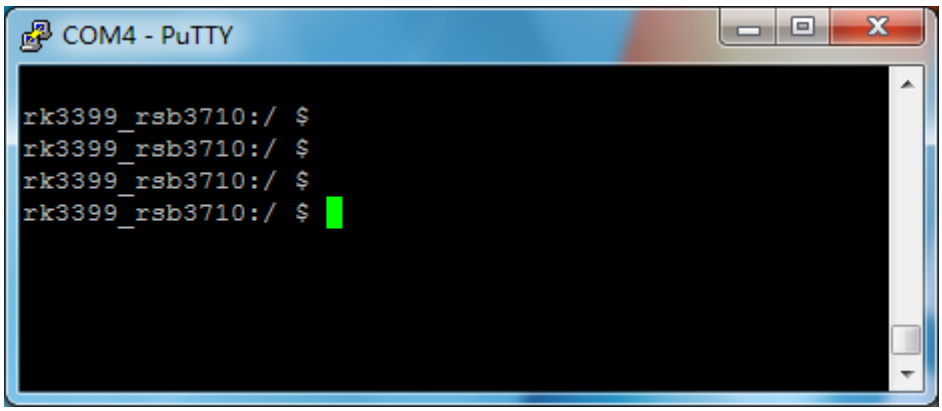
2.7.2 Debug Port Setting

RSB-3710 can communicate with host servers using serial cables. Common serial communication programs such as HyperTerminal, Tera Term, or PuTTY can be used in these cases. The example below describes the serial terminal setup using Hyper-Terminal on a Windows host:

1. Open HyperTerminal on your Windows PC, and select the settings as shown in the following figure.



2. Insert the power adapter connector to the DC jack on RSB-3710 to power on the board. The bootloader prompt is displayed on the terminal screen.



Chapter 3

Software Functionality

This chapter details the software programs on the RSB-3710 platform.

3.1 Introduction

The purpose of this chapter is to introduce the software development of RSB-3710. This is so users can develop their own application(s) efficiently.

RSB-3710 is designed for Linux host exclusively. Therefore, developing your app on a Windows/Android host PC may result in failure. At present, this device's host version is Ubuntu 16.04 LTS 64bit. Host PCs with any other version may have compatibility issues. We strongly recommend installing Ubuntu 16.04 LTS 64bit on your host PC before starting RSB-3710 evaluation/development.

3.2 Set up Build Environment

All instructions in this guide are based on Ubuntu 16.04 LTS 64bit only. Please install Ubuntu 16.04 LTS 64bit with minimum 4GB DRAM in advance. First login to the installed system and perform the tasks detailed in the following sections:

3.2.1 Install Docker

You have to install Docker on your platform before using it. Please refer to Docker Installation Guide. Docker can be installed on Linux, Cloud, Windows, and OS X. We advise installing docker on Ubuntu.

3.2.2 Acquiring the Base Image

Use docker pull <IMAGE REPOSITORY> to get the images we provided on the image list.

```
# docker pull advrisc/u16.04-imx6abv5:20170523
```

3.2.3 Acquiring the Android Source Code

Related version information:

Android 7.1.2

Kernel 4.4.126

U-Boot 2014-10

Pull down the Android source tree to your working directory from the repositories as specified in the default manifest:

```
$ cd ~/code
$ sudo git clone https://github.com/rockchip-linux/repo.git
$ mkdir rk3399_android_n7
$ cd rk3399_android_n7
$ git config --global user.name "Your Name"
$ git config --global user.email you@example.com
$ ../repo/repo init -u https://gitlab.wise-paas.com/RISC/android-manifest.git -b android-7.1.2
-m default.xml
$ ../repo/repo sync
$ ../repo/repo forall -c git checkout -b local --track origin/android-7.1.2
```

Some folders described below:

android/u-boot/

U-Boot source code

android/device/rockchip/

Android device related settings

hardware/rockchip/

HAL (Hardware Abstraction Layer)

android/kernel/

Linux kernel source code

3.2.4 Building Android 7.1.2 Image

Start Docker Container

```
# docker run -it --name android_n7 -v /home/bsp/myandroid:/home/adv/BSP:rw advrisc/
u16.04-imx6abv5:20170523 /bin/bash
```

Build Instructions

Set the $JAVA_HOME environment variable.

```
$ export JAVA_HOME=/usr/lib/jvm/java-8-openjdk-amd64
$ export PATH=$JAVA_HOME/bin:$PATH
$ export CLASSPATH=.:$JAVA_HOME/lib:$JAVA_HOME/lib/tools.jar
```

Prepare the environment for building. This only configures the current terminal.

```
$ source build/envsetup.sh
```

Execute the Android launch command. The setup in this example is for the production image of Advantech RISC platform devices with a user debug type. If you are using an RSB-3710, you will be sent the following command: “lunch rk3399_rsb3710-userdebug.

```
$ lunch rk3399_rsb3710-userdebug
```

To build boot loader

Enter the following command into the terminal console:

```
$ cd u-boot
$ make rk3399_rsb3710a2_2G_defconfig
$ make ARCHV=aarch64
```

To build kernel image

Enter the following command into the terminal console:

```
$ cd kernel
$ make ARCH=arm64 rk3399_adv_defconfig -j8
$ make ARCH=arm64 rk3399-rsb3710-a2.img -j12
```

To build system image

Enter the following command into the terminal console:

```
$ source build/envsetup.sh
$ lunch rk3399_rsb3710-userdebug
$ make -j4 2>&1 | tee build-log.txt
$./mkimage.sh
```

All android images are generated in rockdev/Image- rk3399_rsb3710/ folder.

Common image files are listed below:

boot.img : Android's initramfs, to initialize and mount system partition.
kernel.img : Kernel image.
misc.img : Misc partition image, to switch boot mode and pass parameter in recovery mode.
recovery.img : Recovery mode image.
resource.img : Resource image, containing boot logo and kernel's device tree info.
system.img : System partition image with ext4 filesystem format.
uboot.img : uboot
trust.img : File about sleep
MiniLoaderAll.bin : Loader

3.3 GPIO

GPIO Number	GPIO formed	Numeric Representation
# GPIO1	EXP1_0	504
# GPIO2	EXP1_1	505
# GPIO3	EXP1_2	506
# GPIO4	EXP1_3	507
# GPIO5	EXP2_0	496
# GPIO6	EXP2_1	497
# GPIO7	EXP2_2	498
# GPIO8	EXP2_3	499
# GPIO9	EXP2_4	500
# GPIO10	EXP2_5	501
# GPIO11	EXP2_6	502
# GPIO12	EXP2_7	503

Export GPIO then use control GPIO from user space through sysfs.

Export GPIO1.

```
$ echo 504 > /sys/class/gpio/export
```

Set GPIO direction to in/out.

```
$ echo "out" > /sys/class/gpio/gpio504/direction
```

Set GPIO value 0/1 if GPIO pin define is output.

```
$ echo 1 > /sys/class/gpio/gpio504/value
```

Unexport GPIO1.

```
$ echo 504 > /sys/class/gpio/unexport
```

GPIO 1 and GPIO 2 are taken as examples:
Connect GPIO 1 and GPIO 2
Export GPIO 1 and GPIO 2

```
$ echo 504 > /sys/class/gpio/export
$ echo 505 > /sys/class/gpio/export
```

Set GPIO 1 to output.

```
$ echo "out" > /sys/class/gpio/gpio504/direction
```

Set GPIO 2 to input.

```
$ echo "in" > /sys/class/gpio/gpio505/direction
```

Change GPIO 1 to 1 and read GPIO 2 value.

```
$ echo 1 > /sys/class/gpio/gpio504/value
$ cat /sys/class/gpio/gpio505/value
1
```

Change GPIO 1 to 0 and read GPIO 2 value.

```
echo 0 > /sys/class/gpio/gpio504/value
$ cat /sys/class/gpio/gpio505/value
0
```

3.4 UART

The Android/Linux user UART/serial port access is facilitated through the tty-devices. The tty-devices have different names depending on the UART drivers of different boards.

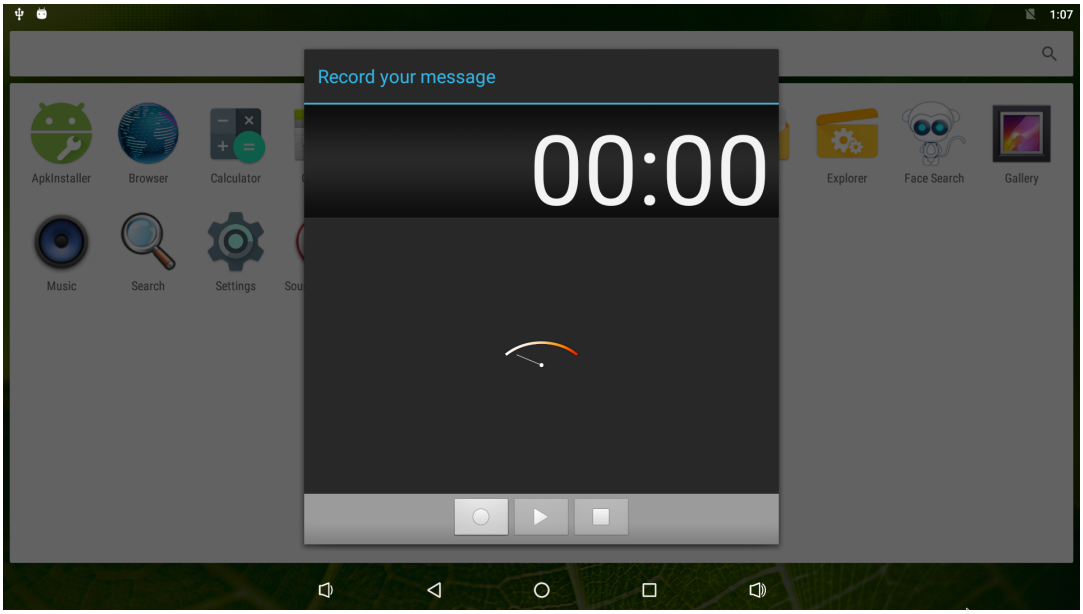
RS-485 uses half-duplex communication, meaning one medium is shared for transmitting and receiving data. Therefore, the system needs to control the RS-485 transceiver's transmit mode. Usually the UART RTS signal is used to switch the transmitter on and off.

3.4.1 RSB-3710 Uart

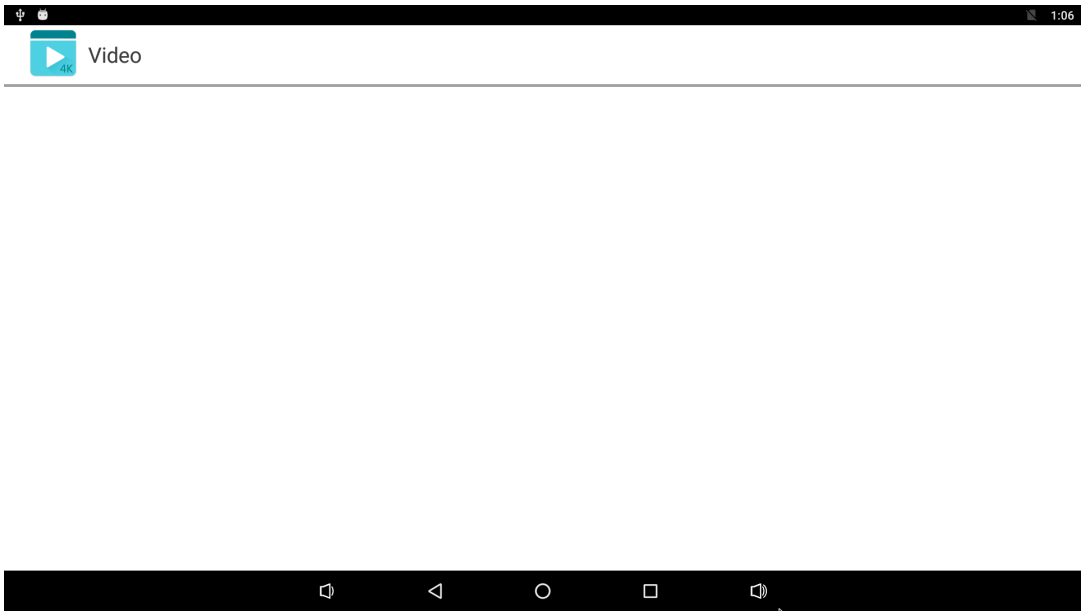
COM Name	Device Node	Remark
COM0	/dev/ttyS0	support RS232, no flow control
COM2	/dev/ttyS2	Debug Port
COM4	/dev/ttyS4	support RS232, no flow control

3.5 Audio

Launch “Sound Recorder” for MIC.



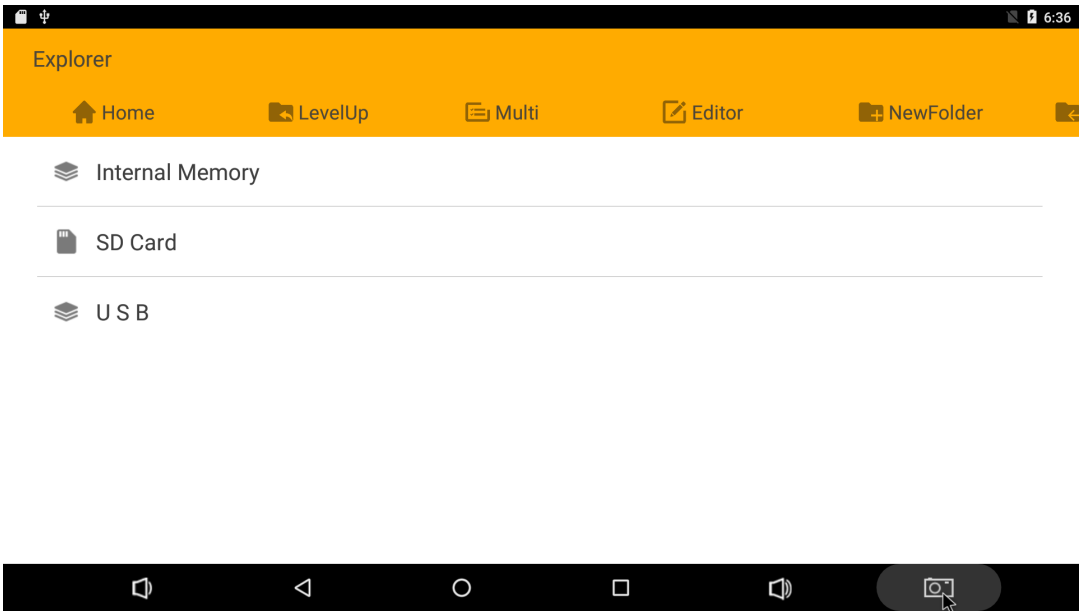
Launch “Video” for Audio.



3.6 SD/MMC Card/USB Disk

3.6.1 Browse the SD

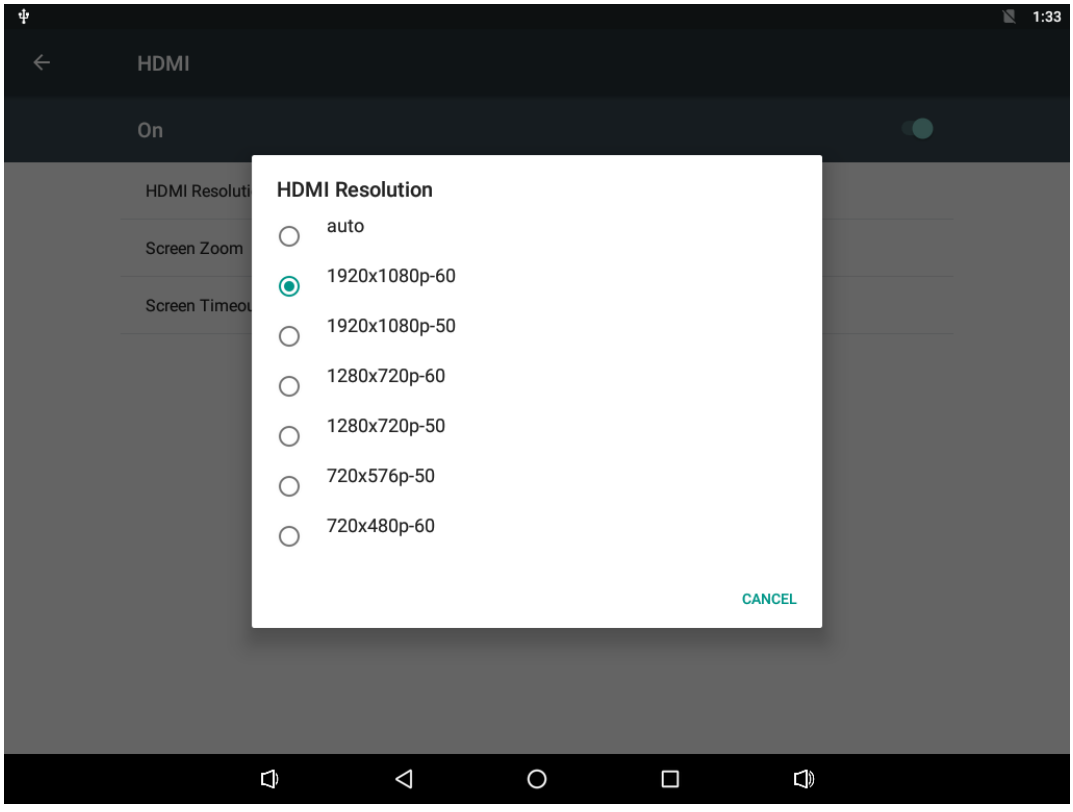
Launch “Explorer” to browse the SD card or USB disk.



3.7 HDMI

3.7.1 HDMI resolution

Starting Android, Enter Settings->Display->HDMI->HDMI Resolution.



3.7.2 HDMI Audio

When the HDMI monitor supports audio, the default output is from both HDMI and onboard audio codec.

3.8 Multi-display

RSB-3710 supports 3 x display ports — eDP, LVDS (mipi to LVDS), and HDMI. Only two ports can function at the same time.

Supported Default Displays:

Port	RSB3710
edp	edp-1920x1080 edp-1366x768
lvds	lvds-g070vw01 lvds-g150xgel05 lvds-g215hvn01
hdmi	hdmi-default

NOTE:

1. The name of the panel must begin with "edp-", "lvds-" or "hdmi-".
   And it can be found in "kernel/include/dt-bindings/display/screen-timing/{LCD-NAME}.dtsi" like:
   lvds_g070vw01: lvds-g070vw01
2. If there is no configuration, you will get default setting:
   hdmi-default and lvds-g070vw01 as default setting.
3. Check your configuration in Terminal or debug console.
   cat /proc/cmdline
   ... prmry_screen=hdmi-default extend_screen=edp-1920x1080

3.8.1 Enter U-boot Interrupt Mode

Connect device to the debug port, and open the debug console.

Press “ctrl + c” keys before powering the device on until you receive the following information on the debug console:

```
Hit any key to stop autoboot: 0
=> <INTERRUPT>
=>
```

Once finished you can input the following commands to configure Multi-Display.

3.8.2 eDP and HDMI

1. To set eDP as main display: set in u-boot as shown below:

```
setenv prmry_screen edp-1920x1080
setenv extend_screen hdmi-default
saveenv
reset
```

2. To set HDMI as main display: set in u-boot as shown below:

```
setenv prmry_screen hdmi-default
setenv extend_screen edp-1920x1080
saveenv
reset
```

3.8.3 HDMI and LVDS

1. To set HDMI as main display: set in u-boot as shown below:

```
setenv prmry_screen hdmi-default
setenv extend_screen lvds-g070vw01
saveenv
reset
```

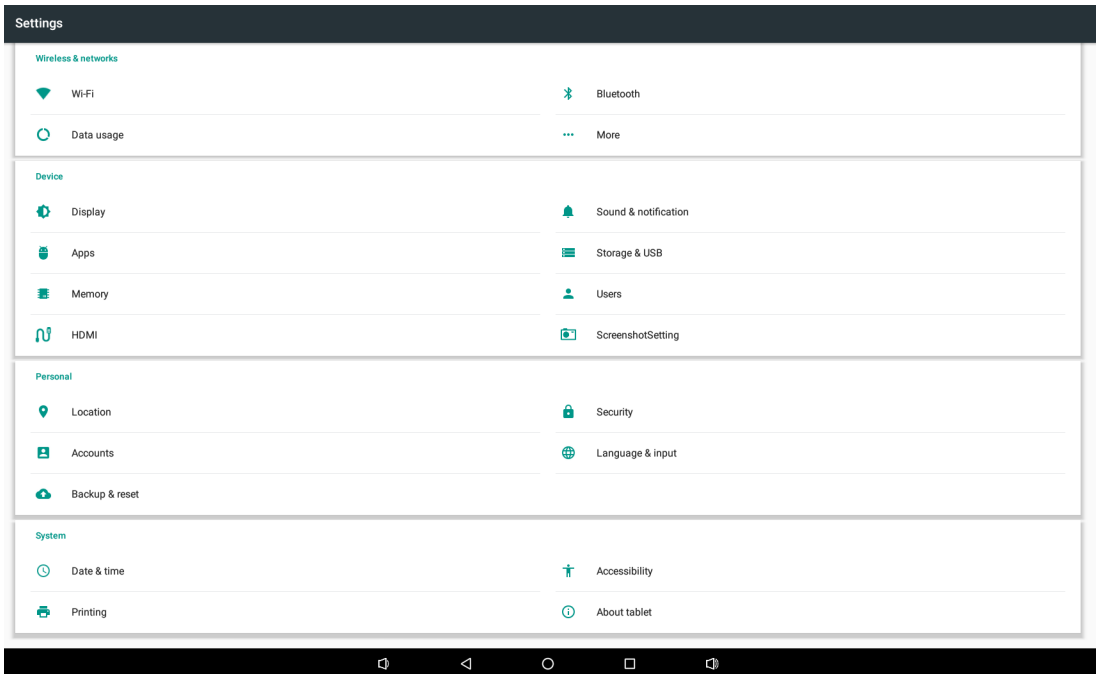
2. To set LVDS as main display: set in u-boot as shown below:

```
setenv prmry_screen lvds-g070vw01
setenv extend_screen hdmi-default
saveenv
reset
```

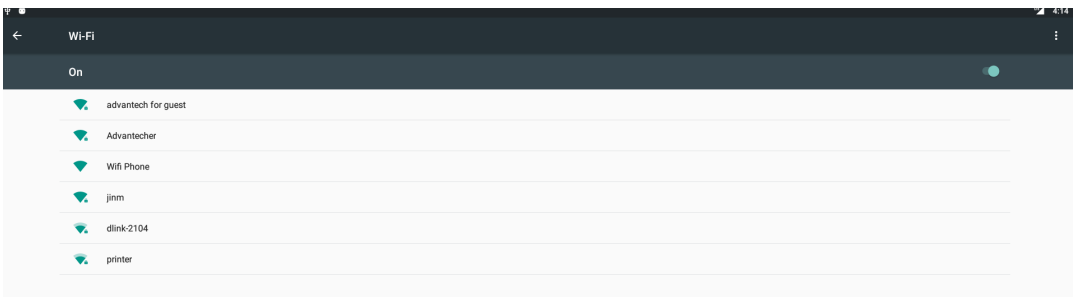
3.9 Network Setup

3.9.1 Wi-Fi

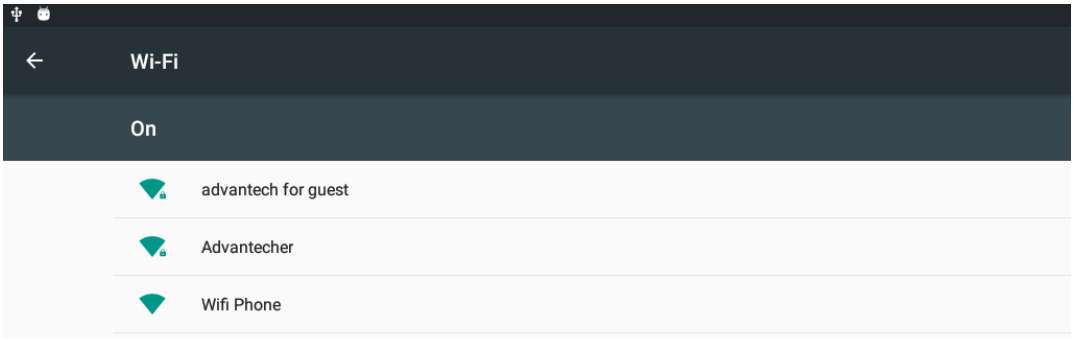
1. Click Settings.



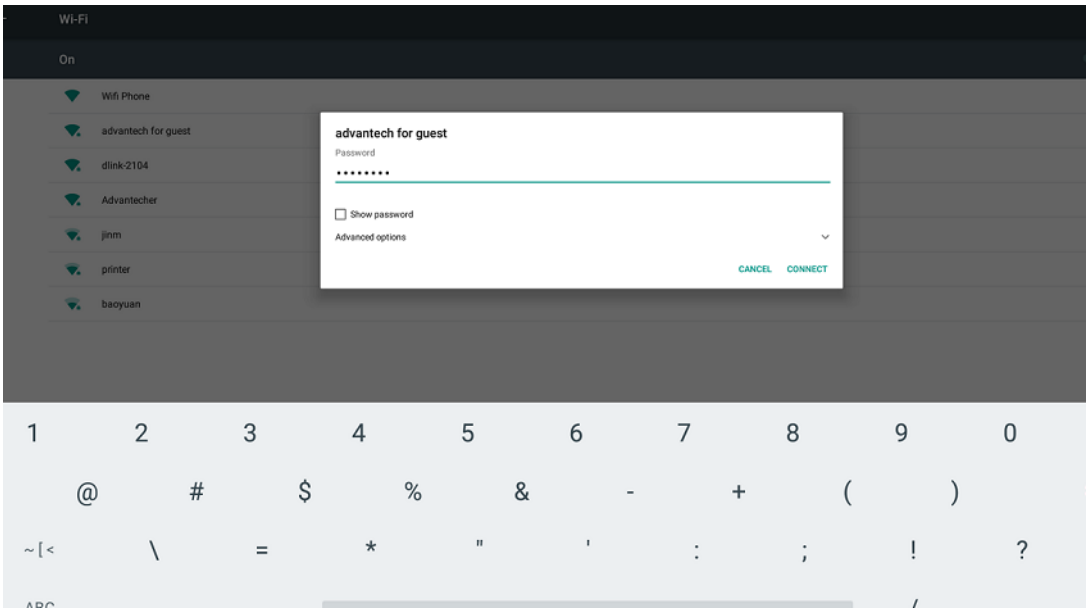
2. Turn on Wi-Fi.



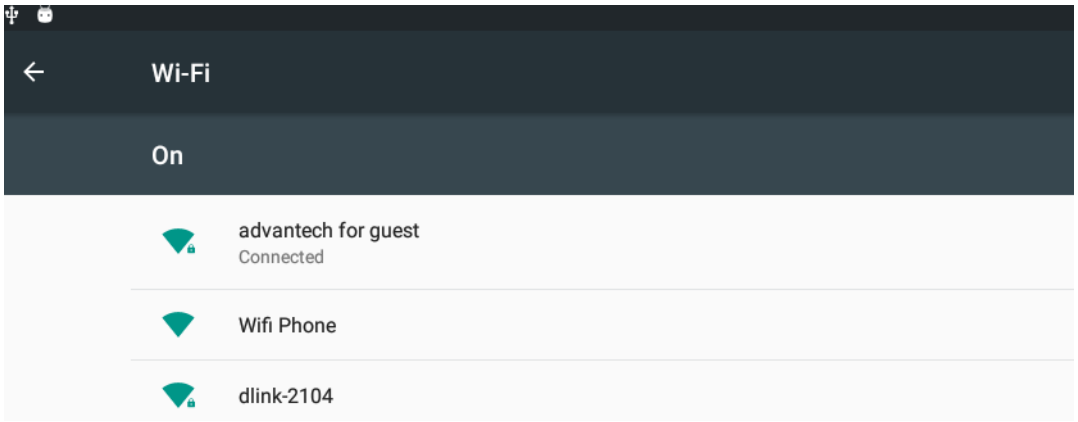
3. Choose ESSID (for example, Advantech for guest).



4. Input the correct password.

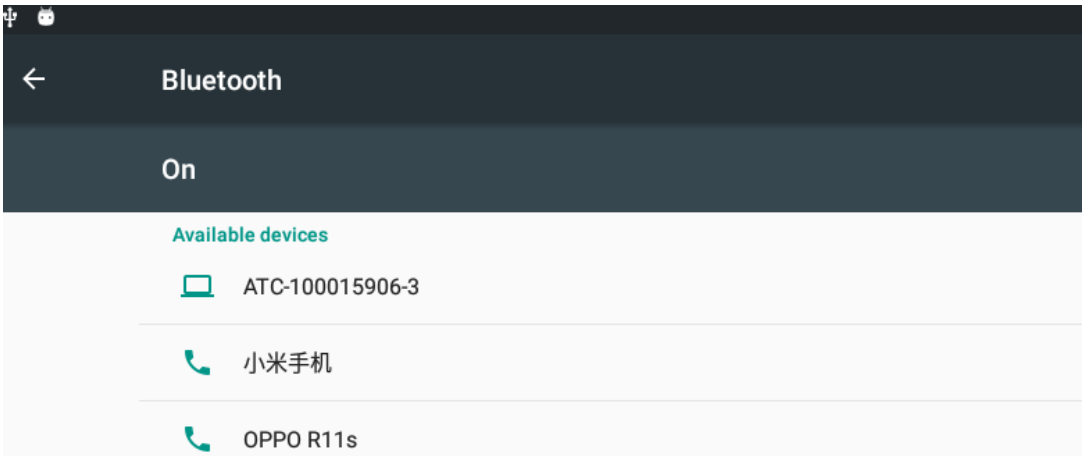


5. Connect to Wi-Fi.



3.9.2 Bluetooth

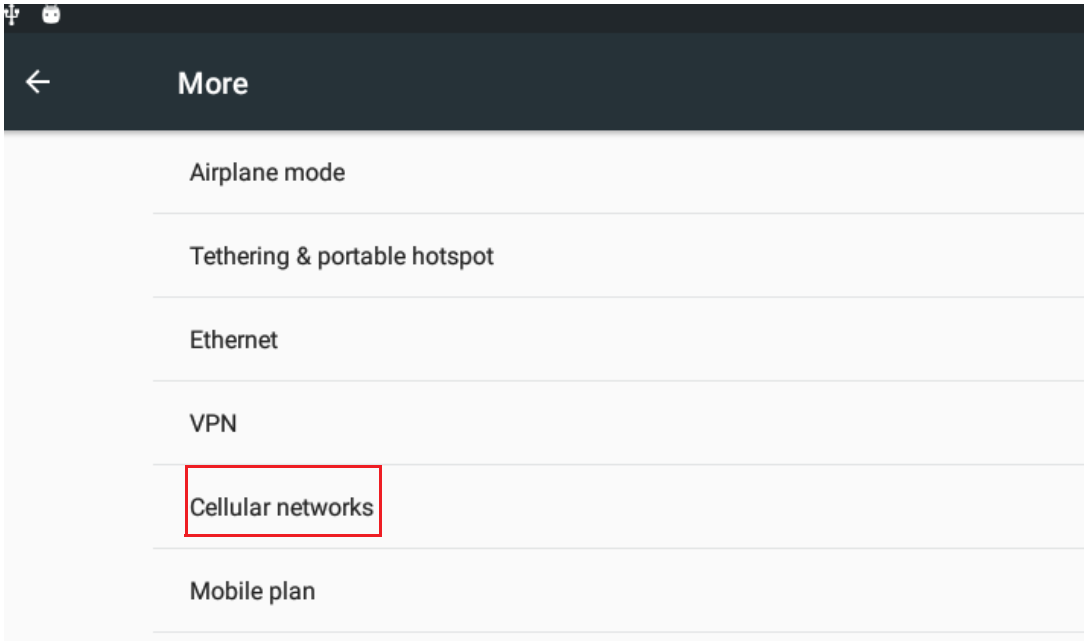
1. Switch the Bluetooth switch to “On” in settings to activate Bluetooth:

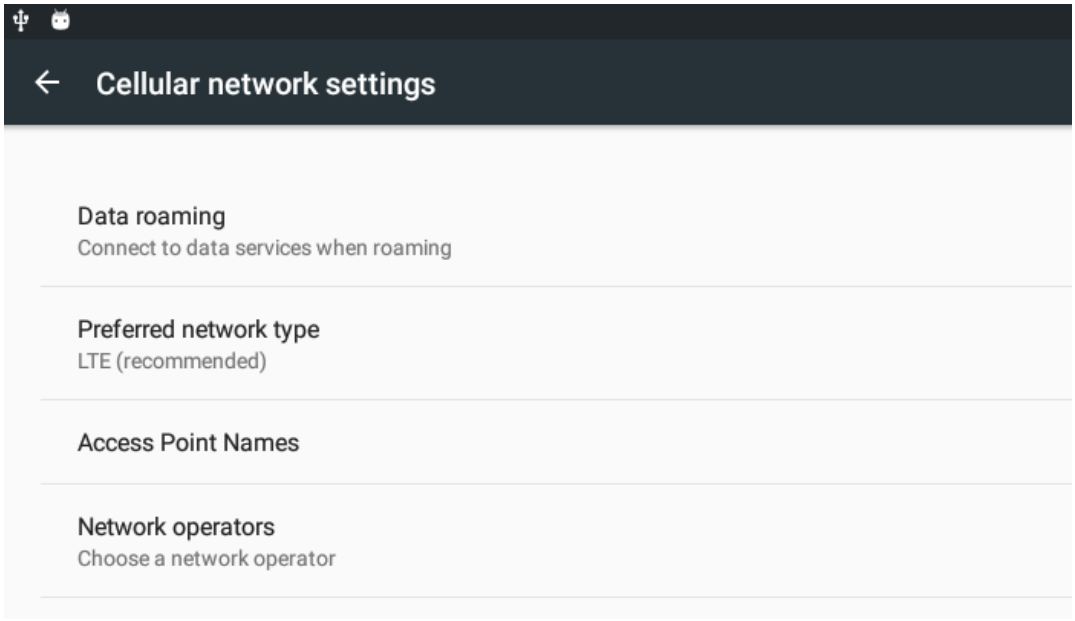


2. Click any available devices you wish to pair with.
3. Users can communicate with devices after pairing successfully.

3.9.3 3G/4G

1. Insert SIM card, restart.
2. If you can’t connect to the network, please check the following settings: Settings/More/Cellular networks/ Access Point Names, then Correct.





3.9.4 Ethernet

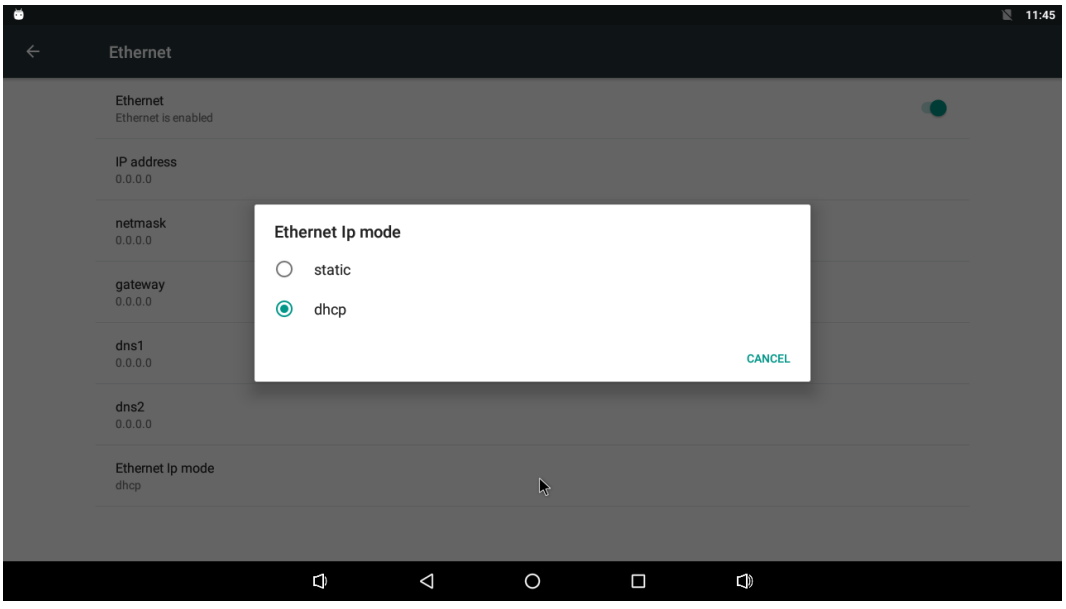
RSB-3710 support two Ethernet (eth0 and eth1), but Android only supports to config eth0 as following:

Config eth0:

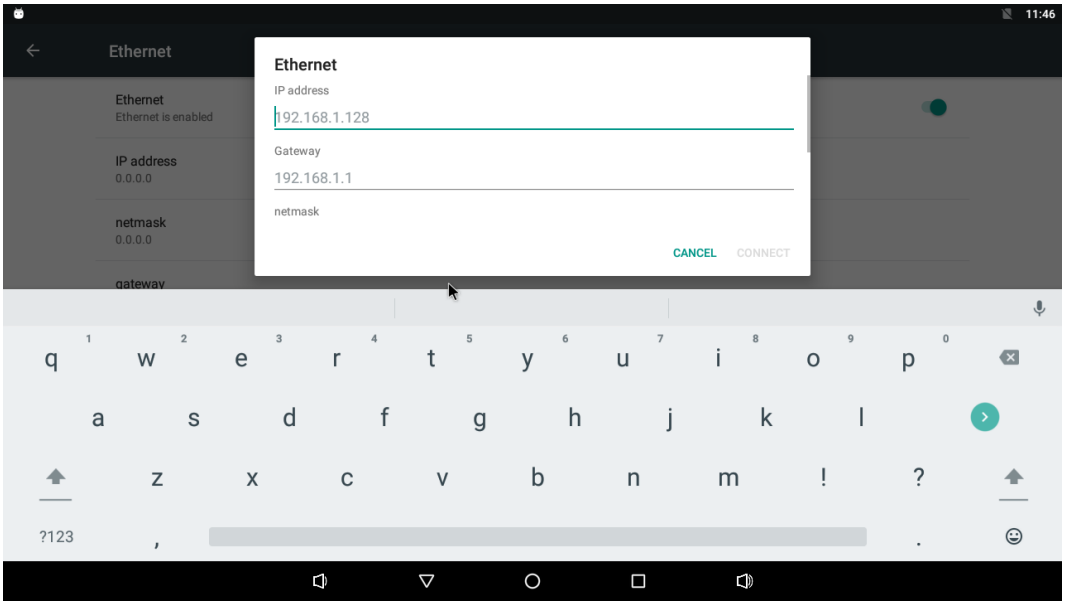
Click Settings Settings->More->Ethernet Configure Ethernet

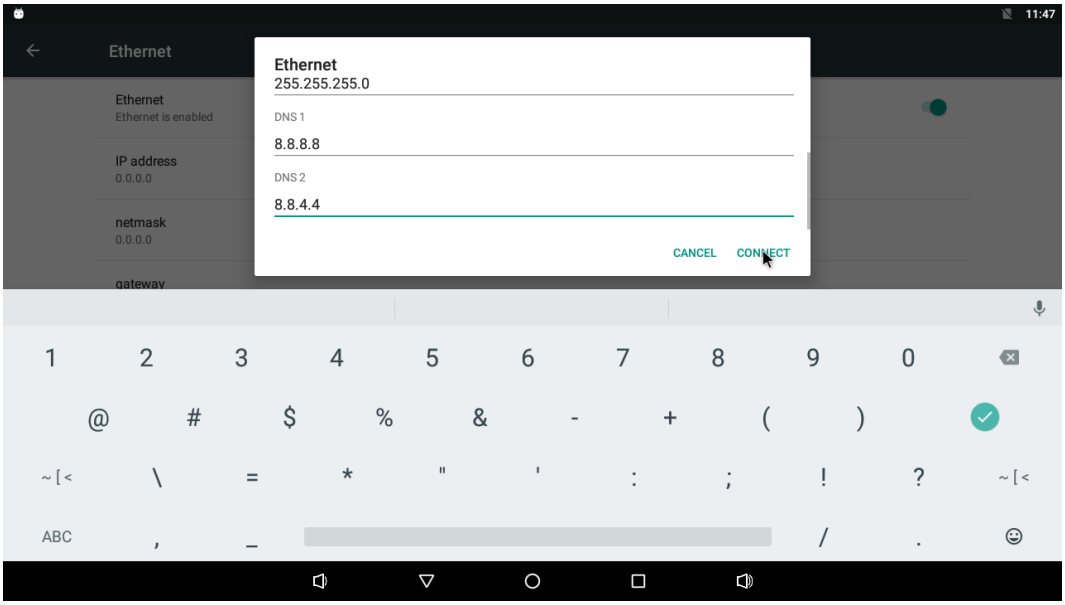
There are two of IP setting: DHCP IP and static IP.

DHCP IP - configuration is controlled by system.



Static IP - There are five fields need to be filled: IP Address, netmask,,getway dns1 and dns2.





Config eth1:

Eth1 setting static ip example

.

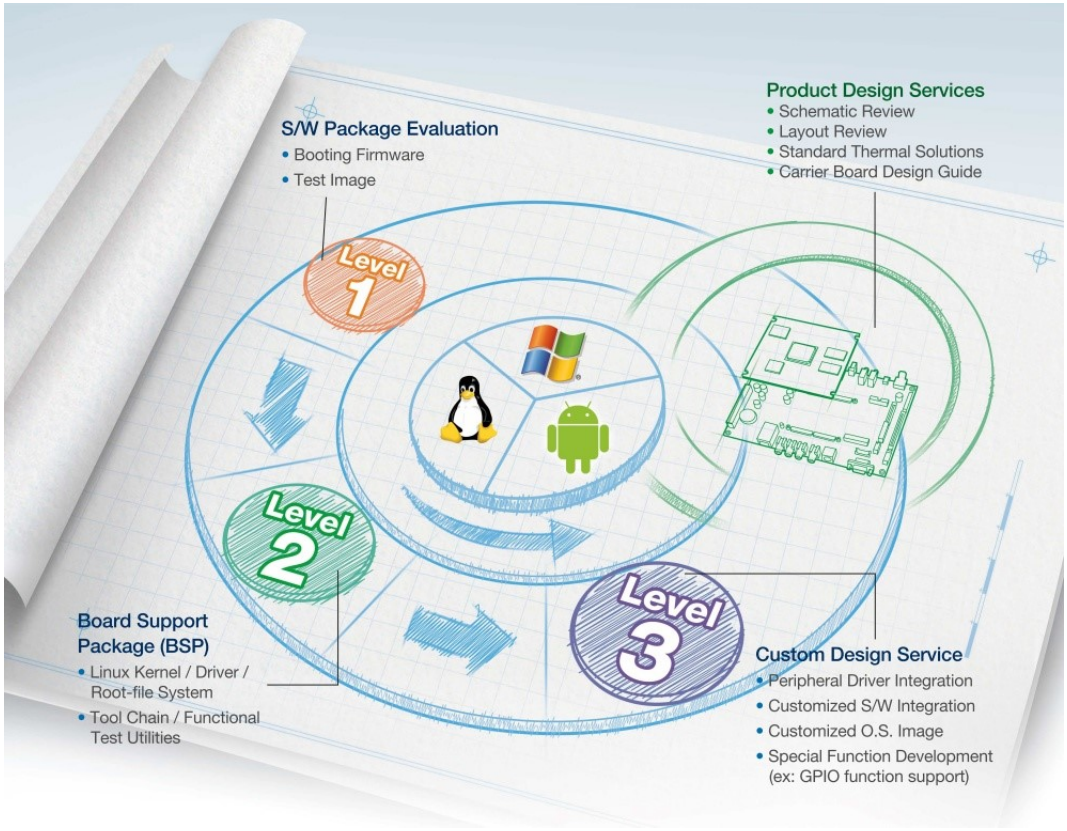
```
$ su
# ip rule add from all lookup main pref 9999
# ifconfig eth1 172.12.1.2 netmask 255.255.0.0
```

Chapter 4

Advantech Services

This chapter introduces Advantech's design-in services, technical support, and warranty policy for the RSB-3710 evaluation kit.

4.1 RISC Design-in Services



Advantech RISC Design-in Services help customers reduce the time and work involved with designing new carrier boards. We handle the complexities of technical research and greatly minimize the development risks associated with carrier boards.

Easy Development

Advantech delivers support firmware, root file-system, BSP, and other development tools to customers. These tools help customers develop their carrier board and differentiate their embedded products and applications.

- Full Range of RISC Product Offerings
- Comprehensive Document Support

Design Assistance Service

Advantech provides engineers with a schematic checklist and review services based on customer carrier board specifications. These services prevent design errors before they occur. This saves time and reduces the costs associated with developing carrier boards.

- Schematic Review
- Placement and Layout Review
- Debugging Assistance Services
- General/Special Reference Design Database

Thermal Solution Service

Advantech provides thermal solution services — including modularized and/or customized thermal solutions — that quickly accommodate customers' designs.

- Standard Thermal Solutions
- Customized Thermal Solutions

Embedded Software Services

This service provides support drivers, software integration/customized firmware, root file-system, and Linux image — enabling users to save time and focus on their core development.

- Embedded Linux/Android OS
- Advantech boot loader Customization

With the spread of industrial computing, a whole range of new applications has been developed, resulting in a fundamental change in the IPC industry. Due to diverse market demands and intense competition, cooperation on vertical integration is an effective way to create competitive advantages. As a result, ARM-based CPU modules have grown in popularity. Concentrating all necessary components on CPU modules and placing other parts on the carrier board provides greater flexibility while retaining low power consumption credentials.

Advantech has identified the following common questions concerning the implementation of modular designs.

General I/O design capability

Users can typically perform vertical integration. However, lack of expertise and experience in general power and I/O design can cause challenges; especially when integrating CPU modules into carrier boards.

The acquisition of information

Despite obtaining sufficient information for making decisions concerning specialized vertical applications, some customers encounter difficulties dealing with platform design, and communicating with the CPU/chipset manufacturers. These challenges in carrier board design can negatively impact time-to-market at the expense of market opportunities.

Software development and modification

Compared to x86 architectures, RISC architectures use simpler instruction sets. Software support for x86 platforms cannot be used on RISC platforms. System integrators (SI) need to develop software for their system and integrate it with hardware themselves. Unlike x86 platforms, RISC platforms are not well supported by Board Support Packages (BSP) and drivers. While driver support is provided, system integration still requires a lot of effort. The BSP provided by CPU manufacturers is usually tailored for carrier board design, making system integration for software difficult.

Addressing this, Advantech introduced Streamlined Design-in Support Services for RISC-based Computer on Modules (COM). With a dedicated professional design-in services team, Advantech actively participates in carrier board design and problem solving. Advantech's services not only enable customers to effectively distribute their resources, but also reduce R&D costs and hardware investment.

By virtue of a cooperative relationship with leading original manufacturers of CPUs and chipsets — such as ARM, TI, and NXP — Advantech helps solve communication and technical support difficulties. This can reduce the uncertainties in product devel-

opment. Advantech's professional software team focuses on providing complete Board Support Packages. They also help customers create a software development environment for their RISC platforms.
Advantech RISC design-in services helps customers reduce time to market by overcoming their problems through streamlined services.

Along with our multi-stage development process which includes: planning, design, integration, and validation, Advantech's RISC design-in service provides comprehensive support during the following different phases:

Planning stage

Before deciding to adopt Advantech RISC COM, customers must go through a complete survey process, detailing product features, specifications, and compatibility testing with software. Advantech offers a RISC Customer Solution Board (CSB) as an evaluation tool for carrier boards which are simultaneously designed when developing RISC COMs. In the planning stage, customers can use this evaluation board to assess RISC modules and test peripheral hardware. Advantech provides standard software Board Support Packages (BSP) for RISC COM, so that customers can define their product's specifications while simultaneously verifying I/O and performance. Advantech also offers software evaluation and peripheral module recommendations (such as Wi-Fi, 3G, and BT). At this stage, Advantech seeks to resolve customer concerns. Product evaluation with a focus on performance and specification is vital during the planning period. Therefore, Advantech helps their customers conduct all the necessary tests for their RISC COM.

Design stage

Advantech will supply a reference carrier board design guide when a product moves into the design stage. The carrier board design guide provides pin definitions for the COM connectors with limitations and recommendations for carrier board design. This design guide gives customers clear guidelines during their carrier board development. Advantech offers a complete pin-out check list for different form factors such as Q7, ULP and RTX 2.0, enabling carrier board signals and layout design examination. Advantech's team helps customers review the placement/layout and schematics. This helps carrier board designs fulfill customers' requirements. Advantech's RISC software team assists in establishing an environment for software development while evaluating the time and resources needed. Advantech can also cooperate with third parties to provide proficient consulting services in software development. With Advantech's professional support, the design process is eased and product quality is improved; thus meeting customer targets.

Integration stage

This phase comprises HW/SW integration, application development, and peripheral module implementation. Due to the lack of knowledge and experience using platforms, customers need to spend time analyzing integration problems. In addition, peripheral module implementation is relevant to driver designs on carrier boards. RISC platforms usually have less support for ready-made drivers on carrier boards, therefore users need to learn by trial and error to get the best solution with the least effort. Advantech's team has years of experience in customer support and HW/SW development. Advantech supports customers with professional advice and information — shortening development time and enabling effective product integration.

Validation stage

After the completion of a customer's ES sample there is a series of verification steps. In addition to verifying a product's functionality, testing a product's efficiency is an important stage for RISC platforms. Through an efficient verification process, backed by Advantech's technical support, customers optimize their applications with ease. Advantech's team can provide professional consulting services regarding further testing and equipment usage. This helps customers find the right tools to efficiently identify and solve problems to enhance product quality and performance.

4.2 Contact Information

The contact information for Advantech customer service is displayed below.

Region/Country	Contact Information
America	1-888-576-9688
Brazil	0800-770-5355
Mexico	01-800-467-2415
Europe (Toll Free)	00800-2426-8080
Singapore & SAP	65-64421000
Malaysia	1800-88-1809
Australia (Toll Free)	1300-308-531
China (Toll Free)	800-810-0345 800-810-8389 Sales@advantech.com.cn
India (Toll Free)	1-800-425-5071
Japan (Toll Free)	0800-500-1055
Korea (Toll Free)	080-363-9494 080-363-9495
Taiwan (Toll Free)	0800-777-111
Russia (Toll Free)	8-800-555-01-50

Our service team is also reachable through website, our technical support engineers provide quick responses once the forms are filled out:

http://www.advantech.com.tw/contact/default.aspx?page=contact_form2&subject=Technical+Support

4.3 Global Service Policy

4.3.1 Warranty Policy

The warranty policy for Advantech products is detailed below.

4.3.1.1 Warranty period

Advantech branded off-the-shelf products and third party off-the-shelf products used to assemble Configure-to-Order products are entitled to a two year complete and prompt global warranty service. Product defects in design, materials, and workmanship are covered from the date of shipment.

All customized products will carry a 15 month regional warranty service by default. The actual product warranty terms and conditions may vary based on sales contract.

All third party products purchased separately will be covered by the original manufacturer's warranty and time period, and shall not exceed one year of coverage through Advantech.

4.3.1.2 Repairs Under warranty

It is possible to obtain a replacement (Cross-Shipment) during the first 30 days of the purchase. Contact your original Advantech supplier to organize returns for Dead on Arrival products (if the products were purchased directly from Advantech). The DOA Cross-Shipment excludes any damage incurred during shipping as well as customized and/or built-to-order products.
For those products which are not DOA, the return fee to an authorized Advantech repair facility will be at the customers' expense. The shipping fee for refurbished products from Advantech back to customers' sites will be Advantech's expense.

4.3.1.3 Warranty Exclusions

The product is excluded from warranty if:

- The product has been found to be defective after expiry of the warranty period.
- Warranty has been voided by removal or alternation of product or part identification labels.
- The product has been misused, abused, or subjected to unauthorized disassembly/modification; placed in an unsuitable physical or operating environment; improperly maintained by the customer; or failure caused which Advantech is not responsible whether by accident or other cause. Such conditions will be determined by Advantech at its sole unfettered discretion..
- The product is damaged beyond repair due to a natural disaster such as a lighting strike, flood, earthquake, etc.
- Product updates/upgrades and tests upon the request of customers who are without warranty.

4.3.2 Repair Process

4.3.2.1 Obtaining an RMA Number

All returns from customers must be authorized with an Advantech RMA (Return Merchandise Authorization) number. Any returns of defective units or parts without valid RMA numbers will not be accepted; they will be returned to the customer at the customer's cost without prior notice.

An RMA number is only an authorization for returning a product; it is not an approval for repair or replacement. When requesting an RMA number, please access Advantech's RMA web site: http://erma.Advantech.com.tw with an authorized user ID and password.

You must fill out basic product and customer information and describe the problems encountered in detail in "Problem Description". Vague entries such as "does not work" and "failure" are not acceptable.

If you are uncertain about the cause of the problem, please contact Advantech's Application Engineers (AE). They may be able to find a solution that does not require sending the product for repair.

The serial number of the whole set is required if only a key defective part is returned for repair. Otherwise, the case will be regarded as out-of-warranty.

4.3.2.2 Returning Products for Repair

It's possible for customers to save time and meet end-user requirements by returning defective products to any authorized Advantech repair facility without an extra cross-region charge. Customers are required to contact the local repair center before using global repair services.

Customers should send cards without accessories (manuals, cables, etc.). Remove any unnecessary components from the card, such as CPU, DRAM, and CF Card. If you return these parts (because you believe they may be part of the problem), please note clearly that they are included. Otherwise, Advantech is not responsible for any items not listed. Make sure the “Problem Description” is enclosed.

1. European Customers that are located outside European Community are requested to use UPS as the forwarding company. We strongly recommend adding a packing list to all shipments. Please prepare a shipment invoice according to the following guidelines to decrease goods clearance time:Give a low value to the product on the invoice, or additional charges will be levied by customs that will be borne by the sender.
2. Add information “Invoice for customs purposes only with no commercial value” on the shipment invoice.
3. Show RMA numbers, product serial numbers and warranty status on the shipment invoice.
4. Add information about Country of origin of goods.

In addition, please attach an invoice with RMA number to the packaging, then write the RMA number on the outside of the carton and attach the packing slip to save handling time. Please also address the parts directly to the Service Department and mark the package “Attn. RMA Service Department”.

All products must be returned in properly packed ESD material or anti-static bags. Advantech reserves the right to return items at the customer's cost if inappropriately packed.

"Door-to-Door" transportation such as speed post is recommended for delivery. The sender should bear additional charges such as clearance fees if Air-Cargo is adopted.

Should DOA cases fail, Advantech will take full responsibility for the product and transportation charges. If the items are not DOA, but fail within warranty, the sender will bear the freight charges. For out-of-warranty cases, customers must cover the cost and take care of both outward and inward transportation.

4.3.2.3 Service Charges

The product is excluded from warranty if:

- The product is repaired after expiry of the warranty period.
- The product is tested or calibrated after expiry of the warranty period, and a no problem found (NPF) result is obtained.
- The product, though repaired within the warranty period, has been misused, abused, or subjected to unauthorized disassembly/modification; placed in an unsuitable physical or operating environment; improperly maintained by the customer; or suffered a failure for which Advantech is not responsible —whether by accident or other cause. Such conditions will be determined by Advantech at its discretion.

- The product is damaged beyond repair due to a natural disaster such as a lighting strike, flood, earthquake, etc.
- Product updates and tests upon the request of customers who are without warranty.

If a product has been repaired by Advantech,but requires another repair for the same problem within 3 months, Advantech will do this repair free of charge. However, such free repairs do not apply to products which have been misused, abused, or subjected to unauthorized disassembly/modification; placed in an unsuitable physical or operating environment; improperly maintained by the customer; or have failed for reasons for which Advantech is not responsible whether by accident or other cause.

Please contact your nearest regional service center for a detailed service quotation.

Before we start out-of-warranty repairs, we will send you a pro forma invoice (P/I) with the repair charges. When you remit the funds, please reference the P/I number listed under "Our Ref". Advantech reserves the right to deny repair services to customers that do not return the DOA unit or sign the P/I. Meanwhile, Advantech will scrap defective products without prior notice if customers do not return the signed P/I within 3 months.

4.3.2.4 Repair Reports

Advantech returns each product with a "Repair Report" which shows the result of the repair. A "Repair Analysis Report" is also provided to customers upon request. If the defect is not caused by Advantech design or manufacturing, customers will be charged US$60 or US$120 for in-warranty or out-of-warranty repair analysis reports respectively.

4.3.2.5 Custody of Products Submitted for Repair

Advantech will retain custody of a product submitted for repair for one month while it is waiting the return of a signed P/I or payment (A/R). If the customer fails to respond within this period, Advantech will close the case automatically. Advantech will take reasonable measures to stay in proper contact with the customers during this one month period.

4.3.2.6 Return Shipping to Customer

The forwarding company for RMA returns from Advantech to customers is selected by Advantech. Per customer requirement, other express services can be adopted, such as UPS or FedEx. The customer must bear the extra costs accrued by alternative shipment. If you require any special arrangements, please indicate this when shipping the product to us.

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Please verify specifications before quoting. This guide is intended for reference purposes only.

All product specifications are subject to change without notice.