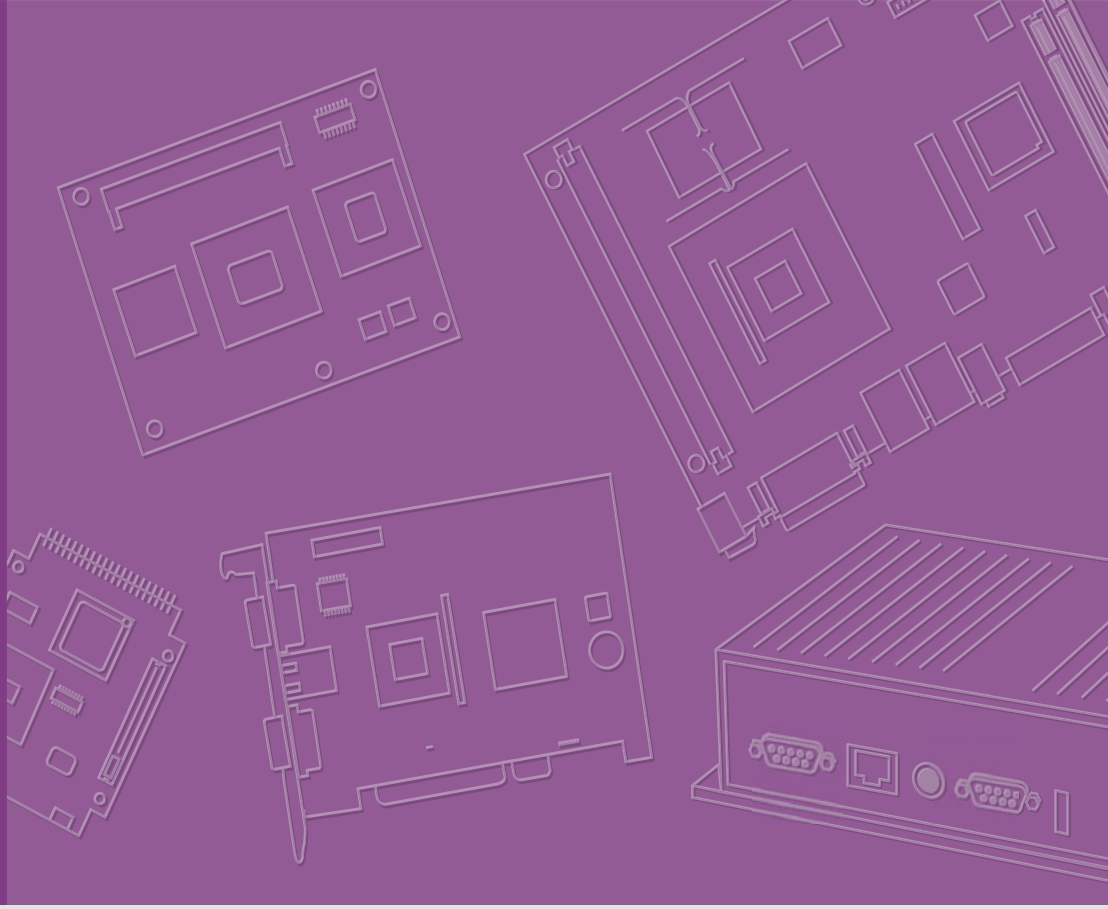

User Manual

RSB-3430

2.5" SBC with NXP i.MX6 Processor ARM® Cortex™ A9 Architecture

ADVANTECH

Enabling an Intelligent Planet

Copyright

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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 merchandize 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.2006343000 Edition 1

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Declaration of Conformity

CE

This product has passed the CE test for environmental specifications when shielded cables are used for external wiring. We recommend the use of shielded cables. This kind of cable is available from Advantech. Please contact your local supplier for ordering information.

CE

This product has passed the CE test for environmental specifications. Test conditions for passing included the equipment being operated within an industrial enclosure. In order to protect the product from being damaged by ESD (Electrostatic Discharge) and EMI leakage, we strongly recommend the use of CE-compliant industrial enclosure products.

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 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 his own expense.

FCC Class B

Note: 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 instructions, 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 help.

FM

This equipment has passed the FM certification. According to the National Fire Protection Association, work sites are classified into different classes, divisions and groups, based on hazard considerations. This equipment is compliant with the specifications of Class I, Division 2, Groups A, B, C and D indoor hazards.

Technical Support and Assistance

1. Visit the Advantech website at http://support.advantech.com where you can find the latest information about the product.
2. Contact your distributor, sales representative, or Advantech's customer service center for technical support if you need additional assistance. Please have the following information ready before you call:
   - Product name and serial number
   - Description of your peripheral attachments
   - Description of your software (operating system, version, application software, etc.)
   - A complete description of the problem
   - The exact wording of any error messages

Warnings, Cautions and Notes

Warning! *Warnings indicate conditions, which if not observed, can cause personal injury!*

Caution! *Cautions are included to help you avoid damaging hardware or losing data. e.g.*

There is a danger of a new battery exploding if it is incorrectly installed. Do not attempt to recharge, force open, or heat the battery. Replace the battery only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

Note! *Notes provide optional additional information.*

Document Feedback

To assist us in making improvements to this manual, we would welcome comments and constructive criticism. Please send all such - in writing to: support@advantech.com

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.

- Item XXXXXXXX
- Box XXXXXXXXX

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.
15. DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT WHERE THE STORAGE TEMPERATURE MAY GO BELOW -20° C (-4° F) OR ABOVE 60° C (140° F). THIS COULD DAMAGE THE EQUIPMENT. THE EQUIPMENT SHOULD BE IN A CONTROLLED ENVIRONMENT.
16. CAUTION: DANGER OF EXPLOSION IF BATTERY IS INCORRECTLY REPLACED. REPLACE ONLY WITH THE SAME OR EQUIVALENT TYPE RECOMMENDED BY THE MANUFACTURER, DISCARD USED BATTERIES ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.

The sound pressure level at the operator's position according to IEC 704-1:1982 is no more than 70 dB (A).

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

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.

Contents

Chapter 1

General Introduction

1.1 Introduction

RSB-3430 is a RISC 3.5" single board computer (SBC) powered by a high-performance NXP ARM® Cortex®-A9 i.MX6 processor that supports full HD video encoding/decoding and Gigabit Ethernet networking. RSB-3430 also features mini PCIe, M.2, and SIM card slot for integrating Wi-Fi, Bluetooth, and 3G modules. Equipped with complete Linux and Android BSPs, this system enables customers to easily develop unique application software for specific OS.

1.2 Specifications

1.2.1 Functional Specifications

Processor: Freescale i.mx6 Series

- ARM Cortex™-A9 high performance processor, Dual core 1 GHz
- Supports 2 IPU, OpenGL ES 2.0 for 3D BitBLT for 2D and OpenVG™ 1.1
- Video decoder: MPEG-4 ASP, H.264 HP, H.263, MPEG-2 MP, MJPEG BP
- Video Encoder: MPEG-4 SP, H.264 BP, H.263, MJPEG BP

System Memory Support

- DDR3 1066 MHz
- Capacity: on board DDR3 1 GB

Gigabit Ethernet

- Chipset: Freescale i.MX6 integrated RGMII
- 1 x10/100/1000 Mbps

Peripheral Interface

- 1 x dual channel 18/24 bit LVDS
- 1 x HDMI
- 1 x USB Type A, and 4 x USB 2.0 ports in UIO20
- 1 x Line Out
- 1 x Mic In
- 1 x Micro SD slot
- 1x 4-wire RS-232/422/485 DB9 Connector
- 1x CAN/ 2 wires UART in UIO40
- 1 x miniPCIe slot
- 1 x M.2 slot
- 1 x SIM slot
- 1 x I2C in UIO40
- 12 x GPIO, 4 GPIO in UIO20 and 8 GPIO in UIO40

OS Support

- RSB-3430 supports Yocto Linux

1.2.2 Mechanical Specifications

- Dimension: 100 x 72 mm
- Height: 15.92 mm
- Reference Weight: 650 g (including whole package)

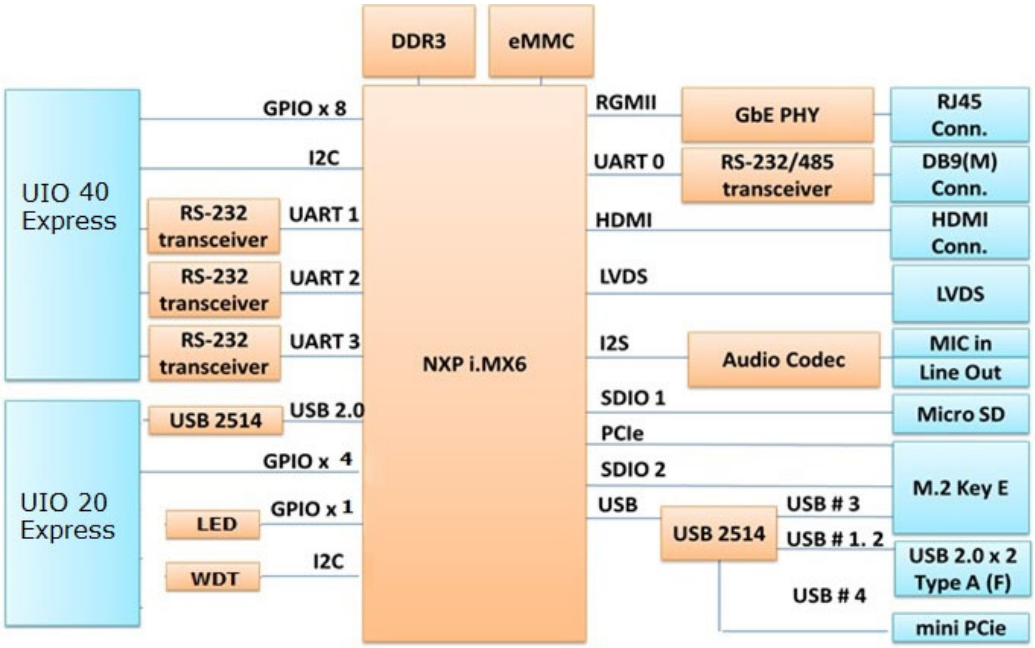
1.2.3 Electrical Specifications

- Power supply type: DC-in 12 V
- Power consumption:
  - Kernel Idle mode: TBD
  - Max mode: TBD
- RTC Battery:
  - Typical voltage: 3.0 V
  - Normal discharge capacity: TBD

1.3 Environmental Specifications

- Operating temperature: 0 ~ 60° C (32 ~ 140° F)
- Operating humidity: 40° C @ 95% RH Non-condensing
- Storage temperature: -40 ~ 85° C (-40 ~ 185° F)
- Storage humidity: 60° C @ 95% RH Non-condensing

1.4 Block Diagram



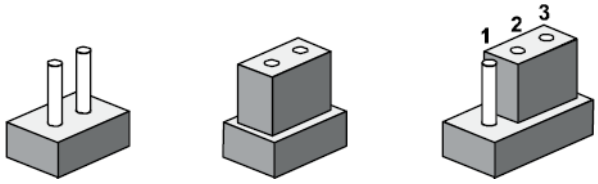
Chapter 2

H/W Installation

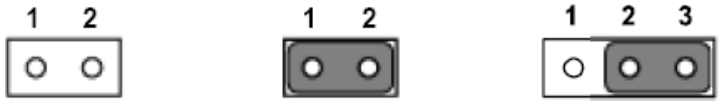
2.1 Jumpers

2.1.1 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 con- nect 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.

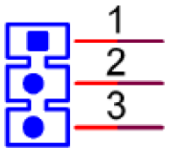
2.1.2 Jumper List

Table 2.1: Jumper List	
LVDS_VDD_SLT	LVDS Power
LVDS_BKLT_SLT	Backlight Power
SW	Boot device

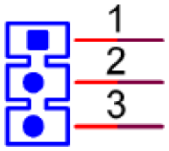
2.1.3 Jumper Settings

SW	Boot device
Part number	1600000202
Description	DIP SW CHS-02TB(29) SMD 4P SPST P=1.27mm W=5.4mm
Setting	Function
1 ON 2 OFF	Boot from SPI
1 OFF 2 ON	Boot from Micro SD

LVDS_VDD_SLT	LVDS Power
Part number	1653003101
Description	PIN HEADER 3x1P 2.0mm 180D(M) DIP 2000-13 WS
Setting	Function
(1-2)	+ V3.3
(2-3)	+ V5



LVDS_BKLT_SLT	LVDS Backlight Power
Part number	1653003101
Description	PIN HEADER 3x1P 2.0mm 180D(M) DIP 2000-13 WS
Setting	Function
(1-2)	+ V5
(2-3)	+ V12



2.2 Connectors

2.2.1 Connector List

Table 2.2: Connector List	
RTC_BAT	RTC Battery
DCIN	DC Power Jack
COM	RS-232/422/485
	Ethernet Connector
HDMI	HDMI
USB	USB port 0/1
M2	M.2
MiniPCIe	MiniPCIe
SW	Device boot selection
LVDS_BKLT_PWR Backlight voltage MIC	Backlight VDD_LD 5/12V MIC-In
H4	Line-out
CN1	UIO20
CN2	UIO40
LVDS	LVDS
SD	Micro SD
SIM_Slot	SIM Socket

2.2.2 Connector Settings

2.2.2.1 RTC Battery connectors (RTC_BAT)

RSB-3430 supports a lithium 3V/210mAH CR2032 battery with wire via battery connector.

2.2.2.2 DC power Jack (DCIN)

RSB-3430 comes with a DC-Jack header that carries 12V/19V/24V DC external power input.

Pin	Description
1(Inner)	DC_In
2(Outer)	GND

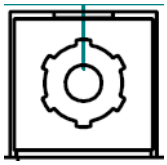


Figure 2.1 DC Power Jack

2.2.2.3 RS-232/422/485 (COM)

RSB-3430 provides one D-Sub 9-pin connector serial communication interface port. The port can support RS-232/422/485 mode communication.

Pin	Description		
1	N/C	RS-422 TX-	RS-485-
2	COM 2_RXD	RS-422 TX+	RS-485+
3	COM2_TXD	RS-422 RX+	
4	N/C	RS-422 RX-	
5	GND		
6	N/C		
7	COM2_RTS		
8	COM2_CTS		
9	N/C		

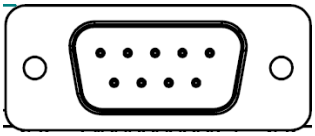


Figure 2.2 COM Port

2.2.2.4 Ethernet Connector

RSB-3430 provides one RJ45 LAN interface connector; it is fully compliant with IEEE802.3u 10/100/1000 Base-T CSMA/CD standards. The Ethernet port provides standard RJ-45 jack connector with LED indicators on the front side to show Active/ Link status and Speed status.

Pin	Description
1	MIDI0+
2	MIDI0-
3	MIDI1+
4	MIDI1-
5	GND
6	GND
7	MIDI2+
8	MIDI2-
9	MIDI3+
10	MIDI3-
11	VCC
12	ACT
13	Link100#
14	Link1000#

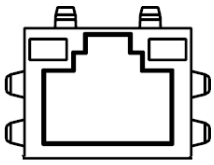


Figure 2.3 Ethernet Connector

2.2.2.5 HDMI (HDMI)

RSB-3430 provides one HDMI interface connector which provides all digital audio/ video interfaces to transmit the uncompressed audio/video signals and is HDCP and CEC compliant Connect the HDMI audio/video device to this port. HDMI technology can support a maximum resolution of 1920 x 1080p but the actual resolution supported depends on the monitor being used.

Pin	Description
1	HDMI_TD2+
2	GND
3	HDMI_TD2-
4	HDMI_TD1+
5	GND
6	HDMI_TD1-
7	HDMI_TD0+
8	GND
9	HDMI_TD0-
10	HDMI_CLK+
11	GND
12	HDMI_CLK-

13	HDMI_CEC_A
14	GND
15	DDC_CLK_HDMI_A
16	DDC_DATA_HDMI_A
17	GND
18	+5V
19	HDMI_HPD

Figure 2.4 HDMI

2.2.2.6 USB Connector (USB)

RSB-3430 supports one standard USB2.0 Type A connector in the coastline.

Pin	Description
1	+5V
2	USB1_D-
3	USB1_D+
4	GND
5	+5V
6	USB2_D-
7	USB2_D+
8	GND

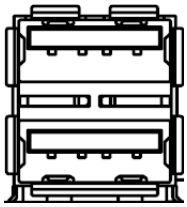


Figure 2.5 USB Type A Connector

2.2.2.7 LVDS Connector (LVDS)

RSB-3430 provides a LVDS 20x2-pin board-to-board connector for dual channel 18/24 bit LVDS panel up to 1920 x 1080. Please also refer to jumper setting before connecting LVDS panel.

Pin	Description
1	+VDD_LVDS
2	+VDD_LVDS
3	GND
4	GND
5	+VDD_LVDS
6	+VDD_LVDS
7	LVDS0_TX0_N
8	LVDS1_TX0_N
9	LVDS0_TX0_P
10	LVDS1_TX0_P
11	GND
12	GND
13	LVDS0_TX1_N
14	LVDS0_TX1_N
15	LVDS0_TX1_P
16	LVDS1_TX1_P
17	GND
18	GND
19	LVDS0_TX2_N
20	LVDS1_TX2_N
21	LVDS0_TX2_P
22	LVDS1_TX2_P
23	GND
24	GND
25	LVDS0_CLK_N
26	LVDS1_CLK_N
27	LVDS0_CLK_P
28	LVDS1_CLK_P
29	GND
30	GND
31	I2C1_SCL_LVDS0
32	I2C1_SDA_LVDS0
33	GND
34	GND
35	LVDS0_TX3_N
36	LVDS1_TX3_N
37	LVDS0_TX3_P
38	LVDS1_TX3_P
39	GND
40	+VDD_LVDS

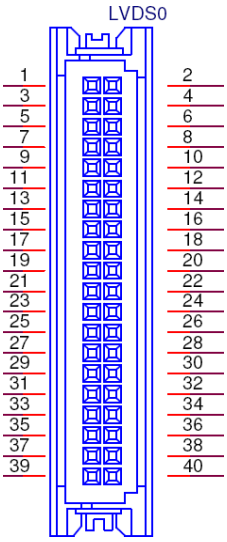


Figure 2.6 LVDS Connector

2.2.2.8 LVDS Backlight Connector

Please also refer to jumper setting in page before connecting LVDS panel.

Pin	Description
1	+VDD_BKLT_LVDS
2	GND
3	LCD_BKLT_EN
4	LCD_BKLT_PWM
5	+V5

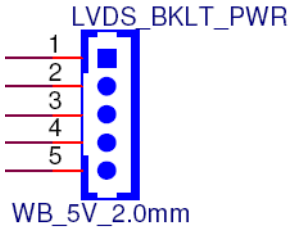


Figure 2.7 LVDS Backlight Power Connector

2.2.2.9 MIC in (MIC)

RSB-3430 offers MIC in, microphone can be connected to the MIC in pin header.

Pin	Description
1	MIC IN
2	GND

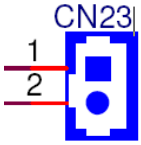


Figure 2.8 MIC in Internal Pin Header

2.2.2.10 Line out (H4)

RSB-3430 offers Line-out stereo speakers; earphone can be connected to the lineout pin header.

Pin	Description
1	LINEOUT_L
2	LINEOUT_R
3	GND

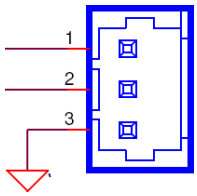


Figure 2.9 Line out Internal Pin Header

2.2.2.11 MiniPCIe

RSB-3430 supports full size miniPCIe slot both USB and PCIe interface. If the WiFi card is only half-sized, please purchase extending bracket (P/N: 1960047454N000) for WiFi card fixing.

Pin	Description	Pin	Description
1	NC	2	3.3V
3	NC	4	GND
5	NC	6	NC
7	NC	8	UIM_PWR
9	GND	10	UIM_DATA
11	REFCLK-	12	UIM_CLK
13	REFCLK+	14	UIM_RESET
15	GND	16	NC
	Mechanical Key		
17	NC	18	GND
19	NC	20	3G_RF_OFF#
21	GND	22	WIFI_RESET#
23	PCIe_RXM	24	3.3V
25	PCIe_RXP	26	GND
27	GND	28	NC
29	GND	30	NC
31	PCIe_TXM	32	NC
33	PCIe_TXP	34	GND
35	GND	36	USD_D-
37	GND	38	UDB_D+
39	3.3V	40	GND
41	3.3V	42	WIMAX-3G_LED#
43	GND	44	WLAN_LED#
45	NC	46	NC
47	NC	48	NC

49	NC	50	GND
51	NC	52	3.3V

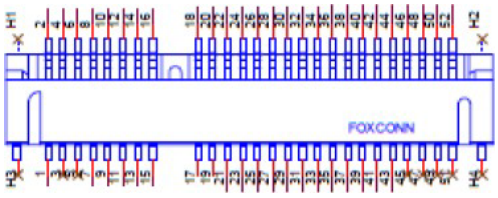


Figure 2.10 mini-PCIe

2.2.2.12 SIM Socket (SIM-Slot)

RSB-3430 supports on board SIM socket is for 3G integration. Please insert valid SIM card to dial to 3G network.

Pin	Description	Pin	Description
C1	UIM_PWR	C2	UIM_RESET
C3	UIM_CLK		
C5	GND	C6	NC
C7	UIM_DATA	SW1	NC
SW2	NC		

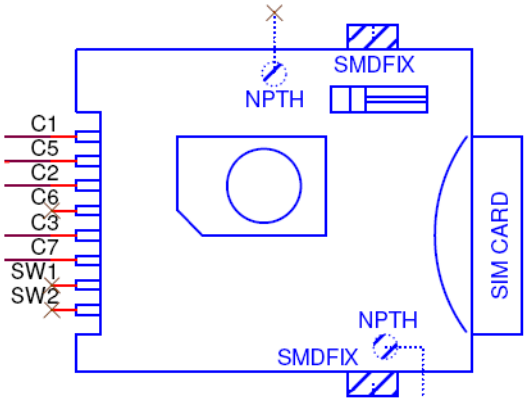


Figure 2.11 SIM Socket

2.2.2.13 Micro SD Socket (SD)

RSB-3430 supports Micro SD card in Class2, 4, 6, 8, 10. Supported capacity is up to 32G(SDHC).

Pin	Description	Pin	Description
1	DAT2	2	DAT3
3	CMD	4	+3.3V
5	CLK	6	VSS
7	DAT0	8	DAT1

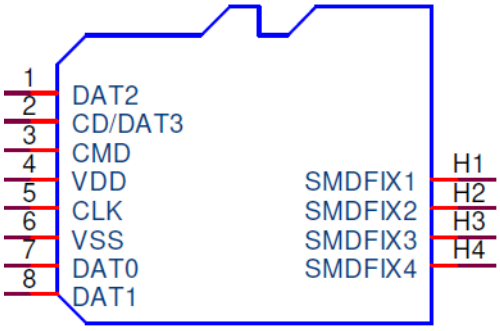


Figure 2.12 SD Slot

2.2.2.14 M.2 (M2)

RSB-3430 supports M.2 2230 Key.E slot with SDIO,I2C and USB interface.

Pin	Description	Pin	Description
1	GND	2	+V3.3V
3	USB5_D+	4	+V3.3V
5	USB5_D-	6	M.2_WLAN_LED#
7	GND	8	NC
9	SD1_CLK	10	NC
11	SD1_CMD	12	NC
13	SD1_DATA0	14	NC
15	SD1_DATA1	16	M.2_BT_LED#
17	SD1_DATA2	18	GND
19	SD1_DATA3	20	NC
21	M2_SDIO_WAKE#	22	NC
23	SDIO_ RESET#		
	Mechanical Key		
		32	NC
33	GND	34	NC
35	NC	36	NC
37	NC	38	NC
39	GND	40	NC
41	NC	42	NC
43	NC	44	NC
45	GND	46	NC
47	NC	48	NC
49	NC	50	NC
51	GND	52	NC
53	NC	54	M.2_BT_X_OFF#
55	NC	56	M.2_WLAN_X_OFF#
57	GND	58	I2C1_SDA
59	NC	60	I2C1_SCL
61	NC	62	I2C1_ALERT#
63	GND	64	NC
65	NC	66	NC
67	NC	68	NC

69	GND	70	NC
71	NC	72	+3.3V
73	NC	74	+3.3V
75	GND		

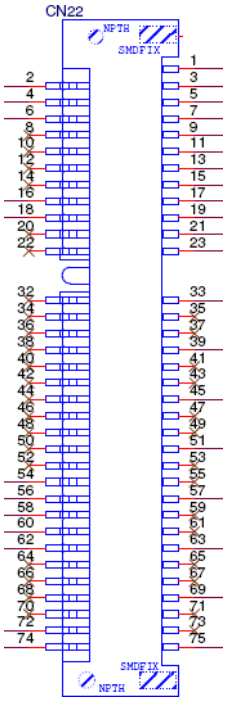


Figure 2.13 M.2 Connector

2.2.2.15 UIO20 (CN1)

RSB-3430 provides one UIO20 interface connector which provides 4 USB ports and 4 GPIO ports.

Pin	Description
1	VCC
2	GND
3	USB0 D-
4	USB0 D+
5	USB1 D+
6	USB1 D-
7	GND
8	VCC
9	GPIO1
10	GPIO2
11	GPIO3
12	GPIO4
13	VCC
14	GND
15	USB2 D-
16	USB2 D+
17	USB3 D+
18	USB3 D-

19	GND
20	VCC

2.2.2.16 UIO40 (CN2)

RSB-3430 provides one UIO40 interface connector which provides 2 UART ports , 1 UART/CAN(RSB-3430CD-PCA1E), 1 I2C and 4 GPIO ports.

Pin	Description
1	VCC_5V
2	GND
3	UART1 TX
4	UART2 TX
5	UART1 RX
6	UART2 RX
7	GPIO1
8	GPIO2
9	GPIO3
10	GPIO4
11	GPIO5
12	GPIO6
13	GPIO7
14	GPIO8
15	UART3 TX / CAN+
16	SDA
17	UART3 RX / CAN-
18	SCL
19	VCC_3.3V
20	GND

2.3 Mechanical

2.3.1 Jumper and Connector Location

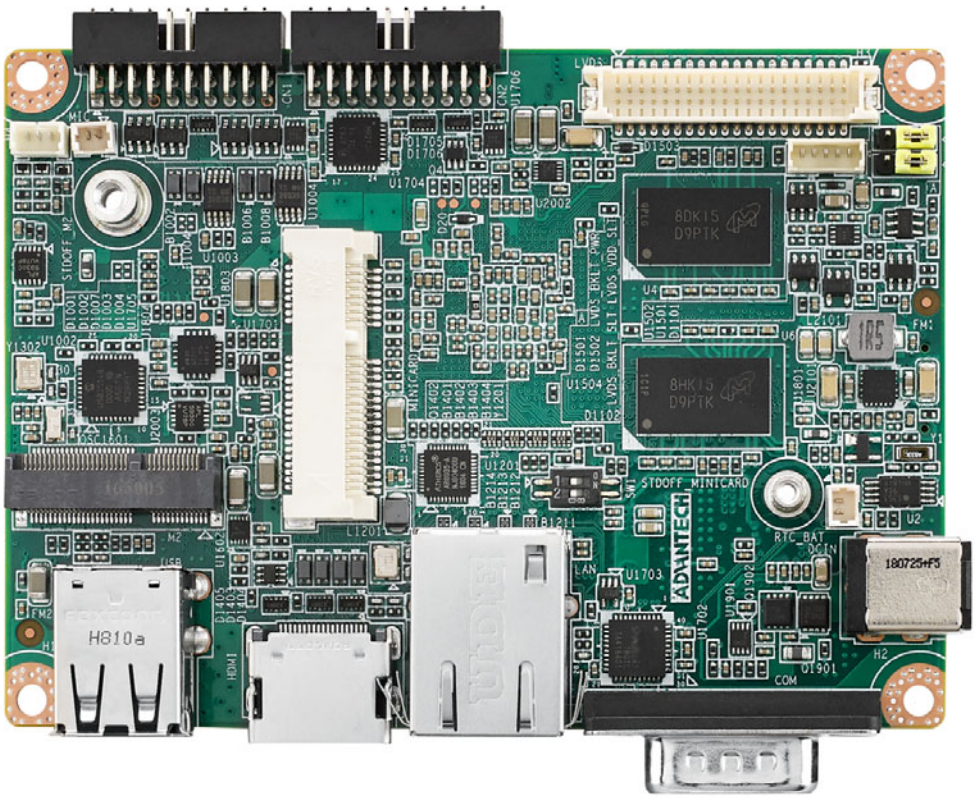


Figure 2.14 Board outline

Figure 2.15 Edge I/O description

2.3.2 Board Dimensions

2.3.2.1 Board Drawing

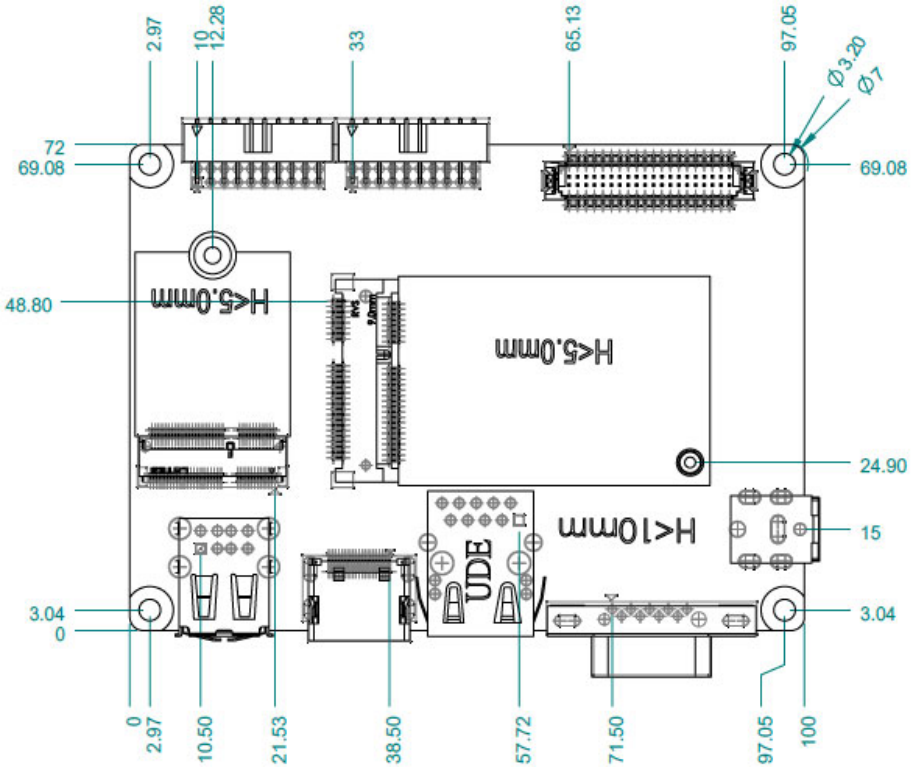


Figure 2.16 Board Dimension Layout (Top Side)

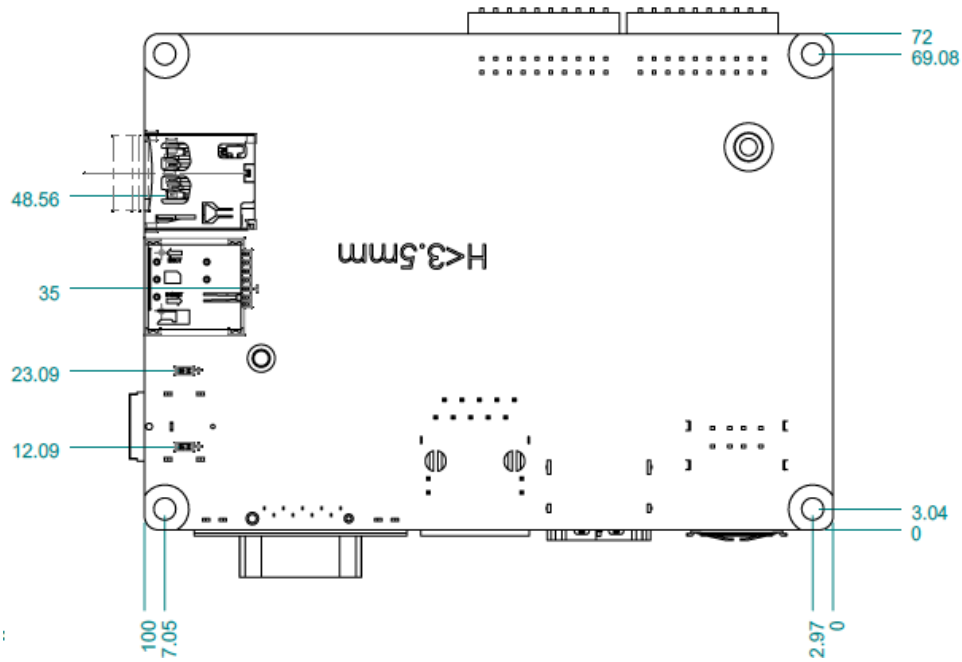


Figure 2.17 Board Dimension Layout (Bottom Side)

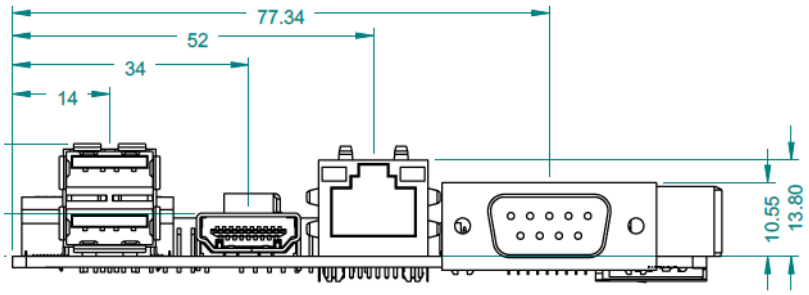


Figure 2.18 Board Dimension Layout (Coastline)

2.4 Quick Start of RSB-3430

2.4.1 Debug Port Connection

1. Connect debug port cable to the RSB-3430 debug port.
2. Connect the RS-232 extension cable to the debug cable.
3. Connector the other sides of the extension cable to the USB-to-RS-232 cable then connect to your PC.

2.4.2 Debug Port Setting

RSB-3430 can communicate with a host server (Windows or Linux) by using serial cables. Common serial communication programs such as Hyper Terminal, Tera Term or PuTTY can be used in this case. The example below describes the serial terminal setup using Hyper Terminal on a Windows host:

1. Connect RSB-3430 with your Windows PC by using a serial cable.
2. Open Hyper Terminal on your Windows PC, and select the settings as shown in Figure 2.25.
3. After the bootloader is programmed on SD card, insert power adapter connector to DC jack on RSB-3430 to power up the board. The bootloader prompt is displayed on the terminal screen.

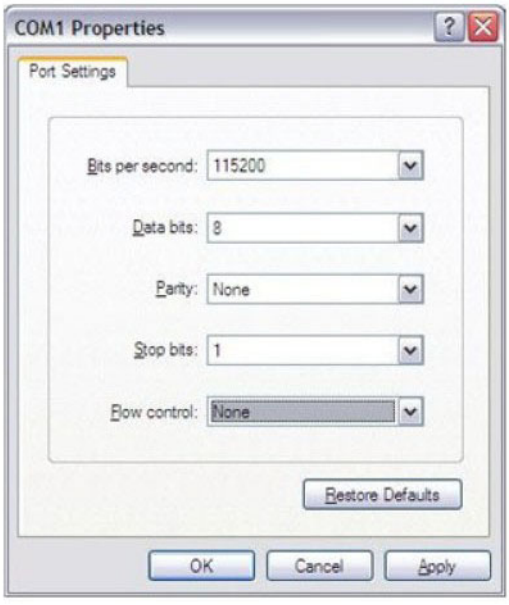


Figure 2.19 Hyper Terminal Settings for Terminal Setup

Chapter 3

Software Functionality

This chapter details the software programs on the RSB-3430 platform.

3.1 Test Tools

All test tools must be verified on the RSB-3430. Please prepare the required test fixtures before verifying each specified I/O. If you have any problems with testing, please contact your Advantech contact window for help.

3.1.1 USB Test

Insert a USB disk

usb 1-1.2: new high-speed USB device number 4 using ci_hdrc
usb-storage 1-1.2:1.0: USB Mass Storage device detected
scsi2 : usb-storage 1-1.2:1.0
scsi 2:0:0:0: Direct-Access Generic- SD/MMC 1.00 PQ: 0 ANSI: 0 CCS
sd 2:0:0:0: [sda] 3862528 512-byte logical blocks: (1.97 GB/1.84 GiB)
sd 2:0:0:0: [sda] Write Protect is off
sd 2:0:0:0: [sda] No Caching mode page found
sd 2:0:0:0: [sda] Assuming drive cache: write through
sd 2:0:0:0: [sda] No Caching mode page found
sd 2:0:0:0: [sda] Assuming drive cache: write through
sda: sda1
sd 2:0:0:0: [sda] No Caching mode page found
sd 2:0:0:0: [sda] Assuming drive cache: write through
sd 2:0:0:0: [sda] Attached SCSI removable disk

3.1.2 LAN

*Use Different Domain

LAN - **Front IO -eth0**
ifconfig eth0 8.8.8.8
LAN - **Rear IO -eth1**
ifconfig eth1 8.8.8.8

3.1.3 3G Test (Telit HE910D)

pppd connect 'chat -v -s -t 10 "" "AT" "" "ATDT*99#" "CONNECT" """ user username password password /dev/ttyACM3 460800 nodetach crtscts debug usepeerdns defaultroute &

3.1.4 M.2 module test (EWM-W162M201E) - WIFI / BT Function WIFI

$ ifconfig mlan0 up
$ wpa_passphrase ${SSID} ${WPA_KEY} > /tmp/wpa.conf
$ wpa_supplicant -BDwext -imlan0 -c/tmp/wpa.conf
$ udhcpc -b -i mlan0

BlueTooth

$ /usr/libexec/bluetooth/bluetoothd -C &
$ hciconfig hci0 up
$ bluetoothctl
$ discoverable on
$ pairable on
$ scan on
[NEW] FC:18:3C:8D:75:F4 Device ID
$ scan off
$ pair FC:18:3C:8D:75:F4
$ connect FC:18:3C:8D:75:F4

3.1.5 LVDS Test

U-boot command :

setenv mmcargs setenv bootargs console=${console},${baudrate} ${smp} root=${mmcroot} ${bootargs} video=mxcfb0:dev=ldb,800x480M@60,if=RGB24

3.1.6 Audio Test

Line out :

$ aplay -D plughw:0,0 Advantech.wav

MIC in :

$ arecord -t wav -c 1 -r 44100 -d 10 test.wav

3.1.7 RTC :

$ date MMDDhhmm[[CC]YY][.ss]
$ hwclock -w
$ ntpdate tw.pool.ntp.org

3.1.8 RS-232/ RS-422/ RS-485 Port Test (For RSB-3430 COM port)

Uboot command :

setenv console ttymxc2 <--(Change to other RS-232 port) , then do the Front IO - RS 232 test
saveenv
reset

<RS-232 Test>

stty -F /dev/ttymxc1 115200
echo Serial Port Test > /dev/ttymxc1

if wnat to change debug port back, need to set the uboot command again .

setenv console ttymxc1
saveenv
reset

< RS-422 Test>

RS-422 setting

```
echo 134 > /sys/class/gpio/export
echo 135 > /sys/class/gpio/export
echo out > /sys/class/gpio/gpio1/direction
echo out > /sys/class/gpio/gpio2/direction
echo 1 > /sys/class/gpio/gpio1/value
echo 1 > /sys/class/gpio/gpio2/value
```

RS-422 test

```
stty -F /dev/ttymxc1 115200
echo Serial Port Test > /dev/ttymxc1
```

< RS-485 Test>

RS-485 setting

```
echo 134 > /sys/class/gpio/export
echo 135 > /sys/class/gpio/export
echo out > /sys/class/gpio/gpio1/direction
echo out > /sys/class/gpio/gpio2/direction
echo 0 > /sys/class/gpio/gpio1/value
echo 1 > /sys/class/gpio/gpio2/value
```

RS-485 test

```
stty -F /dev/ttymxc1 115200
echo Serial Port Test > /dev/ttymxc1
```

3.1.9 RS-485 Port Test (For UIO-4030 COM port)

Note: RS-232: /dev/ttymxc2

GPIO : need to connect loopback.

RS-485: pin1 data- & pin2 data+ (ttyUSB0)

Test command

```
$ stty -F /dev/ttymxc2 -echo -onlcr 115200 crtscts
$ cat /dev/ttymxc2 &
$ echo "Serial Port Test" > /dev/ttymxc2
```

RS-485 Test with Adam-4520

```
stty -F /dev/ttyUSB0 115200
echo "Serial Test" > /dev/ttyUSB0
```

3.1.10 GPIO Port define

GPIO
[EXTENSION I/O B]
pin#5: gpio 121, pin#6: gpio 122
pin#7: gpio 123, pin#8: gpio 124
pin#9: gpio 125, pin#10: gpio 126
pin#11: gpio 127, pin#12: 133

if want to test need to connect with GPIO device .

3.1.11 RS-232 Port Test (For UIO-4032 COM port)

Note: RS-232: /dev/ttymxc2
$ stty -F /dev/ttymxc2 -echo -onlcr 115200 crtscts
$ cat /dev/ttymxc2 &
$ echo "Serial Port Test" > /dev/ttymxc2

3.1.12 RS-232 Port Test (For UIO-4034 COM port)

$ stty -F /dev/ttymxc2 -echo -onlcr 115200 crtscts
$ cat /dev/ttymxc2 &
$ echo "Serial Port Test" > /dev/ttymxc2

3.1.13 CAN Bus Port Test (For UIO-4034 CAN port)

$ ip link set can0 up type can bitrate 125000
$ ifconfig can0 up
$ ip link set can1 up type can bitrate 125000
$ ifconfig can1 up

$ candump can0 &
$ cansend can1 1F334455#1122334455667788

3.1.14 Watch Dog Test

$ echo 1 > /dev/watchdog

All of the related S/W description, please refer the below link.
http://ess-wiki.advantech.com.tw/view/IoTGateway/BSP/Linux/iMX6/Yocto_LBV8_User_Guide

Chapter 4

System Recovery

This chapter introduces how to recover Linux operating system if it is damaged accidentally.

4.1 System Recovery

This section provides detail procedures of restoring the eMMC image. If you destroy the onboard flash image by accident, you can recover a system following these steps.

1. Copy "3430A1LIVxxxx.img.gz" package to your desktop.
2. Open "Terminal" on Ubuntu 12.04 LTS.
3. $sudo su (Change to "root" authority)
4. Input your password.
5. #cd Desktop/
6. #gunzip 3430A1LIVxxxx.img.gz (Unzip files)
7. Insert one SD card to your developing computer
8. # sudo fdisk - l
9. # Check the SD card location, like /dev/sdf
10. #dd if=3430A1LIVxxxx.img of=/dev/sdf bs=1M conv=fsync
11. Please wait until dump disk is done
12. Connect console cable to debug port (CONSOLE) and open serial console program on Ubuntu 12.04 LTS, set baudrate to 115200. For detailed console setting, please refer to section 3.6.
13. On RSB-3430 platform, type #root (Login)
14. On RSB-3430 platform, type #cd /mk_inand
15. On RSB-3430 platform, type #./mkinand?linux.sh /dev/mmcblk0
16. On RSB-3430 platform, type "y "
    (Start to copy files, wait until it shows [Done])
17. Power off and remove this SD card.

Chapter 5

Advantech Services

This chapter introduces Advantech design in serviceability, technical support and warranty policy for RSB-3430 evaluation kit.

5.1 Contact Information

Below is the contact information for Advantech customer service

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

You can also reach our service team through the website below; our technical support engineer will provide quick response once the form is filled out:

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

5.2 Technical Support and Assistance

For more information about this and other Advantech products, please visit our website at:

http://www.advantech.com/

http://www.advantech.com/ePlatform/

For technical support and service, please visit our support website at:

<http://support.advantech.com.tw/support/>

1. Visit the Advantech web site at www.advantech.com/support where you can find the latest information about the product.
2. Contact your distributor, sales representative, or Advantech's customer Service center for technical support if you need additional assistance. Please have the following information ready before you call:

- Product name and serial number
- Description of your peripheral attachments
- Description of your software (operating system, version, application software, etc.)
- A complete description of the problem
- The exact wording of any error messages

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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.