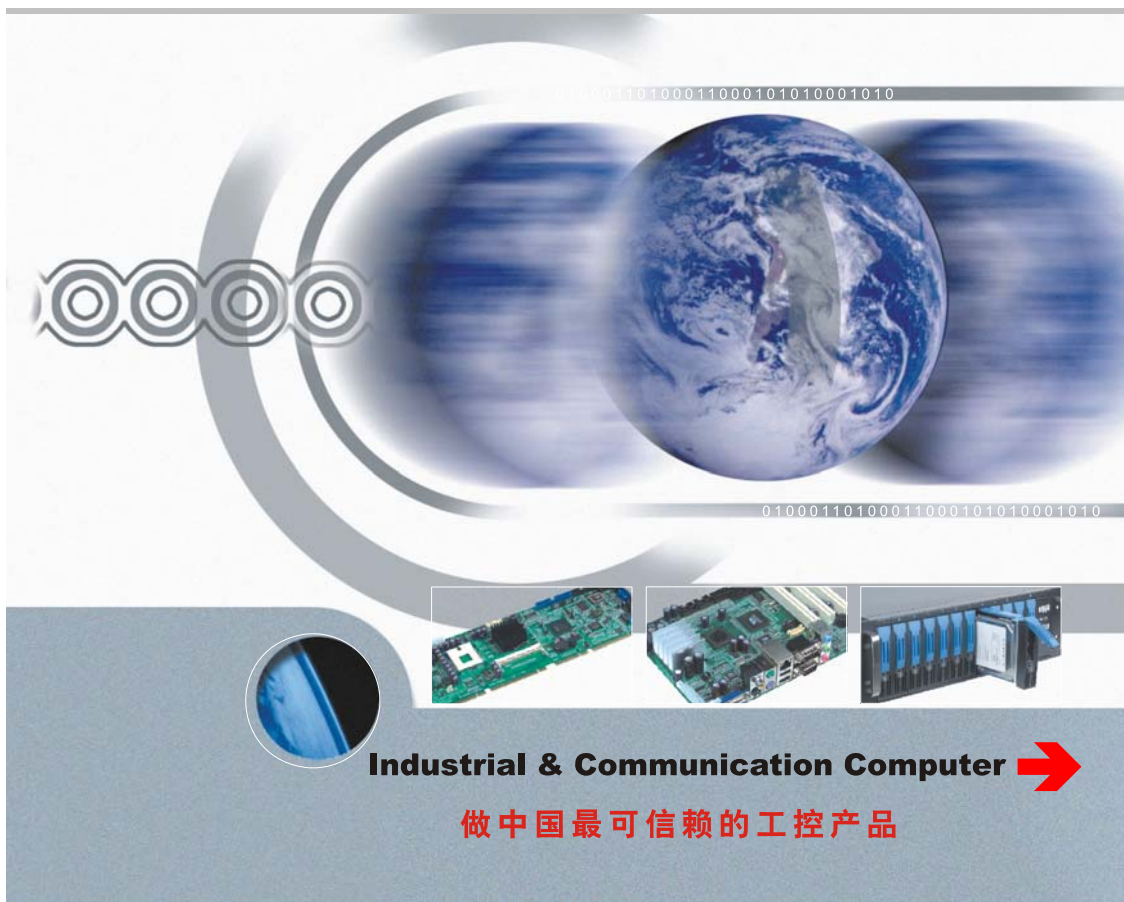




BIS-6380B
USER' Manual V1.0

用户手册

USER' Manual



Industrial & Communication Computer 

做中国最可信赖的工控产品

BIS-6380B

USER' Manual V1.0

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Date: 2014

Safety Instructions

1. Please read the product manual carefully before using this product.
2. Put all the unused or uninstalled boards or electronic components in a static dissipative surface or static shielding bag.
3. Always ground yourself to remove any static discharge before touching the board, to place your hands on grounding metal object for a while or wear a grounding wrist strap at all times.
4. When taking or fetching the boards or cards, please wear antistatic gloves and have the habit of holding the boards by its edges.
5. Make sure that your power supply is set to the correct voltage in your area. Incorrect voltage may cause personal injuries and damage the system.
6. To prevent electronic shock hazard or any damage to the product, please ensure that all power cables for the devices are unplugged when adding or removing any devices or reconfiguring the system.
7. To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before relocating the system.
8. When adding or removing devices to or from the system, ensure that all the power cables for the devices are unplugged in advance.
9. To prevent any unnecessary damage to the products due to frequent power on/off, please wait at least 30 seconds to restart the unit after the shutdown.
10. If system goes wrong during the operation, do not try to fix it by yourself. Contact a qualified service technician or your retailer.
11. This product is classified as Class A product, which may cause radio interference in our living environment. On this occasion, users need to take measures to handle the interference.

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Packing List

Thanks for purchasing NORCO products. Please check the accessories as per the packing list when you open its package. If you find any components/parts defected, damaged or lost, please contact your vendor ASAP.

- | | |
|--------------------|--------|
| ■BIS-6380B | 1 Unit |
| ■12V Power Adapter | 1 pcs |



Chapter 1. Product Introduction

Chapter 1 Product Introduction

1.1 Overview

This Compact system BIS-6380B uses the Freescale i.MX6 series CPU which is a power efficient implementation of the ARM Cortex™ A9 core which offers long lifecycle support. This processor features full HD 1080p playback as well as 1080p decoding and encoding using hardware acceleration and the ability of running dual independent displays through the HDMI & LVDS interfaces. This ARM architecture-based barebone is designed to operate on Android 4.0 or Linux natively.

The BIS-6380B is built to industrial standards so you can run it in a factory, but it's cost effective enough to run as a digital media streamer and can be used as a suitable solution for a wide range of applications including but not limited to digital control, digital signage, interactive client, media player, advertising, Large LCD screen Control, transportation, information control, education and banking.

1.2 Specifications

Processor

- CPU: Freescale Cortex™-A9 i.MX6 Series (Single Core, dual core, quad-core)

Memory

- Onboard Memory: default 1GB (support up to 2GB) , DDRIII 800

Display

- Display: LVDS, 2x HDMI
- LVDS: dual channel LVDS, 24Bit , maximum resolution: 1920×1080@60Hz
- HDMI1: Sil9022A, maximum resolution: 1920x1080@60Hz
- HDMI2: i.MX6 CPU integrated, maximum resolution: 1920x1080@60Hz

Ethernet

- LAN Controller: RGMII PHY Chip AR8033
- Rate: 10/100/1000Mbps

Storage

- Provide 1x standard 7+15Pin SATA port (only quad-core CPU support)
- SD: Micro SD
- FLASH: Onboard 4GB(up to 8GB) INAND

AUDIO

- Adopt SGTL5000-XNAA3 audio controller chip
- Provides 1xMIC-in,1x Headphone
- Provides 1x Line-in, 1x Line-out

I/O

- COM: 5x COM ports. COM2 supports RS232/RS422/RS485; COM1/COM3/COM4/COM5 supports RS232
- Provides 8x USB 2.0, 2x USB2.0, 1x mini USB OTG, 3x USB2.0mm Pin, 1x MINI PCIE_USB, 1x USB WIFI module
- 2x CAN BUS (optional)

Expansions

- 1x MINI PCIe supports WiFi, 3G module
- Onboard SIM card socket supports 3G network, co-working with MINI PCIe 3G module
- Supports 16bit GPIO
- Supports four-wire resistive touch

Power Supply

- +9~24V single supply

Watchdog

- Support system reset function

Operating Environment

- Operating Temperature: 0℃~60℃
- Operating Humidity: 5%~95%, non-condensing

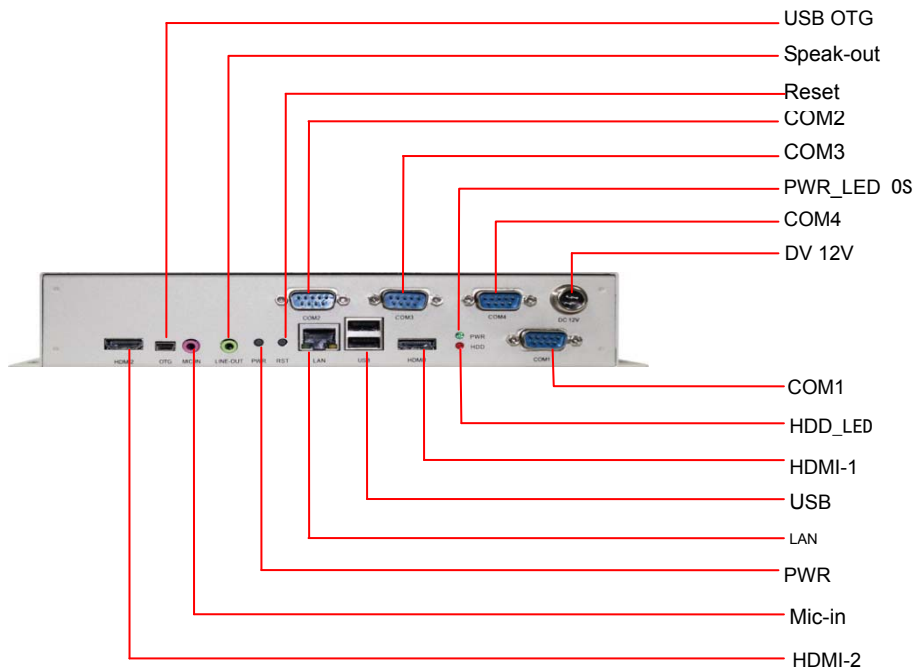


Chapter 2. Hardware Introduction

Chapter 2 Hardware Introduction

2.1 External Interfaces Location

1: BIS-6380B Front View



2.2 Front Panel I/O Connectors

2.2.1 Audio (Speak-out, Mic-in)

BIS-6380B adopts SGTL5000 audio controller chip. The green port is speak-out; the pink port is Mic-in.

2.2.2 LED

The upper LED is PWR_LED, the lower LED is HDD_LED.

2.2.3 USB (USB1/2)

BIS-6380B provides 2x USB2.0, 1x USB OTG, plug and play.

| Pin | Signal Name |
|------|-------------|
| 1、 2 | +5V |
| 3、 4 | USB DATA- |
| 5、 6 | USB DATA+ |
| 7、 8 | GND |

2.2.4 Ethernet (LAN)

BIS-6380B provides 1x RJ-45 Gigabit LAN port. LILED and ACTLED are the two LED indicator Lamps on the two sides of the RJ-45 Interface. The two lamps indicate LAN status:

RJ45 LAN LED Status::

| LILED (Green) | Function | ACTLED (Yellow) | Function |
|---------------|----------------|-----------------|---------------|
| Flash | Effective Link | On | Data transfer |
| Off | No link/Close | Off | No data |

2.2.5 HDMI (HDMI1/HDMI2)

BIS-6380B provides 2x HDMI ports to transmit non-compressed audio signal and HD video signal.

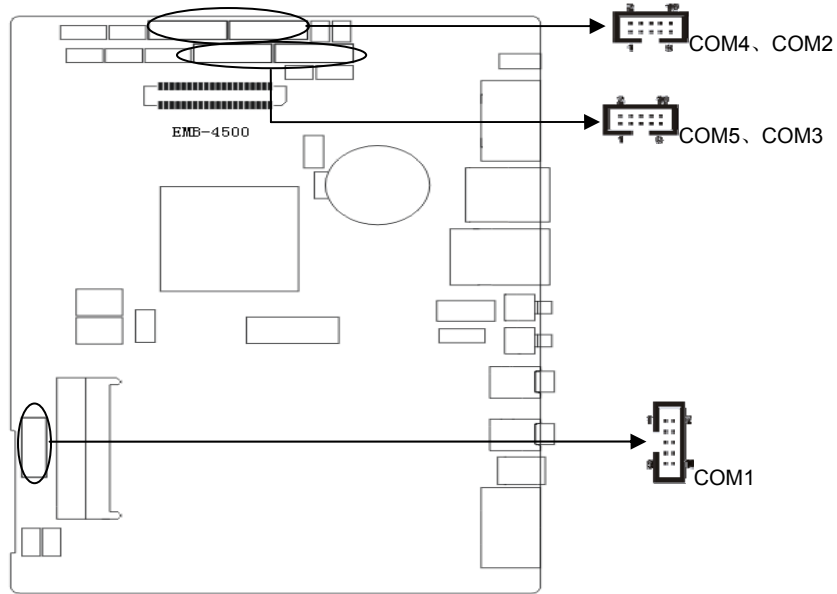
| Signal Name | Pin | | Signal Name |
|-------------|-----|----|-------------|
| D2+ | 1 | 2 | D2 Shield |
| D2- | 3 | 4 | D1+ |
| D1 Shield | 5 | 6 | D1- |
| D0+ | 7 | 8 | D0 Shield |
| D0- | 9 | 10 | CK+ |
| CK Shield | 11 | 12 | CK- |
| CE Remote | 13 | 14 | NC |
| DDC CLK | 15 | 16 | DDC DATA |
| GND | 17 | 18 | +5V |
| HP DET | 19 | 20 | SHELL0 |
| SHELL1 | 21 | 22 | SHELL2 |
| SHELL3 | 23 | 24 | SHELL4 |
| SHELL5 | 25 | 26 | SHELL6 |
| SHELL7 | 27 | 28 | SHELL8 |

| | | | |
|---------|----|----|---------|
| SHELL9 | 29 | 30 | SHELL10 |
| SHELL11 | 31 | | |

2.3 Inner Interfaces

2.3.1 Serial Ports (COM1_COM5)

BIS-6380B provides 5x serial ports. COM2 supports RS232/RS422/RS485; COM1/COM3/COM4/COM5 support RS232.



COM1/COM3/COM4/COM5:

| Pin | Signal Name |
|---------|-------------|
| 1,2,7,8 | NC |
| 3 | COM_RXD |
| 4 | COM_RTS# |
| 5 | COM_TXD |
| 6 | COM_CTS# |
| 9, 10 | GND |

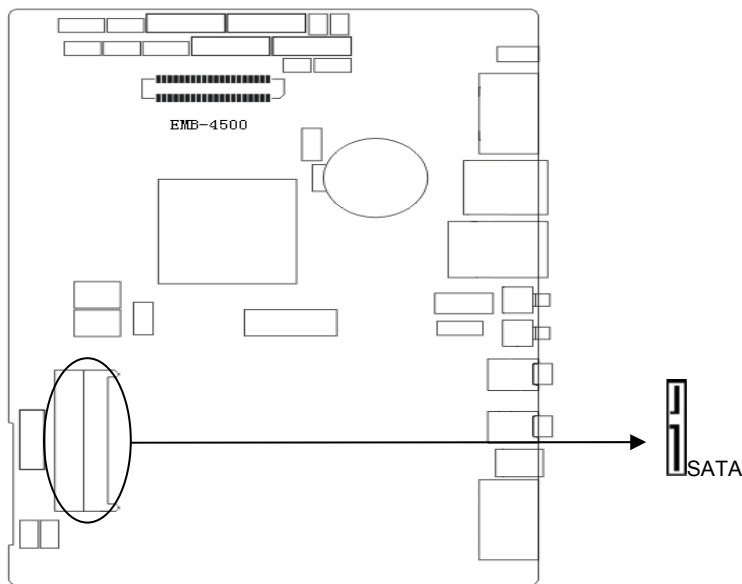
COM2 set as RS232/RS422/RS485, Pin defined as below::

| Pin | RS232 (default) | RS422 | RS485 |
|-----|-----------------|-------|-------|
| | | | |

| | | | |
|----|----------|-----|-------|
| 1 | NC | TX- | DATA- |
| 2 | NC | NC | NC |
| 3 | COM_RXD | TX+ | DATA+ |
| 4 | COM_RTS# | NC | NC |
| 5 | COM_TXD | RX+ | NC |
| 6 | COM_CTS# | NC | NC |
| 7 | NC | RX- | NC |
| 8 | NC | NC | NC |
| 9 | GND | GND | GND |
| 10 | GND | GND | GND |

2.3.2 SATA Port (SATA)

BIS-6380B provides 1x standard 7+15Pin SATA port.



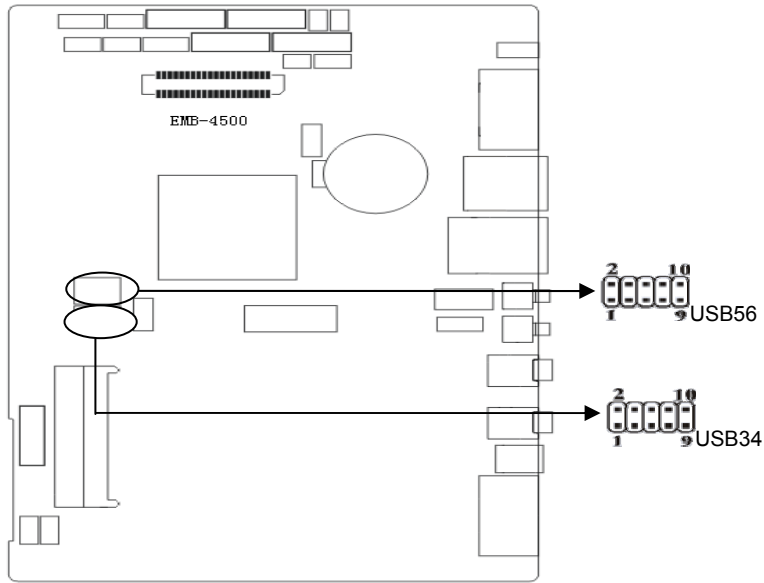
SATA:

| Pin | Signal Name | Pin | Signal Name |
|------|-------------|-----|-------------|
| 1, 2 | GND | P4 | GND |
| S1 | GND | P5 | GND |

| | | | |
|----|-------|---------|-----|
| S2 | TX+ | P6 | GND |
| S3 | TX- | P7 | VCC |
| S4 | GND | P8 | VCC |
| S5 | RX- | P9 | VCC |
| S6 | RX+ | P10 | GND |
| S7 | GND | P11 | GND |
| P1 | +3.3V | P12 | GND |
| P2 | +3.3V | P13、P14 | NC |
| P3 | +3.3V | P15 | NC |

2.3.3 USB (USB34, USB56)

There are 4x USB2.0, 2x2*USB2.0 PIN header inside.



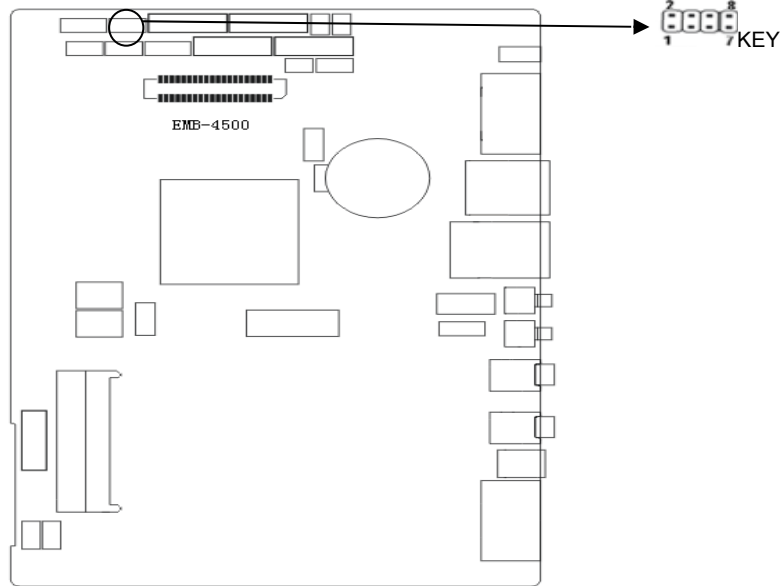
USB34, USB56:

| Signal Name | Pin | | Signal Name |
|-------------|-----|---|-------------|
| VCC | 1 | 2 | GND |
| USB DATA- | 3 | 4 | GND |
| USB DATA+ | 5 | 6 | USB DATA+ |

| | | | |
|-----|---|----|-----------|
| GND | 7 | 8 | USB DATA- |
| GND | 9 | 10 | VCC |

2.3.4 KEY (3x3)

BIS-6380B provides one 2x4Pin 3x3 key matrix to expand external keys

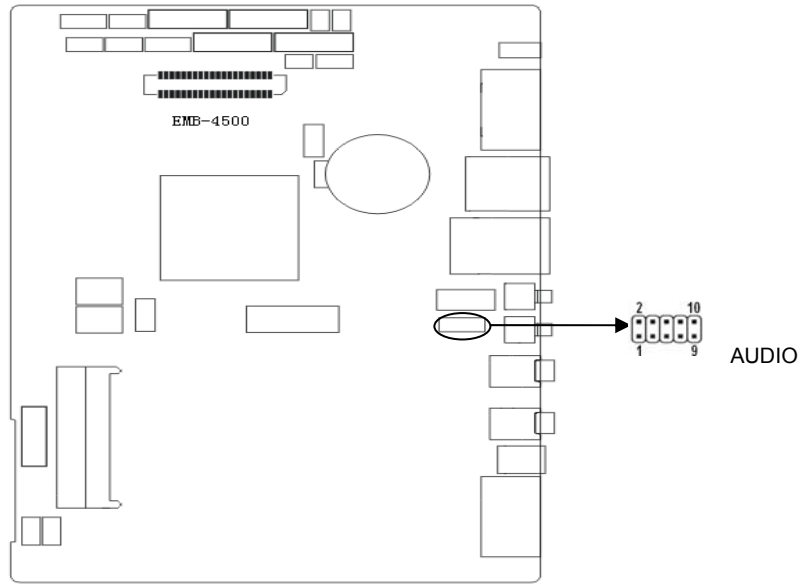


KEY:

| Signal Name | Pin | | Signal Name |
|-------------|-----|---|-------------|
| GND | 1 | 2 | 3.3V |
| KEY_COL2 | 3 | 4 | KEY_ROW2 |
| KEY_COL7 | 5 | 6 | KEY_ROW7 |
| KEY_COL6 | 7 | 8 | KEY_ROW6 |

2.3.5 Audio (AUDIO)

EMB-4500 adopts SGTL5000-XNAA3 audio controller chip. Except for external audio output interface (Headphone) and microphone (MIC-in), board also provides one Pin audio interface.

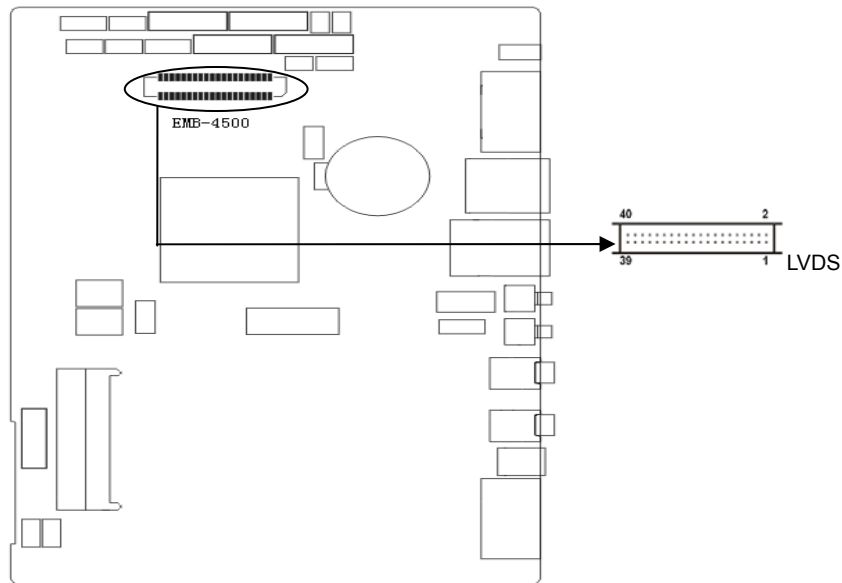


AUDIO:

| Signal Name | Pin | | Signal Name |
|-------------|-----|----|-------------|
| NC | 1 | 2 | MIC1*P |
| LIN_L | 3 | 4 | LIN_R |
| GND | 5 | 6 | GND |
| GND | 7 | 8 | GND |
| LINE_OUT_L | 9 | 10 | LINE_OUT_R |

2.3.6 Display Port (LVDS)

Except for HDMI1\HDMI2, there is 1x dual channel LVDS inside.

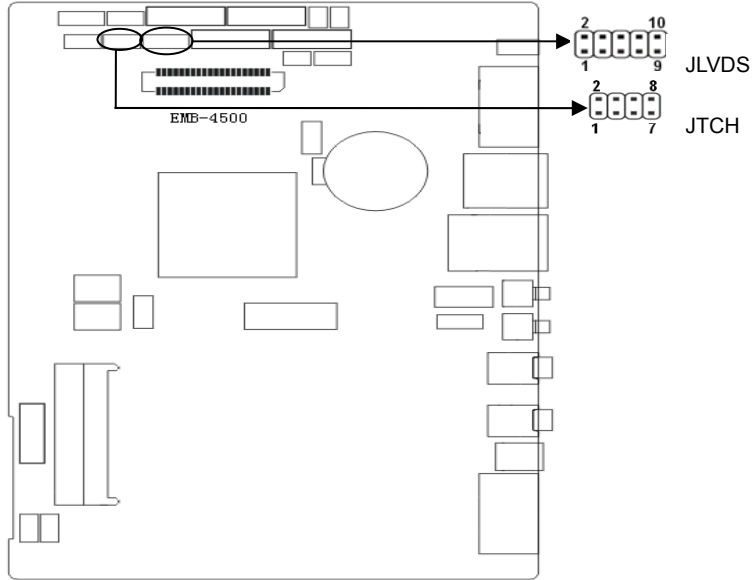


LVDS:

| Signal Name | Pin | | Signal Name |
|---------------|-----|----|---------------|
| VDD_PANEL | 1 | 2 | VDD_PANEL |
| GND | 3 | 4 | GND |
| LVDS0_TX0_NEG | 5 | 6 | LVDS1_TX0_NEG |
| LVDS0_TX0_POS | 7 | 8 | LVDS1_TX0_POS |
| GND | 9 | 10 | GND |
| LVDS0_TX1_NEG | 11 | 12 | LVDS1_TX1_NEG |
| LVDS0_TX1_POS | 13 | 14 | LVDS1_TX1_POS |
| GND | 15 | 16 | GND |
| LVDS0_TX2_NEG | 17 | 18 | LVDS1_TX2_NEG |
| LVDS0_TX2_POS | 19 | 20 | LVDS1_TX2_POS |
| GND | 21 | 22 | GND |
| LVDS0_CLK_NEG | 23 | 24 | LVDS1_CLK_NEG |
| LVDS0_CLK_POS | 25 | 26 | LVDS1_CLK_POS |
| GND | 27 | 28 | GND |
| VCC5 | 29 | 30 | VCC5 |
| GND | 31 | 32 | GND |
| LVDS0_TX3_NEG | 33 | 34 | LVDS1_TX3_NEG |

| | | | |
|---------------|----|----|---------------|
| LVDS0_TX3_POS | 35 | 36 | LVDS1_TX3_POS |
| GND | 37 | 38 | GND |
| VDD_PANEL | 39 | 40 | VDD_PANEL |

2.3.7 JTCH, JLVDS



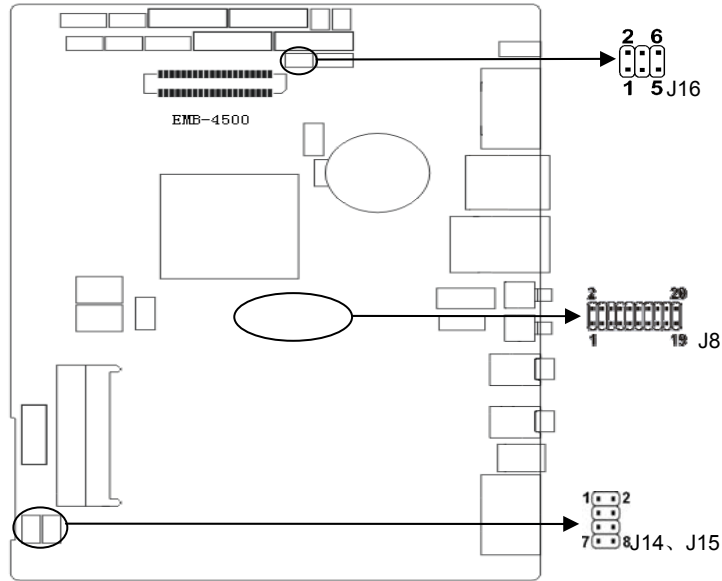
JTCH:

| Signal Name | Pin | | Signal Name |
|--------------|-----|---|--------------|
| +3.3V | 1 | 2 | GND |
| LVDS1_SCL | 3 | 4 | LVDS0_SCL |
| LVDS1_SDA | 5 | 6 | LVDS0_SDA |
| CAP_TCH_INT0 | 7 | 8 | CAP_TCH_INT1 |

JLVDS

| Signal Name | Pin | | Signal Name |
|-------------|-----|----|-------------|
| VCC5 | 1 | 2 | +3.3V |
| BACKLIGHTON | 3 | 4 | LVDS_VDD |
| GND | 5 | 6 | VCC5 |
| L_BKLT_CTL | 7 | 8 | LVDS_VDD |
| +VIN | 9 | 10 | +VIN |

2.3.8 J8, J14, J15, J16



J8: 16 bit definable GPIO

| Signal Name | Pin | | Signal Name |
|-------------|-----|----|-------------|
| SD1_CMD | 1 | 2 | EIM_CS0 |
| SD1_CLK | 3 | 4 | EIM_D23 |
| SD1_DAT0 | 5 | 6 | EIM_BCLK |
| SD1_DAT1 | 7 | 8 | SD2_CLK |
| SD1_DAT2 | 9 | 10 | NANDF_D7 |
| ENET_RXD0 | 11 | 12 | NANDF_D4 |
| ENET_TXD0 | 13 | 14 | NANDF_D5 |
| SD2_CMD | 15 | 16 | BUZZER |
| 3.3V | 17 | 18 | 3.3V |
| GND | 19 | 20 | GND |

J14, J15: TF card and INAND boot option configuration Pins

| Pin | Signal |
|----------|----------------|
| J14(3-4) | SD3 TF boot |
| J15(3-4) | SD3 TF boot |
| J15(5-6) | SD3 TF boot |
| J14(3-4) | SD4 INAND boot |

| | |
|----------|----------------|
| J14(5-6) | SD4 INAND boot |
| J15(1-2) | SD4 INAND boot |
| J15(7-8) | SD4 INAND boot |
| J15(5-6) | SD4 INAND boot |

J16: boot and burn mode configure Pin

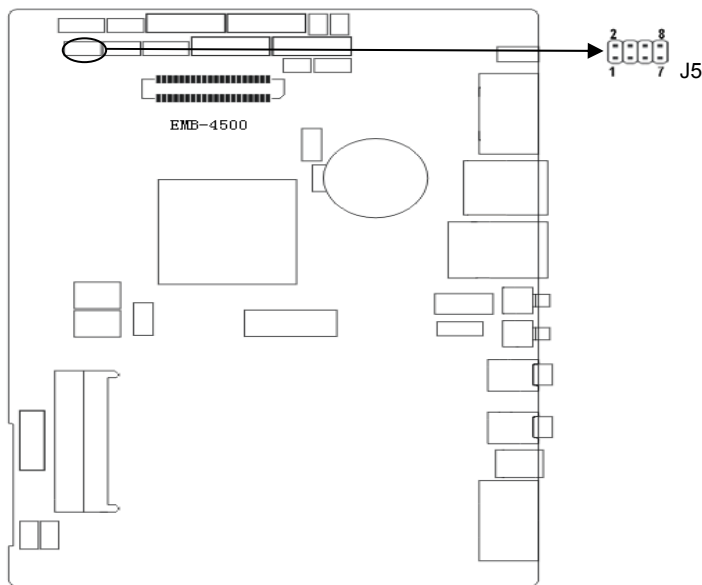
| Pin | Signal Name |
|----------|-------------|
| J16(2-4) | NORMAL BOOT |
| J16(4-6) | DOWNLOADER |

2.3.9 MINI PCIe

Board provides 1x MINI PCIe socket to expand Mini PCIe devices based on actual needs.

2.3.10 CAN BUS (J5)

Board provides 2x CAN BUS (optional).



J5:

| Signal Name | Pin | | Signal Name |
|-------------|-----|---|-------------|
| VCC5 | 1 | 2 | VCC5 |
| CAN1_H | 3 | 4 | CAN2_H |

| | | | |
|--------|---|---|--------|
| CAN1_L | 5 | 6 | CAN2_L |
| GND | 7 | 8 | GND |

2.3.11 Four-wire Resistive Touch (J4)

Motherboard provides 1x four-wire resistive touch J4 (optional).

J4:

| Pin | Signal Name |
|-----|----------------|
| 1 | TOUCHSCREEN_x+ |
| 2 | TOUCHSCREEN_X- |
| 3 | TOUCHSCREEN_Y+ |
| 4 | TOUCHSCREEN_Y- |



Chapter 3. Installation Instructions

Chapter 3 Installation Instructions

Before installing the computer accessories:

Follow the instructions below will help to prevent your computer from being damaged, and also ensuring your personal safety.

1. Please make sure your computer is disconnected from the power supply.
2. Please always wear anti-static wrist strap or gloves to operate the board in case that you may touch the integrated circuit components, such as RAM.

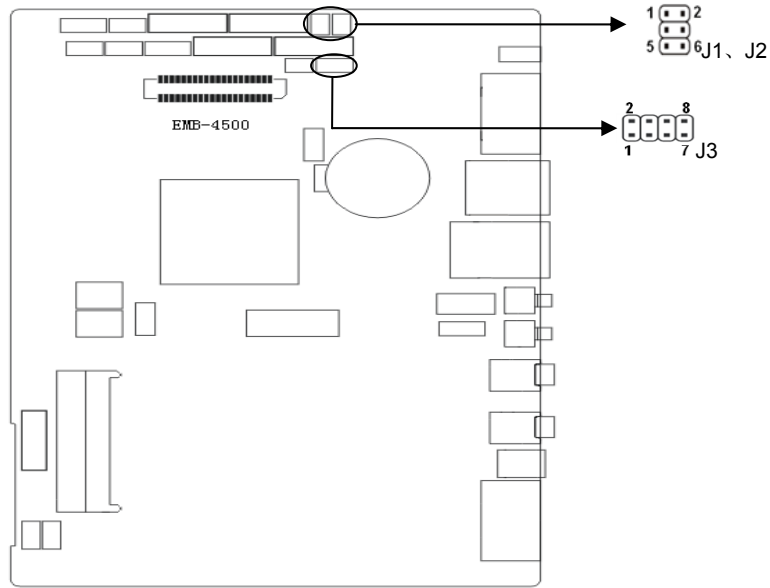
3.1 Jumper Setting

Please refer to following instructions to setup jumpers before installing your hardware devices.

Remark: How to identify the PIN1 of all jumpers and interfaces: Please observe the word mark on the side of the plug socket, which will be a "1" or bold line or triangular symbol; And please look at the back of PCB, each with a square shape will be the PIN 1; and all the jumpers' PIN1 have a white arrow on the side..

3.1.1 COM2 Jumper Setting (J1, J2, J3)

J1, J2, J3 jumpers are used to setup COM2 transmission mode. COM2 supports RS232, RS422 RS485. System default [RS232].



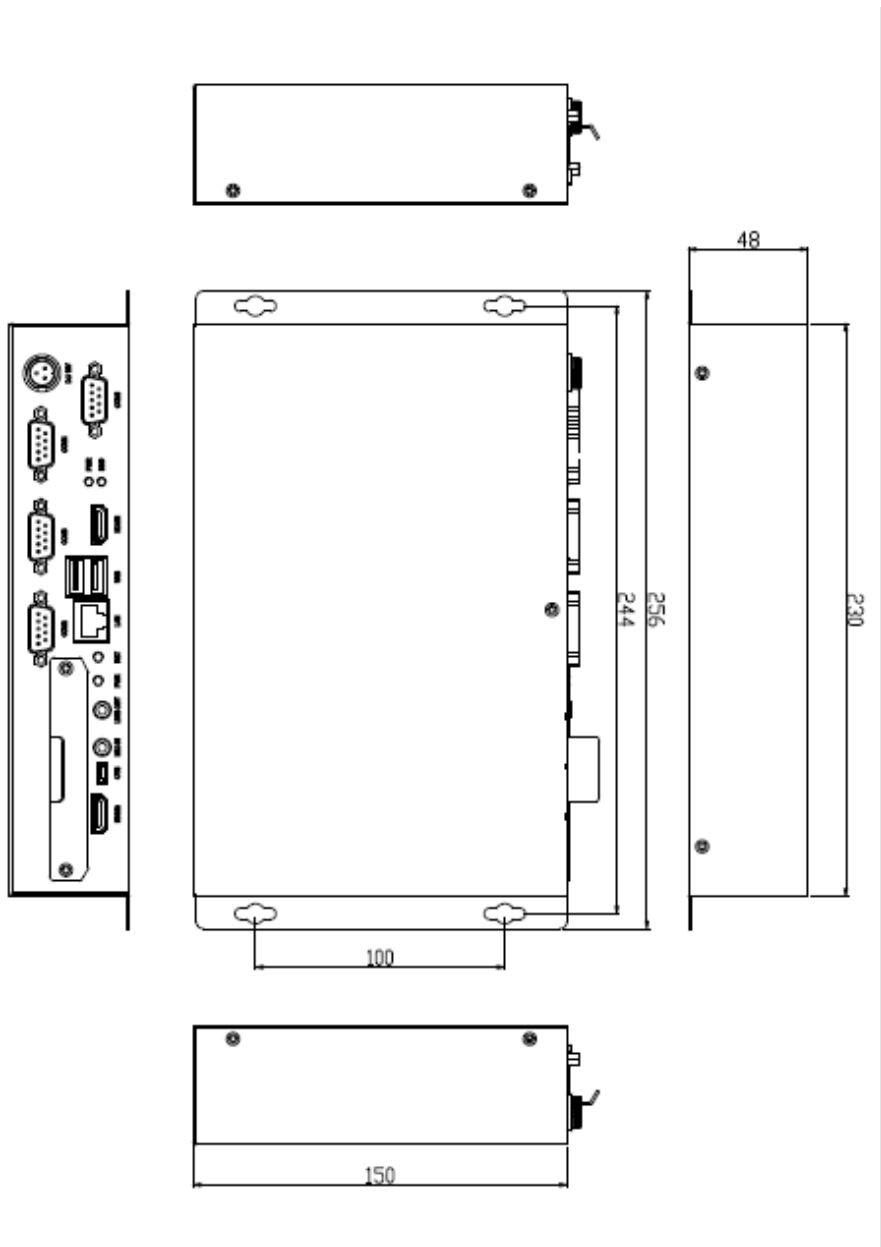
| COM2 AS RS232 PORT | | COM2 AS RS422 PORT | | COM2 AS RS485 PORT | |
|--------------------|---------|--------------------|---------|--------------------|---------|
| J1 | 1-3,2-4 | J1 | 3-5,4-6 | J1 | 3-5,4-6 |
| J2 | 1-3,2-4 | J2 | 3-5,4-6 | J2 | 3-5,4-6 |
| J3 | 1-2 | J3 | 3-4 | J3 | 5-6 7-8 |

3.2 Hard Disk Installation

BIS-6380B provides one 2.5" SATA hard disk drive bay. Please follow the instructions below to install your hard disk::

1. Shut off the power supply
2. Use screwdriver to unscrew the drive and the screws on the front panel.
3. Dismount the 2.5" hard disk drive.
4. Select matching 2.5" hard disk and fix it on the hard disk drive.
5. Finally, install the hard disk drive with the hard disk into the chassis.

3.3 Structure Diagram (Dimension)





Chapter 4. Software Functions

Chapter 4 Software Functions

4.1 Android

4.1.1 VGA

Non-support VGA out temporarily

4.1.2 HDMI

2x HDMI output by changing u-boot environment variables

Setting instructions:

1.Set HDMI2 out. Input following command when system is entering the u-boot command line interface:

```
setenv bootargs console=ttyMXC0,115200 androidboot.console=ttyMXC0 vmlloc=400M  
init=/init video=mxcfb0:dev=hdmi,1920x1080M@60 video=mxcfb1:off video=mxcfb2:off  
fbmem=28M;saveenv;
```

2.Set HDMI1 out. Input following command when system starts up and is entering the u-boot command line interface:

```
setenv bootargs console=ttyMXC0,115200 androidboot.console=ttyMXC0 vmlloc=400M  
init=/init video=mxcfb0:dev=sii902x_hdmi,1920x1080M@60 video=mxcfb1:off  
video=mxcfb2:off fbmem=28M;saveenv;
```

4.1.3 LCD

Support LVDS LCD output; Driver is customized as per customers' LCD screen.

4.1.4 USB

U-Disk auto mount directory:/mnt/udisk/

4.1.5 COM

Serial port operation node:/dev/ttyMXC0~/dev/ttyMXC4

4.1.6 CAN

No test

4.1.7 SD Card

Non-support

4.1.8 TF Card

TF Card auto mount directory: /dev/extsd/

4.1.9 SATA

Mount directory is customized as per customers' demand

4.1.10 WIFI

Support, how to operate, please refer to android interface

4.1.11 3G

Customize driver as per the 3G module that customers utilize

4.1.12 Ethernet

Support, how to operate, please refer to android interface

4.1.13 Audio Card

Support, Android OS realizes switch to local audio card output

4.2 Linux

4.2.1 VGA

Non-support VGA out temporarily

4.2.2 HDMI

2x HDMI output by changing u-boot environment variables.

Setting instructions:

1. Input following command when system is entering the u-boot command line interface:

```
setenv bootargs_mmc 'setenv bootargs ${bootargs} root=/dev/mmcblk0p1 rootwait rw
video=mxcfb0:dev=sii902x_hdmi,1920x1080M@60    video=mxcfb1:hdmi,1920x1080M@60
video=mxcfb2:off fbmem=28M,28M';saveenv;
```

4.2.3 LCD

Support LVDS LCD output; Driver is customized as per customers' LCD screen

4.2.4 USB

Support

4.2.5 COM

Serial port operation node:/dev/ttymx0~/dev/ttymx4

4.2.6 CAN

No Test

4.2.7 SD Card

Non-support

4.2.8 TF Card

Support, need to mount for testing

4.2.9 SATA

Support, need to mount for testing

4.2.10 WIFI

Support, need iwlist iwconfig for testing

4.2.11 3G

Customize driver as per the 3G module that customers utilize

4.2.12 Ethernet

Support, need tool "ifconfig dhcp ping" for testing

4.2.13 Audio Card

Support, need tool alsa-untis for testing



Appendix

Appendix

Appendix 1: Glossary

COM

Computer-Output Microfilmer. A universal serial communication interface, usually adopts normative DB 9 connector.

LAN

Network interface. Network grouped by correlative computers in a small area, generally in a company or a building. Local area network is buildup by sever, workstation, some communications links. Terminals can access data and devices anywhere through cables, which enables users to share costly devices and resource.

USB

It is the Universal Serial Bus for short. A hardware interface adapts to low speed peripherals, and is always used to connect keyboard, mouse etc. One PC can connect maximum 127 USB devices, providing 12Mbit/s transmit bandwidth USB supports hot swap and multi- data stream, namely, you can plug USB devices while system is running, system can auto-detect and makes it work on.



敬请参阅

<http://www.norco.com.cn>

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