

EMB-9675/9676 Series

Intel® Pentium® M / Celeron® M Mini ITX Main Board

Quick Installation Guide



1st Ed – 12 October 2005

FCC Statement



THIS DEVICE COMPLIES WITH PART 15 FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS:

(1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE.

(2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRABLE OPERATION.

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.

Notice

This guide is designed for experienced users to setup the system within the shortest time. For detailed information, please always refer to the electronic user's manual.

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2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information available.
3. If your product is diagnosed as defective, obtain an RMA (return material authorization) number from your dealer. This allows us to process your good return more quickly.
4. Carefully pack the defective product, a complete 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.

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1. Getting Started

1.1 Safety Precautions

Warning!



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

Caution!



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

1.2 Packing List

Before you begin installing your single board, please make sure that the following materials have been shipped:

- 1 x EMB-9675/9676 Intel Socket 478/479 Pentium® M/Celeron® M Mini ITX Main Board
- 1 x Quick Installation Guide for EMB-9675/9676
- 1 x CD-ROM or DVD-ROM contains the followings:
 - User's Manual (this manual in PDF file)
 - Ethernet driver and utilities
 - VGA drivers and utilities
 - Audio drivers and utilities
- 1 x Cable set contains the followings:
 - 1 x IDE HDD cable (40-pin, pitch 2.54mm)
 - 1 x IDE HDD cable (44-pin, pitch 2.0mm)
 - 1 x FDD cable (34-pin, pitch 2.54mm)
 - 1 x Serial port cable with 3 DB9P(M) (10-pin, pitch 2.54mm) (EMB-9676 series only)
 - 1 x I/O shield
- 1 x Pentium® M CPU cooler

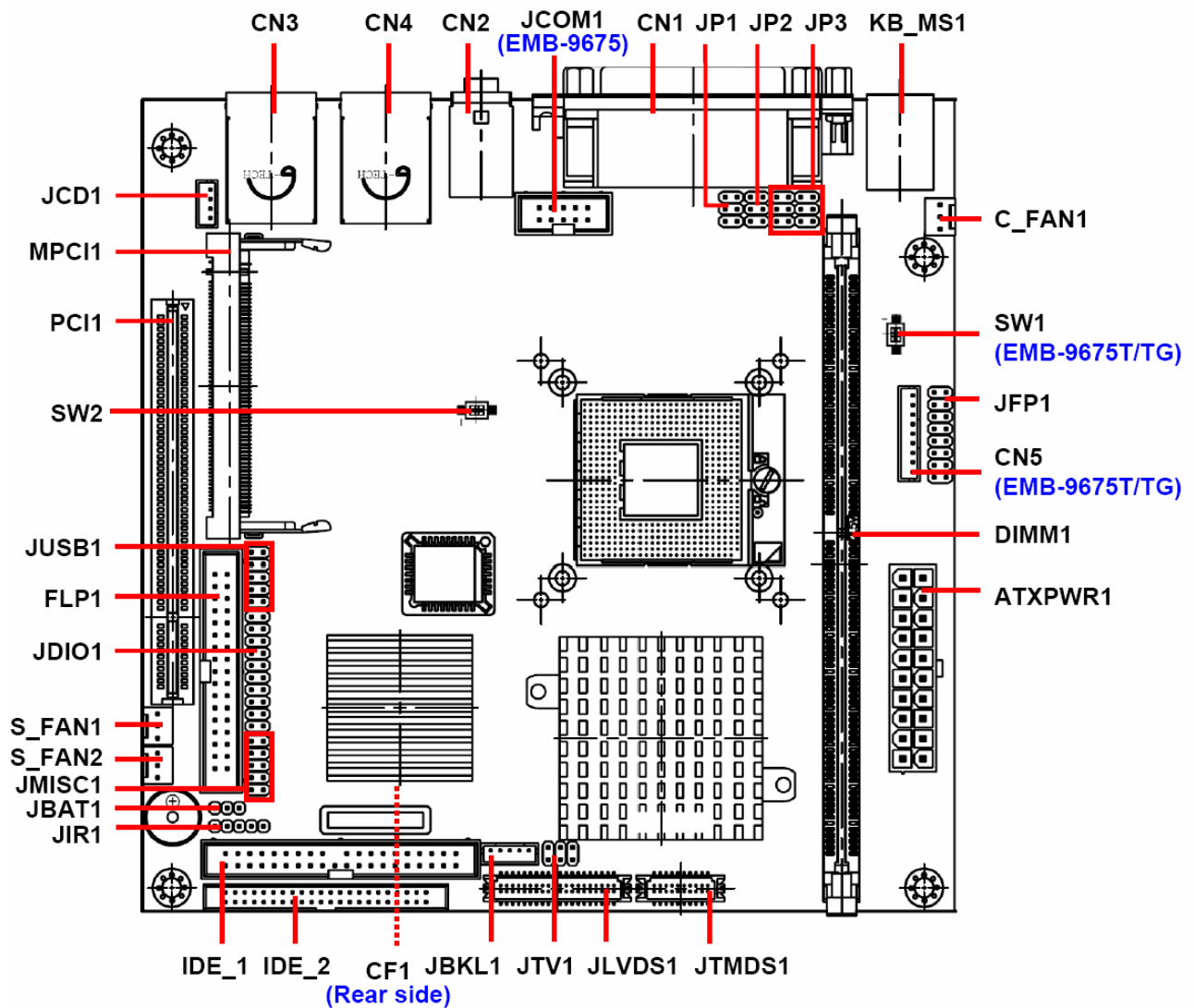


If any of the above items is damaged or missing, contact your retailer.

2. Hardware Configuration

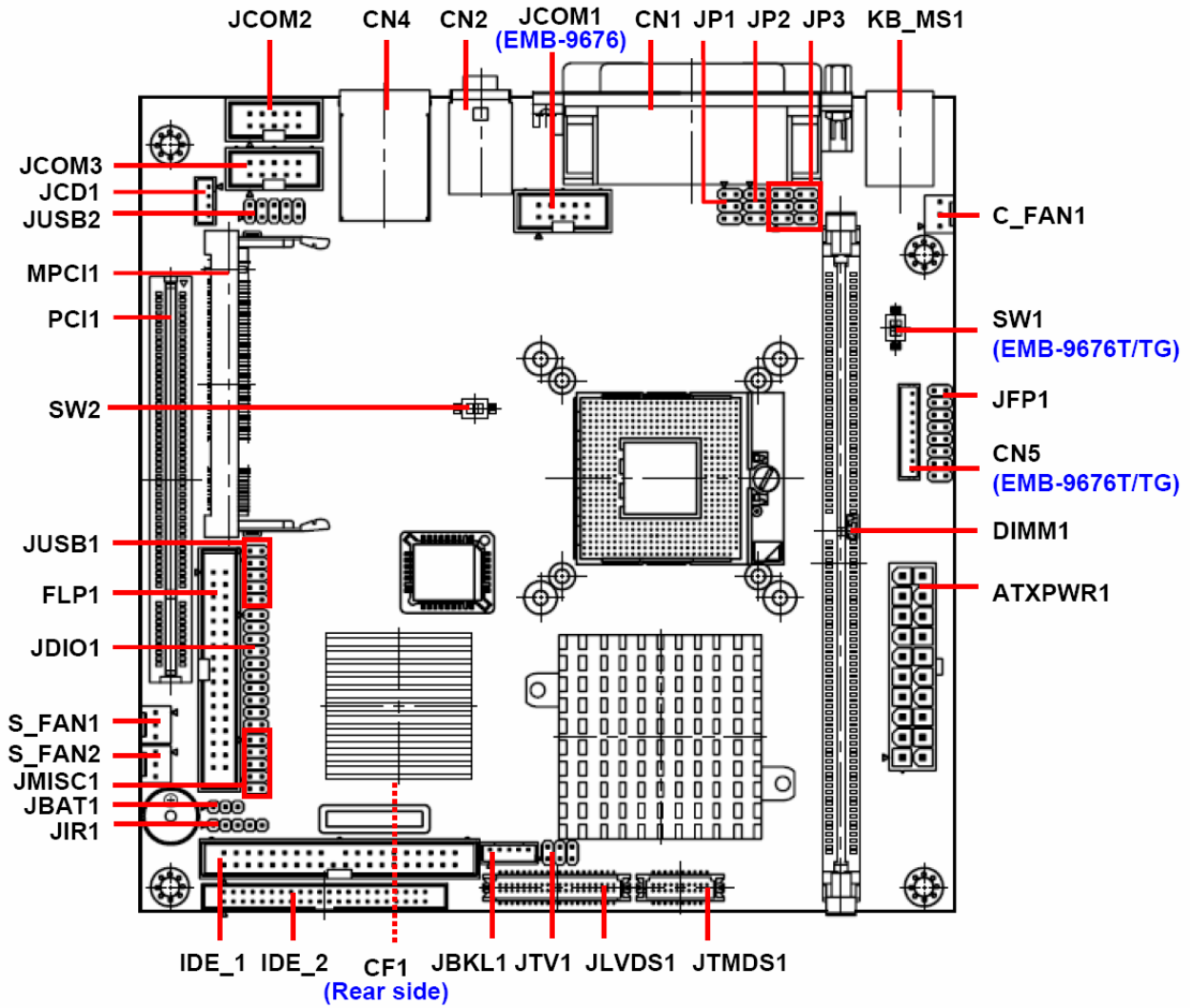
2.1 Product Overview

2.1.1 EMB-9675



EMB-9675/9676 Series

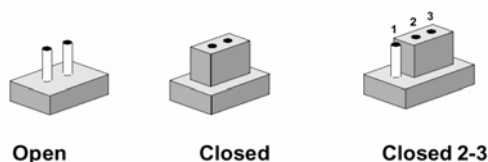
2.1.2 EMB-9676



2.2 Jumper and Connector List

You can configure your board to match the needs of your application by setting jumpers. A jumper is the simplest kind of electric switch.

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 two pins.



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



A pair of needle-nose pliers may be helpful when working with jumpers.

Connectors on the board are linked to external devices such as hard disk drives, a keyboard, or floppy drives. In addition, the board has a number of jumpers that allow you to configure your system to suit your application.

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.

The following tables list the function of each of the board's jumpers and connectors.

Jumpers

| Label | Function | Note |
|-----------------|---|--|
| JBAT1 | Clear CMOS | 3 x 1 header, pitch 2.54mm |
| JP1 | COM1 pin 9 signal select | 3 x 2 header, pitch 2.0mm |
| JP2, JP3 | COM1 RS-232/422/485 select | 3 x 2 header, pitch 2.0mm 4 x 3 header, pitch 2.0mm |
| SW1 | 4/5/8-wire touch screen select (EMB-9675T/TG , EMB-9676T/TG) | Switch |
| SW2 | Reserved | Switch |

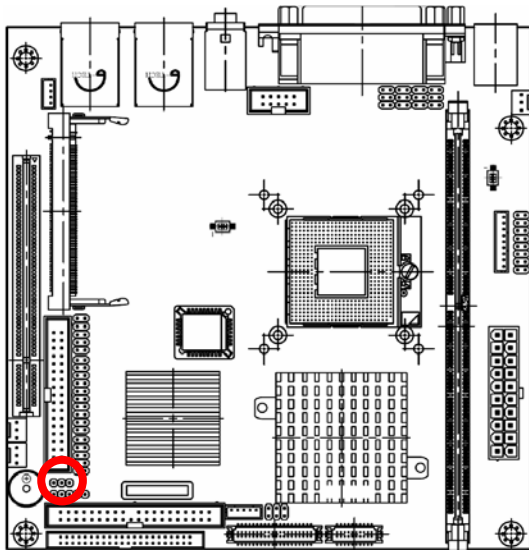
EMB-9675/9676 Series

Connectors

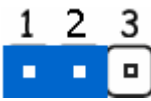
| Label | Function | Note |
|---------------|---|---|
| ATXPWR1 | ATX Power connector | ATX power connector |
| C_FAN1 | CPU fan connector | 3 x 1 wafer, pitch 2.54mm |
| CF1 | CF card connector | |
| CN1 | Parallel port connector Serial port 1 connector VGA connector | D-sub 25-pin, female D-sub 9-pin, male D-sub 15-pin, female |
| CN2 | Audio connector | Phone Jack X 3 |
| CN3 | RJ-45 Ethernet / USB 4 & 5 connector | (EMB-9675 series) |
| CN4 | RJ-45 Ethernet / USB 0 & 1 connector | |
| CN5 | 4/5/8-wire touch screen connector (EMB-9675T/TG, EMB-9676T/TG) | 9 x 1 wafer, pitch 2.0mm |
| DIMM1 | 184-pin DDR SDRAM DIMM socket | |
| FLP1 | Floppy connector | 17 x 2 header, pitch 2.54mm |
| IDE_1 | Primary IDE connector | 20 x 2 header, pitch 2.54mm |
| IDE_2 | Secondary IDE connector | 22 x 2 header, pitch 2.0mm |
| JBKL1 | LCD inverter connector | 5 x 1 wafer, pitch 2.0mm |
| JCD1 | CD-ROM audio input connector | 4 x 1 wafer, pitch 2.0mm |
| JCOM1 | Serial port 2 connector (EMB-9675/9676) | 5 x 2 header, pitch 2.54mm |
| JCOM2 | Serial port 3 connector (EMB-9676 series) | 5 x 2 header, pitch 2.54mm |
| JCOM3 | Serial port 4 connector (EMB-9676 series) | 5 x 2 header, pitch 2.54mm |
| JDIO1 | Digital input/output connector | 10 x 2 header, pitch 2.54mm |
| JFP1 | Front panel connector | 8 x 2 header, pitch 2.54mm |
| JIR1 | IrDA connector | 5 x 1 header, pitch 2.54mm |
| JLVDS1 | LVDS connector | HIROSE DF13-40DP-1.25V |
| JMISC1 | Miscellaneous setting connector | 5 x 2 header, pitch 2.54mm |
| JTMDS1 | TMDS connector | HIROSE DF13-20DP-1.25V |
| JTV1 | TV out connector | 3 x 2 header, pitch 2.54mm |
| JUSB1 | USB connector 2 & 3 | 5 x 2 header, pitch 2.54mm |
| JUSB2 | USB connector 4 & 5 (EMB-9676 series) | 5 x 2 header, pitch 2.54mm |
| KB_MS1 | PS/2 Keyboard & mouse connector | 6-pin Mini-DIN x 2 |
| MPCI1 | Mini PCI slot | |
| PCI1 | PCI slot | |
| S_FAN1,S_FAN2 | System fan connector 1 & 2 | 3 x 1 wafer, pitch 2.54mm |

2.3 Setting Jumpers & Connectors

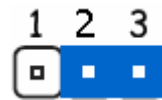
2.3.1 Clear CMOS (JBAT1)



Protect*

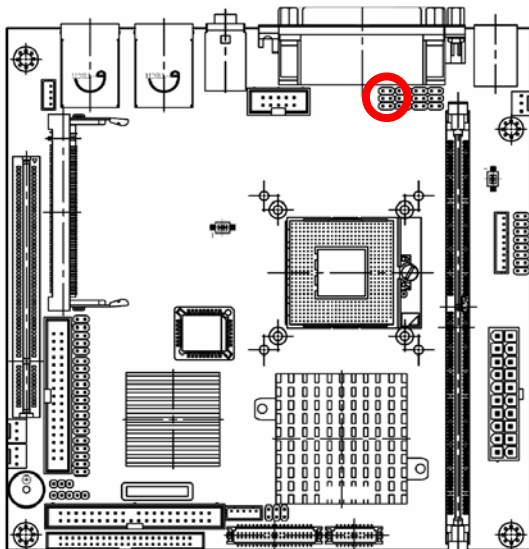


Clear CMOS

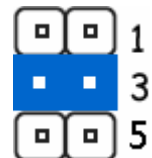


* Default

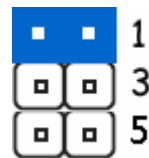
2.3.2 COM1 Pin 9 Signal Select (JP1)



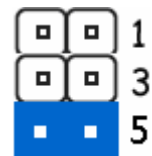
+5V



Ring*



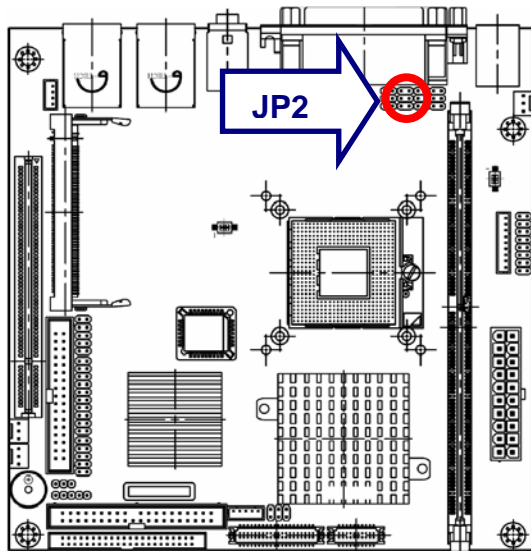
+12V



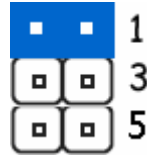
* Default

EMB-9675/9676 Series

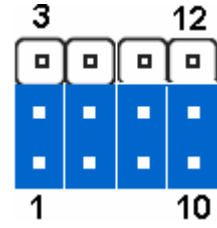
2.3.3 COM1 RS-232/422/485 Select (JP2, JP3)



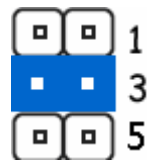
(JP2)
RS-232*



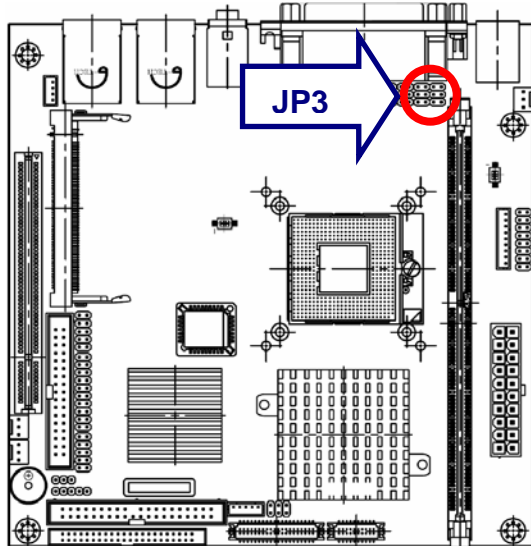
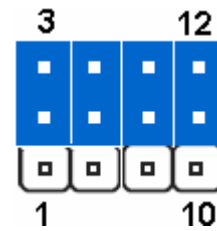
(JP3)
RS-232*



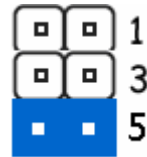
RS-422



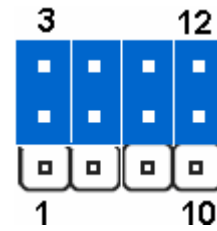
RS-422



RS-485

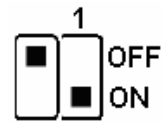
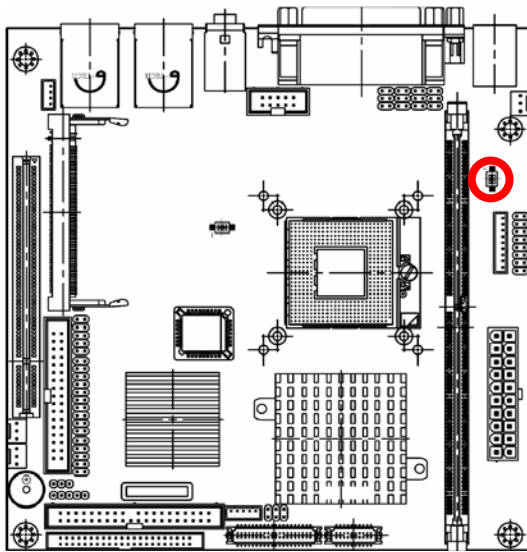


RS-485



* Default

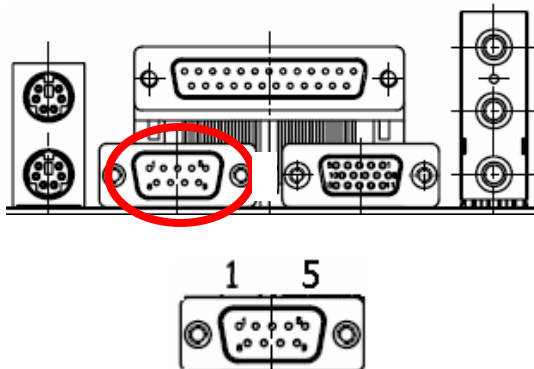
2.3.4 4/5/8-wire Touch Screen Select (SW1) (EMB-9675T/TG, EMB-9676T/TG)



| Wire | BIT1 | BIT2 |
|--------|------|------|
| * 4, 8 | OFF | ON |
| 5 | ON | OFF |

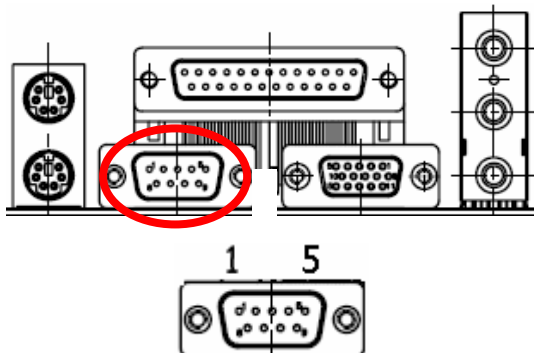
* Default

2.3.5 Serial Port 1 Connector in RS-232 Mode (CN1)



| Signal | PIN | PIN | Signal |
|-------------|-----|-----|--------|
| DCD | 1 | 2 | RxD |
| TxD | 3 | 4 | DTR |
| GND | 5 | 6 | DSR |
| RTS | 7 | 8 | CTS |
| RI/+5V/+12V | 9 | 10 | NC |

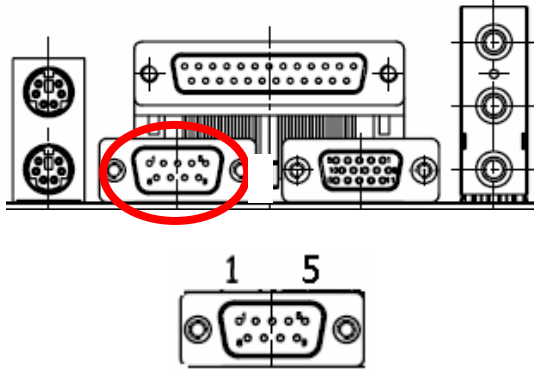
2.3.6 Serial Port 1 Connector in RS-422 Mode (CN1)



| Signal | PIN | PIN | Signal |
|--------|-----|-----|--------|
| TxD- | 1 | 2 | RxD+ |
| TxD+ | 3 | 4 | RxD- |
| GND | 5 | 6 | NC |
| NC | 7 | 8 | NC |
| NC | 9 | 10 | NC |

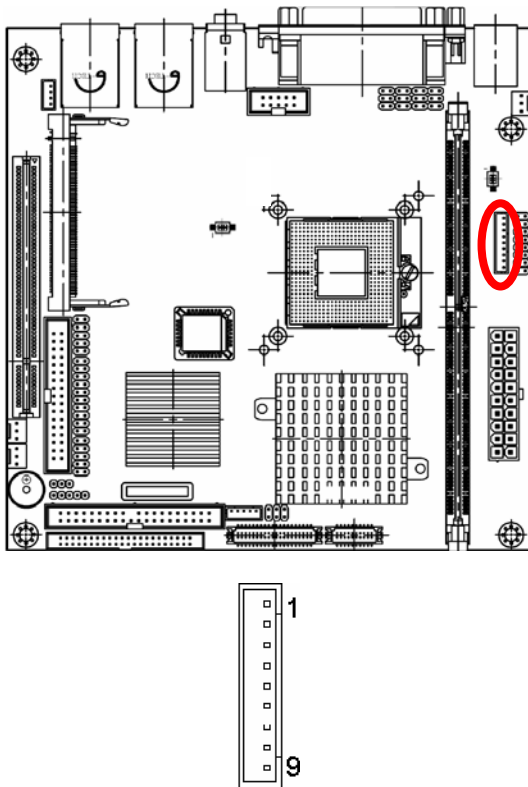
EMB-9675/9676 Series

2.3.7 Serial Port 1 Connector in RS-485 Mode (CN1)



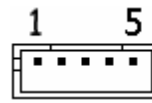
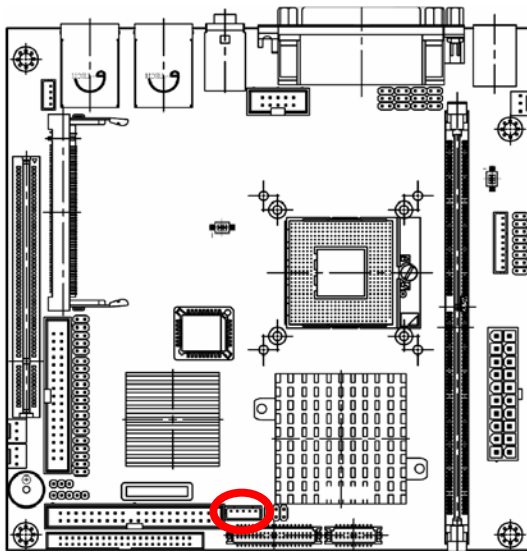
| Signal | PIN | PIN | Signal |
|--------|-----|-----|--------|
| DATA- | 1 | 2 | NC |
| DATA+ | 3 | 4 | NC |
| GND | 5 | 6 | NC |
| NC | 7 | 8 | NC |
| NC | 9 | 10 | NC |

2.3.8 4/5/8-Wire Touch Screen Connector (CN5) (EMB-9675T/TG, EMB-9676T/TG)



| PIN | 4-Wire | 5-Wire | 8-Wire |
|-----|--------|--------|---------------|
| 1 | NA | NA | Right Sense |
| 2 | NA | NA | Left Sense |
| 3 | NA | NA | Bottom Sense |
| 4 | NA | Sense | Top Sense |
| 5 | Right | LR | Right Excite |
| 6 | Left | LL | Left Excite |
| 7 | Bottom | UR | Bottom Excite |
| 8 | Top | UL | Top Excite |
| 9 | GND | GND | GND |

2.3.9 LCD Inverter Connector (JBKL1)



| Signal | PIN |
|--------|-----|
| +12V | 1 |
| GND | 2 |
| ENBKL | 3 |
| VR | 4 |
| +5V | 5 |



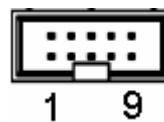
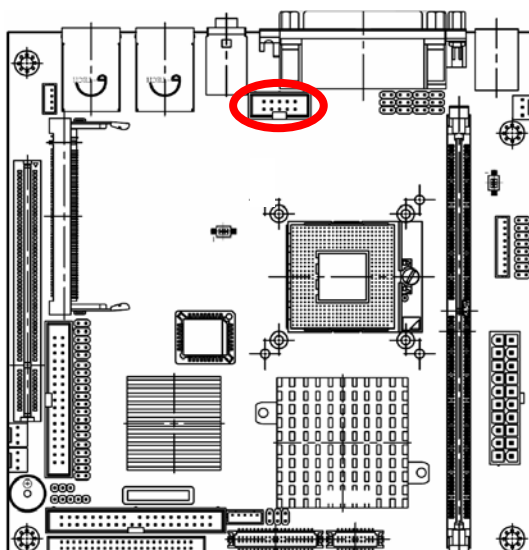
Note:

For inverters with adjustable Backlight function, it is possible to control the LCD brightness through the VR signal controlled by **JMISC**. Please see the **JMISC** section for detailed circuitry information.

2.3.9.1 Signal Description – LCD Inverter Connector (JBKL1)

| Signal | Signal Description |
|--------|---|
| VR | V _{adj} = 0.75V ~ 4.25V (Recommended: 4.7KΩ, >1/16W) |
| ENBKL | LCD backlight ON/OFF control signal |

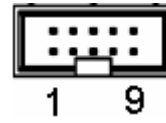
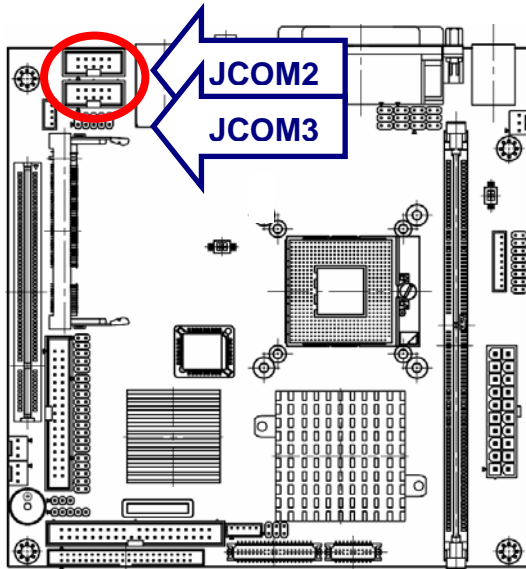
2.3.10 Serial Port 2 Connector (JCOM1) (EMB-9675/9676)



| Signal | PIN | PIN | Signal |
|--------|-----|-----|--------|
| DCD | 1 | 2 | RxD |
| TxD | 3 | 4 | DTR |
| GND | 5 | 6 | DSR |
| RTS | 7 | 8 | CTS |
| RI | 9 | 10 | NC |

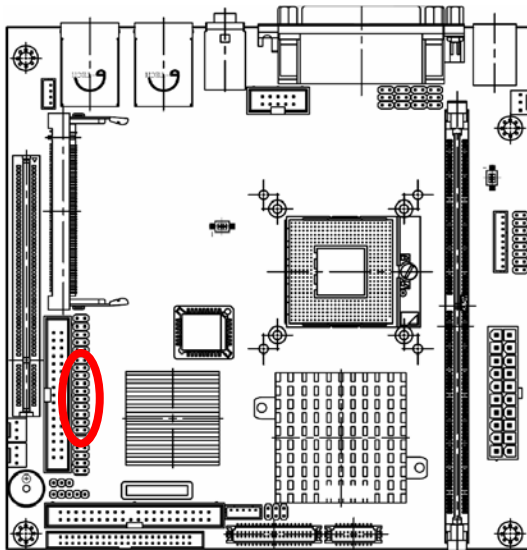
EMB-9675/9676 Series

2.3.11 Serial Port 3/4 Connector (JCOM2, JCOM3) (EMB-9676 Series)



| Signal | PIN | PIN | Signal |
|--------|-----|-----|--------|
| DCD | 1 | 2 | RxD |
| TxD | 3 | 4 | DTR |
| GND | 5 | 6 | DSR |
| RTS | 7 | 8 | CTS |
| RI | 9 | 10 | NC |

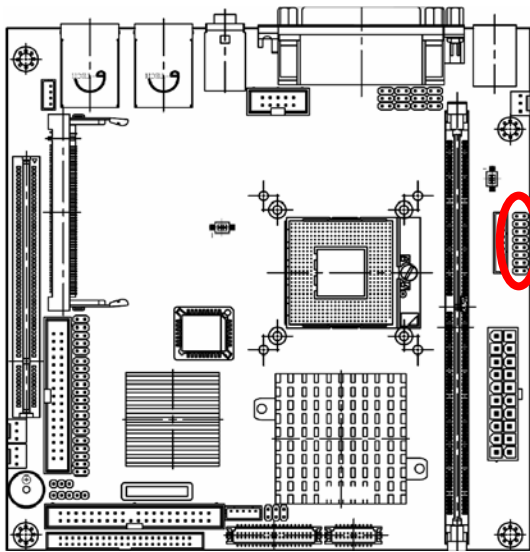
2.3.12 Digital Input / Output Connector (JDIO1)



| Signal | PIN | PIN | Signal |
|-----------|-----|-----|------------|
| DIO0 | 1 | 2 | DIO10 |
| DIO1 | 3 | 4 | DIO11 |
| DIO2 | 5 | 6 | DIO12 |
| DIO3 | 7 | 8 | DIO13 |
| DIO4 | 9 | 10 | DIO14 |
| DIO5 | 11 | 12 | DIO15 |
| DIO6 | 13 | 14 | DIO16 |
| DIO7 | 15 | 16 | DIO17 |
| SMB_CLK_S | 17 | 18 | SMB_DATA_S |
| GND | 19 | 20 | +5V |



2.3.13 Front Panel Connector (JFP1)



| Signal | PIN | PIN | Signal |
|----------|-----|-----|----------|
| RESET | 1 | 2 | SYS_LED+ |
| GND | 3 | 4 | SYS_LED- |
| HDD_LED+ | 5 | 6 | PWR_LED+ |
| HDD_LED- | 7 | 8 | PWR_LED- |
| VCCSB | 9 | 10 | SUS_LED+ |
| PWR_BUT | 11 | 12 | SUS_LED- |
| SUS_BUT | 13 | 14 | SPK+ |
| GND | 15 | 16 | SPK- |

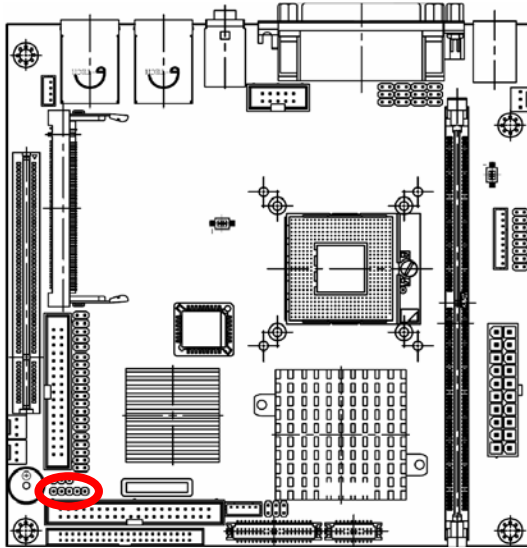


2.3.13.1 Signal Description – Front Panel Connector (JFP1)

| PIN No. | Description |
|---------|--------------|
| 1, 3 | Reset SW |
| 2, 4 | System LED |
| 5, 7 | HDD LED |
| 6, 8 | Power-On LED |
| 9, 11 | Power SW |
| 10, 12 | Suspend LED |
| 13, 15 | Suspend SW |
| 14, 16 | Speaker |

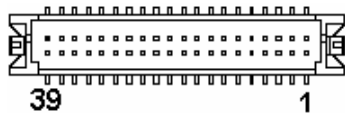
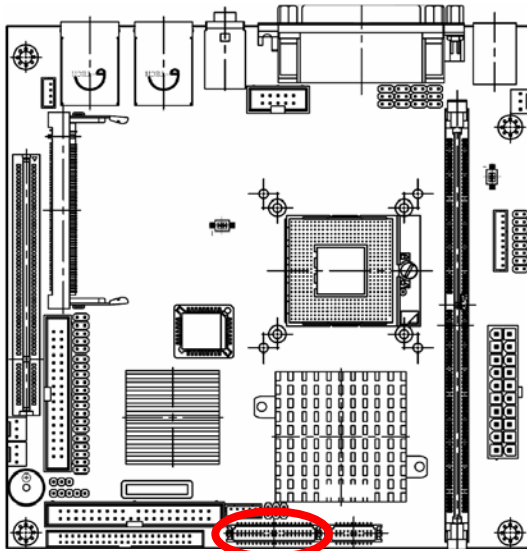
EMB-9675/9676 Series

2.3.14 IrDA Connector (JIR1)



| Signal | PIN |
|--------|-----|
| +5V | 1 |
| NC | 2 |
| IRRX | 3 |
| GND | 4 |
| IRTX | 5 |

2.3.15 LVDS Connector (JLVDS1)



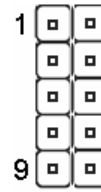
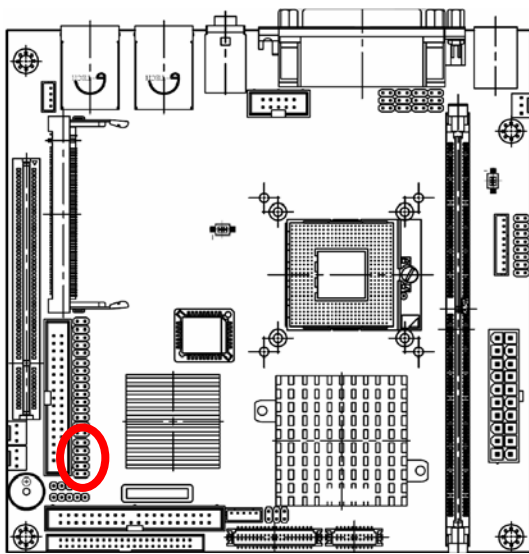
| Signal | PIN | PIN | Signal |
|----------------------|-----|-----|----------------------|
| +5V | 2 | 1 | +3.3V |
| +5V | 4 | 3 | +3.3V |
| I ² C_DAT | 6 | 5 | I ² C_CLK |
| GND | 8 | 7 | GND |
| LCDDO1 | 10 | 9 | LCDDO3 |
| LCDDO0 | 12 | 11 | LCDDO2 |
| GND | 14 | 13 | GND |
| LCDDO5 | 16 | 15 | LCDDO9 |
| LCDDO4 | 18 | 17 | LCDDO8 |
| GND | 20 | 19 | GND |
| LCDDO11 | 22 | 21 | LCDDO13 |
| LCDDO10 | 24 | 23 | LCDDO12 |
| GND | 26 | 25 | GND |
| LCDDO15 | 28 | 27 | LCDDO19 |
| LCDDO14 | 30 | 29 | LCDDO18 |
| GND | 32 | 31 | GND |
| LCDDO7 | 34 | 33 | LCDDO17 |
| LCDDO6 | 36 | 35 | LCDDO16 |
| GND | 38 | 37 | GND |
| +12V | 40 | 39 | +12V |

2.3.15.1 Signal Description – LVDS Connector (JLVDS1)

| Signal | 1 Pixel / Clock LVDS Mode | 2 Pixel / Clock LVDS Mode |
|--|--|---------------------------|
| LCDDO0 | Txout0# | Odd Txout0# |
| LCDDO1 | Txout0 | Odd Txout0 |
| LCDDO2 | Txout1# | Odd Txout1# |
| LCDDO3 | Txout1 | Odd Txout1 |
| LCDDO4 | Txout2# | Odd Txout2# |
| LCDDO5 | Txout2 | Odd Txout2 |
| LCDDO6 | Txclk# | Odd Txclk# |
| LCDDO7 | Txclk | Odd Txclk |
| LCDDO8 | Txout3# | Odd Txclk3# |
| LCDDO9 | Txout3 | Odd Txclk3 |
| LCDDO10 | - | Even Txout0# |
| LCDDO11 | - | Even Txout0 |
| LCDDO12 | - | Even Txout1# |
| LCDDO13 | - | Even Txout1 |
| LCDDO14 | - | Even Txout2# |
| LCDDO15 | - | Even Txout2 |
| LCDDO16 | - | Even Txclk# |
| LCDDO17 | - | Even Txclk |
| LCDDO18 | - | Even Txout3# |
| LCDDO19 | - | Even Txout3 |
| I ² C_DAT, I ² C_CLK | I ² C interface for panel parameter EEPROM. This EEPROM is mounted on the LVDS receiver. The data in the EEPROM allows the EXT module to automatically set the proper timing parameters for a specific LCD panel. | |

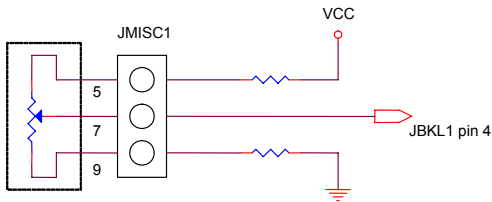
EMB-9675/9676 Series

2.3.16 Miscellaneous Setting Connector (JMISC1)

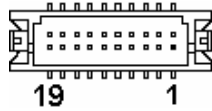
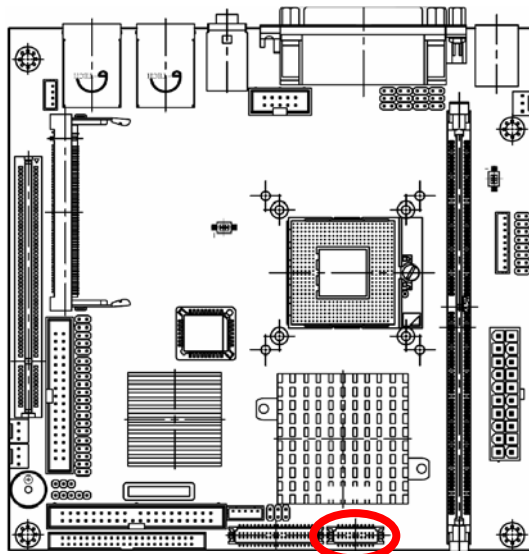


| Signal | PIN | PIN | Signal |
|-----------|-----|-----|---------|
| CASEOPEN# | 1 | 2 | VTIN3 |
| GND | 3 | 4 | THRMDN |
| +5V | 5 | 6 | +5V |
| BRIGHT | 7 | 8 | #MASTER |
| GND | 9 | 10 | GND |

2.3.16.1 Signal Description – Miscellaneous Setting Connector (JMISC1)

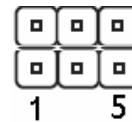
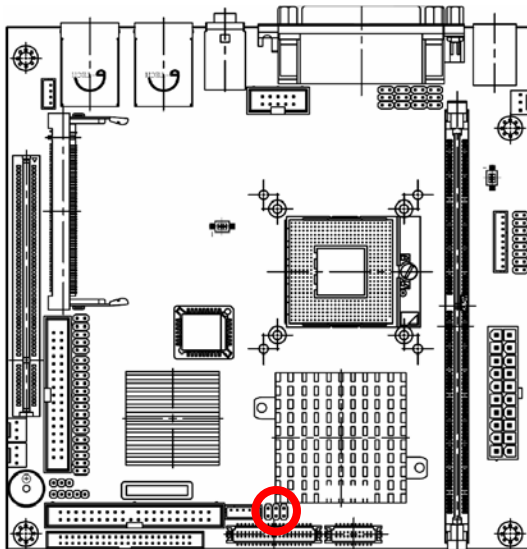
| PIN No. | Description |
|----------|--|
| 1, 3 | Case open detection |
| 5, 7, 9 | LCD brightness setting  <p>Variation Resistor (Recommended: 4.7KΩ, >1/16W)</p> |
| 2, 4 | Thermal detection |
| 6, 8, 10 | CF Master/Slave setting 8-10 short (default: Master) |

2.3.17 TMD5 Connector (JTMD51)



| Signal | PIN | PIN | Signal |
|----------|-----|-----|--------|
| +5V | 2 | 1 | TDC0# |
| GND | 4 | 3 | TDC0 |
| NC | 6 | 5 | NC |
| NC | 8 | 7 | NC |
| HPDET | 10 | 9 | TDC1# |
| TMDSDATA | 12 | 11 | TDC1 |
| TMDSDCLK | 14 | 13 | NC |
| GND | 16 | 15 | NC |
| TLC# | 18 | 17 | TDC2# |
| TLC | 20 | 19 | TDC |

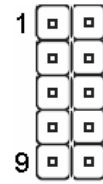
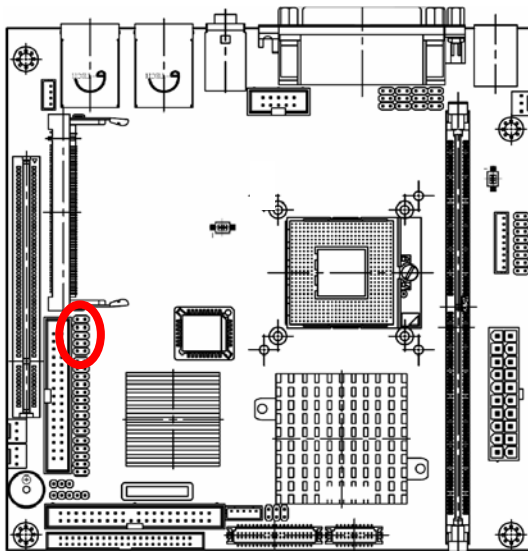
2.3.18 TV Out Connector (JTV1)



| Signal | PIN | PIN | Signal |
|---------|-----|-----|---------|
| TVCVB | 1 | 2 | GND |
| TVYFCC2 | 3 | 4 | TVCFCC2 |
| GND | 5 | 6 | GND |

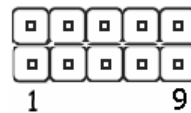
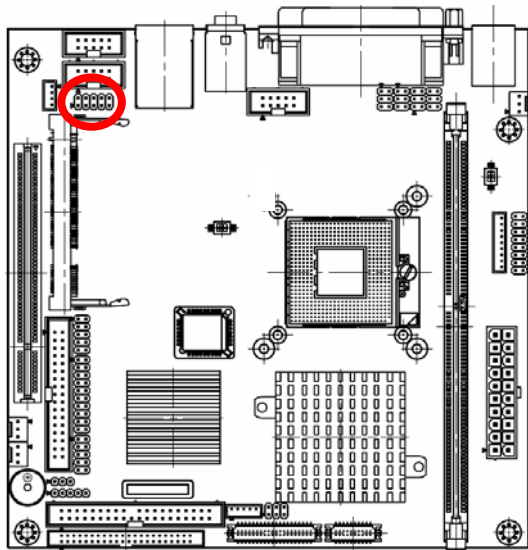
EMB-9675/9676 Series

2.3.19 USB Connector 2 & 3 (JUSB1)



| Signal | PIN | PIN | Signal |
|--------|-----|-----|--------|
| +5V | 1 | 2 | GND |
| D2- | 3 | 4 | GND |
| D2+ | 5 | 6 | D3+ |
| GND | 7 | 8 | D3- |
| GND | 9 | 10 | +5V |

2.3.20 USB Connector 4 & 5 (JUSB2) (EMB-9676 Series)



| Signal | PIN | PIN | Signal |
|--------|-----|-----|--------|
| +5V | 1 | 2 | GND |
| D4- | 3 | 4 | GND |
| D4+ | 5 | 6 | D5+ |
| GND | 7 | 8 | D5- |
| GND | 9 | 10 | +5V |

