

# **ECM-US15WP**

**3.5" Intel® Atom™ processor Z510P / Z530P Micro Module**

## **Quick Installation Guide**



**1<sup>st</sup> Ed – 11 September 2009**

### 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 UNDESIRE 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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### A Message to the customer

#### *Avalue Customer Services*

Each and every Avalue's product is built to the most exacting specifications to ensure reliable performance in the harsh and demanding conditions typical of industrial environments. Whether your new Avalue device is destined for the laboratory or the factory floor, you can be assured that your product will provide the reliability and ease of operation for which the name Avalue has come to be known.

## Quick Installation Guide

Your satisfaction is our primary concern. Here is a guide to Avalue's customer services. To ensure you get the full benefit of our services, please follow the instructions below carefully.

### ***Technical Support***

We want you to get the maximum performance from your products. So if you run into technical difficulties, we are here to help. For the most frequently asked questions, you can easily find answers in your product documentation. These answers are normally a lot more detailed than the ones we can give over the phone. So please consult the user's manual first.

To receive the latest version of the user's manual; please visit our Web site at:

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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.

**Always note** that improper disassembling action could cause damage to the motherboard. We suggest not removing the heatsink without correct instructions in any circumstance. If you really have to do this, please contact us for further support.

## 1.2 Packing List

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

- 1 x Intel® US15WP Micro Module
- 1 x Quick Installation Guide for ECM-US15WP
- 1 x SDVO to VGA daughter board
- 1 x 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 VGA cable (DB 15P(F) – 10P/2.0mm)
  - 1 x IDE cable (44-pin, pitch 2.0mm)
  - 1 x Serial ATA cables (7-pin, standard)
  - 1 x PS/2 Keyboard & mouse Y cable (7-pin, Mini-DIN)

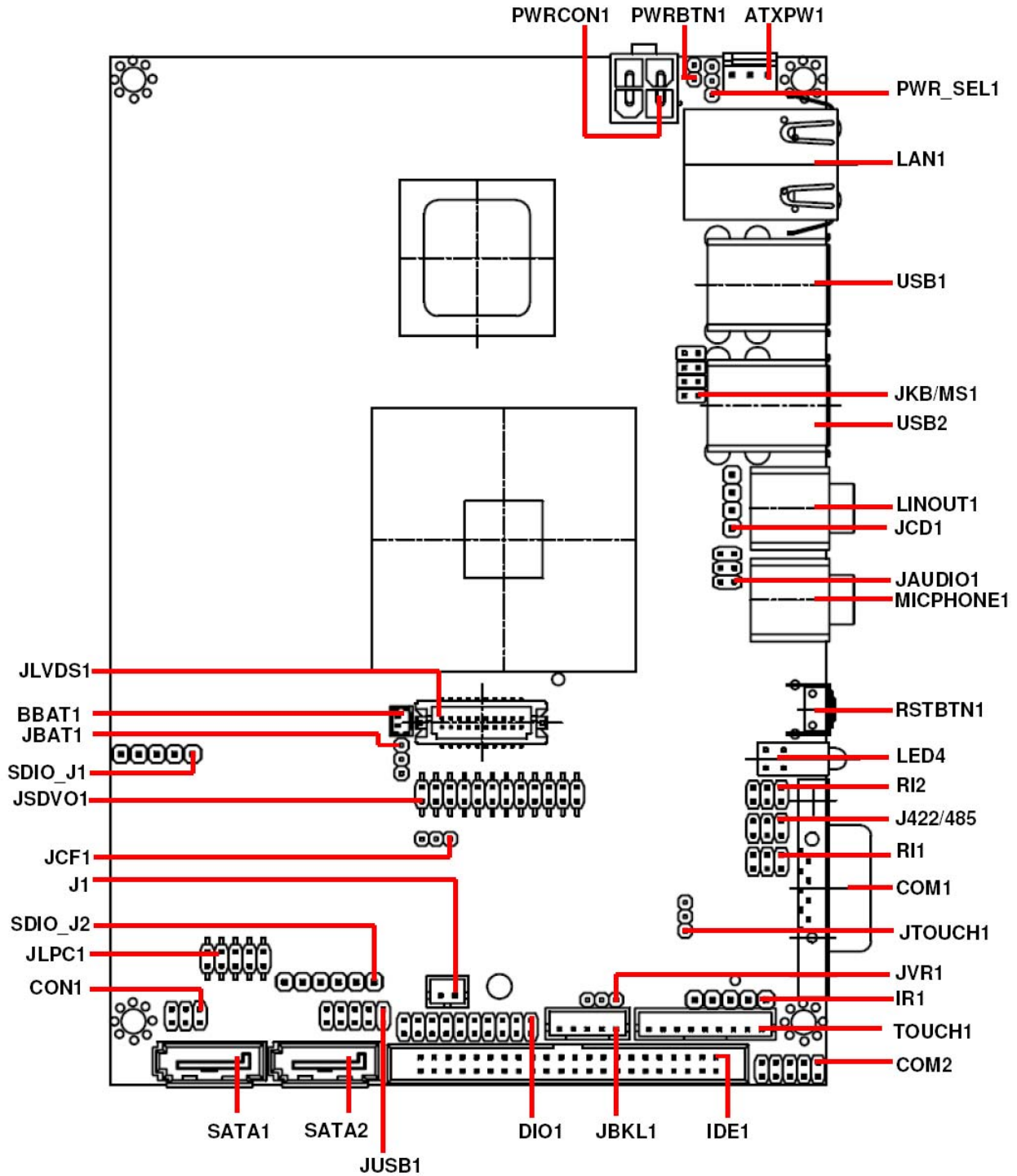


If any of the above items is damaged or missing, contact your retailer.

## 2. Hardware Configuration

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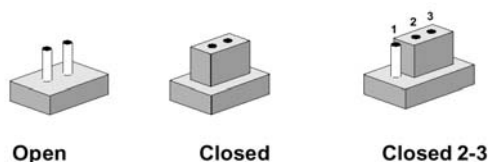
2.1 Product Overview



## 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
<b>JBAT1</b>	Clear CMOS	3 x 1 header, pitch 2.0mm
<b>JCF1</b>	CF card mode select	3 x 1 header, pitch 2.0mm
<b>JTOUCH1</b>	Touch panel mode select	3 x 1 header, pitch 2.0mm
<b>PWR_SEL1</b>	AT/ATX power mode select	3 x 1 header, pitch 2.0mm
<b>RI1</b>	Serial port 1 – Ring, +5V, +12V power select	3 x 1 header, pitch 2.0mm
<b>RI2</b>	Serial port 2 – Ring, +5V, +12V power select	3 x 1 header, pitch 2.0mm

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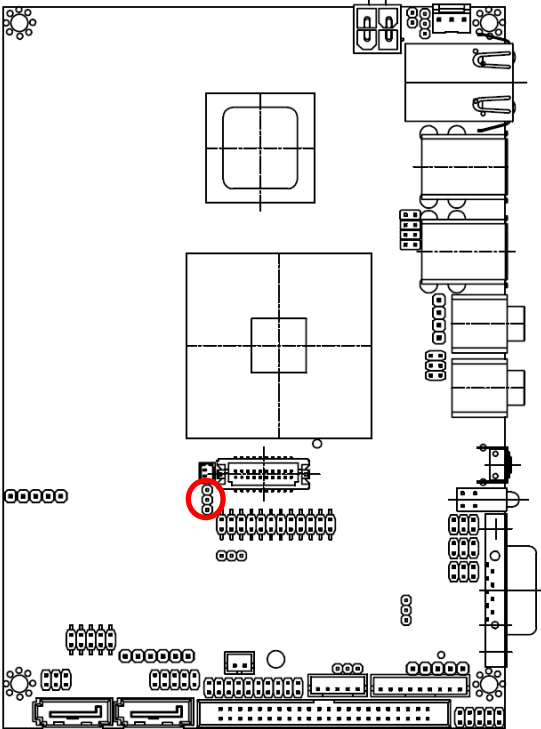
### Connectors

Label	Function	Note
<b>ATXPW1</b>	ATX power connector	3 x 1 wafer, pitch 2.54mm
<b>BBAT1</b>	Battery connector	2 x 1 wafer, pitch 1.25mm
<b>COM1</b>	Serial port1 connector	D-sub 9-pin, male
<b>COM2</b>	Serial port 2 connector	5 x 2 header, pitch 2.0mm
<b>DIO1</b>	Digital Input/ Output connector	10 x 2 header, pitch 2.0mm
<b>IDE1</b>	Primary IDE connector	22 x 2 header, pitch 2.0mm
<b>IR1</b>	IrDA connector	5 x 1 header, pitch 2.54mm
<b>J1</b>	LCD inverter power connector	2 x 1 wafer, pitch 2.54mm
<b>J422/485</b>	Serial port 2 in RS-422/485 mode connector	3 x 2 header, pitch 2.0mm
<b>JAUDIO1</b>	Audio connector	3 x 2 header, pitch 2.0mm
<b>JBKL1</b>	LCD inverter connector	5 x 1 wafer, pitch 2.0mm
<b>JCD1</b>	CD-ROM audio input connector	4 x 1 header, pitch 2.54mm
<b>JKB/MS1</b>	PS/2 Keyboard & Mouse connector	4 x 2 header, pitch 2.0mm
<b>JLPC1</b>	(Reserved for BIOS programming)	3 x 2 header, pitch 2.0mm
<b>JLVDS1</b>	LVDS connector	HIROSE DF13-200P-1.25C
<b>JSDVO1</b>	SDVD port connector	12 x 2 header, pitch 2.0mm
<b>CON1</b>	(Reserved for BIOS programming)	5 x 2 header, pitch 2.0mm
<b>JUSB1</b>	USB 5&6 connector	5 x 2 header, pitch 2.0mm
<b>JVR1</b>	LCD backlight brightness adjustment	3 x 1 header, pitch 2.0mm
<b>LAN1</b>	RJ-45 Ethernet connector	
<b>LED4</b>	Power & HDD indicator	
<b>LINEOUT1</b>	Audio out connector	
<b>MICPHONE1</b>	MIC connector	
<b>PWRBTN1</b>	Power button connector	2 x 1 header, pitch 2.0mm
<b>PWRCON1</b>	Power connector	2 x 2 wafer, pitch 4.2mm
<b>RSTBTN1</b>	Reset button	
<b>SATA1</b>	SATA 1 connector	
<b>SATA2</b>	SATA 2 connector	
<b>SDIO_J1</b>	SDIO connector	5 x 1 header, pitch 2.54mm
<b>SDIO_J2</b>	SDIO connector	6 x 1 header, pitch 2.54mm
<b>USB1</b>	USB 2&3 connector	Double deck
<b>USB2</b>	USB 0&1 connector	Double deck

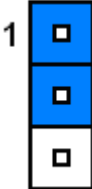


## 2.3 Setting Jumpers & Connectors

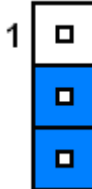
### 2.3.1 Clear CMOS (JABT1)



Protect\*

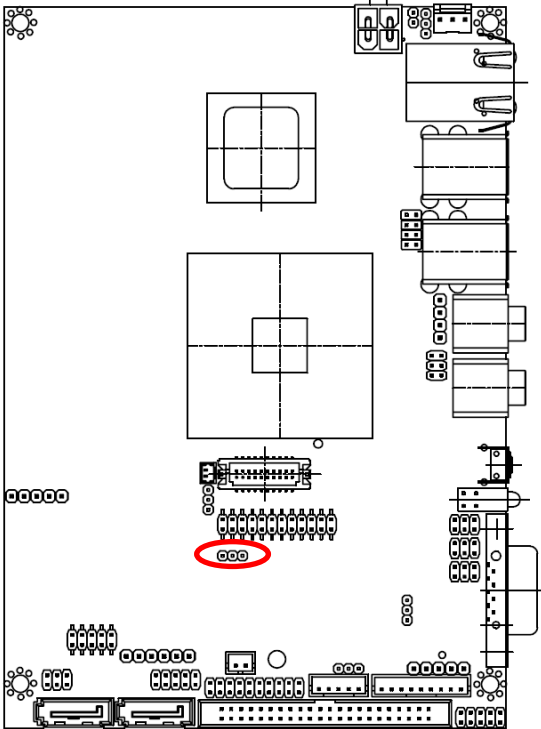


Clear CMOS



\* Default

### 2.3.2 CF Card mode select (JCF1)



Master \*



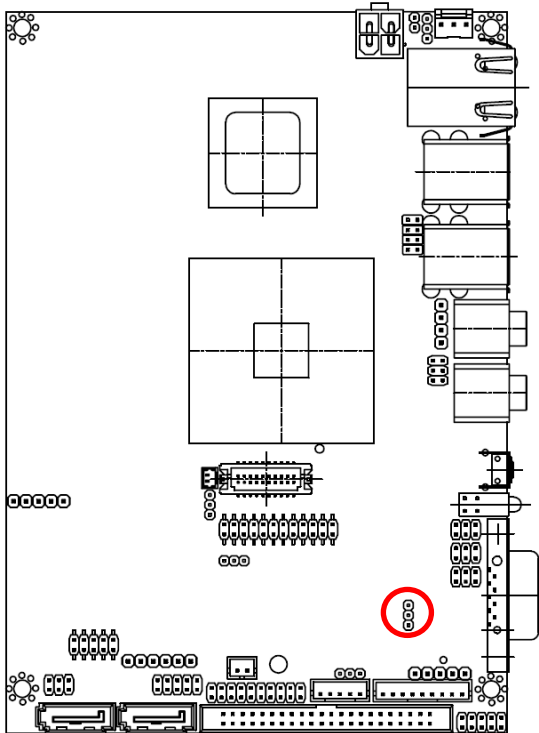
Slave



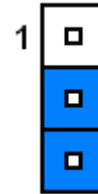
\* Default

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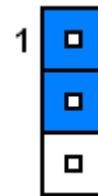
## 2.3.3 Touch Panel mode select (JTOUCH1)



4/8-Wire\*

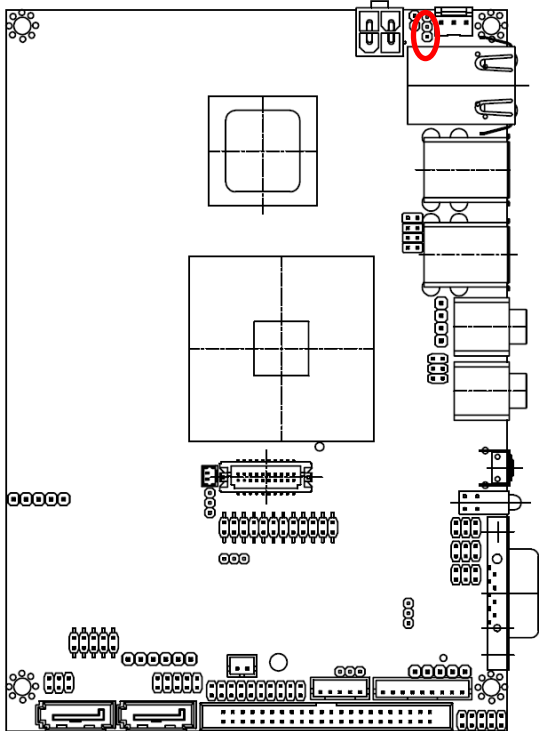


5-Wire

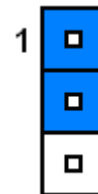


\* Default

## 2.3.4 AT/ATX power mode select (PWR\_SEL1)



AT \*

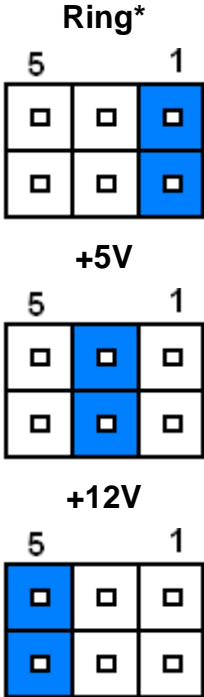
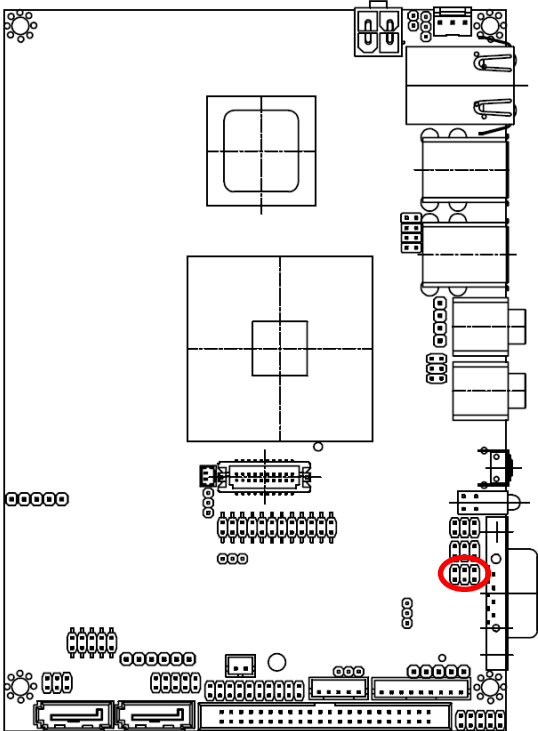


ATX



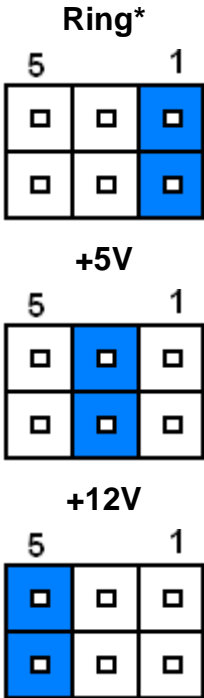
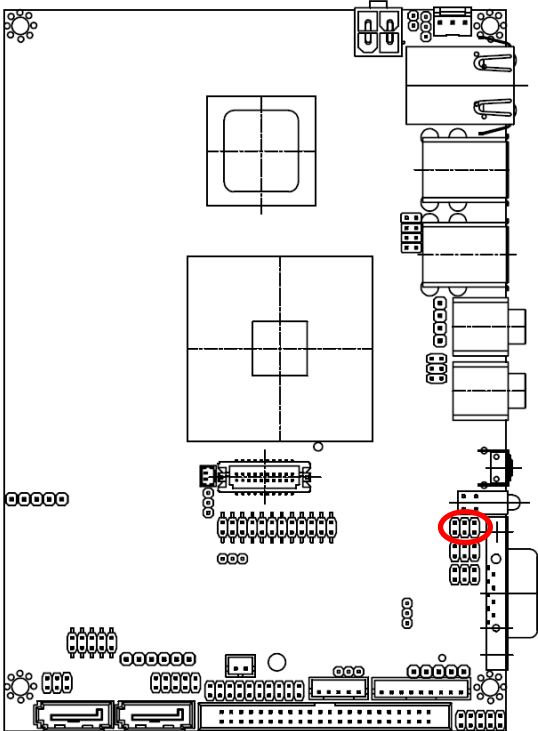
\* Default

2.3.5 Serial port 1 – Ring, +5V, +12V power select (RI1)



\* Default

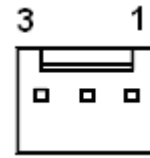
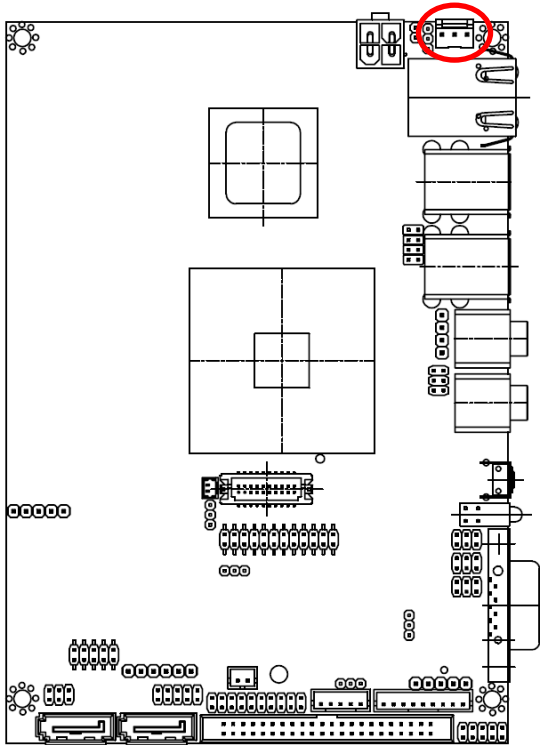
2.3.6 Serial port 2 – Ring, +5V, +12V power select (RI2)



\* Default

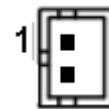
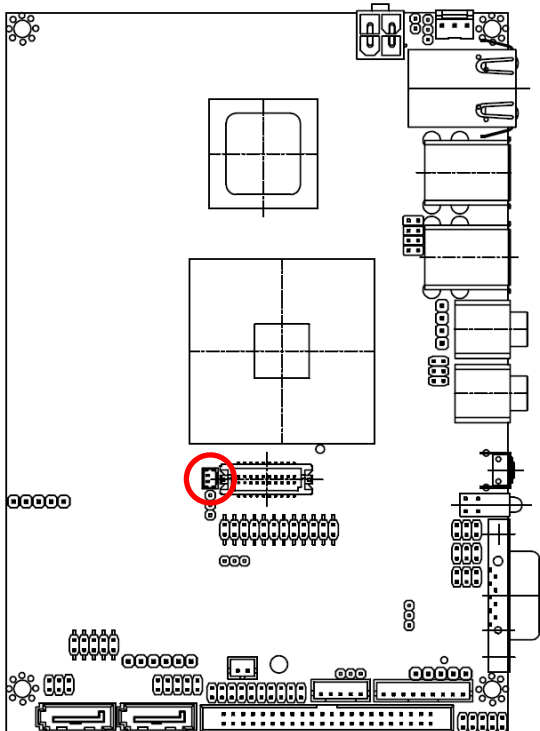
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## 2.3.7 ATX power connector (ATXPW1)



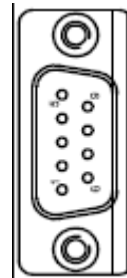
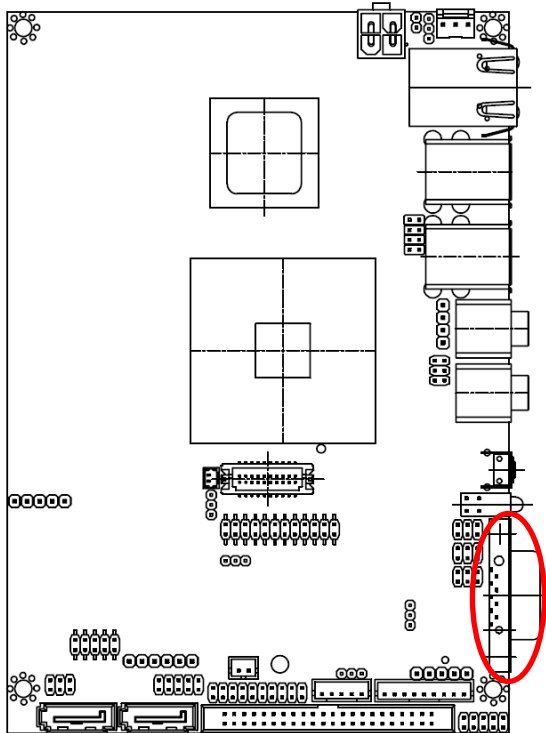
Signal	PIN
PSON-	1
GND	2
PS5VSB	3

## 2.3.8 Battery connector (BBAT1)



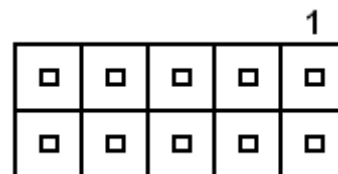
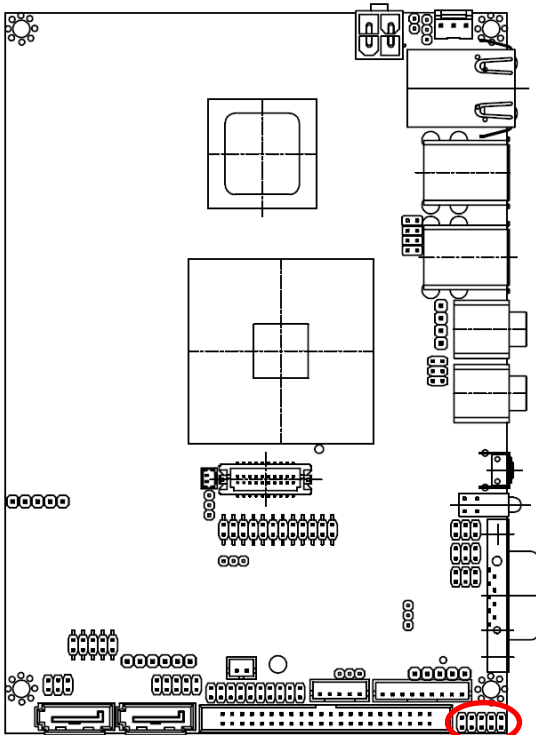
Signal	PIN
BAT	1
GND	2

### 2.3.9 Serial Port 1 connector (COM1)



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

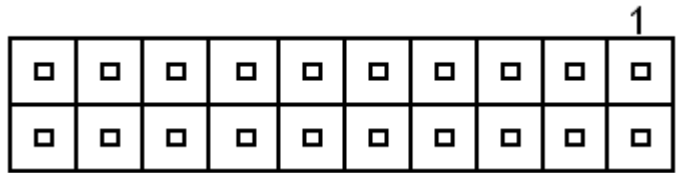
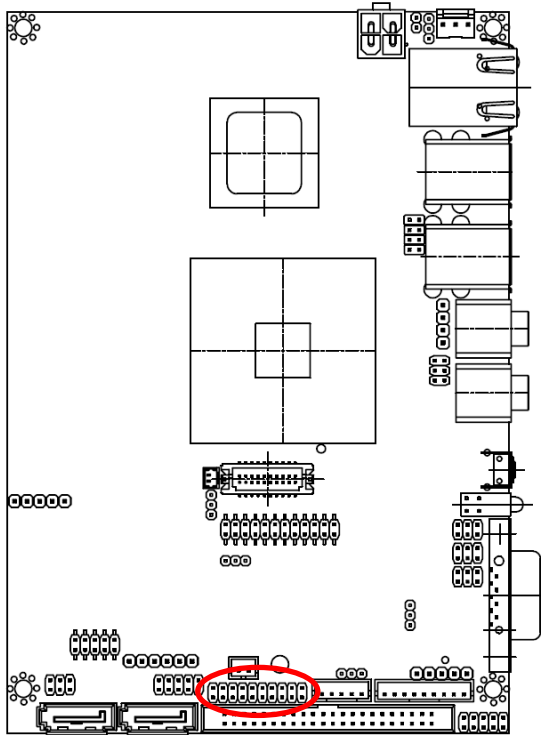
### 2.3.10 Serial Port 2 connector (COM2)



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

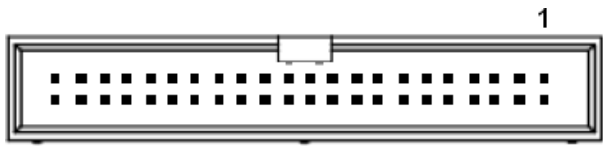
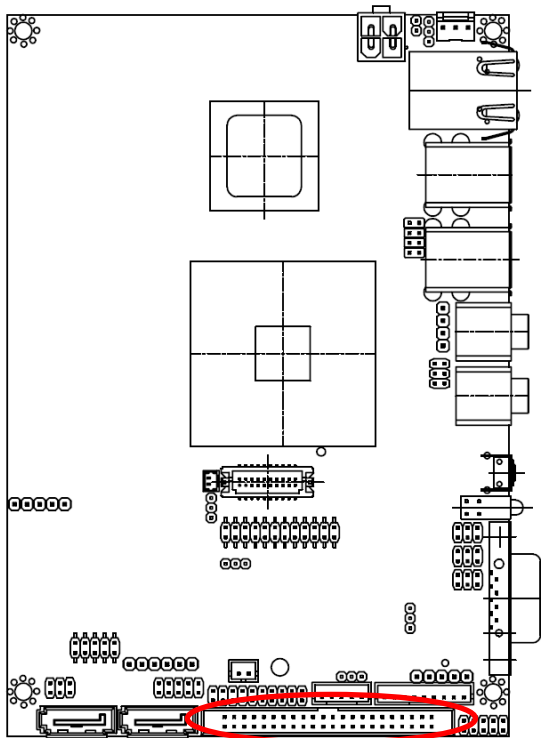
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## 2.3.11 Digital Input/ Output connector (DIO1)



Signal	PIN	PIN	Signal
GPI0	1	2	GPO0
GPI1	3	4	GPO1
GPI2	5	6	GPO2
GPI3	7	8	GPO3
GPI4	9	10	GPO4
GPI5	11	12	GPO5
GPI6	13	14	GPO6
GPI	15	16	GPO7
SMB_CLK	17	18	SMB_DATA
GND	19	20	+5V

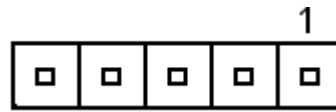
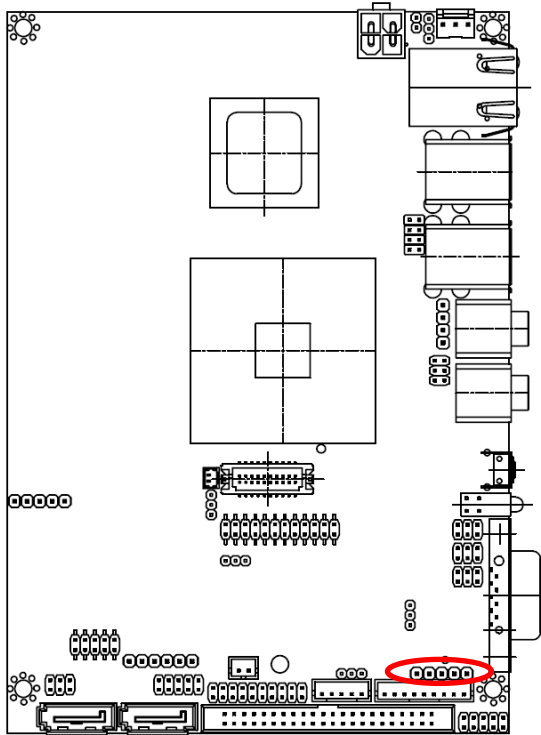
2.3.12 Primary IDE connector (IDE1)



Signal	PIN	PIN	Signal
RESET#	1	2	GND
PDD7	3	4	PDD8
PDD6	5	6	PDD9
PDD5	7	8	PDD10
PDD4	9	10	PDD11
PDD3	11	12	PDD12
PDD2	13	14	PDD13
PDD1	15	16	PDD14
PDD0	17	18	PDD15
GND	19	20	NC
PDREQ	21	22	GND
PDIOW#	23	24	GND
PDIOR#	25	26	GND
PIORDY	27	28	GND
PDAK#	29	30	GND
IRQ15	31	32	NC
PDA1	33	34	LID
PDA0	35	36	PDA2
PDCS1#	37	38	PDCS3#
HD_LED1	39	40	GND
+5V	41	42	+5V
GND	43	44	NC

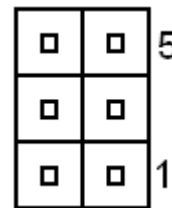
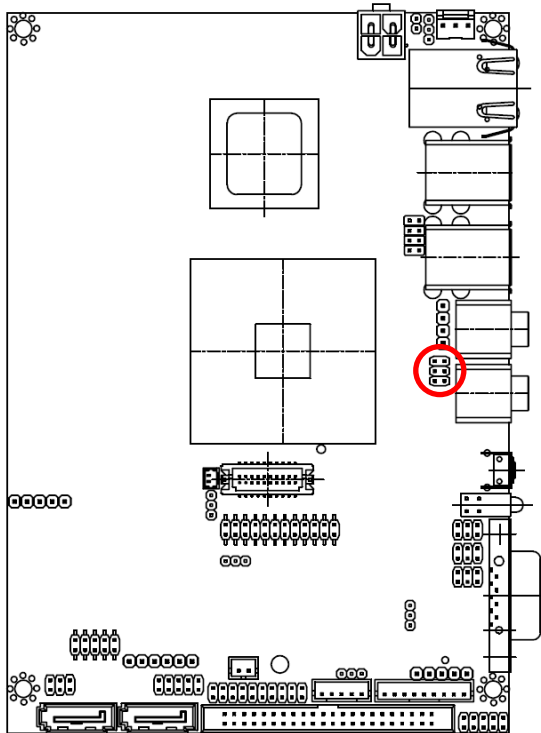
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## 2.3.13 IrDA connector (IR1)



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

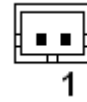
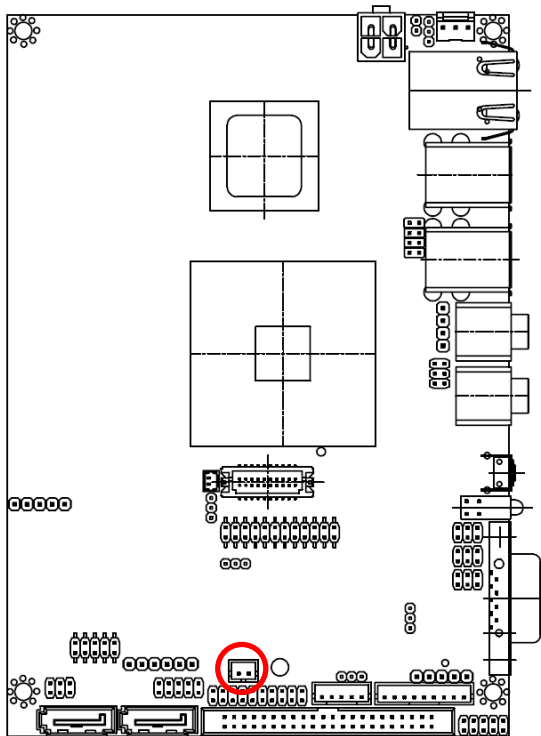
## 2.3.14 Audio connector (JAUDIO1)



Signal	PIN	PIN	Signal
LINEIN_L	1	2	LINEIN_R
GND	3	4	LINE1-JD
SPDIFO	5	6	SPDIFI

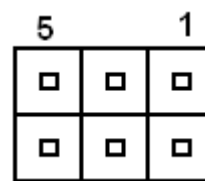
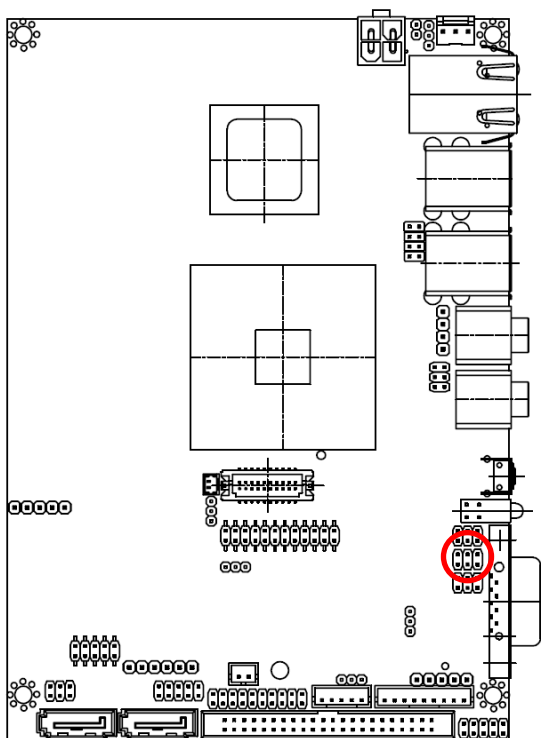


2.3.15 LCD inverter power connector (J1)



Signal	PIN
+12V	1
GND	2

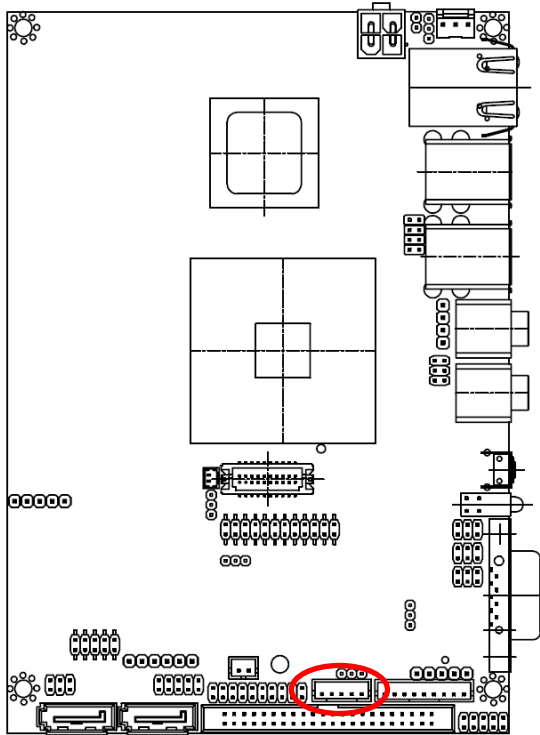
2.3.16 Serial port 2 in RS-422/485 mode (J422/485)



Signal	PIN	PIN	Signal
485TX-	1	2	485RX-
485TX+	3	4	485RX+
+5V	5	6	GND

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## 2.3.17 LCD Inverter Connector (JBKL1)



Signal	PIN
+12V	1
GND	2
BLK_ON	3
BRIGHT	4
+5V	5



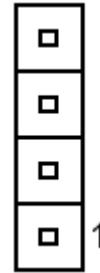
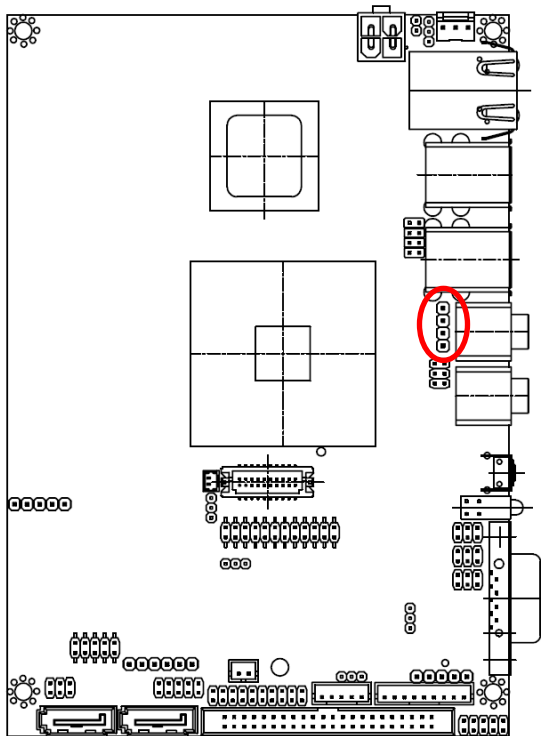
**Note:**

For inverters with adjustable Backlight function, it is possible to control the LCD brightness through the VR signal controlled by **JVR1**. Please see the **JVR1** section for detailed circuitry information.

### 2.3.17.1 Signal Description – LCD Inverter Connector (JBKL1)

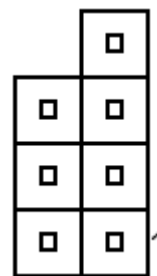
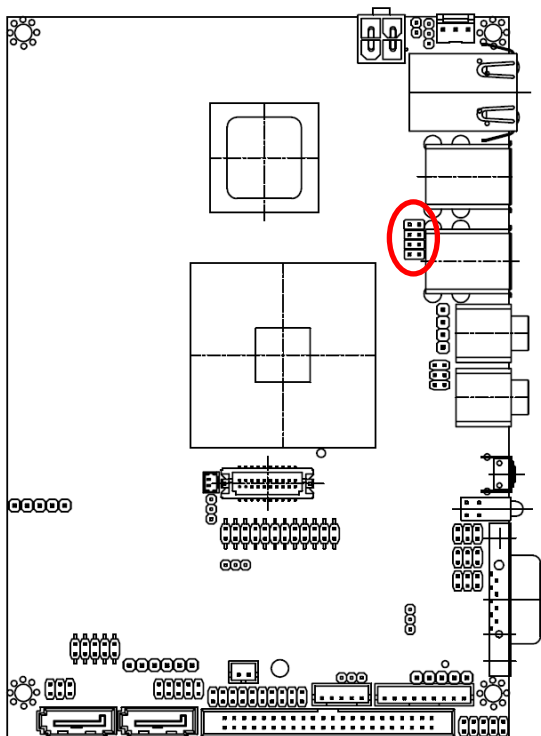
Signal	Signal Description
VR	Vadj = 0.75V ~ 4.25V (Recommended: 4.7KΩ, >1/16W)
BLK_ON	LCD backlight ON/OFF control signal

2.3.18 CD-ROM audio input Connector (JCD1)



Signal	PIN
CD_R	1
GND	2
GND	3
CD_L	4

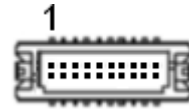
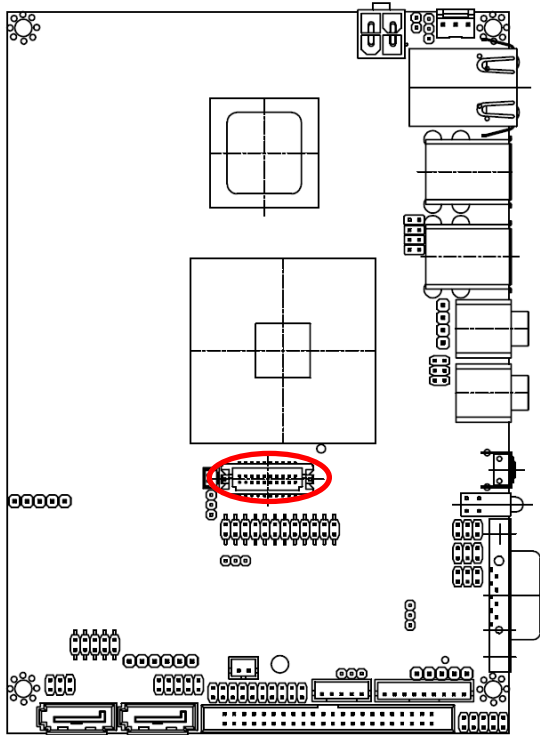
2.3.19 Keyboard & mouse connector (JKB/MS)



Signal	PIN	PIN	Signal
		7	NC
MSCK	6	5	MSDT
+5V	4	3	GND
KBCK	2	1	KBDT

# ECM-US15WP Quick Installation Guide

## 2.3.20 LVDS connector (JLVDS1)

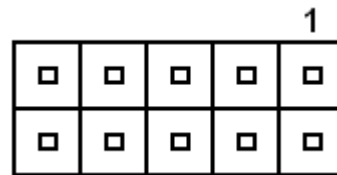
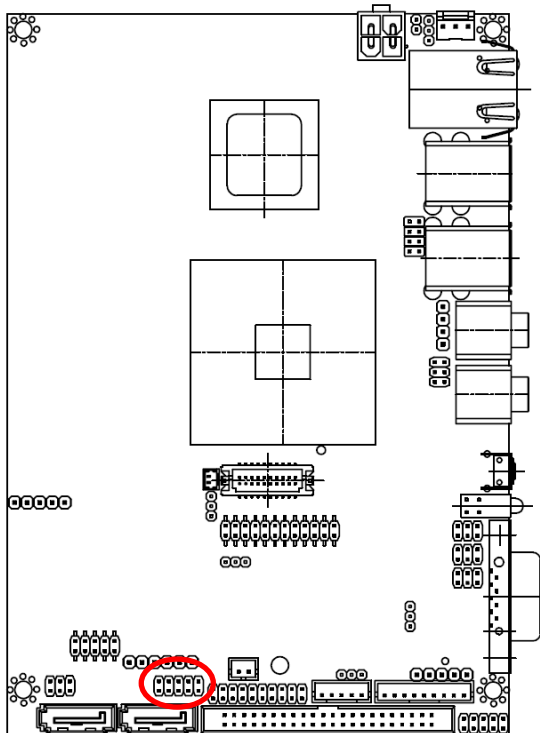


Signal	PIN	PIN	Signal
GND	2	1	GND
LCDS_0-	4	3	LCDS_0+
LCDS_1-	6	5	LCDS_1+
LCDS_2-	8	7	LCDS_2+
LCDS_3-	10	9	LCDS_3+
LCDS_CLK-	12	11	LCDS_CLK+
GND	14	13	GND
I_SCL	16	15	I_SDA
+5V	18	17	+3.3V
+5V	20	19	+3.3V

**Note:**

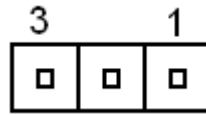
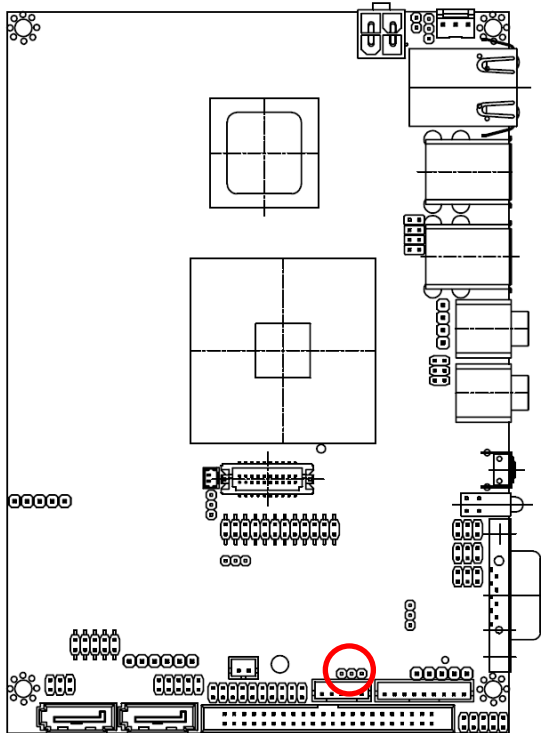
Mating Connector: HIROSE DF13-20DS-1.25C

## 2.3.21 USB 5&6 connector (JUSB1)

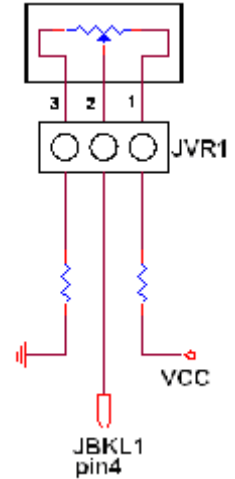


Signal	PIN	PIN	Signal
+5V	1	2	GND
DN6	3	4	GND
DP6	5	6	DP5
GND	7	8	DN5
GND	9	10	+5V

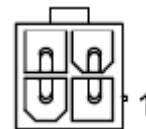
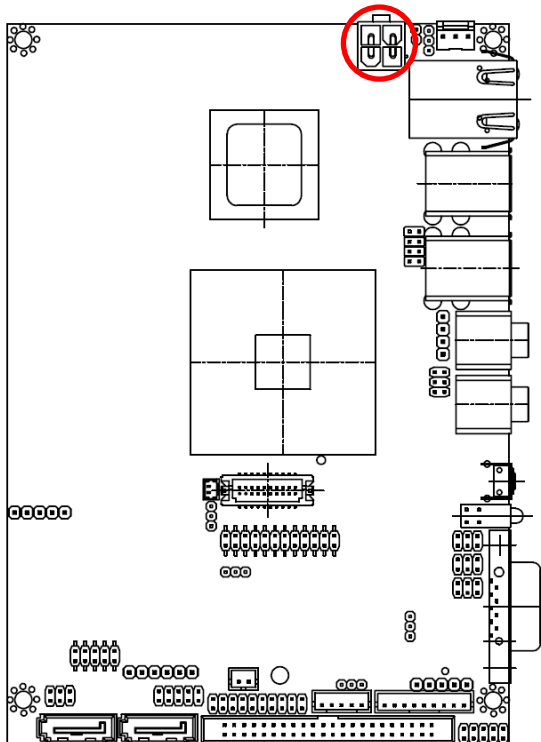
### 2.3.22 LCD backlight brightness adjustment (JVR1)



Signal	PIN
+5V	1
VR	2
GND	3



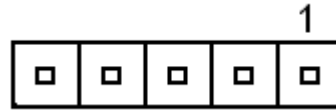
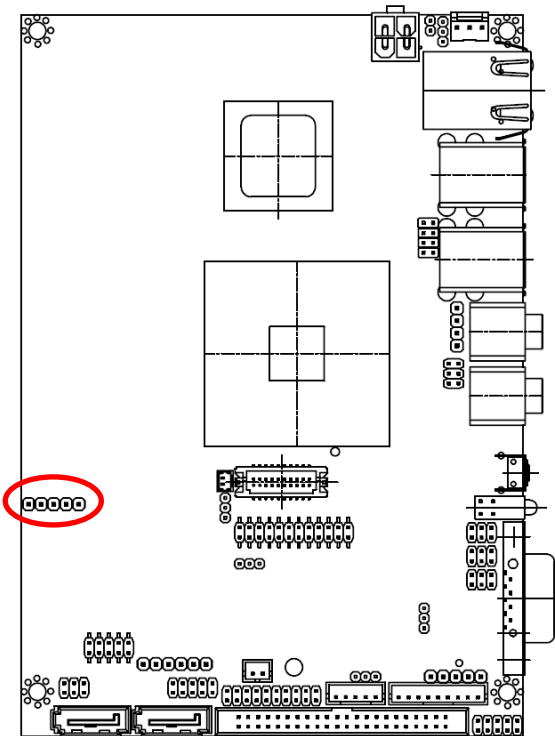
### 2.3.23 Power connector (PWRCON1)



Signal	PIN	PIN	Signal
VIN	3	4	VIN
GND	2	1	GND

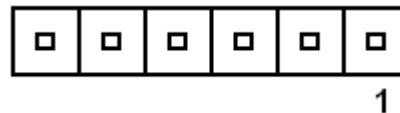
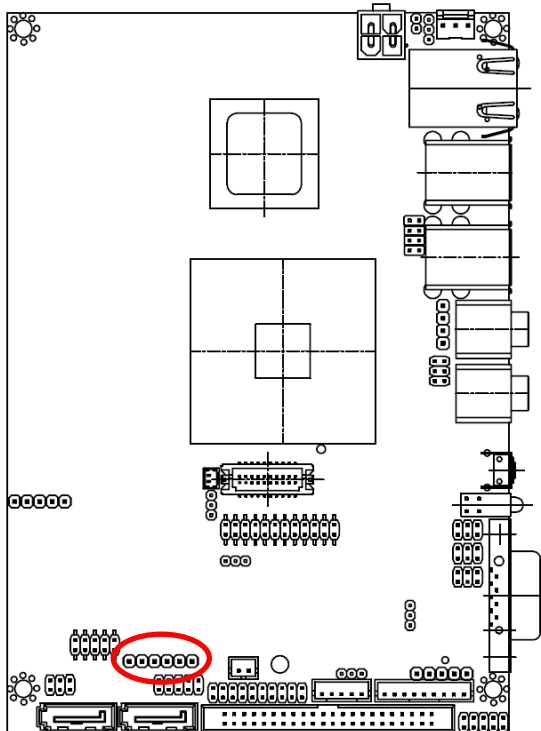
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## 2.3.24 SDIO connector (SDIO\_J1)



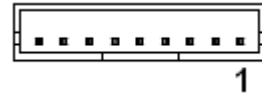
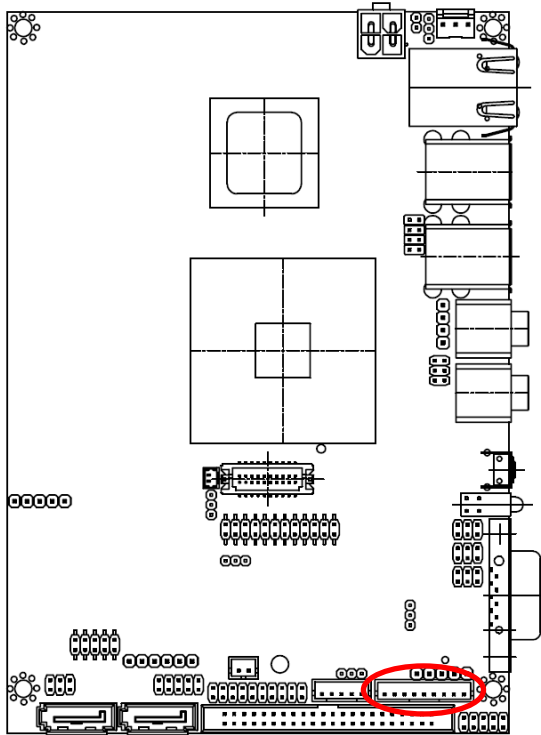
Signal	PIN
+3.3V	1
WP	2
CD	3
DATA1	4
DATA0	5

## 2.3.25 SDIO connector (SDIO\_J2)



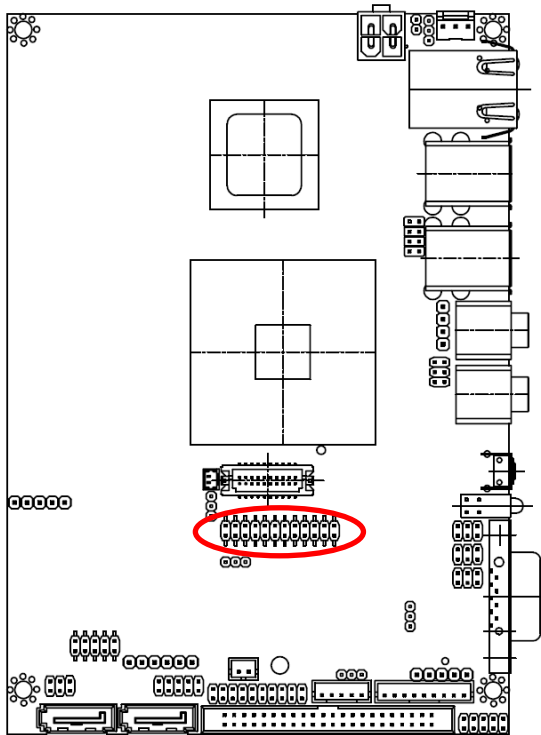
Signal	PIN
GND	1
PWR	2
CLK	3
CMD	4
DATA3	5
DATA2	6

2.3.26 Touch panel connector (TOUCH1)



Signal	PIN
X+	1
X-	2
Y+	3
SENSE	4
X+	5
X-	6
Y+	7
Y-	8
GND	9

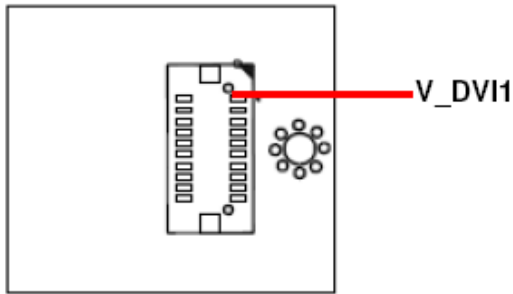
2.3.27 SDVO port connector (JSDVO1)



Signal	PIN	PIN	Signal
+12V	1	2	SDVO_CLK
+5V	3	4	SDVO_CLK#
+3.3V	5	6	SDVO_BLUE
DVO_SEL1	7	8	SDVO_BLUE#
DVO_SEL2	9	10	SDVO_GREEN
GND	11	12	SDVO_GREEN#
GND	13	14	SDVO_RED
SDVO_REST	15	16	SDVO_RED#
SDVO_INIT	17	18	SDVO_TVCLKIN
SDVO_INIT#	19	20	SDVO_TVCLKIN#
SDVO_STALL	21	22	SDVO_CTRCLK
SDVO_STALL#	23	24	SDVO_CTRDATA

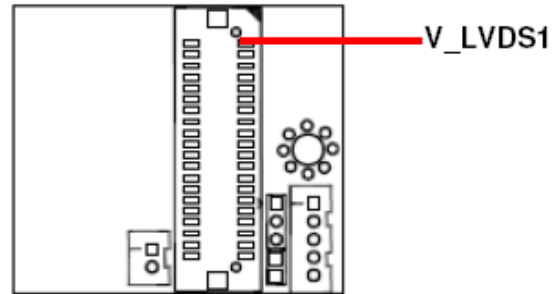
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## 2.3.27.1 SDVO to DVI/ LVDS/ CRT SDVO to DVI (V\_DVI1)



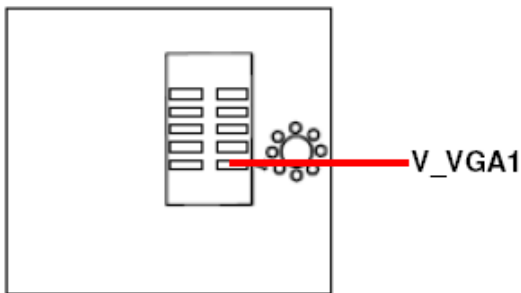
Signal	PIN	PIN	Signal
+5V	2	1	TDC0N
GND	4	3	TDC0P
NC	6	5	NC
NC	8	7	NC
GND	10	9	TDC1N
SDDDC	12	11	TDC1P
SCDDC	14	13	NC
GND	16	15	NC
TLCN	18	17	TDC2N
TLCP	20	19	TDC2P

## SDVO to LVDS (V\_LVDS1)



Signal	PIN	PIN	Signal
+5V	2	1	+3.3V
+5V	4	3	+3.3V
SPDATA	6	5	SPCLK
GND	8	7	GND
YA0P	10	9	YA1P
YA0M	12	11	YA1M
GND	14	13	GND
YA2P	16	15	YA3P
YA2M	18	17	YA3M
GND	20	19	GND
YA4P	22	21	YA5P
YA4M	24	23	YA5M
GND	26	25	GND
YA6P	28	27	YA7P
YA6M	30	29	YA7M
GND	32	31	GND
CLK1P	34	33	CLK2P
CLK1M	36	35	CLK2M
GND	38	37	GND
+12V	40	39	+12V

## SDVO to CRT (V\_VGA1)



Signal	PIN	PIN	Signal
HS_VGA	10	9	VS_VGA
SDT_DDC	8	7	GND
SCK_DDC	6	5	CRT_B_VGA
GND	4	3	CRT_G_VGA
+5V	2	1	CRT_R_VGA

