

PBE-1702

COM Express Type 6 Evaluation Board

Quick Installation Guide

Version 1.2

Form Factor
<i>COM Express Evaluation Board</i>

Video
<i>Dual Channels LVDS, Analog RGB, DVI, Display Port</i>

Audio
<i>ALC888 CODEC, Line-in/ out, Mic-in, 7.1 + 2 Channel</i>

I/O
<i>PCI Express x16/x1/x4, SATA, USB, COM, LPT, Mini-card</i>

Ethernet
<i>RJ-45 LAN Connector</i>

◆ Technical Support

If you have any technical difficulties, please consult the user's manual first at:
<ftp://ftp.arbor.com.tw/pub/manual>

Please do not hesitate to call or e-mail our customer service when you still can not find out the answer.

<http://www.arbor.com.tw>

E-mail: info@arbor.com.tw

FCC Class A

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions : (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.



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4041170200120P

COM Express Module Type Summary Features

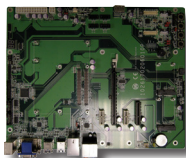
COM Express supports seven pin-out Type apply to Basic and Extended form factors:
Module Type 1 and 10 supports single connector with two rows of pins (220 pins)
Module Type 2, 3, 4, 5 and 6 support two connectors with four rows of pins (440 pins)
Connector placement and most mounting holes have transparency between Form Factors.

The differences amount the Module Types are summarized in table below:

Module Type	1	10	2	3	4	5	6
Connectors	1	1	2	2	2	2	2
Connector Rows	A, B	A, B	A, B, C, D	A, B, C, D	A, B, C, D	A, B, C, D	A, B, C, D
PCIe Lanes (max)	6	4	22	22	32	32	24
PCI Bus	No	No	Yes	Yes	No	No	No
PATA - IDE	No	No	Yes	No	Yes	No	No
LAN (Max)	1	1	1	3	1	3	1
Serial Ports	No	0 / 2	No	No	No	No	0 / 2
Muxed SDVO	No	No	0 / 2	0 / 2	0 / 2	0 / 2	No
Digital Display I/F	No	No	No	No	No	No	0 / 3
USB 3.0 Ports	No	No	No	No	No	No	0 / 4

Packing List

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



1 x PBE-1702 COM Express evaluation board



1 x Quick Installation Guide

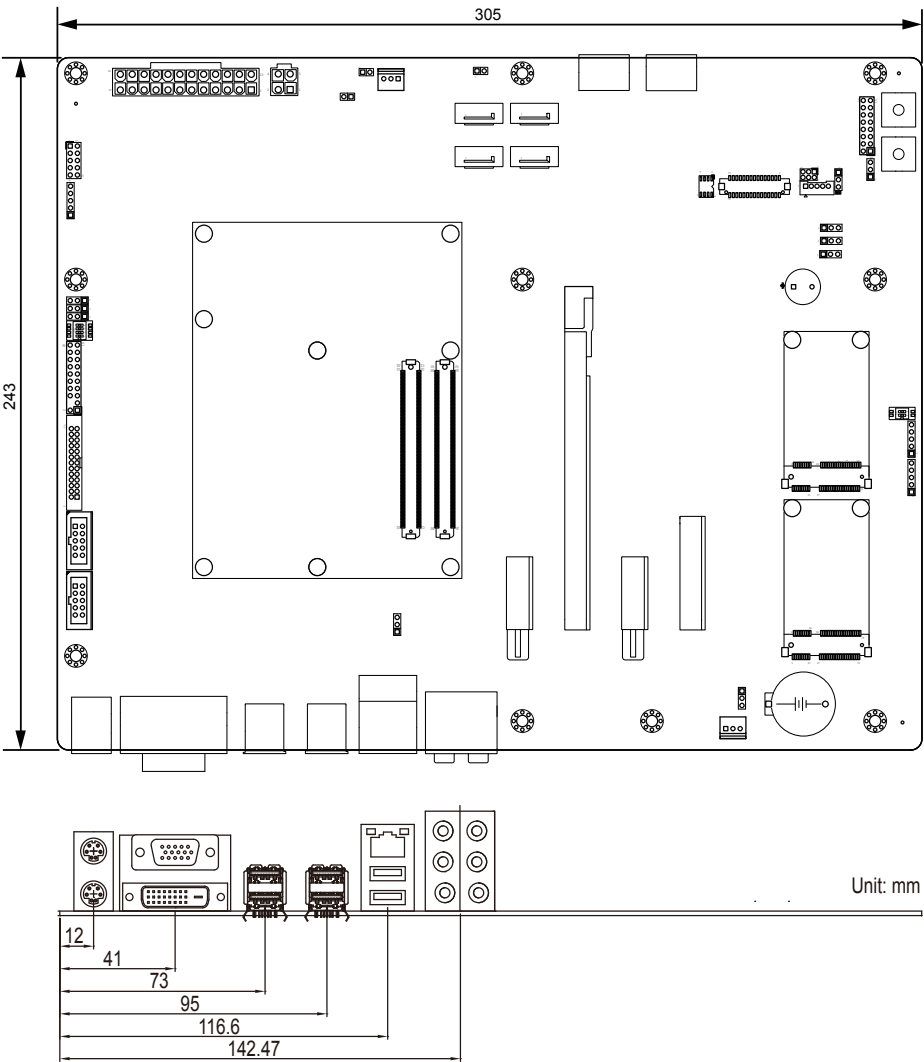
Specifications

Form Factor	COM Express evaluation board in ATX form factor
I/O Chips	Fintek F71869ED
Audio	ALC888 CODEC, Line-in/out, Mic-in, 7.1 + 2 Channel
Serial ATA	4 x Serial ATA connectors (depending on CPU module)
Serial Port	2 x COM ports 2 x Ultra COM ports (depending on CPU module)
Parallel Port	1 x SPP/EPP/ECP mode
KBMS	Standard PS/2 keyboard and mouse
Universal Serial Bus	2 x USB 2.0 ports 4 x USB 3.0 ports (depending on CPU module)
LCD	1 x LVDS Dual Channel connector
VGA / Display Port	Analog RGB connector / DisplayPort connector / DVI connector
DIO	8-bit Digital Input/Output
Expansion Interface	1 x PCI Express x16 slot 2 x PCI Express x1 slots 1 x PCI Express x4 slot 2 x Mini-card sockets All these expansion interfaces' functions are dependent upon CPU module.
Hardware Monitor Chip	Integrated in F71869ED
Operation Temp.	-20°C~70°C (-4°F~158°F)
Power Connector	ATX connector
Dimension (L x W)	305 x 243 mm (12" x 9.6")

Ordering Information

PBE-1702	COM Express evaluation board in ATX form factor
Cable Kit	CBK-04-1702-00

Board dimensions



Jumpers/ Connectors Quick Reference

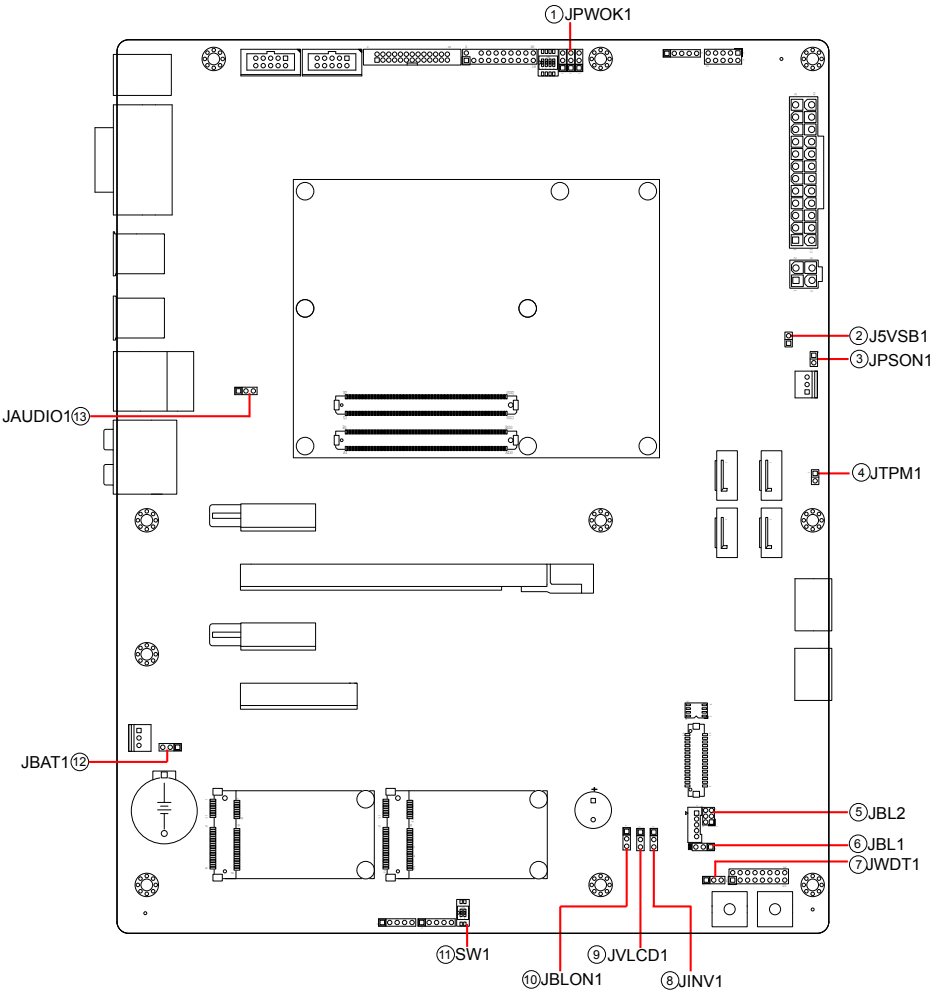
Jumpers

Label	Description
JPWOK1	Carrier Board Power OK Selection
J5VSB1	CPU Midule 5VSB Power Selection
JPSON1	Force ATX Power Supply Power On
JTPM1	Select TPM Module Special Command
JBL2	LVDS1 Brightness Control Level and Mode Selection
JBL1	LVDS1 Brightness Control Source Selection
JWDT1	Watch Dog Source Selection
JINV1	LVDS1 Inverter Power Selection
JVLCD1	LVDS Panel Voltage Selection
JBLON1	LCD Backlight On Control Mode
SW1	BIOS boot selection
JBAT1	Clear CMOS
JAUDIO1	Audio Codec I/O Power Selection

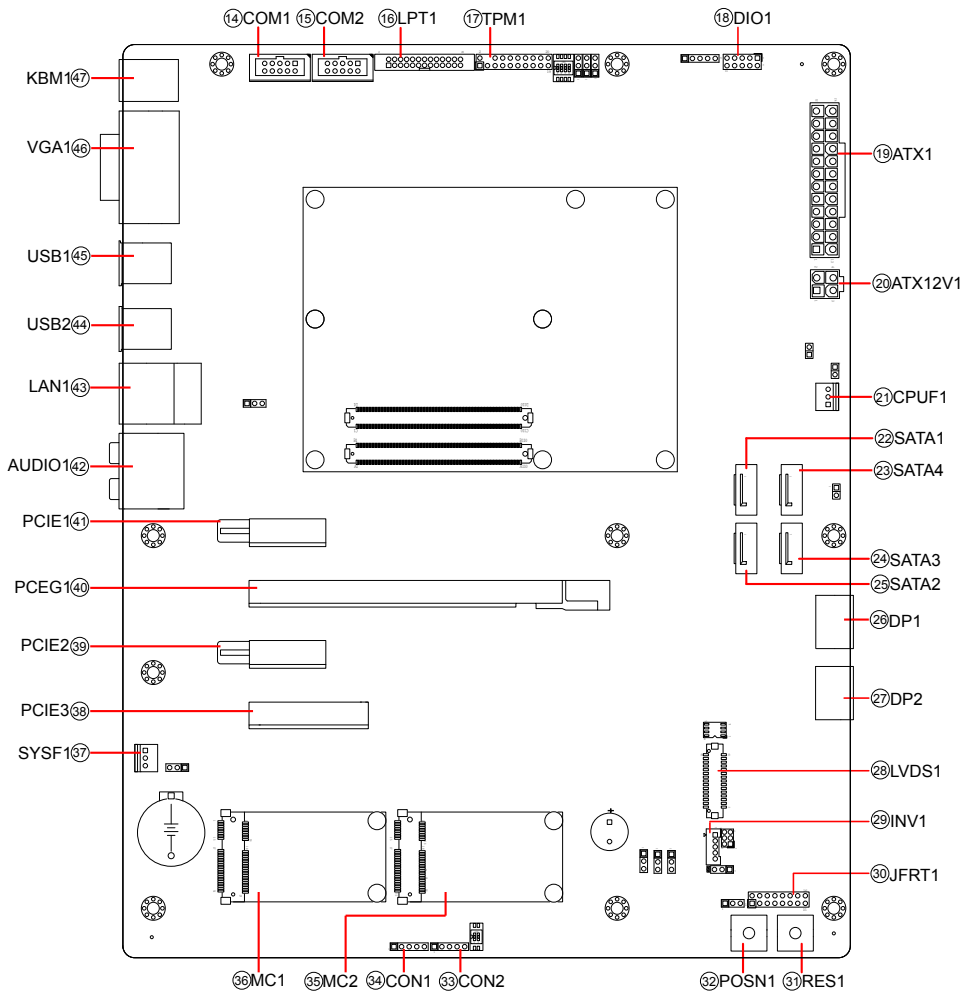
Connectors

Label	Function
COM1~2	RS-232 Serial Ports
LPT1	Parallel Port Connector
TPM1	Trusted Platform Module Connector
DIO1	Digital I/O Connector
ATX1	ATX Power Connector
ATX12V1	ATX +12V Connector
CPUF1	CPU Fan Power Connector
SATA1~4	Serial ATA Connectors
DP1~2	Display Port Connector
INV1	LCD Inverter Connectors
LVDS1	LVDS LCD Panel Connectors
JFRT1	Switches and Indicators Connector
RES1	Reset Button / Connector
PSON1	Power On Button / Connector
CON1~2	CPU Module Ultra Serial Ports (Only RX and TX)
MC1~2	PCI Express Mini-card Sockets
SYSF1	System Fan Power Connector
PCIE1~2	PCIE ×1 Slots
PCIE3	PCIE ×4 Slot
PCEG1	PCIE Graphic ×16 Slot
AUDIO1	HD AUDIO Connector
LAN1	RJ-45 & Double Stack USB Connector
USB1~2	Double Stack USB Type A Connectors (support USB 3.0, depending on CPU module)
VGA1	Analog RGB & DVI-D Display Connector
KBM1	PS/2 Keyboard & Mouse Connector

Jumpers



Connectors



JPWOK1: Carrier Board Power OK Selection (1)

Connector type: 2.54mm pitch 1×3 pin header.

Pin	Power Button
1-2	from carrier board power ok out (default) 
2-3	always high 

J5VSB1: CPU Module 5VSB Power Selection (2)

Connector type: 2.54mm pitch 1×2-pin header.

Pin	CPU Module 5VSB Power
1-2 Short	5VSB (default) 
Open	No Standby power 

JPSON1: Force ATX Power Supply Power On (3)

Connector type: 2.54mm pitch 1×2-pin header.

Pin	AT/ATX Mode Select
Short	AT mode 
Open	ATX Mode (default) 

JTPM1: Select TPM Module Special Command (optional)(4)

Connector type: 2.54mm pitch 1×2-pin header.

Pin	TPM Physical Presence
Short	Presence 
Open	Not Presence 

JBL2: LVDS1 Brightness Control Level and Mode Selection (5)

Connector type: 2.00mm pitch 2×3 pin header.

Pin	Brightness Control Source
1-3	5V PWM mode control (default) 
3-5	3.3V PWM mode control 
2-4	5V DC level control 
4-6	0V DC level control 

JBL1: LVDS1 Brightness Control Source Selection (6)

Connector type: 2.54mm pitch 1×3 pin header.

Pin	Brightness Control Source
1-2	CPU module (default) 
2-3	carrier Super I/O 

JWDT1: Watch Dog Source Selection (7)

Connector type: 2.54mm pitch 1×3 pin header.

Pin	Source
1-2	carrier Super I/O (default) 
2-3	CPU module 

JINV1: LCD Inverter Voltage Selection (8)

The voltage of inverter could be selected by JINV1 in +5V or +12V.

Connector type: 2.54mm pitch 1×3 pin header.

Pin	Voltage
1-2	+5V 
2-3	+12V (default) 

JVLCD1: LVDS Panel Voltage

Selection (9)

The voltage of LVDS panel could be selected by JVLCD1 in +5V or +3.3V.

Connector type: 2.54mm pitch 1×3 pin header.

Pin	Voltage
1-2	+5V
2-3	+3.3V (default)



JBLON1: LCD Backlight On Control Mode (10)

Connector type: 2.54mm pitch 1×3 pin header.

Pin	Mode
1-2	0V low ON
2-3	5V high ON (default)



SW1: BIOS Boot Selection (11)

Function	1 2
Boot from CPU module SPI Flash	
Boot from CPU module SPI Flash	
Boot from Carrier Board SPI Flash	
Boot from CPU Module SPI Flash	

JBAT1: CMOS Setup (12)

Connector type: 2.54mm pitch 1×3 pin header.

Pin	Mode
1-2	keep CMOS (default)
2-3	clear CMOS



JAUDIO1: AUDIO Voltage Selection (13)

The voltage of AUDIO could be selected by JAUDIO1 in +1.5V or +3.3V.

Connector type: 2.54mm pitch 1×3 pin header.

Pin	Voltage
1-2	+3.3V (default)
2-3	+1.5V

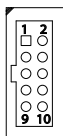


Connectors

COM1, 2: RS-232 Serial Ports (14, 15)

Connector type: 2.54mm pitch 2×5 box header.

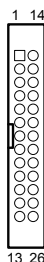
Pin	Desc.	Pin	Desc.
1	DCD#	2	RXD
3	TXD	4	DTR#
5	GND	6	DSR#
7	RTS#	8	CTS#
9	RI#	10	NC



LPT1: Parallel Port Connector (16)

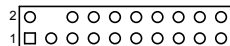
Connector type: 2.00mm pitch 2×13 box header.

Pin	Desc.	Pin	Desc.
1	STB#	14	AFD#
2	PTD0	15	ERROR#
3	PTD1	16	INIT#
4	PTD2	17	SLIN#
5	PTD3	18	GND
6	PTD4	19	GND
7	PTD5	20	GND
8	PTD6	21	GND
9	PTD7	22	GND
10	ACK#	23	GND
11	BUSY	24	GND
12	PE	25	GND
13	SELECT	26	NC (Key)



TPM1: Trusted Platform Module Connector (optional) (17)

Connector type: 2.54mm pitch 2×10 pin header.



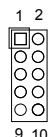
Pin	Description	Pin	Description
1	LPC_CLK	2	GND
3	LFRAME#	4	NC (Key)
5	RESET#	6	5V
7	LAD3	8	LAD2
9	+3.3V	10	LAD1
11	LAD0	12	GND
13	SMB_CLK	14	SMB_DATA
15	+3.3VSB	16	SERIRQ
17	GND	18	NC
19	PD#	20	LDRQ#

DIO1: Digital I/O Connector (18)

DIO1 is a 8-bit GPIO connector.

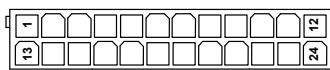
Connector type: 2.54mm pitch 2×5 pin header.

Pin	Desc.	Pin	Desc.
1	DIO1	2	DIO2
3	DIO3	4	DIO4
5	DIO5	6	DIO6
7	DIO7	8	DIO8
9	+5V	10	GND



ATX1: ATX Power Connector (19)

Connector type: Standard 24-pin Power Connector.



Pin	Desc.	Pin	Desc.
13	+3.3V	1	+3.3V
14	NC	2	+3.3V
15	GND	3	GND
16	PS-ON	4	+5V
17	GND	5	GND
18	GND	6	+5V
19	GND	7	GND
20	NC	8	PW-OK
21	+5V	9	+5VSB
22	+5V	10	+12V
23	+5V	11	+12V
24	GND	12	+3.3V

ATX12V1: ATX +12V Connector (20)

ATX +12V voltage is for CPU Processor. If this connector is not connected, system cannot boot up.

Connector type: 12V 4-pin power connector.

Pin	Desc.	Pin	Desc.
2	GND	1	GND
4	+12V	3	+12V



CPUF1, SYSF1: Fan Power Connectors (21, 37)

The fan must be a +12V fan.

Connector type: 2.54mm pitch 1×3 wafer one wall connector.

Pin	Description
1	GND
2	+12V
3	Fan_Detect

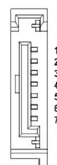


SATA1, 2, 3, 4: Serial ATA Connectors (22, 23, 24, 25)

Support high speed transfer rates and SATA RAID function.

Connector type: Standard 7-pin SATA Connector.

Pin	Description
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+
7	GND



DP1, 2: Display Port Connector (26, 27)



Pin	Description	Pin	Description
1	LANE0+	2	GND
3	LANE0-	4	LANE1+
5	GND	6	LANE1-
7	LANE2+	8	GND
9	LANE2-	10	LANE3+
11	GND	12	LANE3-
13	AUX_EN#	14	GND
15	AUX+	16	GND
17	AUX-	18	HPD
19	RTN_PWR	20	PWR

INV1: LCD Inverter Connectors (29)

Connector type: 2.00mm pitch 1×5 box wafer connector.

Pin	Description
1	+12V
2	GND
3	Backlight on/off
4	Brightness control
5	GND



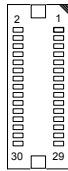
LVDS1: LVDS LCD Panel

Connectors (28)

The connector supports up to 24-bit dual channel.

Connector type: DF-13-30DP-1.25V.

Pin	Desc.	Pin	Desc.
2	VDD*	1	VDD*
4	TX2CLK+	3	TX1CLK+
6	TX2CLK-	5	TX1CLK-
8	GND	7	GND
10	TX2D0+	9	TX1D0+
12	TX2D0-	11	TX1D0-
14	GND	13	GND
16	TX2D1+	15	TX1D1+
18	TX2D1-	17	TX1D1-
20	GND	19	GND
22	TX2D2+	21	TX1D2+
24	TX2D2-	23	TX1D2-
26	GND	25	GND
28	TX2D3+	27	TX1D3+
30	TX2D3-	29	TX1D3-

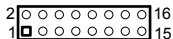


*Note: VDD could be selected by JVLCD1 in +5V or +3.3V.

JFRT1: Switches and Indicators Connector (30)

It's a connector for system indicators that provide computer activities' light indication and for switches to change the computer status.

Connector type: 2.54mm pitch 2×8 pin header.



Pin	Description	Pin	Description
1	Power LED+	2	PWRBTN+
3	Power LED-	4	PWRBTN-
5	Power LED-	6	RESET+
7	HDD LED+	8	RESET-
9	HDD LED-	10	SPEAKER+
11	SMBCLK	12	SPEAKER+
13	SMBDATA	14	SPEAKER-
15	GND	16	SPEAKER-

CON1, 2: Ultra Serial Ports (33, 34)

Connector type: 2.54mm pitch 1×5 pin header.

Pin	Description
1	+3.3V
2	NC
3	RX
4	GND
5	TX



MC1, 2: PCI Express Mini-card Sockets (35, 36)



PCIE1, 2: PCI Express x1 Slots (39, 41)

Pin	Description	Pin	Description
B1	+12V	A1	PRSNT1
B2	+12V	A2	+12V
B3	+12V	A3	+12V
B4	GND	A4	GND
B5	SMCLK	A5	JTAG2
B6	SMDAT	A6	JTAG3
B7	GND	A7	JTAG4
B8	+3.3V	A8	JTAG5
B9	JTAG1	A9	+3.3V
B10	+3.3VAUX	A10	+3.3V
B11	WAKE#	A11	PWRGD
B12	RSVD	A12	GND
B13	GND	A13	REFCLK+
B14	PCIE_TX+	A14	REFCLK-
B15	PCIE_TX-	A15	GND
B16	GND	A16	PCIE_RX+
B17	PRSNT2	A17	PCIE_RX-
B18	GND	A18	GND

PCEG1: PCI Express x16 Slot (40)

Pin	Description	Pin	Description				
B1	+12V	A1	PRSENT1	B54	PEG C TX9+	A54	GND
B2	+12V	A2	+12V	B55	PEG C TX9-	A55	GND
B3	+12V	A3	+12V	B56	GND	A56	PEG RX9+
B4	GND	A4	GND	B57	GND	A57	PEG RX9-
B5	SMCLK	A5	JTAG2	B58	PEG C TX10+	A58	GND
B6	SMDAT	A6	JTAG3	B59	PEG C TX10-	A61	GND
B7	GND	A7	JTAG4	B60	GND	A62	PEG RX10+
B8	+3.3V	A8	JTAG5	B61	GND	A61	PEG RX10-
B9	JTAG1	A9	+3.3V	B62	PEG C TX11+	A62	GND
B10	+3.3VAUX	A10	+3.3V	B63	PEG C TX11-	A63	GND
B11	WAKE#	A11	PWRGD	B64	GND	A64	PEG RX11+
B12	RSVD	A12	GND	B65	GND	A65	PEG RX11-
B13	GND	A13	REFCLK+	B66	PEG C TX12+	A66	GND
B14	PEG C TX0+	A14	REFCLK-	B67	PEG C TX12-	A67	GND
B15	PEG C TX0-	A15	GND	B68	GND	A68	PEG RX12+
B16	GND	A16	PEG RX0+	B69	GND	A69	PEG RX12-
B17	PRSENT2	A17	PEG RX0-	B70	PEG C TX13+	A70	GND
B18	GND	A18	GND	B71	PEG C TX13-	A71	GND
B19	PEG C TX1+	A19	RSVD	B72	GND	A72	PEG RX13+
B20	PEG C TX1-	A20	GND	B73	GND	A73	PEG RX13-
B21	GND	A21	PEG RX1+	B74	PEG C TX14+	A74	GND
B22	GND	A22	PEG RX1-	B75	PEG C TX14-	A75	GND
B23	PEG C TX2+	A23	GND	B76	GND	A76	PEG RX14+
B24	PEG C TX2-	A24	GND	B77	GND	A77	PEG RX14-
B25	GND	A25	PEG RX2+	B78	PEG C TX15+	A78	GND
B26	GND	A26	PEG RX2-	B79	PEG C TX15-	A79	GND
B27	PEG C TX3+	A27	GND	B80	GND	A80	PEG RX15+
B28	PEG C TX3-	A28	GND	B81	PRSENT2	A81	PEG RX15-
B29	GND	A29	PEG RX3+	B82	RSVD	A82	GND
B30	RSVD	A30	PEG RX3-				
B31	PRSENT2	A31	GND				
B32	GND	A32	RSVD				
B33	PEG C TX4+	A33	RSVD				
B34	PEG C TX4-	A34	GND				
B35	GND	A35	PEG RX4+				
B36	GND	A36	PEG RX4-				
B37	PEG C TX5+	A37	GND				
B38	PEG C TX5-	A38	GND				
B39	GND	A39	PEG RX5+				
B40	GND	A40	PEG RX5-				
B41	PEG C TX6+	A41	GND				
B42	PEG C TX6-	A42	GND				
B43	GND	A43	PEG RX6+				
B44	GND	A44	PEG RX6-				
B45	PEG C TX7+	A45	GND				
B46	PEG C TX7-	A46	GND				
B47	GND	A47	PEG RX7+				
B48	PRSENT2	A48	PEG RX7-				
B49	GND	A49	GND				
B50	PEG C TX8+	A50	RSVD				
B51	PEG C TX8-	A51	GND				
B52	GND	A52	PEG RX8+				
B53	GND	A53	PEG RX8-				

PCIE3: PCI Express x4 Slot (38)

Pin	Description	Pin	Description
B1	+12V	A1	PRSNT1
B2	+12V	A2	+12V
B3	+12V	A3	+12V
B4	GND	A4	GND
B5	SMCLK	A5	JTAG2
B6	SMDAT	A6	JTAG3
B7	GND	A7	JTAG4
B8	+3.3V	A8	JTAG5
B9	JTAG1	A9	+3.3V
B10	+3.3VAUX	A10	+3.3V
B11	WAKE#	A11	PWRGD
B12	RSVD	A12	GND
B13	GND	A13	REFCLK+
B14	PCIE_TX0+	A14	REFCLK-
B15	PCIE_TX0-	A15	GND
B16	GND	A16	PCIE_RX0+
B17	PRSNT2	A17	PCIE_RX0-
B18	GND	A18	GND
B19	PCIE_TX1+	A19	NC
B20	PCIE_TX1-	A20	GND
B21	GND	A21	PCIE_RX1+
B22	GND	A22	PCIE_RX1-
B23	PCIE_TX2+	A23	GND
B24	PCIE_RX2-	A24	GND
B25	GND	A25	PCIE_RX2+
B26	GND	A26	PCIE_RX2-
B27	PCIE_TX3+	A27	GND
B28	PCIE_TX3-	A28	GND
B29	GND	A29	PCIE_RX3+
B30	NC	A30	PCIE_RX3-
B31	NC	A31	GND
B32	GND	A32	NC

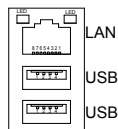
AUDIO1: HD AUDIO Connector (42)

Azalia Audio supports 7.1-channel audio.
Connector type: 2 × triple stack audio jacks
(Stereo ø3.50).

Orange: CET/LEF			Blue: Line In
Black: Surround			Green: Line Out
Gray: Side-SUR			Pink: MIC In

LAN1: RJ-45 & Double Stack USB Connector (43)

This connector supports USB 2.0 ×2 and Gigabit RJ-45 Ethernet Connector.
Connector type: RJ-45 + double stack USB type A connector.



USB1, 2: Double Stack USB Type A Connectors (44, 45)

Connector type: double stack USB 3.0 type A connector.

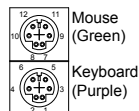


KBM1: PS/2 Keyboard & Mouse Connector (47)

Standard PS/2 Keyboard & Mouse connector
Connector type: double stack 6-pin mini DIN.

Pin Description

Pin	Description
1	KB Data
2	NC
3	GND
4	+5V
5	KB Clock
6	NC
7	MS Data
8	NC
9	GND
10	+5V
11	MS Clock
12	NC



VGA1: Analog RGB & DVI-D

Display Connector (46)

Connector type: VGA: D-Sub 15-pin female.
DVI-D: DVI-D female.



Analog RGB Connector

Pin	Description	Pin	Description
1	Red	9	+5V
2	Green	10	GND
3	Blue	11	Reserve
4	Reserve	12	DDC_Data
5	GND	13	Horizontal Sync
6	Red Return (GND)	14	Vertical Sync
7	Green Return (GND)	15	DDC_Clock
8	Blue Return (GND)		

DVI-D Connector (only supports single channel)

Pin	Description	Pin	Description
1	TMDS Data 2-	13	NC
2	TMDS Data 2+	14	+5V
3	TMDS Data 2/4 shield	15	GND (for +5V)
4	NC	16	Hot plug detect
5	NC	17	TMDS Data 0-
6	DDC clock	18	TMDS Data 0+
7	DDC data	19	TMDS Data 0/5 shield
8	NC/Analog vertical sync	20	NC
9	TMDS Data 1-	21	NC
10	TMDS Data 1+	22	TMDS clock shield
11	TMDS Data 1/3 shield	23	TMDS clock+
12	NC	24	TMDS clock-