Chapter

1

Quick Installation Guide

Part No. 2007951D11 Printed in Taiwan May 2009

1.1 Safety Precaution

Always completely disconnect the power cord from your board whenever you are working on it. Do not make connections while the power is on, because a sudden rush of power can damage sensitive electronic components.

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

1.2 Packing List

When you buy the ECB-951D, COM Express carrier board, you will find the following items in the box:

1. **ECB-951D: COM Express carrier board**
2. **PER-V03B**

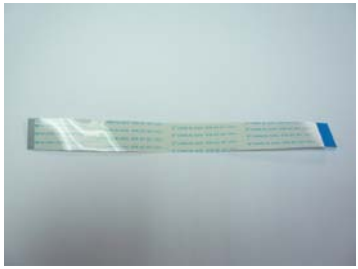
   2.1 PER-V03B, Type 1: SDVO to DVI daughter board for COM-U15 (TF-ECB-951D-A10)

   2.2 PER-V03B, Type 2: SDVO to DVI daughter board for NanoCOM-U15 (TF-ECB-951D-A10-01)

3. SDVO Cable

3.1 SDVO cable, Type 1: 30 cm (TF-ECB-951D-A10)

3.2 SDVO cable, Type 2: 15 cm (TF-ECB-951D-A10-01)



4. PER-Y016: Control board

5. Control board cable

6. SATA cable: 50 cm

7. SATA power cable

8. 44-pin IDE cable

9. PS2 Cable

10. Power adapter: 100-240V input, 19V output

11. This Quick Installation Guide

Please follow the instructions below to set up:

1. DVI output

1.1 For TF-ECB-951D-A10:

Please plug the SDVO cable, Type 1 into the CN2 of PER-V03B and CN6B of ECB-951D to get DVI output.

1.2 For TF-ECB-951D-A10-01:

Please plug the SDVO cable, Type 2 into the CN1 of PER-V03B and CN3 of NanoCOM-U15 to get DVI output.

2. Control board

Please plug the control board cable into CN1 of PER-Y016 and CN7 of ECB-951D to control power On/Off, LCD

brightness and volume.

➔ L1 on PER-Y016: Power button

➔ S1 on PER-Y016: LCD brightness control button, brightness down

➔ S2 on PER-Y016: LCD brightness control button, brightness up

➔ S3 on PER-Y016: Volume control button, volume down

➔ S4 on PER-Y016: Volume control button, volume up

3. HDD

3.1 Please plug the SATA cable and SATA power cable into SATA HDD.

3.2 Please plug the 44-pin IDE cable and 4-pin power connector into IDE HDD.

➔ It depends on the customer's demand.

➔ Please also refer to the *Storage Support Matrix* of 1.3 Application Notes.

4. Power Adapter

Please plug the power jack of power adapter into CN21 of ECB-951D.

1.3 Application Notes

1. Storage Support Matrix

When customers buy the ECB-951D, please refer to the storage support matrix in this manual to check which storages will be supported.

Model Name	Storage	CPU Module	ECB-951D (Function availability)				Description
		SSD (Master)	PATA (IDE) (Master)	SATA (Slave)	CF (Slave)	SDIO	
TF-COM-U15-A10	PATA x 1 (One device) SATA x 1 SDIO x 1	No	Yes (One device only)	Yes	Yes*	Yes	COM Express CPU Module. Intel Atom Z510. US15W. DDRII SO-DIMM. Gigabit Ethernet. SATA. USB2.0. Rev.A1.0
TF-COM-U15-A10-01	PATA x 1 (One device) SATA x 1 SDIO x 1	No	Yes (One device only)	Yes	Yes*	Yes	COM Express CPU Module. Intel Atom Z530. US15W. DDRII SO-DIMM. Gigabit Ethernet. SATA. USB2.0. Rev.A1.0
TF-NanoCOM-U15-A10	SATA x 1 SDIO x 1	No	No	Yes	No	Yes	NanoCOM Express CPU Module. Intel Atom Z510. US15W. DDRII 512MB. Gigabit Ethernet. SATA. USB2.0. Rev.A1.0
TF-NanoCOM-U15-A10-02	SATA x 1 SDIO x 1	No	No	Yes	No	Yes	NanoCOM Express CPU Module. Intel Atom Z530. US15W. DDRII 1GB. Gigabit Ethernet. SATA. USB2.0. Rev.A1.0

Note: *: CF slot on ECB-951D can be functional if the SATA device disconnected.

2. BIOS chip on ECB-951D

There is a "blank" PLCC BIOS chip on ECB-951D for debugging. If you have to verify the functions on ECB-951D, please refresh this "blank" BIOS chip with "legacy" BIOS in the utility CD of CPU module and choose to boot from ECB-951D.

Note: The default BIOS of COM-U15 and NanoCOM-U15 is legacy-free.

If you boot up the BIOS from CPU module directly, some functions (ex. COM ports) may not work properly.

You have to follow the steps below to refresh the BIOS. **Please check if the jumper setting of BIOS Boot Selection is correct or not: Choose to boot from the CPU module first)**

(1) Prepare a bootable CF card (For TF-ECB-951D-A10 only) or Hard Disc Drive and copy the BIOS-related files from the utility CD of CPU module to the bootable CF card or Hard Disc Drive.

(2.1) Plug this CF card into CFD1 connector or Hard Disc Drive into CN38 (SATA connector)/ CN40 (IDE connector)

(2.2) Plug the PS2 cable into CN34 and attach PS2 K/B

(3) Boot to DOS mode

(4) Change the jumper setting of BIOS Boot Selection: Choose to boot from ECB-951D

(5) Follow the README file in the utility CD of CPU module to refresh the BIOS

Note: SPI BIOS cannot be refreshed in the PLCC BIOS chip.

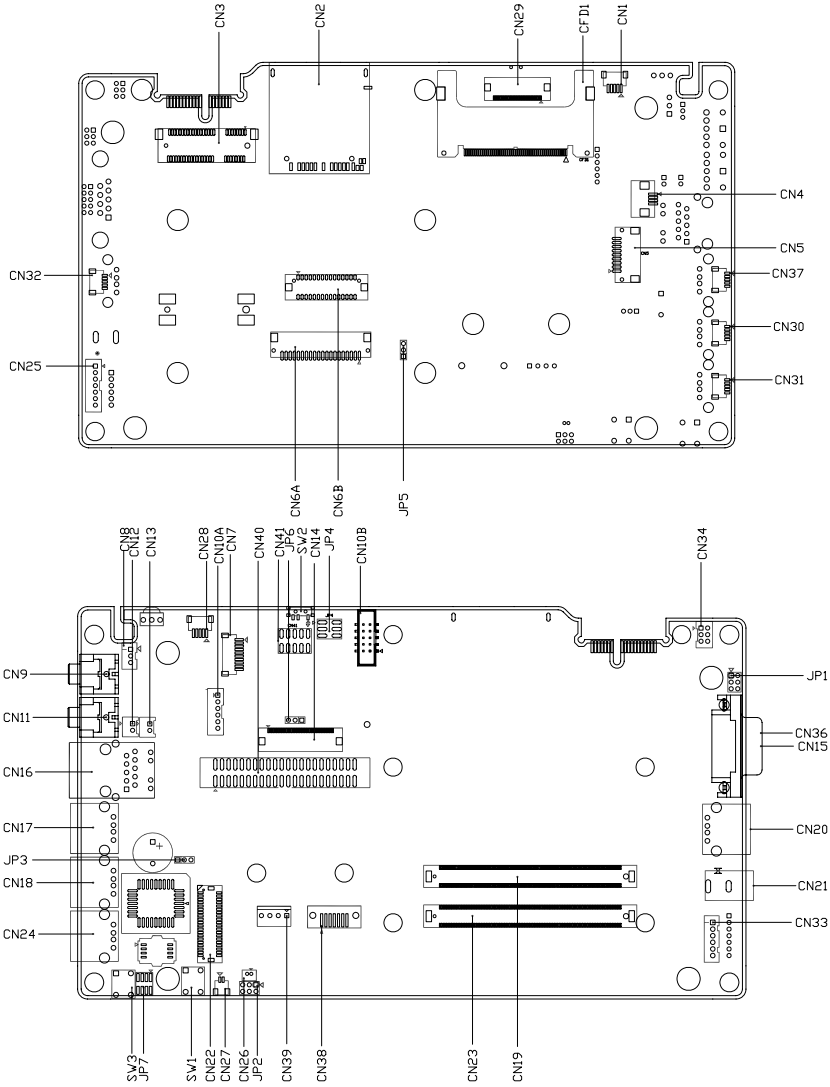
3. Power supply of SATA power connector, CN39

SATA power connector, CN39 provides 1A current for 5V and 12V power respectively.

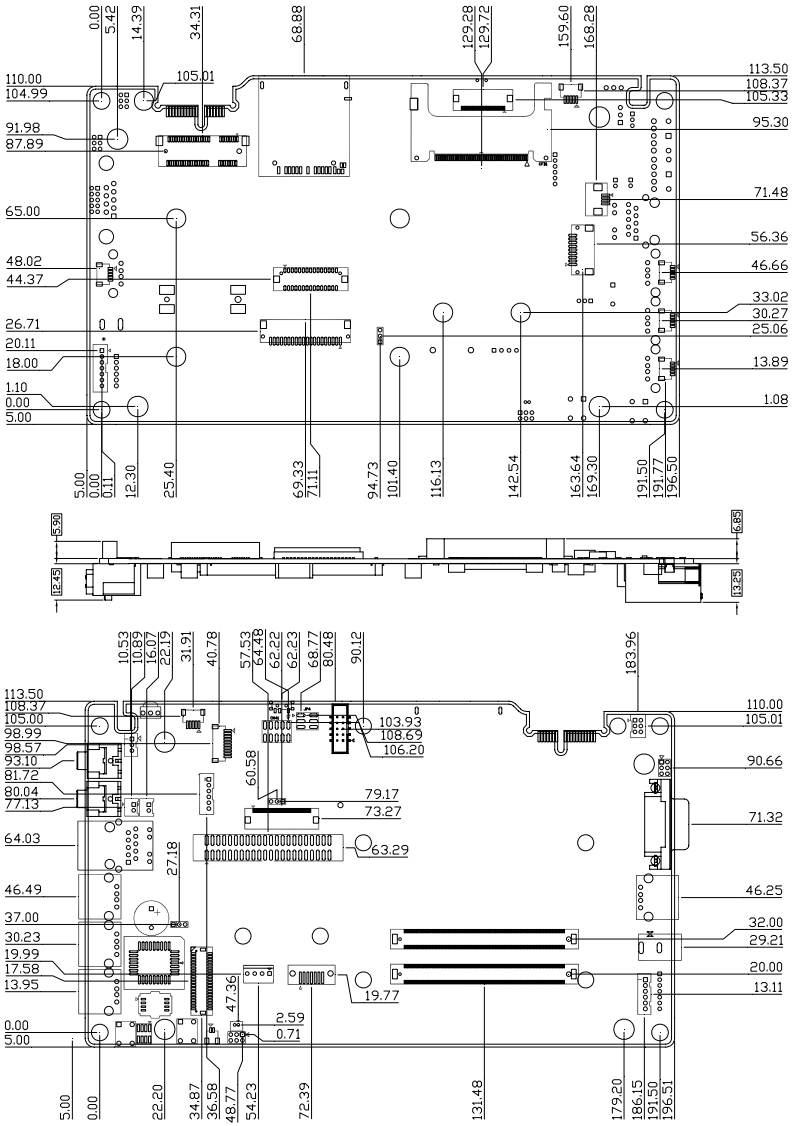
It will be only suitable for SATA HDD usage.

If you use the SATA optical drive, please do not use this SATA power connector. It may cause the device failed or unstable if you use the power adapter cable for more than one SATA HDD.

1.4 Location of Jumpers and Connectors



1.5 Mechanical Drawing



1.6 List of Jumpers

The board has a number of jumpers that allow you to configure your system to suit your application.

The table below shows the function of each of the board's jumpers:

Jumpers

Label	Function
JP1	COM2 +12V/+5V/RING Selection
JP2	BIOS Boot Selection
JP3	USB1 +5V/+3.3V Selection
JP4	COM1 +12V/+5V/RING Selection
JP5	LCD Voltage +5V/+3.3V Selection
JP6	CFD1 +5V/+3.3V Selection
JP7	EC Flash ROM Programming Connector

1.7 List of Connectors

The board has a number of connectors that allow you to configure your system to suit your application. The table below shows the function of each board's connectors:

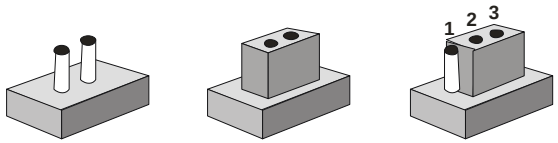
Label	Function
CN1	USB4 Connector (For USB Camera)
CN2	SDIO Slot
CN3	Mini Card Slot
CN4	Touch Screen Connector
CN5	LCD Backlight Power Connector (For 12.1" LCD)
CN6A	LVDS Connector (Reserved)
CN6B	LVDS Connector (DF13) (Default)
CN7	Front Panel Connector
CN8	Microphone Connector (For Internal Usage)
CN9	Microphone Jack
CN10A	COM1 Connector (For ZigBee Module)
CN10B	COM1 Connector (For Extended Cable)
CN11	Line-out Jack
CN12	Right Speaker Connector
CN13	Left Speaker Connector
CN14	IDE Connector (For 1.8" HDD)
CN15	COM2 Connector
CN16	LAN Connector (For GbE)
CN17	USB0 Connector
CN18	USB1 Connector
CN19	COM Express Connector (Row C & D)
CN20	USB2 Connector

CN21	DC Power Jack
CN22	SDVO Connector
CN23	COM Express Connector (Row A & B)
CN24	USB3 Connector
CN25	Battery Connector
CN26	RTC Battery Connector
CN27	SCI#&SMI# Connector (For Battery Operation)
CN28	USB7 Connector (Reserved)
CN29	EC Programming Connector
CN30	USB1 Connector (For Extended Cable)
CN31	USB3 Connector (For Extended Cable)
CN32	USB2 Connector (For Extended Cable)
CN33	DC Power Connector (For Extended Cable)
CN34	KB Connector
CN36	COM2 Connector (For Extended Cable)
CN37	USB0 Connector (For Extended Cable)
CN38	SATA Connector
CN39	SATA Power Connector
CN40	44-pin IDE Connector (For 2.5” HDD)
CN41	Digital I/O Connector
CFD1	CompactFlash Slot
PCIE1	PCI-Express [x1] Slot (Reserved)
SW1	Hardware Reset Button
SW2	Mini Card Enabled/Disabled Switch
SW3	System Recovery Button

1.8 Setting Jumpers

You configure your card 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 pins 1 and 2 or 2 and 3.



Open **Closed** **Closed 2-3**

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 change.

Generally, you simply need a standard cable to make most connections.

1.9 COM2 +12V/ +5V/ Ring Selection (JP1)

JP1	Function
1-2	+12V
3-4	+5V
5-6	Ring (Default)

1.10 BIOS Boot Selection (JP2)

JP2	Function
1-3	CPU Module BIOS Boot (Default)
3-5	Carrier Board BIOS Boot
2-4	Normal (Default)
4-6	Clear CMOS

1.11 USB1 +5V/ +3.3V Selection (JP3)

JP3	Function
1-2	+3.3V
2-3	+5V (Default)

1.12 COM1 +12V/ +5V/ Ring Selection (JP4)

JP4	Function
1-2	+12V
3-4	+5V
5-6	Ring (Default)

1.13 LCD Voltage +5V/+3.3V Selection (JP5)

JP5	Function
1-2	+5V
2-3	+3.3V

1.14 CFD1 +5V/+3.3V Selection (JP6)

JP6	Function
1-2	+5V
2-3	+3.3V

1.15 EC Flash ROM Programming Connector (JP7)

Pin	Signal	Pin	Signal
1	EC_VCC	2	GND
3	FSCE#	4	FSCK
5	FMISO	6	FMOSI
7	NC	8	NC

1.16 USB4 Connector (For USB Camera) (CN1)

Pin	Signal
1	USB Power
2	USBD4-
3	USBD4+
4	GND
5	GND

1.17 SDIO Slot (CN2)

Pin	Signal	Pin	Signal
1	WP	12	CMD
2	CD#	13	DATA4
3	DATA1	14	DATA3
4	DATA0	15	DATA2
5	DATA7	16	GND
6	GND	17	GND

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7	DATA6	18	GND
8	CLK	19	CD#
9	SDIO POWER	20	WP
10	GND	21	NC
11	DATA5	22	NC

1.18 Mini Card Slot (CN3)

Standard Mini Card Slot

1.19 Touch Screen Connector (CN4)

Pin	Signal
1	Y+/UR (Bottom Sense)
2	X+/UL (Left Sense)
3	Y-/LL (Top Sense)
4	X-/LR (Right Sense)

1.20 LCD Backlight Power Connector (for 12.1" LCD) (CN5)

Pin	Signal
1	GND
2	GND
3	GND
4	+12V
5	+12V
6	+12V
7	+12V
8	Backlight Control
9	Backlight enable

1.21 LVDS Connector (CN6A) (Reserved)

Pin	Signal	Pin	Signal
1	LVDS Power	2	LVDS Power
3	GND	4	GND
5	LA_DATAN0	6	LA_DATAP0
7	GND	8	LA_DATAN1
9	LA_DATAP1	10	GND
11	LA_DATAN2	12	LA_DATAP2
13	GND	14	LA_CLKN
15	LA_CLKP	16	GND
17	Backlight Power	18	Backlight Power
19	GND	20	Backlight Control

1.22 LVDS Connector (DF13) (CN6B) (Default)

Pin	Signal	Pin	Signal
1	Backlight enable	2	BKLTCTL
3	LVDS Power	4	GND
5	TX1CLK#	6	TX1CLK
7	LVDS Power	8	GND
9	TX1OUT#0	10	TX1OUT0
11	TX1OUT#1	12	TX1OUT1
13	TX1OUT#2	14	TX1OUT2
15	TX1OUT#3	16	TX1OUT3
17	DDC_DAT	18	DDC_CLK
19	+12V	20	GND
21	+12V	22	GND
23	+12V	24	GND
25	NC	26	NC
27	LVDS Power	28	GND

29	NC	30	NC

1.23 Front Panel Connector (CN7)

Pin	Signal	Pin	Signal
1	VCC5	2	5VDUAL
3	HKEY1#	4	HKEY2#
5	HKEY3#	6	HKEY4#
7	SBYLED	8	Power Button
9	GND	10	GND

1.24 Microphone Connector (for internal usage) (CN8)

Pin	Signal
1	MIC2-R
2	GND
3	MIC2-L

1.25 Microphone Jack (CN9)

Pin	Signal
1	GND
2	MIC1-R
3	MIC1-L
4	MIC1-JD
5	GND

1.26 COM1 Connector (for ZigBee Module) (CN10A)

Pin	Signal
1	TXD1X
2	RXD1X

3	GND
4	3VDUAL
5	GND
6	ZigBee_Wake

1.27 COM1 Connector (for extended cable) (CN10B)

Pin	Signal	Pin	Signal
1	DCD2	2	RXD2
3	TXD2	4	DTR2
5	GND	6	DSR2
7	RTS2	8	CTS2
9	RING2	10	NC

1.28 Line-out Jack (CN11)

Pin	Signal
1	GND
2	FRONT-R
3	FRONT-L
4	FRONT-JD
5	GND

1.29 Right Speaker Connector (CN12)

Pin	Signal
1	SPK_RO+
2	SPK_RO-

1.30 Left Speaker Connector (CN13)

Pin	Signal
1	SPK_LO+
2	SPK_LO-

1.31 IDE Connector (for 1.8" HDD) (CN14)

Pin	Signal	Pin	Signal
1	NC	2	NC
3	IDE_RST#	4	GND
5	IDE_PDD7	6	IDE_PDD8
7	IDE_PDD6	8	IDE_PDD9
9	IDE_PDD5	10	IDE_PDD10
11	IDE_PDD4	12	IDE_PDD11
13	IDE_PDD3	14	IDE_PDD12
15	IDE_PDD2	16	IDE_PDD13
17	IDE_PDD1	18	IDE_PDD14
19	IDE_PDD0	20	IDE_PDD15
21	GND	22	IDE_PDDREQ
23	GND	24	IDE_PDIOW#
25	IDE_PDIOR#	26	GND
27	IDE_PDIPRDY	28	GND
29	IDE_PDDACK#	30	INT_IRQ14
31	IDE_PDA1	32	P66DET
33	IDE_PDA0	34	IDE_PDA2
35	IDE_PDCS1#	36	IDE_PDCS3#
37	IDELED#	38	VCC3
39	VCC3	40	Master & Slave select

1.32 COM2 Connector (CN15)

Pin	Signal	Pin	Signal
1	DCD2	2	RXD2
3	TXD2	4	DTR2
5	GND	6	DSR2
7	RTS2	8	CTS2
9	RING2	10	NC

1.33 LAN Connector For GbE (CN16)

Pin	Signal	Pin	Signal
1	MDI0+	2	MDI0-
3	MDI1+	4	MDI1-
5	TCD0	6	TCD1
7	MDI2+	8	MDI2-
9	MDI3+	10	MDI3-
11	ACT_LED#	12	3VDUAL
13	10_100_LED#	14	1000_LED#

1.34 USB0 Connector (CN17)

Pin	Signal
1	USB Power
2	USBD0-
3	USBD0+
4	GND

1.35 USB1 Connector (CN18)

Pin	Signal
1	USB Power

2	USBD1-
3	USBD1+
4	GND

1.36 COM Express Connector (CN19)

Standard COM Express Connector (Row C & D)

1.37 USB2 Connector (CN20)

Pin	Signal
1	USB Power
2	USBD2-
3	USBD2+
4	GND

1.38 DC Power Jack (CN21)

Pin	Signal
1	GND
2	GND
3	VCC_DCIN

1.39 SDVO Connector (CN22)

Pin	Signal	Pin	Signal
1	SDVO_CLCLK	2	SDVO_RESET#
3	SDVO_CLDATA	4	I2C_CLK
5	NC	6	I2C_DAT
7	GND	8	GND
9	SDVO_RED#	10	SDVO_STALL#
11	SDVO_RED	12	SDVO_STALL

13	GND	14	GND
15	SDVO_BLUE#	16	SDVO_INT#
17	SDVO_BLUE	18	SDVO_INT
19	GND	20	GND
21	SDVO_GREEN#	22	SDVO_CLK#
23	SDVO_GREEN	24	SDVO_CLK
25	GND	26	GND
27	+2.5V	28	VCC5
29	+2.5V	30	VCC5
31	+2.5V	32	GND
33	GND	34	+12V
35	VCC3	36	+12V
37	VCC3	38	GND
39	GND	40	GND

1.40 COM Express Connector (CN23)

Standard COM Express Connector (Row A & B)

1.41 USB3 Connector (CN24)

Pin	Signal
1	USB Power
2	USBD3-
3	USBD3+
4	GND

1.42 Battery Connector (CN25)

Pin	Signal
1	VCC_BAT
2	VCC_BAT

3	SMBUS_SCL
4	SMBUS_SDA
5	CH_TS
6	GND
7	GND

1.43 RTC Battery Connector (CN26)

Pin	Signal
1	USB Power
2	GND

1.44 SCI# & SMI# Connector (for Battery Operation) (CN27)

Pin	Signal
1	SCI#
2	SMI#

1.45 USB7 Connector (Reserved) (CN28)

Pin	Signal
1	USB Power
2	USBD7-
3	USBD7+
4	GND
5	GND

1.46 EC Programming Connector (CN29)

Pin	Signal	Pin	Signal
1	KSO0	2	KSI0
3	KSO1	4	KSO2

5	KSI1	6	KSO3
7	KSI2	8	KSO4
9	KSI3	10	KSO5
11	KSI4	12	KSI5
13	KSO6	14	NC
15	NC	16	KSO7
17	KSO8	18	KSO9
19	KSO10	20	NC
21	NC	22	KSO1
23	NC	24	NC
25	KSO3	26	NC
27	NC	28	GND
29	NC	30	NC

1.47 USB1 Connector (for Extended Cable) (CN30)

Pin	Signal
1	USB Power
2	USBD1-
3	USBD1+
4	GND
5	GND

1.48 USB3 Connector (for Extended Cable) (CN31)

Pin	Signal
1	USB Power
2	USBD3-
3	USBD3+
4	GND
5	GND

1.49 USB2 Connector (for Extended Cable) (CN32)

Pin	Signal
1	USB Power
2	USBD2-
3	USBD2+
4	GND
5	GND

1.50 DC Power Connector (for Extended Cable) (CN33)

Pin	Signal
1	VCC_DCIN
2	VCC_DCIN
3	VCC_DCIN
4	GND
5	GND
6	GND

1.51 Keyboard Connector (CN34)

Pin	Signal	Pin	Signal
1	KDAT	2	KCLK
3	GND	4	5VDUAL with fuse
5	MDAT	6	MCLK

1.52 COM2 Connector (for Extended Cable) (CN36)

Pin	Signal	Pin	Signal
1	DCD2	2	RXD2
3	TXD2	4	DTR2
5	GND	6	DSR2

7	RTS2	8	CTS2
9	RING2	10	NC

1.53 USB0 Connector (for Extended Cable) (CN37)

Pin	Signal
1	USB Power
2	USBD0-
3	USBD0+
4	GND
5	GND

1.54 SATA Connector (CN38)

Standard SATA Connector

1.55 SATA Power Connector (CN39)

Pin	Signal
1	+12V
2	GND
3	GND
4	VCC5

1.56 44-pin IDE Connector (for 2.5" HDD) (CN40)

Pin	Signal	Pin	Signal
1	IDE_RST#	2	GND
3	IDE_PDD7	4	IDE_PDD8
5	IDE_PDD6	6	IDE_PDD9
7	IDE_PDD5	8	IDE_PDD10
9	IDE_PDD4	10	IDE_PDD11

11	IDE_PDD3	12	IDE_PDD12
13	IDE_PDD2	14	IDE_PDD13
15	IDE_PDD1	16	IDE_PDD14
17	IDE_PDD0	18	IDE_PDD15
19	GND	20	NC
21	IDE_PDDREQ	22	GND
23	IDE_PDIOW#	24	GND
25	IDE_PDIOR#	26	GND
27	IDE_PDIPRDY	28	GND
29	IDE_PDDACK#	30	GND
31	INT_IRQ14	32	NC
33	IDE_PDA1	34	P66DET
35	IDE_PDA0	36	IDE_PDA2
37	IDE_PDCS1#	38	IDE_PDCS3#
39	IDELED#	40	GND
41	VCC5	42	VCC5
43	GND	44	NC

1.57 Digital I/O Connector (CN41)

Pin	Signal	Pin	Signal
1	DIO_1	2	DIO_2
3	DIO_3	4	DIO_4
5	DIO_5	6	DIO_6
7	DIO_7	8	DIO_8
9	+5V	10	GND

1.58 CompactFlash Slot (CFD1)

Standard CompactFlash Slot

1.59 PCI-Express [x1] Slot (Reserved) (PCIE1)

Standard PCI-Express [x1] Slot

1.60 Hardware Reset Button (SW1)

Hardware Reset Button

1.61 Mini Card Enabled/Disabled Switch (SW2)

SW2	Function
1-2	Enabled
2-3	Disabled

1.62 System Recovery Button (SW3)

System Recovery Button

Below Table for China RoHS Requirements

产品中有毒有害物质或元素名称及含量

AAEON Main Board/ Daughter Board/ Backplane

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
印刷电路板及其电子组件	×	○	○	○	○	○
外部信号连接器及线材	×	○	○	○	○	○

O：表示该有毒有害物质在该部件所有均质材料中的含量均在 **SJ/T 11363-2006** 标准规定的限量要求以下。

X：表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 **SJ/T 11363-2006** 标准规定的限量要求。

备注：此产品所标示之环保使用期限，系指在一般正常使用状况下。