

## Notice

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This guide is designed for experienced users to setup the system in the shortest time.

## Safety Precautions

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### **Warning!**



*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.*

### **Caution!**



*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*

OZONE SAFE



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## **A Message to the Customer**

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First of all, thank you for purchasing PER-T099 ECX Extension Board. This Quick Installation Guide will help you in the process of the installation of this product. You will find these instructions in this Installation Guide. You may also visit the AAEON website at [www.aaeon.com](http://www.aaeon.com) for the latest version of the instructions to do this.

## **Product Warranty**

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### **AAEON Customer Satisfaction**

All products in AAEON are designed following the strictest specifications to ensure that our products will perform reliably in typical industrial environments. Whether your purchase from AAEON is made for the purpose of being in a laboratory or in a factory facility, you can be assured that every purchase in AAEON will provide reliability and stability of operation. Your satisfaction is our primary concern. To ensure you get the full benefits of our services, please follow the instructions in the next section.

## Technical Support

We require that you receive the maximum performance and satisfaction from your products. If you run into technical difficulties, we'll always be here for you. For the most frequently asked questions, you can easily find solutions in your product documentation as well as on our FAQ page under Support and Service on our website. We strongly suggest that you review these resources before asking for customer service over the phone. If you still cannot find the answer, gather all questions you can think of and have the product on hand before giving a call to your dealer. All dealers of AAEON are well-trained and ready to provide you as much support as you need to get the most from your product. Based on the customer service we've encountered until now, most of problems are minor and able to be easily solved over the phone. In addition, technical support is available from AAEON engineers over e-mail. Please contact your AAEON dealer or visit our website [www.aaeon.com](http://www.aaeon.com) to get the e-mail address you can use to ask for technical help. We are always pleased to give advice regarding installation and operation of AAEON products.

## Ordering Information

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- **TF-PER-T099-A10**  
ECX Extension Board, LVDS, PCI-E, 2COM, Rev. A1.0
- **TF-PER-T099-A10-01**  
ECX Extension Board, LVDS, Mini Card, 2COM, Rev. A1.0
- **TF-PER-T099-A10-02**  
ECX Extension Board, DVI, PCI-E, 2COM, Rev. A1.0
- **TF-PER-T099-A10-03**  
ECX Extension Board, DVI, Mini Card, 2COM, Rev. A1.0

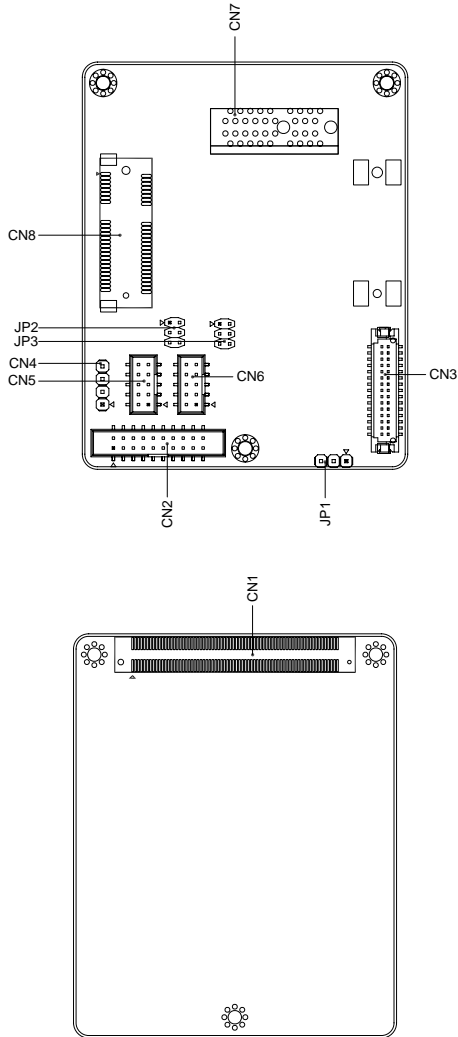
## Packing List

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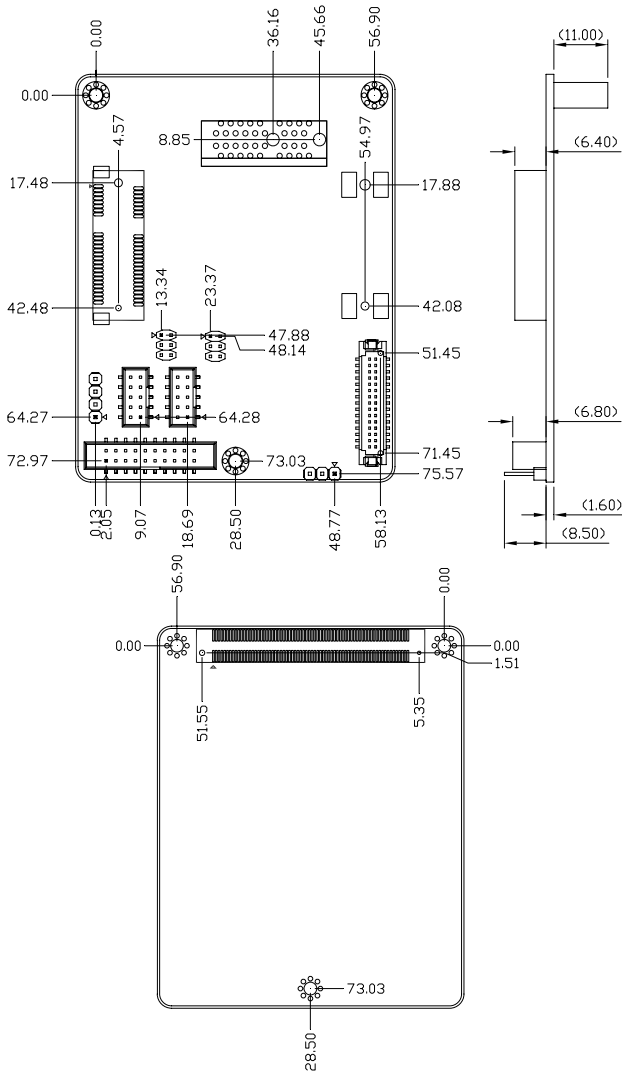
- PER-T099 ECX Extension Board
- Quick Installation Guide
- CD-ROM for QIG (in PDF format) and BIOS
- COM Port Cable (P/N 1701100206)
- DVI Cable (P/N 1700200200) (For DVI version only)

### Location of Connectors and Jumpers

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Mechanical Drawing



## List of Jumpers

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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:

Label	Function
JP1	LVDS - LCD (CN3) Voltage Selection
JP2	COM3 Ring/+5V/+12V Selection
JP3	COM4 Ring/+5V/+12V Selection

## List of Connectors

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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	Expansion board 140-pin slot
CN2	DVI Connector
CN3	LVDS -LCD Connector
CN4	Power connector (Reserved for PCI-E [ x1 ] Slot)
CN5	COM3 Port Connector
CN6	COM4 Port Connector
CN7	PCI-E [ x1 ] Slot
CN8	MINI CARD Connector

**Note:** The connector configurations will be different in terms of the ordering information.

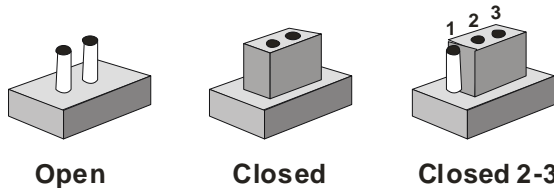


## Setting Jumpers

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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.



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.

**LVDS-LCD (CN3) Voltage Selection (JP1)**

JP1	Function
1-2	+5V
2-3	+3.3V (Default)

**COM3 Ring/ +5V/ +12V Selection (JP2)**

JP2	Function
1-2	+12V
3-4	+5V
5-6	Ring (Default)

**COM4 Ring/ +5V/ +12V Selection (JP3)**

JP3	Function
1-2	+12V
3-4	+5V
5-6	Ring (Default)

**Expansion Board 140-pin Slot (CN1)**

Pin	Signal	Pin	Signal
1	+2.5V	2	SDVOB_CLKN
3	+2.5V	4	SDVOB_CLKP
5	+2.5V	6	GND
7	ICH_RI#	8	SDVOB_BLUE#
9	INT_SERIRQ	10	SDVOB_BLUE
11	PCI_SLOT_RST#	12	SDVOB_GREEN#
13	PCI_GNT#2	14	SDVOB_GREEN

15	PCI_GNT#1	16	SDVOB_RED#
17	PCI_AD11	18	SDVOB_RED
19	PCI_AD13	20	GND
21	PCI_TRDY#	22	SDVOB_INT#
23	PCI_FRAME#	24	SDVOB_INT
25	PCI_AD24	26	GND
27	INT_PIRQC#	28	SDVO_SPC
29	PCI_PME#	30	SDVO_SPD
31	PCI_AD28	32	SDVO_FLDSTALL#
33	PCI_REQ#1	34	SDVO_FLDSTALL
35	PCI_AD22	36	GND
37	PCI_PAR	38	+5V
39	INT_PIRQD#	40	+5V
41	PCI_SLOT2_CLK33	42	+5V
43	PCI_SLOT1_CLK33	44	GND
45	PCI_AD16	46	SMBCLK_SBY
47	PCI_REQ#2	48	SMBDAT_SBY
49	PCI_AD26	50	GND
51	PCI_AD30	52	PCIE_WAKE#
53	PCI_AD31	54	PCIE_RST#
55	PCI_AD29	56	GND
57	PCI_STOP#	58	PCIE_TXP
59	PCI_AD18	60	PCIE_TXN

61	PCI_AD27	62	PCIE_RXP
63	PCI_AD25	64	PCIE_RXN
65	PCI_C/BE#0	66	GND
67	IDSEL0(PCI_AD27)	68	PCIESLOT1_CLK
69	PCI_C/BE#3	70	PCIESLOT1_CLK#
71	PCI_AD23	72	GND
73	IDSEL1(PCI_AD25)	74	LPC_AD3
75	PCI_AD20	76	LPC_AD2
77	PCI_DEVSEL#	78	LPC_AD1
79	PCI_AD21	80	LPC_AD0
81	PCI_AD19	82	ICH_DRQ#1
83	PCI_AD17	84	LPC_FRAME#
85	PCI_C/BE#2	86	GND
87	PCI_IRDY#	88	+3.3V_DUAL
89	PCI_AD4	90	+3.3V_DUAL
91	PCI_AD9	92	+3.3V_DUAL
93	PCI_AD15	94	GND
95	PM_CLKRUN#	96	PM_SLP_S3#
97	PCI_SERR#	98	PM_SLP_S4#
99	PCI_AD6	100	PM_SLP_S5#
101	PCI_PERR#	102	INT_BAT#
103	PCI_C/BE#1	104	+5V_DUAL
105	PCI_AD0	106	+5V_DUAL

107	PCI_AD2	108	+5V_DUAL
109	PCI_AD14	110	NC
111	PCI_LOCK#	112	NC
113	INT_PIRQB#	114	NC
115	PCI_AD12	116	NC
117	PCI_AD10	118	NC
119	PCI_AD8	120	NC
121	PCI_AD7	122	NC
123	INT_PIRQA#	124	NC
125	PCI_AD3	126	NC
127	PCI_AD5	128	GND
129	PCI_AD1	130	NC
131	+3.3V	132	CLK33
133	+3.3V	134	GND
135	+3.3V	136	USBPN
137	GND	138	USBPP
139	GND	140	OC#

**DVI Connector (CN2)**

Pin	Signal	Pin	Signal
1	DVI_TX1+	2	DVI_TX1-
3	GND	4	GND
5	DVI_TXCLK+	6	DVI_TXCLK-
7	GND	8	+5V

9	Hot Plug Detect	10	+5V
11	DVI_TX2+	12	DVI_TX2-
13	GND	14	GND
15	DVI_TX0+	16	DVI_TX0-
17	N.C.	18	N.C.
19	I2C_DATA	20	I2C_CLK

**LVDS – LCD Connector (CN3)**

<b>Pin</b>	<b>Signal</b>	<b>Pin</b>	<b>Signal</b>
1	BKLTEN	2	NC
3	PPVCC	4	GND
5	LVDS1_TXCLK-	6	LVDS1_TXCLK+
7	PPVCC	8	GND
9	LVDS1_TX0-	10	LVDS1_TX0+
11	LVDS1_TX1-	12	LVDS1_TX1+
13	LVDS1_TX2-	14	LVDS1_TX2+
15	LVDS1_TX3-	16	LVDS1_TX3+
17	I2C_DATA	18	I2C_CLK
19	LVDS2_TX0-	20	LVDS2_TX0+
21	LVDS2_TX1-	22	LVDS2_TX1+
23	LVDS2_TX2-	24	LVDS2_TX2+
25	LVDS2_TX3-	26	LVDS2_TX3+
27	PPVCC	28	GND
29	LVDS2_TXCLK-	30	LVDS2_TXCLK+

**Power Connector for PCI-E [ x1 ] Slot (CN4)**

Pin	Signal	Pin	Signal
1	+5V (For PCI-E [ x1 ] Slot)	2	GND
3	GND	4	+12V(For PCI-E [ x1 ] Slot)

**COM3 RS-232 Serial Port Connector (CN5)**

Pin	Signal	Pin	Signal
1	DCD	2	RXD
3	TXD	4	DTR
5	GND	6	DSR
7	RTS	8	CTS
9	RI/+12V/+5V	10	N.C.

**Note:** The resource of PER-T099 has to be set manually and users cannot relocate the resource if PER-T099 got it automatically. Turn on your control panel to find out an available resource for COM ports.

**COM4 RS-232 Serial Port Connector (CN6)**

Pin	Signal	Pin	Signal
1	DCD	2	RXD
3	TXD	4	DTR
5	GND	6	DSR
7	RTS	8	CTS
9	RI/+12V/+5V	10	N.C.

**Note:** The resource of PER-T099 has to be set manually and users cannot relocate the resource if PER-T099 got it automatically. Turn on your control panel to find out an available resource for COM ports.

**PCI-E [ x1 ] Slot (CN7)**

Pin	Signal	Pin	Signal
B1	+12V	A1	PRSNT1#
B2	+12V	A2	+12V
B3	NC	A3	+12V
B4	GND	A4	GND
B5	SMBCLK_SBY	A5	NC
B6	SMBDAT_SBY	A6	NC
B7	GND	A7	NC
B8	+3.3V	A8	NC
B9	NC	A9	+3.3V
B10	+3.3V_DUAL	A10	+3.3V
B11	PCIE_WAKE#	A11	PCIE_RST#
B12	NC	A12	GND
B13	GND	A13	PCIESLOT1_CLK
B14	PCIE_TXP	A14	PCIESLOT1_CLK#
B15	PCIE_TXN	A15	GND
B16	GND	A16	PCIE_RXP
B17	PRSNT2#	A17	PCIE_RXN
B18	GND	A18	GND

**Mini Card Connector (CN8)**

Pin	Signal	Pin	Signal
1	PCIE_WAKE#	2	+3.3V



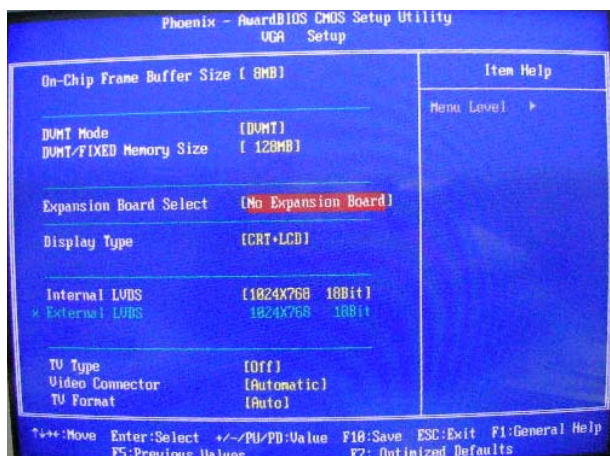
3	Reserved	4	GND
5	Reserved	6	+1.5V
7	Reserved	8	NC
9	GND	10	NC
11	PCIESLOT1_CLK#	12	NC
13	PCIESLOT1_CLK	14	NC
15	GND	16	NC
17	NC	18	GND
19	NC	20	W_DISABLE#
21	GND	22	PCIE_RST#
23	PCIE_RXN	24	+3.3V_DUAL
25	PCIE_RXP	26	GND
27	GND	28	+1.5V
29	GND	30	SMBCLK_SBY
31	PCIE_TXN	32	SMBDAT_SBY
33	PCIE_TXP	34	GND
35	GND	36	USBPN
37	NC	38	USBPP
39	NC	40	GND
41	NC	42	NC
43	NC	44	NC
45	NC	46	NC
47	NC	48	+1.5V

49	NC	50	GND
51	NC	52	+3.3V

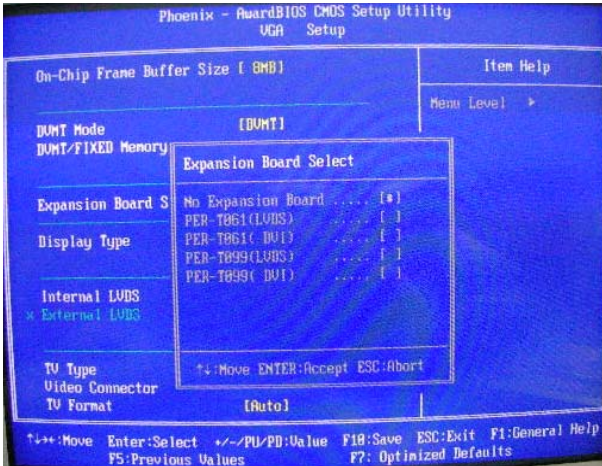
### Setup BIOS for Mainboard with PER-T099

Boot the mainboard with PER-T099 and then installed with your bootable device.

Step 1: Enter the BIOS setup program and then choose **Advanced Chipset** and then **VGA Setup**. You will see the screen below.



Step 2: Enter **Expansion Board Select**. You will see the screen below and you can choose an expansion board what you plug into the mainboard.



The board will restart after saving the BIOS setup.  
 Now the mainboard with PER-T099 is ready for your application.

### List of Mating Connectors and Cables

The table notes mating connectors and available cables.

Connector Label	Function	Mating Connector		Available Cable	Cable P/N
		Vendor	Model no		
CN1	Expansion board Connector	Hirose	0.6mm Pitch 140 pins ( Hirose FX8C-140P-SV6(93)	Board to Board Connector	N/A
CN2	DVI Connector	CATCH	2.00mm Pitch 20 pins (CATCH H754-2x10 or compatible)	DVI Cable	1700200200
CN3	LVDS (1)-LCD Connector	CATCH	1.25mm Pitch 30 pins (CATCH H716 or compatible)	LVDS Cable	N/A
CN4	Power connector (Reserved for PCIe x1 Slot)	Ho-Base	(Ho-Base 2543-H-4)	Power Cable	N/A
CN5	COM Port Connector	CATCH	2.00mm Pitch 10 pins ( CATCH H754-2x5 or compatible)	Serial Port Cable	1701100206
CN6	COM Port Connector	CATCH	2.00mm Pitch 10 pins ( CATCH H754-2x5 or compatible)	Serial Port Cable	1701100206

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	×	○	○	○	○	○
<p><b>O:</b> 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。</p> <p><b>X:</b> 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。</p> <p>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。</p>						