EX-98211

Fanless Intel Celeron/Pentium M
Box PC

Quick Installation Guide

Version 1.0

Chapter 1 General Information

1.1 Introduction

The EX-98211 Box PC is targeted at many different application fields. By adopting it, you can pinpoint specific markets, such as Thin Client, KIOSK, information booth, GSM Server, environment-critical and space-critical applications.

- All-In-One Platform
  The CPU, DRAM and even software are integrated to provide a plugand- play machine.
- Compact-sized
  The kernel of EX-98211 is EX-90212, which is a non-standard form factor embedded board. The whole system consumes only a few space.
- Fanless and Modular CPU Board
  By using a low power processor, the system does not have to rely on fans, which are often unreliable, and cause dust to circulate inside the equipment. The modular design facilitates maintenance or possible upgrades on the CPU board. Modular Box PC can be easily modified to fit many different applications according to customers' requests.
- Powerful Communication Capability
  The EX-98211 provides serial ports, parallel port, Ethernet, USB, Mini Card slot, LPT, DVI and Digital I/O expansion slot.
- CRT SVGA
  EX-98211 supports super 2D video performance and consumes minimal power.
- Advanced storage solution
  EX-98211 comes with Compact Flash, which offers a better, faster and more cost-effective expansibilities for various applications.
- Trustworthy
  The onboard Watchdog Timer can invoke an NMI or system RESET when your application loses control over the system.
- Windows OS Support:
  offers platform support for Windows CE 5.0, Windows CE 6.0, Windows XP, Windows XPe, Linux . The optional Windows CE operating system specifically for the EX-98211 is available for Windows CE application program builders.

1.2 Packing List

After opening the package, carefully inspect the contents. If any of items is missing or appears damaged, please contact with your local dealer or distributor. The package should contain the following items:

- 1 x EX-98211 Box PC
- 2 x EPE FOAM
- 1 x Accessory Box (CD/Quick Installation Guide/Screw/Cable)

1.3 System

System Kernel	
Processor	Intel ULV Celeron M 600MHz up to LV Pentium M 1.8GHz FSB 400MHz
BIOS	AMI Flash BIOS
Chipset	Intel 910GMLE + Intel ICH6M
System Memory	2 x 240-pin DIMM up to 2GB DDRII SDRAM at 400MHz
Flash Disk	1 x CompactFlash Type II Socket
IDE	1 x 44-pin IDE interface, support UDMA33 IDE device
Serial ATA	1 x SATA 1.5Gb/s
Expansion Bus	1 x Mini-card slot
	1 x PCI slot
Ethernet Controller	2 x Realtek RTL8111B Gigabit Ethernet
Cooling System	Fanless
Watchdog Timer	255-level Reset
I/O Ports	
Serial Port	Support 4 x RS-232 ports (1 x RS-422/485 port share with COM2)
USB Port	6 x USB 2.0 compliant
KB/MS	1 x 6-pin mini-DIN for KB/MS
Ethernet Port	2 x RJ-45
VGA	1 x DB15 female connector
Audio	1 x Speaker Output
	1 x Microphone Input

HDD Drive	1 x 2.5" HDD bay (SATA or IDE drive, either one)
Selectable I/O Port	Default is DVI, can be changed to either LPT or Digital I/O (12 bit GPIO, 6 in/6 out, Min. 4 bit, Max. 16 bit (DB25 male connector))
Display	
Graphics Chipset	Integrated with Intel Graphics Media Accelerator (GMA900)
Graphics Interfac	CRT support up to 2048 x 1536
	DVI support
	Support dual display (independent display)
Safety	
FCC	Class A certificated
CE	Certificated
Environment	
Operating Temp.	w/ Hard Drive: 0 ~ 40°C (32 ~ 104°F), ambient w/ air flow
	w/ CompactFlash: -20 ~ 40°C (-4 ~ 104°F), ambient w/ air flow
Humidity	10 ~ 95% @ 40°C relative humidity (non-condensing)
Vibration	17~500 Hz: 1G PTP
Shock (CF Only)	Operating 10G, 11ms; Non-operating 40G, 11ms
Dimensions (W x D x H)	195 x 268 x 80 mm (7.68" x 10.55" x 3.15")

1.4 Power Information

Power Input / Switch	1 x 4-pin DC input terminal block combine remote power on/off switch
Input Voltage	DC 10 ~ 28V (Max. to 120W input)
Power Consumption	2A@DC19V(Pentium M 1.8GHz)

1.5 I/O Ports Arrangement

The EX-98211 has 4 serial ports, 6 USB (Host) ports, and 2 RJ-45 LAN ports. The arrangement of these ports is shown in Figure 1.1 & Figure 1.2

1.5.1 Front View

Figure 1.1: Front View of EX-98211

1.5.2 Back View

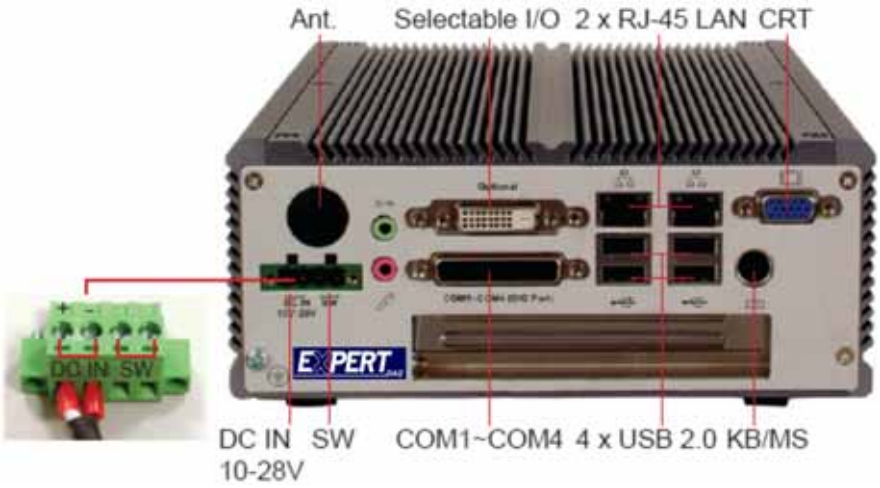


Figure 1.2: Back View of EX-98211

1.6 Dimensions

- Dimension (W x H x D): 195 x 268 x 80 mm (7.68" x 10.55" x 3.15")

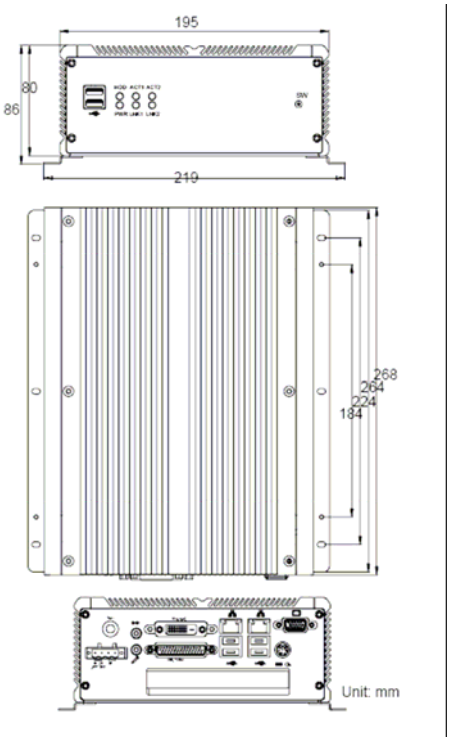


Figure 1.3: Dimensions

Chapter2 The Engine of EX-98211

2.1 Introduction

The engine of EX-98211 is constructed by the combination of one PCBA board. Such a combination makes system customization feasible.

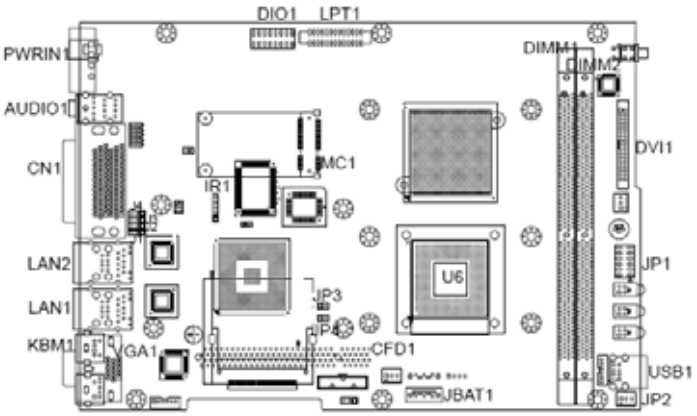


Figure 2.1: EX-98211 Main Board Top View

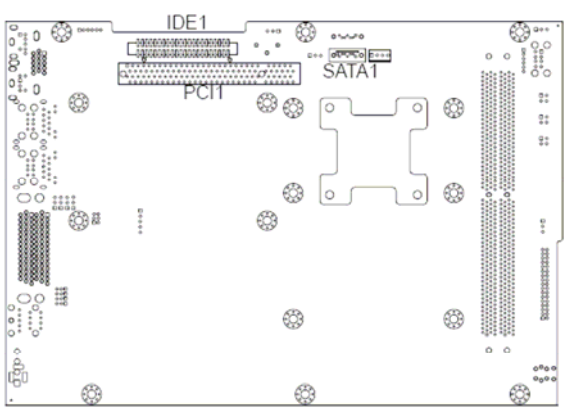


Figure 2.2: EX-98211 Main Board Bottom View

2.2 Jumpers and Connectors

EX-98211 Main Board Jumper Setting

Label	Function	Jumper Settings
JBAT1	Clear CMOS Select Jumper	Keep CMOS:1-2 (default) Clear CMOS 2-3
JRS1	COM2 RS-232 / 422 / 485 Select	RS-232:1-2 (default) RS-422:3-4 RS-485:5-6
JV1~JV4	COM1Power Source Special Support	Com port RI:1-2 (default) 5V:2-3

EX-98211 Main Board Connector Setting

Label	Function
U6	CPU Socket
DIMM1, DIMM2	240-Pin DDR2 DIMM Socket
PCI1	32-bit PCI Interface
MC1	Mini card PCIE X1 Interface Slot
JP1	LAN LED Connector
JP2	USB2 Connector (USB Port 7) VCC Select 5V:1-2 (default)
JP3	SM BUS Connector (PIN1-SMB DATA,PIN2-SMB CLOCK)
JP4	Reset Connector
IDE1	Primary IDE Connector
CFD1	COMPACT FLASH DISK (Share IDE1)
LPT1	Parallel Port
SATA1	S-ATA1 Connector
LAN1	Ethernet Connector (include USB1/2 Connector)
LAN2	Ethernet Connector (include USB3/4 Connector)
USB1	USB Port 5,6
VGA1	CRT Display
DVI1	DVI Display box head
CN1	Serial Port 1~4

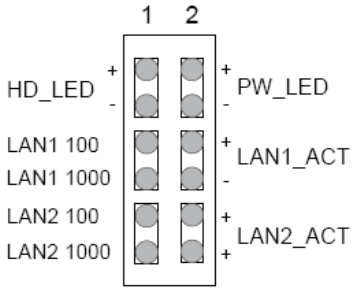
Label	Function
IR1	Infrared (IR) Connector
DIO1	12-bit Digital I/O Connector
KBM1	PS/2 Keyboard and Mouse
AUDIO1	Audio Interface Port
PWRIN1	DC Adapter Power Input
JP1~J4	RS-422/485,GPIO FUNCTION JUMPER

JRS1 RS-232/422/485 Selection

Jumper Setting	RS-232	RS-422	RS-485
1-2	Short	Open	Open
3-4	Open	Short	Open
5-6	Open	Open	Short

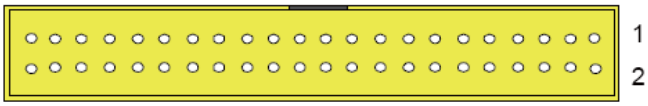
RS-422/485: Loopback is requirement on COM2 connector.

JP1 LAN LED Connector



IDE1: Primary IDE Connector

Connector type: One onboard 44-pin box headers, primary IDE



Pin #	Description	Pin #	Description
1	IDE RESET	2	GND
3	DATA7	4	DATA8
5	DATA6	6	DATA9
7	DATA5	8	DATA10
9	DATA4	10	DATA11
11	DATA3	12	DATA12
13	DATA2	14	DATA13
15	DATA1	16	DATA14
17	DATA0	18	DATA15
19	GND	20	N/C
21	REQ	22	GND
23	IO RWITE	24	GND
25	IO READ	26	GND
27	IO READY	28	IDESEL
29	DACK	30	GND
31	IRQ14	32	N/C
33	ADDR1	34	ATA66 DETECT
35	ADDR0	36	ADDR2
37	CS#1	38	CS#3
39	IDEACTP	40	GND
41	VCC5	42	VCC5
43	GND	44	NC

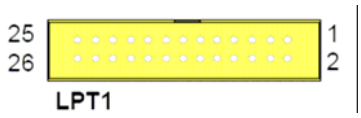
CFD1: Compact Flash Disk (Share IDE1)

Connector type: 50-pin compact flash type I/II

Pin #	Description	Pin #	Description
1	GND	26	GND
2	DATA3	27	DATA11
3	DATA4	28	DATA12
4	DATA5	29	DATA13
5	DATA6	30	DATA14
6	DATA7	31	DATA15
7	CS#1	32	CS#3
8	GND	33	GND
9	GND	34	IO READ
10	GND	35	IO RWITE
11	GND	36	+5V
12	GND	37	IRQ15
13	+5V	38	+5V
14	GND	39	CSEL
15	GND	40	N/C
16	GND	41	IDE RESET
17	GND	42	IO READY
18	ADDR2	43	REQ
19	ADDR1	44	DACK
20	ADDR0	45	DASP
21	DATA0	46	DIAG
22	DATA1	47	DATA8
23	DATA2	48	DATA9
24	N/C (-IOCS16)	49	DATA10
25	GND	50	GND

LPT1: Parallel Port Connector

Connector type: D-Sub 25-pin female.



SATA1~2: S-ATA1 Connector

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

LAN1/LAN2 Connector (USB Port 1, 2 ~ USB Port 3, 4)

Pin #	1	2	3	4	5	6	7	8
Description	MDI0+	MDI0-	MDI1+	MDI2+	MDI2-	MDI1-	MDI3-	MDI3-

Connector: This connector supports USB 2.0 x 4.

Type: USB 2.0 x 4

Pin #	1	2	3	4
Description	VCC	USB-	USB+	GND

USB1 Connector (USB Port 5, 6)

Pin #	Description	Pin #	Description
A1	+5V	B1	+5V
A2	USB-	B2	USB-
A3	USB+	B3	USB+
A4	GND	B4	GND

VGA1: CRT Connector

Connector type: D-Sub 15-pin female.

Pin #	Description	Pin #	Description
1	RED	9	VCC
2	GREEN	10	GND
3	BLUE	11	N/C
4	NC	12	VDDAT
5	GND	13	HSYNC
6	GND	14	VSYNC
7	GND	15	VDCLK
8	GND		

DVI1: DVI Connector

Pin #	Description	Pin #	Description
1	Analog GND	2	Analog GND
3	T.M.D.S. Data2-	4	T.M.D.S. Data2+
5	GND	6	N/C
7	N/C	8	DDC Clock
9	DDC Data	10	N/C
11	T.M.D.S. Data1-	12	T.M.D.S. Data1+
13	Analog GND	14	N/C
15	N/C	16	+5V
17	Analog GND	18	Hot Plug Detect
19	T.M.D.S. Data0-	20	T.M.D.S. Data0+
21	Analog GND	22	N/C
23	N/C	24	GND
25	T.M.D.S. CLK+	26	T.M.D.S. CLK-
27	GND	28	GND
29	N/C	30	N/C
31	N/C	32	Analog GND
33	Analog GND	34	N/C

CN1: (COM1~4 +GPIO 2 In/2 Out Option RS422/485 output)

	Pin #	Description	Pin #	Description
COM1	1	DCD	2	RXD
	3	TXD	4	DTR
	5	GND	6	DSR
	7	RTS	8	CST
	9	RI	10	GND
COM2 (RS-232)	11	DCD	12	RXD
	13	TXD	14	DTR
	15	GND	16	DSR
	17	RTS	18	CST
	19	RI	20	GND
COM3	21	DCD	22	RXD
	23	TXD	24	DTR
	25	GND	26	DSR
	27	RTS	28	CST
	29	RI	30	GND
COM4	31	DCD	32	RXD
	33	TXD	34	DTR
	35	GND	36	DSR
	37	RTS	38	CST
	39	RI	40	GND
GPIO	41	GPIO 422RX-	42	GPIO 422 RX+
	43	GPIO 422 TX-485-	44	GPIO 422 TX-485+

IR1: Infrared (IR) Connector

Pin #	1	2	3	4	5
Description	+5V	N/C	IRRX	GND	IRTX

KBM1: PS/2 Keyboard & Mouse

Connector type: external 6-pin Mini DIN connector on bracket

Pin #	1	2	3	4	5	6
Description	KB_DAT	MS_DAT	GND	VCC5	KB_DAT	MS_DAT

AUDIO1: Audio Interface Port

	Description
GREEN	Line-out
PINK	Mic1

PWRIN1: DC Adapter Power Input

Pin #	1	2	3	4
Description	VCC	GND	PWRBTN+	PWRBTN-

RS-422/485, GPIO Function Jumper

GPIO	RS-422	RS-485
J1 1-2	J1 2-3	J1 2-3
J2 1-2	J2 2-3	J2 2-3
J3 1-2	J3 2-3	J3 1-2 or 2-3
J4 1-2	J4 2-3	J4 1-2 or 2-3

Chapter 3 Maintenance

Hardware Installation

The EX-98211 is designed to be modular, slim and lightweight for easier maintenance. The following section describes simple hardware installations.

3.1 Remove Top Cover

1. Locate 6 screws which secure the top cover.

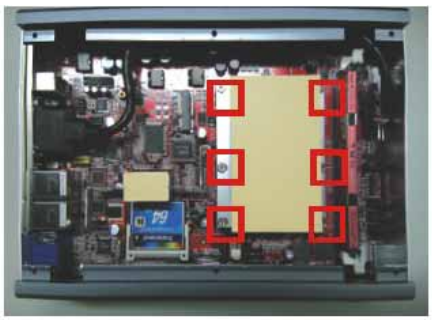
2. Use screw driver to remove the top cover screws. Keep the screws safelyfor later use.

3. Pull the top cover slightly upward.

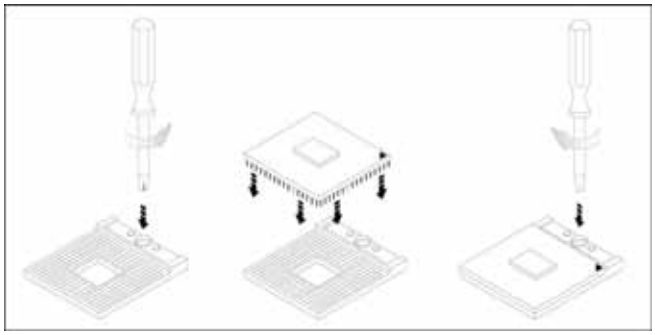
3.2 Installing CPU

1. Locate 6 screws which secure the Thermal Lump.

2. Use screw driver to remove the 6 screws. Keep the screws safely for later use.



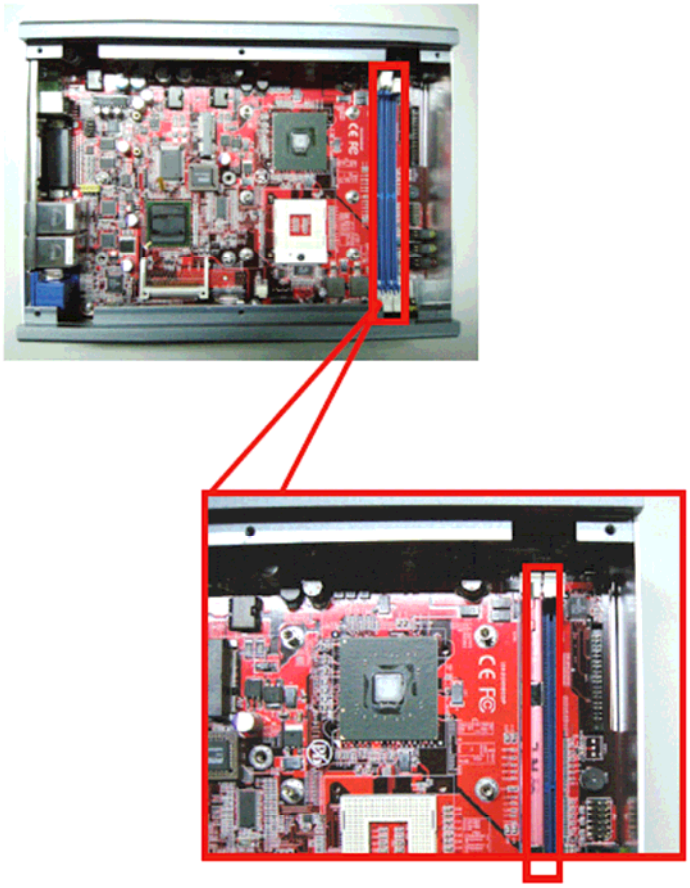
3. The processor socket comes with a screw to secure the CPU. As showing in the picture bellow, loose the screw first before inserting the CPU.



4. Place the CPU into the socket by making sure the notch on the corner of the CPU corresponding with the notch on the inside of the socket. Once the CPU has slid into the socket, lock the screw.
5. The contact area and gap between the processor and the heatsink require a thermal pad or thermal paste. Make sure that heatsink of the CPU top surface is in complete contact to avoid the CPU overheating problem. If not, it would cause your system or CPU to be hanged, unstable, or damaged.

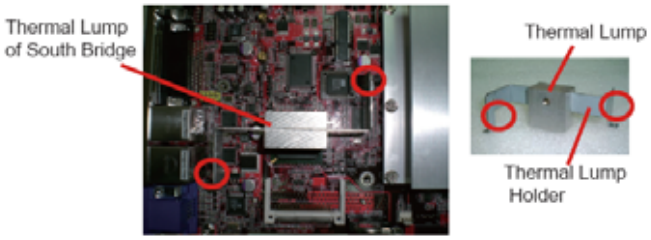
3.3 Installing Memory Module

1. Locate the 240-pin LONG DIMM sockets.
2. Align the LONG DIMM on the socket and let the notch on the LONG DIMM meet the break on socket.
3. Firmly insert the LONG DIMM into the socket.



3.4 Installing CF Card

1. Locate 2 screws which secure the Thermal Lump of South Bridge.



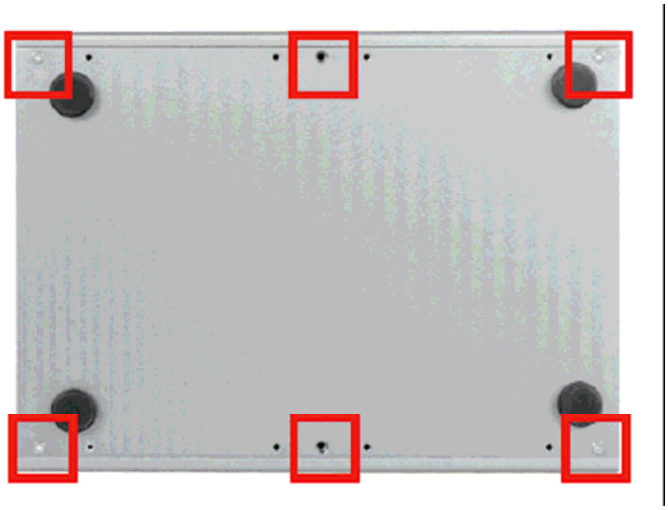
2. Use screw driver to remove the 2 screws. Keep the screws safely for later use.

3. Remove the Thermal Lump of South Bridge.

4. To install a Compact Flash Memory Card into the Main Board, align the notch on the card with the Compact Flash socket in the Main Board. Then firmly insert the card into the socket until it is completely seated.

3.5 Remove Bottom Cover

1. Unscrew 6 screws which secure the bottom cover.

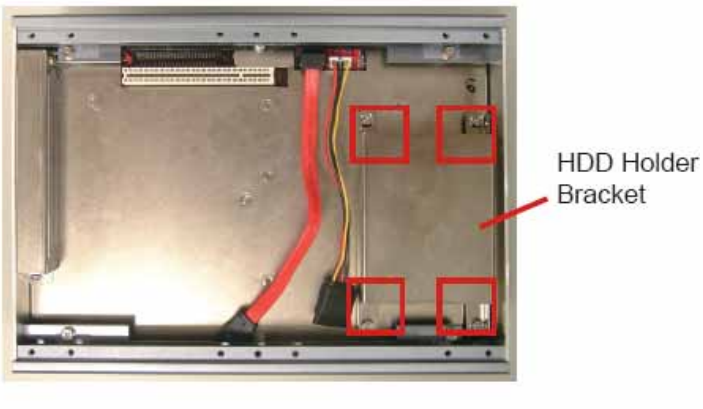


2. Use screw driver to remove the bottom cover screws. Keep the screws safely for later use.

3.6 Installing Hard Disk Drive

1. Upside down the Box PC. Remove the Bottom Cover.

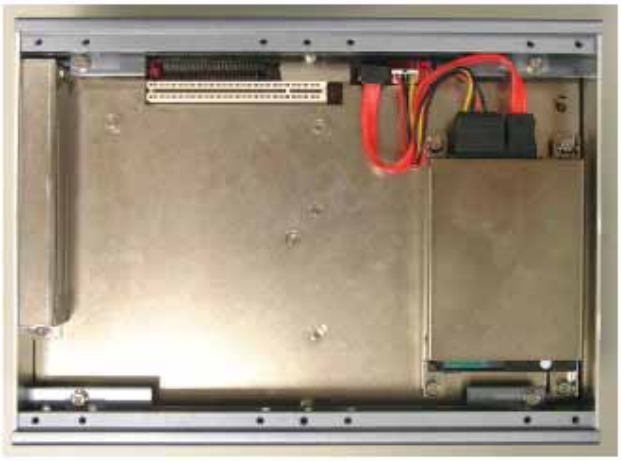
2. Locate the 4 screws on the HDD Holder Bracket.



3. Use screw drvier to remove the screws. Keep the screws safely for later use.

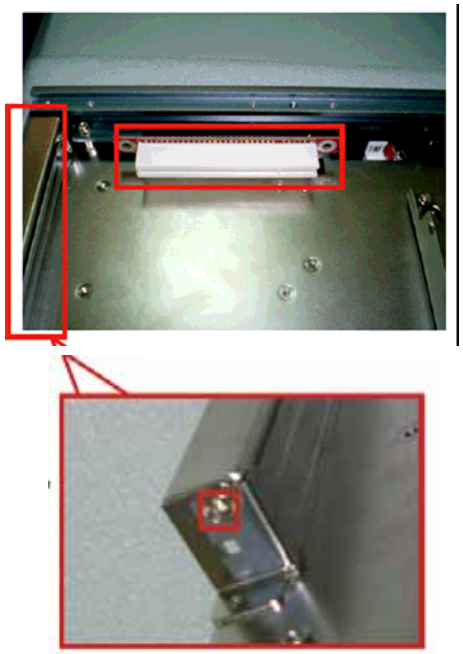
4. Put the HDD into the HDD Holder Bracket and screw it on.

5. Connect the SATA cable between the HDD and the Main Board.



3.7 Installing Riser Card

1. Insert PCI card into the PCI slot.
2. Locate the screw on the slot bracket.
3. Use screw driver to remove the screw. Keep the screw safely for later use.



3.8 Installing Wall-mount Bracket

1. Upside down the Box PC. Please locate the 8 screw holes on the bottom cover.
2. Match the screws on the wall-mount kit and screws onto the main unit.