



Impact-E 52
User Manual
(Issue B)

Part No: 85080839

Introduction



The Impact-E range of rugged embedded computers has a small and compact chassis design. They are ideally suited to a variety of space-critical embedded applications. Powered by Intel processors, these computers can provide the performance necessary for high speed and intensive tasks. Manufactured from selected high quality components, the Impact-E series is a cost effective computing solution for use in harsh environments and critical 24/7 operations.

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Acknowledgements

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Disclaimer

This instruction manual is supplied to provide the user with sufficient information to utilise the purchased product in a proper and efficient manner. The information contained has been reviewed and is believed to be accurate and reliable. However, Amplicon Liveline Ltd accepts no responsibility for any problems caused by errors and omissions. Specifications and instructions are subject to change without notice.

The Impact-E 52 is RoHS compliant.



Installation Suggestions

Ensure you have a stable, clean working environment. Dust and dirt can get into components and cause a malfunction. Use containers to keep small components separated.

Adequate lighting and proper tools can prevent you from accidentally damaging the internal components. Most of the procedures that follow require only a few simple tools, including the following:

A Philips screwdriver

A flat-tipped screwdriver

A grounding strap

An anti-static pad

Using your fingers can disconnect most of the connections. It is recommended that you do not use needlenose pliers to disconnect connections as these can damage the soft metal or plastic parts of the connectors.

Handling Precautions

Always disconnect the unit from the power outlet whenever you are installing or fixing a component inside the chassis.

If possible, always wear a grounded wrist strap when you are installing or fixing a component inside the chassis. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal body of any other grounded appliance.

Hold electronic circuit boards by the edges only. Do not touch the components on the board unless it is necessary to do so. Do not flex or stress the circuit board.

Use the correct screws and do not over tighten them.

Keep the original packaging and static-protective bag in case the unit has to be returned.

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Chapter 1 General Information

1.1 Product Overview

Featuring Intel 945GME & ICH7 chipsets, the Impact-E 52 embedded computer supports Intel's Core 2 Duo /Celeron M processor with 533/667 MHz FSB and DDR2 667/533 memory. This rugged fanless embedded computer is designed for space-critical applications requiring extreme reliability, low-power consumption and versatile I/O configuration. For added flexibility, this system also boasts three RS232 ports, one RS232/422/485 port and two PCI expansion slots.

For data storage, the Impact-E 52 provides 1 x CompactFlash socket and 1 x 2.5" HDD drive bay. The System supports ATX mode power feature and can accept a wide range of power supplies from +12 V DC to +30 V DC.

Housed in a compact 195 mm x 268 mm x 101 mm heavy-duty aluminum chassis, the Impact-E 52 is designed for reliable, maintenance-free industrial computing. This fanless embedded computer offers a cost-effective solution for a multitude of mission-critical embedded computing applications in automation, machine control, and POS systems.

- ✦ Supports Intel® Core 2 Duo / Core Duo/ Celeron® M processors
- ✦ Intel® 945GME Chipsets
- ✦ Dual 1000/100/10Mbps LAN ports
- ✦ 6 x USB2.0, 1 x VGA, 1 x DVI, 4 x SIO
- ✦ 2 x PCI Expansion Slots

1.2 Block Diagram

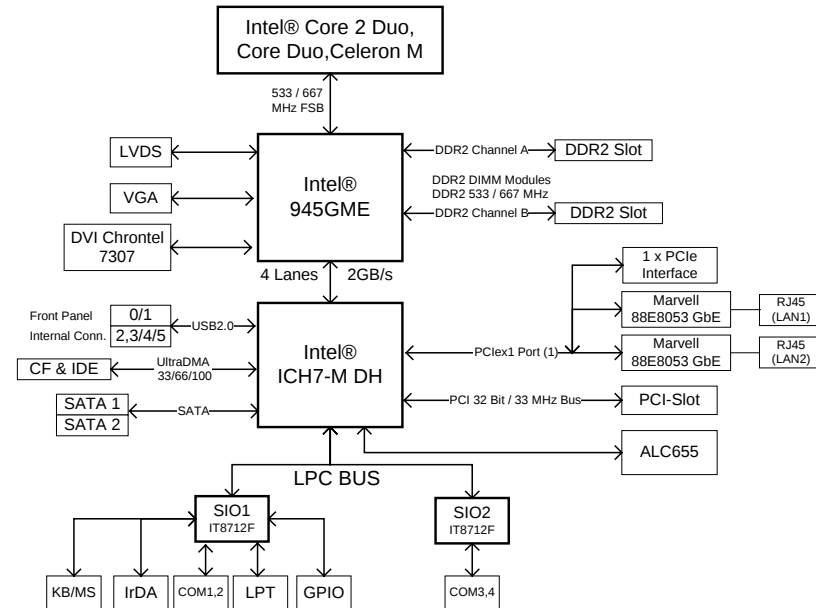


Figure 1.1 : Block Diagram of Impact-E 52 main board

1.3 Specifications

Main Board

- ✧ Supports Intel® Core 2 Duo, Core Duo, Celeron® M family processors with 533/667 MHz
- ✧ Intel® Embedded Processor Reference List (Intel® Longevity CPU):
 - Core Duo Processor (T2300E) 1.66 G
 - Core Duo Processor (T2500) 2.0G
 - Celeron® M 530 1.73G
 - Celeron® M 440 1.86G

Chipset

- ✧ Intel® 945GME Graphics Memory Controller Hub (GMCH)
- ✧ Intel® 82801 GBM ICH7 Mobile digital Home (ICH7-M)

Main Memory

- ✧ 2 x 240 pin DDR2 533/667 DIMM sockets, up to 2 GB unbuffered non-ECC DDR SDRAM (Max. 3G Capacity supported)

Expansion Slot

- ✧ Supports 2 x 32-bit/ 33MHz PCI card
- ✧ PCI Length support:
 - 1 slot x 160 mm, and 1 slot x 240mm (When 2.5" HDD installed)
 - 2 slots x 240 mm (When no HDD is installed)

NB: The Impact-E 52 does not support -12V PCI cards as standard. For this support a '-12V PCI card module' is required. This module will enable support for -12V PCI cards in one PCI slot only, not both.

I/O Interface-Front

- ✧ HDD Access/Power/LAN status LEDs
- ✧ 2 x USB 2.0 ports
- ✧ ATX power on/off switch

I/O Interface-Rear

- ✧ 2 x PS/2 connectors (KB/MS)
- ✧ 1 x VGA connector
- ✧ 4 x USB 2.0 ports
- ✧ 2 x GbE LAN Ports
- ✧ 4 x Serial Ports, with 1x DB44 connector (Three ports support RS232, One port supports RS232/422/485)
- ✧ 1 x DVI interface
- ✧ 1 x Mic-in and 1 x Speaker-out
- ✧ 1 x 2-pin connector output for remote power on/off switch
- ✧ DC-in power connector for +12V to +30V DC power input

Device

- ✧ 1 x On-board CompactFlash socket
- ✧ 1 x Internal 2.5" HDD drive bay



Power Input

- ✧ DC to DC power designed for on-board support of 12 to 30 VDC
(Max: 120 Watts)
- ✧ 1 x External 120 W AC adapter
Power input: 100 to 240 V AC, 2A, 50/60 Hz
Power output: 19 VDC

Dimensions

- ✧ 195 mm (W) x 268 mm (D) x 101 mm (H) (7.6" x 10.5" x 4.0")

Construction

- ✧ Aluminum chassis with fanless design

Environment

- ✧ Operating temperature:
Ambient with air flow : 0°C to 40°C (CPU loading: 70% less continently)
- ✧ Tcase (Surface Temperature of Chassis)
5°C to 50°C (with hard disk drive)
-10°C to 55°C (with CF card or solid state drive)
- ✧ Storage temperature: -20°C to 80°C
Relative humidity: 10% to 90% (Non-condensing)

1.4 Board Layout

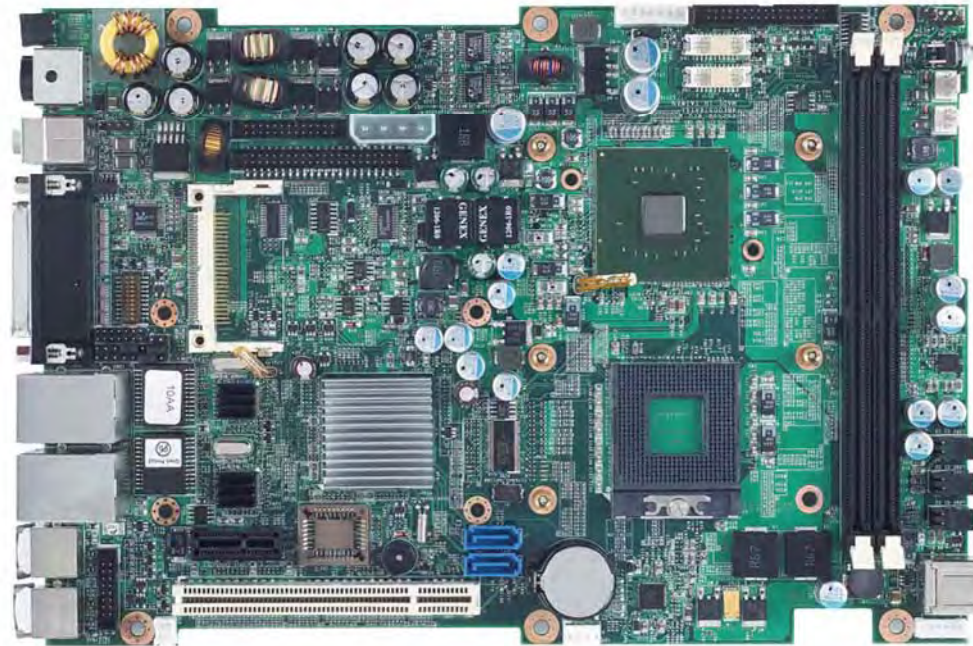


Figure 1.2 : Top View of the Impact-E 52 main board

1.5 Dimension Drawing

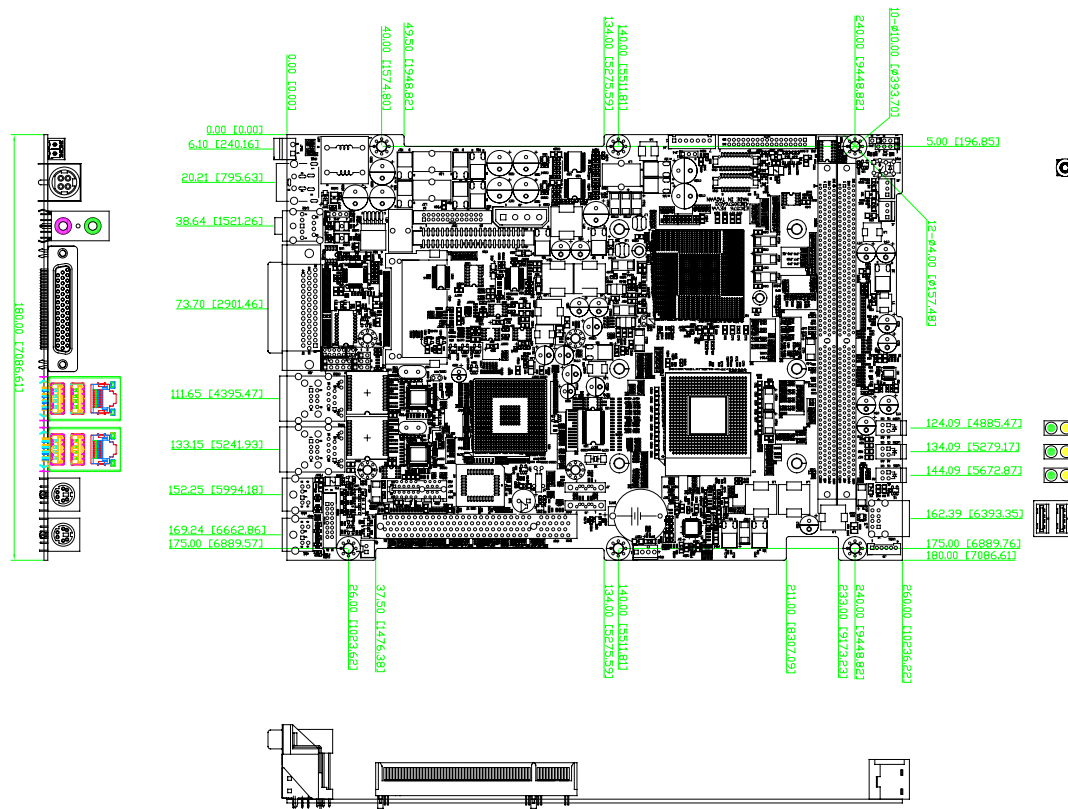


Figure 1.3 : Dimension drawing of Impact-E 52 main board

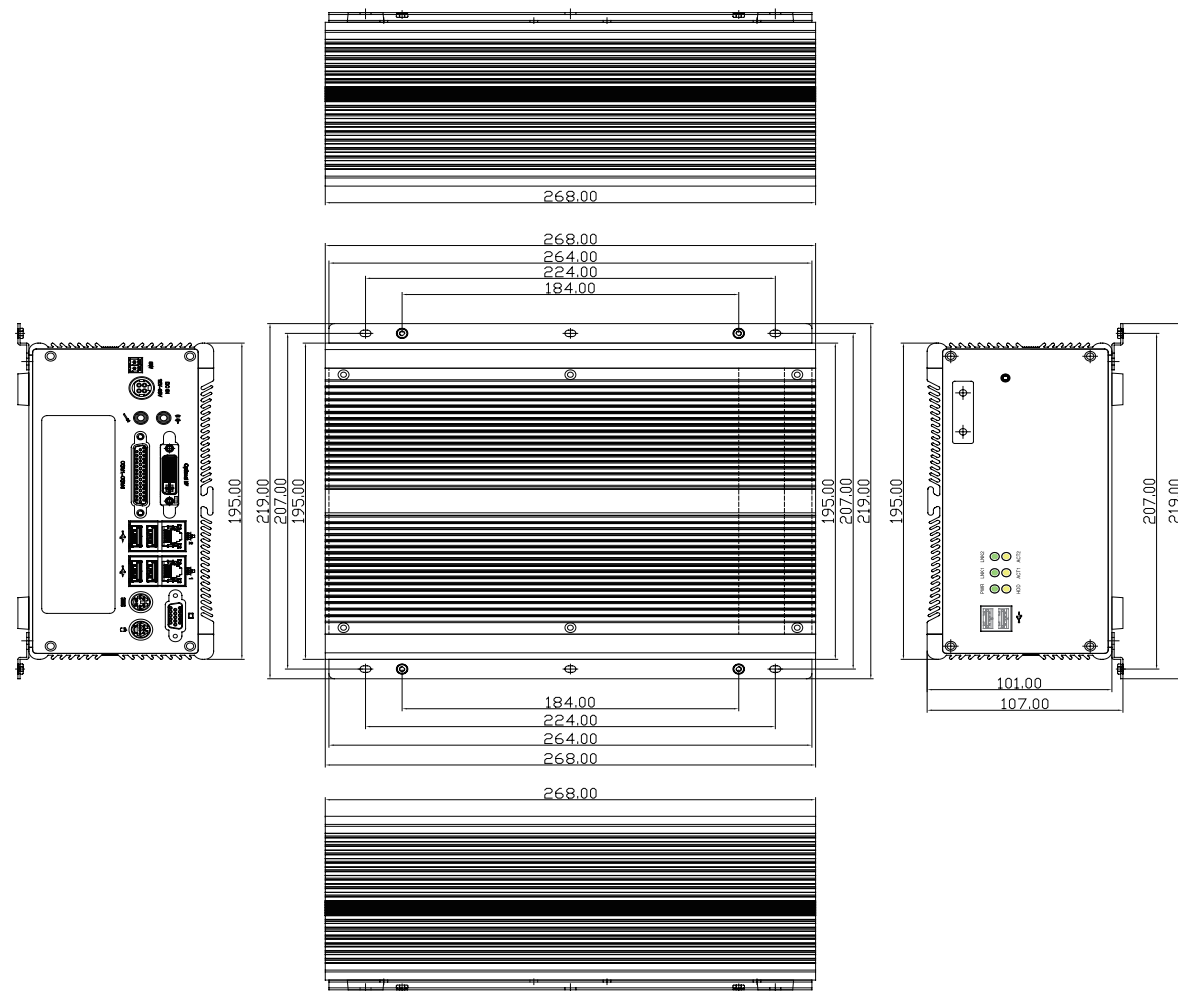


Figure 1.4 Dimension drawing of the Impact-E 52 chassis

Chapter 2 Jumper Setting

2.1 Setting Jumpers

A jumper is the simplest kind of electric switch. It consists of two metal pins and a cap. When setting the jumpers, ensure that the jumper caps are placed on the correct pins. When the jumper cap is placed on both pins, the jumper is SHORT. If you remove the jumper cap, or place the jumper cap on just one pin, the jumper is OPEN. Please see the following illustrations

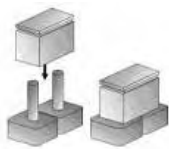
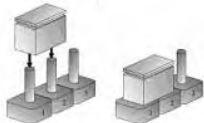
The illustrations on the right show a 2-pin jumper. When the jumper cap is placed on both pins, the jumper is SHORT. If you remove the jumper cap, or place the jumper cap on just one pin, the jumper is OPEN.		
	Open (Off)	Short (On)
These illustrations show a 3-pin Jumper. Pins 1 and 2 are SHORT.		

Table 2.1 Setting Jumpers

2.2 PCI Device interrupt and BUS Assignments

	Configuration BUS/DEVICE/FUNCTION	PCI INT#	REQ# /GNT#
PCI slot	1 / 17 / 0	A,B,C,D	0,1
PCI-E slot	1 / 18 / 0	D,A,B,C	

2.3 Location of Jumpers

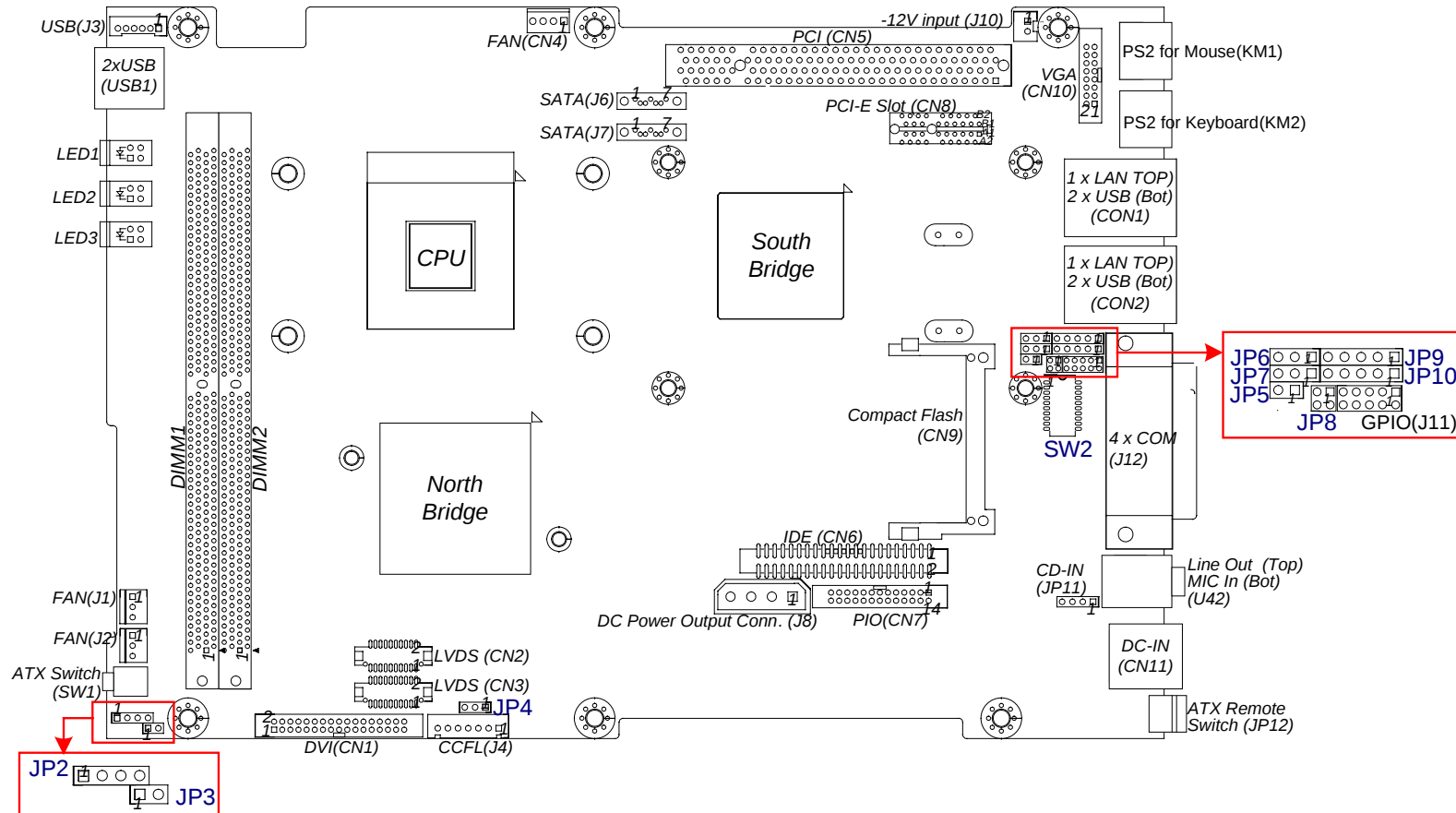
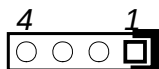


Figure 2-1: Jumper Location of Impact-E 52 main board

2.4 Definition of Jumpers

✧ JP2: ATX power Switch (1x4 pin header,2.54mm)



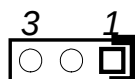
PIN	Def.	PIN	Def.	PIN	Def.
1	ATX Power on	2	ATX Power on	3-4	GND

✧ JP3: Hardware Reset (1x2 pin header,2.54mm)



PIN	Def.	PIN	Def.
1	Reset	2	GND

✧ JP4: Panel Power Select (1x3 pin header,2.54mm)



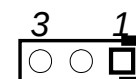
PIN	Def.
1	VCC5
2	Panel Power
3	VCC3

✧ JP5: I²C (1x2 pin header,2.54mm)



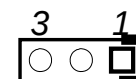
Pin	Def.	Pin	Def.
2	Data	1	CLK

✧ JP6: CMOS Status Select (1x3 pin header,2.54mm)



Pin	Status	Function
1-2	Short*	Normal Operation
2-3	Short	Clear CMOS DATA

✧ JP7: CF Master / Slave Selection (1x3 pin header,2.54mm)

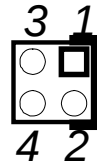


<1-2 pin short= Master / **2-3 pin short= Slave>

PIN	Def.	PIN	Def.	PIN	Def.
3	Slave (GND)	2	CF_CSEL	1	Master (VCC5)

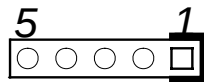
Chapter 2 Jumper Setting

✘ JP8: GPI/O Programming LED (2x2 pin header,2.0mm)



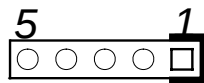
Pin	Def.	Pin	Def.
3	GP21	1	GP20
4	GND	2	GND

✘ JP9: IR Interface (1x5 pin header,2.54mm)



PIN	Def.	PIN	Def.	PIN	Def.	PIN	Def.	PIN	Def.
5	IRTX	4	GND	3	IRRX	2	CIRRX	1	VCC5

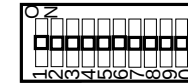
✘ JP10: RI# Signal Power Select (1x5 pin header,2.54mm)



<1-2 short: RI Power = 5v / 3-4 short: RI Power=12V / **4-5 short: Normal >

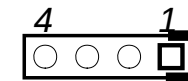
PIN	Def.	PIN	Def.	PIN	Def.	PIN	Def.	PIN	Def.
5	SP_RI2	4	RI2	3	+12V	2	RI2	1	VCC5

✘ SW2: COM2 RS232/422/485 Select (2x10 DIP SWITCH)



Mode	1	2	3	4	5	6	7	8	9	10
RS232*	OFF	OFF	OFF	ON	OFF	ON	OFF	OFF	OFF	OFF
RS422	OFF	OFF	ON	OFF	ON	OFF	ON	ON	ON	ON
RS485	ON	ON	OFF	ON	ON	OFF	OFF	OFF	OFF	ON

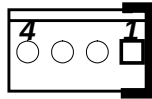
✘ JP11: CD-IN (1x4 pin header, 2.54mm)



Pin.	Def.
1	CD-IN-L
2	AUDIO GND PWR
3	AUDIO GND PWR
4	CD-IN-R

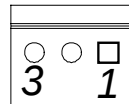
Chapter 2 Jumper Setting

✦ CN4:CPU FAN (1x4 pinWafer, 2.54mm)



Pin.	Def.
1	GND
2	+12V
3	SENSE
4	FAN_CTRL

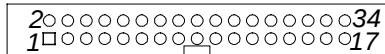
✦ J1/J2: SYSTEM FAN (1x 3 pin Wafer, 2.54mm)



Pin.	Def.
1	GND
2	12V
3	SENSE

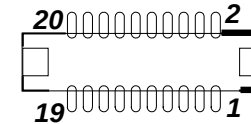
Chapter 2 Jumper Setting

✱ CN1: DVI Interface (2x17 pin box header, 2.0mm)



Pin.	Def.	Pin.	Def.
1	CAS_GND	18	HPDET
2	CAS_GND	19	DVI_DATA0#
3	DVI_DATA2#	20	DVI_DATA0
4	DVI_DATA2	21	CAS_GND
5	GND	22	NC
6	NC	23	NC
7	NC	24	GND
8	DDC_CLK	25	TLC
9	DDC_DATA	26	TLC#
10	NC	27	GND
11	DVI_DATA1#	28	GND
12	DVI_DATA1	29	NC
13	CAS_GND	30	NC
14	NC	31	NC
15	NC	32	CAS_GND
16	DVI_VCC	33	CAS_GND
17	CAS_GND	34	NC

✱ CN2/CN3: LVDS Connector (2x10 pin DF13)



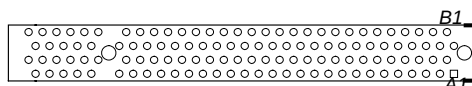
CN2			
Pin.	Def.	Pin.	Def.
1	DDCCLK	11	LA_CLK_P
2	DDC_DATA	12	LA_DATAN1
3	VDD	13	LA_CLK_N
4	LA_DATA0	14	GND
5	NC	15	GND
6	LA_DATAN0	16	BACKLIGHT
7	NC	17	LA_DATAP2
8	VDD	18	BACKLIGHT
9	GND	19	LA_DATAN2
10	LA_DATAP1	20	GND

CN3			
Pin.	Def.	Pin.	Def.
1	DDCCLK	11	LB_CLK_P
2	DDC_DATA	12	LB_DATAN1
3	VDD	13	LB_CLK_N
4	LB_DATA0	14	GND
5	NC	15	GND

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6	LB_DATAN0	16	BACKLIGHT
7	NC	17	LB_DATAP2
8	VDD	18	BACKLIGHT
9	GND	19	LB_DATAN2
10	LB_DATAP1	20	GND

✱ CN5: PCI-SLOT (Standard PCI 32 Bit Connector)



Pin.	Def. (Side B)	Def. (Side A)
1	-12V	GND
2	GND	+12V
3	GND	+5V
4	NC	+5V
5	+5V	+5V
6	+5V	Interrupt A#
7	Interrupt B#	Interrupt C#
8	Interrupt D#	+5V
9	Connector capacitance 10pf to Ground	NC
10	Request#1	+5V
11	Connector capacitance 10pf to Ground	NC
12	GND	GND
13	GND	GND
14	Clock1	Grant#1
15	GND	Reset#

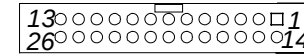
16	Clock0	+5V
17	GND	Grant#0
18	Request#0	GND
19	+5V	Power Management Event#
20	Address and Data 31	Address and Data 30
21	Address and Data 29	+3.3V
22	GND	Address and Data 28
23	Address and Data 27	Address and Data 26
24	Address and Data 25	GND
25	+3.3V	Address and Data 24
26	Command & Byte Enable#3	Initialization Device Select
27	Address and Data 23	+3.3V
28	GND	Address and Data 22
29	Address and Data 21	Address and Data 20
30	Address and Data 19	GND
31	+3.3V	Address and Data 18
32	Address and Data 17	Address and Data 16
33	Command & Byte Enable#2	+3.3V
34	GND	Frame#
35	Initiator Ready#	GND
36	+3.3V	Target Ready#
37	Device Select#	Device Select#
38	GND	GND
39	Lock#	Lock#
40	Parity Error#	Parity Error#

Chapter 2 Jumper Setting

41	+3.3V	+3.3V
42	System Error#	System Error#
43	+3.3V	+3.3V
44	Command & Byte Enable#1	Command & Byte Enable#1
45	Address and Data 14	Address and Data 14
46	GND	GND
47	Address and Data 12	Address and Data 12
48	Address and Data 10	Address and Data 10
49	GND	GND
50	Connector Key	Connector Key
51	Connector Key	Connector Key
52	Address and Data 8	Address and Data 8
53	Address and Data 7	Address and Data 7
54	+3.3V	+3.3V
55	Address and Data 5	Address and Data 5
56	Address and Data 3	Address and Data 3
57	GND	GND
58	Address and Data 1	Address and Data 1
59	+5V	+5V
60	+5V	+5V
61	+5V	+5V
62	+5V	+5V

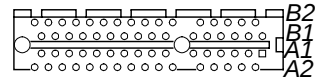
NB: The Impact-E 52 does not support -12V PCI cards as standard. For this support a '-12V PCI card module' is required. This module will enable support for -12V PCI cards in one PCI slot only, not both.

✕ CN7: Parallel port (2x13 pin box header)



Pin.	Def.	Pin.	Def.
1	STB#	14	AFD-
2	PD0	15	ERR-
3	PD1	16	INIT-
4	PD2	17	NC
5	PD3	18	GND
6	PD4	19	GND
7	PD5	20	GND
8	PD6	21	GND
9	PD7	22	GND
10	ACK-	23	GND
11	BUSY	24	GND
12	PE	25	GND
13	SLCT	26	NC

✕ CN8: PCI-E Slot



Pin.	Def. (Side B)	Def. (Side A)
1	+12 volt power	NC
2	+12 volt power	+12 volt power
3	Reserved	+12 volt power
4	Ground	Ground
5	SMBus clock	NC
6	SMBus data	NC
7	Ground	NC
8	+3.3 volt power	NC
9	NC	3.3v volt power
10	3.3VSB	3.3v volt power
11	WAKE#	PE_RESEET#
12	Reserved	Ground
13	Ground	REFCLK_P
14	TXP0	REFCLK_N
15	TXN0	Ground
16	Ground	RXP0
17	SDVO_CTRLCLK	RXN0
18	Ground	Ground

✕ CN9: Compact Flash Socket (Type 2)



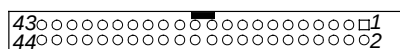
Pin.	Def.	Pin.	Def.
1	GND	2	SDD3A
3	SDD4A	4	SDD5A
5	SDD6A	6	SDD7A
7	SDCS#1	8	GND
9	GND	10	GND
11	GND	12	GND
13	VCC	14	GND
15	GND	16	GND
17	GND	18	SDA2A
19	SDA1A	20	SDA0A
21	SDD0A	22	SDD1A
23	SDD2A	24	NC
25	CF_CD2#	26	CF_CD1#
27	SDD11A	28	SDD12A
29	SDD13A	30	SDD14A
31	SDD15A	32	SDCS#3
33	NC	34	SDIOR#
35	SDIOW#	36	VCC

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37	HDIRQ14	38	VCC
39	CF_SEL#	40	NC
41	IDERST#	42	SIORDY
43	SDREQ	44	SDDACK#
45	IDEACTP#	46	DIAG#
47	SDD8A	48	SDD9A
49	SDD10A	50	GND

✧ CN12(Reverse)/ CN6 (Obverse): IDE Connector (2x44 pin box header,2.0mm)

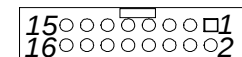
<Note: CN12 and CN6 are co-layout>



Pin.	Def.	Pin.	Def.
1	RESET	2	GND
3	DD7	4	DD8
5	DD6	6	DD9
7	DD5	8	DD10
9	DD4	10	DD11
11	DD3	12	DD12
13	DD2	14	DD13
15	DD1	16	DD14
17	DD0	18	DD15
19	GND	20	NC
21	REQ	22	GND
23	IOW	24	GND

25	IOR	26	GND
27	IO_CH_RDY	28	DIAG
29	DACK#	30	GND
31	IRQ_R	32	NC
33	DA1	34	66DET
35	DA0	36	DA2
37	CS0	38	CS1
39	ACT	40	GND
41	VCC5	42	VCC5
43	GND	44	NC
41	VCC5	42	VCC5
43	GND	44	NC

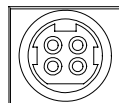
✧ CN10: VGA Port (2x8 pin box header, 2.0mm)



Pin.	Def.	Pin.	Def.
1	RED_VGA	9	VGA_VCC
2	GREEN_VGA	10	GND
3	BLUE_VGA	11	NC
4	NC	12	DATA_V
5	GND	13	HS_VGA
6	GND	14	VS_VGA
7	GND	15	CLK_V
8	GND	16	NC

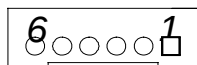
Chapter 2 Jumper Setting

✕ CN11: Power Jack 4 pins



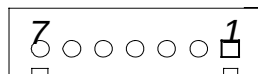
Pin	Def,	Pin	Def,
3-4	GND	1-2	DC-IN

✕ J3: Internal USB Connector (1x6 pin JST, 2.0mm)



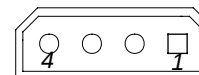
Pin.	Def.	Pin.	Def.
1	VCC	4	USB_1N
2	USB_ON	5	USB_1P
3	USB_OP	6	GND

✕ J4: CCFL (1x7 pin JST, 2.54mm)



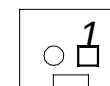
Pin.	Def.	Pin.	Def.
1	+5V	2	+12V
3	+12V	4	Brightness Ctrl
5	GND	6	GND
7	Backlight Enable		

✕ J8: DC Power output Connector (1x4-pin power jack, 5.08mm)



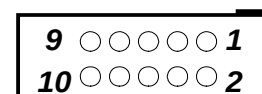
Pin.	Def.	Pin.	Def.	Pin.	Def.	Pin.	Def.
4	VCC5	3	GND	2	GND	1	+12v

✕ J10: External 12 power input connector (1x2 pin JST, 2.5mm)



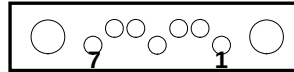
Pin.	Def.	Pin.	Def.
2	GND	1	-12V

✕ J11: External GPI/O Indicated LED (2x5 pin header, 2.0mm)



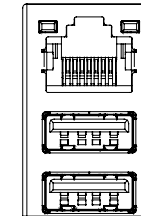
Pin.	Def.	Pin.	Def.
1	+5V	2	GND
3	GP20: Output	4	GP24: Input
5	GP21: Output	6	GP25: Input
7	GP22: Output	8	GP26: Input
9	GP23: Output	10	GP27: Input

✘ J6/J7: SATA Connector (Standard Serial ATAII 1.27mm connector)



J6			
Pin.	Def.	Pin.	Def.
1	GND	2	TXP0
4	GND	3	TXN0
7	GND	5	RXN0
		6	RXP0
J7			
Pin.	Def.	Pin.	Def.
1	GND	2	TXP1
4	GND	3	TXN1
7	GND	5	RXN1
		6	RXP1

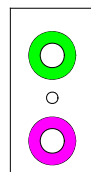
✘ CON1/ CON2: USB / LAN Port (RJ45 Jack combine with dual USB ports)



CON1-A:			
Pin.	Def.	Pin.	Def.
1	VCC	5	VCC
2	USB_2N	6	USB_3N
3	USB_2P	7	USB_3P
4	GND	8	GND
CON1-B:			
9	TX0P_E	19	VCC3
10	TX0N_E	20	LINK_E
11	TX1P_E	21	GND
12	TX2P_E	22	GND
13	TX2N_E	23	GND
14	TX1N_E	24	GND
15	TX3P_E	25	GND
16	TX3N_E	26	GND
17	ACT_E	27	GND
18	LINK_E	28	GND

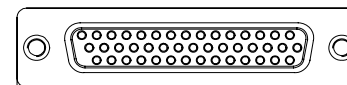
CON2-A:			
Pin.	Def.	Pin.	Def.
1	VCC	5	VCC
2	USB_4N	6	USB_5N
3	USB_4P	7	USB_5P
4	GND	8	GND
CON2-B:			
9	TX0P_F	19	VCC3
10	TX0N_F	20	LINK_F
11	TX1P_F	21	GND
12	TX2P_F	22	GND
13	TX2N_F	23	GND
14	TX1N_F	24	GND
15	TX3P_F	25	GND
16	TX3N_F	26	GND
17	ACT_F	27	GND
18	LINK_F	28	GND

✕ U42: Audio Interface (Double layer Phone jack)



	Def.		Def.
GreenUpper	Line-Out	Pink Lower	MIC-In

✕ J12: Serial Interface (COM1~COM4, 44-pin D-SUB)



COM1 (RS-232)			
Pin.	Def.	Pin.	Def.
1	DCD1	2	RXD1
3	TXD1	4	DTR1
5	GND	6	DSR1
7	RTS1	8	CTS1
9	RI1	10	GND
COM2 (RS-232)			
Pin.	Def.	Pin.	Def.
11	DCD2	12	RXD2
13	TXD2	14	DTR2
15	GND	16	DSR2
17	RTS2	18	CTS2
19	RI2	20	GND
COM3 (RS-232)			
Pin.	Def.	Pin.	Def.
21	DCD3	22	RXD3
23	TXD3	24	DTR4
25	GND	26	DSR3
27	RTS3	28	CTS3
29	RI3	30	GND

Chapter 2 Jumper Setting

COM4 (RS-232)			
Pin.	Def.	Pin.	Def.
31	DCD4	32	RXD4
33	TXD4	34	DTR5
35	GND	36	DSR4
37	RTS4	38	CTS4
39	RI4	40	GND
41	NC	42	NC
43	NC	44	NC

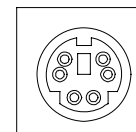
COM2 (RS-422)			
Pin.	Def.	Pin.	Def.
11	TXD#	12	TXD
13	RXD	13	RXD#
15	GND	16	RTS
17	RTS#	18	CTS
19	CTS#	20	GND

COM2 (RS-485) :pin 19 is defined as an external Power source, which can be selected for 5V or 12V by JP10

Pin.	Def.	Pin.	Def.
11	TXD#	12	TXD
	RXD#		RXD
13	Reserved	13	Reserved
15	Reserved	15	Reserved
17	Reserved	17	Reserved

19	Power Source	20	Reserved
----	--------------	----	----------

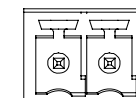
✘ KM1/ KM2 :P/S 2 Keyboard / Mouse (6-pin Mini DIMM)



KM2 For Keyboard:			
Pin.	Def.	Pin.	Def.
1	KB_DATA	2	NC
3	GND	4	KM_VCC
5	KB_CLK	6	NC

KM1 For Mouse:			
Pin.	Def.	Pin.	Def.
1	LM_DATA	2	NC
3	GND	4	KM_VCC
5	LM_CLK	6	NC

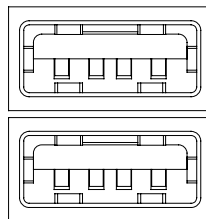
✘ JP12: ATX Remote On / Off Switch (2 pin Tterminal port, 3.81mm)



Pin.	Def.
1	GND
2	PWR_ON

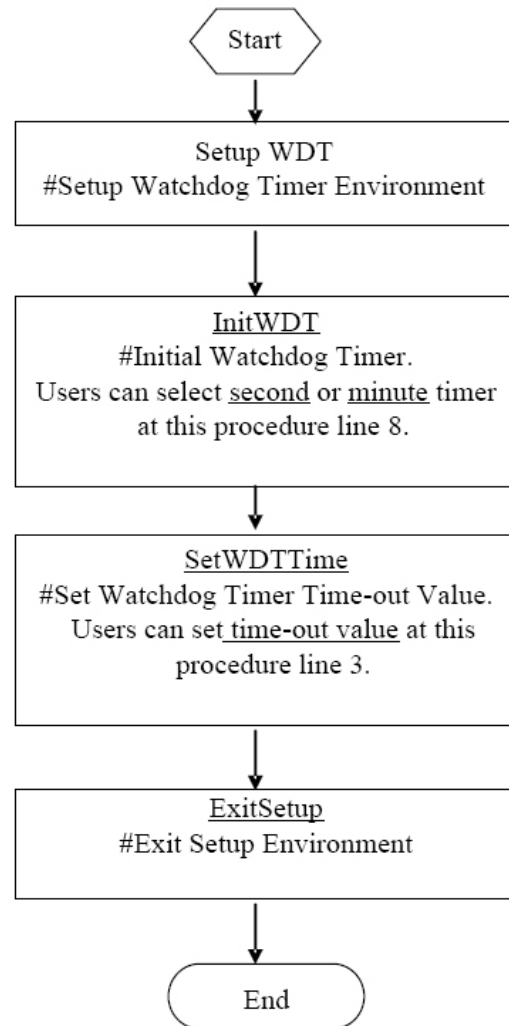


✕ USB1: USB Port (Dual USB port)



Pin.	Def.	Pin.	Def.
1	VCC	5	VCC
2	USB_1N	6	USB_ON
3	USB_1P	7	USB_OP
4	GND	8	GND

Appendix A-Watchdog Timer



Watchdog Timer Common library

0	SetupWDT	PROC
1	mov	al,87h
2	out	2eh, al
3	mov	al,01h
4	out	2eh,al
5	mov	al,55h
6	out	2eh,al
7	out	2eh,al
8		
9	mov	al,07h
10	out	2eh,al
11	mov	al,07h
12	out	2fh,al
13	ret	
14	SetupWDT	ENDP

0	InitWDT	PROC
1	mov	al,71h
2	out	2eh,al
3	mov	al,30h
4	out	2fh,al
5		

Appendix-A Watchdog Timer

6	mov	al,72h
7	out	2eh,al
8	mov	al,0c0h -Here!! set 0c0h for second, set 40h for minute
9	out	2fh,al
10	ret	
11	InitWDT	ENDP

0	SetWDTTime	PROC
1	mov	al,73h
2	out	2eh,al
3	mov	al,5-Here!! Set 5 sec. (time out vale: 0x00-0xff)
4	out	2fh,al
5	ret	
6	SetWDTTime	ENDP

0	ExitSetup	PROC
1	mov	al,02h
2	out	2eh,al
3	mov	al,02h
4	out	2fh,al
5	ret	
6	ExitSetup	ENDP

Appendix B-GPIO Programming Guide

Appendix-B GPIO Programming Guide

PIN	Description	PIN	Description
1	+5V	2	GND
3	GP20:OUTPUT	4	GP24:INPUT
5	GP21:OUTPUT	6	GP25:INPUT
7	GP22:OUTPUT	8	GP26:INPUT
9	GP23:OUTPUT	10	GP27:INPUT

IO ADDRESS : 801H

Bit0 : GP20
Bit1 : GP21
Bit2 : GP22
Bit3 : GP23
Bit4 : GP24
Bit5 : GP25
Bit6 : GP26
Bit7 : GP27

Note:

- GPIO Pin-20 signal level is controlled by BIOS, high defined as system power up and low defined as system shutdown with standby power.

*If GPIO slave input port: Reflects the incoming logic levels of the pins, regardless of whether the pin is defined as an input or output. Writes to this register[bit:7..4] have no effect.

*If GPIO slave output port: Controls the levels of the GPIO output pins defined as outputs. Bit values in this register[bit:3..0] have no effect on pins defined as inputs.

Read form this register reflects the saved value last written, not the actual pin value.

Appendix C-Power Consumption

Appendix C Power Consumption

DC Line 19V: (System-Only)	CPU Type: Intel Core Duo T2500 2.0GHz	
	+19V	Total Watts
Full-Loading Mode	2.61A	49.59W
Idle Mode	1.12A	21.28W
Standby Mode (HDD Power-Down)	1.07A	20.33W

Test Criteria:

- ✕ Test configuration should include a fully configured system with test board, memory and hard disk drive.
- ✕ Full loading mode should utilise the CPU 100% by running a Burn-in test program.
- ✕ Idle mode should utilise the CPU loading below 5%, and there should be no data or application running.

Appendix D- Installation Guide



D.1 Handling Precautions

- ✘ Always disconnect the unit from the power outlet whenever you are installing or fixing a component inside the chassis.
- ✘ If possible, always wear a grounded wrist strap when you are installing or fixing a component inside the chassis. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal body of any other grounded appliance.
- ✘ Hold electronic circuit boards (such as this main board) by the edges only. Do not touch the components on the board unless it is necessary to do so. Do not flex or stress the circuit board.
- ✘ Use the correct screws and do not over tighten them.
- ✘ Keep the original packaging and static-protective bag in case the unit has to be returned.

D.2 Installation

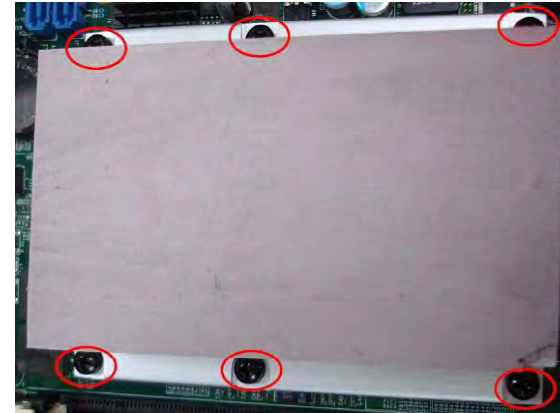
1. Open Top Cover

- ✂ Step 1-1: Remove 6 screws from the top.



2. Install/Remove CPU

- ✂ Step 2-1: Unscrew 6 screws on heat sink

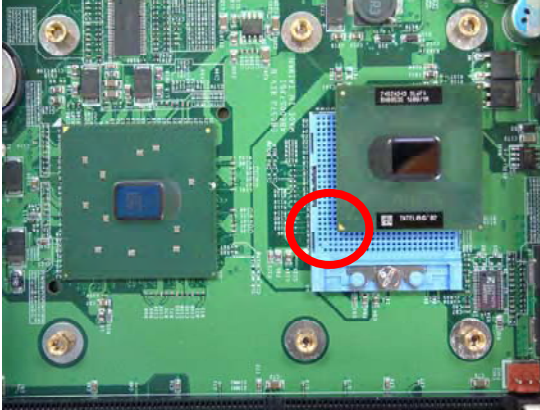


- ✂ Step 2-2: Pay attention to CPU installation

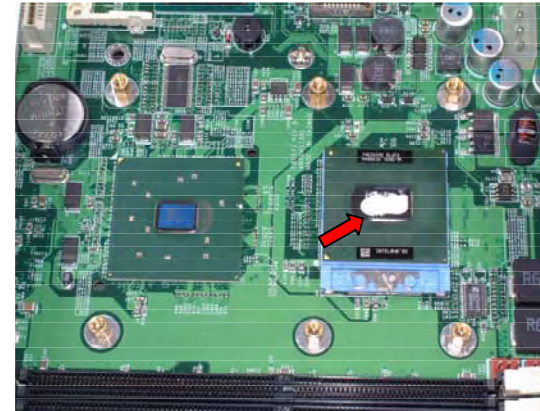


Appendix D- Installation Guide

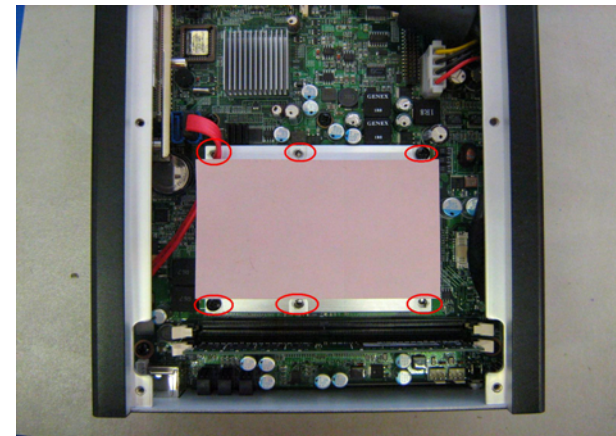
- ✘ Step 2.3: Be aware that the beveled corner of the CPU as shown in the picture is aligned to the direction of the socket.



- ✘ Step 2.4: Secure the CPU and apply heat sink silicon compound



- ✘ Step 2.5: Lock the heat sink in place



3. Install/Remove RAM module

- ✦ Step 3-1: Insert either 1 or 2 DDR



4. Close Top Cover

- ✦ Step 4-1: Secure the top cover with screws



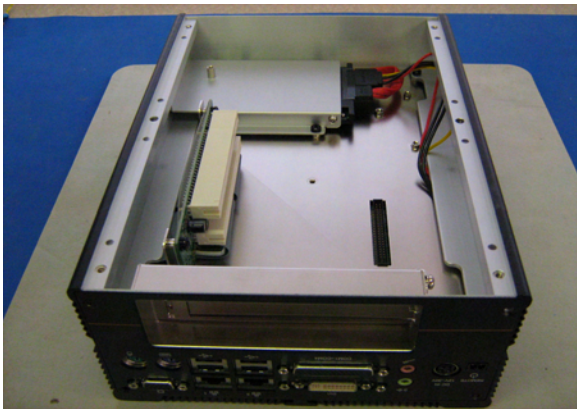
5. Open Bottom Cover

- ✦ Step 5-1: Remove the screws on the bottom of the chassis

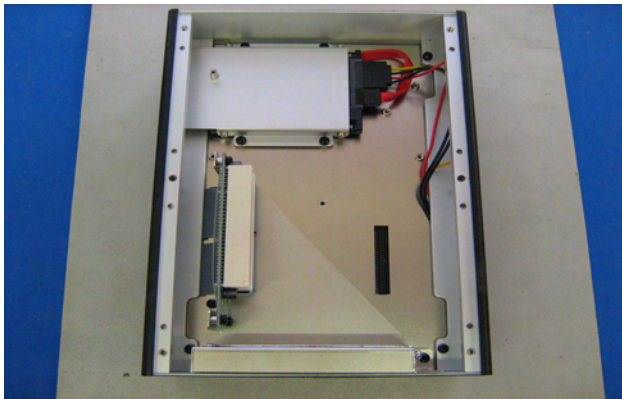


6. Install HDD

- ✘ Step 6-1: Unscrew HDD stand and secure 2.5" HDD



- ✘ Step 6-2: Place finished stand with HDD back to the chassis and make sure it is properly secured. Plug in HDD cable and make sure SATA power cable and SATA cable are in the right positions.



7. Close Bottom Cover

- ✘ Step 7-1: Lock bottom cover with screws



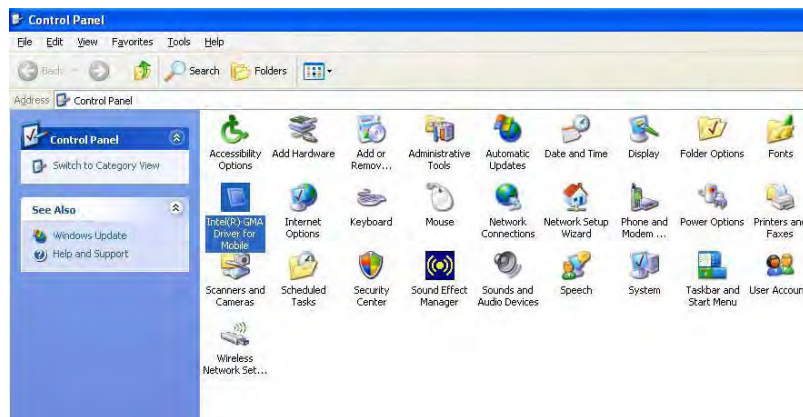
Appendix E- Display Setting

Appendix D- Installation Guide

Since the chipset belongs to Intel mobile group, LVDS is the display default. If VGA port is not linked to a monitor when the system is powered on, LVDS will be the first display automatically afterwards. Follow the steps below to select the VGA/DVI monitor as the default display.

After setting, press "CTRL + ALT + F1" to enable monitor as the main display if have the same situation.

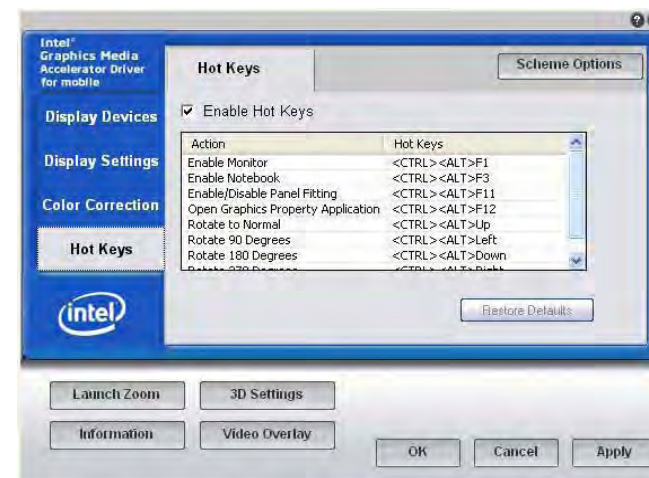
- ✘ Have Impact-E system linked with VGA/DVI monitor
- ✘ Select "Intel GMA Driver for Mobile" from Control Panel



- ✘ Select "Monitor" from Display Devices



- ✘ Select "Enable Hot Keys" from Hot Keys



Appendix F- IEGD Installation Guide

How to resolve no display:

If there is no monitor attached onto the VGA connector when the system is at startup stage, the chipset will disable the VGA signal output automatically.

The IEGD VGA driver can help to resolve no display issue in Windows XP and XPe OS. Please follow this IEGD driver installation guide:

- ✘ Step 1: Remove original graphic driver under Windows XP or Windows XPe.
- ✘ Step 2: After reboot, please set “Boot Display” to be “CRT+DVI” in the BIOS setting.



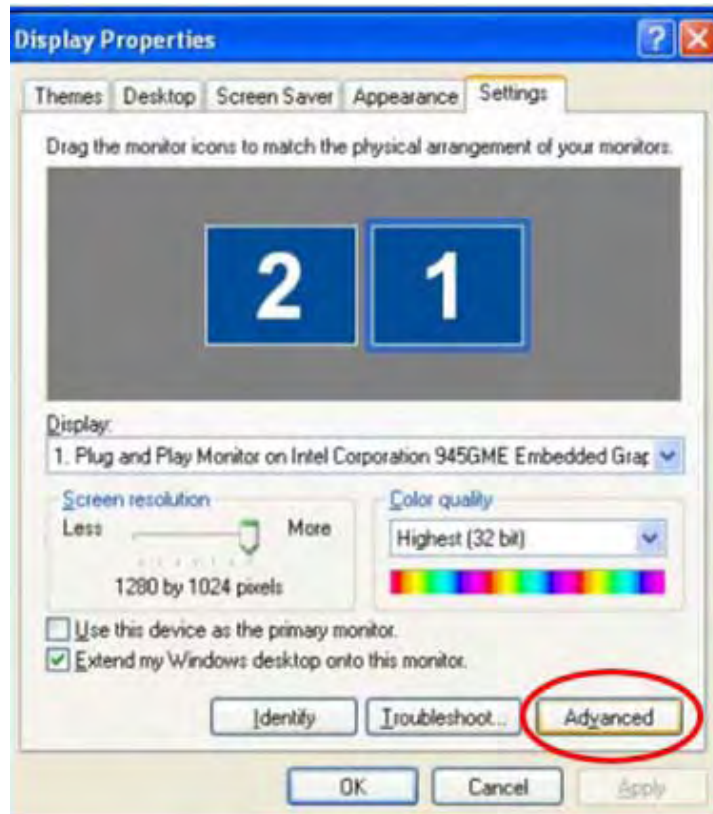
- ✘ Step 3: Uncompress the IEGD driver and run setup.exe in the utility folder.

\\IEGD_8_0_Windows-For A2DVI2\\IEGD_8_0_Windows\\IEGD_8_0_Windows\\Utilities



Appendix D- Installation Guide

- ✘ Step-4: After driver installation, please reboot the system.
- ✘ Step-5: Press “Advanced” in Display Properties.



- ✘ Step-6: Select preferred Display Config:

945_DVI (single)
945_CRT (single)
945_DVI, 945_CRT (twin)
945_DVI (clone) 945_CRT
945_DVI (extend) 945_CRT

