EPIC SBC with Intel® Atom™ N270 1.6GHz, VGA/Dual LVDS, Dual GbE, CF II, USB, SATA

NANO-945GSE
Quick Installation Guide

Version 2.0

Aug. 03, 2011

Package Contents

NANO-945GSE package includes the following items:

- 1 x NANO-945GSE Single Board Computer
- 1 x KB/MS cable
- 2 x SATA cable
- 1 x Power cable
- 2 x RS-232 cable
- 1 x Mini Jumper Pack
- 1 x Utility CD
- 1 x QIG (Quick Installation Guide)

Specifications

- CPU: On board Intel® Atom™ N270 1.6GHz/512KB L2 Cache FSB 533MHz
- System Chipset: Intel® 945GSE +ICH7M
- BIOS: AMI BIOS
- System memory: 1 x 200-pins 533/400MHz DDR2 SDRAM SO-DIMM (max. 2GB)
- Ethernet: Dual Realtek RTL8111E GbE Controllers
- I/O Interface:

  2 x SATA

  6 x USB 2.0 (4 by header, 2 on rear side)

  1 x CF Type II

  3 x RS-232

  1 x RS-232/422/485

  1 x PS/2 KB/MS, 1 x KB/MS by 1x6 pins wafer-header

  1 x IDE

  1 x LPT
- Expansions:

  1 x PCI-104(PCI-BUS)

  1 x PCIe mini card slot
- Audio: Support by Audio Kit (AC'97 & HD)

  5.1 channel AC'97 Audio Kit with Realtek ALC655 codec

  7.1 channel HD Audio Kit with Realtek ALC888 codec support dual audio streams
- Digital I/O: 8-bit digital I/O, 4-bit input/ 4-bit output by super I/O
- IrDA: 1x Infrared Interface by super I/O
- Super I/O: ITE IT8718F
- Display Interface:

  Analog CRT: Support for CRT Hot plug

  18/24-bit Dual-Channel LVDS by SDVO to LVDS Transmitter: Chrontel CH7308B

  18-bit Dual-Channel LVDS from Intel® 945GSE

  Support HDTV resolution up to 1080i by component interface
- Watchdog timer:

Software programmable supports 1~255 sec. system reset

- Power Supply: +12V only, AT/ATX support
- Power Consumption:
  12V@1.43A(DDR2 667MHz 1GB) (Windows® XP, 3D mark®2001)
- Humidity: Operation: 5% ~ 95%, non-condensing
- Temperature: 0 ~ 60°C(32 ~ 140°F)
- Dimension: 165 mm x 115 mm
- Weight: GW: 1100g; NW: 250g

Ordering Information

NANO-945GSE-N270-R20:
EPIC SBC with Intel® Atom™ N270 1.6G, VGA/LVDS, Dual GbE,CFII, USB, SATA
NANO-945GSE-N270W-R20:
EPIC SBC with Intel® Atom™ N270 1.6G, VGA/LVDS, Dual GbE,CFII, USB, SATA, -20~70C
NANO-945GSE-N270W2-R20:
EPIC SBC with Intel® Atom™ N270 1.6G, VGA/LVDS, Dual GbE,CFII, USB, SATA, -40~85C
NANO-945GSELVDS2-N270-R20:
EPIC SBC with Intel® Atom™ N270 1.6G, VGA/Dual LVDS, Dual GbE,CFII, USB, SATA
NANO-945GSELVDS2-N270W-R20:
EPIC SBC with Intel® Atom™ N270 1.6G, VGA/Dual LVDS, Dual GbE,CFII, USB, SATA, -20~70C
NANO-945GSELVDS2-N270W2-R20:
EPIC SBC with Intel® Atom™ N270 1.6G, VGA/Dual LVDS, Dual GbE,CFII, USB, SATA, -40~85C
AC-KIT08R-R10: 5.1 channel AC'97 Audio Kit with Realtek ALC655 codec
AC-KIT-888HD-R10: 7.1 channel HD Audio Kit with Realtek ALC888 codec support dual audio streams
32000-044300-RS: Dual port USB cable
32200-015100-RS: LPT cable
32200-026500-RS: RS-232/422/485 cable
32100-043403-RS: ATX Power Cable
32000-083701-RS: HDTV out Cable
32200-000009-RS: 44pin 2.5" IDE cable
32200-008800-RS: 44pin to 2.5"/3.5" IDE cable
32100-088600-RS: SATA Power Cable
32000-114000-RS: SATA 5V power output Cable Kit for NANO series

Jumpers setting

LABEL	FUNCTION
J_CMOS1	CMOS state setting
JP1	COM2 Port Mode setting
J_VLVDS1	LVDS1 Voltage Selection
J_VLVDS2	LVDS2 Voltage Selection
JP2	PCI-104 VIO Selector
JCF1	CF Card setting
ATXCTL1	AT Power Mode Setting
J_LCD_TYPE1	LVDS1 & LVDS2 Panel Resolution Selection

J_CMOS1: Clear CMOS Setup	
J_CMOS1	DESCRIPTION
Short 1-2 (default)*	Keep CMOS Setup (Normal Operation)
Short 2-3	Clear CMOS Setup

JP1: configure COM2 Mode	
JP1	DESCRIPTION
Short 1-2 (default)	RS - 232
Short 3-4	RS - 422
Short 5-6	RS - 485

J_VLVDS1: LVDS1 Voltage Selection	
J_VLVDS1	DESCRIPTION
1-2	+3.3V LVDS
2-3	+5V LVDS

J_VLVDS2: LVDS 2 Voltage Selection	
J_VLVDS2	DESCRIPTION
1-2	+3.3V LVDS
2-3	+5V LVDS

JP2: PCI-104 VIO Voltage select	
J2	DESCRIPTION
Short 1-2	VCC (+5V)
Short 2-3	VCC3 (+3.3V)

JCF1: Configure CF Card type	
JCF1	DESCRIPTION
Open (default)	Slave
Short 1-2	Master

ATXCTL1: AT Power Mode Setting	
ATXCTL1	DESCRIPTION
1-2 (default)	AT Power Mode
Open	ATX Power Mode

J_LCD_TYPE1 : LVDS1 Panel Resolution Selection		
1-2	3-4	LVDS1
OFF	OFF	LVDS1 800X600 (18bit)
ON	OFF	LVDS1 1024 X 768 (18bit)
OFF	ON	LVDS1 1280X1024 (36bit)
ON	ON	LVDS1 1400X1050 (36bit)

J_LCD_TYPE1 : LVDS2 Panel Resolution Selection		
5-6	7-8	LVDS2
OFF	OFF	LVDS2 1024 X 768 (18bit)
ON	OFF	LVDS2 1024 X 768 (24bit)
OFF	ON	LVDS2 1280X1024 (36bit)
ON	ON	LVDS2 1280X1024 (48bit)

Table of Connectors

LABEL	FUNCTION
VGA1	VGA 15-pin Female Connector
USB_C45	2 Port USB Connector
LAN1 LAN2	RJ45 LAN Connectors
KB_MS1 KB1	PS/2 MOUSE & KEYBOARD Connectors
COM1	COM Port Connector
COM2	Internal Serial Port Connectors (RS-232/422/485)
COM3 COM4	Internal Serial Port Connectors (RS-232)
LPT1	Parallel Port Connector
USB01 USB23	Internal 4 Port USB Connectors
J_AUDIO1	Extend Audio Module Connector
SATA1 SATA2	Serial ATA Connectors
IR1	Infrared Interface Connector
CPU_FAN1	Fan Connector
IDE1	IDE Connector
TV1	TV Out Connector
DIO1	Digital I/O Connector
LVDS1	LVDS Panel Connector
LVDS2	LVDS Panel Connector
INVERTER1,2	LVDS1,2 Panel Backlight +12V Power Source
F_PANEL1	PWR & RST Buttons and Indicators
ATXCTL1	ATX Power Control Connector
CN1	+12V Main Power Input Connector
CN3	+5V Power Output Connector
JSPI 1	SPI flash connector
BAT1	Battery connector
CF1	Compact Flash Slot
PC104_PLUS1	PCI-104 Plus Connector
CN4	PCI-E Mini Card connector

VGA1: 15-pin Female Connector			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	RED	2	GREEN
3	BLUE	4	NC
5	GND	6	CRT_PLUG#
7	GND	8	GND
9	VCC	10	GND
11	NC	12	DDCDAT
13	HSYNC	14	VSYNC
15	DDCCLK		

USB_C45: USB Connector			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	VCC (+5V)	5	VCC (+5V)
2	DATA4-	6	DATA5-
3	DATA4+	7	DATA5+
4	GROUND	8	GROUND

LAN1、LAN2: RJ45 LAN Connector			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	MDIA3-	5	MDIA1+
2	MDIA3+	6	MDIA2+-
3	MDIA2-	7	MDIA0-
4	MDIA1-	8	MDIA0+

KB_MS1: 6-pin Mini-DIN Keyboard Connector	
PIN NO.	**DESCRIPTION**
1	Keyboard Data
2	Mouse Data
3	GND
4	VCC (+5V)
5	Keyboard Clock
6	Mouse Clock

KB1: 6-pin Mini-DIN Keyboard/Mouse Connector	
PIN NO.	**DESCRIPTION**
1	VCC (+5V)
2	Mouse Data
3	Mouse Clock
4	Keyboard Data
5	Keyboard Clock
6	GND

COM1: Serial Port Connector	
PIN NO.	**DESCRIPTION**
1	DATA CARRIER DETECT (DCD#)
2	RECEIVE DATA (RXD)
3	TRANSMIT DATA (TXD)
4	DATA TERMINAL READY (DTR#)
5	GND (GND)
6	DATA SET READY (DSR#)
7	REQUEST TO SEND (RTS#)
8	CLEAR TO SEND (CTS#)
9	RING INDICATOR (RI#)

COM2 : Internal Serial Port Connector			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	DATA CARRIER DETECT (DCD#)	2	DATA SET READY (DSR#)
3	RECEIVE DATA (RXD)	4	REQUEST TO SEND (RTS#)
5	TRANSMIT DATA (TXD)	6	CLEAR TO SEND (CTS#)
7	DATA TERMINAL READY (DTR#)	8	RING INDICATOR (RI#)
9	GND	10	N/C
11	TXD485+	12	TXD485#
13	RXD485+	14	RXD485#

COM3 & COM4 : Internal Serial Port Connectors			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	DATA CARRIER DETECT (DCD#)	2	DATA SET READY (DSR#)
3	RECEIVE DATA (RXD)	4	REQUEST TO SEND (RTS#)
5	TRANSMIT DATA (TXD)	6	CLEAR TO SEND (CTS#)
7	DATA TERMINAL READY (DTR#)	8	RING INDICATOR (RI#)
9	GND	10	N/C

LPT1 : Parallel Port Connector			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	STROBE#	14	AUTO FORM FEED #
2	DATA0	15	ERROR#
3	DATA1	16	INITIALIZE#
4	DATA2	17	PRINTER SELECT LN#
5	DATA3	18	GND
6	DATA4	19	GND
7	DATA5	20	GND
8	DATA6	21	GND
9	DATA7	22	GND
10	ACKNOWLEDGE#	23	GND
11	BUSY	24	GND
12	PAPER EMPTY	25	GND
13	PRINTER SELECT	26	N/C

USB01, USB23: Internal USB Connector			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	VCC(+5V)	2	GND
3	DATA-	4	DATA+
5	DATA+	6	DATA-
7	GND	8	VCC(+5V)

J_AUDIO1 : Audio Source Connector			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	AC97_SYNC	2	AC97_BITCLK
3	AC97_SDOUT	4	AC97_PCBEEP
5	AC97_SDIN	6	AC97_RST#
7	AC97_VCC	8	AC97_GND
9	AC97_12V	10	AC97_GND

SATA1 & SATA2 : Serial ATA Connector			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	GND	5	RX-
2	TX+	6	RX+
3	TX-	7	GND
4	GND	8	N/C

IR1: Infrared Interface connector	
PIN NO.	**DESCRIPTION**
1	VCC
2	NC
3	IR-RX
4	GND
5	IR-TX

CPU_FAN1 : CPU Fan Connector	
PIN NO.	**DESCRIPTION**
1	Ground
2	+12V (PWM)
3	FANIO1

IDE1 : IDE Interface Connector			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	RESET#	2	GND
3	DATA 7	4	DATA 8
5	DATA 6	6	DATA 9
7	DATA 5	8	DATA 10
9	DATA 4	10	DATA 11
11	DATA 3	12	DATA 12
13	DATA 2	14	DATA 13
15	DATA 1	16	DATA 14
17	DATA 0	18	DATA 15
19	GND	20	N/C
21	IDE DRQ	22	GND
23	IOW#	24	GND
25	IOR#	26	GND
27	IDE CHRDY	28	BALE – DEFAULT
29	IDE DACK	30	GND
31	INTERRUPT	32	N/C
33	SA1	34	PDIAG#
35	SA0	36	SA2
37	HDC CS0#	38	HDC CS1#
39	HDD ACTIVE#	40	GND
41	VCC	42	VCC
43	GND	44	N/C

TV1: Video output for television			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	GND	2	AGREEN_Y
3	GND	4	ARED_C
RCA Connector (only video signal)			
5	GND	6	ABLUE_CVBS

DIO1 : Digital Input / Output Connector			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	Ground	2	VCC
3	Output 3	4	Output 2
5	Output 1	6	Output 0
7	Input 3	8	Input 2
9	Input 1	10	Input 0

LVDS1: LVDS Connector (18-bit)			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	GND1	2	GND2
3	A_Y0	4	A_Y0#
5	A_Y1	6	A_Y1#
7	A_Y2	8	A_Y2#
9	A_CK	10	A_CK#
11	NC	12	NC
13	GND3	14	GND4
15	B_Y0	16	B_Y0#
17	B_Y1	18	B_Y1#
19	B_Y2	20	B_Y2#
21	B_CK	22	B_CK#
23	NC	24	NC
25	GND5	26	GND6
27	VCC_LCD	28	VCC_LCD
29	VCC_LCD	30	VCC_LCD

LVDS2: LVDS Connector (18/24-bit)			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	GND1	2	GND2
3	A_Y0	4	A_Y0#
5	A_Y1	6	A_Y1#
7	A_Y2	8	A_Y2#
9	A_CK	10	A_CK#
11	A_Y3	12	A_Y3#
13	GND3	14	GND4
15	B_Y0	16	B_Y0#
17	B_Y1	18	B_Y1#
19	B_Y2	20	B_Y2#
21	B_CK	22	B_CK#
23	B_Y3	24	B_Y3#
25	GND5	26	GND6
27	VCC_LCD	28	VCC_LCD
29	VCC_LCD	30	VCC_LCD

INVERTER1, 2 : 5-pin Header Inverter Connector	
PIN NO.	**DESCRIPTION**
1	LCD_BKLTCTL
2	GROUND
3	+12V
4	GROUND
5	BACKLIGHT ENABLE

F_PANEL1 : PWR & RST Buttons and Indicators panel					
	PIN	DESCRIPTION	PIN	DESCRIPTION	
PWRBTN	1	PWRBTSW-	2	VCC	Power LED
	3	GROUND	4	GROUND	
HDD LED	5	VCC	6	SYSRST-	RESET
	7	-HDLED	8	Ground	

ATXCTL1 : ATX Power Control Connector	
PIN NO.	DESCRIPTION
1	GND
2	PS_ON#
3	5VSB

CN1: +12V MAIN POWER Input Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	GND
3	+12V	4	+12V

CN3 : +5V Power Output Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VCC (+5V)	2	GND

JSPI1 : SPI flash Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	SPI_VCC (+3.3V)	5	GND
2	SPI_CS#	6	SPI_CLK
3	SPI_MISO	7	SPI_MOSI
4	N/C	8	N/C

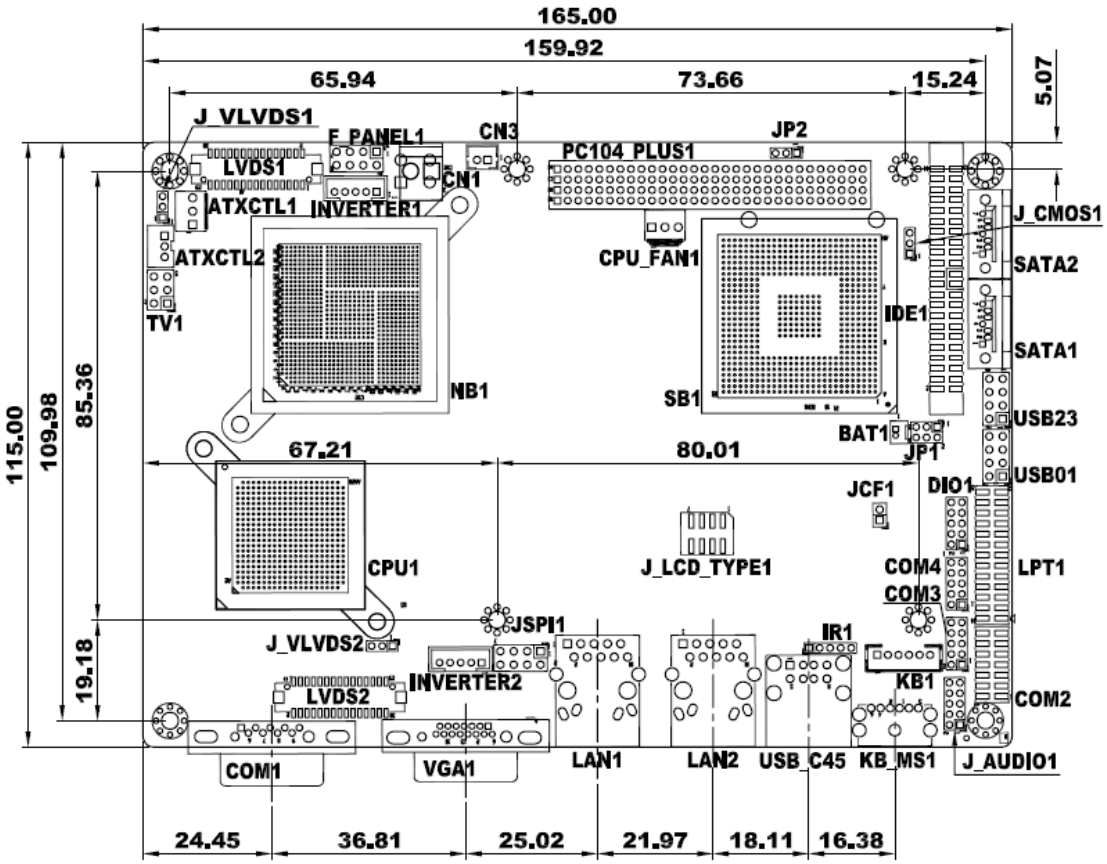
BAT1 : +3V Battery Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	BAT (+3V)	2	GND

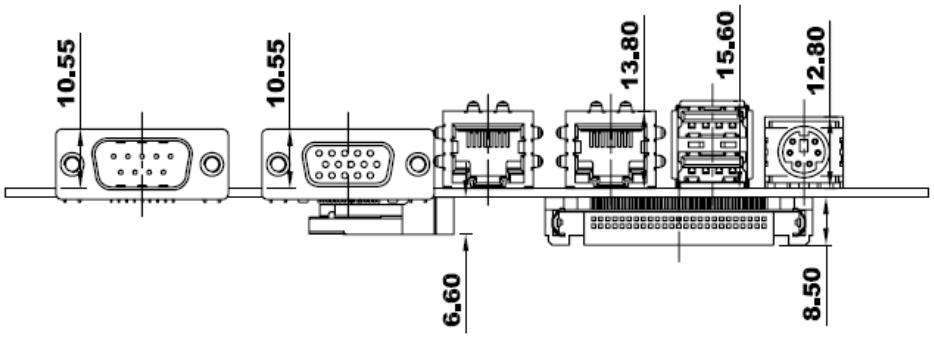
CF1 : CF Card Interface Slot			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	GND	26	CD1#
2	D3	27	D11
3	D4	28	D12
4	D5	29	D13
5	D6	30	D14
6	D7	31	D15
7	CE#	32	CE2#
8	A10	33	VS1#
9	OE#	34	IOR#
10	A9	35	IOW#
11	A8	36	WE#
12	A7	37	IRQ
13	VCC	38	VCC
14	A6	39	CSEL#
15	A5	40	VS2#
16	A4	41	RESET#
17	A3	42	WAIT#
18	A2	43	INPACK#
19	A1	44	REG#
20	A0	45	BVD2
21	D0	46	BVD1
22	D1	47	D8
23	D2	48	D9
24	IOCS16#	49	D10
25	CD2#	50	GND2

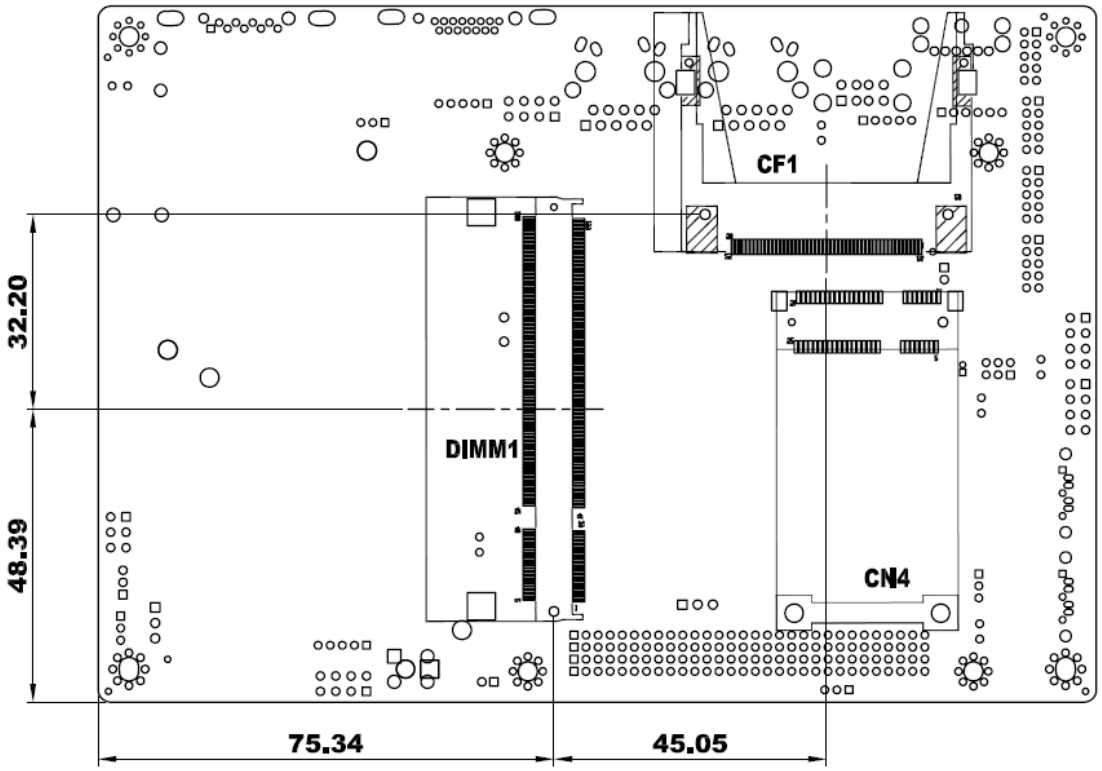
PC104_PLUS1: PC/104-Plus Connector (120-pin PCI bus)							
PIN	**Description**	**PIN**	**Description**	**PIN**	**Description**	**PIN**	**Description**
A1	GND	B1	RESERVED1	C1	+5V	D1	AD0
A2	VIO1	B2	AD2	C2	AD1	D2	+5V
A3	AD5	B3	GND	C3	AD4	D3	AD3
A4	CBE0-	B4	AD7	C4	GND	D4	AD6
A5	GND	B5	AD9	C5	AD8	D5	GND
A6	AD11	B6	VIO2	C6	AD10	D6	M66EN
A7	AD14	B7	AD13	C7	GND	D7	AD12
A8	+3V	B8	CBE1-	C8	AD15	D8	+3V
A9	SERR-	B9	GND	C9	SBO-	D9	PAR
A10	GND	B10	PERR-	C10	+3V	D10	SDONE
A11	STOP-	B11	+3V	C11	LOCK-	D11	GND
A12	+3V	B12	TRDY-	C12	GND	D12	DEVSEL-
A13	FRAME-	B13	GND	C13	IRDY-	D13	+3V
A14	GND	B14	AD16	C14	+3V	D14	CBE2-
A15	AD18	B15	+3V	C15	AD17	D15	GND
A16	AD21	B16	AD20	C16	GND	D16	AD19
A17	+3V	B17	AD23	C17	AD22	D17	+3V
A18	IDSEL0	B18	GND	C18	IDSEL1-	D18	IDSEL2
A19	AD24	B19	CBE3-	C19	VIO4	D19	IDSEL3
A20	GND	B20	AD26	C20	AD25	D20	GND
A21	AD29	B21	+5V	C21	AD28	D21	AD27
A22	+5V	B22	AD30	C22	GND	D22	AD31
A23	REQ0-	B23	GND	C23	REQ1-	D23	VIO5
A24	GND	B24	REQ2-	C24	+5V	D24	GNT0-
A25	GNT1-	B25	VIO3	C25	GNT2-	D25	GND
A26	+5V	B26	PCICLK0	C26	GND	D26	PCICLK1
A27	PCICLK2	B27	+5V	C27	PCICLK3	D27	GND
A28	GND	B28	INTD-	C28	+5V	D28	PCIRST-
A29	+12V	B29	INTA-	C29	INTB-	D29	INTC-
A30	-12V	B30	RESERVED2	C30	RESERVED3	D30	GND

CN4: PCI-E Mini Card Connector			
PIN NO.	**DESCRIPTION**	**PIN NO.**	**DESCRIPTION**
1	PCIE_WAKE#	2	VCC3
3	N/C	4	GND
5	N/C	6	1.5V
7	CLKREQ#	8	LFRAME#
9	GND	10	LAD3
11	CLK-	12	LAD2
13	CLK+	14	LAD1
15	GND	16	LAD0
17	PCIRST#	18	GND
19	LPC	20	VCC3
21	GND	22	PCIRST#
23	PERN2	24	3VDual
25	PERP2	26	GND
27	GND	28	1.5V
29	GND	30	SMBCLK
31	PETN2	32	SMBDATA
33	PETP2	34	GND
35	GND	36	USBD-
37	N/C	38	USBD+
39	N/C	40	GND
41	N/C	42	N/C
43	N/C	44	RF_LINK#
45	N/C	46	BLUELED#
47	N/C	48	1.5V
49	N/C	50	GND
51	N/C	52	VCC3

Board Layout: Jumper and Connector Locations



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