

EPIC SBC with Intel® Atom™ N270 1.6GHz, VGA/LVDS/TTL, Dual GbE,  
CFII, USB, SATA and PC/104+, RoHS

# NANO-945GSE2

## Quick Installation Guide

Version 1.0

May 11, 2011

### Package Contents

NANO-945GSE2 package includes the following items

- 1 x NANO-945GSE2 Single Board Computer
- 2 x RS-232 Cable
- 2 x SATA Cable
- 1 x PS/2 KB/MS Y Cable
- 1 x Power Cable
- 1 x Mini Jumper Pack
- 1 x Utility CD
- 1 x QIG(Quick Installation Guide)



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## Specifications

- CPU : Intel® Atom™ N270 1.6GHz with a 533MHz FSB
- System Chipset : Intel® 945GSE+ICH7M
- BIOS : AMI BIOS
- System Memory : 1x DDR2 SO-DIMM 400/533MHz support up to 2GB
- Ethernet : Dual Realtek RTL8111CP GbE (PCIe Interface)
- I/O Interface :
  - 3 x RS-232 (COM1, COM2, COM4)
  - 1 x RS-232/422/485 (COM3)
  - 6 x USB 2.0 (2 on Rear Side, 4 by pin-header)
  - 2 x SATA with 5V SATA Power DC Output
  - 1 x LPT
  - 1 x PS/2 for KB/MS
- Expansion :
  - 1 x PC/104+ (PCI Bus + ISA Bus)
- Digital I/O :
  - 8-bit digital I/O, 4-bit input/4-bit output
- Infrared Interface :
  - 1x Infrared Interface by pin header
- Super I/O :
  - First Super I/O : ITE IT8718F
  - Second Super I/O: Fintek 81216D
- Display Output :
  - Analog CRT Support for CRT Hot plug
  - 18-bit Dual-Channel LVDS Support up to UXGA (1600x 1200)
  - 24-bit TTL (LVDS to TTL)
  - (For Dual Display, only VGA+LVDS or VGA+TTL)
- Audio : Realtek ALC655 AC'97 Codec
- SSD : CF Type II
- Watchdog Timer :
  - Software programmable 1-255 sec. by Fintek 81216D

- Power Supply :  
12V only, AT/ATX support  
1x internal 2x2pin power connector
- Power Consumption :  
12V@1.45A (Intel® Atom™ N270 1.6GHz with 1GB DDR2)
- Temperature :  
Operation: 0 ~ 60° C (32 ~ 140° F)
- Humidity : Operation: 5% ~ 95%, non-condensing
- Dimensions : 165mm x 115mm
- Weight : GW:700g, NW:350g

### **Ordering Information**

- NANO-945GSE2-N270-R10 : EPIC SBC with Intel® Atom™ N270 1.6GHz, VGA/LVDS/TTL, Dual GbE, CFII, USB, SATA and PC/104+
- NANO-945GSE2-N270W-R10 : EPIC SBC with Intel® Atom™ N270 1.6GHz, VGA/LVDS/TTL, Dual GbE, CFII, USB, SATA and PC/104+, -20~70C
- 32000-070301-RS : Dual Ports USB Cable
- 32200-000049-RS : RS-232 Cable
- 32200-833600-RS : RS-422/485 Cable
- 32100-043403-RS : ATX Power Cable
- 32100-088600-RS : SATA Power Cable
- 32000-114000-RS : SATA 5V power output Cable Kit for NANO series
- 32200-015100-RS : LPT Cable

## Connector /Jumper List

LABEL	FUNCTION
ATXCTL1	Power on mode setting
BT1	Battery Connector
CN1 CN2	SATA1, SATA2 Power Connectors
CN3	LCD TTL Interface Connector
CN5	Main Power Input Connector (option)
COM1	External Serial Port Connectors (RS-232)
COM2 COM4	Internal Serial Port Connectors (RS-232)
COM3	Internal Serial Port Connector (RS-232/422/485,RS-422/485 in JP2)
DIMM1	DDR2 SO-DIMM Slot
DIO1	Digital I/O Connector
F_PANEL1	PWR 、 RST Button 、 Indicators
INV1	LVDS Panel Voltage Supply Connector
IR1	Infrared Interface Connector
J_CMOS1	CMOS state setting jumper
J_LCD_TYPE1	LVDS Panel Resolution Selection jumper
J1	CPU Fan Connector
J3	LPT Connector
J4	PCI-104 Connector (PCI-BUS)
J5	5VSB & PS_ON Connector
J6	PC/104 Connector (ISA-BUS)
J8	Audio Connector
J9	Compact Flash Slot
JP1	Configure COM3 Mode jumper
JP2	COM3 RS-422/485 jumper
JP3	LVDS Voltage Selection
KB/PS1	PS/2 MOUSE & KEYBOARD Connector
LAN1 LAN2	RJ-45 LAN Connectors
LVDS1	LVDS Panel Connector
PW1	Main Power Input Connector
RST1	Reset button
SATA1 SATA2	Serial ATA Connectors

USB1	External USB Connectors
USB2 USB3	Internal USB Connectors
VGA1	VGA Connector

<b>ATXCTL1: Power Supply Type Selection</b>	
<b>ATXCTL1</b>	<b>DESCRIPTION</b>
Open	ATX (default)
Short	AT

<b>J_CMOS1: Clear CMOS setting</b>	
<b>J_CMOS1</b>	<b>DESCRIPTION</b>
1-2	Normal (default)
2-3	Clear CMOS Setup

<b>J3: LPT Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	STROBE#	14	ALF#
2	PD0	15	ERROR#
3	PD1	16	PAR_INI#
4	PD2	17	SLCTIN#
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	N/C

<b>CN3 : LCD TTL Interface Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	VCC_LCD	2	VCC_LCD
3	GND	4	GND
5	VCC_LCD	6	VCC_LCD
7	N/C	8	GND
9	TFT_B0	10	TFT_B1
11	TFT_B2	12	TFT_B3
13	TFT_B4	14	TFT_B5
15	TFT_B6	16	TFT_B7
17	TFT_G0	18	TFT_G1
19	TFT_G2	20	TFT_G3
21	TFT_G4	22	TFT_G5
23	TFT_G6	24	TFT_G7
25	TFT_R0	26	TFT_R1
27	TFT_R2	28	TFT_R3
29	TFT_R4	30	TFT_R5
31	TFT_R6	32	TFT_R7
33	GND	34	GND
35	FPCLK	36	T_VSYNC
37	TFT_EN	38	T_HSYNC
39	N/C	40	L_VDDEN

<b>USB2, USB3 : Internal USB Connectors</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	+5V	2	GND
3	DATA-	4	DATA+
5	DATA+	6	DATA-
7	GND	8	+5V

<b>J9: Compact Flash Slot</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	GND	26	N/C
2	PDD3	27	PDD11
3	PDD4	28	PDD12
4	PDD5	29	PDD13
5	PDD6	30	PDD14
6	PDD7	31	PDD15
7	PDCS#1	32	PDCS#3
8	N/C	33	N/C
9	GND	34	PDIOR#
10	N/C	35	PDIOW#
11	N/C	36	VCC5
12	N/C	37	IRQ14
13	VCC5	38	VCC5
14	N/C	39	CSEL
15	N/C	40	N/C
16	N/C	41	IDERST#
17	N/C	42	PIORDY
18	PDA2	43	PDREQ
19	PDA1	44	PDDACK#
20	PDA0	45	IDEACTP#
21	PDD0	46	P66DET
22	PDD1	47	PDD8
23	PDD2	48	PDD9
24	N/C	49	PDD10
25	N/C	50	GND

<b>COM1, COM2, COM3, COM4 : Internal/External Serial Port Connectors (RS-232)</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
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

<b>DIO1: 8-bit GPIO Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	GND	2	VCC5(+5V)
3	DOUT3	4	DOUT2
5	DOUT1	6	DOUT0
7	DIN3	8	DIN2
9	DIN1	10	DIN0

<b>J8: Audio Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	LINE OUT R	2	Line In R
3	GND	4	GND
5	LINE OUT L	6	Line In R
7	GND	8	GND
9	MICIN	10	N/C



<b>LVDS1 : LVDS Interface Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	GND	2	GND
3	LVDS_DAP0	4	LVDS_DAN0
5	LVDS_DAP1	6	LVDS_DAN1
7	LVDS_DAP2	8	LVDS_DAN2
9	LVDS_CLKA	10	LVDS_CLKA#
11	N/C	12	N/C
13	GND	14	GND
15	LVDS_DBP0	16	LVDS_DBN0
17	LVDS_DBP1	18	LVDS_DBN1
19	LVDS_DBP2	20	LVDS_DBN2
21	LVDS_CLKB	22	LVDS_CLKB#
23	N/C	24	N/C
25	GND	26	GND
27	VCC_LCD	28	VCC_LCD
29	VCC_LCD	30	VCC_LCD

<b>BT1: Battery Connector</b>	
<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	BAT(3.3V)
2	GND

<b>J1 : Fan Connector</b>	
<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	DET
2	VCC(+12V)
3	GND

<b>JP3: LVDS Voltage Selection</b>	
<b>JP3</b>	<b>DESCRIPTION</b>
1-2	3.3V (default)
2-3	5V

<b>F_PANEL1 : PWR &amp; RST Button and Indicators panel</b>					
	<b>PIN</b>	<b>DESCRIPTI ON</b>	<b>PIN</b>	<b>DESCRIPTI ON</b>	
<b>PWR BTN</b>	1	<b>PWRBTSW-</b>	2	<b>VCC</b>	<b>Power LED</b>
	3	<b>GROUND</b>	4	<b>GROUND</b>	
<b>HDD LED</b>	5	<b>VCC</b>	6	<b>SYSRST-</b>	<b>RESET</b>
	7	<b>-HDLED</b>	8	<b>Ground</b>	

<b>JP2: COM3 RS-422/485 pin-header</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	<b>TX_422-</b>	2	<b>RX_422-</b>
3	<b>TX_422+</b>	4	<b>RX_422+</b>
5	<b>D_485+</b>	6	<b>D_485-</b>

<b>JP1: Configure COM3 Mode</b>	
<b>JP1</b>	<b>DESCRIPTION</b>
1-2	RS-232 (default)
3-4	RS-422
5-6	RS-485

<b>IR1 : Infrared Interface Connector</b>	
<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	VCC5 (+5V)
2	N/C
3	IRRX
4	GND
5	IRTX

<b>J5: 5VSB &amp; PS_ON Connector</b>	
<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	VCC5SBY
2	GND
3	PS_ON#

<b>SATA1 &amp; SATA2 : Serial ATA Connectors</b>	
<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+
7	GND

<b>CN1, CN2: SATA1, SATA2 Power Connectors</b>	
<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	VCC (+5V)
2	GND

<b>INV1 : 5-pin Header Inverter Connector</b>	
<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	L_BKLTCTL
2	GND
3	+12V
4	GND
5	L_BKLTEN

<b>KB/PS1 : MOUSE &amp; KEYBOARD Connector</b>	
<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	L_KDAT
2	L_MDAT
3	GND
4	+5V
5	L_KCLK
6	L_MCLK
7	GND
8	GND
9	GND
10	GND

<b>PW1: Main Power Input Connector</b>			
<b>PIN NO.</b>		<b>DESCRIPTION</b>	
<b>2</b>	<b>GND</b>	<b>4</b>	<b>Vin(+12V)</b>
<b>1</b>	<b>GND</b>	<b>3</b>	<b>Vin(+12V)</b>

<b>CN5: Main Power Input Connector (option) (Co-layout with PW1)</b>	
<b>PIN NO.</b>	<b>DESCRIPTION</b>
<b>1</b>	<b>Vin(+12V)</b>
<b>2</b>	<b>GND</b>

<b>J_LCD_TYPE1: LVDS Panel Resolution Selection setting</b>				
<b>1-2</b>	<b>3-4</b>	<b>5-6</b>	<b>7-8</b>	
OPEN	OPEN	OPEN	OPEN	LVDS1 640X480 18-bit
SHORT	OPEN	OPEN	OPEN	LVDS1 800X480 18-bit
OPEN	SHORT	OPEN	OPEN	LVDS1 800X600 18-bit (Default)
SHORT	SHORT	OPEN	OPEN	LVDS1 1024X768 18-bit
OPEN	OPEN	SHORT	OPEN	LVDS1 1280X1024 36-bit
SHORT	OPEN	SHORT	OPEN	LVDS1 1400X1050 36-bit
OPEN	SHORT	SHORT	OPEN	LVDS1 1400X900 36-bit
SHORT	SHORT	SHORT	OPEN	LVDS1 1600X1200 36-bit

# Board Layout: Connector Locations





