

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

Mar. 11, 2009

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+
- 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 |

| JP3: LVDS Voltage Selection | |
|------------------------------------|-----------------------|
| JP3 | DESCRIPTION |
| 1-2 | 3.3V (default) |
| 2-3 | 5V |

| ATXCTL1: Power Supply Type Selection | |
|---|----------------------|
| ATXCTL1 | DESCRIPTION |
| Open | ATX (default) |
| Short | AT |

| J_CMOS1: Clear CMOS setting | |
|------------------------------------|-------------------------|
| J_CMOS1 | DESCRIPTION |
| 1-2 | Normal (default) |
| 2-3 | Clear CMOS Setup |

| J3: LPT Connector | | | |
|--------------------------|--------------------|----------------|--------------------|
| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
| 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 |

| CN3 : LCD TTL Interface Connector | | | |
|--|--------------------|----------------|--------------------|
| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
| 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 |

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

J9: Compact Flash Slot

| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
|----------------|--------------------|----------------|--------------------|
| 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 |

COM1, COM2, COM3, COM4 : Internal/External Serial Port Connectors (RS-232)

| 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 |

DIO1: 8-bit GPIO Connector

| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
|----------------|--------------------|----------------|--------------------|
| 1 | GND | 2 | VCC5(+5V) |
| 3 | DOUT3 | 4 | DOUT2 |
| 5 | DOUT1 | 6 | DOUT0 |
| 7 | DIN3 | 8 | DIN2 |
| 9 | DIN1 | 10 | DIN0 |

J8: Audio Connector

| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
|----------------|--------------------|----------------|--------------------|
| 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 |

LVDS1 : LVDS Interface Connector

| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
|---------|-------------|---------|-------------|
| 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 |

BT1: Battery Connector

| PIN NO. | DESCRIPTION |
|---------|-------------|
| 1 | BAT(3.3V) |
| 2 | GND |

J1 : Fan Connector

| PIN NO. | DESCRIPTION |
|---------|-------------|
| 1 | DET |
| 2 | VCC(+12V) |
| 3 | GND |

IR1 : Infrared Interface Connector

| PIN NO. | DESCRIPTION |
|---------|-------------|
| 1 | VCC5 (+5V) |
| 2 | N/C |
| 3 | IRRX |
| 4 | GND |
| 5 | IRTX |

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

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

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

| J5: 5VSB & PS_ON Connector | |
|---------------------------------------|--------------------|
| PIN NO. | DESCRIPTION |
| 1 | VCC5SBY |
| 2 | GND |
| 3 | PS_ON# |

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

| CN1, CN2: SATA1, SATA2 Power Connectors | |
|--|--------------------|
| PIN NO. | DESCRIPTION |
| 1 | VCC (+5V) |
| 2 | GND |

| SATA1 & SATA2 : Serial ATA Connectors | |
|--|--------------------|
| PIN NO. | DESCRIPTION |
| 1 | GND |
| 2 | TX+ |
| 3 | TX- |
| 4 | GND |
| 5 | RX- |
| 6 | RX+ |
| 7 | GND |

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

| J_LCD_TYPE1: LVDS Panel Resolution Selection setting | | | | |
|---|------------|------------|------------|-----------------------------------|
| 1-2 | 3-4 | 5-6 | 7-8 | |
| 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 |

| PW1: Main Power Input Connector | | | |
|--|------------|--------------------|------------------|
| PIN NO. | | DESCRIPTION | |
| 2 | GND | 4 | Vin(+12V) |
| 1 | GND | 3 | Vin(+12V) |

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

Board Layout: Connector Locations





