

EPIC SBC with Intel® Atom™ D425/ D525/N455, VGA/LVDS, Dual GbE, USB2.0, CF II, Audio and SATA II, RoHS

NANO-PV-D4251-R10
NANO-PV-D5251-R10
NANO-PV-N4551-R10

Quick Installation Guide

Version 1.0

Oct. 28th, 2010

Package Contents

NANO-PV-D4251/D5251/N4551 package includes the following items:

- 1 x NANO-PV-D4251/D5251/N4551-R10 Single Board Computer
- 1 x SATA cable with 5v power
- 2 x RS-232 cable
- 1 x KB/MS Y Cable
- 1 x USB Cable
- 1 x Power Cable
- 1 x Audio Cable
- 1 x Mini Jumper Pack
- 1 x Driver CD
- 1 x One Key Recovery Utility CD
- 1 x QIG (Quick Installation Guide)



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Specifications

- CPU:
 - D425:** Intel® Atom™ 45nm 1.8GHz Single Core Processor with 512KB L2 Cache
 - D525:** Intel® Atom™ 45nm 1.8GHz Dual Core Processor with 1MB L2 Cache
 - N455:** Intel® Atom™ 45nm 1.66GHz Single Core Processor with 512KB L2 Cache
- System Chipset: Intel ICH8M
- BIOS: UEFI BIOS
- System memory: One 204-pin 800MHz DDR3 SDRAM SO-DIMM supported (System max. 2GB)
- LAN: Dual PCIe GbE by Realtek RT8111E, LAN1 supports ASF2.0
- I/O Interface:
 - 2 x SATA II
 - 8 x USB 2.0 (6 by header, 2 on rear side)
 - 4 x RS-232
 - 1 x RS-232/422/485 with Auto Flow control
 - 1 x LPT
 - 1 x CF Type II socket
 - 2 x PS/2 KB/MS
- Expansions:
 - 1 x PCI-104 slot
 - 1 x PCIe Mini card slot (PCIe + USB + SATA signal) support IEI mini DOM
- Audio: Realtek ALC888 HD codec
- Digital I/O: 8-bit digital I/O, 4-bit input/ 4-bit output by super I/O
- Super I/O: FINTEK F81865
- Display Interface:
 - Analog CRT up to 2048x1536 for D525/ D425, 1400x1050 for N455 Support for CRT hot plug
 - 18-bit single-channel LVDS, resolution support up to WXGA 1366x768 or XGA 1024x768
- Watchdog timer:

Software programmable supports 1~255 sec. system reset

- TPM
 - 1 x 20-pin LPC pin header
- SMBUS
 - 1 x 4-pin wafer connector
- Power Supply: 12V only, AT/ATX support
- Power Consumption:
 - 2.21A @ 12V(Intel® Atom™ D525 with 2GB 1066Mhz DDR3)
 - 2.11A @ 12V(Intel® Atom™ D425 with 2GB 1066Mhz DDR3)
 - 2.00A @ 12V(Intel® Atom™ N455 with 2GB 1066Mhz DDR3)
- Humidity: Operation: 5% ~ 95%, non-condensing
- Temperature:
 - 20°C~60°C with free air, -20°C~70°C with force air for D525 processor
 - 20°C~65°C with free air, -20°C~70°C with force air for D425 processor
 - 20°C~70°C with free air, -20°C~75°C with force air for N455 processor
- Dimension: 165 mm x 115 mm
- Weight: GW: 850g; NW: 350g

Ordering Information

NANO-PV-D5251-R10:

EPIC with Intel® Atom™ D525 1.8GHz, DDR3, VGA/LVDS, Dual GbE, USB2.0, CF II, Audio and SATA II, RoHS

NANO-PV-D4251-R10:

EPIC with Intel® Atom™ D425 1.8GHz, DDR3, VGA/LVDS, Dual GbE, USB2.0, CFII, Audio and SATA II, RoHS

NANO-PV-D4251-R10:

EPIC with Intel® Atom™ N455 1.66GHz, DDR3, VGA/LVDS, Dual GbE, USB2.0, CFII, Audio and SATA II, RoHS

32200-015100-RS :LPT cable

32000-062800-RS: SATA cable

32205-000300-100-RS: RS-232/422/485 cable

19FTS00032100-000001-RS: CPU fan

TPM-IN01-R11:20-pin INFINEON TPM Module, S/W management Tool, Firmware V3.17

Jumpers setting

LABEL	FUNCTION
J_AUTOPWR1	AT/ATX mode selection
J_ATXCTL1	AT/ATX mode selection
J_CMOS1	Clear CMOS
J_VLVDS1	LCD Voltage Selection
J4	RS232/RS422 or RS485 Type Selection
J6	RS422/RS485 type selection
J9	RS422 terminal selection
J10	RS485 terminal selection
JCF1	CF master/slave selection
J_VCF1	CF Voltage selection
JP1	PCI-104 voltage selection
J_LCD_TYPE1	LVDS1 panel resolution selection

AT/ATX Mode Selection

J_AUTOPWR1	DESCRIPTION	J_ATXCTL1	DESCRIPTION
Open	ATX mode	1-2	ATX mode
Short(Default)	AT mode(default)	2-3	AT mode(default)

J_CMOS1: Clear CMOS Setup

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

COM3 RS232/RS422 or RS485 Type Selection

J4	DESCRIPTION
1-2	RS232(default)
3-4	RS422
5-6	RS485

COM3 RS422 or RS485 Type Selection

J6	DESCRIPTION
1-3,2-4	RS422
3-5,4-6	RS485

Compact Flash Master/Slave Function Selection.	
JCF1	DESCRIPTION
Short	Master
Open(default)	Slave(default)

PIO_VCC:PCI-104 device voltage selection	
JP1	DESCRIPTION
1-2	5V
2-3(default)	3.3V(default)

CF voltage selection	
J_VCF1	DESCRIPTION
1-2	5V
2-3(default)	3.3V(default)

LCD Voltage Selection	
J_VLVDS1	DESCRIPTION
1-2(default)	3.3V(default)
3-4	5V
5-6	12V

J_LCD_TYPE1: LVDS1 panel resolution selection				
Resolution	1-2	3-4	5-6	7-8
640 X 480 (18bit)	Open	Open	Open	Open
800 X 480 (18bit)	Short	Open	Open	Open
800 X 600 (18bit)	Open	Short	Open	Open
1024 X600 (18bit)	Short	Shot	Open	Open
1024 X768 (18bit)	Open	Open	Short(default)	Open
1280 X 720 (18bit)	Short	Open	Short	Open
1280 X 800(18bit)	Open	Short	Short	Open
1366 X 768 (18bit)	Short	Short	Short	Open

J9: RS422 terminal selection	
short	120 ohm termination Resistance
open	NC

J10: RS485 terminal selection	
short	120 ohm termination Resistance
open	NC

Table of Connectors

LABEL	FUNCTION
PT1	6 pin PS/2 KB/MS Connector
KB/MS1	Internal KB/MS Connector
COM1	COM 9pin Female Connector
COM2,4,5	Internal Serial Pin Header (RS-232)
COM3	Internal Serial Pin Header (RS-232/422/485)
VGA1	VGA 15-pin Female Connector
LAN1,2	RJ45 LAN Connectors
AUDIO1	Audio Connector
CPU12V1	Power input connector
CPU_FAN1	CPU Fan Connector
SYS_FAN1	System Fan Connector
USB01, USB23, USB45	Internal USB pin header Connectors
USB67	External USB ports
F_PANEL1	PWR, RST Buttons and Indicators connector
SPI1	SPI flash connector
DIO1	Digital I/O Connector
SATA1,SATA2	Serial ATA Connectors
BAT1	BIOS battery Connector
Mini_PcIe1	PCIe mini-card Slot
TPM1	Internal TPM connector
CN1	SMBUS CONNECTOR
CF1	Compact flash card slot
LPT1	Parallel Port Connector
PWR1	SATA Power Connector
INV1	Inverter Connector
PC104_PLUS1	PC104 socket
LVDS1	LVDS LCD Connector
DIMM1	204pin DDR3 slot

COM1 : Serial port connector

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	DCD1	2	RX1
3	TX1	4	DTR1
5	GND	6	DSR1
7	RTS1	8	CTS1
9	RI1		

COM2,COM4,COM5:**Serial port connector.(PIN HEADER 2*5,10PIN,P:2.0mm)**

PIN NO	DESCRIPTION	PIN NO	DESCRIPTION
1	DCD	2	RX
3	TX	4	DTR
5	GND	6	DSR
7	RTS	8	CTS
9	RT		

COM3 : Serial port connector.(PIN HEADER 2*7,14PIN,P:2.0MM)

PIN	DESCRIPTION	PIN	DESCRIPTION
1	DCD3	2	DSR3
3	RXD3	4	RTS3
5	TXD3	6	CTS3
7	DTR3	8	RI2
9	GND	10	N/A
11	RS422 TX2+/485	12	RS422 TX2-/485
13	RS422 RX2+	14	RS422 RX2-

KB_MS1: 6-pin Mini-DIN Keyboard Connector

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VCC (+5V)	2	Mouse Data
3	Mouse Clock	4	Keyboard Data
5	Keyboard Clock	6	Keyboard GND

BAT1 : Battery connector (WAFER 1*2PIN,2PIN,P:1.25MM)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VBAT	2	GND

PT1: Keyboard/Mouse Connector (MINIDIN JACK,6PIN,)

PIN NO.	DESCRIPTION	PIN NO	DESCRIPTION
1	L_KDAT	2	L_MDAT
3	GND	4	GND
5	VCC	6	L_KCLK
7	GND	8	L_MCLK

VGA1: 15-pin Female Connector

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	RED	2	GREEN
3	BLUE	4	NC
5	GND	6	GND
7	GND	8	GND
9	VCC	10	Display_ GND
11	NC	12	DDCDAT
13	HSYNC	14	VSYNC
15	DDCCLK		

LAN1,2: RJ45 LAN Connector

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	MDI0+	8	MDI2+
2	MDI0-	9	MDI3-
3	MDI1+	10	MDI3+
4	MDI1-	11	LED 100M LED
5	GND	12	MDI2-
6	GND	13	LAN Active
7	MDI2-	14	VCC3

USB0_1,USB2_3, USB4_5: USB Connector

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VCC (+5V)	5	DATA_P
2	GND	6	DATA_N
3	DATA_N	7	GND
4	DATA_P	8	VCC

USB6-7 : 2 USB Connector (USB PORT)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VCC	2	DATA6_N
3	DATA6_P	4	GND
5	VCC	6	DATA7_N
7	DATA7_P	8	GND
9	VCC	10	DATA6_N

AUDIO1: 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_L
7	GND	8	GND
9	MIC_R	10	MIC_L

CPU12V1: Power input connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	GND
3	EXT_12VIN	4	EXT_12VIN

SYS_FAN1:Fan Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	FANIO2	2	VCC12
3	GND		

CPU_FAN1:CPU Fan Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	FANIO2	2	FANOUT
3	GND		

F_PANEL1: External Switches and Indicators panel			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	PWR_BTN+	2	PWR_LED+
3	PWR_BTN-	4	PWR_LED-
5	HDD_LED+	6	RESET+
7	HDD_LED-	8	RESET-

TPM1:TPM Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	TPMCLK	2	GND
3	LPC_Frame#	4	NC
5	PLT_RST#	6	VCC5S
7	LPC_AD3	8	LPC_AD2
9	VCC3S	10	LPC_AD1
11	LPC_AD0	12	VBAT

13	SMBCLK	14	SMBDATA
15	GND	16	INT_SERIRQ
17	GND	18	NC
19	VCC3S	20	LAD

DIO1 : 10-pin Digital I/O Connector.

PIN NO	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	VCC5S
3	OUTPUT3	4	OUTPUT2
5	OUTPUT1	6	OUTPUT0
7	INPUT3	8	INPUT2
9	INPUT1	10	INPUT0

CN1: SMBUS CONNECTOR

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	SDAT
3	SCLK	4	+5V

LVDS1 : LVDS LCD Connector.

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	GND
3	LVDSA_DATA0+	4	LVDSA_DATA0-
5	LVDSA_DATA1+	6	LVDSA_DATA1-
7	LVDSA_DATA2+	8	LVDSA_DATA2-
9	LVDSA_CLK	10	LVDSA_CLK-
11	NC	12	NC
13	GND	14	GND
15	L_DDC_DATA	16	L_DDC_CLK
17	VCC_LCD	18	VCC_LCD
19	VCC_LCD	20	VCC_LCD

SATA1,SATA2: SATA Connectors

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	TXP
3	TXN	4	GND
5	RXN	6	RXP
7	GND		

LPT1: Parallel Port Connector

PIN	DESCRIPTION	PIN	DESCRIPTION
1	STB	2	AFD
3	PTD0	4	ERROR#
5	PTD1	6	INITIALIZE
7	PTD 2	8	SLIN
9	PTD3	110	GND
11	PTD 4	112	GND
13	PTD 5	14	GND
15	PTD 6	16	GND
17	PTD7	18	GND
19	ACK	20	GND
21	BUSY	22	GND
23	PE	24	GND
25	SLCT		

INV1: Inverter Connector

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	Brightness Adjust	2	GND
3	Backlight Power	4	GND
5	Backlight Enable		

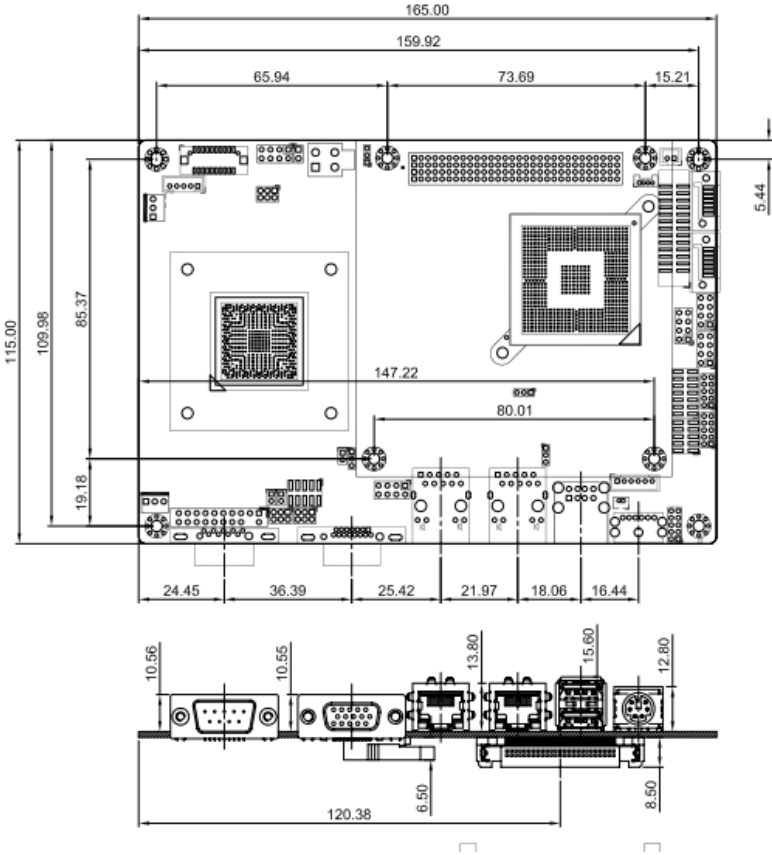
SPI1: SPI flash connector**PIN HEADER 2*4,8PIN,180D,P:2.54MM**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	SPI_VCC	2	GND
3	SPI_CS#	4	SPI_CLK
5	SPI_MISO	6	SPI_MOSI

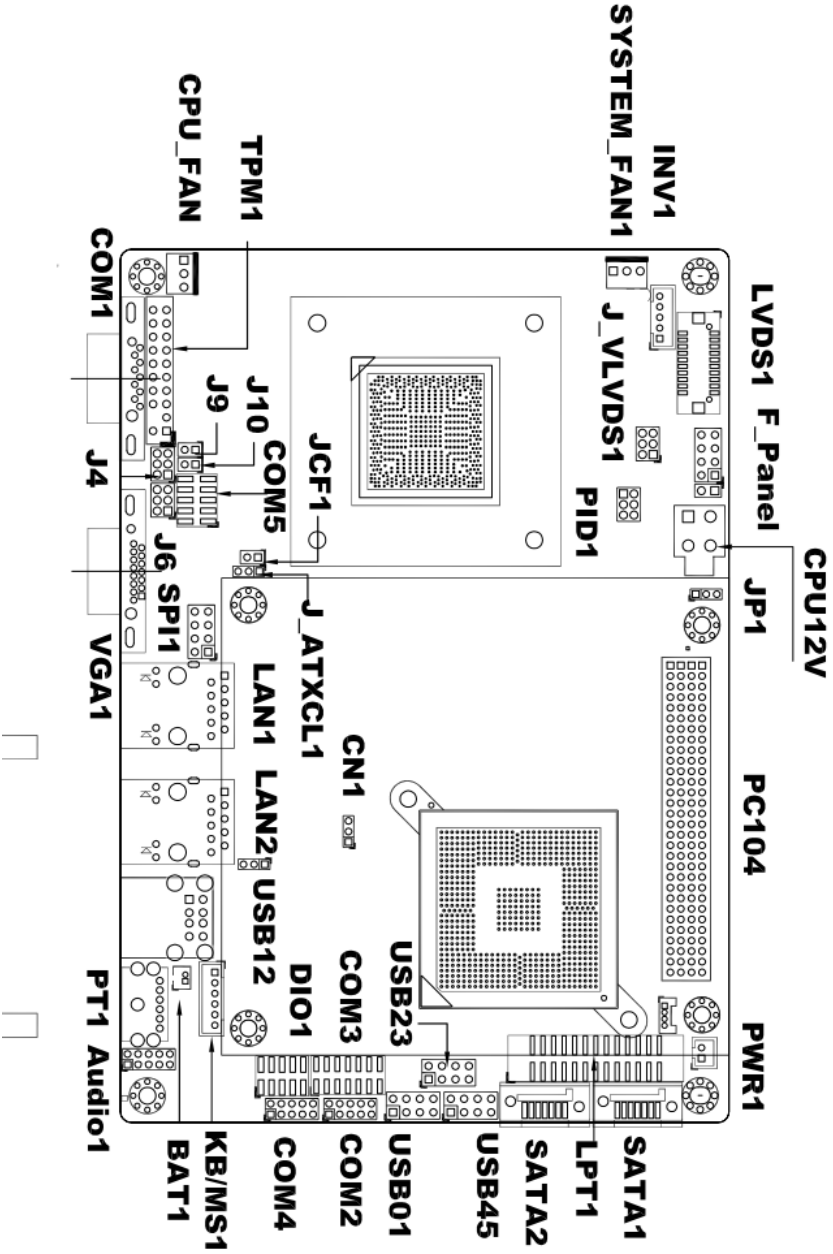
PWR1: SATA Power Connector

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	3V	2	PWRBTSW-

Board Layout: Dimensions (Unit: MM)



Board Layout: Jumper and Connector Locations



Bottom Side:

