

3.5" SBC with Intel® Atom™ D425/N455/D525, DDR3, VGA/LVDS, Dual GbE, USB2.0 and SATA II, Audio, RoHS

# WAFER-PV-N4552/D5252

## Quick Installation Guide

Version 1.1

Nov. 25, 2014

### Package Contents

WAFER-PV-N4552/D5252 package includes the following items:

- 1 x WAFER-PV-N4552/D5252 Single Board Computer
- 1 x KB/MS cable
- 1 x Audio cable
- 1 x SATA with 5V output cable Kit
- 1 x Quad RS-232 cable
- 1 x Power Cable
- 1 x Enclosure heatsink
- 1 x Mini Jumper Pack
- 1 x Utility CD
- 1 x QIG (Quick Installation Guide)



©2006 Copyright by IEI Technology corp.  
All rights reserved.

## Specifications

- CPU
  - Intel® Atom™ D525 dual-core processor 1.8GHz/1MB L2 cache
  - Intel® Atom™ N455 single-core processor 1.66GHz/512KB L2 cache
- System Chipset: Intel® ICH8M
- BIOS: UEFI BIOS
- Memory: One 204-pin 800MHz DDR3 SDRAM SO-DIMM supported (System max. 2GB)
- Graphic
  - GMA 3150
  - Graphic core speed 400MHz for D525
  - Graphic core speed 200MHz for N455
- Display interface: Analog CRT up to 2048x1536 for D525, 1400x1500 for N455
  - Support for CRT hot plug
  - Single-channel 18-bit LVDS
- Ethernet:
  - Dual GbE by Realtek RTL8111E, LAN1 with ASF2.0 support
- I/O Interface:
  - 5 x RS-232
  - 1 x KB/MS
  - 8 x USB 2.0
  - 1 x RS-232/422/485 with Auto Flow control
  - 2 x SATA II
  - 1 x CF Type II
- Digital I/O: 8-bit digital I/O, 4-bit input / 4-bit output
- Expansion: 1 x PCIe Mini card slot (PCIe + USB + SATA signal) support IEI mini DOM
- Audio: Realtek ALC662 HD codec

- Watchdog timer:  
Software programmable supports 1~255 sec. system reset by Super I/O
- Power Supply:  
12V only , AT/ATX support
- Super I/O : Fintek F81865F
- FAN Connector  
1 x 3-Pin CPU fan  
1 x 3-Pin system fan
- SMBus: 1x 4-pin wafer connector
- Power Consumption:  
12V@1.79A(Intel® Atom™ D525 1.8GHz with DDR3 1GB)
- Temperature: Operating :  
-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
- Humidity: 5% ~ 95%, non-condensing
- Weight: GW:600g / NW:250g

### **Ordering Information**

**WAFER-PV-D5252-R11**: 3.5" SBC with Intel® Atom™ D525 1.8GHz, DDR3,VGA/ LVDS, Dual GbE, USB2.0 and SATA II, audio, RoHS

**WAFER-PV-N4552-R11**: 3.5" SBC with Intel® Atom™ N455 1.66GHz, DDR3,VGA/ LVDS, Dual GbE, USB2.0 and SATA II, audio, RoHS

**32000-070301-RS**: Dual port USB cable

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

## Jumpers setting and connectors

LABEL	FUNCTION
J_CMOS1	CMOS state setting
J_VLVDS1	LVDS1 Voltage Selection
JP1	COM2 Port Mode setting
JP2	COM1 Pin 9 Mode Setting
JCF1	CF Card setting
J_LCD_TYPE1	LVDS1 Panel Resolution Selection
J_AUTOPWR1	AT Power Mode Setting
VGA1	VGA 15-pin Female Connector
USB1	2 Port USB Connector
LAN1 LAN2	RJ45 LAN Connectors
KB/MS1	Keyboard & Mouse Connector
COM1	COM1 Port Connector
USB2-4	Internal 6 Port USB Connectors
SATA1 SATA2	Serial ATA Connectors
AUDIO1	Audio Connector
COM6	Internal Serial Port Connector (COM6)
COM2-5	Internal Serial 4 Port Connectors (COM2-5)
CN1	PCI-E Mini Card
FAN1,2	Fan Connector
DIO1	Digital I/O Connector
LVDS1	LVDS Panel Connector
INVERTER1	LVDS1 Panel Backlight +12V Power Source
PWR_BTN	Power Button
RST_BTN	Reset Button
CN2	LED Indicators +5V Power output
J1	4Pin 12V ATX Power Control Connector
JSPI1	8Pin SPI Pin Header
SATA_PWR1,2	2 Pin Internal SATA Power Connectors
CF1	Compact Flash Slot
CN3	4 Pin SMBUS Connector

<b>J_VLVDS1 : LVDS Voltage Selection</b>	
J_VLVDS1	DESCRIPTION
1-2	+5V LVDS
2-3	+3.3V LVDS(DEFAULT)

<b>J_VLVDS1 : LVDS Voltage Selection</b>	
J_VLVDS1	DESCRIPTION
1-2	+5V LVDS
2-3	+3.3V LVDS(DEFAULT)

<b>JP1 : configure COM2 Mode</b>	
JP1	DESCRIPTION
Short 1-2 (default)	RS – 232
Short 3-4	RS – 422
Short 5-6	RS – 485
Short 5-6 Short 7-8	RS-485 with RTS Control

<b>JP2 : configure COM1 Pin 9 Mode</b>	
JP2	DESCRIPTION
Short 1-3	5V
Short 3-5	12V
Short 3-4 (default)	RI#

<b>JCF1 : configure CF Card type</b>	
JCF1	DESCRIPTION
OFF (default)	Slave
Short 1-2	Master

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

<b>J_AUTOPWR1 : AT/ATX Power Mode setting</b>	
PIN	DESCRIPTION
Short 1-2 (default)	ATX Power Mode
2-3	AT Power Mode

<b>VGA1 : 15-pin Female Connector</b>			
PIN	DESCRIPTION	PIN	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	DCCDAT
13	HSYNC	14	VSYNC
15	DDCCLK		

<b>USB1: USB Connector</b>			
USB_C45			
PIN	DESCRIPTION	PIN	DESCRIPTION
1	VCC	5	VCC
2	DATA-	6	DATA-
3	DATA+	7	DATA+
4	GROUND	8	GROUND

<b>LAN1、LAN2: RJ45 LAN Connector</b>			
PIN	DESCRIPTION	PIN	DESCRIPTION
1	MDIA3-	5	MDIA1+
2	MDIA3+	6	MDIA2+
3.	MDIA2-	7	MDIA0-
4.	MDIA1-	8	MDIA0+

<b>KB/MS1: 6-pin Mini-DIN Keyboard/Mouse Connector</b>	
PIN	DESCRIPTION
1	VCC
2	Mouse Data
3	Mouse Clock
4	Keyboard Data
5	Keyboard Clock
6	GND

<b>COM1 : Serial Port Connector</b>		
<b>PIN</b>	<b>DESCRIPTION</b>	
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)

<b>USB2,3,4: Internal USB Connector</b>			
USB01, USB23, USB45			
<b>PIN</b>	<b>DESCRIPTION</b>	<b>PIN</b>	<b>DESCRIPTION</b>
1	VCC	2	GND
3	DATA-	4	DATA+
5	DATA+	6	DATA-
7	GND	8	VCC

<b>SATA1 &amp; SATA2 : Serial ATA Connector</b>			
<b>PIN</b>	<b>DESCRIPTION</b>	<b>PIN</b>	<b>DESCRIPTION</b>
1	GND	5	RX-
2	TX+	6	RX+
3	TX-	7	GND
4	GND	8	N/C

<b>AUDIO1: Audio Connector</b>			
<b>PIN</b>	<b>DESCRIPTION</b>	<b>PIN</b>	<b>DESCRIPTION</b>
1	LINE_OUTR	2	LINEIN_R
3	GND_AUDIO	4	GND_AUDIO
5	LINE_OUTL	6	LINEIN_L
7	GND_AUDIO	8	GND_AUDIO
9	MICIN	10	MICIN

<b>COM6 : Internal Serial Port Connector</b>	
PIN	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 (GND)
10	N/C
11	TXD485+
12	TXD485#
13	RXD485+
14	RXD485#

<b>COM 2~5: Internal Serial Port Connector (COM2 ~ COM5)</b>			
PI N	DESCRIPTION	PI N	DESCRIPTION
1	DATA CARRIER DETECT (DCD2)	2	DATA SET READY (DSR2)
3	RECEIVE DATA (RXD2)	4	REQUEST TO SEND (RTS2)
5	TRANSMIT DATA (TXD2)	6	CLEAR TO SEND (CTS2)
7	DATA TERMINAL READY (DTR2)	8	RING INDICATOR (RI2)
9	GND	10	GND
11	DATA CARRIER DETECT (DCD3)	12	DATA SET READY (DSR3)
13	RECEIVE DATA (RXD3)	14	REQUEST TO SEND (RTS3)
15	TRANSMIT DATA (TXD3)	16	CLEAR TO SEND (CTS3)
17	DATA TERMINAL READY (DTR3)	18	RING INDICATOR (RI3)
19	GND	20	GND
21	DATA CARRIER DETECT (DCD4)	22	DATA SET READY (DSR4)
23	RECEIVE DATA (RXD4)	24	REQUEST TO SEND (RTS4)
25	TRANSMIT DATA (TXD4)	26	CLEAR TO SEND (CTS4)
27	DATA TERMINAL READY (DTR4)	28	RING INDICATOR (RI4)
29	GND	30	GND
31	DATA CARRIER DETECT (DCD5)	32	DATA SET READY (DSR5)
33	RECEIVE DATA (RXD5)	34	REQUEST TO SEND (RTS5)
35	TRANSMIT DATA (TXD5)	36	CLEAR TO SEND (CTS5)
37	DATA TERMINAL READY (DTR5)	38	RING INDICATOR (RI5)
39	GND	40	GND



<b>CN1: PCI-E Mini Card Connector</b>			
DVI Connector			
PIN	DESCRIPTION	PIN	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	USB-
37	GND	38	USB+
39	SATARXP	40	GND
41	SATARXN	42	N/C
43	N/C	44	RF_LINK#
45	SATATXN	46	BLUELED#
47	SATATXP	48	1.5V
49	GND	50	GND
51	N/C	52	VCC3

<b>FAN1,2 : Fan Connector</b>	
PIN	DESCRIPTION
1	FANIO1
2	+12V (PWM)
3	GND

<b>DIO1 : Digital Input / Output Connector</b>			
PIN	DESCRIPTION	PIN	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

<b>LVDS1: LVDS Connector</b>			
PIN	DESCRIPTION	PIN	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

<b>INVERTER1 : 5-pin Header Inverter Connector</b>	
PIN	DESCRIPTION
1	LCD_BKLTCTL
2	GROUND
3	+12V
4	GROUND
5	BACKLIGHT ENABLE

<b>PWR_BTN : Power Button</b>	
PIN	DESCRIPTION
1	PWRBTSW-
2	GND

<b>RST_BTN : Power Button</b>	
PIN	DESCRIPTION
1	PM_RESET
2	GND

<b>CN2: 6-pin LED indicators</b>		
	PIN	DESCRIPTION
+5V Power Output	1	VCC
	2	GND
PWRLED	3	VCC
	4	GND
HDDLED	5	VCC
	6	-HDLED

<b>J1 : 4Pin 12V ATX Power Control Connector</b>	
PIN	DESCRIPTION
1	GND
2	GND
3	12V
4	12V

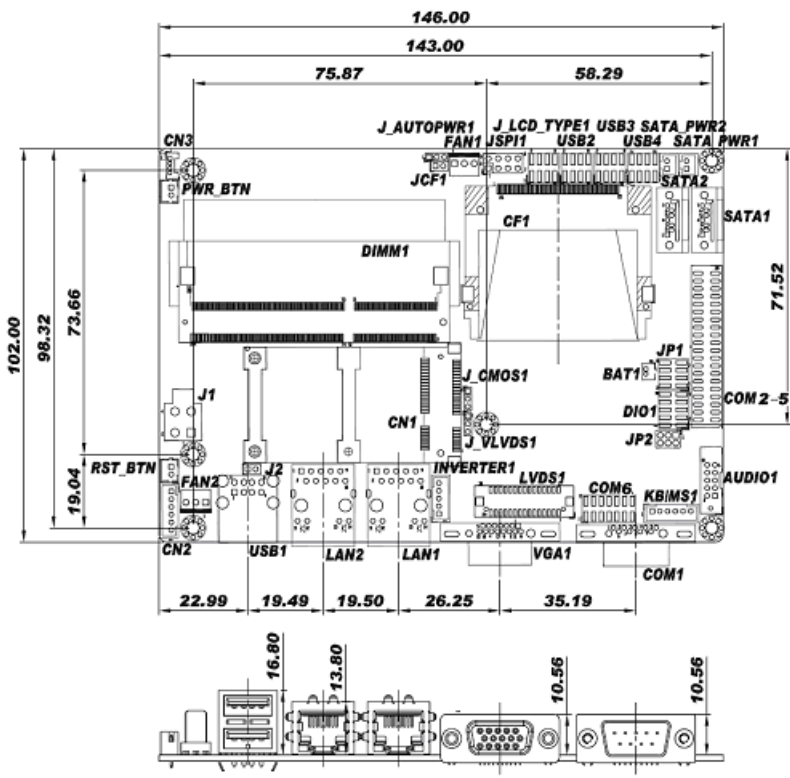
<b>JSPI1: 8Pin Header For programming SPI</b>			
USB01, USB23, USB45			
PIN	DESCRIPTION	PIN	DESCRIPTION
1	VCC	2	GND
3	CS#	4	CLK
5	SO	6	SI
7	NC	8	NC

<b>SATA_PWR1,2 : SATA Power Connectors</b>	
PIN	DESCRIPTION
1	VCC5
2	GND

<b>CF1 : CF Card Interface Slot</b>			
PIN	DESCRIPTION	PIN	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

<b>CN3 : 4Pin SMBUS Connector</b>	
PIN	DESCRIPTION
1	GND
2	SMBDATA
3	SMBCLK
4	VCC5

# Board Layout: Jumper and Connector Locations



(mm)