

**Mini-ITX Motherboard with Intel® Atom™ CPU, UPS Battery Backup, DDR2, VGA, DVI, LVDS, HDTV, Dual PCIe GbE, Compact Flash®, Dual SATA and PCIe Mini**

# **eKINO-945GSE**

## **Quick Installation Guide**

**Version 1.10**

**Nov. 03, 2010**

### **Package Contents**

eKINO-945GSE package includes the following items

- 1 x eKINO-945GSE Single Board Computer
- 2 x SATA 5V power output cable Kit
- 1 x I/O shielding
- 1 x KB/MS Y cable
- 1 x Mini Jumper Pack
- 1 x Utility CD
- 1 x One Key Recovery CD
- 1 x QIG(Quick Installation Guide)



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## Specifications

- CPU : Intel® Atom™ N270 1.6GHz with 533MHz FSB 512K L2 Cache
- System Chipset : Intel® 945GSE+ICH7M
- BIOS : AMI BIOS
- System Memory : 1x 200-pin DDR2 400/533MHz SDRAM SO-DIMM supported, max up to 2GB
- Ethernet : Dual Realtek RTL8111CP GbE Controllers
- I/O Interface :
  - 3 x RS-232 (COM1,COM2, COM4)
  - 1 x RS-232/422/485 (COM3)
  - 6 x USB 2.0
  - 2 x SATA with 5V DC output
  - 1 x IDE
  - 1 x 6-pin header for KB/MS
- Infrared Interface:
  - 1x Infrared Interface by pin header
- Display Output :
  - VGA integrated in Intel® 945GSE
  - Support HDTV resolution up to 1080i by component interface
  - 18-bit Dual-Channel LVDS by Intel® 945GSE
  - DVI-D support by SDVO to DVI Transmitter: Silicon Image Sil1362
- Expansions :
  - 1 x PCI slot
  - 1 x PCIe mini card slot
- Graphic : Intel® Graphics Media Accelerator 950 (Intel® GMA 950)
- Digital I/O : 8-bit digital I/O, 4-bit input/4-bit output
- Super IO :
  - First Super IO: ITE IT8718F
  - Second Super IO: Fintek 81216D
- Audio : Realtek ALC655 AC'97 Codec
- SSD : CF Type II
- WDT : Software Programmable support 1~255 sec. system reset
- Power Supply :
  - Maximum input voltage range 9V~28V
  - Recommend operating input voltage range 12V~24V
  - 1 x external DIN 4-pin DC jack
  - 1 x internal 2x2-pin power connector
- DC Output Connector :
  - 2 x 4-pin (1x4) 5V/12V power connector (Major for 2.5" HDD use)
- Power Consumption :
  - 12V@1A (Intel® Atom™ N270 1.6GHz with 1GB DDR2 DRAM)
- Temperature :

- Operation: 0°C ~ 40°C with AUPS sub-system
- Operation: 0°C ~ 60°C without AUPS sub-system
- Humidity : Operation: 5% ~95% non-condensing
- Dimensions : 170mm x 170mm
- Weight : GW: 1100 g / NW: 400 g

## Ordering Information

### eKINO-945GSE-N270UPS-R11

Mini-ITX SBC support AUPS sub-system, Intel® Atom™ N270 1.6GHz, Wide range 9-28VDC input, VGA/DVI/HDTV

### CB-USB02-RS

Dual ports USB cable with Bracket

### HDTV CABLE SET-01

HDTV Cable Set with S-Video, Composite and Component Interfaces

### WMPCIE-V01-R20

PCIe Mini card wireless LAN Module

### BATKIT-2S2P3800-R10

2S2P 7.4V 3800mAh AUPS BATTERY KIT

### BAT-LI-2S2P3800

2S2P 7.4V 3800mAh SMART BATTERY

### BATKIT-4S2P3800-R10

4S2P 14.8V 3800mAh AUPS BATTERY KIT

### BAT-LI-4S2P3800

4S2P 14.8V 3800mAh SMART BATTERY

### 63000-FSP096AHB-RS

96W/12V Power Adaptor 90VAC~260VAC, DIN 4 PIN

### 63000-FSP120AAB-RS

120W/19V Power adapter, 90VAC~264VAC, DIN 4PIN

### 32200-000009-RS

44-pin 2.5" IDE cable

### 32100-192900-RS

One 4-pin (2x2) to one 4-pin(1x4) DC power cable with terminal block

### 19800-000300-100-RS

RS-232 cable with bracket

### 32200-833600-RS

RS-422/485 Cable

## Connector /Jumper List

LABEL	FUNCTION
J_CMOS1	CMOS state setting jumper
J_VLVD1	LCD Voltage Selector jumper
ATXCTL1	Power on mode setup(eKINO-945GSE-N270 only)
J_CF1	CF Card Master/Slave setting jumper
J_U/B1	UPS & BATTERY setting (eKINO-945GSE-N270UPS only)
JP1	RS-232/422/485 Mode jumper
JP3	UPS Terminal Switch (eKINO-945GSE-N270UPS only)
JP2	COM3 RS-422/485 connector
USB1	Internal USB Connector
MS/KB1	PS/2 MOUSE & KEYBOARD Connector
J_LCD_TYPE1	LVDS Panel Resolution Selection jumper
F_PANEL1	PWR,RST Buttons,Indicators and Speaker
J2	CF Card Slot
VIDEO1	VGA 15-pin Female Connector & DVI-D Connector
LAN/USB1 LAN/USB2	RJ-45 LAN and USB Connectors
LVDS1	LVDS Panel Connector
COM1	External 2 Ports Serial Port DB-9 Connectors (RS-232)
AUDIO1	Audio Connector (Line out/MIC in)
PWR1	ADAPTER IN Connector (9V~28V Input)
CN2	Power Input Connector
DIO1	Digital I/O Connector
J1	Fan Connector
PW1,PW2	Serial ATA Device Power Connectors
IR1	Infrared Interface Connector
COM3	Internal Serial Port Connector (RS-232/422/485,RS-422/485 in JP2)
COM4	Internal Serial Port Connector (RS-232)
SATA1,SATA2	Serial ATA Connectors
INVERTER1	LVDS Panel Voltage Supply Connector
SPDIF1	SPDIF Connector
MCU1	MCU Flash Connector (eKINO-945GSE-N270UPS only)
J3	LED Indicator Connector(eKINO-945GSE-N270UPS only)
TV1	HDTV Out Connector
BRIGHTNESS	LCD Brightness Control Connector (eKINO-945GSE-N270UPS only)
BT1	Battery Connector

PCN1	Battery Module Connector (eKINO-945GSE-N270UPS only)
J11	10M MCU LAN Connector (eKINO-945GSE-N270UPS only)
IDE1	IDE Connector

<b>J_CMOS1 : Clear CMOS Setup (1*3 pin header, pitch 2.00mm)</b>	
PIN	DESCRIPTION
1-2	Normal (Default)
2-3	Clear CMOS Setup

<b>J_VLVDS1 : LCD Voltage Setup (1*3 pin header, pitch 2.00mm)</b>	
PIN	DESCRIPTION
1-2	3.3V (Default)
2-3	5V

<b>ATXCTL1 : Power On Mode Setup (1*2 pin header, pitch 2.00mm)</b>	
PIN	DESCRIPTION
Open	ATX
Short	AT (Default)

<b>J_CF1 : CF Card Master / Slave Setup (1*2 pin header, pitch 2.00mm)</b>	
PIN	DESCRIPTION
Open	Slave (Default)
Short	Master

<b>J_U/B1 : UPS / Battery Mode Setup (1*3 pin header, pitch 2.00mm)</b>	
PIN	DESCRIPTION
1-2	UPS (Default)
2-3	Battery

<b>JP1 : COM3 RS-232&amp; RS-422/485 Type Select(2*3 pin header, pitch 2.00mm)</b>	
PIN	DESCRIPTION
1-2	RS-232(Default)
3-4	RS-422
5-6	RS-485

<b>JP3 : UPS Terminal Switch (1*2 pin header, pitch 2.00mm)</b>	
PIN	DESCRIPTION
Open	Disable Battery function (Default)
Short	Enable Battery function

<b>JP2 : COM3 RS-422/485 (2*3 pin header, pitch 2.00mm)</b>			
PIN	DESCRIPTION	PIN	DESCRIPTION
1	TX_422-	2	RX_422-
3	TX_422+	4	RX_422+
5	D_485+	6	D_485-

**MS/KB1 : PS/2 Keyboard & Mouse Connector(1\*6pin header,pitch 2.00mm)**

PIN	DESCRIPTION
1	VCC (+5V)
2	MS_DATA
3	MS_CLK
4	KB_DATA
5	KB_CLK
6	GND

**USB1 : Internal USB Connector (2\*4pin header,pitch 2.54mm)**

PIN	DESCRIPTION	PIN	DESCRIPTION
1	VCC (+5V)	2	GND
3	DATA-	4	DATA+
5	DATA+	6	DATA-
4	GND	8	VCC (+5V)

**J\_LCD\_TYPE1 : LVDS Panel Resolution Seletion Jumper (2\*4pin header, pitch 2.00mm)**

1-2	3-4	5-6	7-8	
Open	Open	Open	Open	LVDS1 640x480 18bit
Short	Open	Open	Open	LVDS1 800x480 18bit
Open	Short	Open	Open	LVDS1 800x600 18bit (Default)
Short	Short	Open	Open	LVDS1 1024x768 18bit
Open	Open	Short	Open	LVDS1 1280x1024 18bit
Short	Open	Short	Open	LVDS1 1400x1050 18bit
Open	Short	Short	Open	LVDS1 1400x900 18bit
Short	Short	Short	Open	LVDS1 1600x1200 18bit

**F\_PANEL1 : System Panel Connector (2\*7pin header, pitch 2.54mm)**

Function	PIN	DESCRIPTION	Function	PIN	DESCRIPTION
Power LED	1	VCC (+5V)	SPEAKER	2	VCC (+5V)
	3	N/C		4	N/C
	5	GND		6	N/C
PWRBTN	7	PWRBTN+		8	SPKOUT
	9	GND	RESET	10	N/C
HDDLED	11	VCC (+5V)		12	Reset+
	13	HDLED-		14	GND

<b>J2 : Compact Flash Connector</b>			
PIN	DESCRIPTION	PIN	DESCRIPTION
1	GND	26	N/C
2	DATA 3	27	DATA 11
3	DATA 4	28	DATA 12
4	DATA 5	29	DATA 13
5	DATA 6	30	DATA 14
6	DATA 7	31	DATA 15
7	HDC_CS0#	32	HDC_CS1#
8	N/C	33	N/C
9	GND	34	IOR#
10	N/C	35	IOW#
11	N/C	36	VCC (+5V)
12	N/C	37	IRQ14
13	VCC (+5V)	38	VCC (+5V)
14	N/C	39	CSEL
15	N/C	40	N/C
16	N/C	41	HDD_RESET#
17	N/C	42	IORDY
18	SA2	43	SDREQ
19	SA1	44	SDACK#
20	SA0	45	HDD_ACTIVE#
21	DATA 0	46	66DET
22	DATA 1	47	DATA 8
23	DATA 2	48	DATA 9
24	N/C	49	DATA 10
25	N/C	50	GND

<b>VIDEO1 : Daul Video Display Connector</b>			
<b>TOP: DB-15 CRT Connector</b>			
<b>Bottom: DVI-D Connector</b>			
<b>DVI</b>		<b>CRT</b>	
PIN	DESCRIPTION	PIN	DESCRIPTION
1	DVI_DATA2#	26	GND
2	DVI_DATA2	27	GND
3	GND	28	GND
4	N/C	C1	N/C
5	N/C	C2	N/C
6	DDC_CLK	C3	N/C
7	DDC_DATA	C4	N/C
8	N/C	C5	GND
9	DVI_DATA1#	C6	N/C
10	DVI_DATA1	V1	RED
11	GND	V2	GREEN
12	N/C	V3	BULE
13	N/C	V4	N/C
14	VCC (+5V)	V5	GND
15	GND	V6	GND
16	HPDET	V7	GND
17	DVI_DATA0#	V8	GND
18	DVI_DATA0	V9	N/C
19	GND	V10	GND
20	N/C	V11	N/C
21	N/C	V12	DDC_DATA
22	GND	V13	HSYNC
23	DVI_CLK	V14	VSYNC
24	DVI_CLK#	V15	DDC_CLK
25	GND		

<b>LAN/USB1A / LAN/USB2A : RJ-45 Connector</b>	
PIN	DESCRIPTION
1	GND
2	MDIO0+
3	MDIO0-
4	MDIO1+
5	MDIO1-
6	MDIO2+
7	MDIO2-
8	MDIO3+
9	MDIO3-
10	GND
11	LED0
12	VCC (+3.3V)
13	LED1
14	LED3
15-22	GND

<b>LVDS1 : LCD LVDS Interface Connector (30 pin Connector)</b>			
PIN	DESCRIPTION	PIN	DESCRIPTION
1	GND	2	GND
3	LVDS_A0+	4	LVDS_A0-
5	LVDS_A1+	6	LVDS_A1-
7	LVDS_A2+	8	LVDS_A2-
9	LVDS-_ACLK+	10	LVDS-_ACLK-
11	N/C	12	N/C
13	GND	14	GND
15	LVDS_B0+	16	LVDS_B0-
17	LVDS_B1+	18	LVDS_B1-
19	LVDS_B2+	20	LVDS_B2-
21	LVDS_BCLK+	22	LVDS_BCLK-
23	N/C	24	N/C
25	GND	26	GND
27	VCC_LCD	28	VCC_LCD
29	VCC_LCD	30	VCC_LCD

<b>AUDIO1 : Audio Connector (LINE IN Option)</b>			
PIN	DESCRIPTION	PIN	DESCRIPTION
1	GND	NC1	GND
2	MIC_IN	NC2	GND
3	N/C	NC3	GND
4	N/C	NC4	GND
5	MIC_IN	NC5	GND
22	LINEOUT_L	32	LINEIN_L
23	N/C	33	N/C
24	LINEOUT_R	34	LINEIN_R
25	N/C	35	N/C



<b>LAN/USB1B / LAN/USB1B : USB0~USB3 Connector</b>			
PIN	DESCRIPTION	PIN	DESCRIPTION
1	VCC (+5V)	5	VCC (+5V)
2	DATA-	6	DATA-
3	DATA+	7	DATA+
4	GND	8	GND

<b>PWR1 : ADAPTER IN connector (9V~28V Input)</b>	
PIN	DESCRIPTION
1	Vin
2	GND
3	Vin
4	GND
5	GND

<b>CN2 : Power Input connector (9V~28V Input)</b>	
PIN	DESCRIPTION
1	GND
2	GND
3	Vin
4	Vin

<b>DI01 : Digital I/O Connector (2*5 pin header, pitch 2.00mm)</b>			
PIN	DESCRIPTION	PIN	DESCRIPTION
1	GND	2	VCC (+5V)
3	D_OUT3	4	D_OUT2
5	D_OUT1	6	D_OUT0
7	D_IN3	8	D_IN2
9	D_IN1	10	D_IN0

<b>J1 : Fan connector</b>	
PIN	DESCRIPTION
1	FAN_IO
2	VCC (+12V)
3	GND

<b>PW1,PW2 : SATA Power Connectors (1*4 pin wafer, pitch 2.50mm)</b>	
PIN	DESCRIPTION
1	12V
2	GND
3	GND
4	5V

<b>IR1 : Infrared Interface Connector (1*5 pin header, pitch 2.00mm)</b>	
PIN	DESCRIPTION
1	VCC (+5V)
2	N/C
3	IR_RX
4	GND
5	IR_TX

<b>COM3,COM4 : Internal Serial Port Connectors (2*5 pin header, pitch 2.00mm)</b>			
PIN	DESCRIPTION	PIN	DESCRIPTION
1	DCD#	2	DSR#
3	RX	4	RTS#
5	TX	6	CTS#
7	DTR#	8	RI#
9	GND	10	N/C

<b>SATA1,SATA2 : SATA connectors</b>	
PIN	DESCRIPTION
1	GND
2	SATA_TX+
3	SATA_TX-
4	GND
5	SATA_RX-
6	SATA_RX+
7	GND

<b>INVERTER1 : LCD Inverter Power Connector (1*5 pin header, pitch 2.00mm)</b>	
PIN	DESCRIPTION
1	BRIGHTNESS
2	GND
3	VCC (+12V)
4	GND
5	BKLT_EN

<b>SPDIF1 : SPDIF Connector (1*5 pin header, pitch 2.54mm)</b>	
PIN	DESCRIPTION
1	VCC (+5V)
2	N/C
3	SPDIF_OUT
4	GND
5	SPDIF_IN

<b>MCU1 : MCU's Flash Connector (1*5 pin header, pitch 2.00mm)</b>	
PIN	DESCRIPTION
1	MCLR
2	VCC (+3.3V)
3	GND
4	ICSPCLK
5	ICSPDAT

<b>J3 : LED Indicator Connector (1*6 pin header, pitch 2.00mm)</b>		
Function	PIN	DESCRIPTION
Discharged LED	1	VCC (+5V)
	2	DIS_LED
Charged LED	3	VCC (+5V)
	4	BAT_LED
Power LED (DC-IN)	5	VCC (+5V)
	6	DC_LED

<b>TV1 : HDTV Out Connector (2*3 pin header, pitch 2.54mm)</b>			
PIN	DESCRIPTION	PIN	DESCRIPTION
1	GND	2	GREEN_Y
3	GND	4	RED_C
5	GND	6	BULE_CVBS

<b>BRIGHTNESS : LCD Brightness Control connector (1*3 pin wafer, pitch 2.00mm)</b>	
PIN	DESCRIPTION
1	BRIGHT+
2	GND
3	BRIGHT-

<b>BT1 : Battery connector (1*2 pin wafer, pitch 1.25mm)</b>	
PIN	DESCRIPTION
1	VCC (+3.3V)
2	GND

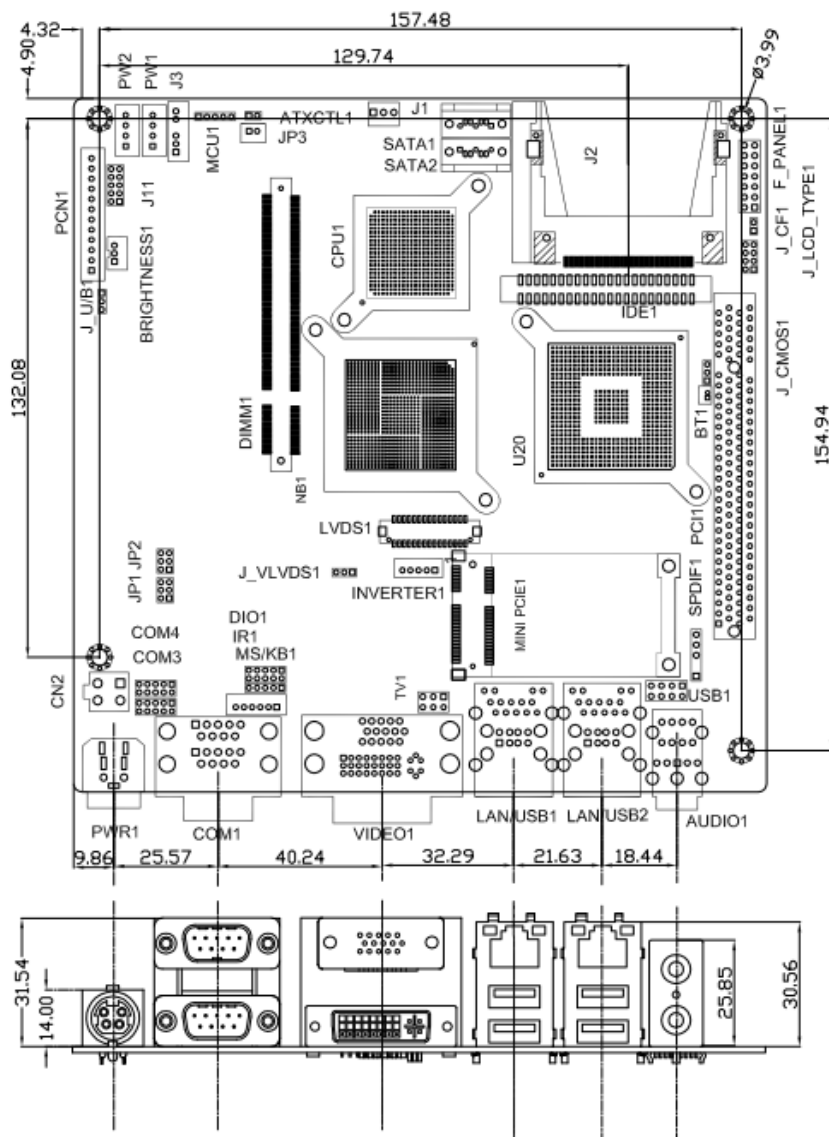
<b>PCN1 : Battery Module Connector (2*5 pin wafer, pitch 2.50mm)</b>			
PIN	DESCRIPTION	PIN	DESCRIPTION
1	VBAT	7	BAT_TH
2	VBAT	8	BAT_ID
3	VBAT	9	GND
4	VBAT	10	GND
5	BAT_CLK	11	GND
6	BAT_DATA	12	GND

<b>J11 : 10M MCU LAN Connector for MCU use (2*5 pin header, pitch 2.00mm)</b>			
PIN	DESCRIPTION	PIN	DESCRIPTION
1	N/C	2	N/C
3	RX+	4	RX-
5	N/C	6	PAIR3
7	N/C	8	PAIR2
9	TX+	10	TX-

<b>COM1 : Daul COM Ports Connector (COM1,COM2) (9-pin Male Connector*2)</b>			
PIN	DESCRIPTION	PIN	DESCRIPTION
1	DCD1#	12	DCD2#
2	RX1	13	RX2
3	TX1	14	TX2
4	DTR1#	15	DTR2#
5	GND	16	GND
6	DSR1#	17	DSR2#
7	RTS1#	18	RTS2#
8	CTS1#	19	CTS2#
9	RI1#	20	RI2#
10	GND	21	GND
11	GND	22	GND

<b>IDE1 : Primary IDE Interface Connector</b>			
<b>PIN</b>	<b>DESCRIPTION</b>	<b>PIN</b>	<b>DESCRIPTION</b>
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	GND
29	IDE_DACK	30	GND
31	INTERRUPT	32	N/C
33	SA1	34	66DET
35	SA0	36	SA2
37	HDC_CS0#	38	HDC_CS1#
39	HDD_ACTIVE#	40	GND
41	VCC (+5V)	42	VCC (+5V)
43	GND	44	N/C

# Board Layout



Unit: mm