



HK870 Series All-in-One Point of Sale System

System Integration Manual

Document version 1.0

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Safety Notice

Safety notices to follow before installing or using the POS system



Caution:

- Make sure that the voltage of the power outlet is the same as the voltage that's marked on the outside of the POS system.
- Always keep the power cable properly connected and grounded.
- Keep the POS product in a safe, stable place that's away from heavy or sharp objects.
- Install the POS product in a well-ventilated area and use it in a clean and dry place.
- Make sure your USB flashdrive or disk does not contain viruses before you insert it into the POS product and always back up important files.
- Use the separate power strips specifically designed for this POS system.
- Do not use loose or damaged power cables.
- Do not touch the power plug with wet hands.
- Do not plug in the AC power cord while you are opening the unit to install features or service this POS product.



Warning

- Static may cause damage to the POS.
- Incorrectly replacing a battery can result in an explosion. Make sure to only replace the battery with the same or equivalent type as recommended by the manufacturer (Hisense). Discard used batteries according to the manufacturer's instructions.
- Do not remove the peripheral device before you turn off the system.
- Turn on the system after you turn on peripheral devices and turn off the peripheral devices after you turn off the system

The manufacturer has the right to modify contents of this manual without prior announcements!

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Section 1. Introduction

Welcome to the Hisense family!

Welcome to the **Hisense** family! This *Hisense HK870 Series All-in-one POS System Integration Manual* provides steps to install and configure the **Hisense HK870 Series All-in-One Point-of-Sale (POS) System**. In order to install this successfully, you should have an understanding of different programming languages, computer networking, hardware components, application integration and POS systems.

Overview of the Hisense HK870 Series All-in-one POS System

Because we understand that processing sales transactions is an integral part of business, we've designed an all-in-one solution called the **Hisense HK870 Series All-in-one POS System**. This system has a 15" LED light display for the panel, an Intel processor for powerful speed and many other powerful features to meet the business needs of our customers.

Items that were packaged with the POS system

After you unpack the unit, check to ensure the following items are included inside the package:

- HK870 POS System (with base and cable cover)
- Driver CD (including the manual)
- Power adapter (in the base)
- Power cord

Contact information for questions

If any items are missing from the carton box or you have questions, contact Hisense via phone, email or postal mail.

Phone	(86) 532 5575 -1252 (International): Monday through Friday between 9 a.m. to 6 p.m.
Email	infopos@hisense.com
Mailing Address	No.11 Jiangxi Road Qingdao 266071 China
Website address	http://hics.hisense.com

Required tools

You will need a Phillips screwdriver to disassemble the POS in order to access the motherboard.

Section 2. Understanding the HK870 Series POS

Understanding the HK870 Series POS

This section describes the exterior of the POS system, the dimensions at different angles and the input/output ports.

Controls and other Exterior Components

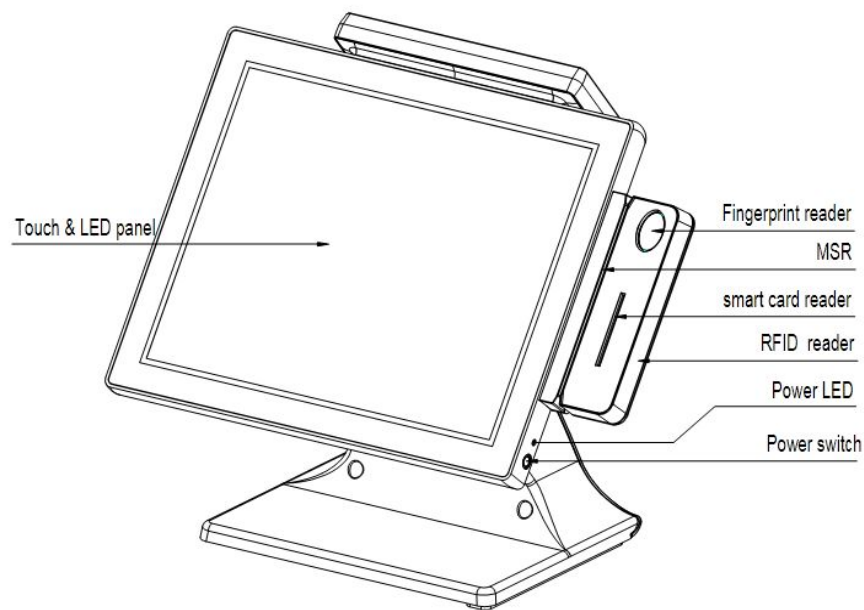


Figure 1. Front view of the HK870 Series POS System

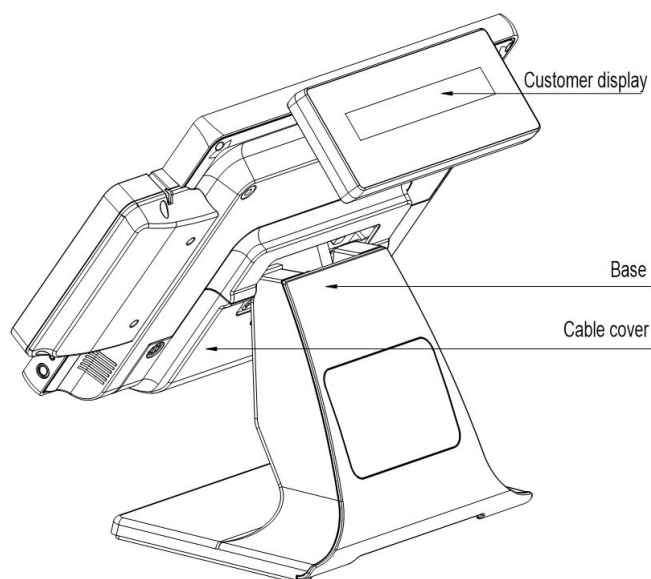


Figure 2. Back view of the HK870 Series POS System

Disclaimer: The exterior design and specifications for this product may be changed without prior notice in order to improve quality.

HK870 POS System dimensions and angles

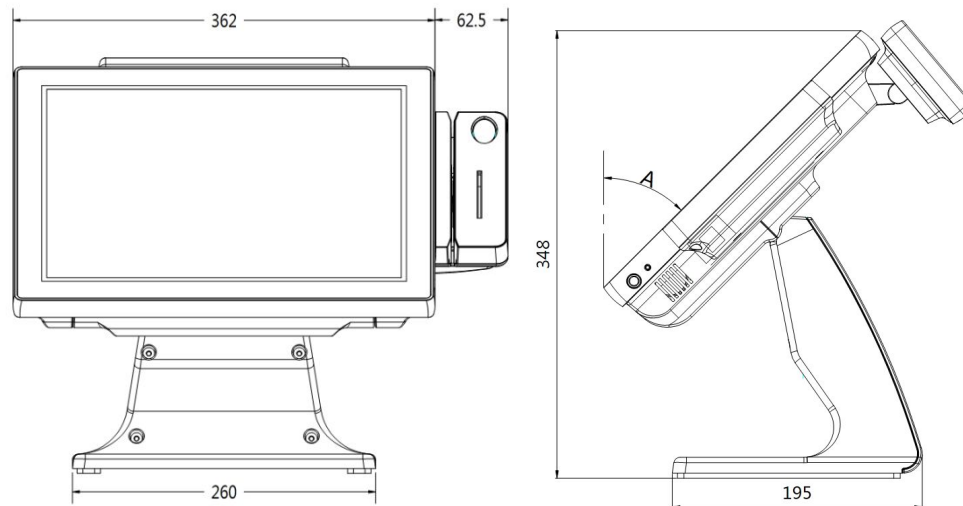
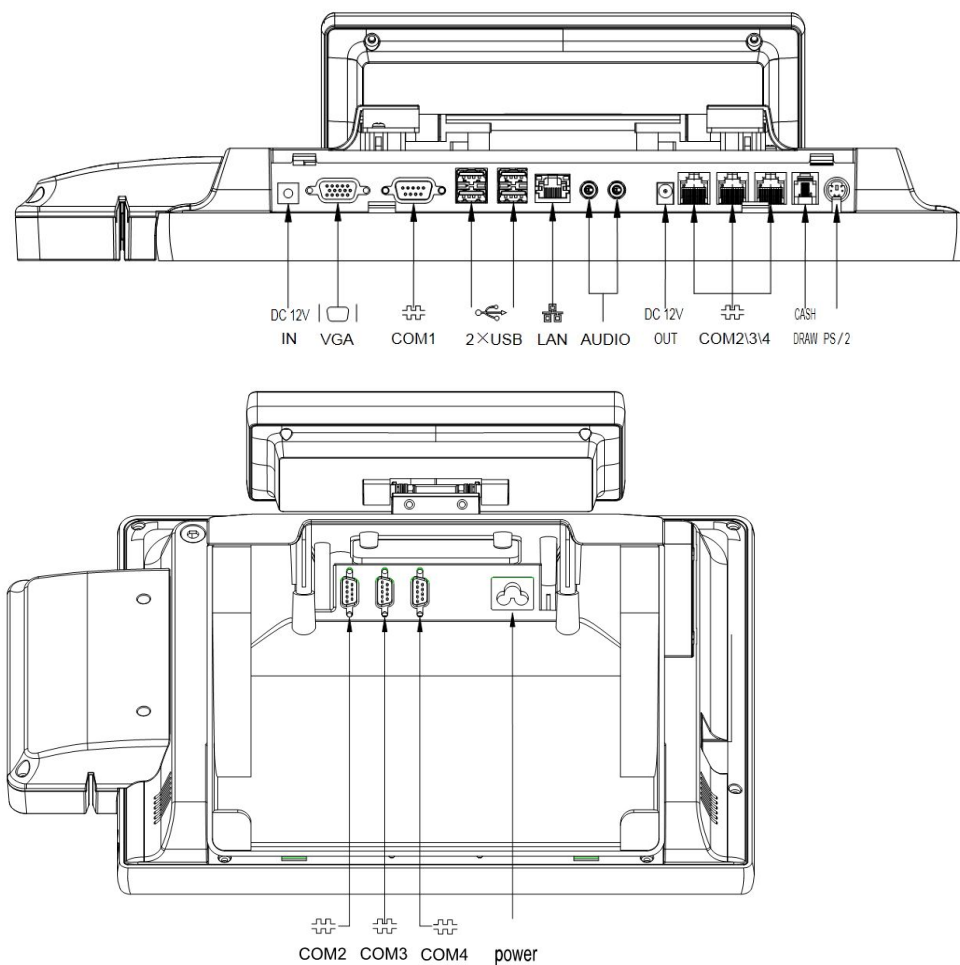


Figure 3. POS dimensions at a fixed angle and with an LCD at a slanted angle

Ports

HK870 (D2550 motherboard) POS system has 16 built-in ports.



HK870E (Baytrail J1900 motherboard) POS system has 15 built-in ports.

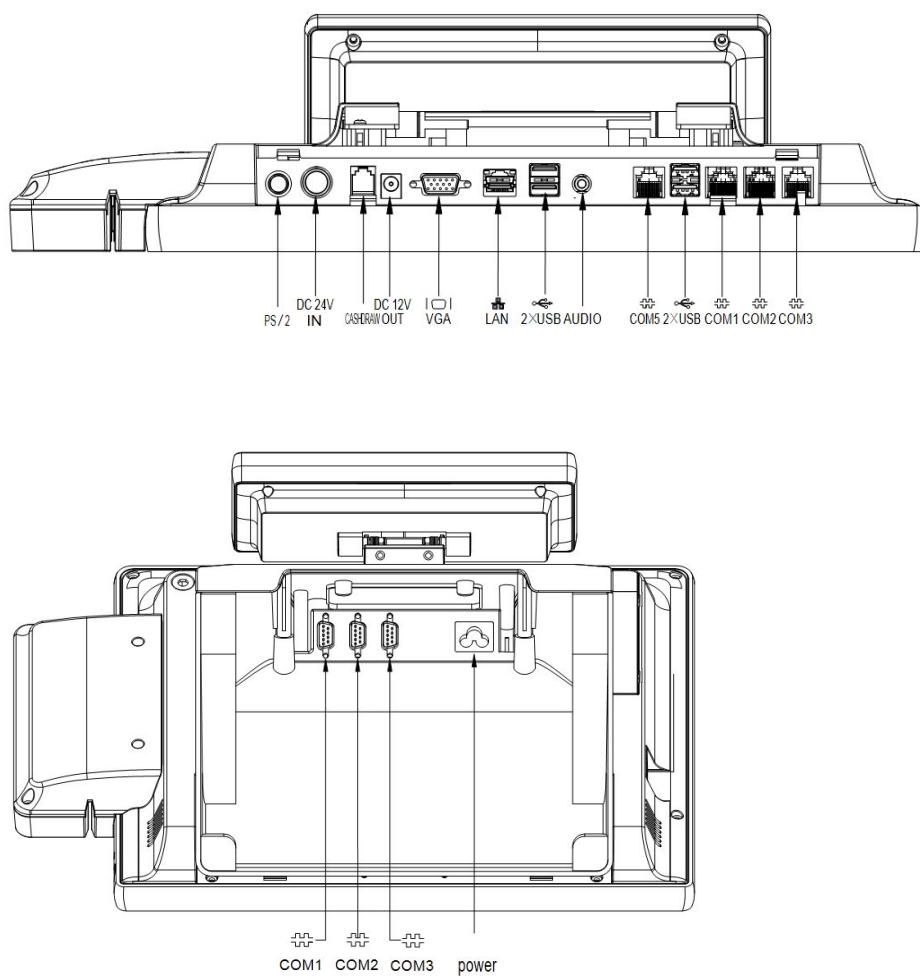


Figure 4 Built-in ports of the POS system

Section 3. Installing the POS System

Installing the POS System

This section provides the steps to install the POS system, connect peripherals and the DC power supply cable.

Finding the right location to install the POS system

It is important to choose a safe and secure place to install the terminal.

- Choose a desk or table big and strong enough to support the weight of the system and peripherals.
- Choose a flat, hard surface. Carpeted area can generate static electricity that can alter memory or damage system components.
- Make sure to install the system in a well-ventilated place and keep the space free around the system.
- Choose appropriate environmental conditions such as cool and dry places. Avoid humid and dusty places. Also avoid direct sunlight, rapidly changing temperatures, or placing the system near heat sources.
- Select the appropriate voltage. Connect all the equipment into an isolated outlet to prevent static electricity and short circuit.
- Choose a location where sufficient power outlets are available for printers and other peripheral devices.
- Do not install the POS system near electromagnetic and electrical devices, such as phones and electric motors, that can cause system damage.
- The socket-outlet should be installed near the equipment and easy to access.

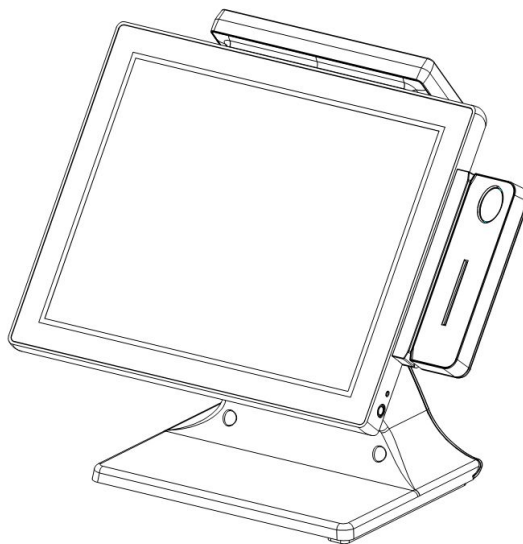


Figure 5. Angle view of the POS system

Connecting Peripherals

To connect peripherals, first remove the [Back cover] that's in the bottom of the system. Next, remove the [Cable arrange cover] located in the rear of the system.

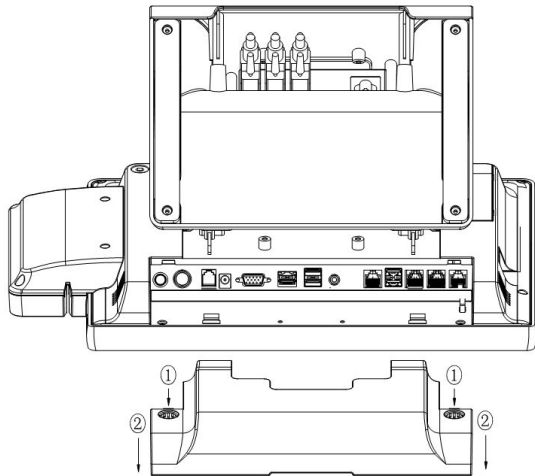


Figure 6. Direction to pull the cover

Connecting a DC power supply cable

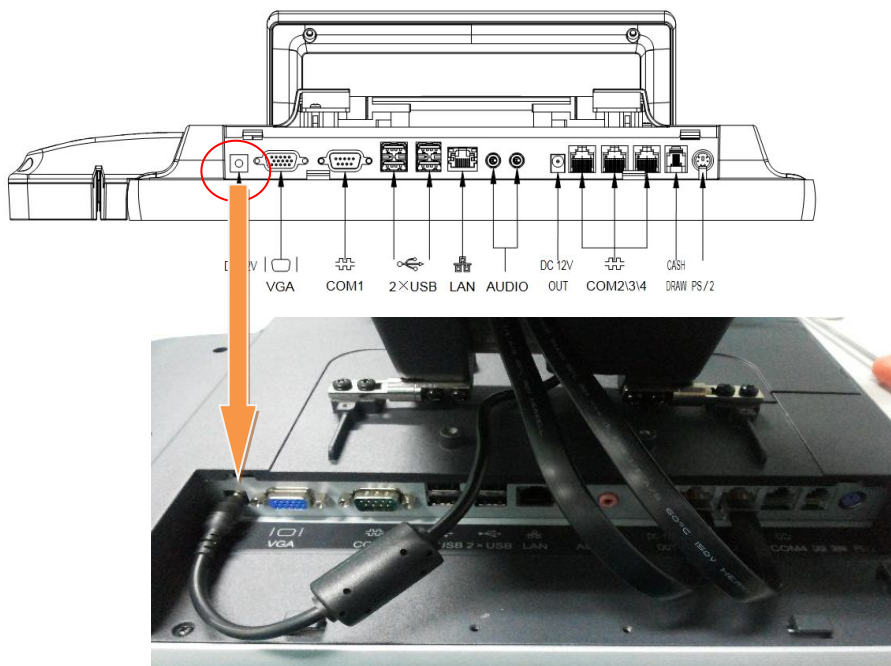
Connect the [DC power cable] to the [DC power input] at the bottom of the system.

Note: You can use a 100V - 240V adapter with this POS system.



You should only use the manufacturer (Hisense) adapter with this POS system. Hisense will not be held liable for any damages caused by using products made by other manufacturers.

HK870 (D2550 motherboard)



HK870E (Baytrail J1900 motherboard)



Figure 7. DC power supply cable

Section 4. Installing Utility Software

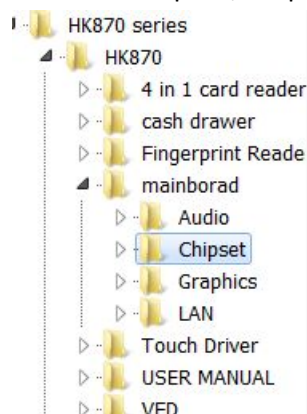
POS Driver and Utility Introduction

This section provides the steps to run the utility software that's needed to install the drivers on the mainboard. The POS drivers and other utilities are located on the CD that came with the system.

Installing software on the HK870 Mainboard

To install the software on the HK870 (D2550) Mainboard

Install the Chipset , Graphics, LAN, Audio in proper sequence on the HK870 system.



To install the software on the HK870E(Baytrail J1900) Mainboard:

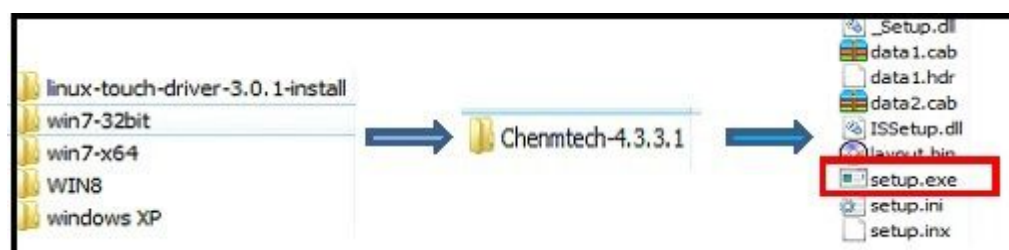


Mainboard



Figure 8. USB3.0 Driver files

Touch Panel



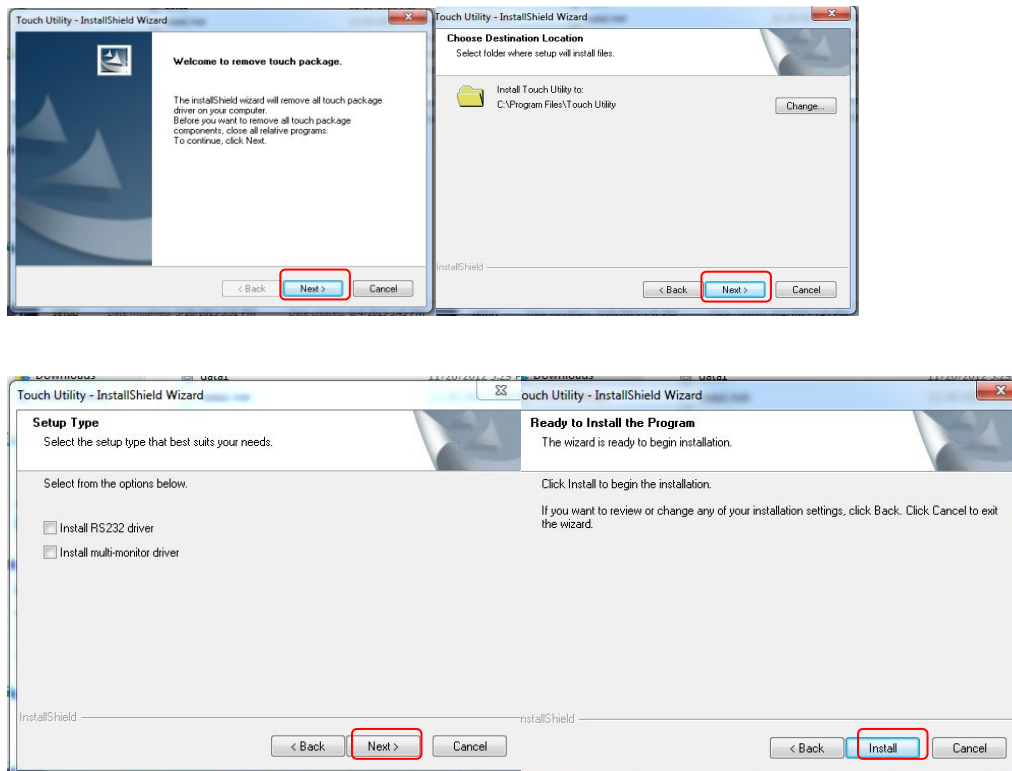


Figure 9. InstallShield Wizard Screenshot

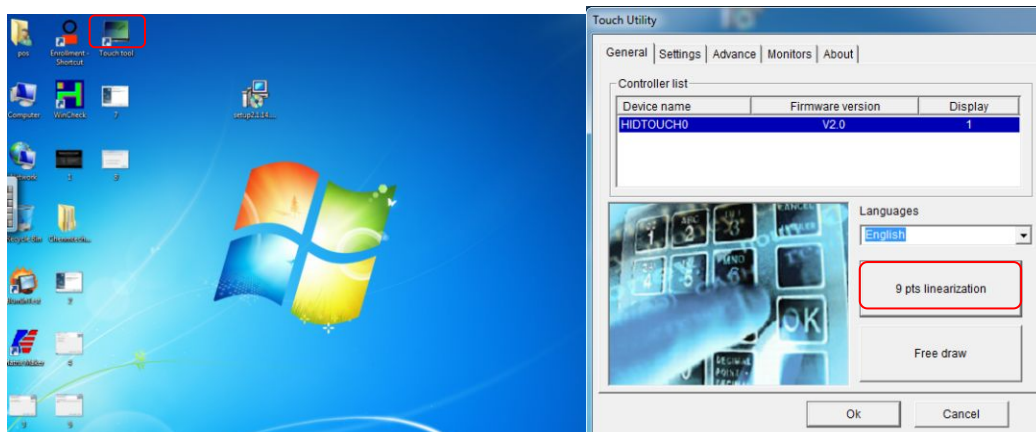
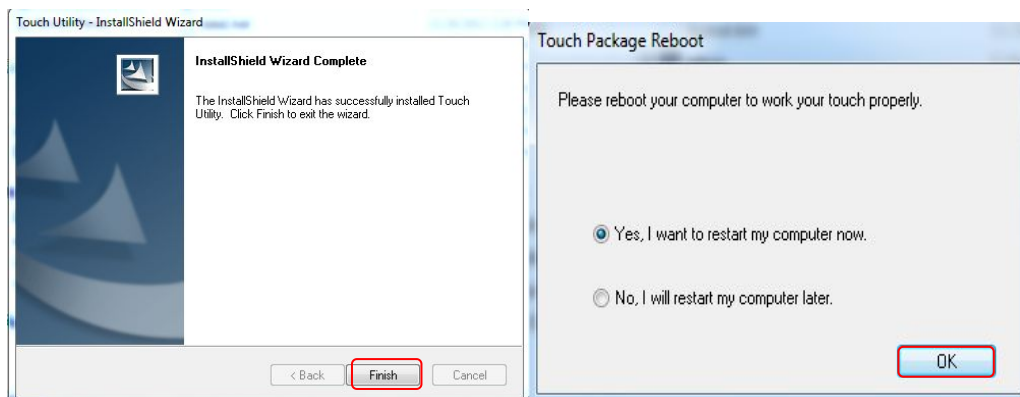


Figure 10. Screenshots of each stage of the install process

Using a Dual Monitor with the POS system

You can use a dual monitor (which is two monitors for one system) with the POS system. You can connect the additional monitor to the [VGA] port. The screen for the sub-monitor can be displayed as a duplication of the main monitor or as an extended screen.

Note: The steps below apply to a Windows 7.

To connect a second monitor:

1. Connect the external monitor when the system is off.
Note: Remove the [Interface cover] at the top of the system to see the VGA connector.
2. Connect a [Power Cable] to the external monitor.
3. Press the [Power] button of the system.
4. Right-click your mouse on the Windows desktop screen and select **Screen resolution** from a pop-up menu.

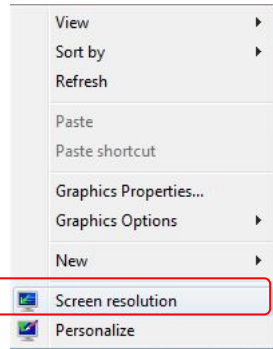


Figure 11. Screen resolution feature

After you select the Screen resolution, the **Change the appearance of your display** dialogue window will appear. The **Display** option is set as '**1|2. Multiple Monitors**' and the **Multiple displays** option is set as '**Duplicate these displays**'.

In figure 12, the dual monitor shows a duplicated screen.

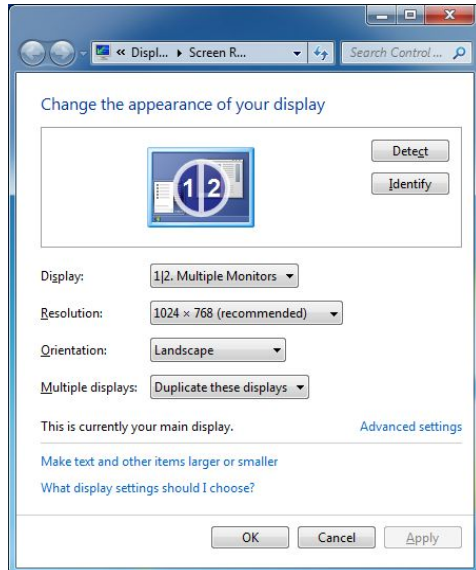


Figure 12. 'Change the appearance of your display' dialogue window

If you want to change to an extended screen, set the **Multiple displays** option to 'Extend these displays' and click "OK". Figure 13 shows where two different extended screen monitors are being used.

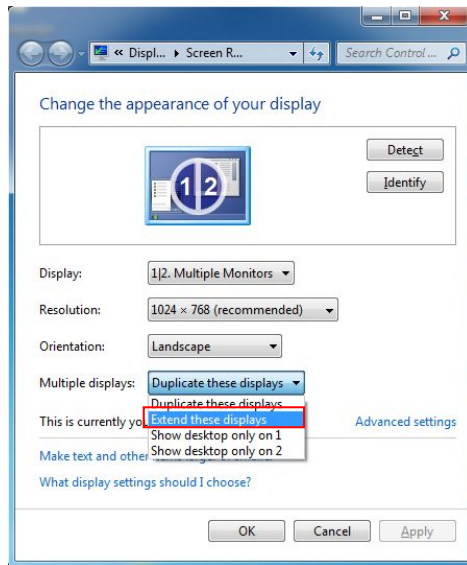


Figure 13. Extend these displays option

5. Click the **Keep changes** button on the 'Display Settings' dialog window to keep the current settings.

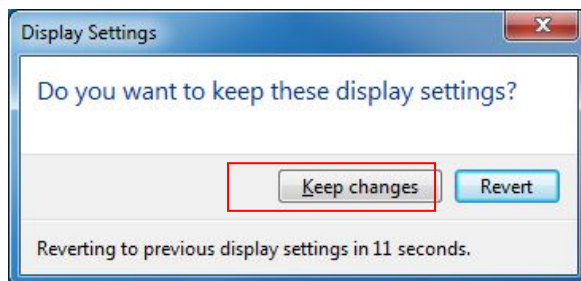


Figure 14. Display settings window

6. If the configuration is finished, click the **OK** button to close the **Change the appearance of your displays** dialog window.

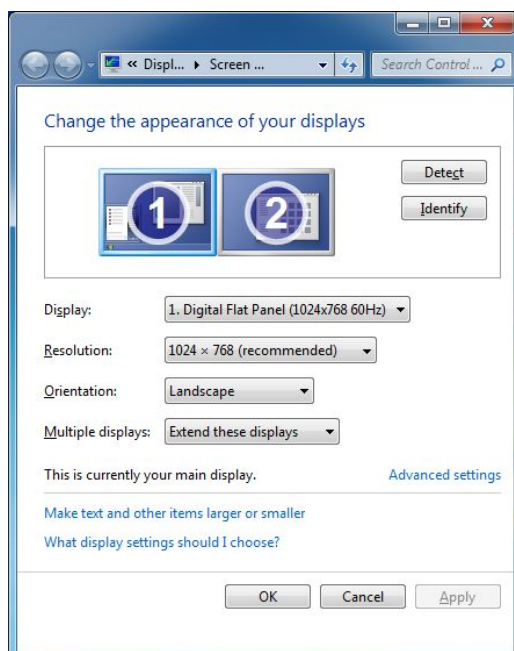


Figure 15. Change the appearance of your displays window

Section 5. Getting familiar with the HK870 motherboards

The HK870 Series is comprised of two different motherboards: HK870 and HK870E.

HK870 (D2550) Motherboard Layout

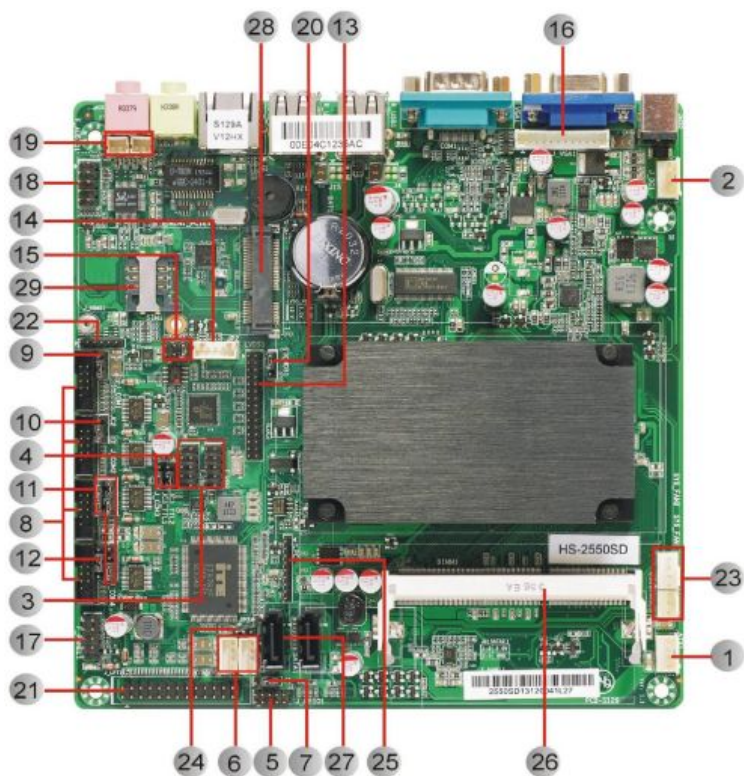


Figure 16. HK870 Motherboard

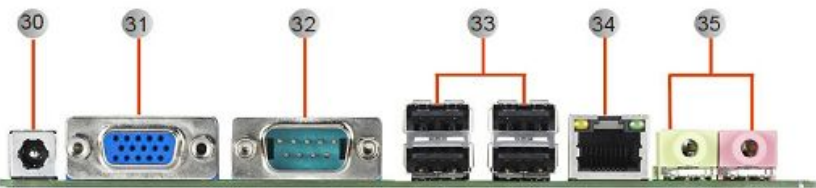


Figure 17. HK870 Connectors

HK870 Connectors and Functions

Table 1. HK870 Connectors and Functions

Connectors	Function
1. ATX 1	ATX Power Output Connector (4*1 Pin 2.54mm)
2. J_DC1	DC Power Supply Connector (4*1 Pin 2.54mm) Interface
3. J_USB1& J_USB2	Front USB Headers(5*2 Pin 2.54mm)
4. J13,J14	F_USB1 Signal Control Jumpers(3*1 Pin 2.54mm)
5. JGPIO1	GPIO Header(5*2 Pin 2.00mm)
6. SATA_P1,SATA_P2	SATA Power Supply Connectors(4*1 Pin 2.00mm)
7. J1	SATA1 DOM Power Supply Selection Jumper(3*1 Pin 2.00mm)
8. J_COM1-COM4	COM1~4 headers(5*2 Pin 2.54mm)
9. JC1	COM1 Control Jumper (3*1 Pin 2.00mm)
10. JC2	COM2 Control Jumper (3*1 Pin 2.00mm)
11. JC3-TTL1, JC3-TTL2, JC3_P	COM3 Control Jumper (3*1 Pin 2.00mm)
12. JC4	COM4 Control Jumper (3*1 Pin 2.00mm)
13. LVDS1	LVDS Header (15*2 Pin 2.00mm)
14. JP2	LVDS Backlight Control Connector (5*1 Pin 2.00mm)
15. LVDS_P1	LVDS VCC Selection Jumper (3*2 Pin 2.00mm)
16. J_VGA1	VGA Header(12*1 Pin 2.00mm)
17. F_PANEL1	Front Panel Header (5*2 Pin 2.54mm)
18. F_AUDIO1	Front Audio Header (5*2 Pin 2.54mm)
19. J_SPK_R, J_SPK_L	Amplifier Headers(2*1 Pin 2.00mm)
20. JCMOS1	COMS clear jumper(3*1 Pin 2.54mm)
21. J_LPT1	LPT header Headers(13*2 Pin 2.00mm)
22.J_KBMS1	Keyboard and Mouse Headers(6*1 Pin 2.00mm)
23. SYS_FAN1,SYS_FAN2	System Fan Headers(3*1 Pin 2.54mm/ 4*1 Pin 2.54mm)
24.DCOUT1	Power-on Signal Select Jumper(3*1 Pin 2.00mm)
25. JP3	Debug Header
26. SO_DIMM	SO-DIMM socket
27. SATA	SATA connector
28. MINIPCIE	MINIPCIE socket
29. SIM	SIM card socket

HK870 Common Jumpers and functions

Table 2. Common Jumper Descriptions

Location	Header	Pin	Definition	Pin	Definition
17	F_PANEL1	1	HD LED+	2	Power LED+
		3	HD LED-	4	Power LED-
		5	RESET+	6	PWR+
		7	RESET-	8	PWR-
		9	N/C		
Location	Jumper	Setting		Function	
20	JCMOS1	1-2(Default)		Normal	
		2-3		Clear CMOS	

HK870 Display Description

Table 3. HK870 Display Description

Location	Header	Pin	Definition	Pin	Definition
13	LVDS1	1	VCC ^[1]	2	VCC ^[1]
		3	VCC ^[1]	4	N/C
		5	GND	6	GND
		7	LVDS_A_DATA0_N	8	LVDS_A_DATA0_P
		9	LVDS_A_DATA1_N	10	LVDS_A_DATA1_P
		11	LVDS_A_DATA2_N	12	LVDS_A_DATA2_P
		13	GND	14	GND
		15	LVDS_A_CLK_N	16	LVDS_A_CLK_P
		17	LVDS_A_DATA3_N	18	LVDS_A_DATA3_P
		19	LVDS_B_DATA0_N	20	LVDS_B_DATA0_P
		21	LVDS_B_DATA1_N	22	LVDS_B_DATA1_P
		23	LVDS_B_DATA2_N	24	LVDS_B_DATA2_P
		25	GND	26	GND
		27	LVDS_B_CLK_N	28	LVDS_B_CLK_P
		29	LVDS_B_DATA3_N	30	LVDS_B_DATA3_P

Notes:

Vcc could be 3.3V(default) or 5V or 12V by setting the jumper"LVDS_P1(Location 15)"
LVDS Backlight Control Connector (5*1 Pin 2.00mm)

Location	Connector	Pin	Definition	Pin	Definition
14	JP2	1	+ 12V	2	GND
		3	LVDS_BKL_EN	4	N/C
		5	+ 5V		

LVDS VCC Selection Jumper (3*2 Pin 2.00mm)

Location	Jumper	Setting	Function
15	LVDS_P1	1-2	+ 12V
		3-4	+ 5V
		5-6(Default)	+ 3.3V

Notes:

Only one jumper can be installed at once, otherwise, the LVDS device or the motherboard will get damaged.

VGA Header(12*1 Pin 2.00mm)

Location	Connector	Pin	Definition	Pin	Definition
16	J_VGA1	1	GND	2	VSYNC
		3	HSYNC	4	GND
		5	RED	6	GND
		7	GREEN	8	GND
		9	BLUE	10	GND
		11	DDCDAT	12	DDCCLK

HK870 Audio Description

Table 4. HK870 Audio description

Location	Header	Pin	Definition	Pin	Definition
18	F_AUDIO1	1	FP_MIC_L	2	GND
		3	FP_MIC_R	4	AUD_VCC
		5	FP_OUT_R	6	SENSE1_RETURN
		7	SENSE_SEND		
		9	FP_OUT_L	10	SENSE2_RETURN

HK870 LAN Description

Table 5. HK870 LAN Description

LAN	Description
LAN IC	RTL811E 10M/100M/1000M
PIN TYPE	RJ45

HK870 USB Description

Table 6. HK870 USB Description

Location	Header	Pin	Definition	Pin	Definition
3	F_USB1	1	+ 5 V	2	+ 5 V
		3	J13*	4	USBP7-
		5	J14*	6	USBP7+
		7	GND	8	GND
				10	N/C
	F_USB2	1	+ 5 V	2	+ 5 V
		3	USBP4-	4	USBP5-
		5	USBP4+	6	USBP5+
		7	GND	8	GND
				10	N/C

HK870 COM Description

Table 7. HK870 COM Description

Location	Header	Pin	Definition	Pin	Definition
8	J_COM1	1	JC1*	2	RXD
		3	TXD	4	DTR
		5	GND	6	DSR
		7	RTS	8	CTS
		9	RI		
	J_COM2	1	JC2*	2	RXD
		3	TXD	4	DTR
		5	GND	6	DSR
		7	RTS	8	CTS
		9	RI		
	J_COM3	1	JC3_P*	2	JC3_TTL1* /JC3_TTL2*
		3	JC3_TTL1* /JC3_TTL2*	4	DTR
		5	GND	6	DSR
		7	RTS	8	CTS
		9	N/C ^[1]		
	J_COM4	1	JC4*	2	RXD
		3	TXD	4	DTR
		5	GND	6	DSR
		7	RTS	8	CTS
		9	N/C ^[1]		

These signals are depend on relevant jumpers(e.g. Pin1 of J_COM1 depends on JC1 Jumper)
Pin 9 of J_COM3 and J_COM4 are “N/C”(default),and 5V or 12V selectable.

COM1 Control Jumper (3*1 Pin 2.00mm)

Location	Jumper	Settings	Function
9	JC1	1-2	PIN1 :5V
		2-3 (Default)	PIN1 :DCD

COM2 Control Jumper (3*1 Pin 2.00mm)

Location	Jumper	Settings	Function
10	JC2	1-2	PIN1:5V
		2-3(Default)	PIN1:DCD

COM3 Control Jumper (3*1 Pin 2.00mm)

Location	Jumper	Setting	Function
11	JC3_TTL1 JC3_TTL2	1-2, 3-4(Default)	RS-232
		2-3	TTL
	JC3_P	1-2	PIN1:5V
		2-3	PIN1 :12V
		3-4(Default)	PIN1:N/C

COM4 Control Jumper (3*1 Pin 2.00mm)

Location	Jumper	Setting	Function
12	JC4	1-2	PIN1 :5V
		2-3	PIN1 :12V
		3-4(Default)	PIN1:N/C

HK870 MINI-PCIE Description

Table 8. HK870 Mini-PCIE description

MINI-PCIE	Description
Connector type	1*Mini PCIE Port

HK870 Cash Drawer Description

Table 9. HK870 Cash Drawer Description

CASH DRAWER	Description
Connector type	RJ11 +24V
PIN defined	1.GND 2.CD_OPEN 3.CD_SENSE 4.+24V 5.NC 6.GND

HK870 PS/2 Description

Table 10. HK870 PS/2 Description

Location	Header	Pin	Definition	Pin	Definition
22	J_KBMS1	1	KB_CLK	2	KB_DATA
		3	MS_CLK	4	GND
		5	+ 5V	6	MS_DATA

HK870 Power connector description

Table 11. HK870 Power connector description

Location	Connector	Pin	Definition	Pin	Definition
6	SATA_P1	1	+ 12V	2	GND
		3	GND	4	+ 5V
	SATA_P2	1	+ 12V	2	GND
		3	GND	4	+ 5V

HK870E (Baytrail J1900) Motherboard Layout



Figure 16. HK870E Motherboard



Figure 17. HK870E Connectors

HK870E Connectors and Functions

Table 12. HK870E Connectors and Functions

Connectors	Function
1. 24V power	+24V power 2*2 PIN CONNECTOR
2. LVDS1	Low Voltage Differential Signaling Transmitter Interface
3.DIMM	1*204pin SO-DIMM Socket
4. LVDSP1	LVDS Inverter power connector
5 SATA	SATA connector
6 PANEL1	Front panel switch/LED header
7.SATA PWR	SATA PWR
8. J_USB1	Front panel USB header
9. J_USB3	2*4 pin PHD header 2.0mm
10. MSATA	Mini SATA
11.SIM	SIM Slot
12. MINI-PCIE	1*MINIPICIE
13. JGPIO	GPIO connector
14. COM2-6	Serial port connectors
15. BAT	CMOS Battery
16.SPK	1*4Pin 2.0mm wafer box
17. MIC	1*4Pin 2.0mm wafer box
18. JS4	COM4 Ring function selector
19. JS3	COM3 Ring function selector
20. JVGA	(2*5 2.0mm PHD Header
21. PS2	PS2 connector
22.DC_POWER	DC 24V power connector
23. RJ11	RJ11 connector
24.DCOUT1	Power Connector for 2 nd Display
25. VGA	VGA connector
26.LAN	LAN connector
27. USB1	USB connector
28. HP	Headphone connector
29.Thermal	Thermal module

HK870E Common Jumpers and functions

Table 13. Common Jumper Descriptions

Jumper	Pin	Function	Setting
JBAT	3-pin	Clear CMOS	1-2 Normal 2-3 Clear CMOS

JS3/4 JS4	6-pin	COM3,COM4 Voltage	1- 12V 3-4 5V 5-6 RI
FP1	9-pin	HDD LED Power LED Switch reset	1-3 Power button 2-4 HDD LED 6-8 Power LED
JIVNT	3-pin	LDC Backlight voltage	1-2 +3.3V 2-3 +5V
JLVDS_PWER	3-pin	LVDS voltage select	1-2 +3.3V 2-3 +5V

HK870E Display Description

Table 14. HK870E Display Description

Display		Description			
Interface	VGA	1*DB15 1*VGA (PHD 2.0mm 2*5)			
	LVDS	2*20Pin, 24bit			
Display Mode	Dual display	Support Colon and extended display			
Interface defined		2*20 PIN LVDS CONNECTOR			
		PIN Defined:			
		Pin No.	Function	Pin No.	Function
		1	VCC	21	LVDS0_P2
		2	VCC	22	LVDS1_P2
		3	GND	23	GND
		4	GND	24	GND
		5	VCC	25	LVDS0_CLKN
		6	VCC	26	LVDS1_CLKN
		7	LVDS0_N0	27	LVDS0_CLKP
		8	LVDS1_N0	28	LVDS1_CLKP
		9	LVDS0_P0	29	GND
		10	LVDS1_P0	30	GND
		11	GND	31	DDC_CLK
		12	GND	32	DDC_DATA
		13	LVDS0_N1	33	GND
		14	LVDS1_N1	34	GND
		15	LVDS0_P1	35	LVDS0_N3
		16	LVDS1_P1	36	LVDS1_N3
		17	GND	37	LVDS0_P3
18	GND	38	LVDS1_P3		
19	LVDS0_N2	39	N.C		
20	LVDS1_N2	40	N.C		

<div> <div> 1 ● 3 ● 5 ● 7 ● 9 ● 11 ● 13 ● 15 ● 17 ● 19 ● 21 ● 23 ● 25 ● 27 ● 29 ● 31 ● 33 ● 35 ● 37 ● 39 ● 2 ● 4 ● 6 ● 8 ● 10 ● 12 ● 14 ● 16 ● 18 ● 20 ● 22 ● 24 ● 26 ● 28 ● 30 ● 32 ● 34 ● 36 ● 38 ● 40 ● </div> </div>							
LVDS Power (1*3 2.54mm) :							
<table> <tr> <th>Pin</th><th>Define</th></tr> <tr> <td>1-2</td><td>3.3V (default)</td></tr> <tr> <td>2-3</td><td>5V</td></tr> </table>	Pin	Define	1-2	3.3V (default)	2-3	5V	<div>1 ■ 2 ● 3 ●</div>
Pin	Define						
1-2	3.3V (default)						
2-3	5V						
Backlight Control defined (1*5 2.0mm wafer box) 1.V12S 2.GND 3.BKLT on 4.BKLT PWM 5.V5S							
<div>1 ■ 2 ● 3 ● 4 ● 5 ●</div>							
Backlight control voltage select (1*3 2.54mm) :							
<table> <tr> <th>Pin</th><th>Define</th></tr> <tr> <td>1-2</td><td>3.3V (default)</td></tr> <tr> <td>2-3</td><td>5V</td></tr> </table>	Pin	Define	1-2	3.3V (default)	2-3	5V	<div>1 ■ 2 ● 3 ●</div>
Pin	Define						
1-2	3.3V (default)						
2-3	5V						
Onboard VGA defined: (2*5 2.0mm PHD Header)							
1.GND 2. 5V DDC Data 3. B-OUT 4. 5V DDC CLK 5. G-OUT 6.VSYNC 7.R-OUT 8. HSYNC 9.GND 10. +5V	<div> 1 ■ 2 ● 3 ● 4 ● 5 ● 6 ● 7 ● 8 ● 9 ● 10 ● </div>						

HK870E Audio Description

Table 15. HK870E Audio description

Audio	Description				
Audio Codec	Realtek ALC662				
Rear IO Type	HP Connector				
Onboard audio pin	PIN defined				
	1	XOUTA-	2	XOUTA+	<div>1■ 2● 3● 4●</div>
	3	XOUTB-	4	XOUTB+	
	PIN defined				
	1	MIC-R	2	MIC-JD	<div>1■ 2● 3● 4●</div>
	3	MIC-L	4	GND	
PIN Type	1*4Pin 2.0mm wafer box				

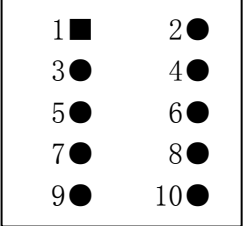
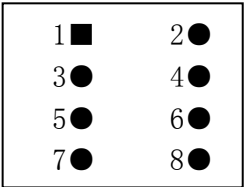
HK870E LAN Description

Table 16. HK870 LAN Description

LAN	Description
LAN IC	RTL811E 10M/100M/1000M
PIN TYPE	RJ45

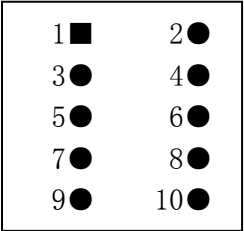
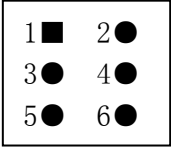
HK870E USB Description

Table 17. HK870E USB Description

USB	Description																		
Connector type	6X USB2.0, 1x usb3.0 PHD																		
Rear connector	2																		
Onboard connector	<p>USB2.0 PIN defined (2*5pin PHD Header 2.0mm) :</p> <table> <tr><td>1. VCC</td><td>2. VCC</td></tr> <tr><td>3. DATA0-</td><td>4. DATA1-</td></tr> <tr><td>5. DATA0+</td><td>6. DATA1+</td></tr> <tr><td>7. GND</td><td>8. GND</td></tr> <tr><td>9. NC(CUT)</td><td>10. GND</td></tr> </table>  <p>USB3.0 PIN defined (2*4 pin PHD header 2.0mm)</p> <table> <tr><td>1. VCC</td><td>2. DATA-</td></tr> <tr><td>3. DATA1+</td><td>4. DATA_TX+</td></tr> <tr><td>5. DATA_TX-</td><td>6. GND</td></tr> <tr><td>7. DATA_RX+</td><td>8. DATA_RX-</td></tr> </table> 	1. VCC	2. VCC	3. DATA0-	4. DATA1-	5. DATA0+	6. DATA1+	7. GND	8. GND	9. NC(CUT)	10. GND	1. VCC	2. DATA-	3. DATA1+	4. DATA_TX+	5. DATA_TX-	6. GND	7. DATA_RX+	8. DATA_RX-
1. VCC	2. VCC																		
3. DATA0-	4. DATA1-																		
5. DATA0+	6. DATA1+																		
7. GND	8. GND																		
9. NC(CUT)	10. GND																		
1. VCC	2. DATA-																		
3. DATA1+	4. DATA_TX+																		
5. DATA_TX-	6. GND																		
7. DATA_RX+	8. DATA_RX-																		
PIN type	2X5pin PHD Header 2.0mm																		

HK870E COM Description

Table 18. HK870E COM Description

COM	Description										
Connector type	5x COM, COM3-COM4 jumper selectable 5V/12V (1A) /RI, other standard										
COM pin	<p>COM1 PIN (Standard RS232) :</p> <p>COM2~COM6 RS232 2*5 PIN Defined:</p> <table> <tr><td>1. DCD</td><td>2. RXD</td></tr> <tr><td>3. TXD</td><td>4. RTD</td></tr> <tr><td>5. GND</td><td>6. DSR</td></tr> <tr><td>7. RTS</td><td>8. CTS</td></tr> <tr><td>9. RI</td><td>10. NC(CUT)</td></tr> </table> 	1. DCD	2. RXD	3. TXD	4. RTD	5. GND	6. DSR	7. RTS	8. CTS	9. RI	10. NC(CUT)
1. DCD	2. RXD										
3. TXD	4. RTD										
5. GND	6. DSR										
7. RTS	8. CTS										
9. RI	10. NC(CUT)										
Voltage select	<p>COM3&COM4 Pin9 12V select</p> <table> <tr><th>Pin</th><th>Define</th></tr> <tr><td>1-2</td><td>12V</td></tr> <tr><td>3-4</td><td>5V</td></tr> <tr><td>5-6</td><td>RI</td></tr> </table> 	Pin	Define	1-2	12V	3-4	5V	5-6	RI		
Pin	Define										
1-2	12V										
3-4	5V										
5-6	RI										

HK870E MINI-PCIE Description

Table 19. HK870E Mini-PCIE description

MINI-PCIE	Description
Connector type	1*Mini PCIE Port

HK870E Cash Drawer Description

Table 20. HK870E Cash Drawer Description

CASH DRAWER	Description
Connector type	RJ11 +24V
PIN defined	1.GND 2.CD_OPEN 3.CD_SENSE 4.+24V 5.NC 6.GND

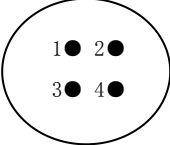
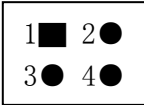
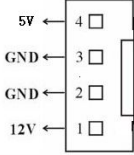
HK870E PS/2 Description

Table 21. HK870E PS/2 Description

PS/2	Description
Connector type	PS/2 Single layer connector

HK870E Power connector description

Table 22. HK870E Power connector description

24V DC	+24V 4 PIN DC JACK defined: 1. 24V 3. 24V 3. GND 4. GND	
	+24V 2*2 PIN CONNECTOR 1. GND 2. GND 3. 24V 4. 24V	
SATA PWR		
DC-OUT	12V/2.5A (1*3Pin Power Jack outside radius 5.5mm, inside radius 2.0mm)	

Section 6. Assembling and Disassembling the POS System

Assembling and disassembling the POS

This section provides the steps to assemble and disassemble the POS system.

1 Remove the Hard Disk Drive (HDD)

- A. To disassemble the POS, first remove the screw of the [HDD cover] and take off the cover.
- B. Pull out the hard disk assembly.

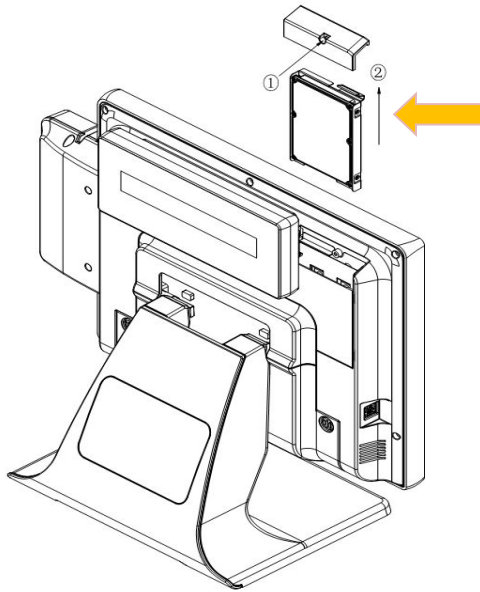


Figure 18. HDD cover to remove

2 Remove the cable cover

- A. Press the switch.

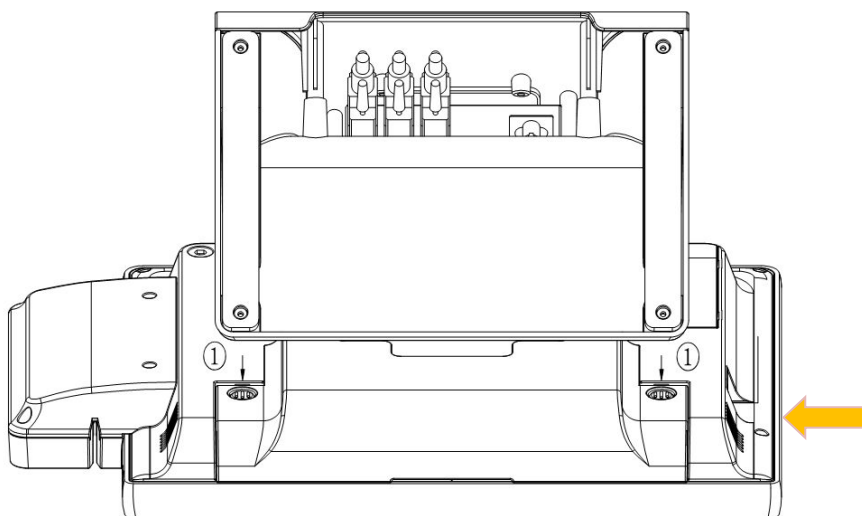


Figure 19. Cable cover

- B. Pull out the cable cover

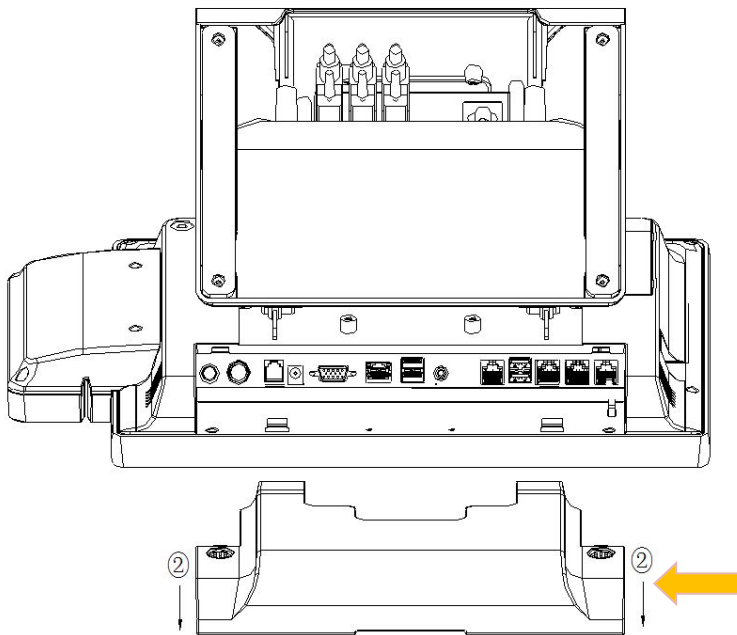


Figure 20. Cable cover that's detached

3 Remove the multi-function card reader

- A. Release the two screws.
B. Pull off the cable terminal and remove the multifunction card reader.

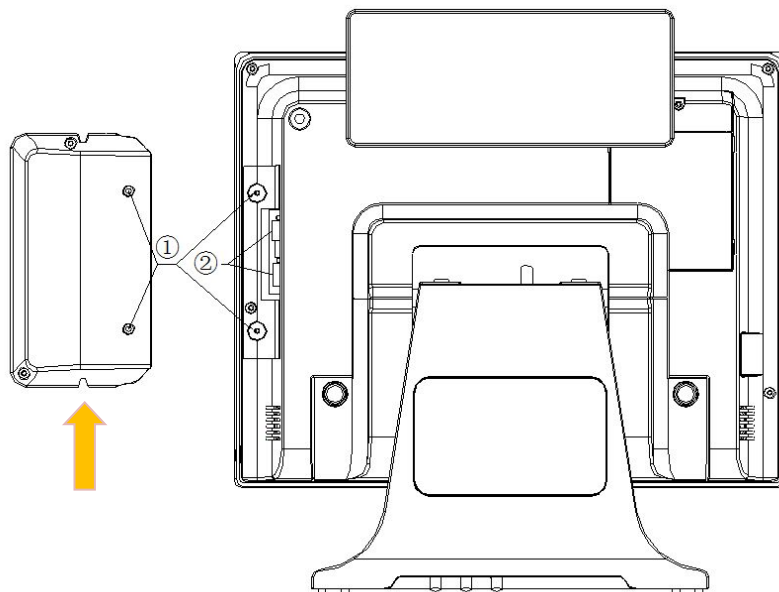


Figure 21. Multi-function card reader

4 Remove the customer display

- A. Rotate the customer display to the horizontal position.

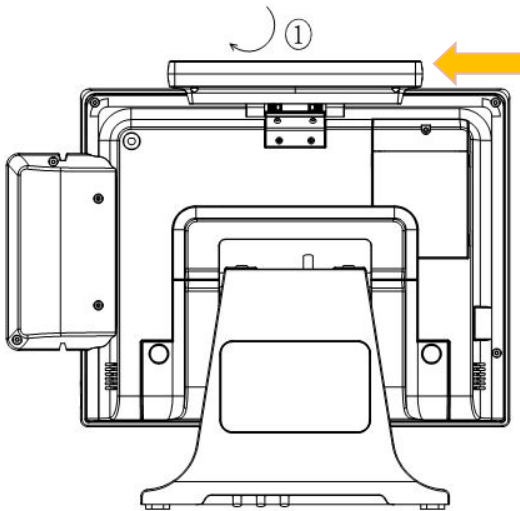


Figure 22. Rotated customer display

- B. Release the two screws.
- C. Pull off the cable terminal and remove the customer display.

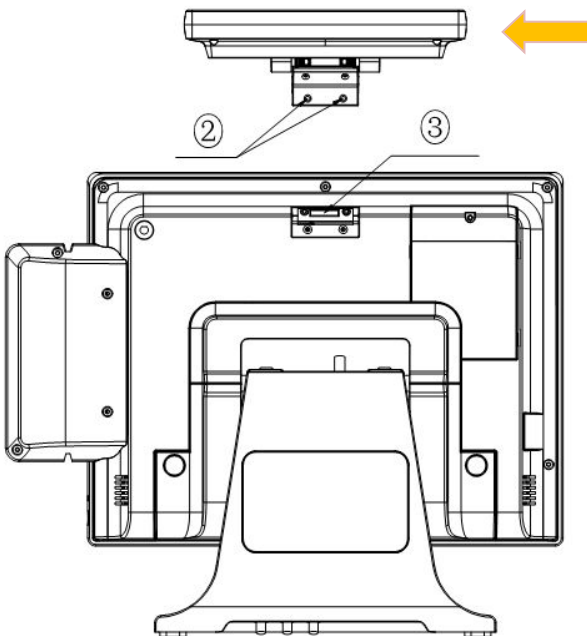


Figure 23. Second display

5 Remove the second display

- A. Press the switch and pull out the cable cover.

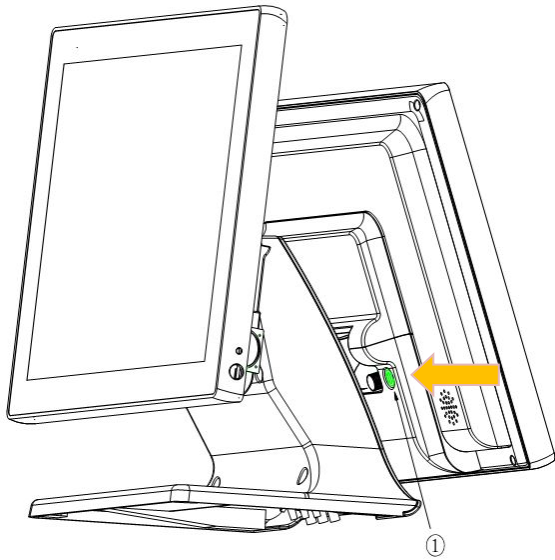


Figure 24. Switch to pull out the cable cover

- B. Release the two tool-less screws.
- C. Rotate and pull the second display.

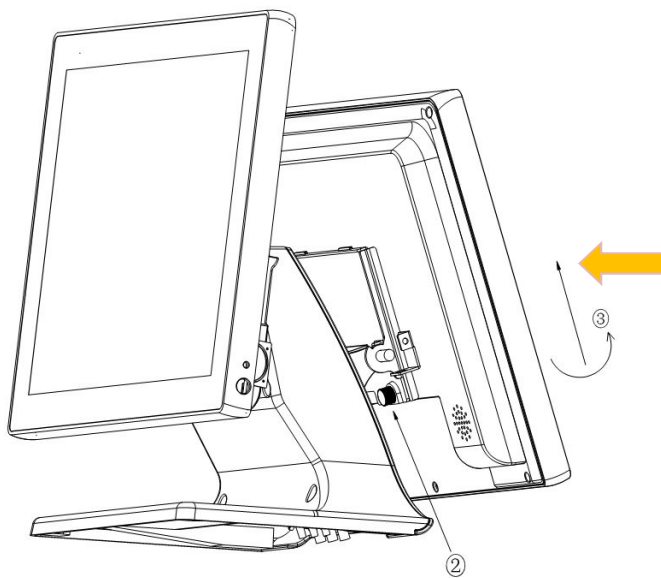


Figure 25. Second display that's rotated

Section 7. Product Specifications

HK870 series Specifications

Table 23. HK870 Specifications

Item		Description
Model		HK870
System	CPU	Intel® Atom D2550 Dual Core, clock speed 1.86 GHz, TDP 10W
	Memory	DDRIII 2G (Up to 4G)
LCD Touch Panel	LCD Size	15 inch
	Brightness	400 cd/m ²
	Resolution	1024×768
	Touch Screen	5 wire resistive true flat touch (single touch) True flat projected capacitive technology (optional)
Storage	HDD	HDD SATA 2.5 inch (320Gb Standard)
	SSD	SATA 32Gb SSD (larger capacity optional)
		MSATA 64Gb SSD (larger capacity optional)
I/O Ports	Serial Ports	3* standard RS-232 COM; (COM4 is alternative to OPOS customer display,COM4 with 5V/12V power.) COM3 is alternative to 5V power(COM3 without power default)
	USB	6 * USB 2.0 (2 Front,4 Rear)
	VGA	1 * VGA reserved for 2nd display
	LAN	1 * RJ-45 (1000Mbps Gigabit LAN)
	Audio	1 Line-out +1MIC
	Cash Drawer	1 * RJ-11 24V for cash drawer
	PS/2	1
	DC 12V out	1
Power	Power Adapter	Adapter (DC 12V, 7A)
Peripheral	MSR	3 Tracks (USB)

	Fingerprint Reader	Digital Personal module / USB
	RFID	RFID Reader (USB, option)
	IC Card	Smart Card Reader (USB, option)
	Customer Display	2 × 20 characters VFD
		15" TFT LCD display
Environment	Operating Temperature	5°C - 40°C
	Operating Humidity	40% - 90%

Table 24. HK870E Specifications

Item		Description
Model		HK870E
System	CPU	Intel® Celeron process Baytrail-D J1900 Quad Core, clock speed 2.0 GHz, TDP 10W
	Memory	DDRIII 2G (Up to 8G)
LCD Touch Panel	LCD Size	15 inch
	Brightness	400 cd/m ²
	Resolution	1024×768
	Touch Screen	5 wire resistive true flat touch (single touch) True flat projected capacitive technology (optional)
Storage	HDD	HDD SATA 2.5 inch (320Gb Standard)
	SSD	SATA 32Gb SSD (larger capacity optional)
		MSATA 64Gb SSD (larger capacity optional)
I/O Ports	Serial Ports	3* standard RS-232 COM; (COM4 is alternative to OPOS customer display, COM4 with 5V/12V power.) COM3 is alternative to 5V power (COM3 without power default)
	USB	6 * USB 2.0 (2 Front, 4 Rear)
	VGA	1 * VGA reserved for 2nd display
	LAN	1 * RJ-45 (1000Mbps Gigabit LAN)
	Audio	1 Line-out

	Cash Drawer	1 * RJ-11 24V for cash drawer
	PS/2	1
	DC 12V out	1
Power	Power Adapter	Adapter (DC 24V, 3.75A)
Peripheral	MSR	3 Tracks (USB)
	Fingerprint Reader	Digital Personal module / USB
	RFID	RFID Reader (USB, option)
	IC Card	Smart Card Reader (USB, option)
	Customer Display	2 × 20 characters VFD
		15" TFT LCD display
Environment	Operating Temperature	5°C - 40°C
	Operating Humidity	40% - 90%

Appendix A. Basic Input and Output System (BIOS)

Set Up Information

This section provides information about the Basic Input and Output System (BIOS) that will drive the main board.

Understanding BIOS

Basic Input and Output System (BIOS) provides configuration and set-up information for driving the main board. BIOS values are saved in CMOS ROM on the main board. **BIOS Set-Up** is a menu-oriented software utility which enables a user to configure the system's environmental set-up, system hardware, power saving functions, etc. BIOS Set-Up values can seriously affect how the system works. Therefore, users should determine all options regarding BIOS Set-Up and configure the system accordingly.

Entering the Setup for HK870 series

- Turn on the system and press [F2] to enter the SETUP screen.
- Turn on the system and press [F11] to enter the boot menu.

Scenarios of when to use a BIOS Setup

Use the BIOS setup software utility when:

- Checking HDD type and capacity after HDD replacement
- Changing the booting sequence
- Reflecting the users need on the setup

Appendix B. Input/Output Information

This section provides input/output information for the **HK870 All-in-One POS System**.

Input/Output information for the HK870 series

HK870 (D2550) Super I/O Information (BIOS default settings)

COM1: 3F8/4
COM2: 2F7/3
COM3: 3E8/7
COM4: 2E8/7

HK870 (D2550) Cash Drawer

```
//Borland C++3.1 + DOS6.22
//XB2550
#ifndef byte
    #define byte unsigned char
#endif
#ifndef Sleep
    #define Sleep(x) delay(x)
#endif

#ifndef HSOtp
    #define HSOtp(add,by) outportb(add,by)
#endif

#ifndef HSItp
    #define HSItp(add) inportb(add)
#endif

//OpenDrawer
void OpenDrawer()
{
    //GPO38 PIN Bit6 0--->1
    byte by = HSItp( 0x538 );
    HSOtp( 0x538 , 0xBF & by );

    Sleep( 120 ); //200ms-->120ms

    by = HSItp( 0x538);
    HSOtp( 0x538, 0x40 | by );
}

//status1:Drawer closed; 0:Drawer open;
bool GetDrwStatus()
{
    //GPI22 2PIN Bit6
    if( HSItp( 0x50E ) & 0x40)
        return 1;
    else return 0;
}
```

HK870E (J1900) Super I/O Information (BIOS default settings)

COM1: 3F8/4
COM2: 2F7/3
COM3: 3E8/7
COM4: 2E8/7
COM5: 2F0/5

HK870E (J1900) Cash Drawer

```
/*  
  
This Demo program for   POS box  
  
    CD_SENSE GP36  
    CD_OPEN  GP40  
  
*/  
#include "stdio.h"  
#include "conio.h"  
#include "graphics.h"  
#include "string.h"  
#include "io.h"  
  
#define BIT0 0x01  
#define BIT1 0x02  
#define BIT2 0x04  
#define BIT3 0x08  
#define BIT4 0x10  
#define BIT5 0x20  
#define BIT6 0x40  
#define BIT7 0x80  
#define IO_Base      0xA00  
#define CDS_PORTIO_Base+2  
#define CDO_PORT     IO_Base+3  
  
void Init_DIO_Default()  
{  
  
}  
  
/*-----  
@brief : Set CD_OPEN power level  
@Input :   Level-- 0:Low   1: High  
-----*/  
void Set_CD_OPEN(int Level)  
{  
    int t;  
    if(Level)  
    { outputb(CDO_PORT,inportb(CDO_PORT)|BIT0);  
      printf(" CD_OPEN is High \n");  
    }  
    else  
    { outputb(CDO_PORT,inportb(CDO_PORT) &~BIT0);  
      printf("CD_OPEN is Low\n");  
    }  
}
```



```

/*-----
@brief :   Get CD_SENSE low active
@return :   1:Low active with no jitter
-----*/

int Get_CD_SENSE_Status()
{
    if(inportb(CDS_PORT)&BIT6)
    {
        delay(100);
        if(inportb(CDS_PORT)&BIT6)
        {
            printf("CD_SENSE is Low level stability.\n");
            return 1;
        }
    }
    else
        printf("CD_SENSE is High level\n");
    return 0;
}

main()
{
    printf("System ready\n ");
    /*Set_CD_OPEN High */
    Set_CD_OPEN(1);

    /*Set_CD_OPEN Low */
    Set_CD_OPEN(0);

    while(1)
    {
        Get_CD_SENSE_Status();
    }
}

```