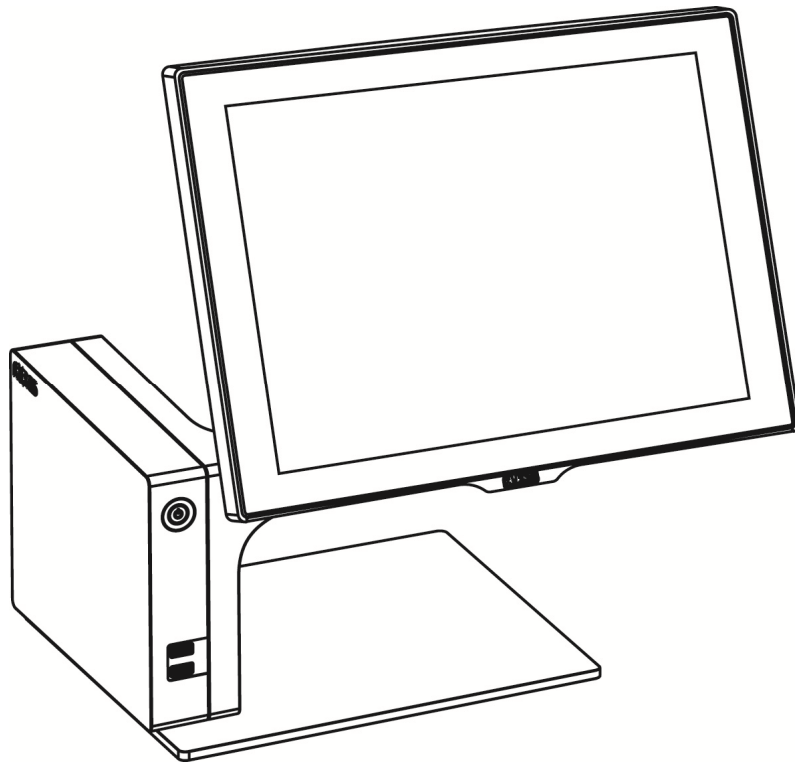


User Manual

Version 1.3 September 2019

SANGO



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Manual Version 1.3

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Safety

IMPORTANT SAFETY INSTRUCTIONS

1. To disconnect the machine from the electrical Power Supply, turn off the power switch and remove the power cord plug from the wall socket. The wall socket must be easily accessible and in close proximity to the machine.
2. Read these instructions carefully. Save these instructions for future reference.
3. Follow all warnings and instructions marked on the product.
4. Do not use this product near water.
5. Do not place this product on an unstable cart, stand, or table. The product may fall, causing serious damage to the product.
6. Slots and openings in the cabinet and the back or bottom are provided for ventilation; to ensure reliable operation of the product and to protect it from overheating. These openings must not be blocked or covered. The openings should never be blocked by placing the product on a bed, sofa, rug, or other similar surface. This product should never be placed near or over a radiator or heat register, or in a built-in installation unless proper ventilation is provided.
7. This product should be operated from the type of power indicated on the marking label. If you are not sure of the type of power available, consult your dealer or local power company.
8. Do not allow anything to rest on the power cord. Do not locate this product where persons will walk on the cord.
9. Never push objects of any kind into this product through cabinet slots as they may touch dangerous voltage points or short out parts that could result in a fire or electric shock. Never spill liquid of any kind on the product.



CE MARK

This device complies with the requirements of the EEC directive 2014/30/EU with regard to “Electromagnetic compatibility” and 2014/35/EU “Low Voltage Directive”



FCC

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference.
- (2) This device must accept any interference received, including interference that may cause undesired operation

CAUTION ON LITHIUM BATTERIES

There is a danger of explosion if the battery is replaced incorrectly. Replace only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.



Battery Caution

Risk of explosion if battery is replaced by an incorrectly type.
Dispose of used battery according to the local disposal instructions.



Safety Caution

Note: To comply with IEC60950-1 Clause 2.5 (limited power sources, L.P.S) related legislation, peripherals shall be 4.7.3.2 "Materials for fire enclosure" compliant.

4.7.3.2 Materials for fire enclosures

For MOVABLE EQUIPMENT having a total mass not exceeding 18kg, the material of a FIRE ENCLOSURE, in the thinnest significant wall thickness used, shall be of V-1 CLASS MATERIAL or shall pass the test of Clause A.2.

For MOVABLE EQUIPMENT having a total mass exceeding 18kg and for all STATIONARY EQUIPMENT, the material of a FIRE ENCLOSURE, in the thinnest significant wall thickness used, shall be of 5VB CLASS MATERIAL or shall pass the test of Clause A.1

LEGISLATION AND WEEE SYMBOL

2012/19/EU Waste Electrical and Electronic Equipment Directive on the treatment, collection, recycling and disposal of electric and electronic devices and their components.



The crossed dustbin symbol on the device means that it should not be disposed of with other household wastes at the end of its working life. Instead, the device should be taken to the waste collection centers for activation of the treatment, collection, recycling and disposal procedure.

To prevent possible harm to the environment or human health from uncontrolled waste disposal, please separate this from other types of wastes and recycle it responsibly to promote the sustainable reuse of material resources.

Household users should contact either the retailer where they purchased this product, or their local government office, for details of where and how they can take this item for environmentally safe recycling.

Business users should contact their supplier and check the terms and conditions of the purchase contract.

This product should not be mixed with other commercial wastes for disposal.

Revision History

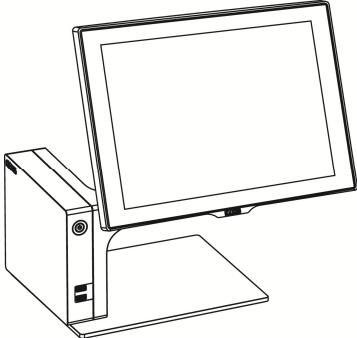
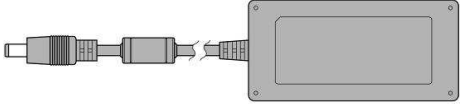


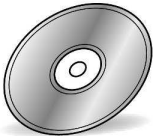
Revision	Date	Description
V1.0	March, 2013	● Release
V1.1	September, 2013	● Peripherals added: - scanner module - speaker cable - audio cable - 2 nd display
V1.2	September, 2017	● C96 MB removed ● D95 and D96 MB added
V1.3	September, 2019	● Power adapter rating modified

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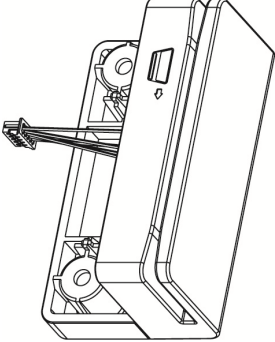
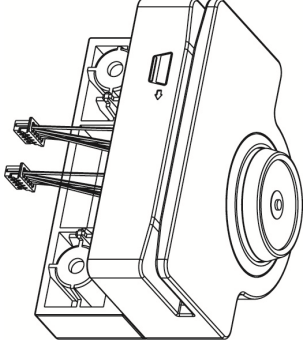
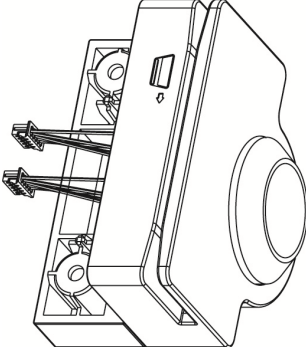

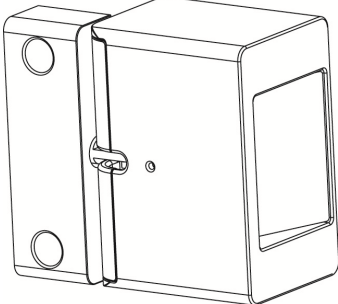
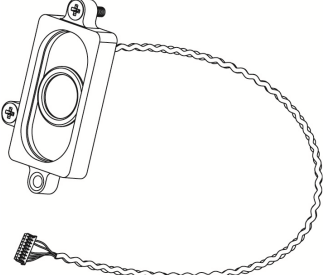
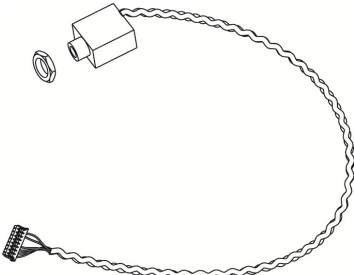
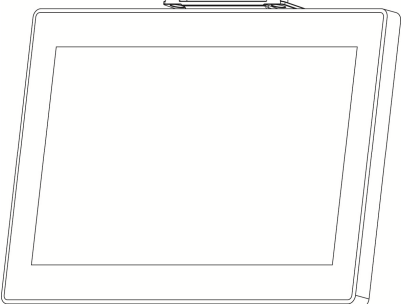
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1 Item Checklist

1-1 Standard Items

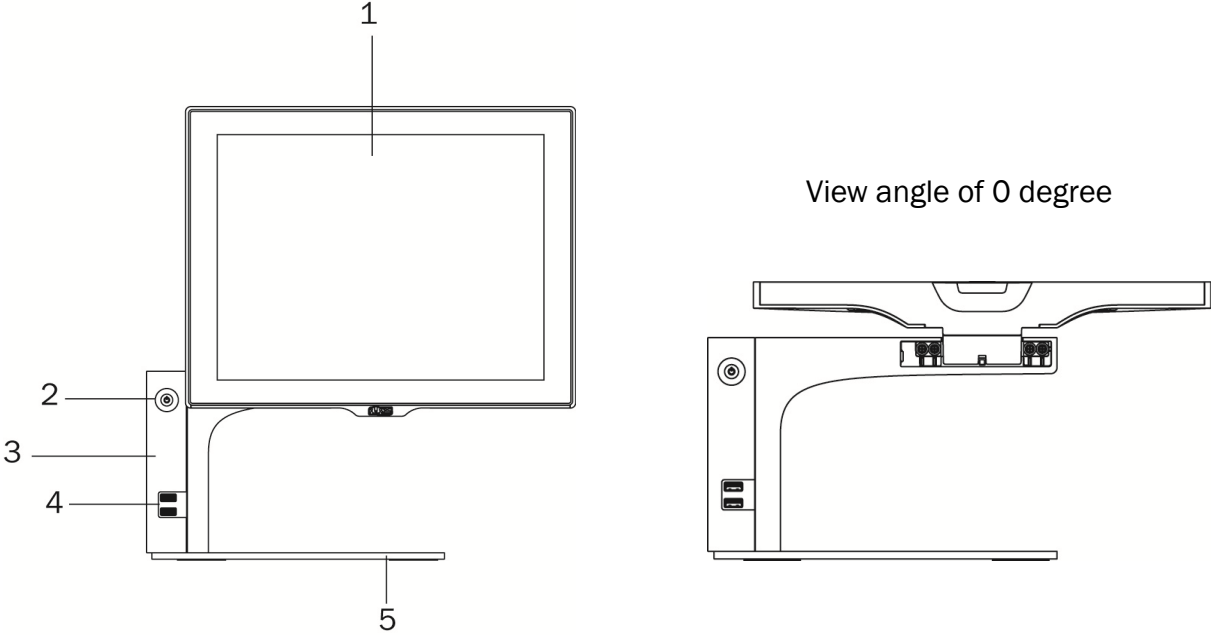
	
a. System	b. Power adapter (65W)
	
c. Power cable	d. COM-RJ45 cable (x4)
	
e. Manual CD	

1-2 Optional Items

	
a. MSR module	b. 2-in-1 MSR+ iButton module
	
c. 2-in-1 MSR+ Addimat reader	d. Customer display (Graphic LCM)
	
e. Scanner module	f. Speaker cable
	
g. Audio cable	h. 2 nd display

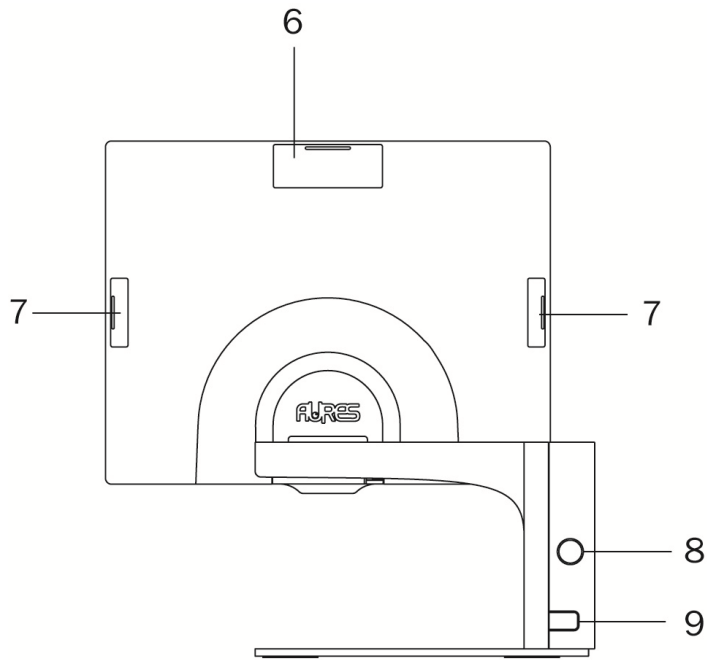
2 System View

2-1 Front View



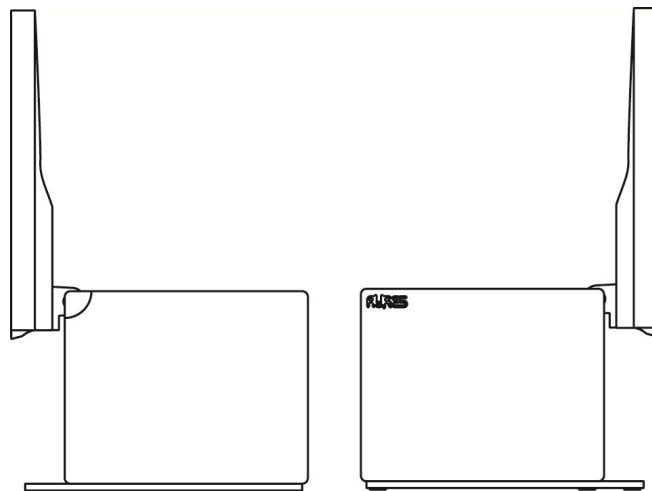
Number	Description
1	Touch screen
2	Power button
3	System box
4	USB x2
5	Stand base

2-2 Rear View

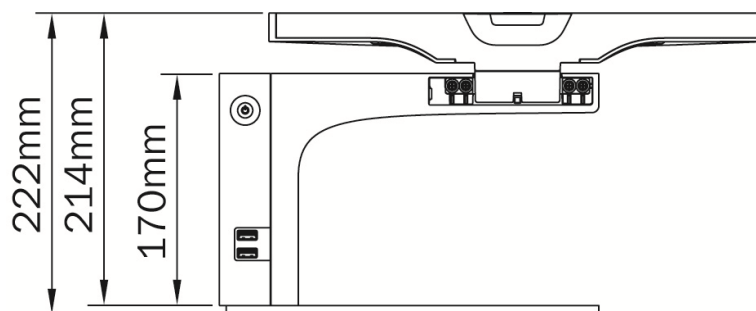
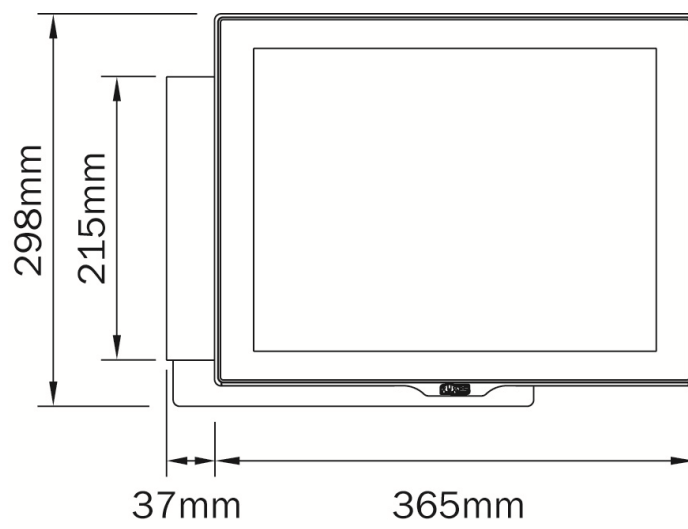
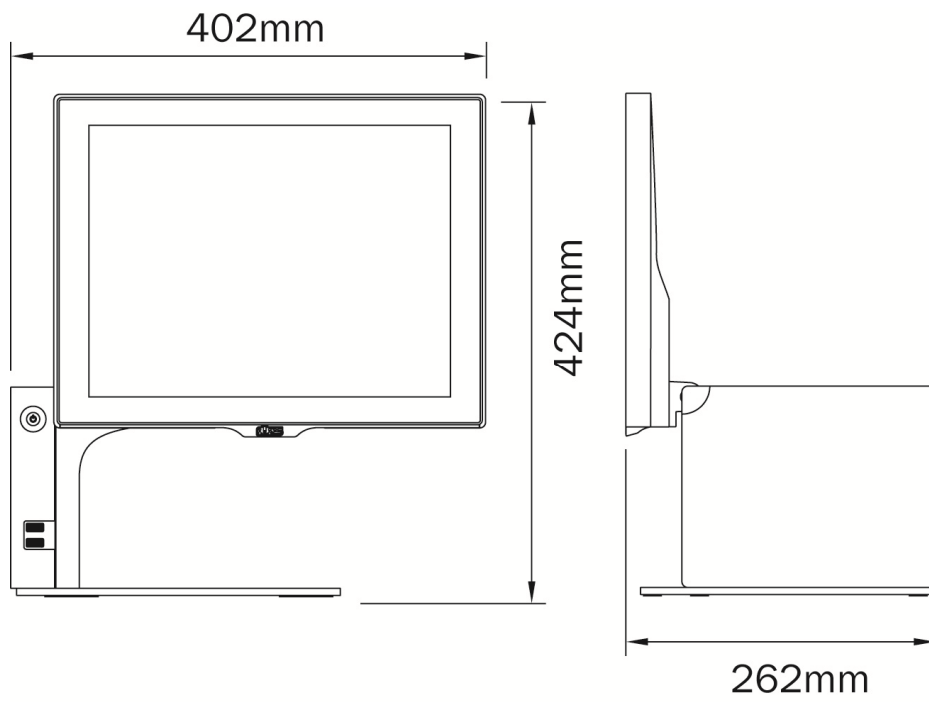


Number	Description
6	Customer display (Graphic LCM) dummy cover
7	MSR / 2-in-1 MSR+ iButton / 2-in-1 MSR+ addimat reader dummy cover
8	Lock button of the system box
9	Entry of the power adapter

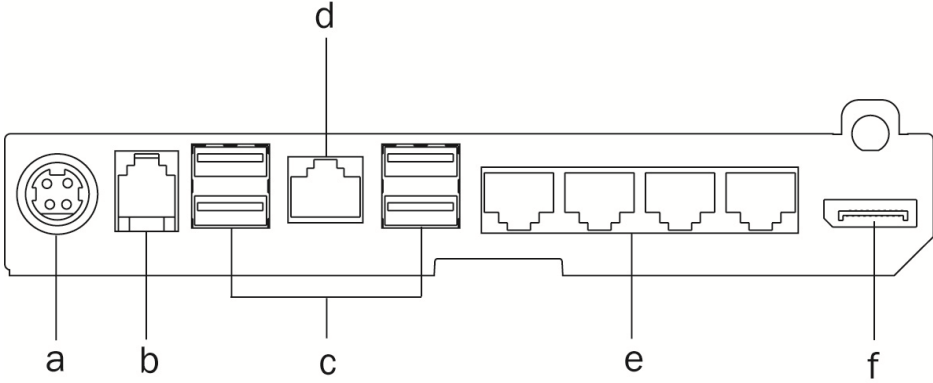
2-3 Side View



2-4 Dimension



2-5 I/O View

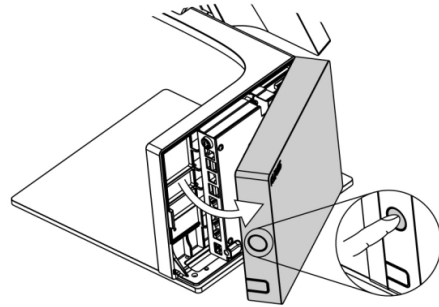


Number	Description
a	DC jack
b	Cash drawer
c	USB x 4
d	LAN
e	COM1~4 (from left to right)
f	Display port

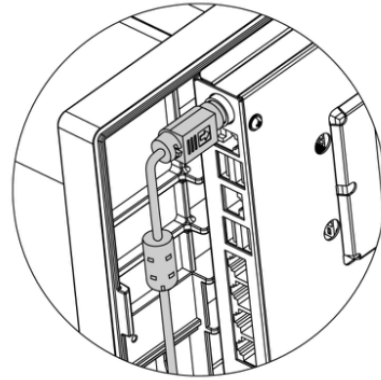
3 Installing the Power Adapter

The system is equipped with a 65W power adapter. Please plug it into the system as shown below.

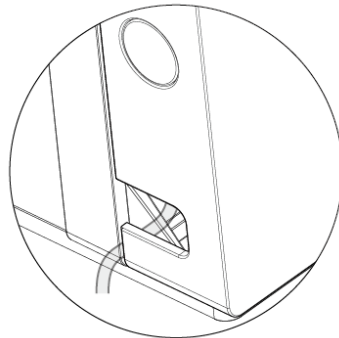
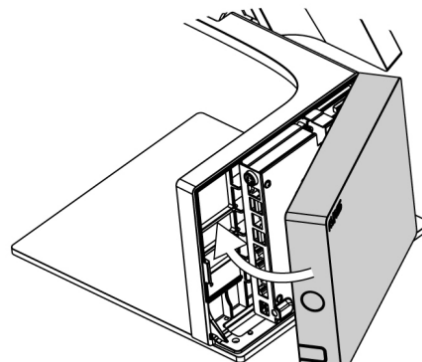
1. Press the button to open the system box cover.



2. Find the power connector on the I/O panel.(refer to chapter 2-5 a.) and connect the power adapter directly to the DC-IN connector.



3. Close the system box cover. Make sure the power adapter is threaded through the hole as shown in the picture.

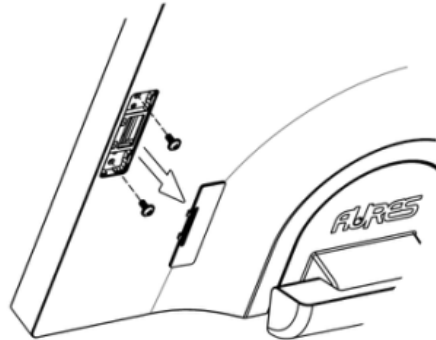


4 Peripherals Installation

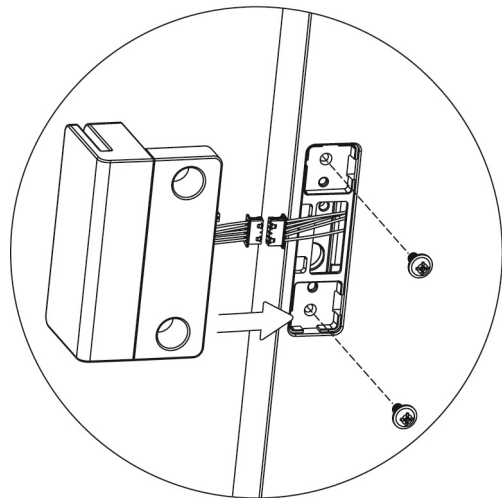
4-1 Install the MSR Module

MSR module can be installed to either side of the system. Choose one side and follow the steps below. Make sure the unit is powered down before starting.

1. Remove the dummy cover first and then unfasten the screws (x2).

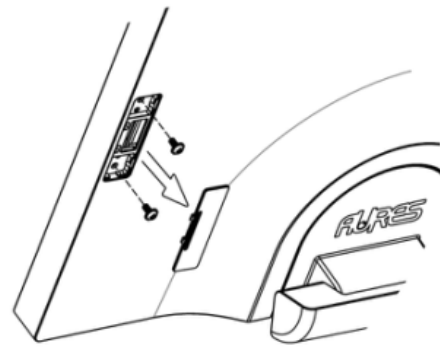


2. Connect the MSR cable (x1) to the connector on the system side.
3. Insert the MSR module in place and fasten the screws (x2) on the back to secure the module.

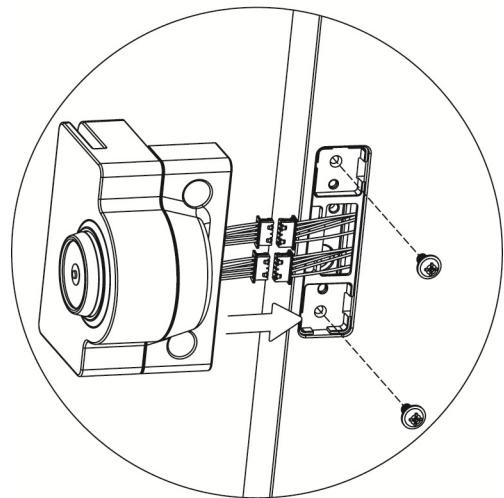


4-2 Install the 2-in-1 MSR+ iButton Module

1. Remove the dummy cover first and then unfasten the screws (x2).

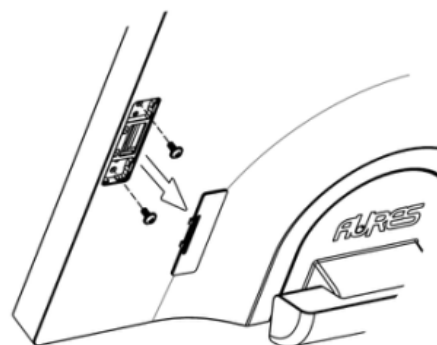


2. Connect the MSR+ iButton cables (x2) to the connector on the system side.
3. Insert the MSR+ iButton module in place and fasten the screws (x2) on the back to secure the module.

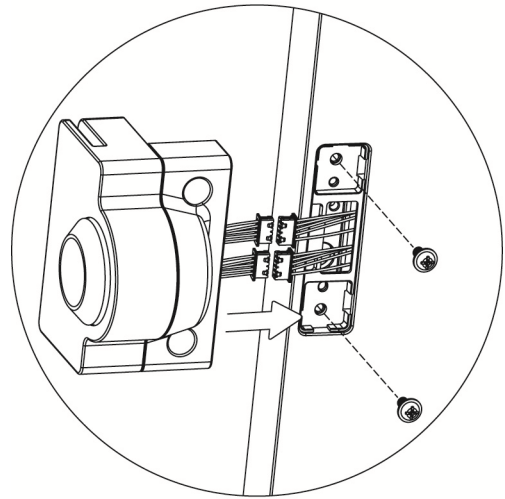


4-3 Install the 2-in-1 MSR+ Addimat Reader

1. Remove the dummy cover first and then unfasten the screws (x2).

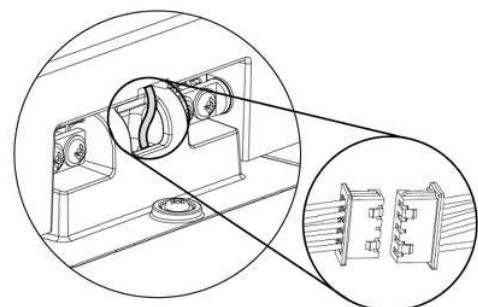
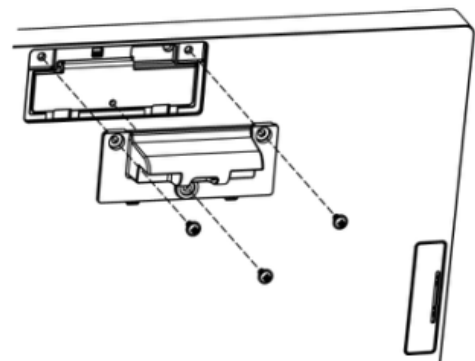
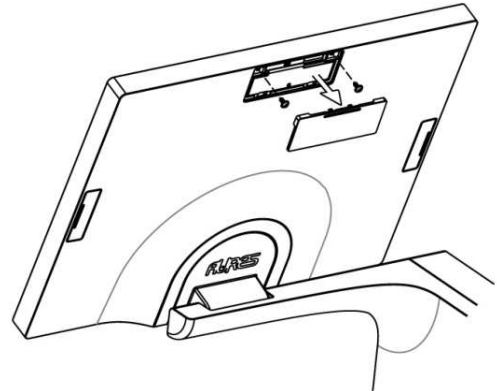


2. Connect the addimat key reader cables (x2) to the connector on the system side.
3. Insert the addimat key reader in place and fasten the screws (x2) on the back to secure the module.

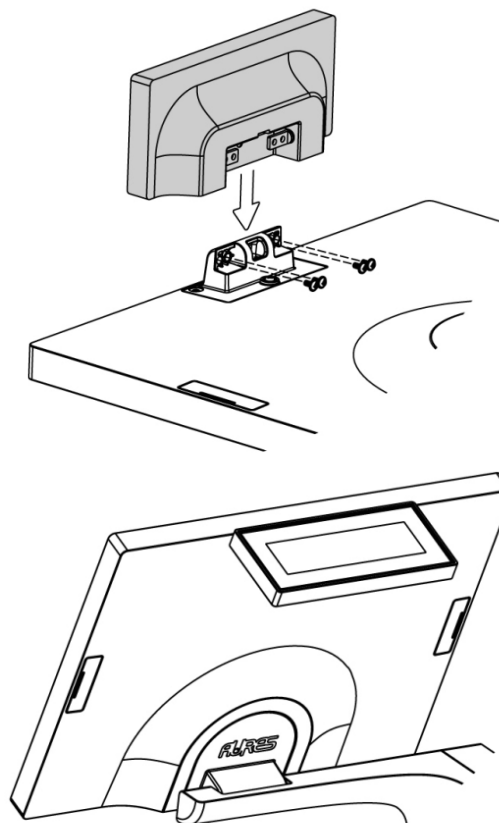


4-4 Install the Customer Display (Graphic LCM)

1. Remove the dummy cover first and then unfasten the screws (x2).
2. Attach the customer display (Graphic LCM) bracket to the back side of the LCD and fasten the screws (x3).
3. Connect the customer display (Graphic LCM) cable to the connector on system side.

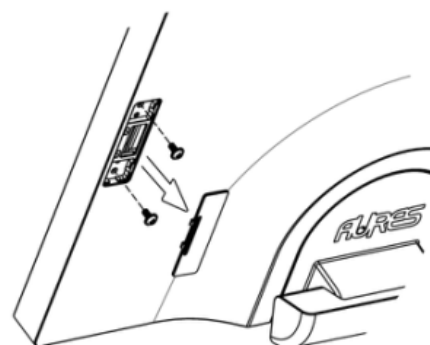


4. Attach the customer display (Graphic LCM) to the bracket and fasten the screws (x4) to secure it to the system.

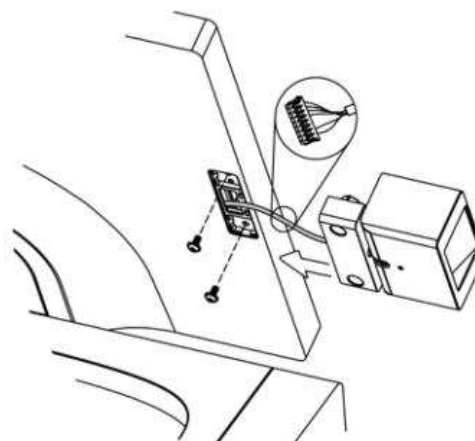


4-5 Install the Scanner Module

1. Remove the dummy cover first and then unfasten the screws (x2).

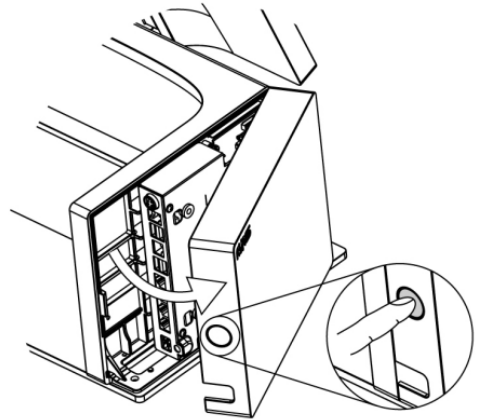


2. Connect the scanner n cable to the connector on the system side.
3. Insert the scanner module in place and fasten the screws (x2) on the back to secure the module.

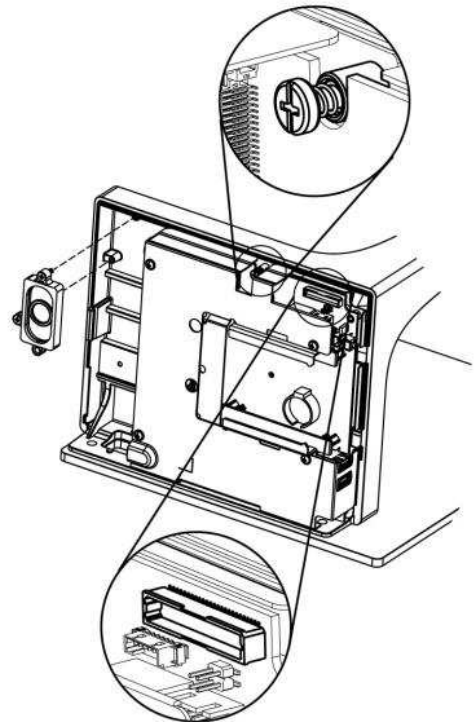


4-6 Install the Speaker Cable

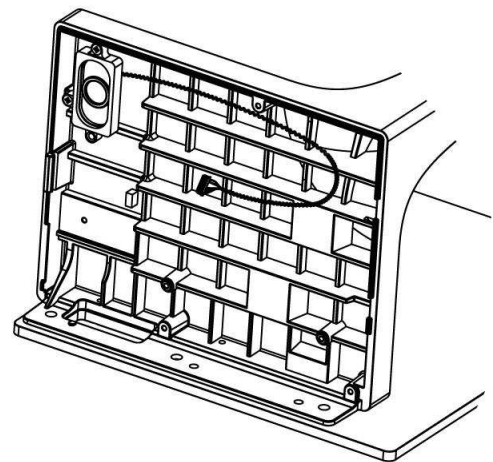
1. Press the button to open the system box cover.



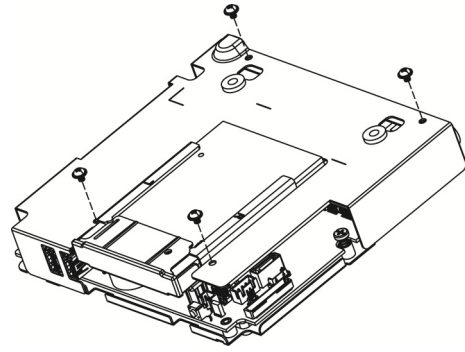
2. Attach the speaker and fasten the screws (x2) to secure it to the system.
3. Unfasten the thumb screw and disconnect the LCD cable to release the system box from the arm.



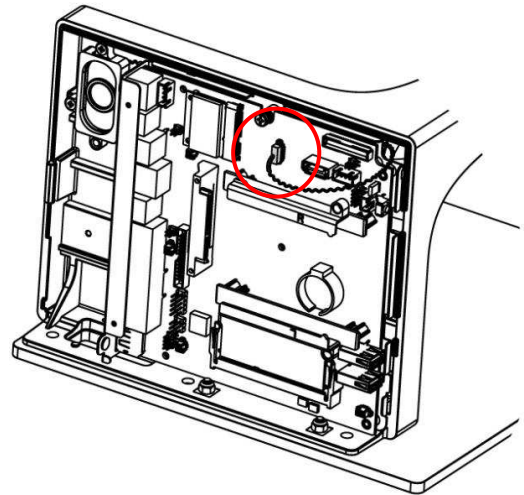
4. Arrange the speaker cable as shown in the picture.



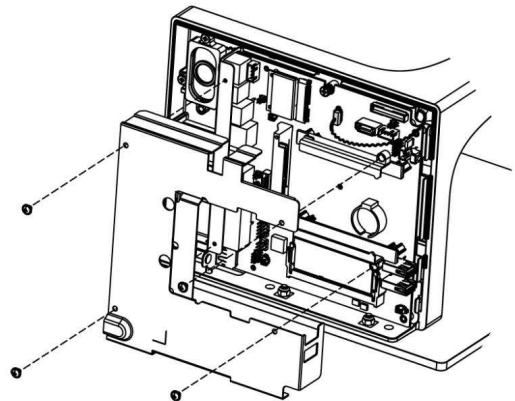
5. Remove the screws (x4) to release the metal bracket from the system box.



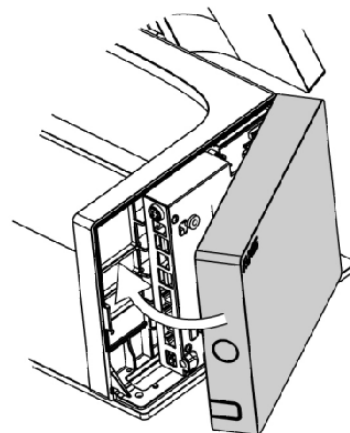
6. Attach the system box back to the arm and fasten the thumb screw (x1).
7. Route the speaker cable through the hole as shown in the picture and connect the cable to the connector (CN9) on the motherboard.



8. Cover the metal bracket of the system box and fasten the screws (x4).

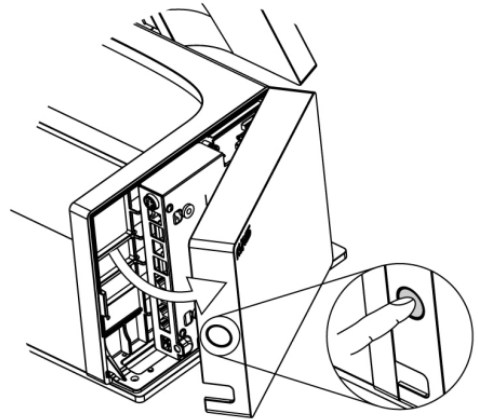


9. Lower the cover down onto the chassis until it snaps into place.

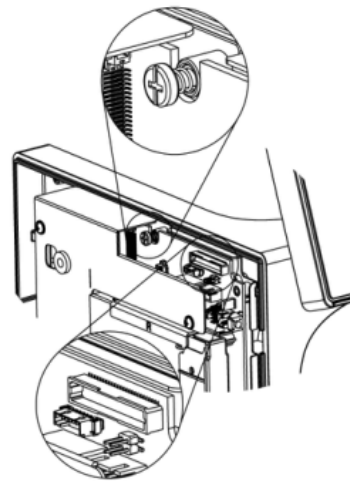


4-7 Install the Audio Cable

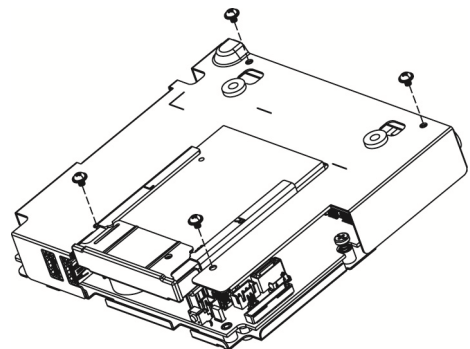
1. Press the button to open the system box cover.



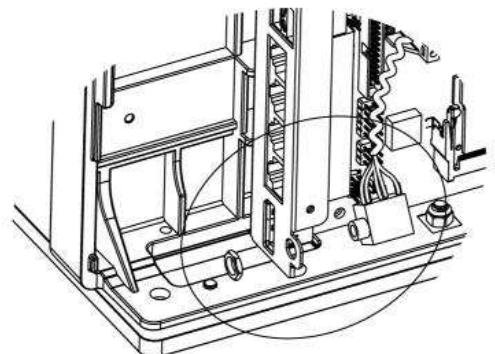
2. Unfasten the thumb screw and disconnect the LCD cable to release the system box from the arm.



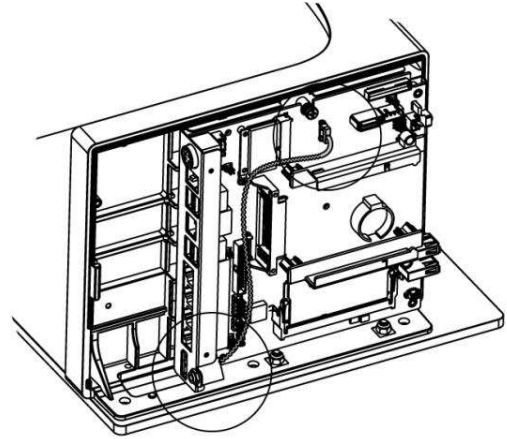
3. Remove the screws (x4) to release the metal bracket from the system box.



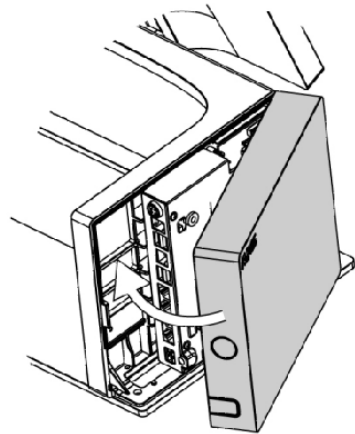
4. Open blind hole on the IO metal bracket.
5. Align and thread the audio through the hole and rotate the check nut to fix the audio to the IO metal bracket.



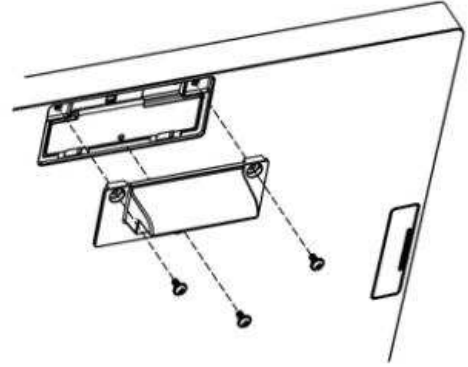
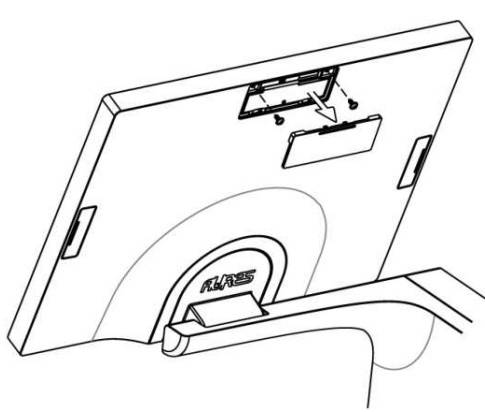
6. Connect the audio cable to the connector (CN9) on the motherboard.



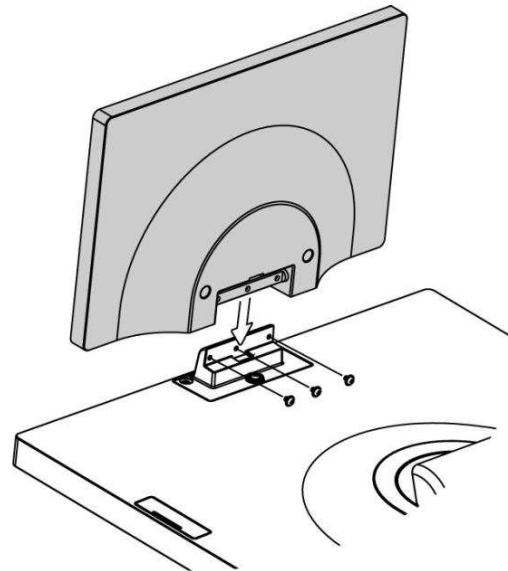
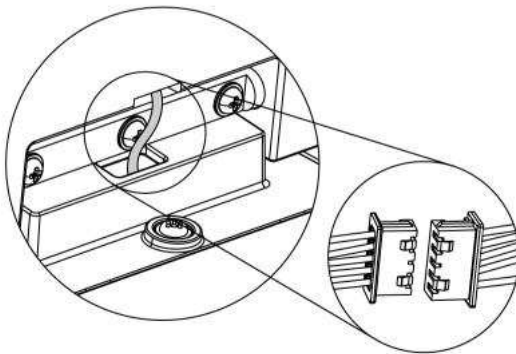
7. Lower the cover down onto the chassis until it snaps into place.



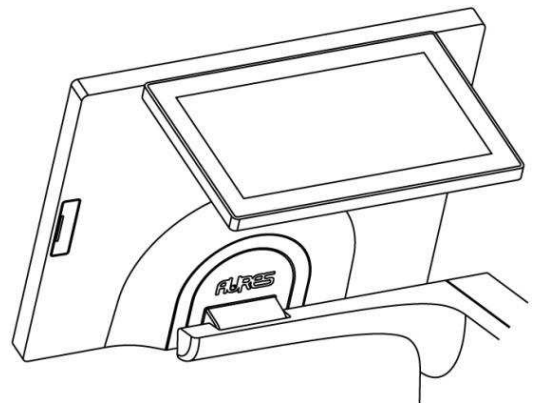
4-8 Install the 2nd Display



1. Remove the dummy cover first and then unfasten the screws (x2).
2. Attach the 2nd display bracket to the back side of the LCD and fasten the screws (x3).



3. Connect the 2nd display cable to the connector on system side.
4. Attach the 2nd display to the bracket and fasten the screws (x3) to secure it to the system.

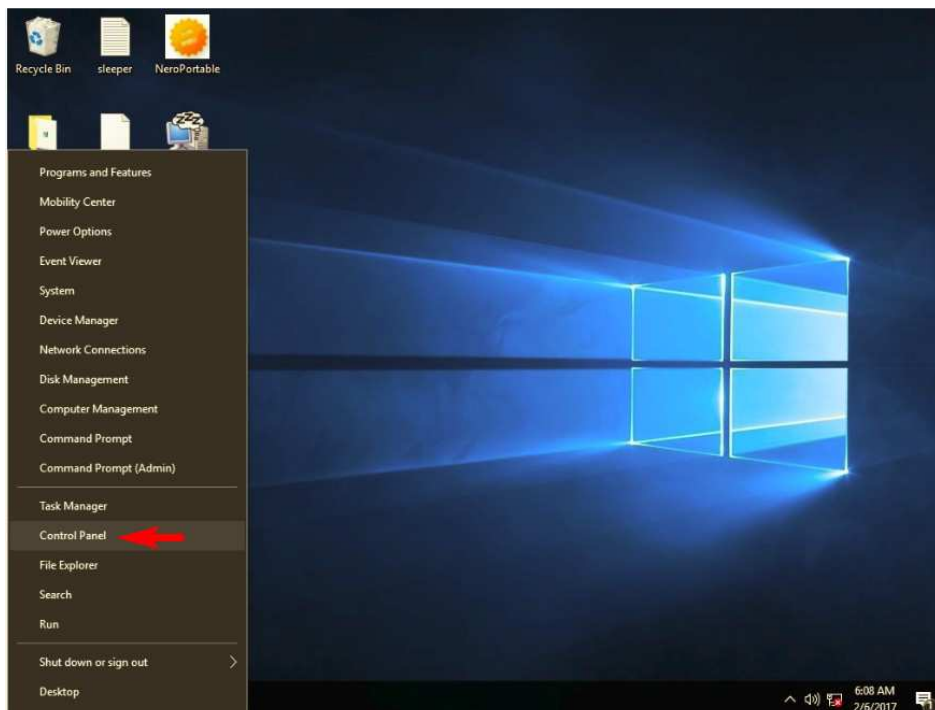


4-8-1 How to activate the 2nd display Under Windows

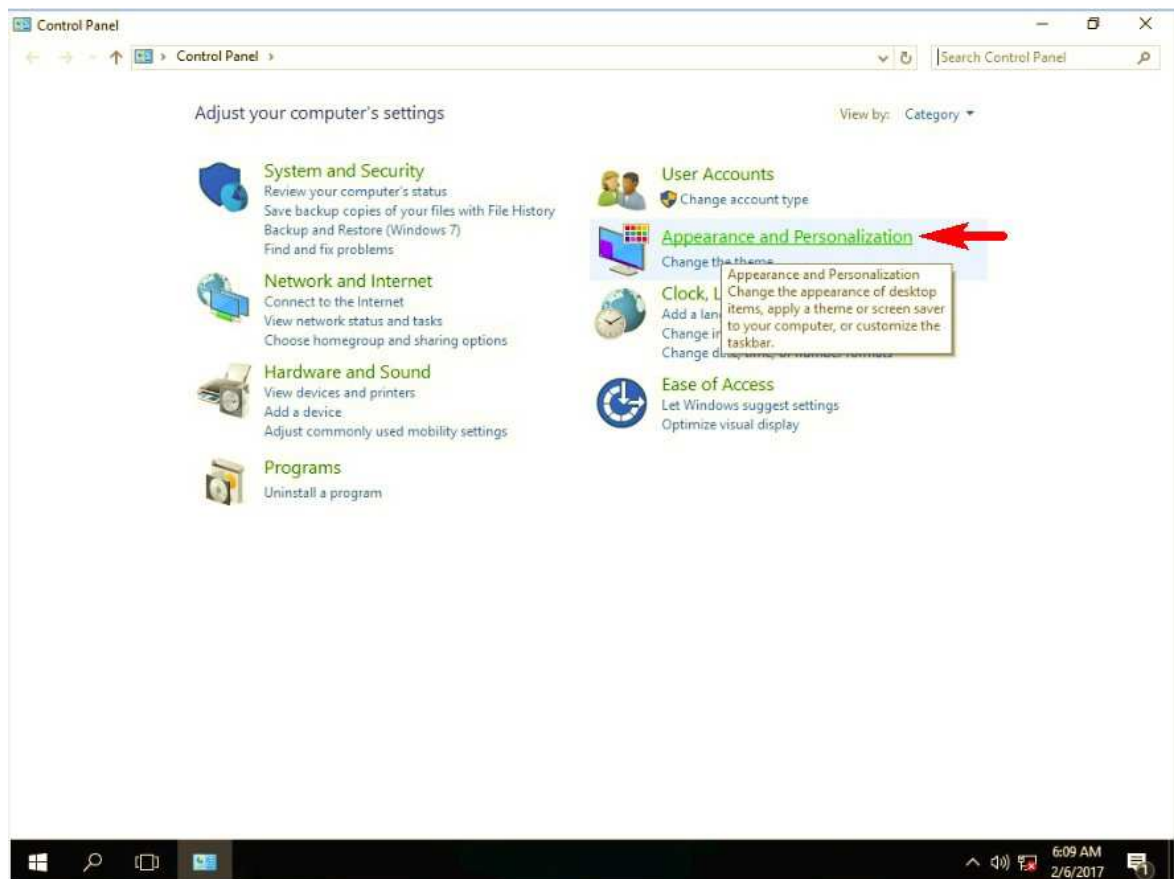
- Make sure to connect the 2nd display cable and begin the installation after your system has booted.
- The Setup program requires about one minute for the installation. If you turn the power off or remove the 2nd display cable while the Setup program is running, it may cause an error with the Windows operating system.
- The optimal resolution for this USB monitor is 1024 x 600.
- When the installation is completed, configure the following settings to activate the 2nd display.



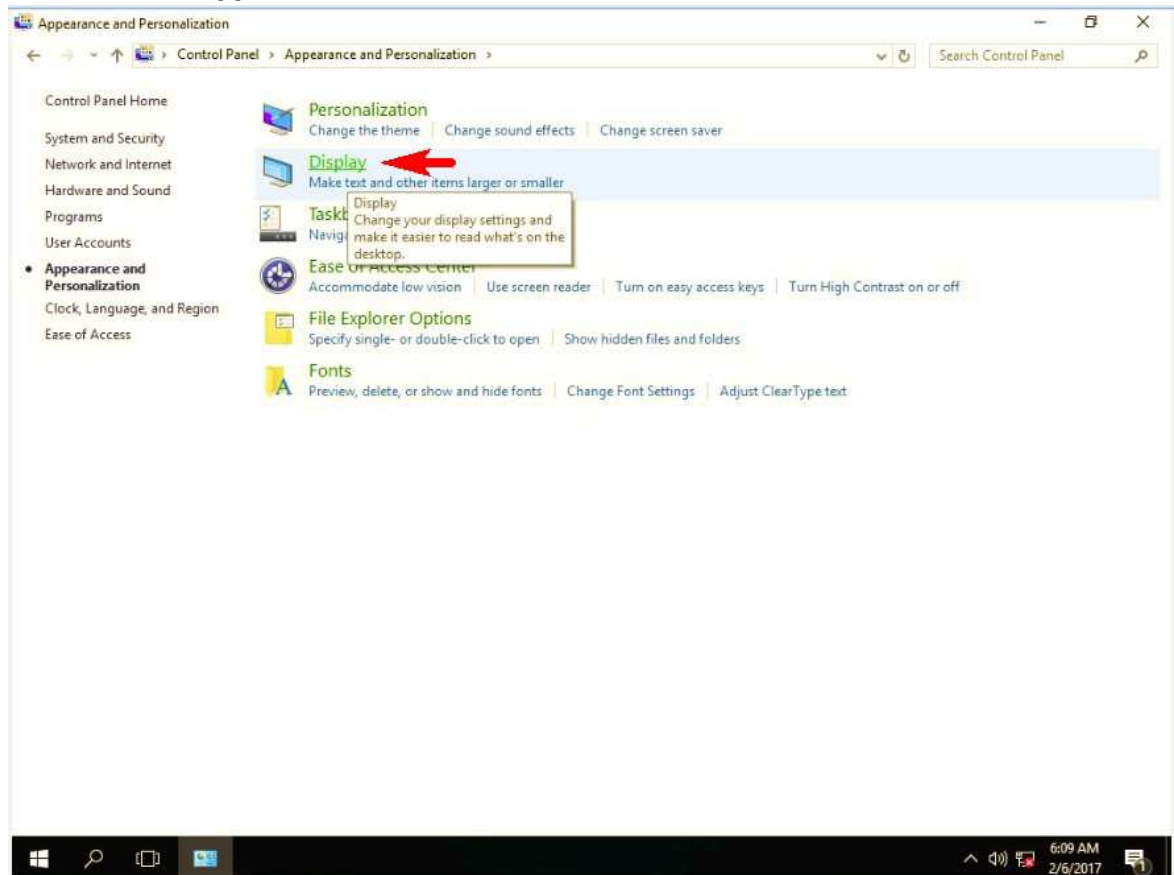
1. Click the **Start button Picture** of the Start button in the lower-left corner of the screen.



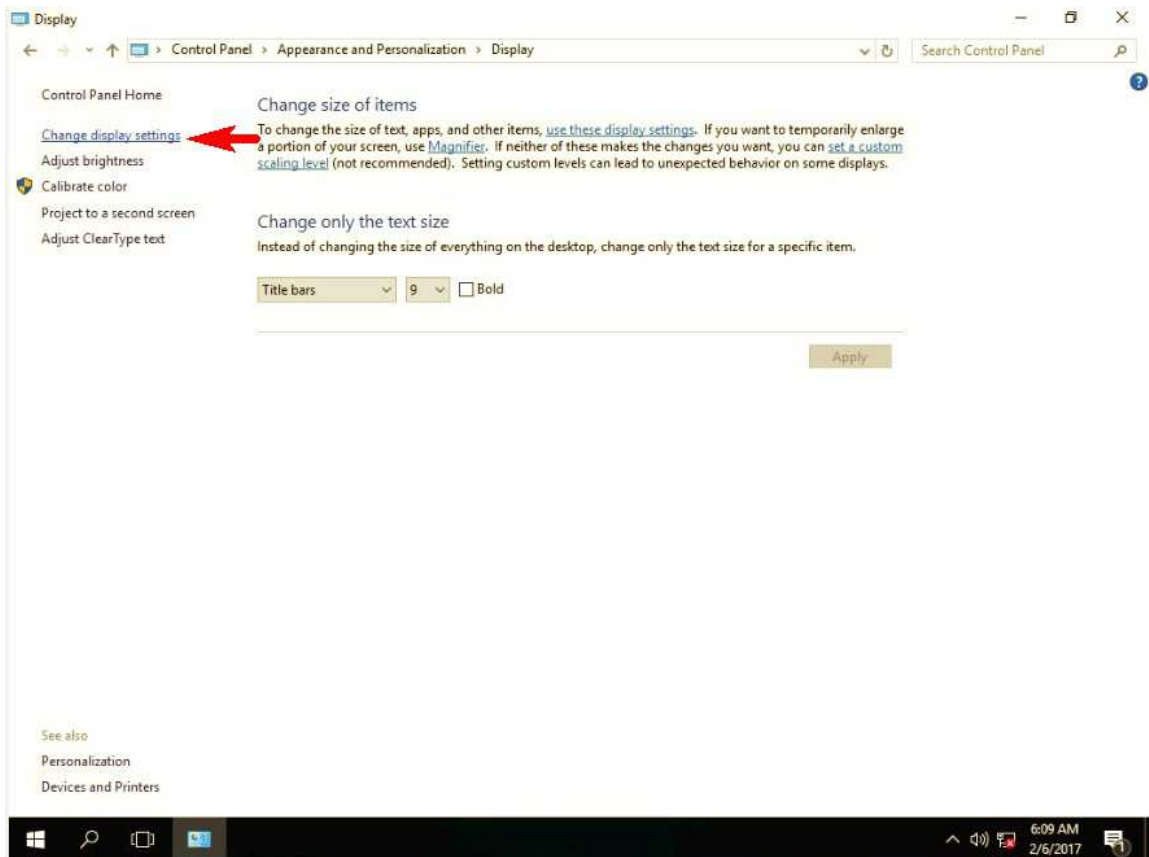
2. Click the **Control Panel** to change the setting and customize the functionality of the system.



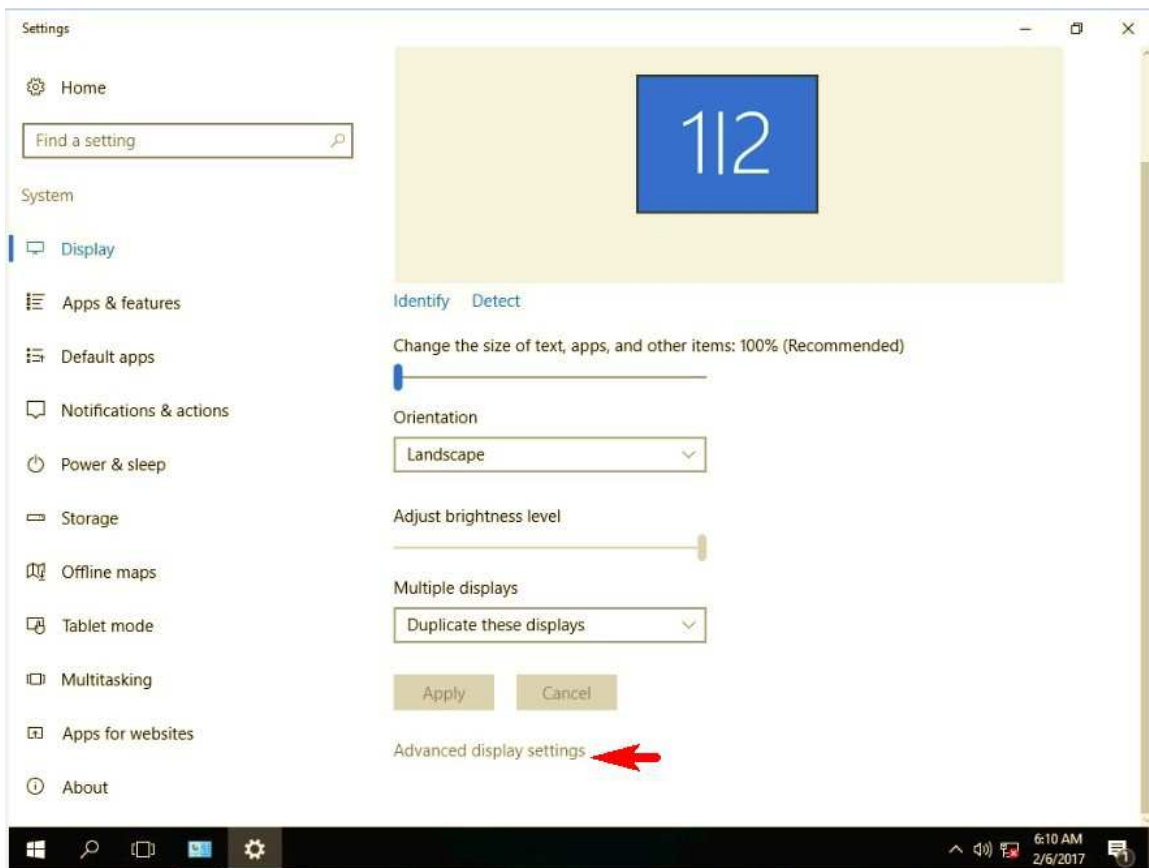
3. Click the **Appearance and Personalization** to enter the menu.



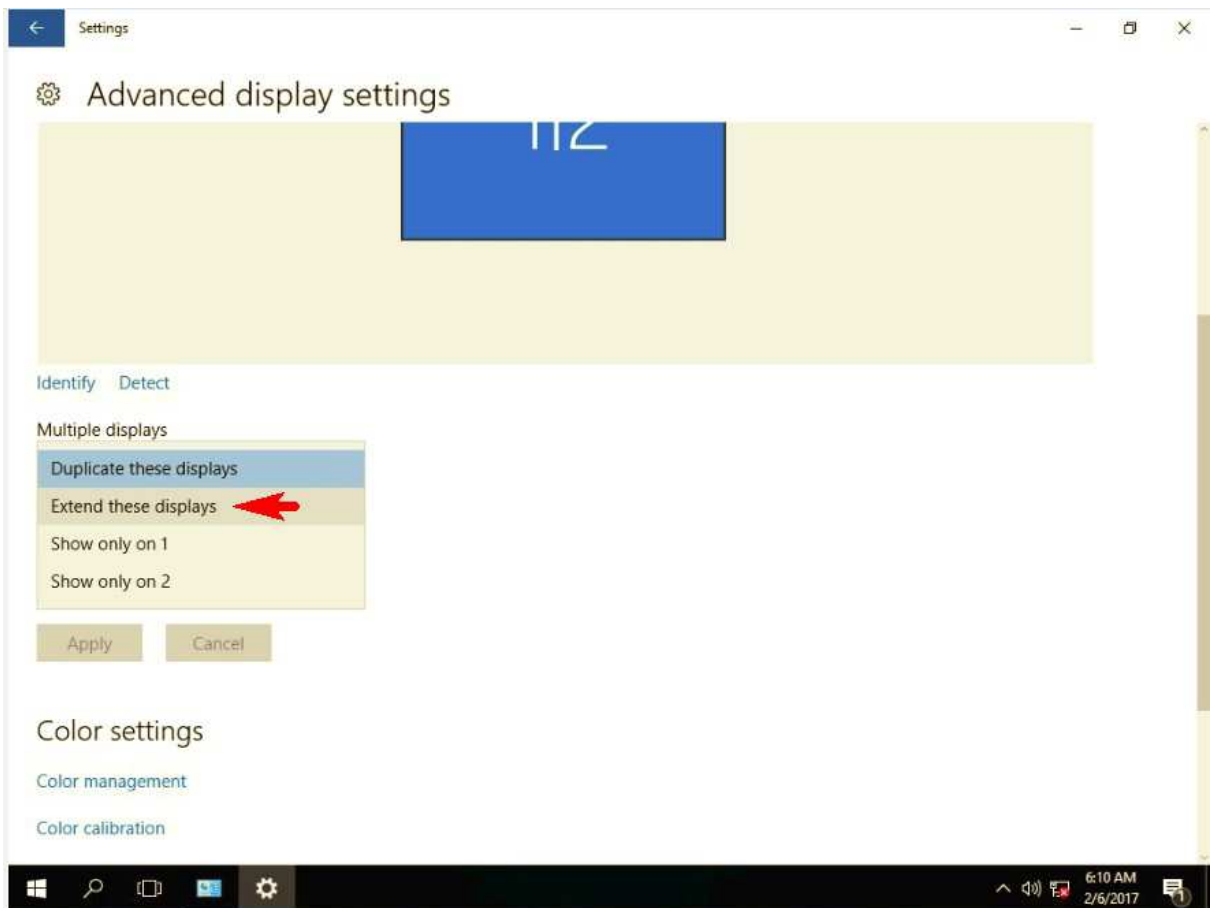
4. Select **Display** from the menu and the display properties windows appears.



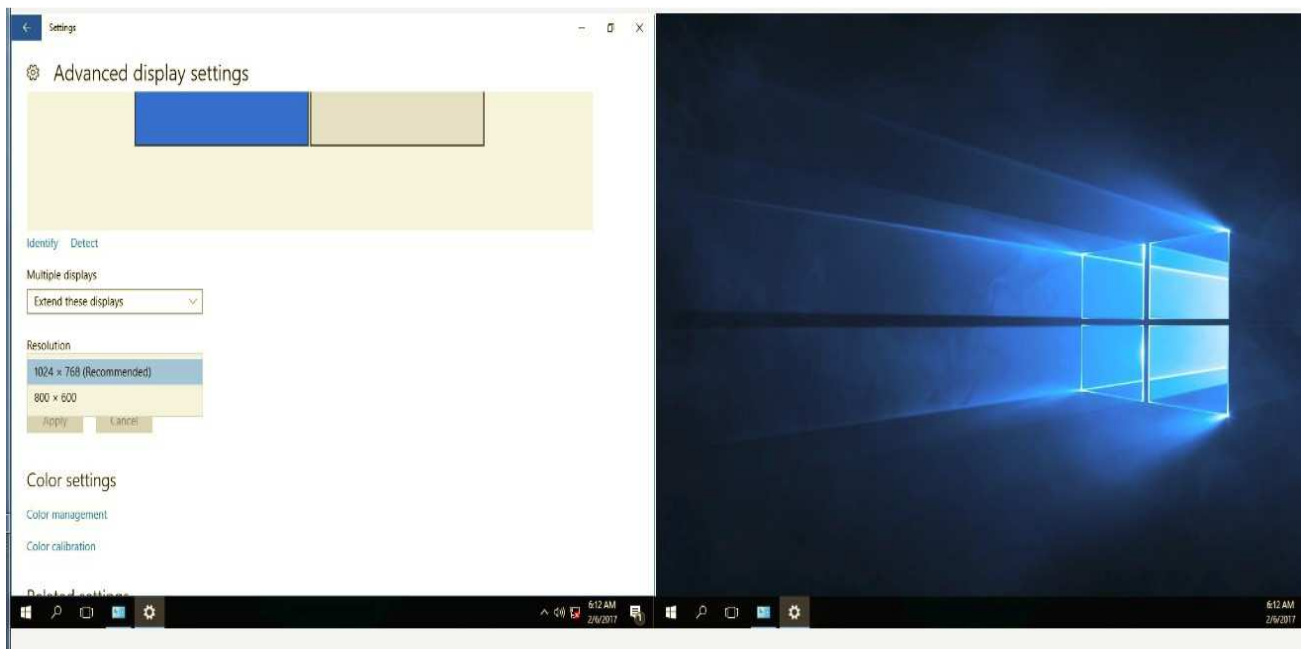
5. Select **Change display settings**.



6. Select **Advanced display settings**.



7. Arrange the monitors displayed in the order they are actually used.



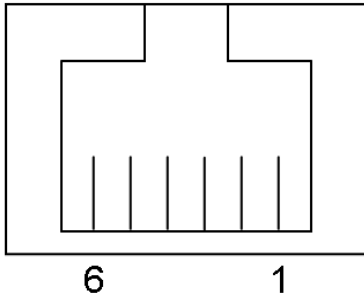
8. Select screen resolution to 1024 x 768. Remember to click **Apply** before exiting the menu.

4-9 Install the Cash Drawer

4-9-1 For C95 Motherboard

You can install a cash drawer through the cash drawer port. Please verify the pin assignment before installation.

Cash Drawer Pin Assignment



Pin	Signal
1	GND
2	DOUT bit0
3	DIN bit0
4	12V / 19V
5	DOUT bit1
6	GND

Cash Drawer Controller Register

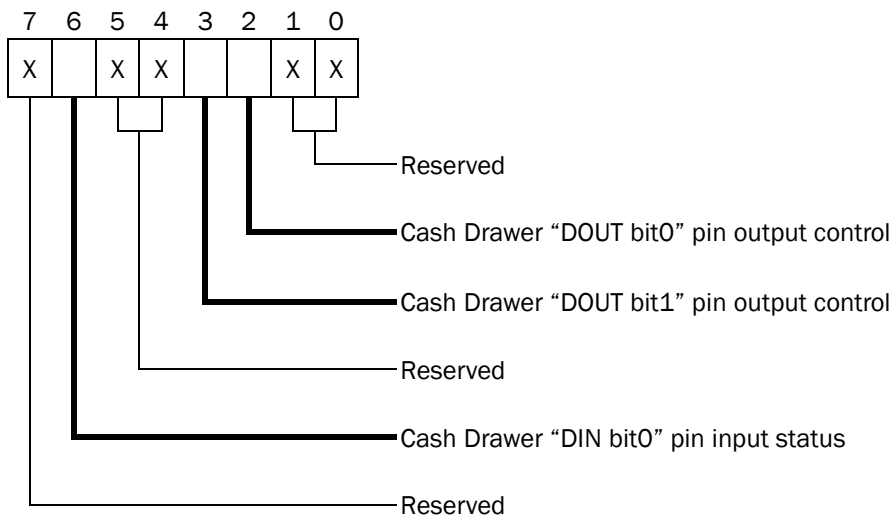
The Cash Drawer Controller use one I/O addresses to control the Cash Drawer.

Register Location: 48Ch

Attribute: Read / Write

Size: 8bit

BIT	BIT7	BIT6	BIT5	BIT4	BIT3	BIT2	BIT1	BIT0
Attribute	Reserved	Read	Reserved	Reserved	Write	Reserved	Reserved	Reserved



- Bit 7: Reserved
- Bit 6: Cash Drawer "DIN bit0" pin input status.
 - = 1: the Cash Drawer closed or no Cash Drawer
 - = 0: the Cash Drawer opened
- Bit 5: Reserved
- Bit 4: Reserved
- Bit 3: Cash Drawer "DOUT bit1" pin output control.
 - = 1: Opening the Cash Drawer
 - = 0: Allow close the Cash Drawer
- Bit 2: Cash Drawer "DOUT bit0" pin output control.
 - = 1: Opening the Cash Drawer
 - = 0: Allow close the Cash Drawer
- Bit 1: Reserved
- Bit 0: Reserved

Note: Please follow the Cash Drawer control signal design to control the Cash Drawer.

Cash Drawer Control Command Example

Use Debug.EXE program under DOS or Windows98

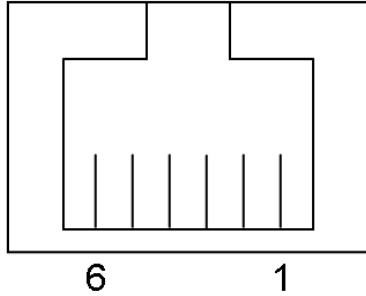
Command	Cash Drawer
O 48C 04	Opening
O 48C 00	Allow to close
<ul style="list-style-type: none"> ➤ Set the I/O address 48Ch bit2 =1 for opening Cash Drawer by "DOUT bit0" pin control. ➤ Set the I/O address 48Ch bit2 = 0 for allow close Cash Drawer. 	

Command	Cash Drawer
I 48C	Check status
<ul style="list-style-type: none"> ➤ The I/O address 48Ch bit6 =1 mean the Cash Drawer is opened or not exist. ➤ The I/O address 48Ch bit6 =0 mean the Cash Drawer is closed. 	

4-9-2 For D95 and D96 Motherboard

You can install a cash drawer through the cash drawer port. Please verify the pin assignment before installation.

Cash Drawer Pin Assignment



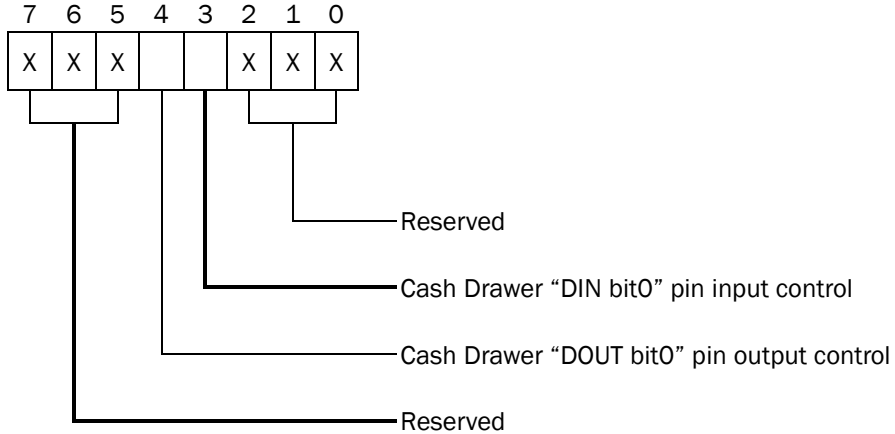
Pin	Signal
1	GND
2	DOUT bit0
3	DIN bit0
4	12V / 19V
5	DOUT bit1
6	GND

Cash Drawer Controller Register

The Cash Drawer Controller use one I/O addresses to control the Cash Drawer.

Register Location: 482h
Attribute: Read / Write
Size: 8bit

BIT	BIT7	BIT6	BIT5	BIT4	BIT3	BIT2	BIT1	BIT0
Attribute	Reserved			Write	Read	Reserved		



Bit 7: Reserved
 Bit 6: Reserved
 Bit 5: Reserved
 Bit 4: Cash Drawer "DOUT bit0" pin output control.
 = 1: Opening the Cash Drawer
 = 0: Allow close the Cash Drawer
 Bit 3: Cash Drawer "DIN bit0" pin input control.
 = 1: the Cash Drawer closed or no Cash Drawer
 = 0: the Cash Drawer opened
 Bit 2: Reserved
 Bit 1: Reserved
 Bit 0: Reserved

Note: Please follow the Cash Drawer control signal design to control the Cash Drawer.

Cash Drawer Control Command Example

Use Debug.EXE program under DOS or Windows98

Command	Cash Drawer
O 482 04	Opening
O 482 00	Allow to close
➤ Set the I/O address 482h bit4 =1 for opening Cash Drawer by "DOUT bit0" pin control. ➤ Set the I/O address 482h bit4 = 0 for allow close Cash Drawer.	

Command	Cash Drawer
I 482	Check status
➤ The I/O address 482h bit3 =1 mean the Cash Drawer is opened or not exist. ➤ The I/O address 482h bit3 =0 mean the Cash Drawer is closed.	

5 Specification

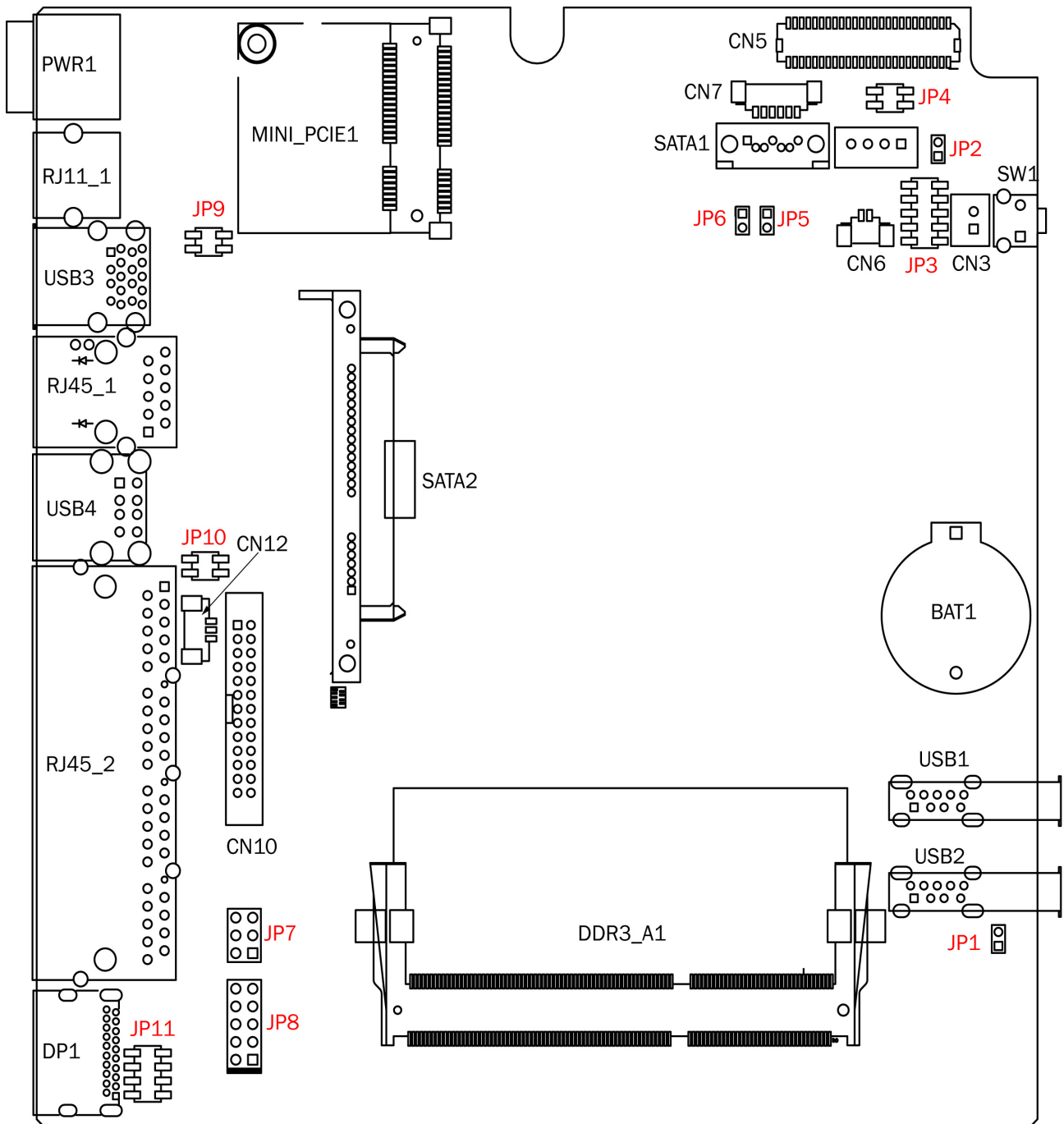
Model Name	SANGO		
Motherboard	C95	D95	D96
CPU support	Intel Sandy Bridge 1047UE LLC 2MB Intel Ivy Bridge i3-3217U 1.8G, LLC 3MB	Intel SkyLake U Celeron 3955U 2GHz, LLC 2MB i3-6100U 2.3GHz, LLC 3MB i5-6200U 2.3GHz, LLC 3MB	Intel BayTrail J1900 2.0G L2 2M, TDP 10W
Chipset	Intel Express chip HM76	Integrated in Intel SkyLake U SoC	NA
System memory	DDR3 2GB (1047UE CPU), max. 8GB DDR3 4GB (i3-3217U CPU), max. 8GB	DDR3L 4GB	
Graphic memory	Intel HD Graphic (Gen. 7, DX11, OpenGL 3.1, OCL 1.1)	Intel HD Graphic DX11/12 OCLx2.x, OCL 4.3/4.4, ES 2.0	Intel HD Graphic DX11.1
LAN controller	Intel 82579LM (Phy)	Intel WG I219 PHY	Realtek RTL8111GN 10/100/1000 base-T
Audio controller	Realtek ALC 662-GR HD codec		
I/O controller	Winbond W83627UHG	Winbond NCT6106D	
BIOS	Phoenix UEFI		
LCD Touch Panel			
LCD size	15" LED LCD		
Brightness	300nits		
Maximal resolution	1024 x 768		
Touch screen type	15" True flat resistive touch/True flat projected capacitive touch		
Tilt angle	0° ~ 89°		
Storage			
HDD/SSD	One 2.5" 64G SSD		
Expansion			
mini PCI-E socket	1		
Front I/O			
Power button	1		
Power LED	1		
USB	2 (USB 3.0/2.0)		2 (USB 2.0)
Rear I/O			
USB	2 (USB 2.0) / 2 (USB 3.0/2.0)		
Serial / COM	RJ45 COM x4 (COM1 standard RS-232, COM2/COM3/COM4 powered COM with enable option in BIOS. Power on pin 9 (DB9)/ pin 10 (RJ45) selectable to +5V / 12V by jumper on the motherboard. Default setting: +5V)		
LAN	1 x RJ45 (10/100/1000 Mbps Giga LAN)		

Model Name	SANGO		
Motherboard	C95	D95	D96
DC jack	1 x DC-19V (4 pins with lock)		
Cash drawer	1 x RJ-11 (12V or 19V, selection by jumper. Default setting: 19V)		
Display port	1		
Power			
Power adapter	Ext. 65W adapter 19V/3.42A		
Peripherals			
MSR module	3 track MSR (USB)		
2-in-1 reader	MSR+ iButton / MSR+ Addimat reader (USB)		
Customer display	Customer display (Graphic LCM) (USB)		
2 nd Display	10.1" second display (USB)		
Scanner	1D /2D barcode laser scanner (USB)		
Speaker	2W * 1		
Communication			
Wireless LAN	802.11 b/g/n wireless LAN card (Option)		
Certifications			
CME & DBT	FCC/CE Class A, LVD		
Environment			
Operating temperature	0°C ~ 35 °C (32 °F ~ 95 °F)		
Storage temperature	-20 °C ~ 60 °C (-4 °F ~ 140 °F)		
Humidity	20% ~ 85% RH non condensing		
Dimension (W x D x H)	LCD 0 degree : 401.9 x 297.9 x 221.9 mm		
	LCD 89 degree : 401.9 x 262 x 424 mm		
Weight (N.W./G.W.)	10kg / 11kg		
OS support	Windows XP, POS Ready 2009, XP Embedded, XP professional for Embedded, Linux, Windows7, POSReady7, Windows 8, Intel Ivy Bridge i5-3337U 1.8G, LLC 3MB	Windows 7, POSReady 7 (64bit), Windows 8, Windows Embedded 8.1 (64bit), Windows 10 (64bit), Linux	Windows 7, POSReady 7 (64bit) Windows 8, Windows Embedded 8.1 (64bit) Windows 10 (64bit), Linux
* This specification is subject to change without prior notice.			

6 Configuration

6-1 C95 Motherboard

6-1-1 Motherboard Layout





6-1-2 Connectors & Functions



Connectors	Functions
CN3	Power button(Internal)
CN4	SATA power connector
CN5	I/O board connector
CN7	Speaker & MIC connector
CN10	Printer port connector
CN12	EC SMBus connector
PWR1	+19V DC jack
RJ11_1	Cash drawer connector
RJ45_1	LAN connector
RJ45_2	COM1/COM2/COM3/COM4
DDR3_A1	DDR3 SO-DIMM
SATA1/2	SATA connector
USB1	USB3.0 port2
USB2	USB3.0 port3
USB3	USB3.0 port0/1
USB4	USB4 USB5
JP1	CMOS operation mode
JP2	Auto button setting
JP3	LCD ID setting
JP4	Inverter select
JP5	H/W reset
JP6	ME debug mode
JP7/JP8	VGA connector (internal)
JP9	Cash drawer power setting
JP10	COM2 power setting
JP11	COM3/COM4 power setting
SW1	Power button
DP1	Display port

6-1-3 Jumper Settings



LCD Backlight Type

Function	JP4 (1-2) (3-4)
▲ LED W/BN	
CCFL W/BN	



Cash Drawer Power Setting

Function	JP9 (1-2) (3-4)
▲ +19V	
+12V	

ME update

Function	JP6 (1-2)
▲ Lock	
Un-lock	

COM2 Power Setting

Function	JP10 (1-2) (3-4)
▲ COM2 +5V	
COM2 +12V	

▲ = Manufacturer Default Setting



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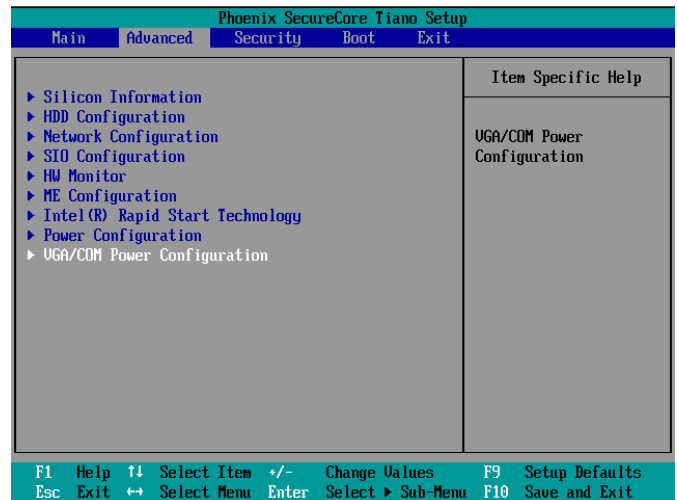
COM 3 & COM4 Power Setting

Function	JP11 (1-2) (3-4) (5-6) (7-8)								
▲ COM3 +5V	<table border="1"> <tr><td>1</td><td>3</td><td>5</td><td>7</td></tr> <tr><td>2</td><td>4</td><td>6</td><td>8</td></tr> </table>	1	3	5	7	2	4	6	8
1	3	5	7						
2	4	6	8						
COM3 +12V	<table border="1"> <tr><td>1</td><td>3</td><td>5</td><td>7</td></tr> <tr><td>2</td><td>4</td><td>6</td><td>8</td></tr> </table>	1	3	5	7	2	4	6	8
1	3	5	7						
2	4	6	8						
▲ COM4 +5V	<table border="1"> <tr><td>1</td><td>3</td><td>5</td><td>7</td></tr> <tr><td>2</td><td>4</td><td>6</td><td>8</td></tr> </table>	1	3	5	7	2	4	6	8
1	3	5	7						
2	4	6	8						
COM4 +12V	<table border="1"> <tr><td>1</td><td>3</td><td>5</td><td>7</td></tr> <tr><td>2</td><td>4</td><td>6</td><td>8</td></tr> </table>	1	3	5	7	2	4	6	8
1	3	5	7						
2	4	6	8						

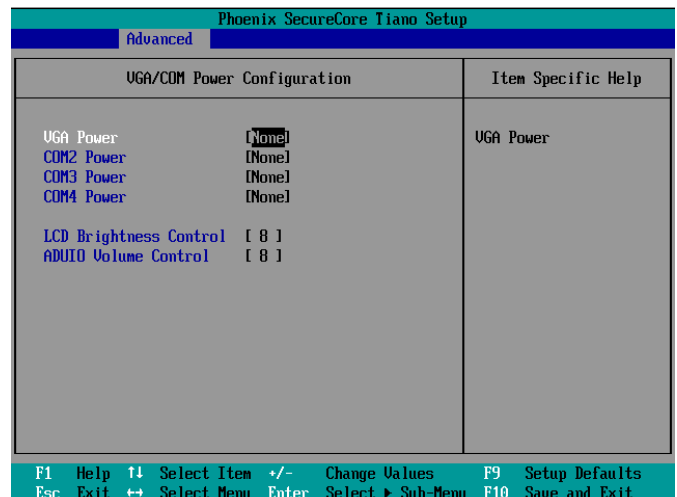
COM2/COM3/COM4 Power Setting

COM2, COM3 and COM4 can be set to provide power to your serial device. The voltage can be set to +5V or +12V by setting jumper JP10 and JP11 on the motherboard. When enabled, the power is available on pin 10 of the RJ45 serial connector. If you use the serial RJ45 to DB9 adapter cable, the power is on pin 9 of the DB9 connector. By default, the power option is **disabled** in the BIOS.

1. Power on the system, and press the key when the system is booting up to enter the BIOS Setup utility.
2. Select the Advanced tab.
3. Select **VGA/COM Power and LCD Brightness Configuration** Ports and press <Enter> to go to display the available options.



4. To enable the power, select COM2 , COM3 or COM4 Power setting and press <Enter>. Select Power and press <Enter>. Save the change by pressing F10.



LCD ID Setting

Panel Number	Resolution	LVDS		Output Interface	JP9										
		Bits	Channel		(1-2) (3-4) (5-6) (7-8) (9-10)										
4	1024 x 768	24	Single	LVDS Panel	<table border="1"> <tr> <td>1</td> <td>3</td> <td>5</td> <td>7</td> <td>9</td> </tr> <tr> <td>2</td> <td>4</td> <td>6</td> <td>8</td> <td>10</td> </tr> </table>	1	3	5	7	9	2	4	6	8	10
1	3	5	7	9											
2	4	6	8	10											

▲ = Manufacturer Default Setting



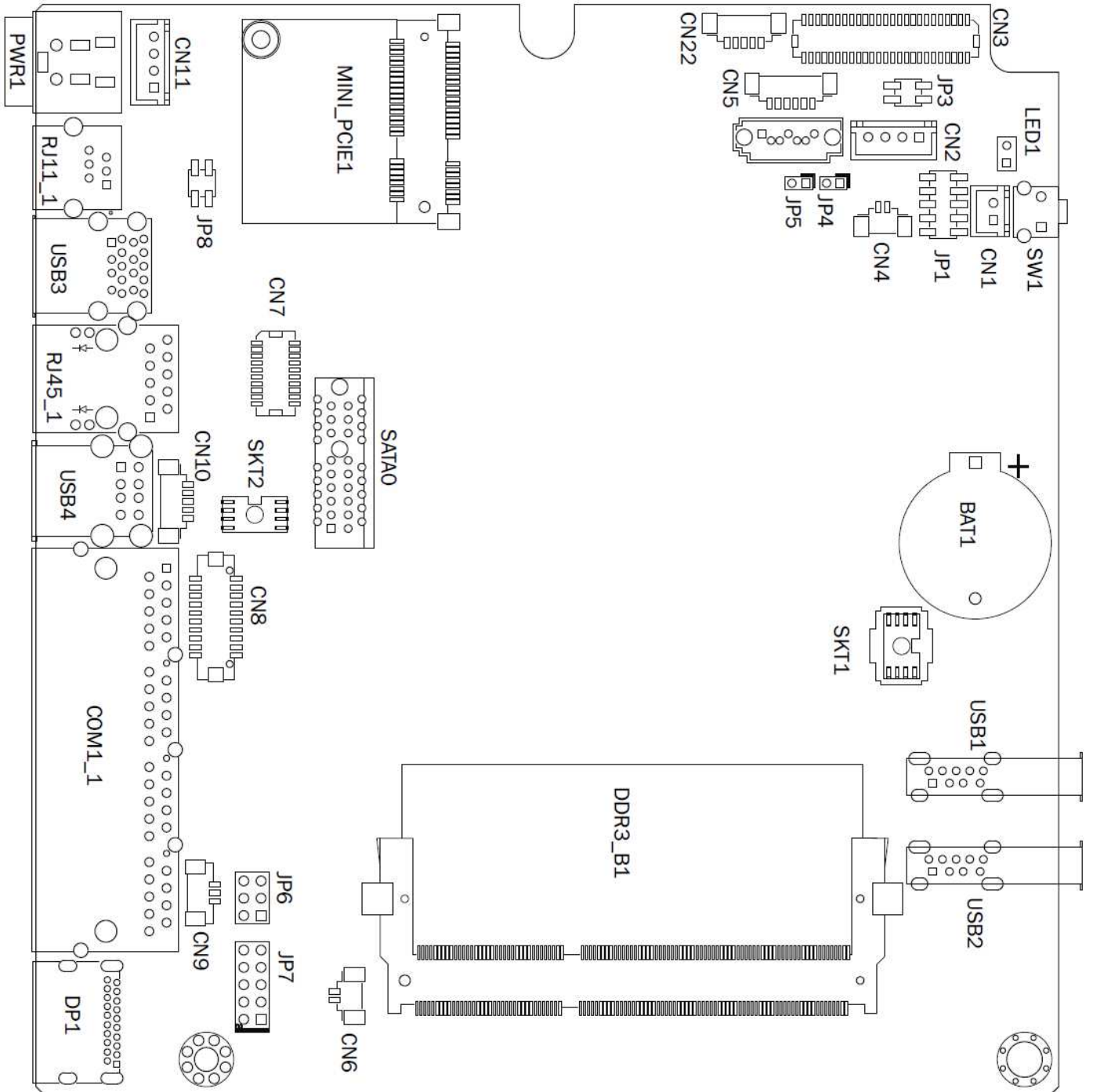
OPEN



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6-2 D95 Motherboard

6-2-1 Motherboard Layout



6-2-2 Connectors & Functions

Connectors	Functions
CN1	Power button (Internal)
CN2	SATA power connector
CN3	50P I/O board connector
CN4	SATA LED connector
CN5	Speaker & MIC connector
CN6	Power LED connector
CN7	SDV connector
CN8	Printer port connector
CN9	System FAN connector
CN10	EC SMBus connector
CN11	+19V DC IN connector
CN22	SDR connector
SW1	Power button
DP1	Display port
MINI_PCIE1	MINI_PCIE connector
PWR1	+19V DC jack
RJ11_1	Cash drawer connector
RJ45_1	LAN connector
COM1_1	COM1/ COM2/ COM3/ COM4
DDR3_B1	DDR3 SO-DIMM
SATA0/1	SATA connector
USB1	USB3.0 port3
USB2	USB3.0 port4
USB3	USB3.0 port1/2
USB4	USB2.0 port 5/6
JP1	LCD ID setting
JP3	Inverter selection
JP4	Hardware reset
JP5	RTC reset
JP6/JP7	VGA connector (Internal)
JP8	Cash drawer power setting

6-2-3 Jumper Settings

Inverter Selection

Function	JP3 (1-2) (3-4)				
▲ LED W/BN	<table border="1"> <tr><td>1</td><td>3</td></tr> <tr><td>2</td><td>4</td></tr> </table>	1	3	2	4
1	3				
2	4				
CCFL W/BN	<table border="1"> <tr><td>1</td><td>3</td></tr> <tr><td>2</td><td>4</td></tr> </table>	1	3	2	4
1	3				
2	4				

Cash Drawer Power Setting

Function	JP8 (1-2) (3-4)				
▲ +19V	<table border="1"> <tr><td>1</td><td>3</td></tr> <tr><td>2</td><td>4</td></tr> </table>	1	3	2	4
1	3				
2	4				
+12V	<table border="1"> <tr><td>1</td><td>3</td></tr> <tr><td>2</td><td>4</td></tr> </table>	1	3	2	4
1	3				
2	4				

LCD ID Setting

Panel Number	Resolution	LVDS		Output Interface	JP1 (1-2) (3-4) (5-6) (7-8) (9-10)										
		Bits	Channel												
4	1024 x 768	24	Single	LVDS Panel	<table border="1"> <tr><td>1</td><td>3</td><td>5</td><td>7</td><td>9</td></tr> <tr><td>2</td><td>4</td><td>6</td><td>8</td><td>10</td></tr> </table>	1	3	5	7	9	2	4	6	8	10
1	3	5	7	9											
2	4	6	8	10											

▲ = Manufacturer Default Setting



OPEN

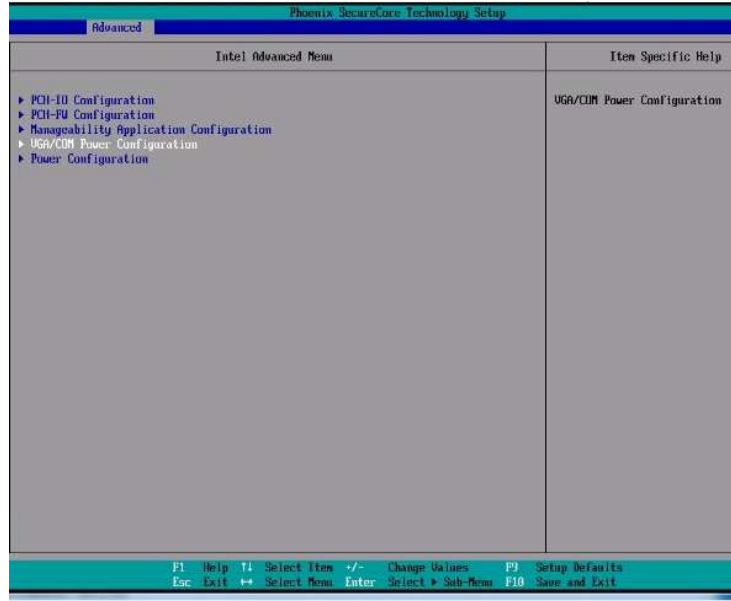


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COM2/COM3/COM4 Power Setting

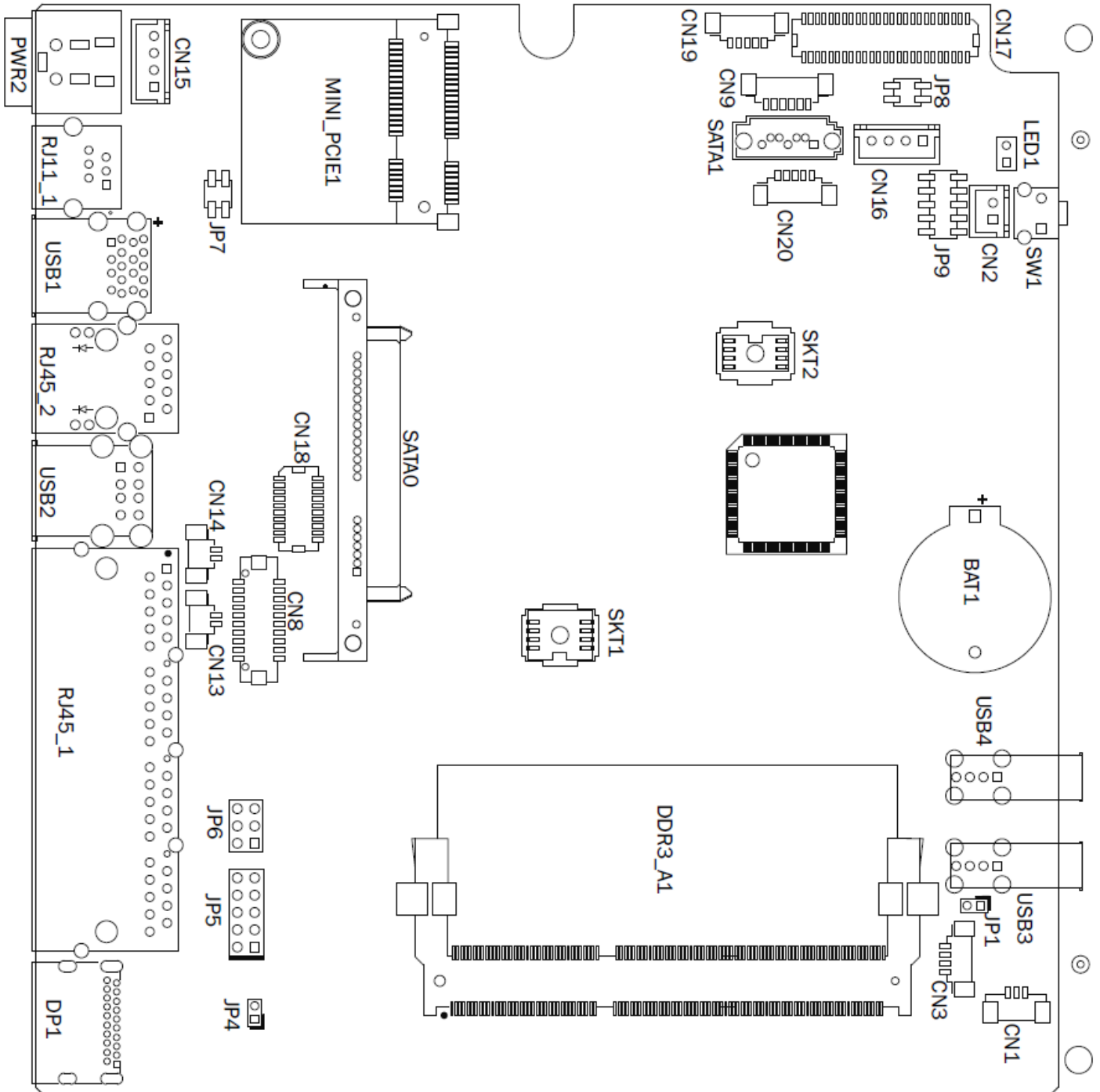
COM2, COM3 and COM4 can be set to provide power to your serial device. The voltage can be set to +5V or +12V by setting jumper JP10 and JP11 on the motherboard. When enabled, the power is available on pin 10 of the RJ45 serial connector. If you use the serial RJ45 to DB9 adapter cable, the power is on pin 9 of the DB9 connector. By default, the power option is **disabled** in the BIOS.

5. Power on the system, and press the key when the system is booting up to enter the BIOS Setup utility.
6. Select the Advanced tab.
7. Select **VGA/COM Power Configuration** Ports and press <Enter> to go to display the available options.
8. To enable the power, select COM2 , COM3 or COM4 Power setting and press <Enter>. Select Power and press <Enter>. Save the change by pressing F10.



6-3 D96 Motherboard

6-3-1 Motherboard Layout



6-3-2 Connectors & Functions

Connectors	Functions
CN1	CPU FAN
CN2	Power button (Internal)
CN3	USB HUB_A port3
CN8	Printer port connector
CN9	Speaker & MIC connector
CN13	Power LED connector
CN14	SATA LED connector
CN15	+19V DC IN connector
CN16	SATA power connector
CN17	50P I/O board connector
CN18	SDR connector
CN20	EC SMBus connector
SW1	Power button
DP1	Display port
MINI_PCIE1	MINI_PCIE connector
PWR2	+19V DC jack
RJ11_1	Cash drawer connector
RJ45_2	LAN connector
RJ45_1	COM1/ COM2/ COM3/ COM4
DDR3_A1	DDR3 SO-DIMM
SATA0/1	SATA connector
USB1	USB3.0 port3/4
USB2	USB2.0 HUB_B Port1/2
USB3	USB2.0 HUB_A Port2
USB4	USB2.0 HUB_A Port1
JP1	RTC reset
JP4	Hardware reset
JP5/JP6	VGA connector (Internal)
JP7	Cash drawer power setting
JP8	Inverter selection
JP9	LCD ID setting

6-3-3 Jumper Settings

Inverter Selection

Function	JP8 (1-2) (3-4)				
▲ LED W/BN	<table border="1"> <tr><td>1</td><td>3</td></tr> <tr><td>2</td><td>4</td></tr> </table>	1	3	2	4
1	3				
2	4				
CCFL W/BN	<table border="1"> <tr><td>1</td><td>3</td></tr> <tr><td>2</td><td>4</td></tr> </table>	1	3	2	4
1	3				
2	4				

Cash Drawer Power Setting

Function	JP7 (1-2) (3-4)				
▲ +19V	<table border="1"> <tr><td>1</td><td>3</td></tr> <tr><td>2</td><td>4</td></tr> </table>	1	3	2	4
1	3				
2	4				
+12V	<table border="1"> <tr><td>1</td><td>3</td></tr> <tr><td>2</td><td>4</td></tr> </table>	1	3	2	4
1	3				
2	4				

LCD ID Setting

Panel Number	Resolution	LVDS		Output Interface	JP9 (1-2) (3-4) (5-6) (7-8) (9-10)										
		Bits	Channel												
4	1024 x 768	24	Single	LVDS Panel	<table border="1"> <tr><td>1</td><td>3</td><td>5</td><td>7</td><td>9</td></tr> <tr><td>2</td><td>4</td><td>6</td><td>8</td><td>10</td></tr> </table>	1	3	5	7	9	2	4	6	8	10
1	3	5	7	9											
2	4	6	8	10											

▲ = Manufacturer Default Setting

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 OPEN

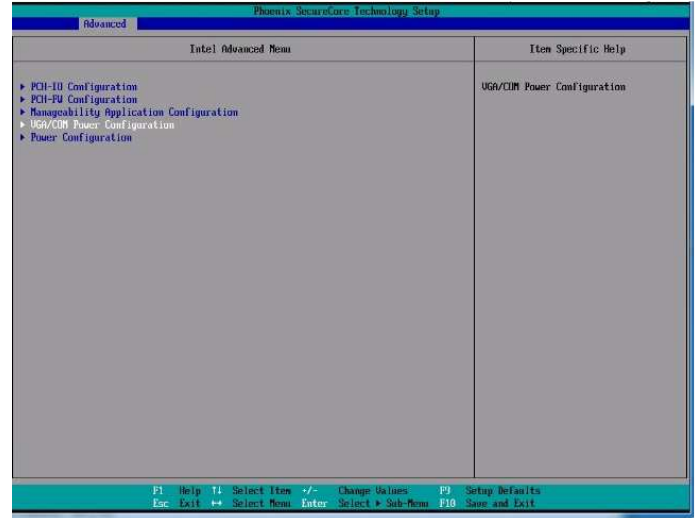
■

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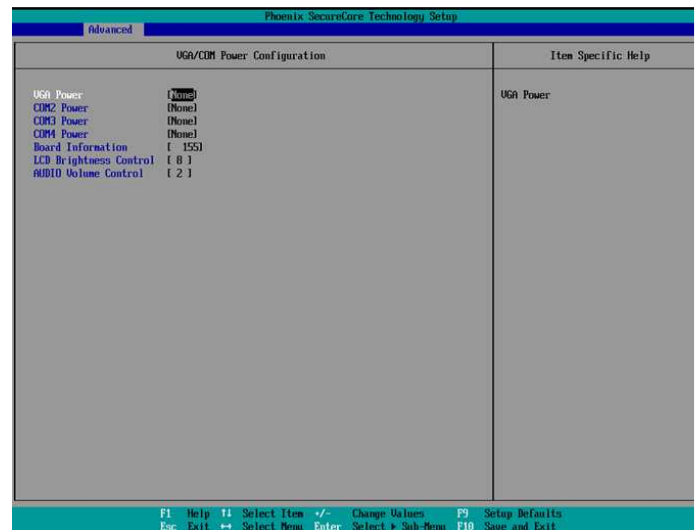
COM2/COM3/COM4 Power Setting

COM2, COM3 and COM4 can be set to provide power to your serial device. The voltage can be set to +5V or +12V by setting jumper JP7 and JP8 on the motherboard. When enabled, the power is available on pin 10 of the RJ45 serial connector. If you use the serial RJ45 to DB9 adapter cable, the power is on pin 9 of the DB9 connector. By default, the power option is **disabled** in the BIOS.

1. Power on the system, and press the key when the system is booting up to enter the BIOS Setup utility.
2. Select the Advanced tab.
3. Select **VGA/COM Power Configuration** Ports and press <Enter> to go to display the available options.



4. To enable the power, select COM2 , COM3 or COM4 Power setting and press <Enter>. Select Power and press <Enter>. Save the change by pressing F10.



Appendix A: Driver Installation

To download the most recent drivers and utilities, and obtain advice regarding the installation of your equipment, please visit the AURES Technical Support Website:

www.ares-support.fr (French)

www.ares-support.fr/UK (English)

www.ares-support.fr/GE (German)

Appendix B: Customer Display Command Setting

Features

1. Data can be display on 20 columns x 2 lines(USA/Euro/Arabic Symbol)
2. White-Black color and large character are easy to see.
3. System command set provide stored in non-volatile Flash ROM that without the switches
4. Command emulation modes include: POS7300, EPSON ESC/POS, DSP800, ADM787/
ADM788, AEDEX/ EMAX, UTC, and CD5220.
5. Display area can be controlled by window function.
6. Provides an interface based in USB Virtual COM, (driver install request)
7. Reverse characters can be specified using the POS7300/EPSON command set.

Specification

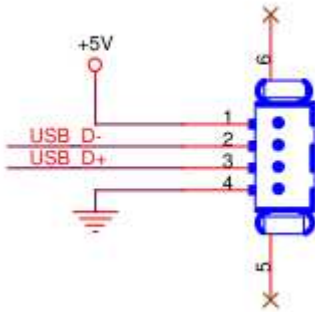
NO	Item	Description
1	Display method	White LED Backlight FSTN Negative Transmissive LCD
2	Number of character	40 characters (20 x 2 Line)
3	Character font	12 x 32 Dot matrix
4	Display color	White-Black
5	Brightness	1000 cd/m ²
6	Character type	96 alphanumeric 28 kinds of international character set
7	Character size	6.33mm x 16.93mm
8	Power supply	USB +5V Power Supply
9	Power consumption	0.3 W
10	MTBF	50,000 hours (power on time)
11	Panel dimensions	142.5 (W) x 51.7(H) x 14.9(D) mm
12	View area dimensions	130.2mm (W) x 37.6mm (H)
13	Viewing angle	30 ~ 60 degress (Vertical) -45 ~ 45 degrees (Horizontal)
14	Operating temperature	5 ~ 45°C
15	Operating Humidity	30% ~ 85%
16	Storage Temperature	-10 ~ 55 °C
17	Storage Humidity	10% ~ 85%

Interface

USB Virtual COM. Install driver is necessary.

Connector Pin Definition

- Connector type: Pitch 1.25mm 4 pin USB connector



- USB Pin Definition

Pin #	Definition
1	+5V_VBUS
2	USB_D-
3	USB_D+
4	GND

Software Status Setting Commands

When the device is POWER ON, it will read the Flash ROM Setting to set the **Command Type, Baud Rate, Parity, Data Length, Demo Mode and International Character**. User can re-set the Software Status Setting Commands as following, and Status Setting will be saving to Flash ROM:

6-3-4

Baud Rate Setting Command

STX 05 B n ETX /Change the baud rate setting/
 ASCII Format STX 05 B n ETX
 Dec. Format [02] [05] [66] n [03]
 Hex. Format [02h][05h][42h] n $30h \leq n \leq 33h$
 [0 3 h]
 Description Change the display communication baud rate.
 The baud rate setting can be selected from 4800 to 38400.

n	Baud rate
31h	4800
30h	9600
37h	19200
36h	38400

Parity Check Setting Command

STX 05 P n ETX /Change the Parity check setting/
 ASCII Format STX 05 P n ETX
 Dec. Format [02] [05] [80] n [03]
 Hex. Format [02h][05h][50h] n $n=30h \sim 32h$
 [0 3 h]
 Description Change the display communication parity. Set 8 data bit and the parity set for even 、 odd or non-parity.

n	Parity check
31h	None-parity
33h	Even-parity
35h	Odd-parity

Data Length Setting Command

STX 05 L n ETX /Change the Data Length Setting/
 ASCII Format STX 05 L n ETX
 Dec. Format [02] [05] [76] n [03]
 Hex. Format [02h][05h][4Ch] n $n=37h, 38h$
 [0 3 h]
 Description Change the display communication data length. Set 8-bits or 7-bits data length.

n	Data Length
37h	7 bits
38h	8 bits

International Character Set Setting Command

STX 05 S n ETX /Change the international character set/
 ASCII Format STX 05 S n ETX
 Dec. Format [02] [05] [83] n [03]
 Hex. Format [02h][05h][53h] n 30h ≤ n ≤ 4Ch
 [0 3 h]
 Description Change the display international character font.

n	Character Set (20h - 7Fh)	Code Table (80H-FFH)	Note
30h	U.S.A.	CP-437 (USA, Standard Europe)	
31h	FRANCE	CP-858 (Multilingual + Euro Symbol)	
32h	GERMANY		
33h	U.K.		
34h	DENMARK I		
35h	SWEDEN		
36h	ITALY		
37h	SPAIN		
38h	JAPAN	Katakana	
39h	NORWAY	CP-858	
3Ah	DENMARK II	(Multilingual+ Euro Symbol)	
3Bh	Slawie		
3Ch	RUSSIA		
3Dh	U.S.A.	CP-860 (Portuguese)	
3Eh	U.K.	Greek	
3Fh	U.S.A.	CP-852 (Hungary)	
40h	U.S.A.	CP-862 (Hebrew)	
41h	U.S.A.	CP-863 (Canadian-French)	
42h	U.S.A.	CP-865 (Nordic)	
43h	U.S.A.	CP-866 (Cyrillic)	
44h	U.S.A.	Windows-1251 (Cyrillic)	
45h	U.S.A.	Windows-1252 (West European Latin)	
46h	U.S.A.	Windows-1255 (Hebrew)	
47h	U.S.A.	Windows-1257 (Baltic)	
48h	U.S.A.	Windows-1253 (Greek)	
49h	U.S.A.	Windows-1250 (East European Latin)	
4Ah	U.S.A.	Windows-1254 (Turkish)	
4Bh	Arabic		

Select International Character Set Command

STX 05 T n ETX	/Select International Character Set Command/
ASCII Format	STX 05 T n ETX
Dec. Format	[02] [05] [84] n [03]
Hex. Format	[02h][05h][54h] n 00h ≤ n ≤ 0Dh
Description	[0 3 h] Select International Character Set

Select international character set (20H~7Fh) by command "STX 05 T n ETX"

n	International character set	n	International character set	n	International character set
00h	U.S.A.	06h	ITALY	0Ch	RUSSIA
01h	FRANCE	07h	SPAIN	0Dh	ARABIC
02h	GERMANY	08h	JAPAN		
03h	U.K.	09h	NORWAY		
04h	DENMARK I	0Ah	DENMARK II		
05h	SWEDEN	0Bh	SLAVONIC		

Select Character Code Table Command

STX 05 U n ETX	/Select Character Code Table Command/
ASCII Format	STX 05 U n ETX
Dec. Format	[02] [05] [85] n
Hex. Format	[02h][05h][55h] n 00h ≤ n ≤ 15h
Description	[0 3 h] Select Character Code Table

Select character code table (80H~FFh) by command "STX 05 U n ETX"

n	Character code table	n	Character code table	n	Character code table
00h	CP-437 (USA, Standard Europe)	08h	Greek	10h	Windows-1252 (West European Latin)
01h	Katakana (for Japan)	09h	CP-852 (Hungary)	11h	Windows-1253 (Greek)
02h	CP-850 (Multilingual)	0Ah	CP-862 (Hebrew)	12h	Windows-1250 (East European Latin)
03h	CP-860 (Portuguese)	0Bh	CP-866 (Cyrillic)	13h	CP-858 (Multilingual+ Euro Symbol)
04h	CP-863 (Canadian-French)	0Ch	Windows-1251 (Cyrillic)	14h	Arabic
05h	CP-865 (Nordic)	0Dh	Windows-1254 (Turkish)		
06h	Slawie	0Eh	Windows-1255 (Hebrew)		
07h	Russia	0Fh	Windows-1257 (Baltic)		

Command Type Setting Command

STX 05 C n ETX /Change the command type setting/
 ASCII Format STX 05 C n ETX
 Dec. Format [02] [05] [67] n [03]
 Hex. Format [02h][05h][43h] n 30h ≤ n ≤ 37h
 [0 3 h]
 This command will change the command type and initialize the display.
 Description The display emulation mode is based on DSP800/ ESC/ ADM 787/ POS7300/ AEDEX/ UTC/ CD5220 mode.

n	Command Type	n	Command Type
32h	POS7300	34h	AEDEX
31h	ESC/POS	35h	UTC/P
33h	ADM 787	36h	UTC/S
30h	DSP800	37h	CD5220

Run Demo message

STX 05 D 08 ETX /Run demo message/
 ASCII Format STX 05 D 08 ETX
 Dec. Format [02][05][68][08][03]
 Hex. Format [02h][05h][44h][08h][03h]
 Run demo message for the display.
 Description The display emulation mode is based on PA7300, DSP800, EPSON ESC/POS, CD5220 command type.

Show Firmware Version

STX 05 V 01 ETX /Show Firmware Version/
 ASCII Format STX 05 V 01 ETX
 Dec. Format [02][05][86][01][03]
 Hex. Format [02h][05h][56h][01h][03h]
 Description Show firmware version.

Graphic LCM Contrast Setting

STX F7 SOH n NUL /Set Graphic LCM Contrast Value/
 ASCII Format STX F7 SOH n NUL
 Dec. Format [02][247][01][n][00]
 Hex. Format [02h][F7h][01h][n][00h]
 Set Graphic LCM Contrast.
 Description Setting Value Range: 00h ~ 3Fh
 Default Value is 20h

Display Logo Command

STX F7 SOH n NUL

ASCII Format

Dec. Format

Hex. Format

Description

/Display Logo Command/

STX FC 55 AA 55 AA

[02][252][85][170][85][170]

[02h][FCh][55h][AAh][55h] [AAh]

Displays the logo. Please ensure that the logo has been set with the Customer Display configuration utility before using this command.

Command List Table

Command	Command Set	POS7300	CD5220	EPSON D101	UTC/S	UTC/P	AEDEX	ADM788	DSP800
Move cursor right		0	0	0					
Move cursor left		0	0	0					
Move cursor up		0	0	0					
Move cursor down		0	0	0					
Move cursor to right-most position		0	0	0					
Move cursor to left-most position		0	0	0					
Move cursor to home position		0	0	0					
Move cursor to bottom position		0	0	0					
Move cursor to specified position		0	0	0					0
Clear display screen		0	0	0	0			0	
Clear cursor line		0	0	0					
Blink display screen		0	0	0					0
Initialize display		0	0	0					0
Select character code table		0	0	0					
Select international character set		0	0	0					0
Select/cancel reverse character		0		0					
Overwrite mode		0	0	0	0				
Vertical scroll mode		0	0	0	0				
Horizontal scroll mode		0	0	0					
Set/cancel the window range		0	0	0					
Set starting/ending position of macro definition				0					
Execute and quit macro				0					
Execute self-test		0	0	0					0
Display time		0		0		0	0		
Display time continuously		0		0					
Display position		0			0				
Cursor on/off		0	0	0	0				
Change to UTC enhanced mode					0				
Change to UTC standard mode						0			
Write string to upper line		0	0			0	0		
Upper line message continuous scroll		0	0			0	0		
Bottom line message scroll continuously		0							
Message vertical down scroll continuously		0							
Message vertical upper scroll continuously		0							
Carriage return		0			0			0	
Line feed		0			0				
Back space		0			0				
Horizontal tab		0			0				
Command type select			0	0					0
Upper line message scroll once pass						0	0		
Change attention code						0	0		
Two line display						0	0		

Command	Command Set	POS7300	CD5220	EPSON D101	UTC/S	UTC/P	AEDEX	ADM788	DSP800
Clear upper line and move cursor to upper left-end position								0	
Clear bottom line and move cursor to bottom left-end position								0	
Set period to upper line, last n position								0	
Set line blinking, upper line		0						0	
Clear line blinking, upper line		0						0	
Clear field 1 and move cursor to field 1, first position								0	
Clear field 2 and move cursor to field 2,first position								0	
Clear display range from n position to m position and move cursor to n position									0
Save the current displaying data to n layer for demo display									0
Specify period		0		0					
Specify comma		0		0					
Specify semicolon (period + comma)		0		0					

Command Details

POS7300 Series Command List

Command	Code (hex)	Function Description
ESC F A [DATA] CR	1B 46 41 [DATA] 0D	Write string to upper line ➤ Maximal [DATA] length is 40
ESC F B [DATA] CR	1B 46 42 [DATA] 0D	Write string to lower line ➤ Maximal [DATA] length is 40
ESC F D [DATA] CR	1B 46 44 [DATA] 0D	Upper line message scroll continuously ➤ Maximal [DATA] length is 40
ESC F O [DATA] CR	1B 46 4F [DATA] 0D	Bottom line message scroll continuously ➤ Maximal [DATA] length is 40
ESC P x y	1B 50 x y	Move cursor to specified position ➤ x = 1 ~ 14h, for columns location. ➤ y = 1 ~ 2, for lines location.
ESC _ n	1B 5F n	Set cursor on/off ➤ n = 00 ~ 01
ESC DC1	1B 11	Overwrite mode
ESC DC2	1B 12	Vertical scroll mode
ESC DC3	1B 13	Horizontal scroll mode
ESC @	1B 40	Initialize display
US MD1 n	1F 01 n	Message vertical upper scroll continuously ➤ n = 01 ~ 0Ch
US MD2 n	1F 02 n	Message vertical down scroll continuously ➤ n = 01 ~ 0Ch
US DC1 n	1F 11 n	Set line blinking ➤ n = '1' ~ '2' ■ n = '1' up line ■ n = '2' low line
US DC2 n	1F 12 n	Clear line blinking ➤ n = '1' ~ '2' ■ n = '1' up line ■ n = '2' low line
US , n	1F 2C n	Specify comma ➤ n = a displayable character code
US . n	1F 2E n	Specify period ➤ n = a displayable character code
US ; n	1F 3B n	Specify semicolon (period + comma) ➤ n = a displayable character code
US @	1F 40	Execute self - test
US E n	1F 45 n	Blink display screen ➤ n = 00h ~ FFh ■ n = 0 for no blink
US T h m	1F 54 h m	Display time ➤ $0 \leq h \leq 17h$, for hours setting. ➤ $0 \leq m \leq 3Bh$, for minutes setting.
US U	1F 55	Display time continuously
US r n	1F 72 n	Select/cancel reverse character. ➤ n = 00,01
NULL H	0 48	Move cursor up

Command	Code (hex)	Function Description
NULL K	0 4B	Move cursor left
NULL M	0 4D	Move cursor right
NULL P	0 50	Move cursor down
NULL G	0 47	Move cursor to left-most position
NULL O	0 4F	Move cursor to right-most position
BS	08	Back space
HT	09	Horizontal tab
LF	0A	Line feed
HOM	0B	Move cursor to home position
US B	1F 42	Move cursor to bottom position
CLR	0C	Clear display screen
CLR	12	
CR	0D	Carriage return
CAN	18	Clear cursor line, and clear string mode
DLE n	10 n	Display position ➤ n = 0 ~ 27h, for location.
ESC W n s x1 y1 x2 y2	1B 57 n s x1 y1 x2 y2	Set or cancel the window range ➤ n = 1 ~ 4, for window number ➤ s = 0: cancel s = 1: set ➤ $1 \leq \mathbf{x1} \leq \mathbf{x2} \leq 14\text{h}$, for columns location. ➤ $1 \leq \mathbf{y1} \leq \mathbf{y2} \leq 2$, for lines location.
ESC R n	1B 52 n	Select international character set (20H~7Fh). ➤ n = 00 ~ 0Dh. See note *1
ESC t n	1B 74 n	Select character code table (80H~FFh). ➤ n = 00 ~ 15h. See note *2

Note:

1. Select international character set (20H~7Fh) by command “ESC R n”

n	International character set	n	International character set	n	International character set
00h	U.S.A.	05h	SWEDEN	0Ah	DENMARK II
01h	FRANCE	06h	ITALY	0Bh	SLAVONIC
02h	GERMANY	07h	SPAIN	0Ch	RUSSIA
03h	U.K.	08h	JAPAN	0Dh	ARABIC
04h	DENMARK I	09h	NORWAY		

2. Select character code table (80H~FFh) by command “ESC t n”

n	Character code table	n	Character code table	n	Character code table
00h	CP-437 (USA, Standard Europe)	08h	Greek	10h	Windows-1252 (West European Latin)
01h	Katakana (for Japan)	09h	CP-852 (Hungary)	11h	Windows-1253 (Greek)
02h	CP-850 (Multilingual)	0Ah	CP-862 (Hebrew)	12h	Windows-1250 (East European Latin)
03h	CP-860 (Portuguese)	0Bh	CP-866 (Cyrillic)	13h	CP-858 (Multilingual+ Euro Symbol)
04h	CP-863 (Canadian-French)	0Ch	Windows-1251 (Cyrillic)	14h	Arabic
05h	CP-865 (Nordic)	0Dh	Windows-1254 (Turkish)		
06h	Slawie	0Eh	Windows-1255 (Hebrew)		
07h	Russia	0Fh	Windows-1257 (Baltic)		

CD5220 Standard Mode Command List

Command	Code (hex)	Function Description
ESC DC1	1B 11	Overwrite mode
US SOH	1F 01	
ESC DC2	1B 12	Vertical scroll mode
US STX	1F 02	
ESC DC3	1B 13	Horizontal scroll mode
US ETX	1F 03	
ESC Q A [DATA] CR	1B 51 41 [DATA] 0D	Set the string display mode, write string to upper line. *1 ➤ Maximal [DATA] length is 20
ESC Q B [DATA] CR	1B 51 42 [DATA] 0D	Set the string display mode, write string to lower line. *1 ➤ Maximal [DATA] length is 20
ESC Q D [DATA] CR	1B 51 44 [DATA] 0D	Upper line message scroll continuously. *1 *2 ➤ Maximal [DATA] length is 40
ESD [D	1B 5B 44	Move cursor left
BS	08	
ESC [C	1B 5B 43	Move cursor right
HT	09	
ESC [A	1B 5B 41	Move cursor up
US LF	1F 0A	
ESC [B	1B 5B 42	Move cursor down
LF	0A	
ESC [H	1B 5B 48	Move cursor to home position
HOM	0B	
ESC [L	1B 5B 4C	Move cursor to left-most position
CR	0D	
ESC [R	1B 5B 52	Move cursor to right-most position
US CR	1F 0D	
ESC [K	1B 5B 4B	Move cursor to bottom position
US B	1F 42	
ESC # n	1B 23 n	Command type select ➤ n = 30h ~ 37h
US @	1F 40	Execute self test
US E n	1F 45 n	Blink display screen ➤ n = 00h ~ FFh ■ n = 0 for no blink
ESC I x y	1B 6C x y	Move cursor to specified position ➤ x = 1 ~ 14h, for columns location. ➤ y = 1,2, for lines location.
US \$ x y	1F 24 x y	
ESC # n	1B 23 n	Command type select ➤ n = 30h ~ 37h
US E n	1F 45 n	Blink display screen ➤ n = 00h ~ FFh ■ n = 0 for no blink
ESC I x y	1B 6C x y	Move cursor to specified position ➤ x = 1 ~ 14h, for columns location. ➤ y = 1,2, for lines location.
ESC @	1B 40	Initialize display

Command	Code (hex)	Function Description
ESC W s x1 x2 y	1B 57 s x1 x2 y	Set or cancel the window range at horizontal scroll mode ➤ $1 \leq x1 \leq x2 \leq 14h$, for columns location. ➤ $y = 1 \sim 2$, for lines location. ➤ s = 0: cancel s = 1: set
CLR	0C	Clear display screen, and clear string mode
CAN	18	Clear cursor line, and clear string mode
ESC _ n	1B 5F n	Set cursor on/off ➤ n = 1: cursor on n = 0: cursor off
ESC f n	1B 66 n	Select international Character ➤ About n , refer. *3
ESC c n	1B 63 n	Select character code table ➤ About n , refer. *4

Note:

1. While using command “ESC Q A” or “ESC Q B”, other commands cannot be used except when using command “CLR” or “CAN” to change operating mode.
2. When using command “ESC Q D”, the upper line message will scroll continuously until a new command is received, it will then clear the upper line and move the cursor to the upper left-end position.
3. Select the international Character set (20h – 7Fh) by command “ESC f n”.

Parameter “n”		International Character Set	Parameter “n”		International Character Set
Character	Hex		Character	Hex	
‘A’	41h	U.S.A.	‘W’	57h	Sweden
‘G’	47h	Germany	‘D’	44h	Denmark I
‘I’	49h	Italy	‘E’	45h	Denmark II
‘J’	4Ah	Japan	‘L’	4Ch	Slavonic
‘U’	55h	U.K.	‘R’	52h	Russia
‘F’	46h	France	‘B’	42h	Arabic
‘S’	53h	Spain			
‘N’	4Eh	Norway			

4. Select character code table (80H-FFH) by command “ESC c n”.

Parameter “n”		character Code Table
Character	Hex	
‘A’	41h	Compliance with ASCII code (CP-437)
‘J’	4Ah	Compliance with JIS code (Katakana)
‘L’	4Ch	Compliance with Slawie code
‘R’	52h	Compliance with RUSSIA code
‘M’	4Dh	CP-850 (Multilingual)
‘P’	50h	CP-858 (Multilingual+ Euro Symbol)
‘p’	70h	CP-860 (Portuguese)
‘F’	46h	CP-863 (Canadian-French)
‘N’	4Eh	CP-865 (Nordic)
‘u’	75h	CP-852 (Hungary)
‘H’	48h	CP-862 (Hebrew)
‘C’	43h	CP-866 (Cyrillic)
‘G’	47h	Greek
‘c’	63h	Windows-1251 (Cyrillic)
‘W’	57h	Windows-1252 (West European Latin)
‘h’	68h	Windows-1255 (Hebrew)
‘B’	42h	Windows-1257 (Baltic)
‘g’	67h	Windows-1253 (Greek)
‘E’	45h	Windows-1250 (East European Latin)
‘T’	54h	Windows-1254 (Turkish)
‘I’	49h	Arabic

UTC Standard Mode Command List

Command	Code (hex)	Function Description
BS	08	Back space
HT	09	Horizontal tab
LF	0A	Line feed
CR	0D	Carriage return
DLE n	10 n	Display position ➤ n = 0 ~ 27h, for location.
DC1	11	Over write display mode
DC2	12	Vertical scroll mode
DC3	13	Cursor on
DC4	14	Cursor off
US	1F	Clear display
ESC d	1B 64	Change to UTC enhanced mode

UTC Enhanced Mode Command List

Command	Code (hex)	Function Description
ESC u A [DATA] CR	1B 75 41 [DATA] 0D	Upper line display ➤ Maximal [DATA] length is 20
ESC u B [DATA] CR	1B 75 42 [DATA] 0D	Bottom line display ➤ Maximal [DATA] length is 20
ESC u D [DATA] CR	1B 75 44 [DATA] 0D	Upper line message scroll continuously ➤ Maximal [DATA] length is 40
ESC u E h h : m m CR	1B 75 45 h h ':' m m 0D	Display time ➤ h, m = '0' ~ '9'
ESC u F [DATA] CR	1B 75 46 [DATA] 0D	Upper line message scroll Once pass ➤ Maximal [DATA] length is 40
ESC u H n m CR	1B 75 48 n m 0D	Change attention code ➤ n = 1 ~ 20h ➤ m = 1 ~ 20h
ESC u I [DATA] CR	1B 75 49 [DATA] 0D	Two line display ➤ Maximal [DATA] length is 40
ESC RS CR	1B 0F 0D	Change to UTC standard mode

AEDEX/EMAX Mode Command List

Command	Code (hex)	Function Description
! # 1 [DATA] CR	21 23 31 [DATA] 0D	Upper line display ➤ Maximal [DATA] length is 20
! # 2 [DATA] CR	21 23 32 [DATA] 0D	Bottom line display ➤ Maximal [DATA] length is 20
! # 4 [DATA] CR	21 23 34 [DATA] 0D	Upper line message scroll ➤ Maximal [DATA] length is 60
! # 5 h h : m m CR	21 23 35 h h ':' m m 0D	Display time ➤ h, m = '0' ~ '9'
! # 8 n m CR	21 23 38 n m 0D	Change attention code ➤ n, m = 1 ~ 20
! # 9 [DATA] CR	21 23 39 [DATA] 0D	Two line display ➤ Maximal [DATA] length is 40
! # 6 [DATA] CR	21 23 36 [DATA] 0D	Upper line message scroll once pass ➤ Maximal [DATA] length is 60

ADM787/788 mode command list

Command	Code (hex)	Function Description
CLR	0C	Clear display
CR	0D	Carriage return
SLE1	0E	Clear upper line and move cursor to upper left-end position
SLE2	0F	Clear bottom line and move, Cursor to bottom left-end position
DC0 n	10 n	Set period to upper line last n position ➤ n = 31H ~ 37H
DC1 n	11 n	Set line blinking, upper line ➤ n = '1' ~ '2' ■ n = '1': up line ■ n = '2': low line
DC2 n	12 n	Clear line blinking, upper line ➤ n = '1' ~ '2' ■ n = '1': up line ■ n = '2': low line
SF1	1E	Clear field 1 and move cursor to field 1, first position
SF2	1F	Clear field 2 and move cursor to field 2, first position

DSP800 Mode Command List

Command	Code (hex)	Function Description
EOT SOH I n ETB	04 01 49 n 17	Select international character set ➤ n = 00 ~ 1Fh or 30 ~ 4Fh See note *1
EOT SOH P n ETB	04 01 50 n 17	Move cursor to specified position ➤ n = 31h ~ 58h
EOT SOH C n m ETB	04 01 43 n m 17	Clear display range from n position to m position and move cursor to n position ➤ 31h ≤ n ≤ m ≤ 58h
EOT SOH S n ETB	04 01 53 n 17	Save current view message to n layer for demo view data ➤ n = 31h ~ 35h
EOT SOH D n m ETB	04 01 44 n m 17	Display the saved demo message ➤ n = 31h ~ 4Fh ➤ m = 31h ~ 33h
EOT SOH F n ETB	04 01 46 n 17 00h ≤ n ≤ FFh	Blink display Screen ➤ n = 00h ~ FFh, n = 0 for no blink
EOT SOH # n ETB	04 01 23 n 17 n = 30~37h	Command type select
EOT SOH % ETB	04 01 25 17	Initialize display
EOT SOH @ ETB	04 01 40 17	Execute self-test

Note:

1. Select international character set (20H~7Fh) by command "EOT SOH I n ETB"

n	International character set	n	International character set	n	International character set
00h	U.S.A.	05h	SWEDEN	0Ah	DENMARK II
01h	FRANCE	06h	ITALY	0Bh	SLAVONIC
02h	GERMANY	07h	SPAIN	0Ch	RUSSIA
03h	U.K.	08h	JAPAN	0Dh	ARABIC
04h	DENMARK I	09h	NORWAY		
30h	U.S.A.	35h	SWEDEN	3Ah	DENMARK II
31h	FRANCE	36h	ITALY	3Bh	SLAVONIC
32h	GERMANY	37h	SPAIN	3Ch	RUSSIA
33h	U.K.	38h	JAPAN	3Dh	ARABIC
34h	DENMARK I	39h	NORWAY		

EPSON ESC/POS Command List

Command	Code (hex)	Function Description
US r n	1F 72 n	Select/cancel reverse character. ➤ n = 00,01
US MD1	1F 01	Specify overwrite mode.
US MD2	1F 02	Specify vertical scroll mode.
US MD3	1F 03	Specify horizontal scroll mode.
CAN	18	Clear cursor line
ESC # n	1B 23 n	Command type select ➤ n = 30h ~ 37h
US C n	1F 43 n	Set cursor on/off ➤ n = 00, 01
BS	08	Move cursor left
HT	09	Move cursor right
US LF	1F 0A	Move cursor up
LF	0A	Move cursor down
US CR	1F 0D	Move cursor to right-most position
CR	0D	Move cursor to left-most position
HOM	0B	Move cursor to home position
US B	1F 42	Move cursor to bottom position
US \$ x y	1F 24 x y	Move cursor to specified position ➤ x = 1 ~ 14h, for columns location. ➤ y = 1 ~ 2, for lines location.
CLR	0C	Clear display screen
US E n	1F 45 n	Blink display screen ➤ n = 00h ~ FFh n = 0 for no blink
ESC @	1B 40	Initialize display
US , n	1F 2C n	Specify comma ➤ n = a displayable character code
US . n	1F 2E n	Specify period ➤ n = a displayable character code
US ; n	1F 3B n	Specify semicolon (period + comma) ➤ n = a displayable character code
US :	1F 3A	Set starting/ending position of macro definition. Ex.: 1F 3A ... (macro string) ... 1F 3A
US ^ n m	1F 5E n m	Execute and quit macro. It's an interval of n between the two words. It's an interval of m between the two strings. ➤ $00 \leq (n, m) \leq FFh$ ■ n = Word time ■ m = show string time
US @	1F 40	Execute self - test
US T h m	1F 54 h m	Display time ➤ $0 \leq h \leq 17h$, for hours setting. ➤ $0 \leq m \leq 3Bh$, for minutes setting.
US U	1F 55	Display time continuously

Command	Code (hex)	Function Description
ESC W n s x1 y1 x2 y2	1B 57 n s x1 y1 x2 y2	Set or cancel the window range ➤ n = 1 ~ 4, for window number ➤ s = 0: cancel s = 1: set ➤ 1 ≤ x1 ≤ x2 ≤ 14h, for columns location. ➤ 1 ≤ y1 ≤ y2 ≤ 2, for lines location.
ESC R n	1B 52 n	Select international character set (20H~7Fh). ➤ n = 00 ~ 0Dh. See note *1
ESC t n	1B 74 n	Select character code table (80H~FFh). ➤ n = 00 ~ 15h. See note *2

Note:

1. Select international character set (20H~7Fh) by command “ESC R n”

n	International character set	n	International character set	n	International character set
00h	U.S.A.	05h	SWEDEN	0Ah	DENMARK II
01h	FRANCE	06h	ITALY	0Bh	SLAVONIC
02h	GERMANY	07h	SPAIN	0Ch	RUSSIA
03h	U.K.	08h	JAPAN	0Dh	ARABIC
04h	DENMARK I	09h	NORWAY		

2. Select character code table (80H~FFh) by command “ESC t n”

n	Character code table	n	Character code table	n	Character code table
00h	CP-437 (USA, Standard Europe)	08h	Greek	10h	Windows-1252 (West European Latin)
01h	Katakana (for Japan)	09h	CP-852 (Hungary)	11h	Windows-1253 (Greek)
02h	CP-850 (Multilingual)	0Ah	CP-862 (Hebrew)	12h	Windows-1250 (East European Latin)
03h	CP-860 (Portuguese)	0Bh	CP-866 (Cyrillic)	13h	CP-858 (Multilingual+ Euro Symbol)
04h	CP-863 (Canadian-French)	0Ch	Windows-1251 (Cyrillic)	14h	Arabic
05h	CP-865 (Nordic)	0Dh	Windows-1254 (Turkish)		
06h	Slawie	0Eh	Windows-1255 (Hebrew)		
07h	Russia	0Fh	Windows-1257 (Baltic)		

Character Set

Character Code 20H – 7FH

International Character Sets

Character Code Number													
Country	Hex	23	24	40	5B	5C	5D	5E	60	7B	7C	7D	7E
	Dec	35	36	64	91	92	93	94	96	123	124	125	126
U.S.A	#	\$	@	[\]	^	`	{		}	~	
France	#	\$	à	°	ç	§	^	`	é	ù	è	¨	
Germany	#	\$	§	Ä	Ö	Ü	^	`	ä	ö	ü	ß	
U.K	£	\$	@	[\]	^	`	{		}	~	
Denmark I	#	\$	@	Æ	Ø	Å	^	`	æ	ø	å	~	
Sweden	#	¤	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü	
Italy	#	\$	@	°	\	é	^	ù	à	ò	è	ì	
Spain	Pts	\$	@	í	Ñ	¿	^	`	¨	ñ	}	~	
Japan	#	\$	@	[¥]	^	`	{		}	~	
Norway	#	¤	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü	
Denmark II	#	\$	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü	
Slavonic	#	\$	@	[\]	^	`	{		}	~	
Russia	#	\$	@	[\]	^	`	{		}	~	

USA, Standard Character Sets

	00h	01h	02h	03h	04h	05h	06h	07h	08h	09h	0Ah	0Bh	0Ch	0Dh	0Eh	0Fh
20h		!	“	#	\$	%	&	‘	()	*	+	,	-	.	/
30h	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
40h	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
50h	P	Q	R	S	T	U	V	W	X	Y	Z	[\]	^	_
60h	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
70h	p	q	r	s	t	u	v	w	x	y	z	{		}	~	

Character Code 80H – FFH

CP-437 (USA, Standard Europe)

	00h	01h	02h	03h	04h	05h	06h	07h	08h	09h	0Ah	0Bh	0Ch	0Dh	0Eh	0Fh
80h	Ç	ü	é	â	ä	à	å	ç	ê	ë	è	ï	î	ì	Ä	Å
90h	É	æ	Æ	ô	ö	ò	û	ù	ÿ	Ö	Ü	¢	£	¥	Pts	f
A0h	á	í	ó	ú	ñ	Ñ	à	ó	¿	¬	¬	½	¼	¡	«	»
B0h	⋯	⋮	⋱		┌	┐	└	┘	┙	┚	┛	├	┤	┥	┦	┧
C0h	┨	┩	┪	┫	┬	┭	┮	┯	┰	┱	┲	┳	┴	┵	┶	┷
D0h	┸	┹	┺	┻	┼	┽	┾	┿	⌞	⌟	⌠	■	■	■	■	■
E0h	α	β	Γ	π	Σ	σ	μ	τ	Φ	Θ	Ω	δ	∞	φ	ε	∩
F0h	≡	±	≥	≤		J	÷	≈	°	•	·	√	"	²	■	

CP-850 (Multilingual)

	00h	01h	02h	03h	04h	05h	06h	07h	08h	09h	0Ah	0Bh	0Ch	0Dh	0Eh	0Fh
80h	Ç	ü	é	â	ä	à	å	ç	ê	ë	è	ï	î	ì	Ä	Å
90h	É	æ	Æ	ô	ö	ò	û	ù	ÿ	Ö	Ü	ø	£	Ø	×	f
A0h	á	í	ó	ú	ñ	Ñ	à	ó	¿	®	¬	½	¼	¡	«	»
B0h	⋯	⋮	⋱		┌	┐	└	┘	┙	┚	┛	├	┤	┥	┦	┧
C0h	┨	┩	┪	┫	┬	┭	ã	Ã	┰	┱	┲	┳	┴	┵	┶	α
D0h	ð	Ð	Ê	Ë	È	ı	í	î	ï	┘	┙	■	■	ı	ı	■
E0h	Ó	β	Ô	Ò	õ	Õ	μ	þ	Þ	Ú	Û	Ü	ý	Ý	-	'
F0h	-	±	₃	¾	¶	§	÷	¸	°	¨	·	¹	³	²	■	

CP-858 (Multilingual + Euro Symbol)

	00h	01h	02h	03h	04h	05h	06h	07h	08h	09h	0Ah	0Bh	0Ch	0Dh	0Eh	0Fh
80h	Ç	ü	é	â	ä	à	å	ç	ê	ë	è	ï	î	ì	Ä	Å
90h	É	æ	Æ	ô	ö	ò	û	ù	ÿ	Ö	Ü	ø	£	Ø	×	f
A0h	á	í	ó	ú	ñ	Ñ	à	ó	¿	®	¬	½	¼	¡	«	»
B0h	⋯	⋮	⋱		┌	┐	└	┘	┙	┚	┛	├	┤	┥	┦	┧
C0h	┨	┩	┪	┫	┬	┭	ã	Ã	┰	┱	┲	┳	┴	┵	┶	α
D0h	ð	Ð	Ê	Ë	È	€	ı	î	ï	┘	┙	■	■	ı	ı	■
E0h	Ó	β	Ô	Ò	õ	Õ	μ	þ	Þ	Ú	Û	Ü	ý	Ý	-	'
F0h	-	±	₃	¾	¶	§	÷	¸	°	¨	·	¹	³	²	■	

Katakana for Japan

	00h	01h	02h	03h	04h	05h	06h	07h	08h	09h	0Ah	0Bh	0Ch	0Dh	0Eh	0Fh
80h	α	β	γ	△	ε	η	θ	λ	μ	π	ρ	σ	τ	Φ	Ω	Σ
90h	£	§	IE	IR	∫	\bar{x}	\bar{A}	⁻¹	²	³	^x	1/2	1/	√	±	■
A0h		。	「	」	、	・	ヲ	ア	イ	ウ	エ	オ	ヤ	コ	ヨ	ツ
B0h	-	ア	イ	ウ	エ	オ	カ	キ	ク	ケ	コ	サ	シ	ス	セ	ソ
C0h	タ	チ	ツ	テ	ト	ナ	ニ	ヌ	ネ	ノ	ハ	ヒ	フ	ヘ	ホ	マ
D0h	ミ	ム	メ	モ	ヤ	ユ	ヨ	ラ	リ	ル	レ	ロ	ワ	ン	ゝ	゜
E0h	↑	↓	←	→	↶	↷	↸	↹	↺	↻	”	“	«	»	∴	∵
F0h	≤	≥	≠	≡	∥		⊥	∞	α	~	~	≡	〒	♀	⊕	⊖

Slawie

	00h	01h	02h	03h	04h	05h	06h	07h	08h	09h	0Ah	0Bh	0Ch	0Dh	0Eh	0Fh
80h	Ç	ü	é	â	ä	û	ć	ç	ł	ë	õ	õ	î	ż	ä	ć
90h	é	ł	í	ô	ö	ł	ĩ	ś	ś	Ö	Ü	ł	ł	ł	×	č
A0h	á	í	ó	ú	ą	ą	ż	ż	ę	ę		ż	č	ş	«	»
B0h	☐	☐	☐		ł	á	â	ě	ş					ł	ł	
C0h					—	ł	ă	ă						=		α
D0h	đ	đ	d'	ë	d'	ň	í	î	ě			■	■	ł	û	■
E0h	ó	β	ô	ń	ń	ň	š	š	ř	ú	ř	ũ	ý	ý	ł	'
F0h	—	”	˘	ˇ	ˇ	§	÷	,	°	”	˙	ú	ř	ř	■	

Russia

	00h	01h	02h	03h	04h	05h	06h	07h	08h	09h	0Ah	0Bh	0Ch	0Dh	0Eh	0Fh
80h	А	Б	В	Г	Д	Е	Ж	З	И	Й	К	Л	М	Н	О	П
90h	Р	С	Т	У	Ф	Х	Ц	Ч	Ш	Щ	Ъ	Ы	Ь	Э	Ю	Я
A0h	а	б	в	г	д	е	ж	з	и	й	к	л	м	н	о	п
B0h																
C0h																
D0h																
E0h	р	с	т	у	ф	х	ц	ч	ш	щ	ъ	ы	ь	э	ю	я
F0h	ə	ƒ	ƚ	ƚ	θ	Ƴ	Ƴ	h	ə	ƒ	ƚ	ƚ	θ	Ƴ	Ƴ	

CP-860 (Portuguese)

	00h	01h	02h	03h	04h	05h	06h	07h	08h	09h	0Ah	0Bh	0Ch	0Dh	0Eh	0Fh
80h	Ç	ü	é	â	ã	à	Á	ç	ê	Ê	è	Í	Ô	ì	Ã	Â
90h	É	À	È	ô	õ	ò	Ú	ù	ì	Õ	Ü	ç	£	Ù	Þ	Ó
A0h	á	í	ó	ú	ñ	Ñ	ã	õ	ç	Ò	¬	½	¼	¡	«	»
B0h	⋮	⋮	⋮		┌	┐	└	┘	┌	┐	└	┘	└	┘	└	┘
C0h	L	└	┐	┌	┐	└	┘	└	┘	└	┘	└	┘	└	┘	└
D0h	└	┐	┐	└	┘	└	┘	└	┘	└	┘	■	■	■	■	■
E0h	α	β	Γ	π	Σ	σ	μ	τ	Φ	Θ	Ω	δ	∞	φ	ε	∩
F0h	≡	±	≥	≤		J	÷	≈	°	•	·	√	"	²	■	

Greek

	00h	01h	02h	03h	04h	05h	06h	07h	08h	09h	0Ah	0Bh	0Ch	0Dh	0Eh	0Fh
80h	A	B	Γ	Δ	E	Z	H	Θ	I	K	Λ	M	N	Ξ	O	Π
90h	P	Σ	T	Υ	Φ	X	Ψ	Ω	α	β	γ	δ	ε	ζ	η	θ
A0h	ι	κ	λ	μ	ν	ξ	ο	π	ρ	σ	ς	τ	υ	φ	χ	ψ
B0h																
C0h																
D0h																
E0h	ω															
F0h										£				-		

CP-852 (Hungary)

	00h	01h	02h	03h	04h	05h	06h	07h	08h	09h	0Ah	0Bh	0Ch	0Dh	0Eh	0Fh
80h	Ç	ü	é	â	ä	ű	ć	ç	ł	ë	Ő	ő	î	Ž	Ä	Ć
90h	É	Í	í	ô	ö	Ĺ	ł	Ś	ś	Ö	Ü	Ť	ť	Ł	×	Č
A0h	á	í	Ó	ú	Ą	ą	Ž	ž	Ę	ę	¬	ż	Č	ş	«	»
B0h	⋮	⋮	⋮		┌	┐	Á	Â	Ě	Ş	┐	┐	┐	Ž	ž	┐
C0h	L	└	┐	┌	┐	└	Ā	ă	Ľ	┐	┐	┐	┐	=	┐	α
D0h	đ	Đ	Ď	Ě	d'	Ń	í	î	ě	┐	┐	■	■	┐	Ů	■
E0h	Ó	β	Ô	Ń	ń	ň	Š	š	Ř	Ú	ř	Ú	ý	Ý	ı	'
F0h	-	"	˘	ˇ	˘	§	÷	,	°	¨	·	ú	Ř	ř	■	

CP-862 (Hebrew)

	00h	01h	02h	03h	04h	05h	06h	07h	08h	09h	0Ah	0Bh	0Ch	0Dh	0Eh	0Fh
80h	א	ב	ג	ד	ה	ו	ז	ח	ט	י	ך	כ	ל	מ	נ	ן
90h	ס	ע	פ	צ	ק	ר	ש	ת	ף	ץ	£	¥	₪	₪	₪	f
A0h	á	í	ó	ú	ñ	Ñ	ä	ö	ı	ƒ	¬	½	¼	ı	«	»
B0h	▒	▒	▒		└	≡	≡	≡	≡	≡	≡	≡	≡	≡	≡	≡
C0h	L	└	└	└	└	└	└	└	└	└	└	└	└	└	└	└
D0h	└	└	└	└	└	└	└	└	└	└	└	└	└	└	└	└
E0h	α	β	Γ	π	Σ	σ	μ	τ	Φ	Θ	Ω	δ	∞	φ	ε	∩
F0h	≡	±	≥	≤		J	÷	≈	°	•	·	√	n	2	■	

CP-863 (Canadian- French)

	00h	01h	02h	03h	04h	05h	06h	07h	08h	09h	0Ah	0Bh	0Ch	0Dh	0Eh	0Fh
80h	Ç	ü	é	â	Â	à	¶	ç	ê	ë	è	ï	î	=	Ä	§
90h	É	È	Ê	ô	Ë	Ï	û	ù	æ	Ô	Ü	φ	£	Ù	Û	f
A0h	ı	ı	ó	ú	ı	ı	ı	ı	ı	ı	ı	ı	ı	ı	ı	ı
B0h	▒	▒	▒		└	≡	≡	≡	≡	≡	≡	≡	≡	≡	≡	≡
C0h	L	└	└	└	└	└	└	└	└	└	└	└	└	└	└	└
D0h	└	└	└	└	└	└	└	└	└	└	└	└	└	└	└	└
E0h	α	β	Γ	π	Σ	σ	μ	τ	Φ	Θ	Ω	δ	∞	φ	ε	∩
F0h	≡	±	≥	≤		J	÷	≈	°	•	·	√	n	2	■	

CP-865 (Nordic)

	00h	01h	02h	03h	04h	05h	06h	07h	08h	09h	0Ah	0Bh	0Ch	0Dh	0Eh	0Fh
80h	Ç	ü	é	â	ä	à	å	ç	ê	ë	è	ï	î	ì	Ä	Å
90h	É	æ	Æ	ô	ö	ò	û	ù	ÿ	Ö	Ü	ø	£	Ø	Pt	f
A0h	á	í	ó	ú	ñ	Ñ	ä	ö	ı	ƒ	¬	½	¼	ı	«	»
B0h	▒	▒	▒		└	≡	≡	≡	≡	≡	≡	≡	≡	≡	≡	≡
C0h	L	└	└	└	└	└	└	└	└	└	└	└	└	└	└	└
D0h	└	└	└	└	└	└	└	└	└	└	└	└	└	└	└	└
E0h	α	β	Γ	π	Σ	σ	μ	τ	Φ	Θ	Ω	δ	∞	φ	ε	∩
F0h	≡	±	≥	≤		J	÷	≈	°	•	·	√	n	2	■	

CP-866 (Cyrillic)

	00h	01h	02h	03h	04h	05h	06h	07h	08h	09h	0Ah	0Bh	0Ch	0Dh	0Eh	0Fh
80h	А	Б	В	Г	Д	Е	Ж	З	И	Й	К	Л	М	Н	О	П
90h	Р	С	Т	У	Ф	Х	Ц	Ч	Ш	Щ	Ъ	Ы	Ь	Э	Ю	Я
A0h	а	б	в	г	д	е	ж	з	и	й	к	л	м	н	о	п
B0h	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣
C0h	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣
D0h	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣
E0h	р	с	т	у	ф	х	ц	ч	ш	щ	ъ	ы	ь	э	ю	я
F0h	Ё	ё	Є	є	İ	ı	Ÿ	ÿ	°	•	·	√	№	¤	■	

Windows-1250 (Central Europe)

	00h	01h	02h	03h	04h	05h	06h	07h	08h	09h	0Ah	0Bh	0Ch	0Dh	0Eh	0Fh
80h	€		,		„	…	†	‡		‰	Š	‹	Ś	Ť	Ž	Ž
90h		‘	’	“	”	•	–	—		™	š	›	ś	ť	ž	ž
A0h		˘	˘	ł	ą	Ą	ı	§	¨	©	Œ	«	¬	-	®	ž
B0h	°	±	¸	ł	´	μ	¶	·	¸	ą	ś	»	ł	˝	ı	ž
C0h	Ř	Á	Â	Ǻ	Ǻ	Ĺ	Ć	Ç	Č	É	Ę	Ë	Ě	Í	Î	Ď
D0h	Đ	Ń	Ň	Ó	Ô	Ǫ	Ö	×	Ř	Ů	Ú	Ů	Ü	Ý	Ť	ß
E0h	ř	á	â	ǻ	ǻ	ĺ	ć	ç	č	é	ę	ë	ě	í	î	ď
F0h	đ	ń	ň	ó	ô	ǽ	ö	÷	ř	ů	ú	ů	ü	ý	ť	·

Windows-1251 (Cyrillic)

	00h	01h	02h	03h	04h	05h	06h	07h	08h	09h	0Ah	0Bh	0Ch	0Dh	0Eh	0Fh
80h	Ъ	Ѓ	,	ѓ	„	…	†	‡	€	‰	Љ	‹	Њ	Ќ	Ѝ	Ў
90h	ђ	‘	’	“	”	•	–	—		™	љ	›	њ	ќ	ћ	џ
A0h		Ў	ў	Ј	Ѡ	Ѓ	ı	§	Ё	©	Є	«	¬	-	®	Ї
B0h	°	±	ı	ı	ѓ	μ	¶	·	ё	№	є	»	ј	ѕ	ѕ	ї
C0h	А	Б	В	Г	Д	Е	Ж	З	И	Й	К	Л	М	Н	О	П
D0h	Р	С	Т	У	Ф	Х	Ц	Ч	Ш	Щ	Ъ	Ы	Ь	Э	Ю	Я
E0h	а	б	в	г	д	е	ж	з	и	й	к	л	м	н	о	п
F0h	р	с	т	у	ф	х	ц	ч	ш	щ	ъ	ы	ь	э	ю	я

Windows-1252 (West European Latin)

	00h	01h	02h	03h	04h	05h	06h	07h	08h	09h	0Ah	0Bh	0Ch	0Dh	0Eh	0Fh
80h	€		,	f	„	…	†	‡	^	‰	Š	<	Œ		Ž	
90h		‘	’	“	”	•	–	—	~	™	š	>	œ		ž	ÿ
A0h		ı	¢	£	¤	¥		§	¨	©	ª	«	¬	-	®	¯
B0h	°	±	²	³	´	µ	¶	·	¸	¹	º	»	¼	½	¾	¿
C0h	À	Á	Â	Ã	Ä	Å	Æ	Ç	È	É	Ê	Ë	Ì	Í	Î	Ï
D0h	Ð	Ñ	Ò	Ó	Ô	Õ	Ö	×	Ø	Ù	Ú	Û	Ü	Ý	Þ	ß
E0h	à	á	â	ã	ä	å	æ	ç	è	é	ê	ë	ì	í	î	ï
F0h	ð	ñ	ò	ó	ô	õ	ö	÷	ø	ù	ú	û	ü	ý	þ	ÿ

Windows-1253 (Greek)

	00h	01h	02h	03h	04h	05h	06h	07h	08h	09h	0Ah	0Bh	0Ch	0Dh	0Eh	0Fh
80h	€		,	f	„	…	†	‡		‰		<				
90h		‘	’	“	”	•	–	—		™		>				
A0h		ˆ	À	£	¤	¥		§	¨	©		«	¬	-	®	¯
B0h	°	±	²	³	´	µ	¶	·	¸	¹	º	»	¼	½	¾	¿
C0h	ı	Α	Β	Γ	Δ	Ε	Ζ	Η	Θ	Ι	Κ	Λ	Μ	Ν	Ξ	Ο
D0h	Π	Ρ		Σ	Τ	Υ	Φ	Χ	Ψ	Ω	İ	ÿ	ά	έ	ή	ί
E0h	Û	α	β	γ	δ	ε	ζ	η	θ	ι	κ	λ	μ	ν	ξ	ο
F0h	π	ρ	ς	σ	τ	υ	φ	χ	ψ	ω	ı	ÿ	ό	ύ	ώ	



Windows-1255 (Hebrew)

	00h	01h	02h	03h	04h	05h	06h	07h	08h	09h	0Ah	0Bh	0Ch	0Dh	0Eh	0Fh
80h	€		,	f	„	…	†	‡	^	‰		<				
90h		‘	’	“	”	•	–	—	~	™		>				
A0h		ı	¢	£	¤	¥		§	¨	©	×	«	¬	-	®	¯
B0h	°	±	²	³	´	µ	¶	·	¸	¹	÷	»	¼	½	¾	¿
C0h	◌̇	◌̈́	◌̈́	◌̈́	◌̈́	◌̈́	◌̈́	◌̈́	◌̈́	◌̈́	◌̈́	◌̈́	◌̈́	◌̈́	-	◌̈́
D0h		◌̇	◌̇	:			"	'	"	,	:	;	.	!	?	
E0h	א	ב	ג	ד	ה	ו	ז	ח	ט	י	ך	כ	ל	מ	נ	ס
F0h	ע	פ	צ	ק	ר	ש	ת									

Windows-1257 (Baltic)

	00h	01h	02h	03h	04h	05h	06h	07h	08h	09h	0Ah	0Bh	0Ch	0Dh	0Eh	0Fh
80h	€		,		„	…	†	‡		‰		<		“	”	„
90h		‘	’	“	”	•	—	—		™		>		-		„
A0h			¢	£	¤		¦	§	Ø	©	Ŕ	«	¬	-	®	Æ
B0h	°	±	²	³	´	µ	¶	·	ø	¹	ŗ	»	¼	½	¾	æ
C0h	Ą	Į	Ā	Ć	Ä	Å	Ę	Ē	Č	É	Ž	Ė	Ġ	Ķ	Ī	Ļ
D0h	Š	Ņ	Ņ	Ó	Ō	Õ	Ö	×	Ū	Ł	Ś	Ū	Ü	Ž	Ž	ß
E0h	ą	į	ā	ć	ä	å	ę	ē	č	é	ž	ė	ğ	ķ	ī	ļ
F0h	š	ņ	ņ	ó	ō	õ	ö	÷	ų	ł	ś	ū	ü	ž	ž	·

Windows-1254 (Turkish)

	00h	01h	02h	03h	04h	05h	06h	07h	08h	09h	0Ah	0Bh	0Ch	0Dh	0Eh	0Fh
80h	€		,	<i>f</i>	„	…	†	‡	^	‰	Š	<	Œ			
90h		‘	’	“	”	•	—	—	~	™	š	>	œ			ÿ
A0h		ı	¢	£	¤	¥	¦	§	¨	©	ª	«	¬	-	®	¯
B0h	°	±	²	³	´	µ	¶	·	¸	¹	º	»	¼	½	¾	¿
C0h	À	Á	Â	Ã	Ä	Å	Æ	Ç	È	É	Ê	Ë	Ì	Í	Î	Ï
D0h	Ğ	Ń	Ò	Ó	Ô	Õ	Ö	×	Ø	Ù	Ú	Û	Ü	İ	Ş	ß
E0h	à	á	â	ã	ä	å	æ	ç	è	é	ê	ë	ì	í	î	ï
F0h	ğ	ñ	ò	ó	ô	õ	ö	÷	ø	ù	ú	û	ü	ı	ş	ÿ

Arabic Unicode 0x0600 ~ 0x06FF

Arabic Unicode 0x0600 ~ 0x06FF

ا	س	ه	ص	س		٣	٤	و	٪	٪	ف	،	ر	م	ع
0600	0601	0602	0603	0604	0605	0606	0607	0608	0609	060A	060B	060C	060D	060E	060F
ص	ع	ح	ض	س	ط	ال	ز	ر	ء		؛			ي	ب
0610	0611	0612	0613	0614	0615	0616	0617	0618	0619	061A	061B	061C	061D	061E	061F
ي	ء	آ	أ	ؤ	إ	ئ	ا	ب	ة	ت	ث	ج	ح	خ	د
0620	0621	0622	0623	0624	0625	0626	0627	0628	0629	062A	062B	062C	062D	062E	062F
ذ	ر	ز	س	ش	ص	ض	ط	ظ	ع	غ	ك	ك	ئ	ت	ث
0630	0631	0632	0633	0634	0635	0636	0637	0638	0639	063A	063B	063C	063D	063E	063F
-	ف	ق	ك	ل	م	ن	ه	و	ي	ي	ء	و		ر	و
0640	0641	0642	0643	0644	0645	0646	0647	0648	0649	064A	064B	064C	064D	064E	064F
ر	ء	ه	ر	ء		ا	،	ر	-	٧	٨		ء	ر	ع
0650	0651	0652	0653	0654	0655	0656	0657	0658	0659	065A	065B	065C	065D	065E	065F
٠	١	٢	٣	٤	٥	٦	٧	٨	٩	٪	ر	،	★	ب	و
0660	0661	0662	0663	0664	0665	0666	0667	0668	0669	066A	066B	066C	066D	066E	066F
ا	أ	أ	إ	ء	أ	ؤ	ؤ	ئ	ئ	ن	ن	ن	ن	ن	ن
0670	0671	0672	0673	0674	0675	0676	0677	0678	0679	067A	067B	067C	067D	067E	067F
ي	خ	خ	ج	ج	خ	ج	ج	د	د	ب	ب	ت	د	د	د
0680	0681	0682	0683	0684	0685	0686	0687	0688	0689	068A	068B	068C	068D	068E	068F
ظ	ر	ر	ر	ر	ر	ر	ر	ر	ر	ن	ن	ن	ن	ن	ن
0690	0691	0692	0693	0694	0695	0696	0697	0698	0699	069A	069B	069C	069D	069E	069F
ش	ف	ف	ف	ف	ف	ف	ف	ك	ك	ك	ك	ك	ك	ك	ك
06A0	06A1	06A2	06A3	06A4	06A5	06A6	06A7	06A8	06A9	06AA	06AB	06AC	06AD	06AE	06AF
گ	گ	گ	گ	گ	ل	ل	ل	ل	ن	ن	ن	ن	ن	ن	ن
06B0	06B1	06B2	06B3	06B4	06B5	06B6	06B7	06B8	06B9	06BA	06BB	06BC	06BD	06BE	06BF
ه	ه	ه	ه	ه	و	و	و	و	و	و	و	و	و	و	و
06C0	06C1	06C2	06C3	06C4	06C5	06C6	06C7	06C8	06C9	06CA	06CB	06CC	06CD	06CE	06CF
پ	پ	پ	پ	-	ه	ص	ن	م	لا	ج	ء	س	و	و	ه
06D0	06D1	06D2	06D3	06D4	06D5	06D6	06D7	06D8	06D9	06DA	06DB	06DC	06DD	06DE	06DF
٠	١	٢	٣	٤	٥	٦	٧	٨	٩	ش	ض	ن	م	د	ر
06E0	06E1	06E2	06E3	06E4	06E5	06E6	06E7	06E8	06E9	06EA	06EB	06EC	06ED	06EE	06EF
٠	١	٢	٣	٤	٥	٦	٧	٨	٩	ش	ض	ن	م	م	ه
06F0	06F1	06F2	06F3	06F4	06F5	06F6	06F7	06F8	06F9	06FA	06FB	06FC	06FD	06FE	06FF

Command Details

A.1. Overwrite mode

In this mode, the cursor will move towards the right and begin from the upper left position. When the cursor has reached the end of the upper line, the cursor will move down to the bottom left position to continue. When the cursor has reached the end of the bottom line, it will move to up the upper left position and overwrite the previous characters.

A.2. Vertical scroll mode

In this mode, the cursor will move towards the right. The cursor will begin from the upper left position until it has reached the end of the upper line. The cursor will then move down to the bottom left position to continue until it has reached the end of the bottom line.

A.3. Horizontal scroll mode

In this mode, the extent of the cursor activity is bound by a predefined range, limited to the upper line. (Please refer to Set or cancel window command), where the default window is the whole upper line. The cursor will begin from the left-end of the range and move rightward until it reached the end of the range, to continue, the characters that comes thereafter will start pushing the previous characters leftward from the right-end, scrolling the characters to the left.

A.4. Set the string display mode and write string to display

Set the string display mode, write to upper or lower line $d1 d2 d3 \dots dn$ $\{1 \leq n \leq 20\}$. 'A' stands for the upper line, 'B' stands for the lower line. The string display mode will be cancelled and the display will return to the previous mode after receiving CLR or CAN.

A.5. Upper line message continuous scroll

The message (previously defined) will scroll continuously in the horizontal direction until a new command is received.

A.6. Move cursor left

When the current cursor is at the left-end position, this command operates differently depending on the display mode.

- **Overwrite mode:** When the cursor reached the left-end of the lower line, it will continue to the right-end of the upper line, overwrite previous characters. When it reached the left end of the upper line, it will continue to the right-end of the lower line.
- **Vertical scroll mode:** When the cursor reached the left-end of the lower line, the lower line will scroll up and replace the previous upper line, the lower line will be cleared and the cursor will continue to the right end of the lower line.
- **Horizontal scroll mode:** The cursor will remain stationary.

A.7. Move cursor right

Move the cursor to the right. When the cursor has reached the right-end, this command operates differently depending on the display mode.

- **Overwrite mode:** When the cursor has reached the right-end of the lower line, it will continue to the left-end of the upper line and overwrite previous characters. When it has reached the right-end of the upper line, it will continue to the right-end of the lower line.
- **Vertical scroll mode:** When the cursor has reached the right-end of the lower line, the lower line will scroll up to replace the upper line, the lower line is cleared and ready to continue characters thereafter.
- **Horizontal scroll mode:** The cursor will remain stationary.

A.8. Move cursor up

Move the cursor up one line. When the cursor is on the upper line, this command operates differently depending on the display mode.

- **Overwrite mode:** The cursor is moved to the same column the lower line.
- **Vertical scroll mode:** The characters displayed on the upper line is scrolled to the lower line, and the upper line is cleared. The cursor will remain at the same position.
- **Horizontal scroll mode:** The cursor will remain stationary.

A.9. Move cursor down

Move the cursor down one line. When the cursor is on the lower line, this command operates differently depending on the display mode.

- **Overwrite mode:** The cursor is moved to the same column on the upper line.
- **Vertical scroll mode:** The characters displayed on the lower line are scrolled to the upper line, and the lower line is cleared. The cursor will remain at the same position.
- **Horizontal scroll mode:** The cursor will remain stationary.

A.10. Move cursor to home position

The cursor will move to the left-end position of the upper line.

A.11. Move cursor to left-most position

The cursor will be moved to the left-end position of the current line.

A.12. Move cursor to right-most position

The cursor will be moved to the right-end position of the current line.

A.13. Move cursor to bottom position

The cursor will be moved to the right-end position on the lower line.

A.14. Move cursor to specified position

The cursor will be moved to column x on line y.

A.15. Initialize display

The data in the input buffer will be cleared and reset from default.

A.16. Reset the window

Reset the window on the display.

When s=0, the window is cancelled (values: x1, x2, and y are not required.)

When s=1, the window will be reset (values: x1, x2, and y are required.)

The x1 and x2 set the position of the left column and right column, respectively, of the window.

The y sets the upper line or the lower line of the window.

This function is valid within the horizontal mode.

A.17. Clear display screen and clear string mode

All the display characters will be cleared, and the string mode will be cancelled.

A.18. Clear current line and cancel string mode

The current line is cleared, and the string mode is cancelled.

A.20. Set cursor ON or OFF

When n=0, cursor is OFF

When n=1, cursor is ON

Control Code Set

HEX	CODE	HEX	CODE
00H	NULL	10H	DLE
01H	SOH, MD1	11H	DC1
02H	STX, MD2	12H	DC2
03H	ETX, MD3	13H	DC3
04H	EOT, MD4	14H	DC4
05H	ENQ, MD5	15H	NAK
06H	ACK, MD6	16H	SYN
07H	BEL, MD7	17H	ETB
08H	BS, MD8	18H	CAN
09H	HT	19H	EM
0AH	LF	1AH	SUB
0BH	VT, HOM	1BH	ESC
0CH	FF, CLR	1CH	FS
0DH	CR	1DH	GS
0EH	SO, SLE1	1EH	RS, SF1
0FH	SI, SLE2	1FH	US, SF2