

User Manual

February 2011 Revision 1.0

Odysseé II Hardware System



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Manual Version 1.0

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Safety

IMPORTANT SAFETY INSTRUCTIONS

1. Read these instructions carefully. Save these instructions for future reference.
2. Follow all warnings and instructions marked on the product.
3. Do not use this product near water.
4. Do not place this product on an unstable cart, stand, or table. The product may fall, causing serious damage to the product.
5. 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.
6. 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.
7. Do not allow anything to rest on the power cord. Do not locate this product where persons will walk on the cord.
8. 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.

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.

CE Mark



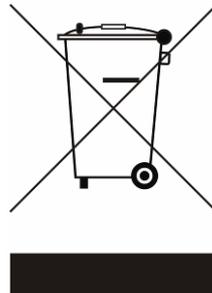
This device complies with the requirements of the EEC directive 2004/108/EC with regard to "Electromagnetic compatibility" and 2006/95/EC "Low Voltage Directive".

Caution on Lithium Batteries

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

LEGISLATION AND WEEE SYMBOL

2002/96/EC 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 centres 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.

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1. Item Checklist

Take the system unit out of the carton. Remove the unit from the carton by holding it by the foam inserts. The following contents should be found in the carton:

1.1. Standard Items



a. Power Cord

1.2. Optional Items



a. Magnetic Card Reader



b. iButton Dallas Key Reader



c. Magnetic Card +
iButton Dallas Key Reader



d. RFID Reader



e. Biometric Reader (fingerprint)



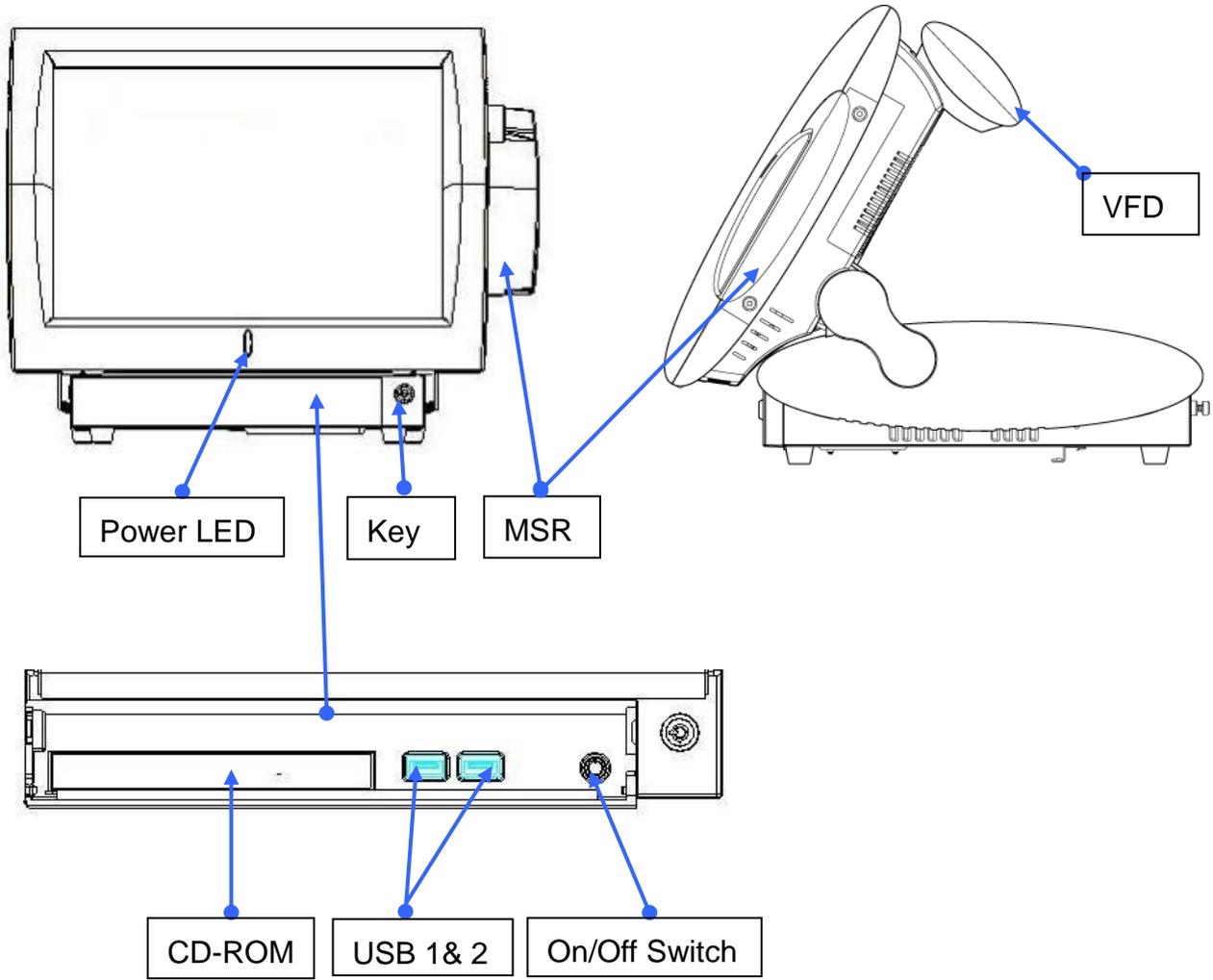
f. Customer Display (VFD)



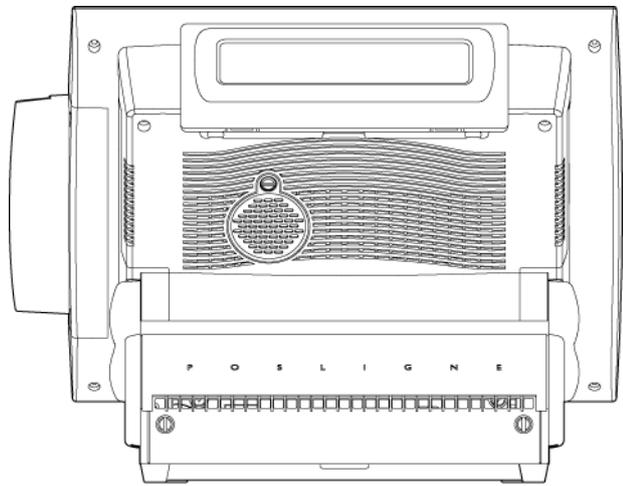
g. 2nd Display

2. System View

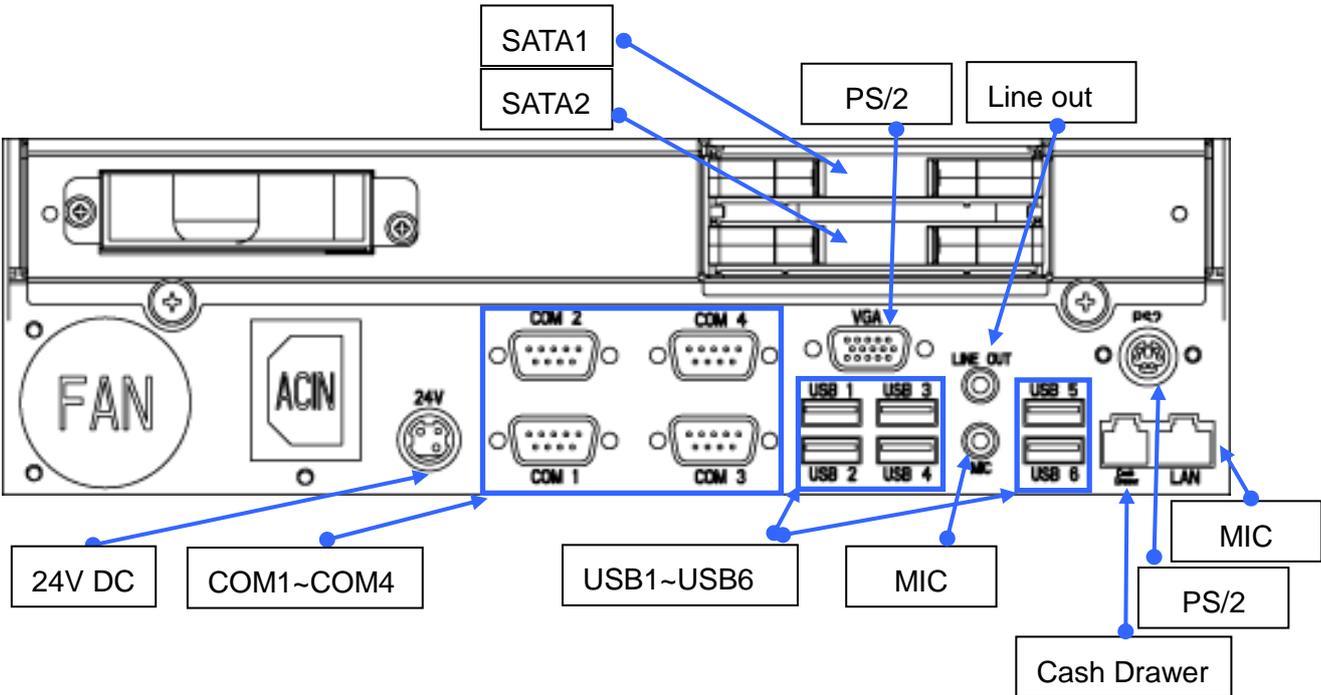
2.1. Front & Side view



2.2. Rear view



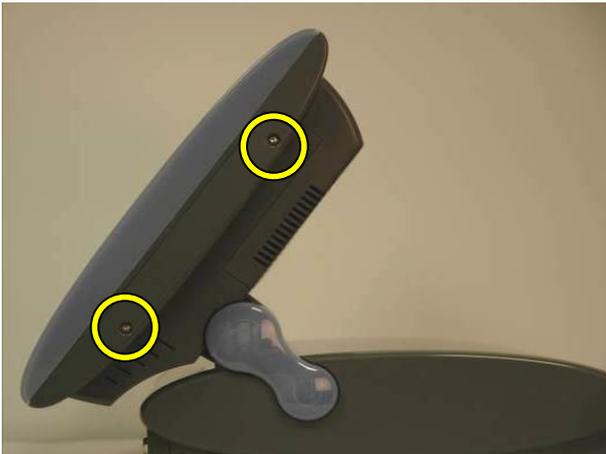
2.3. I/O view



3. Peripherals Installation

Optional peripherals (refer to page 7-8) are tested and can be supplied at your request. The MSR and VFD customer display are packed separately for transportation and can be installed by the user.

3.1. MSR



a. Remove the screws (2) of the MSR dummy door.



b. Slide the MSR dummy door out as shown in the picture.



c. Slide the MSR into position.

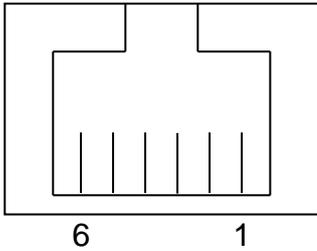


d. Fasten it to the display housing by tightening the screws (2).

3.2. Cash Drawer Installation

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

3.2.1. Cash Drawer Pin Assignment



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

3.2.2. Cash Drawer Controller Register

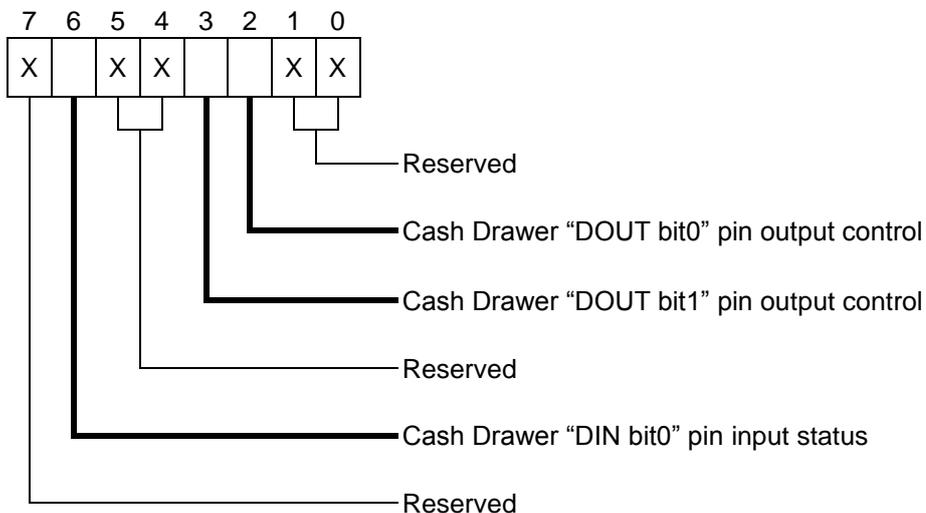
The Cash Drawer Controller use one I/O addresses to control the Cash Drawer.

Register Location: 48Ch

Attribute: Read / Write

Size: 8bit

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

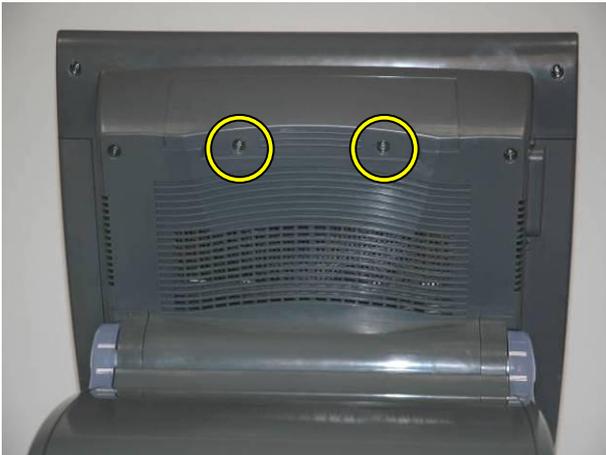
3.2.3. Cash Drawer Control Command Example

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.	

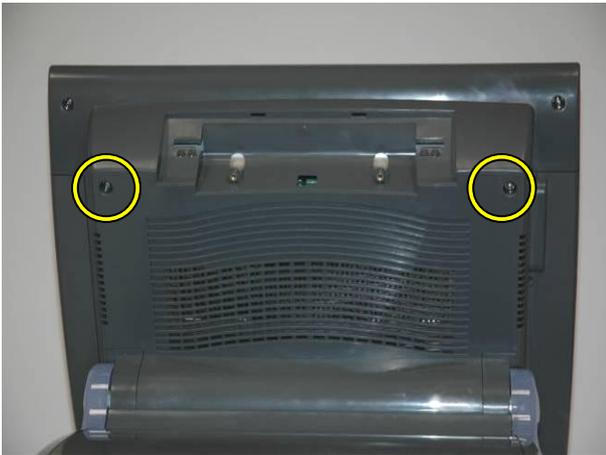
3.3. VFD Customer Display



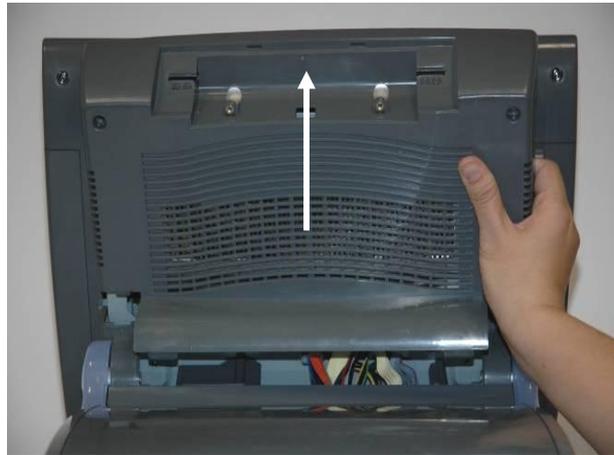
a. Remove the screws (2) of the VFD dummy door.



b. Slide the VFD dummy door out.



c. Remove the screws (2) of the CPU RAM door.



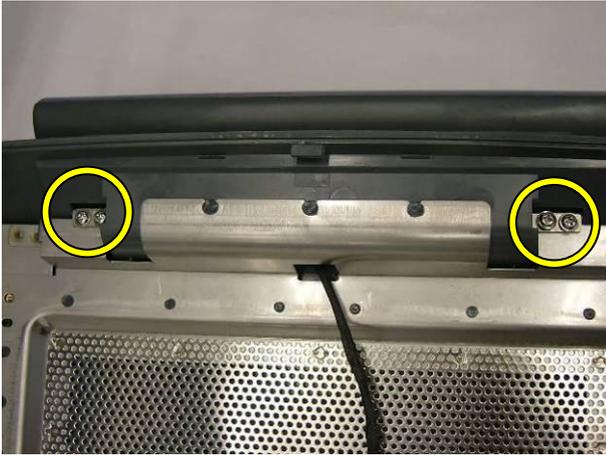
d. Slide the CPU RAM door out.



e. Pass the VFD cable through the hole as shown in the picture.



f. Click both sides of the VFD assembly into the position as shown in the picture.



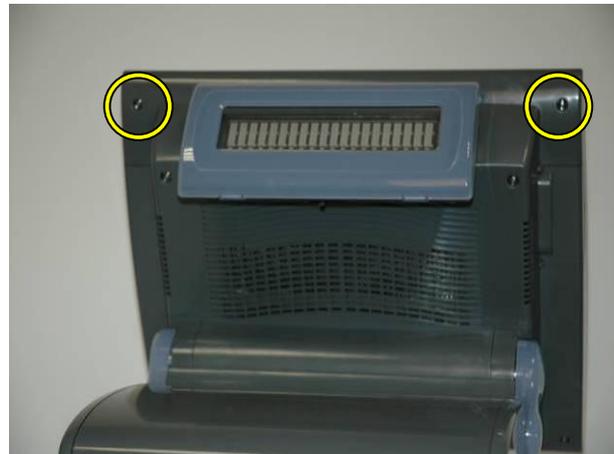
g. Turn the assembly over and fix the MSR to the CPU RAM door with the four screws (4) supplied with the MSR.



h. Connect the VFD cable to the connector as shown.



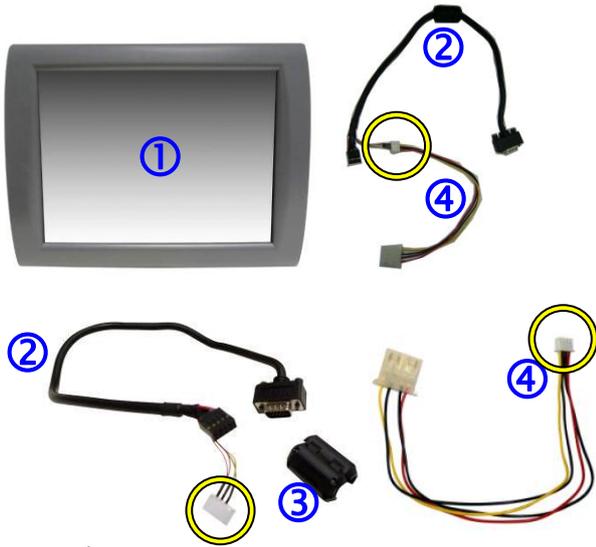
i. Slide the CPU ram door into position.



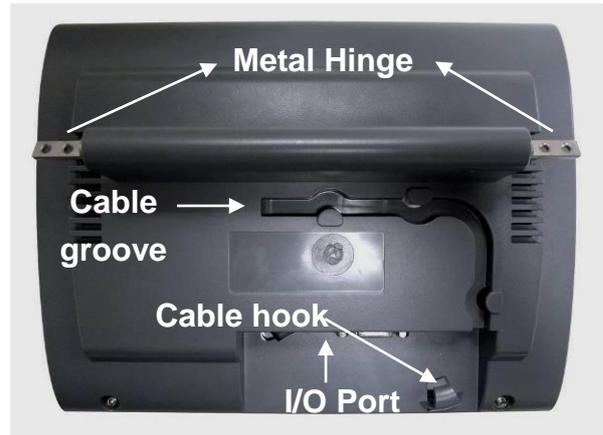
j. Fasten the CPU ram door to the LCD housing by tightening the screws (2).

3.4. Second Display Installation

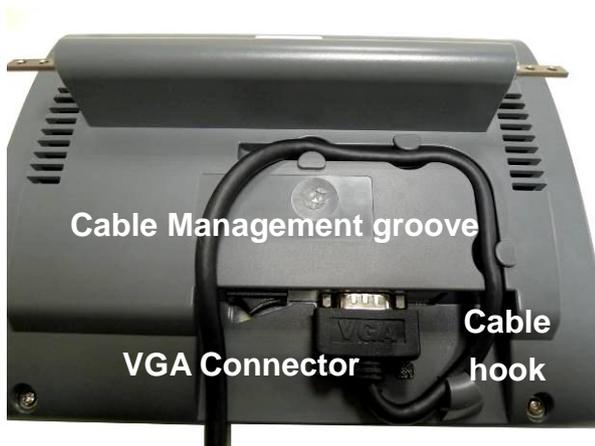
To Install the Second Display, first remove the back cover of the system (see chapter 3.3 steps a, b, c, and d). Remove the base cover and the hard disk/auxiliary fan tray (see chapter 4.1 steps a-b, and chapter 4.3 step a.)



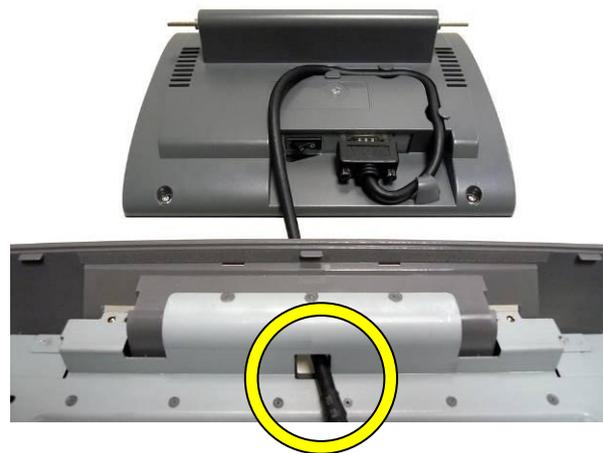
a. ①2nd Display, ②VGA Cable, ③ferrite core and ④power extender cable. For easier assembly, connect ②VGA Cable to ④power extender cable by the four-pin connector(marked by yellow circles).



b. Rear View of 2nd Display and the groove for cable management.



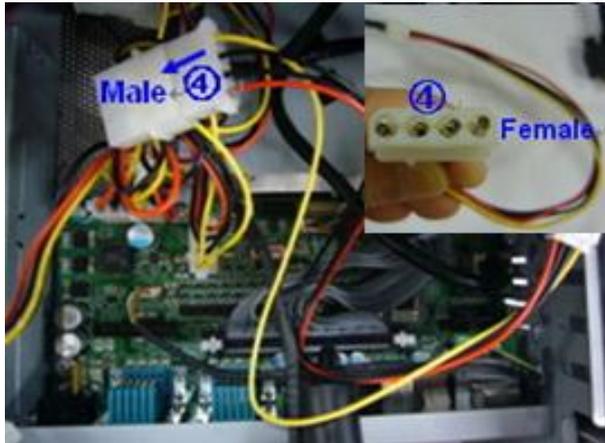
c. Press the VGA cable firmly along the groove and behind the cable hook. Connect the VGA cable as shown in the picture.



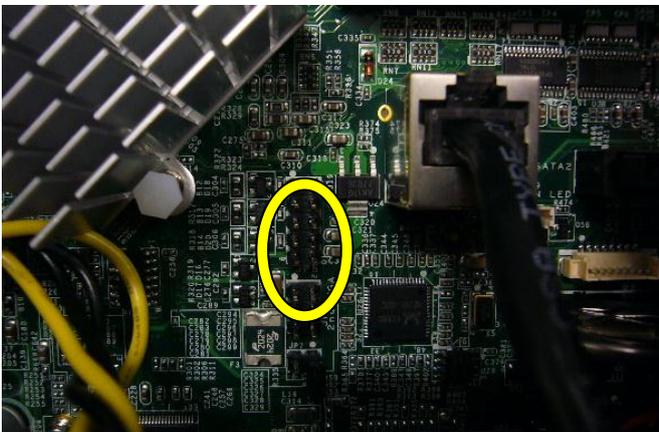
d. Route the cable through the hole of the back cover.



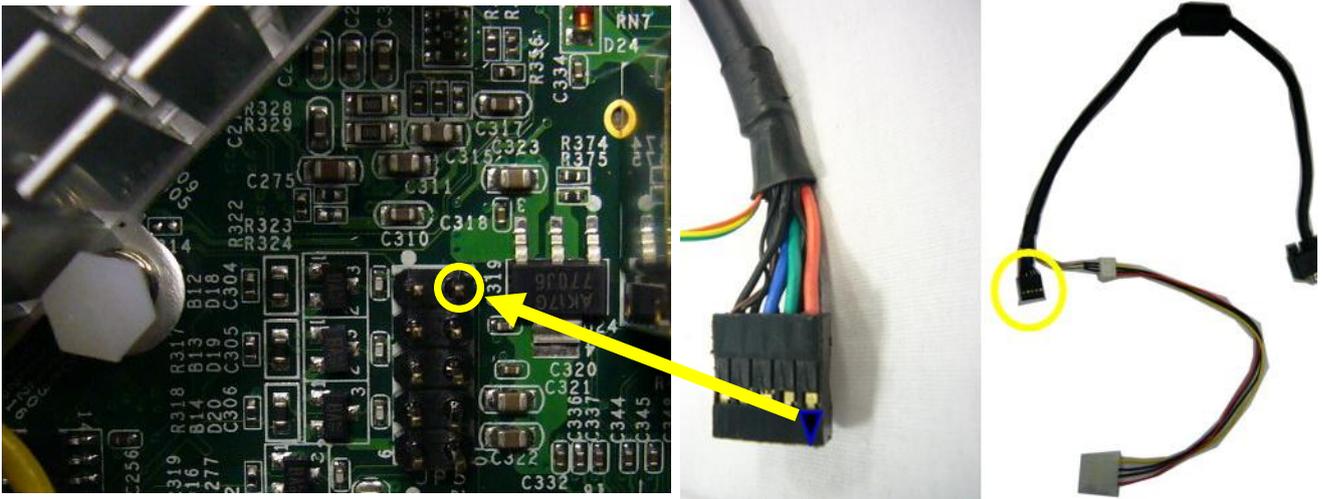
e. Install the ferrite core around the VGA cable and close it.



f. Find the spare Male connector of the power cable routing from the system. Connect it to the female connector of cable ④.

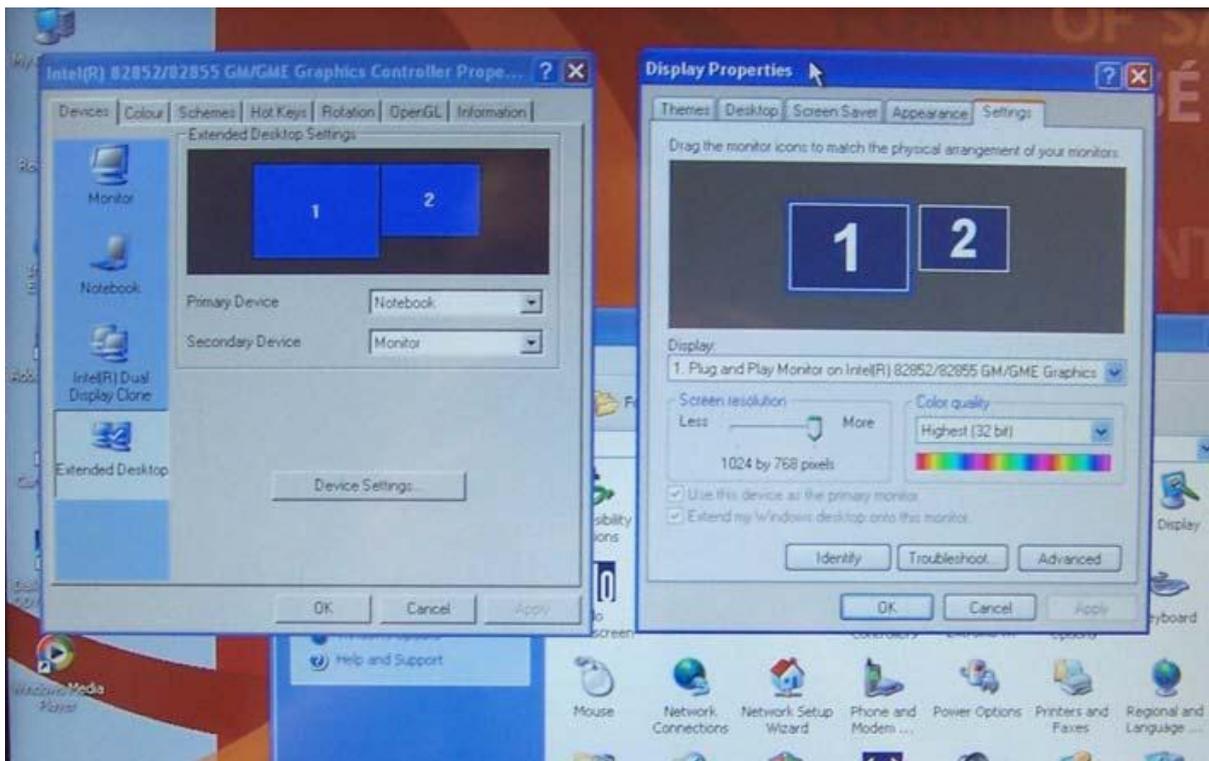


g. The picture shows the location of the motherboard VGA connector. See below for the correct way to connect the cable.



NOTE:

Connect the black 10 pin connector to the motherboard VGA connector, taking care that the black arrow (highlighted in blue) on the connector is in the corner marking with yellow circle and arrow.



The rear LCD assembly will be available in Windows as a secondary display & the desktop can then be either mirrored or extended onto it. This setting can be controlled via either the Windows display settings or the Intel graphics properties, both of which can be accessed via Control Panel.

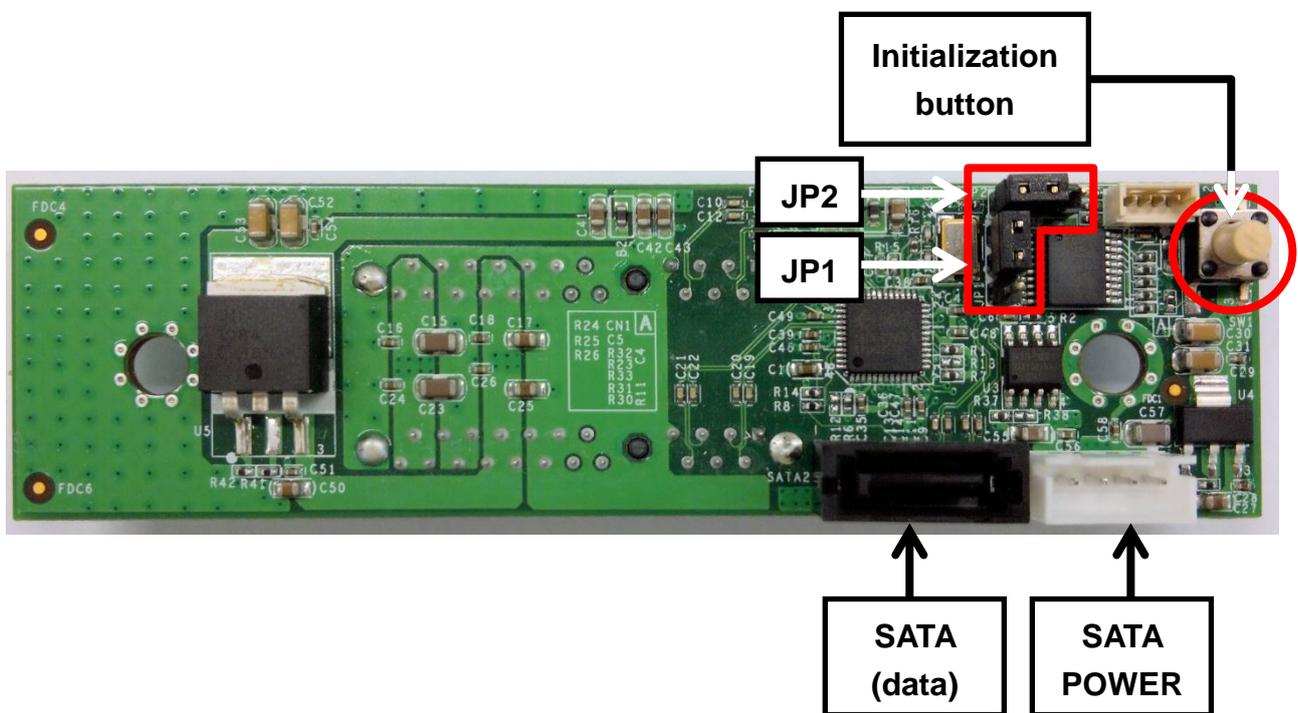
4. RAID

4.1. Introduction

The Odysseé II is equipped with a hardware RAID 1 card that handles all RAID operations automatically.

No drivers are required to use RAID, but the HDDs in the system need to be initialized to set RAID 1 mode (see chapter 4.3).

The RAID board is located at the back of the HDD enclosure.



4.2. Jumper Settings

Mode	JP1	JP2	Comment
			
RAID 1			RAID 1 (mirroring) This is the default setting See chapter 4.3
Clear RAID			Clear RAID setting from HDD. See chapter 4.4

4.3. Setting RAID 1 Mode

In order to work in RAID 1 mode, the HDDs must first be initialized by writing special RAID information in a reserved area of the HDDs.

Initialization to RAID 1 Mode can only be set with **two** HDDs installed into the system. You can not set RAID 1 mode with only one HDD. However, after you have initialized the HDDs, you can, if you wish, remove one HDD, but you will lose the benefit of having a mirror image of the data on the second HDD.

To set RAID 1 mode, proceed as follows:

- Check the RAID board jumpers JP1 and JP2 and ensure that they are set to RAID 1 mode (see chapter 4.2)
- Insert two new HDDs, or two used HDDs that have not been initialized to RAID 1 before.
Note: if one or both of your HDDs have already been initialized, you need to clear the RAID 1 mode from the HDDs first. See chapter 4.4 for details.
- Press the initialization button and turn on the system power.
Wait 3 seconds then release the button
- Check the screen as the system starts. It will identify the HDDs as **Hardware RAID1 0957**

```
Memory Frequency For DDR3 800 (Single Channel Mode)
IDE Channel 0 Master : Hardware RAID1 0957
IDE Channel 0 Slave  : None
```

4.4. Clearing RAID 1 Mode

You must clear RAID mode from the HDD or HDDs in the following situations:

- If you remove the HDD from the Odysseé II to use them in another system
- A HDD is in RAID mode, and an OS has been partially installed and then interrupted.
Examples are: aborted OS installation, or an unfinished disk rebuild.

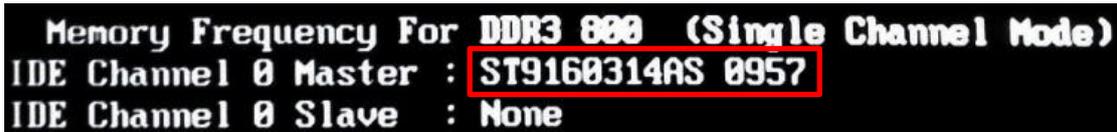
RAID mode can be cleared with only one HDD installed, or with both HDDs installed.

IMPORTANT: Clearing the RAID mode will erase all data from your HDDs

To clear the RAID mode, proceed as follows:

- a. Shut down the system.
- b. Set jumpers to Clear RAID, see chapter 4.2
- c. Press the initialization button and turn on the system power.
Wait 3 seconds then release the button
- d. Check the screen as the system starts.

It will identify the HDDs by showing the model of HDD installed, followed by **0957**



Memory Frequency For **DDR3 800 (Single Channel Mode)**
IDE Channel 0 Master : **ST9160314AS 0957**
IDE Channel 0 Slave : None

Note: You can use the system in non RAID mode, but only one HDD will actually be used.

4.5. Updating from non RAID to RAID 1

If you have installed an operating system on your Odysseé II with the HDD in non RAID mode, you can convert it to RAID later. Just insert a second HDD into the system and follow the procedure in chapter 4.3 to set the HDDs to RAID1.

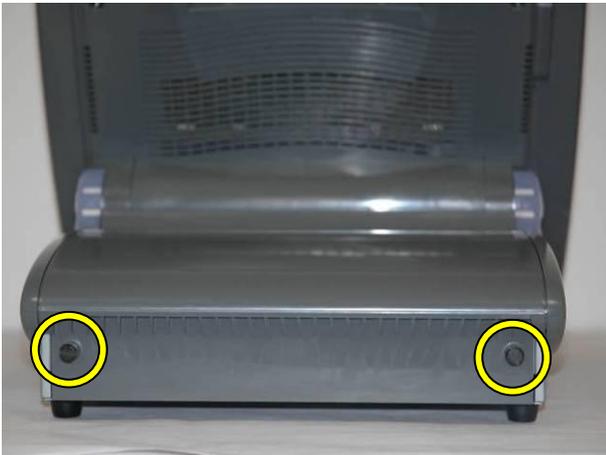
IMPORTANT NOTICES:

- a. This works only if the second HDD does not have RAID set.
If the second HDD already has RAID set, you need to clear the RAID setting first.
To do that, make sure that only the second HDD is in the system, and follow instructions in chapter 4.4.
Then add the HDD which contains the OS and follow instructions in chapter 4.3 to set RAID 1 mode.
- b. Although this method works, you should always make a backup of your OS with a disk imaging software first, before attempting to convert from non RAID to RAID.
This way, if something goes wrong, you can always clear the RAID setting from both HDDs (which will erase your HDDs, see chapter 4.4), then set RAID 1 (see chapter

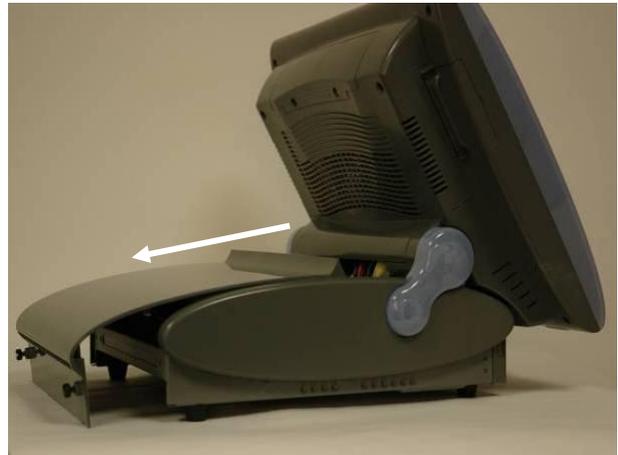
4.), then finally restore the OS image with you disk imaging software.

5. System Disassembly

5.1. Replace HDD



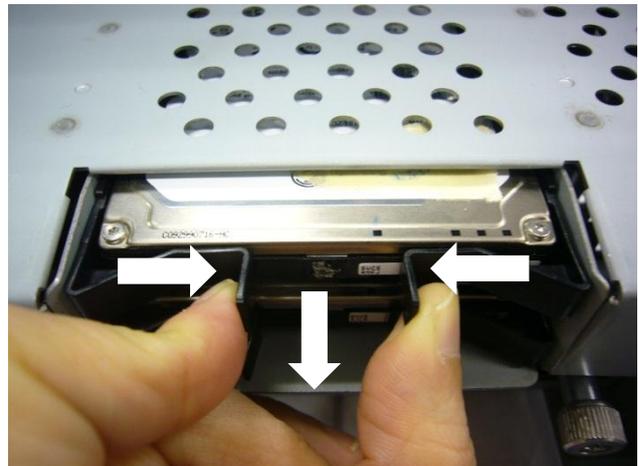
a. Loosen the screws (2) that secure the base rear cover.



b. Slide the base rear cover toward the back of the terminal.



c. Find the HDD above I/O panel.

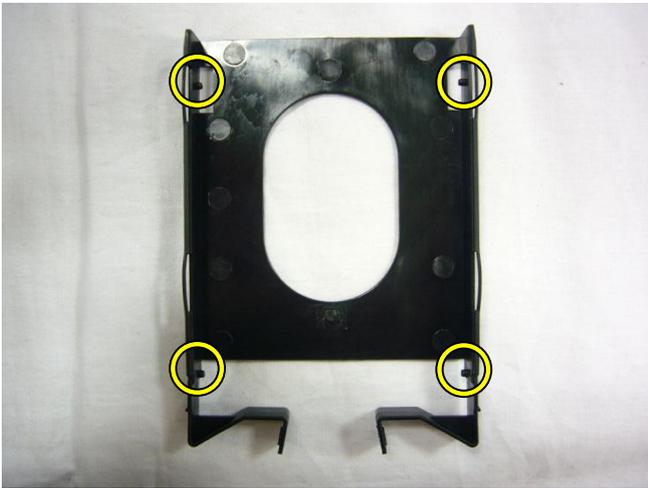


d. Pinch and pull the HDD holding bracket towards you to disconnect the HDD for the system.

e. For installation, slide the HDD into the slot till it clicks.

5.2. Install second HDD

If you purchase a second HDD, you will need to attach the HDD to the holding bracket before installation. Please follow the instructions in Chapter 4.1, items a. to c. to open the system and find the spare bracket for second HDD.



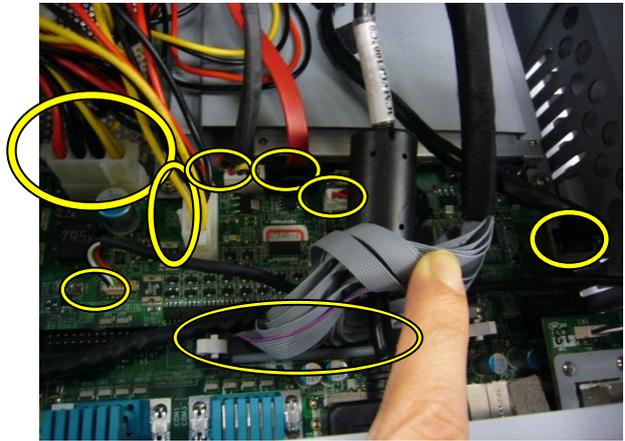
- a. There are four pins on the plastic bracket for holding the HDD. Please directly attach the HDD to the bracket till it clicks in place, and taking care that the HDD must be installed by pressing the edges rather than the center to avoid HDD damage.
- b. Follow Chapter 4.1 item e. to attach the HDD to the system.

5.3. Replace I/O Board

The I/O board is located at the base chassis, so it is necessary to open the system before replacement. Follow Chapter 4.1 items a. & b. to disassemble the base rear cover.



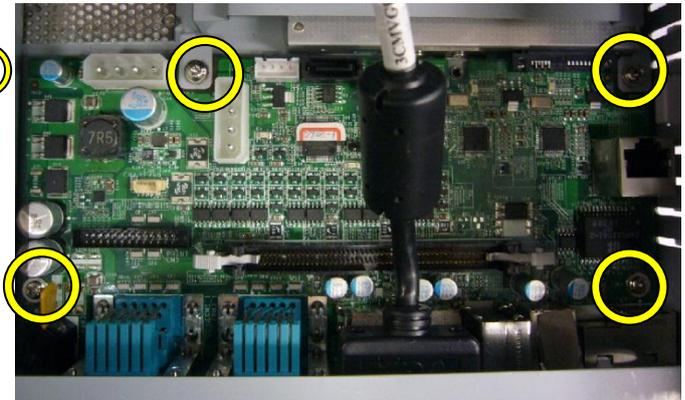
a. Loose the thumb screws (2), and slide the base cover bracket towards you to open up the system.



b. Disconnect all the cables connecting to the I/O board.



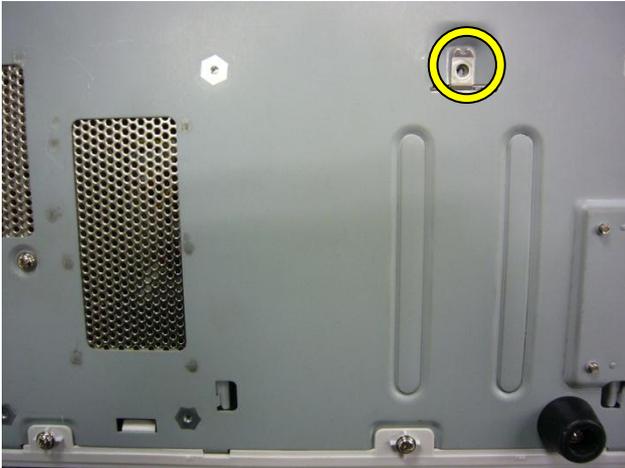
c. Remove the screws (12) securing the I/O panel.



d. Remove the screws (4) to replace the I/O board.

5.4. Replace CD-ROM

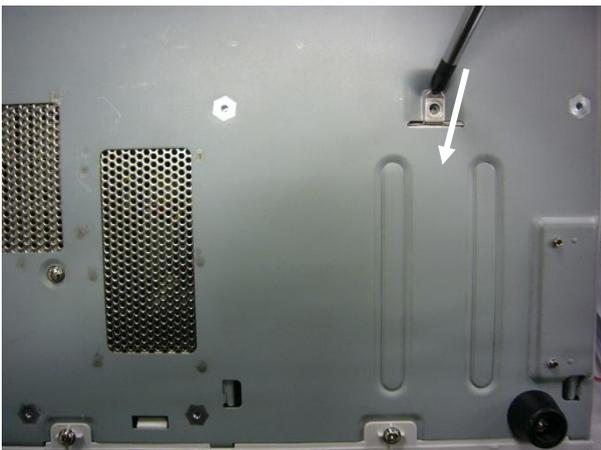
The CD-ROM is located in the base chassis.



a. Remove the back cover screw (1) at the bottom of terminal.



b. Open the base door.



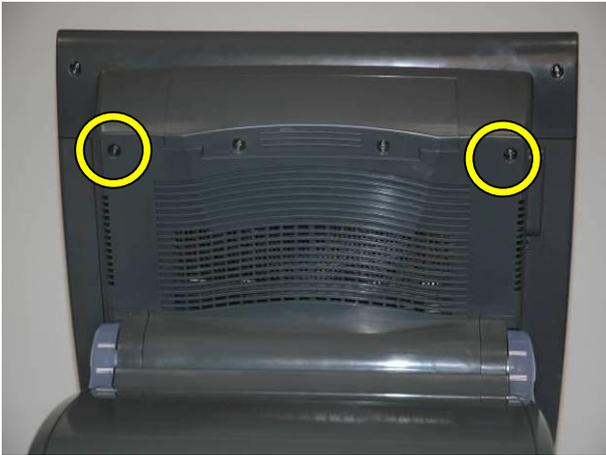
c. Use a screwdriver to remove the CD-ROM.



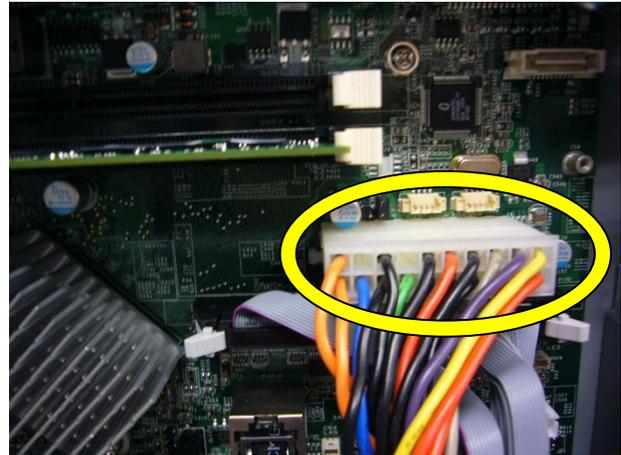
d. Remove the CD-ROM and replace it.

5.5. Replace Power Supply

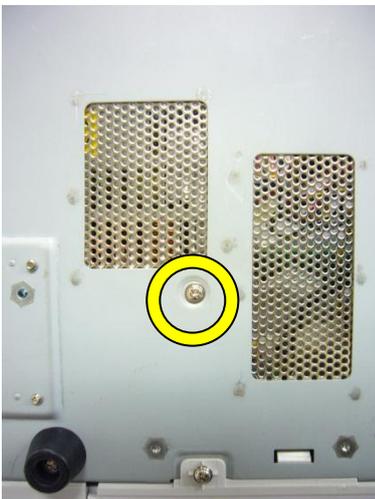
The power supply is located in the base chassis. It is necessary to remove the base cover bracket first as described in chapter 4.3 item a.



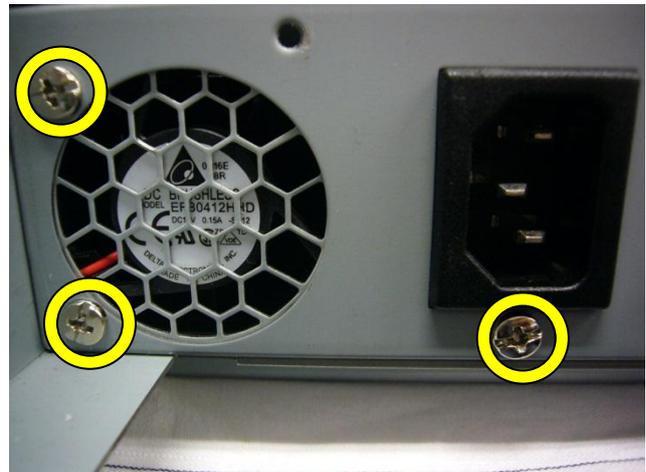
a. Remove the screws (2) to take the CPU ram door out.



b. Disconnect the 16pin cable (1).

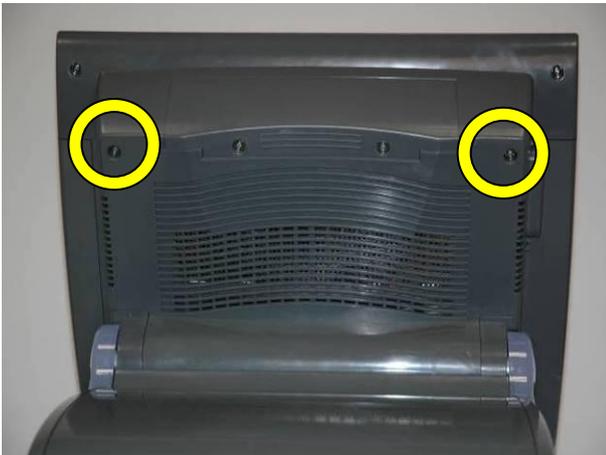


c. Remove the back cover screw (1) at the bottom of terminal.



d. Remove the screws (3) to replace the power supply.

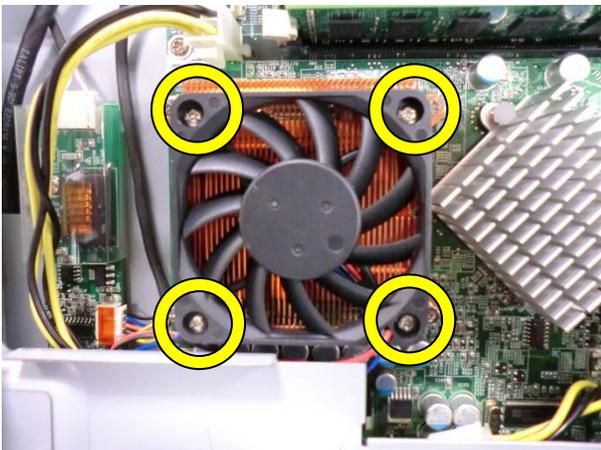
5.6. Replace Memory & CPU



a. Remove the screws (2) to take the CPU ram door out.



b. The memory slots are located on the mainboard. To remove the memory module, use your finger to push the DIMM slot ejector clips into the down position. Remove the memory module from the slot.



c. Remove the screws (4) to remove the heatsink and the fan.

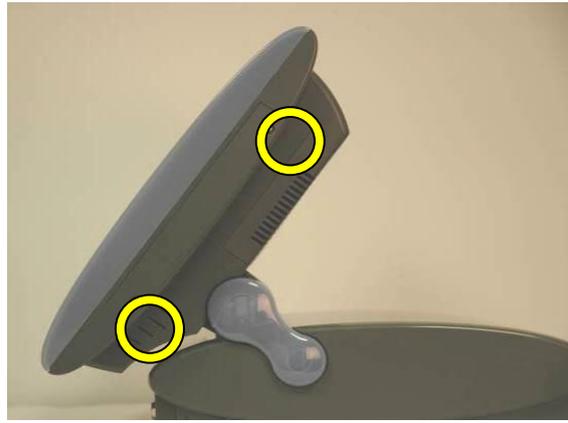


d. To remove the CPU, push the CPU socket lever down and away from the socket, and lift it up.

5.7. Remove Motherboard



a. Disconnect all the cables on motherboard.



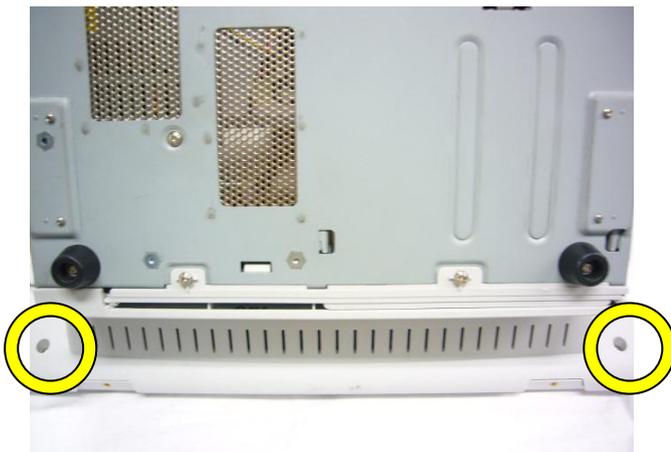
b. Remove the screws (2) of the MSR.



c. Remove the screw (1).



d. Remove the screws (2).



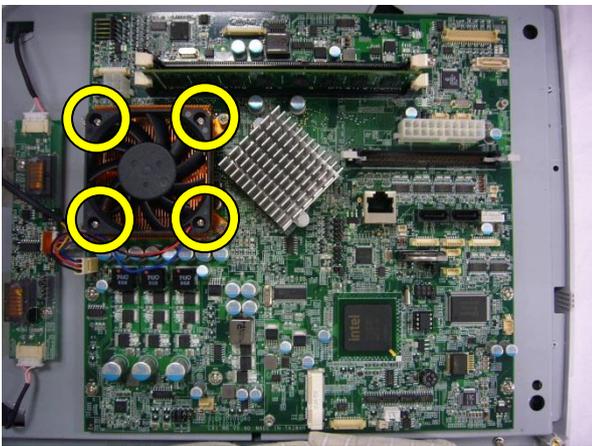
e. Remove the screws (2).



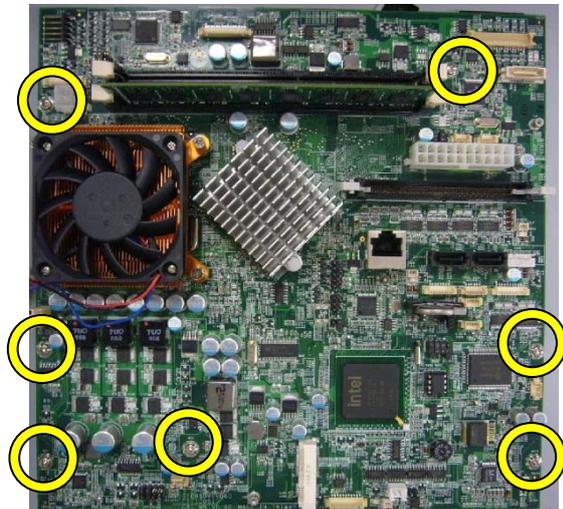
f. Use your hands to carefully press in the two sides to separate the LCD chassis from the base (including LCD cover).



g. Then you will find the LCD chassis (left) and the base(right) separated as pictures shown. Remove all the remaining cables on motherboard.



h. Loose the fan screws (4).



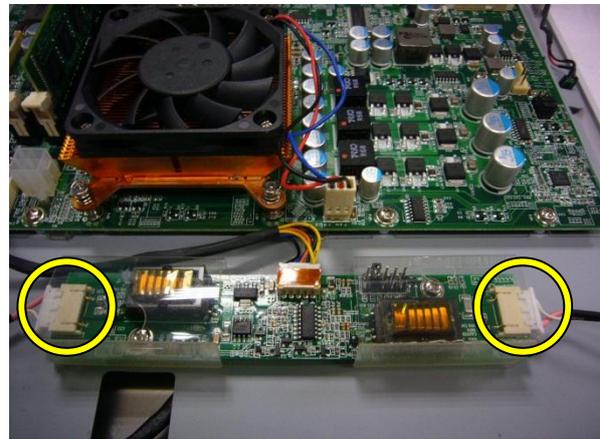
i. Remove the screws (7) to disassemble motherboard from the chassis.

5.8. Remove the Inverter Board

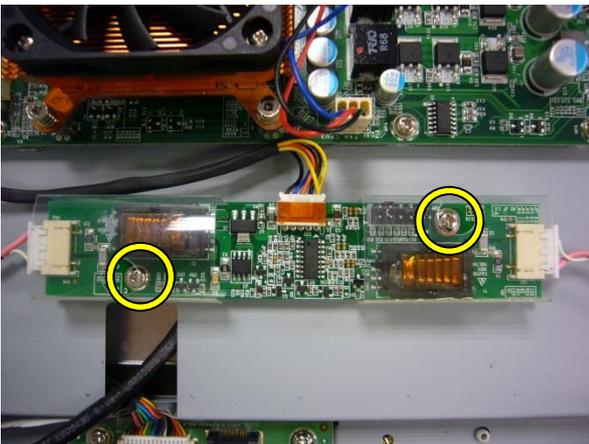
Follow the instructions in chapter 4.7. items a. to f. to separate the base and LCD chassis.



a. Disconnect the cables (2).



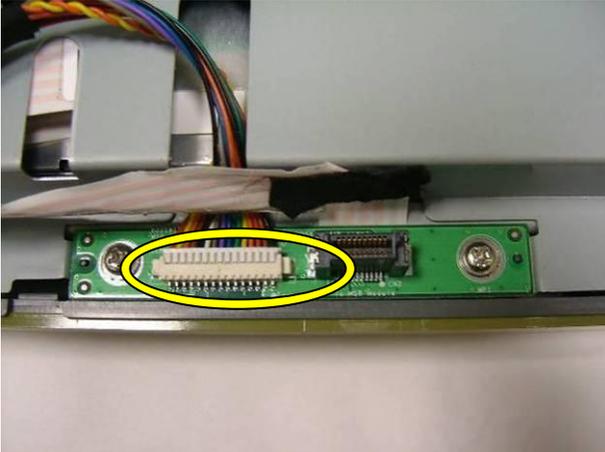
b. Disconnect the backlight cables (2).



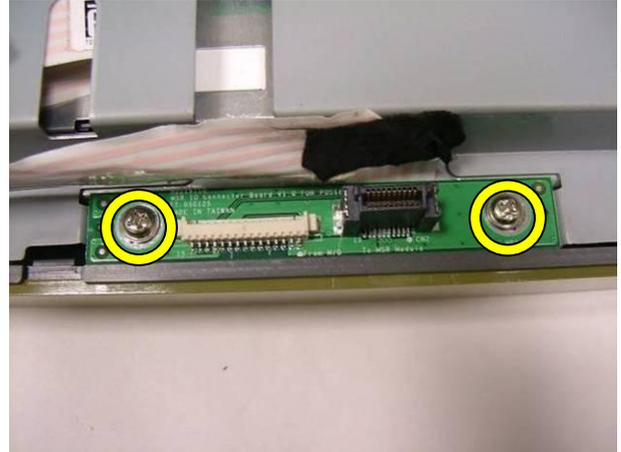
c. Remove the screws (2) to remove the inverter board.

5.9. Remove the Touch Panel

Follow the instructions in chapter 4.7. items a. to f. to separate the base and LCD chassis.



a. Disconnect the cable (1) of the MSR connect board.



b. Remove the screws (2).



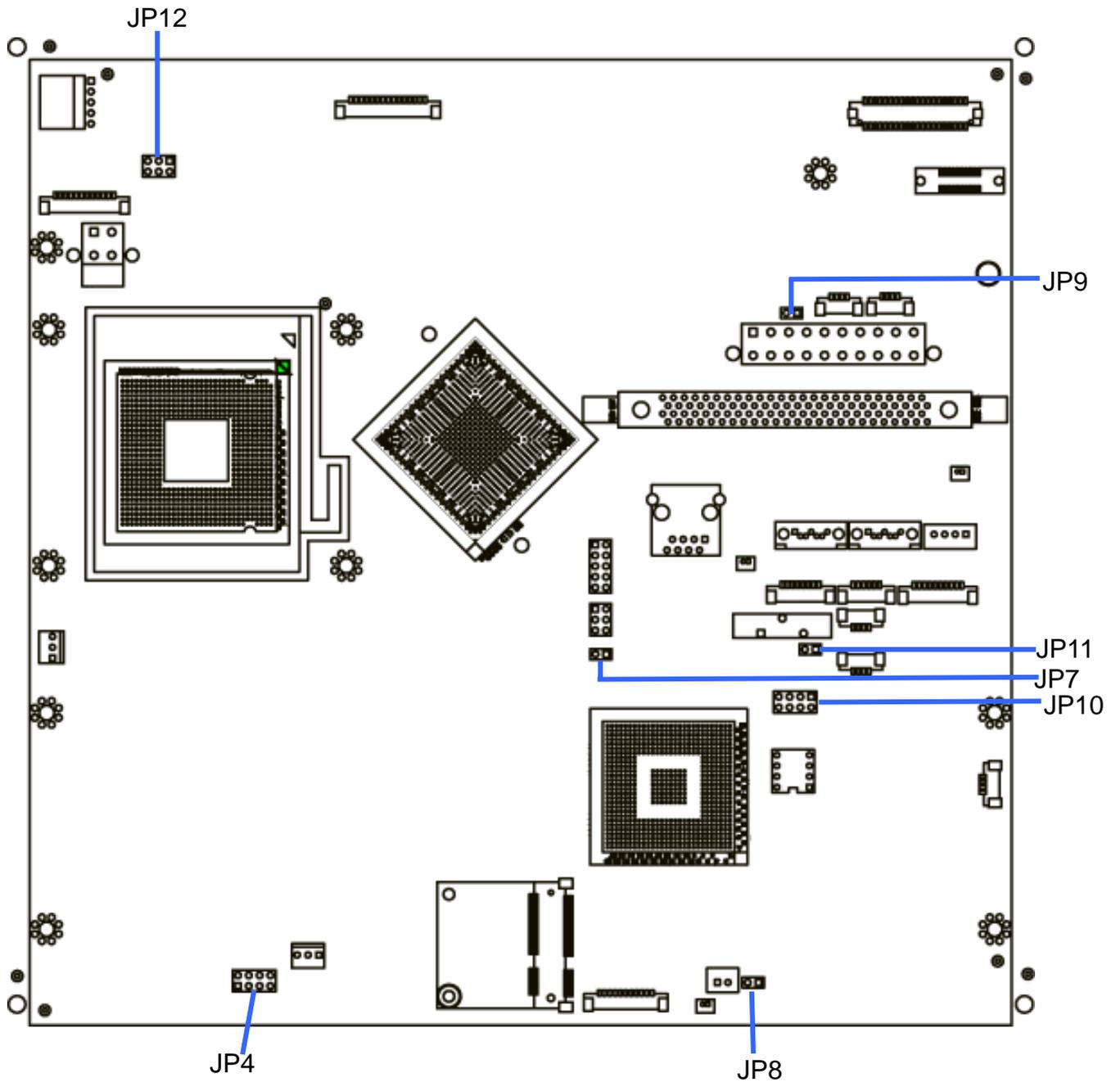
c. Remove the screws (5) that secure the LCD chassis. Then, remove the LCD chassis.



d. Remove the screws (12) to remove the touch panel.

6. Jumper Settings

6.1. Main Board Layout



6.2. Jumper Settings for Main Board

1. System Indicator Setting ⊙ Factory Default

Function	JP4																	
⊙Disable	<table style="border-collapse: collapse; margin: auto;"> <tr> <td style="padding: 0 5px;">1</td> <td style="padding: 0 5px;">3</td> <td style="padding: 0 5px;">5</td> <td style="padding: 0 5px;">7</td> </tr> <tr> <td style="text-align: center;"> <table border="1" style="border-collapse: collapse;"> <tr> <td style="background-color: black; width: 15px; height: 10px;"></td> <td style="width: 15px; height: 10px;"></td> <td style="width: 15px; height: 10px;"></td> <td style="width: 15px; height: 10px;"></td> </tr> <tr> <td style="background-color: black; width: 15px; height: 10px;"></td> <td style="width: 15px; height: 10px;"></td> <td style="width: 15px; height: 10px;"></td> <td style="width: 15px; height: 10px;"></td> </tr> </table> </td> <td style="padding: 0 5px;">2</td> <td style="padding: 0 5px;">4</td> <td style="padding: 0 5px;">6</td> <td style="padding: 0 5px;">8</td> </tr> </table>	1	3	5	7	<table border="1" style="border-collapse: collapse;"> <tr> <td style="background-color: black; width: 15px; height: 10px;"></td> <td style="width: 15px; height: 10px;"></td> <td style="width: 15px; height: 10px;"></td> <td style="width: 15px; height: 10px;"></td> </tr> <tr> <td style="background-color: black; width: 15px; height: 10px;"></td> <td style="width: 15px; height: 10px;"></td> <td style="width: 15px; height: 10px;"></td> <td style="width: 15px; height: 10px;"></td> </tr> </table>									2	4	6	8
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Enable	<table style="border-collapse: collapse; margin: auto;"> <tr> <td style="padding: 0 5px;">1</td> <td style="padding: 0 5px;">3</td> <td style="padding: 0 5px;">5</td> <td style="padding: 0 5px;">7</td> </tr> <tr> <td style="text-align: center;"> <table border="1" style="border-collapse: collapse;"> <tr> <td style="width: 15px; height: 10px;"></td> <td style="width: 15px; height: 10px;"></td> <td style="background-color: black; width: 15px; height: 10px;"></td> <td style="background-color: black; width: 15px; height: 10px;"></td> </tr> <tr> <td style="width: 15px; height: 10px;"></td> <td style="width: 15px; height: 10px;"></td> <td style="background-color: black; width: 15px; height: 10px;"></td> <td style="background-color: black; width: 15px; height: 10px;"></td> </tr> </table> </td> <td style="padding: 0 5px;">2</td> <td style="padding: 0 5px;">4</td> <td style="padding: 0 5px;">6</td> <td style="padding: 0 5px;">8</td> </tr> </table>	1	3	5	7	<table border="1" style="border-collapse: collapse;"> <tr> <td style="width: 15px; height: 10px;"></td> <td style="width: 15px; height: 10px;"></td> <td style="background-color: black; width: 15px; height: 10px;"></td> <td style="background-color: black; width: 15px; height: 10px;"></td> </tr> <tr> <td style="width: 15px; height: 10px;"></td> <td style="width: 15px; height: 10px;"></td> <td style="background-color: black; width: 15px; height: 10px;"></td> <td style="background-color: black; width: 15px; height: 10px;"></td> </tr> </table>									2	4	6	8
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2. 2nd Display Power Setting

Function	JP7					
+12V	<table style="border-collapse: collapse; margin: auto;"> <tr> <td style="padding: 0 5px;">1</td> </tr> <tr> <td style="text-align: center;"> <table border="1" style="border-collapse: collapse;"> <tr> <td style="background-color: black; width: 15px; height: 10px;"></td> </tr> <tr> <td style="background-color: black; width: 15px; height: 10px;"></td> </tr> </table> </td> </tr> <tr> <td style="padding: 0 5px;">2</td> </tr> </table>	1	<table border="1" style="border-collapse: collapse;"> <tr> <td style="background-color: black; width: 15px; height: 10px;"></td> </tr> <tr> <td style="background-color: black; width: 15px; height: 10px;"></td> </tr> </table>			2
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2						
⊙NC	<table style="border-collapse: collapse; margin: auto;"> <tr> <td style="padding: 0 5px;">1</td> </tr> <tr> <td style="text-align: center;"> <table border="1" style="border-collapse: collapse;"> <tr> <td style="background-color: black; width: 15px; height: 10px;"></td> </tr> <tr> <td style="width: 15px; height: 10px;"></td> </tr> </table> </td> </tr> <tr> <td style="padding: 0 5px;">2</td> </tr> </table>	1	<table border="1" style="border-collapse: collapse;"> <tr> <td style="background-color: black; width: 15px; height: 10px;"></td> </tr> <tr> <td style="width: 15px; height: 10px;"></td> </tr> </table>			2
1						
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2						

3. HW Reset

Function	JP8					
⊙Normal	<table style="border-collapse: collapse; margin: auto;"> <tr> <td style="padding: 0 5px;">1</td> </tr> <tr> <td style="text-align: center;"> <table border="1" style="border-collapse: collapse;"> <tr> <td style="width: 15px; height: 10px;"></td> </tr> <tr> <td style="width: 15px; height: 10px;"></td> </tr> </table> </td> </tr> <tr> <td style="padding: 0 5px;">2</td> </tr> </table>	1	<table border="1" style="border-collapse: collapse;"> <tr> <td style="width: 15px; height: 10px;"></td> </tr> <tr> <td style="width: 15px; height: 10px;"></td> </tr> </table>			2
1						
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2						
Reset	<table style="border-collapse: collapse; margin: auto;"> <tr> <td style="padding: 0 5px;">1</td> </tr> <tr> <td style="text-align: center;"> <table border="1" style="border-collapse: collapse;"> <tr> <td style="background-color: black; width: 15px; height: 10px;"></td> </tr> <tr> <td style="background-color: black; width: 15px; height: 10px;"></td> </tr> </table> </td> </tr> <tr> <td style="padding: 0 5px;">2</td> </tr> </table>	1	<table border="1" style="border-collapse: collapse;"> <tr> <td style="background-color: black; width: 15px; height: 10px;"></td> </tr> <tr> <td style="background-color: black; width: 15px; height: 10px;"></td> </tr> </table>			2
1						
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2						

4. Power Mode Setting

Function	JP9
ⒸATX	1  2
AT	1  2

5. CMOS Operation Mode Setting

Function	JP11
ⒸCMOS Normal	1  2
CMOS Reset	1  2

To clear the CMOS:

- 1). Remove the power cable from the system.
- 2). Open the system, and set the 'CMOS Operation jumper' from 'CMOS Normal' to 'CMOS Reset'.
- 3). Connect the power cable to the system, and **power on the system**:
 - in ATX mode: press the power button and **it will fail power on**
 - in AT mode: turn on system power
- 4). Remove the power cable from the system.
- 5). Return the "CMOS Operation mode" jumper setting from "CMOS Reset" to "CMOS normal".
- 6). Connect the power cable and power on the system.

6. Inverter Selection

Function	JP12									
Ⓞ CCFL	<table style="border-collapse: collapse; margin: auto;"> <tr> <td style="padding: 2px 5px;">1</td> <td style="padding: 2px 5px;">3</td> <td style="padding: 2px 5px;">5</td> </tr> <tr> <td style="padding: 2px 5px;"><input type="checkbox"/></td> <td style="padding: 2px 5px;"><input type="checkbox"/></td> <td style="padding: 2px 5px;"><input checked="" type="checkbox"/></td> </tr> <tr> <td style="padding: 2px 5px;">2</td> <td style="padding: 2px 5px;">4</td> <td style="padding: 2px 5px;">6</td> </tr> </table>	1	3	5	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	2	4	6
1	3	5								
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>								
2	4	6								
LED	<table style="border-collapse: collapse; margin: auto;"> <tr> <td style="padding: 2px 5px;">1</td> <td style="padding: 2px 5px;">3</td> <td style="padding: 2px 5px;">5</td> </tr> <tr> <td style="padding: 2px 5px;"><input checked="" type="checkbox"/></td> <td style="padding: 2px 5px;"><input checked="" type="checkbox"/></td> <td style="padding: 2px 5px;"><input type="checkbox"/></td> </tr> <tr> <td style="padding: 2px 5px;">2</td> <td style="padding: 2px 5px;">4</td> <td style="padding: 2px 5px;">6</td> </tr> </table>	1	3	5	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	2	4	6
1	3	5								
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>								
2	4	6								

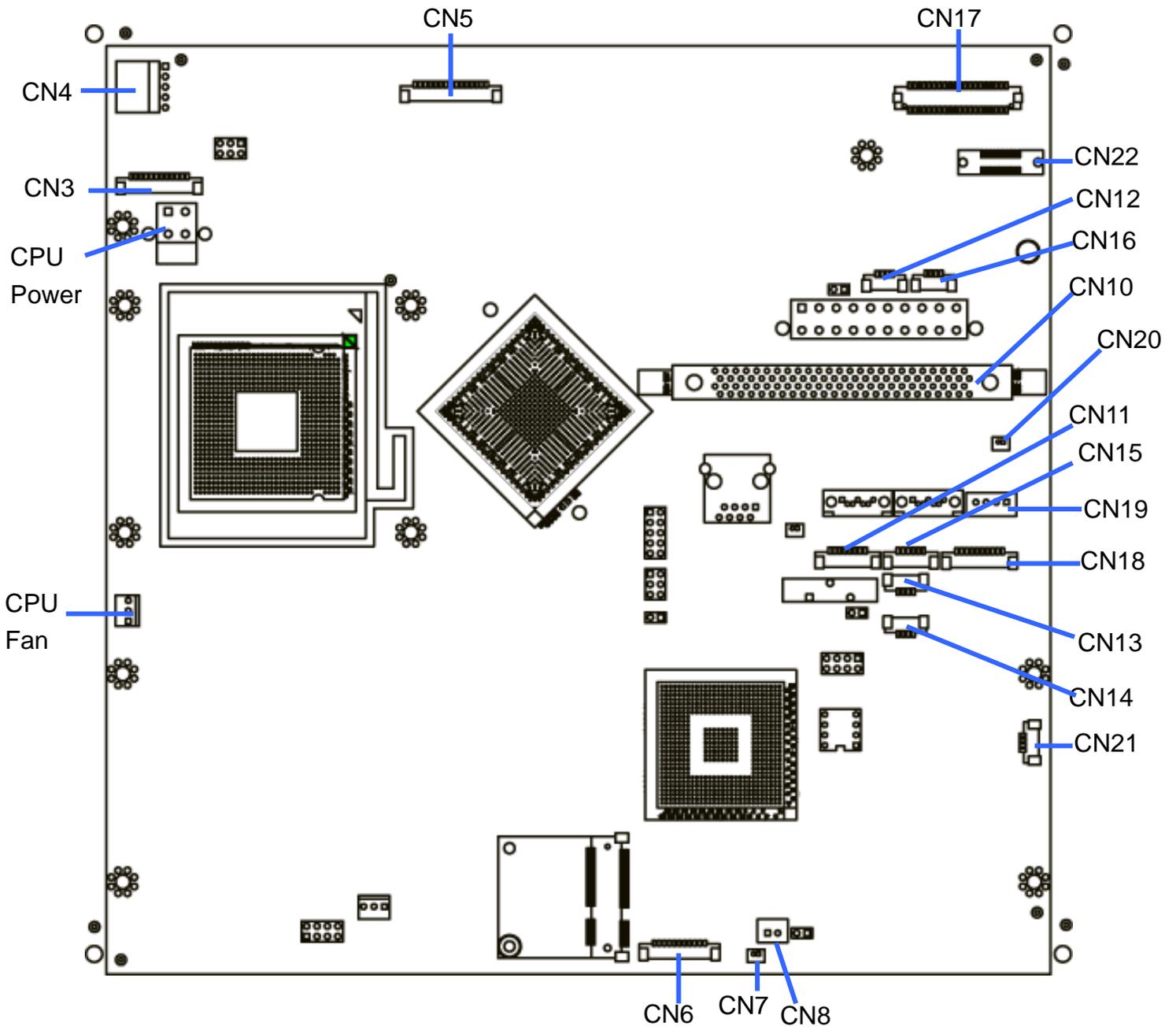
7. LCD ID Setting

Panel Number	Resolution	LVDS		JP10				LCD type
		Bits	Channel	1-2	3-4	5-6	7-8	
1	1024 x 768	24	Single	OPEN	SHORT	SHORT	SHORT	TMS150XG1- 10TB

Note:



6.3. Connectors Location



6.4. Connectors Definition

Connector	Function
CN3	Inverter Power
CN4	Touch CONN
CN5	Card Reader CONN
CN6	ST Status
CN7	Power LED CONN
CN8	Power Button
CN10	100pin to I/O Board
CN11	CD IN
CN12	VFD CONN
CN13/14	USB
CN15	MIC-IN
CN16	Light Sensor
CN17	LVDS
CN18	COM5 for Touch
CN19	SATA Power
CN20	HDD LED
CN22	RF CONN

7. Default BIOS Settings

7.1. BIOS Setup Utility

The BIOS setup defines how the system is configured. You need to run this program the first time you configure this product. You may need to run it again if you change the configuration.

You need to connect a PC keyboard to the keyboard connector to run the BIOS setup utility.

7.2. Starting the BIOS Setup

1. Turn on or reboot this product.
2. Press the DEL key immediately after the product is turned on, or press the DEL key when the following message is displayed during POST (the Power on Self-Test).

Press DEL to enter SETUP.

3. The main menu of the BIOS setup is displayed.
4. If the supervisor password is set, you must enter it here.

7.3. When a Problem Occurs

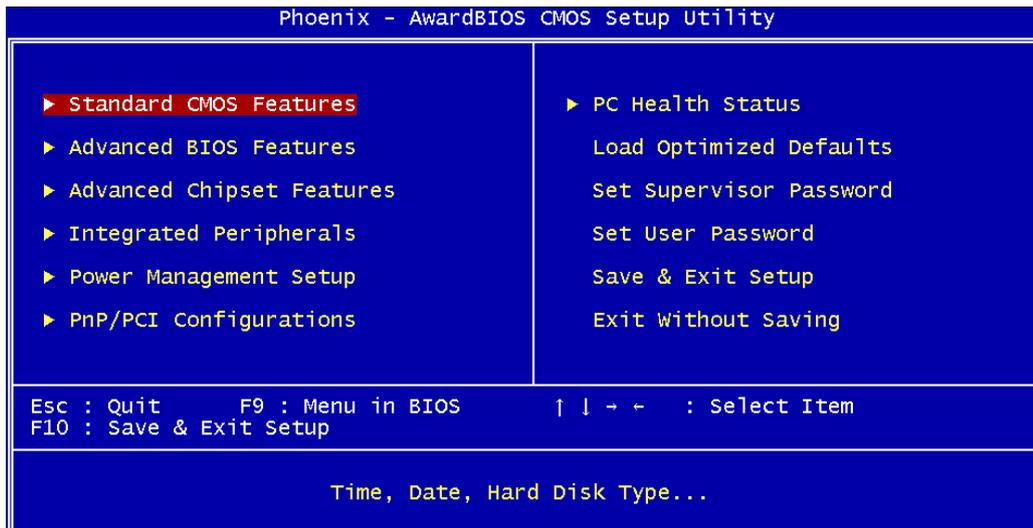
If, after making and saving system changes with the Setup utility, you find that this product no longer boots, start the BIOS setup and execute the following.

Load Optimized Defaults

7.4. BIOS Main Menu

When the BIOS Main Menu is displayed, the following items can be selected. Use the arrow keys to select items and the Enter key to accept and enter the sub-menu.

Note: The BIOS menu below is from B82 BIOS version B82FV10B.BIN. If you have a different BIOS version, the contents of the menu may differ.



Standard CMOS Features

This setup page includes the standard CMOS features.

Advanced BIOS Features

This setup page includes the enhanced AWARD BIOS features.

Advanced Chipset Features

This setup page includes the Chipset features

Integrated Peripherals

Change, set, or disable on board super I/O functions.

Power Management setup

This category determines the system power consumption of the system.

PNP/PCI Configurations

This category specifies the value (in units of PCI bus clocks) of the latency timer for the PCI bus master and the IRQ level for PCI devices.

PC health status

This page shows hardware monitor information.

Load Optimized Defaults

BIOS defaults indicate the most appropriate value of the system parameters for a standard system performance.

Set Supervisor Password

Change, set, or disable the password. It allows the supervisor to change BIOS settings.

Set Password

Change, set, or disable the password. It allows you to limit access to the system and to the setup, or just to the setup.

Save & exit setup

Save CMOS value changes to CMOS and exit setup.

Exit without saving

Discard all CMOS value changes and exit setup.

8. BIOS Updating Procedure

To update the BIOS, you will need the new BIOS file and a flash utility, AF832A. EXE. You can download them from the web site or contact technical support or your sales representative.

1. Prepare one bootable device with DOS OS, save the new BIOS file along with the flash utility AF890.EXE to this boot device.
2. Reboot the system and enter the Award BIOS Setup Utility to set the first boot drive to your boot device.
3. Save the setting and reboot the system.
4. After the system booted from the boot device, execute the flash utility by typing AF890.EXE in **DOS prompt**. The following screen will appear.



5. Type the new BIOS file name onto the gray area that is next to “File Name to Program” then press <Enter>.
6. The following will appear.

Do You Want to Save BIOS (Y/N)

This question refers to the current existing BIOS in your system. We recommend that you save the current BIOS and its flash utility; just in case you need to reinstall the BIOS. To save the current BIOS, press <Y> then enter the file name of the current BIOS. Otherwise, press <N>.

7. The following will then appear.

Press “Y” to Program or “N” to Exit.

8. Press <Y> to flash the new BIOS.

Appendix A: Specification

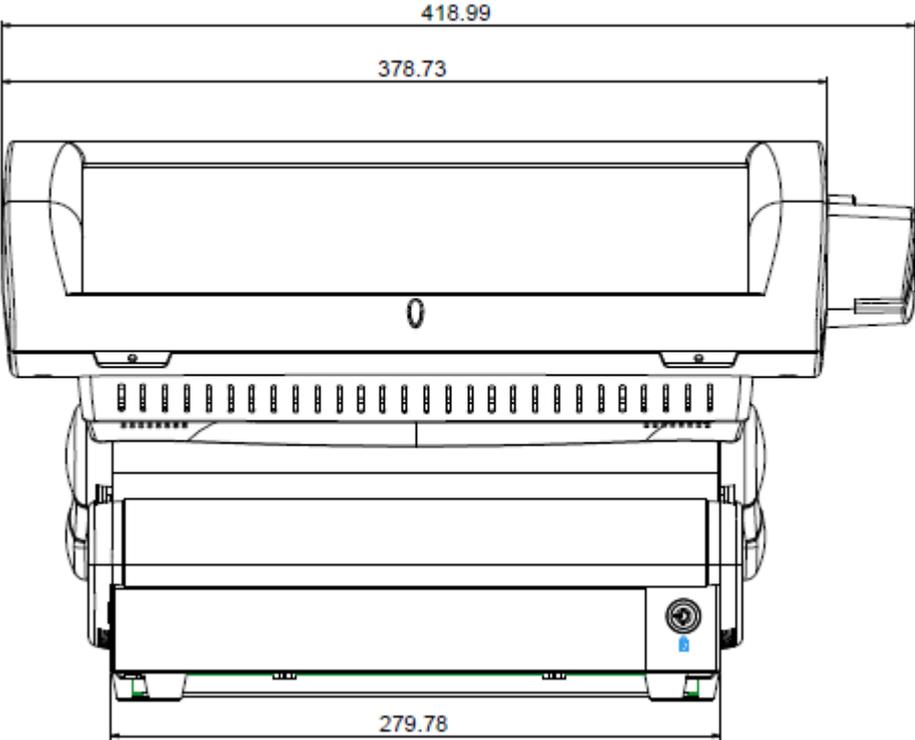
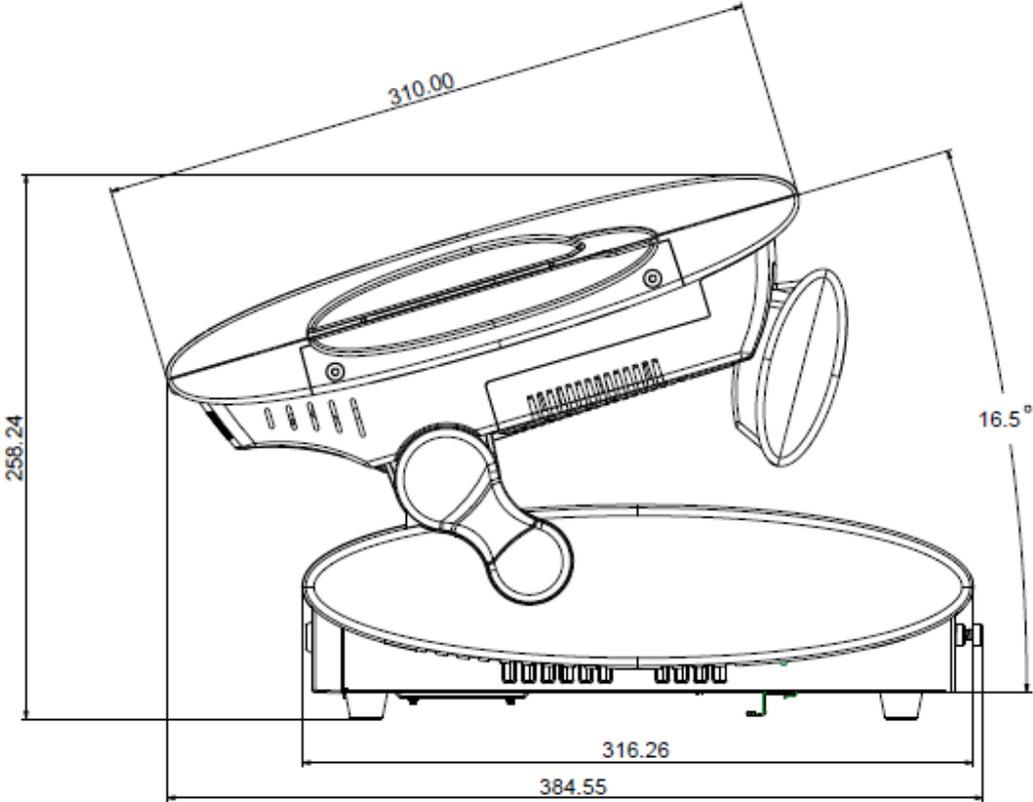
Mainboard	Odysse II
Motherboard	C91
Supported CPU	LGA775 CPU FSB /800/1066 /1333 Mhz Core ™2 Duo 2.8G (E7400) FSB1333Mhz L2 3M Pentium Dual Core 2.6G (E5300) FSB800Mhz L2 2M Celeron® 2.2G (E1500) FSB 800Mhz L2 512K
Core Logic	Intel 82G41 + ICH7
System Memory	DDR3 DIMM socket x2, up to 4GB, FSB 800/1066 Mhz
Graphic Memory	Shared Memory up to 1.7GB
Storage Devices	
HDD	2 x 2.5" HDD supports hardware RAID type 1 with hot swap
ODD	1x Slim CD-ROM/DVD-ROM drive bay
Expansion	
PCI E	1 x PCI E slot for wireless LAN expansion
External I/O Ports	
Front I/O	
Power Button	1
USB	2
Rear I/O	
VGA	1
USB	6 (USB 2.0)
Serial/COM	4COM (DB9 type, 5V/12V powered COM configured by software)
PS2	1
Line out	1
MIC	1
LAN	1
Cash Drawer Port	1 x RJ 11 (12V /24V power setting by software)
24V receipt print	1
Options	
MSR	MSR (3 track, PS2 /COM)
	RFID reader (USB)
	iButton reader (PS2/COM)

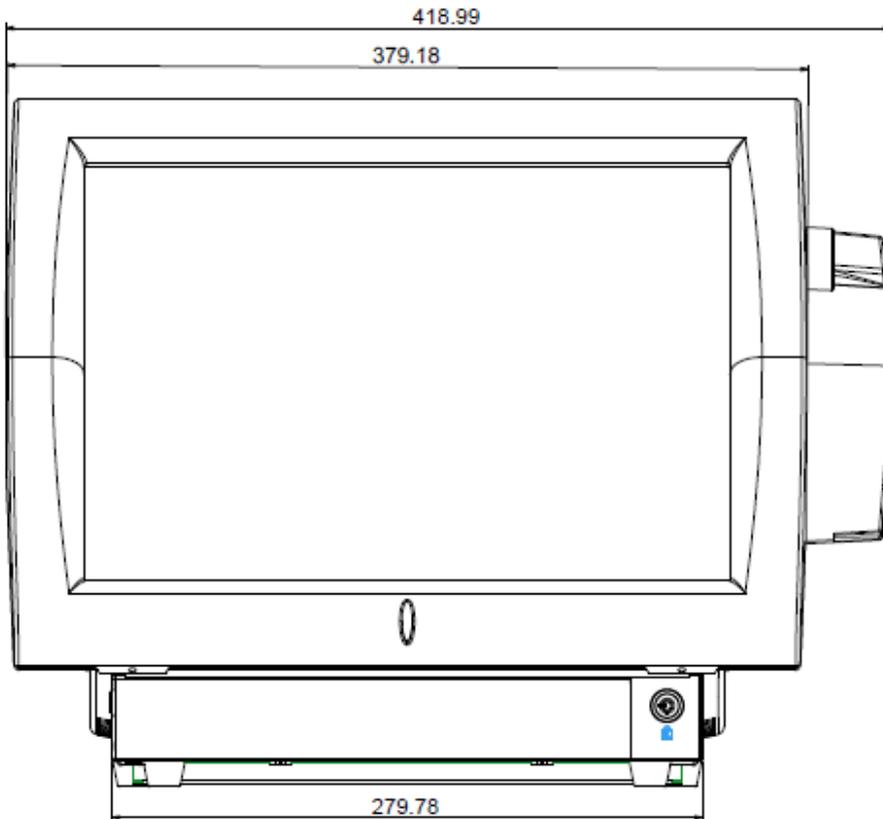
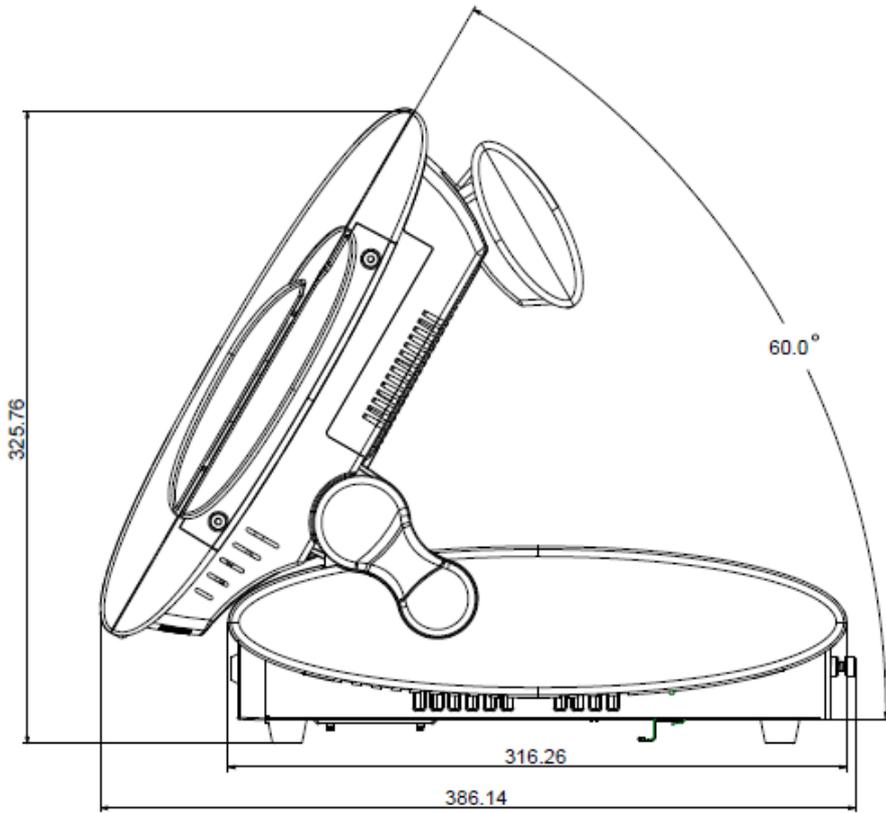
2--in-1 MSR	MSR (PS2), iButton (PS2)
	MSR (PS2), iButton (COM)
	MSR (COM) , iButton (PS2)
	MSR (PS2), Finger Print (USB)
	MSR (COM), Finger Print (USB)
Customer display	20 x2 VFD customer display (COM 4)
2nd display	8.4" LCD display 800*600 250nits
Power	
Power supply	Int. 250W ATX (energy star compliance)
Certificate	
EMC & Safety	FCC Class A, CE, LVD
Environmental	
Operating Temperature	5°C ~ 35°C (41°F ~ 95°F)
Storage Temperature	-20°C ~ 55°C (-4°F ~ 140°F)
Operating Humidity	20% - 80% RH non condensing
Storage Humidity	20% - 85% RH non condensing
Communication	
Wireless LAN	802.11 b/g/n (option)
Operation System	
OS Support	Windows® XP Professional, Windows Embedded POSReady 2009, WEPOS, Windows XP Embedded, Windows XP Professional for Embedded, Windows 7, Linux
Dimensions (W x D x H) mm	418x361x222 (0° Vertical Display) 418x381x325 (60° Tilt Display)
(W x D x H) in	16.4 x 14.2 x 8.7 (0° Vertical Display) 16.4 x 14.9 x 12.7 (60° Tilt Display)

· This specification is subject to change without prior notice.

Appendix B: Dimensional Drawings

All dimensions in mm





Appendix C: Drivers 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 D: Customer Display Command Settings

The Customer Display is connected to serial port **COM4**

The default settings for the Customer Display are:

- **EPSON ESC/POS command set**
- **9600 Baud, 8 bits, no parity, no flow control**

Software Utility

A configuration utility is provided for the customer display on the driver CD.

(see Appendix C: Driver Installation for information about the driver CD)

Folder/File	File Description
<CD>:\Common\CustomerDisplay\Windows	Windows utility
<CD>:\Common\CustomerDisplay\DOS	DOS utility
<CD>:\Common\CustomerDisplay\Linux	Linux utility

A user manual for the utility is also available on the CD at the following location:

Folder/File	File Description
<CD>:\Common\CustomerDisplay\	User manual

Software Status Setting Commands

When the system is powered on, it will read the EEPROM setting to set the **Command Type, Baud Rate, Parity, Data Length, Demo Mode** setting and **International Character Set**. The user can change the Software Status Setting Commands using the command sequences described below:

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 [03h] n=30h, 31h, 36h or 37h
 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 [03h] n=31h, 33h, 35h
 Description Change the display communication parity. Set 8 data bit and the parity set for even, odd or non-parity.

n	Parity
31h	None
33h	Even
35h	Odd

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 [03h] n=37h, 38h
 Description Change the display communication data length. Set 8-bits or 7-bits data length.

n	Parity
37h	7 bits
38h	8 bits

International Character Set Setting Command

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 (Multilingual+ Euro Symbol)	
3Ah	DENMARK II		
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 ~ 4Eh	Reserved	Reserved	
4Fh	User Defined Character Set		

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 [03h]	00h ≤ n ≤ 1Fh	
Description	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	Not used
02h	GERMANY	08h	JAPAN	0Eh	Not used
03h	U.K.	09h	NORWAY	0Fh	Not used
04h	DENMARK I	0Ah	DENMARK II	1Fh	User-Defined
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 [03]		
Hex. Format	[02h][05h][55h] n [03h]	00h ≤ n ≤ 1Fh	
Description	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)	07h	Russia	0Fh	Windows-1257 (Baltic)
01h	Katakana (for Japan)	08h	Greek	10h	Windows-1252 (West European Latin)
02h	CP-850 (Multilingual)	09h	CP-852 (Hungary)	11h	Windows-1253 (Greek)
03h	CP-860 (Portuguese)	0Ah	CP-862 (Hebrew)	12h	Windows-1250 (East European Latin)
04h	CP-863 (Canadian-French)	0Bh	CP-866 (Cyrillic)	13h	CP-858 (Multilingual+ Euro Symbol)
05h	CP-865 (Nordic)	0Ch	Windows-1251 (Cyrillic)	1Fh	User Defined
06h	Slawie	0Eh	Windows-1255 (Hebrew)		

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 [03h] $30h \leq n \leq 37h$
 Description This command will change the command type and initialize the display.
 The display emulation mode is based on DSP800/ ESC/ ADM 787/ POS7300/ AEDEX/ UTC/ CD5220 mode

n	Command Type	n	Command Type
30h	DSP800	34h	AEDEX
31h	ESC/POS	35h	UTC/P
32h	POS7300	36h	UTC/S
33h	ADM787	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]
 Description Run demo message for the display.
 The demo message is available in POS7300, DSP800, EPSON ESC/POS and CD5220 command modes.

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.

User Defined Character Command Set

Function	Command	Description
Del 1 Character	[02h][FDh][55h][00h][n]	Delete one user defined character data. [n] = 20h ~ FFh for displayable character codes
Del All Characters	[02h][FDh][55h][01h][00h]	Delete All User-Define Characters
Set 1 Character	[02h][FDh][55h][02h][n] [m1][m2][m3][m4][m5]	Set one user defined character [n] = 20h ~ FFh for displayable character codes/[m1]~[m5] = Character data byte 1 ~ 5/Ref. table below
Read 1 Character	[02h][FDh][55h][03h][n]	Read one user define character data [n] = 20h ~ FFh for displayable character codes
Read All Characters	[02h][FDh][55h][04h][00h]	Read all user defined character data (Character 20h ~ FFh)

Set User-Define Character 5x7 dot layer out

Bit assignment:

bit 7	bit 6	bit 5	bit 4	bit 3	bit 2	bit 1	bit 0
-------	-------	-------	-------	-------	-------	-------	-------

5x7 dot bit assignment: 1 means fill dot, 0 means empty dot.

m1 bit 7	m1 bit 6	m1 bit 5	m1 bit 4	m1 bit 3
m1 bit 2	m1 bit 1	m1 bit 0	m2 bit 7	m2 bit 6
m2 bit 5	m2 bit 4	m2 bit 3	m2 bit 2	m2 bit 1
m2 bit 0	m3 bit 7	m3 bit 6	m3 bit 5	m3 bit 4
m3 bit 3	m3 bit 2	m3 bit 1	m3 bit 0	m4 bit 7
m4 bit 6	m4 bit 5	m4 bit 4	m4 bit 3	m4 bit 2
m4 bit 1	m4 bit 0	m5 bit 7	m5 bit 6	m5 bit 5

0	1	1	1	0
1	0	0	0	1
1	0	0	1	1
1	0	1	0	1
1	1	0	0	1
1	0	0	0	1
0	1	1	1	0

Ex: character "0"

m1 byte data = 0x74

m2 byte data = 0x67

m3 byte data = 0x5C

m4 byte data = 0xC5

m5 byte data = 0xC0

Command List Table

Command Set Command	POS	CD	EPSON	UTC/S	UTC/P	AEDEX	ADM	DSP
	7300	5220	D101				788	800
Move cursor right	○	○	○					
Move cursor left	○	○	○					
Move cursor up	○	○	○					
Move cursor down	○	○	○					
Move cursor to right-most position	○	○	○					
Move cursor to left-most position	○	○	○					
Move cursor to home position	○	○	○					
Move cursor to bottom position	○	○	○					
Move cursor to specified position	○	○	○					○
Clear display screen	○	○	○	○			○	
Clear cursor line	○	○	○					
Brightness adjustment	○	○	○					○
Blink display screen	○	○	○					○
Initialize display	○	○	○					○
Select character code table	○	○	○					
Select international character set	○	○	○					○
Select/cancel reverse character	○		○					
Overwrite mode	○	○	○	○				
Vertical scroll mode	○	○	○	○				
Horizontal scroll mode	○	○	○					
Set/cancel the window range	○	○	○					
Select peripheral device	○	○	○					○
Set starting/ending position of macro definition			○					
Execute and quit macro			○					
Execute self-test	○	○	○					○
Display time	○		○		○	○		
Display time continuously	○		○					
Display position	○			○				
Cursor on/off	○	○	○	○				
Change to UTC enhanced mode				○				
Change to UTC standard mode					○			
Write string to upper line	○	○			○	○		
Upper line message continuous scroll	○	○			○	○		
Bottom line message scroll continuously	○							
Message vertical down scroll continuously	○							
Message vertical upper scroll continuously	○							
Carriage return	○			○			○	
Line feed	○			○				
Back space	○			○				
Horizontal tab	○			○				
Command type select		○	○					○
Upper line message scroll once pass					○	○		
Change attention code					○	○		
Two line display					○	○		
Clear upper line and move cursor to upper left-end position							○	

Command Set Command	POS 7300	CD 5220	EPSON D101	UTC/S	UTC/P	AEDEX	ADM 788	DSP 800
Clear bottom line and move cursor to bottom left-end position							○	
Set period to upper line, last n position							○	
Set line blinking, upper line	○						○	
Clear line blinking, upper line	○						○	
Clear field 1 and move cursor to field 1, first position							○	
Clear field 2 and move cursor to field 2, first position							○	
Clear display range from n position to m								○
Save the current displaying data to n layer for								○
Turn annunciator on/off	○		○					
Specify period	○		○					
Specify comma	○		○					
Specify semicolon (period + comma)	○		○					
Set/Cancel User-Define Character Set			○					
Create User-define Character			○					○
Delete All User-Define Character			○					
Store User-Define Character to EEPROM			○					
Load User-Define Character from EEPROM			○					
Delete 1 User-Define Character								○

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 x	1F 23 n x	➤ Turn annunciator on/off. ➤ n = 0 for annunciator off ➤ n = 1 for annunciator on ➤ x = 1 ~ 14h, for columns location.
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 ≤ h ≤ 17h, for hours setting. ➤ 0 ≤ m ≤ 3Bh, for minutes setting.
US U	1F 55	➤ Display time continuously
US X n	1F 58 n	➤ Brightness adjustment ➤ n = 1 ~ 4
US r n	1F 72 n	➤ Select/cancel reverse character. ➤ n = 00,01
NULL H	0 48	➤ Move cursor up
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

Command	Code (hex)	Function Description
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 ≤ 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 ~ 1Fh. See note *1
ESC t n	1B 74 n	Select character code table (80H~FFh). ➤ n = 00 ~ 1Fh. See note *2
ESC = n	1B 3D n	Select peripheral device, display or printer n = 1~3 ■ n = '1': enable printer only ■ n = '2': enable display only ■ n = '3': enable both of printer and display

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		
04h	DENMARK I	09h	NORWAY	1Fh	User Defined

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)	07h	Russia	0Fh	Windows-1257 (Baltic)
01h	Katakana (for Japan)	08h	Greek	10h	Windows-1252 (West European Latin)
02h	CP-850 (Multilingual)	09h	CP-852 (Hungary)	11h	Windows-1253 (Greek)
03h	CP-860 (Portuguese)	0Ah	CP-862 (Hebrew)	12h	Windows-1250 (East European Latin)
04h	CP-863 (Canadian-French)	0Bh	CP-866 (Cyrillic)	13h	CP-858 (Multilingual+ Euro Symbol)
05h	CP-865 (Nordic)	0Ch	Windows-1251 (Cyrillic)		
06h	Slawie	0Eh	Windows-1255 (Hebrew)	1Fh	User Defined

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 2A n	Brightness adjustment ➤ $n = 1 \sim 4$, $n = 4$ for highest brightness
US X n	1F 58 n	
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
ESC = n	1B 3D n	Select peripheral device, display or printer ➤ $n=1$: enable printer only ➤ $n=2$: enable display only ➤ $n=3$: enable both of printer and display

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.	‘N’	4Eh	Norway
‘G’	47h	Germany	‘W’	57h	Sweden
‘I’	49h	Italy	‘D’	44h	Denmark I
‘J’	4Ah	Japan	‘E’	45h	Denmark II
‘U’	55h	U.K.	‘L’	4Ch	Slavonic
‘F’	46h	France	‘R’	52h	Russia
‘S’	53h	Spain		1Fh	User-Define

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)
	1Fh	User Defined

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 A n ETB	04 01 41 n 17 n = 31h-34h	Brightness adjustment
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
EOT SOH & n [m1~m5] ETB	04 01 26 n [m1~m5] 17	Set One User-Define Character n = 20h ~ FFh for displayable character code [m1 ~ m5] Byte1~Byte5 Define Character
EOT SOH ? n ETB	04 01 3F n 17	Delete One User-Define Character n = 20h ~ FFh for displayable character code
EOT SOH = n ETB	04 01 3D n 17	➤ Select peripheral device, display or printer n = '1': enable printer only n = '2': enable display only n = '3': enable both of printer and display

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		
04h	DENMARK I	09h	NORWAY	1Fh	User-Define
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		
34h	DENMARK I	39h	NORWAY	4Fh	User-Define

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 # n x	1F 23 n x	➤ Turn annunciator on/off. n = 0 for annunciator off n = 1 for annunciator on ➤ x = 1 ~ 14h, for columns location.
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 ≤ (n, m) ≤ 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 ≤ h ≤ 17h, for hours setting. ➤ 0 ≤ m ≤ 3Bh, for minutes setting.
US U	1F 55	Display time continuously
US X n	1F 58 n	➤ Brightness adjustment n = 1 ~ 4

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 ➤ 1 ≤ y1 ≤ y2 ≤ 2, for lines .
ESC R n	1B 52 n	Select international character set (20H~7Fh). ➤ n = 00 ~ 1Fh. See note *1
ESC t n	1B 74 n	Select character code table (80H~FFh). ➤ n = 00 ~ 1Fh. See note *2
ESC = n	1B 3D n	Select peripheral device, display or printer n = '1': enable printer only n = '2': enable display only n = '3': enable both of printer and display
ESC % n	1B 25 n	Set/Cancel User-Define Character Set ➤ n = 0: Cancel User-Defined Character Set ➤ n = 1: Set User-Define Character Set
ESC & SOH n m [b1~b5] * K	1B 26 01 n m [b1 ~ b5] * K	Create User-define Character 20h ≤ n ≤ m ≤ FFh [b1 ~ b5] Byte1~Byte5 Define Character (Ref. User-Define Character Command-Set 5x7 dot layout) K = (m-n+1) → 1 ~ 5, Max. 5 character.
ESC ?	1B 3F	Delete User-Define Character
ESC s SOH	1B 73 01	Store User-Define Character in EEPROM
ESC d SOH	1B 64 01	Load User-Define Character from EEPROM

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

n	international character set	n	international character set	n	international character set
0h	U.S.A.	6h	ITALY	Ch	RUSSIA
1h	FRANCE	7h	SPAIN	Dh	Not used
2h	GERMANY	8h	JAPAN	Eh	Not used
3h	U.K.	9h	NORWAY	Fh	Not used
4h	DENMARK I	Ah	DENMARK II		
5h	SWEDEN	Bh	SLAVONIC		

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

n	character code table	n	character code table	n	character code table
0h	CP-437 (USA, Standard Europe)	6h	Slawie	Ch	Windows-1251 (Cyrillic)
1h	Katakana (for Japan)	7h	Russia	Eh	Windows-1255 (Hebrew)
2h	CP-850 (Multilingual)	8h	Greek	Fh	Windows-1257 (Baltic)
3h	CP-860 (Portuguese)	9h	CP-852 (Hungary)	10h	Windows-1252
4h	CP-863 (Canadian-French)	Ah	CP-862 (Hebrew)	11h	Windows-1253 (Greek)
5h	CP-865 (Nordic)	Bh	CP-866 (Cyrillic)	13h	CP-858 (Multilingual+ Euro Symbol)

Character Set

Character Codes 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	β	
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	Pt	\$	@	ı	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 Codes 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	ø	£	¥	Pt	f
A0h	á	í	ó	ú	ñ	Ñ	ª	º	¿	¬	½	¼	¡	«	»	
B0h	⌘	⌘	⌘		┌	┐	└	┘	⌘	⌘	⌘	⌘	⌘	⌘	⌘	⌘
C0h	⌘	⌘	⌘	⌘	⌘	⌘	⌘	⌘	⌘	⌘	⌘	⌘	⌘	⌘	⌘	⌘
D0h	⌘	⌘	⌘	⌘	⌘	⌘	⌘	⌘	⌘	⌘	⌘	■	■	■	■	■
E0h	α	β	Γ	π	Σ	σ	μ	τ	Φ	θ	Ω	δ	∞	∅	ε	∩
F0h	≡	±	≥	≤			÷	≈	°	•	·	√	n	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	£	∅	×	f
A0h	á	í	ó	ú	ñ	Ñ	ª	º	¿	®	¬	½	¼	¡	«	»
B0h	⌘	⌘	⌘		┌	Á	Â	À	©	⌘	⌘	⌘	⌘	ø	¥	⌘
C0h	⌘	⌘	⌘	⌘	⌘	ã	Ã	⌘	⌘	⌘	⌘	⌘	⌘	=	⌘	⌘
D0h	ð	Ð	Ê	Ë	È	Í	Î	Ï	⌘	⌘	⌘	■	■	⌘	ì	■
E0h	ó	β	ô	ò	õ	Õ	μ	þ	Ɔ	Ú	Û	Ù	ý	Ý	-	'
F0h	-	±	=	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	á	ì	®	¬	½	¼	ì	«	»
B0h	☒	☒	☒		†	Á	Â	À	©	‡		¶	¶	¢	¥	‡
C0h	L	⊥	⊥	†	—	†	ã	Ã	ℒ	℞	⊥	⊥	‡	=	‡	α
D0h	ð	Ð	Ê	Ë	È	€	í	î	ï	¸	¸	■	■	ì	ì	■
E0h	ó	ß	ô	ò	õ	Õ	μ	þ	þ	Ú	Û	Ù	ý	Ý	-	'
F0h	-	±	=	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	∫	∞	∞	-1	2	3	x	½	1/	√	±	■
A0h		。	「	」	、	・	ヲ	フ	イ	ウ	エ	オ	ヤ	ユ	ヨ	ツ
B0h	一	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	"	°
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	Í	í	ô	ö	Ĺ	ĩ	ś	ś	Ö	Ü	ť	ť	ł	x	č
A0h	á	í	ó	ú	ą	ą	ż	ż	ę	ę		ż	č	ş	«	»
B0h	☼	☼	☼		┌	á	â	ě	ş					‡	‡	
C0h					—	†	ă	ă						=		α
D0h	đ	đ	đ	ë	đ	ň	í	î	ě			■	■	‡	û	■
E0h	ó	β	ô	ń	ń	ň	š	š	ř	ú	ř	ũ	ý	ý	‡	´
F0h	—	~	◌̇	˘	˘	§	÷	˘	°	¨	·	ũ	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	Ѡ	Ѣ	Ѥ	Ѧ	Ѩ	Ѭ	Ѯ	Ѱ	Ѳ	Ѵ	Ѷ	Ѹ	Ѻ	Ѽ	Ѿ	

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	ø	£	Ù	Pt	Ó
A0h	á	í	ó	ú	ñ	Ñ	a	o	¿	®	¬	½	¼	¡	«	»
B0h	☒	☒	☒		┆	┆	┆	┆	┆	┆		┆	┆	┆	┆	┆
C0h	L	⊥	⊥	┆	—	┆	┆	┆	┆	┆	┆	┆	┆	=	┆	┆
D0h	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	L	■	■	■	■	■
E0h	α	β	Γ	π	Σ	σ	μ	τ	Φ	θ	Ω	δ	∞	ø	ε	∩
F0h	≡	±	≥	≤			÷	≈	°	•	.	√	n	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	ú	é	â	ä	û	ć	ç	ł	ë	Ő	ő	î	Ž	Ä	Ć
90h	É	Í	í	ô	ö	Ĺ	ı	Ś	ś	Ö	Ü	Ť	ť	Ł	x	Č
A0h	á	í	ó	ú	Ą	ą	Ż	ż	Ę	ę	¬	ż	Č	ş	«	»
B0h	☼	☼	☼		┌	Á	Â	Ě	Ş	ǂ		ǂ	ǂ	ž	ž	ǂ
C0h	Ł	┌	┐	└	—	┘	Ä	ă	Ł	ǂ	ǂ	ǂ	ǂ	=	ǂ	ǂ
D0h	đ	Đ	Ď	Ě	ď	Ň	í	î	ě	ǂ	ǂ	■	■	ǂ	ǂ	■
E0h	Ó	β	Ô	Ń	ń	ň	Š	š	Ř	Ú	ř	Ů	ý	Ý	ǂ	´
F0h	–	~	♀	˘	˘	§	÷	ۋ	°	¨	·	ü	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	ג	ו	ע	ק	פ	ץ	צ	ק	ר	ש	ת	ץ	£	¥	Pts	f
A0h	á	í	ó	ú	ñ	Ñ	a	o	ı	ǂ	ǂ	½	¼	i	«	»
B0h	☼	☼	☼		┌	ǂ	ǂ	π	ǂ	ǂ		ǂ	ǂ	ǂ	ǂ	ǂ
C0h	Ł	┌	┐	└	—	┘	ǂ	ǂ	Ł	ǂ	ǂ	ǂ	ǂ	=	ǂ	ǂ
D0h	ǂ	ǂ	π	Ł	Ł	ƒ	π	ǂ	ǂ	ǂ	ǂ	■	■	■	■	■
E0h	α	β	Γ	π	Σ	σ	μ	τ	Φ	Θ	Ω	δ	∞	φ	ε	∩
F0h	≡	±	≥	≤	┌	┘	÷	≈	°	·	·	√	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	œ	Ô	Ü	ø	£	Ù	Û	f
A0h	ı	í	‘	ó	ú	”	˘	˙	Î	˚	˛	½	¼	¾	«	»
B0h	⋮	⋱	⋲		┌	┐	└	┘	⌌	⌍	⌎	⌏	⌐	⌑	⌒	⌓
C0h	⌔	⌕	⌖	⌗	⌘	⌙	⌚	⌛	⌜	⌝	⌞	⌟	⌠	⌡	⌢	⌣
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	<u>a</u>	<u>o</u>	ı	®	˚	½	¼	ı	«	œ
B0h	⋮	⋱	⋲		┌	┐	└	┘	⌌	⌍	⌎	⌏	⌐	⌑	⌒	⌓
C0h	⌔	⌕	⌖	⌗	⌘	⌙	⌚	⌛	⌜	⌝	⌞	⌟	⌠	⌡	⌢	⌣
D0h	⌤	⌥	⌦	⌧	⌨	〈	〉	⌫	⌬	⌭	⌮	■	■	■	■	■
E0h	α	β	Γ	π	Σ	σ	μ	τ	Φ	Θ	Ω	δ	∞	ø	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

	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	ı	§	¨	©	Ş	«	¬		®	Ž
B0h	°	±	ˆ	ł	´	µ	¶	·	¸	¸	Ş	»	ł	ł	ł	ž
C0h	Ř	Á	Â	Ǻ	Ä	Ĺ	Ć	Ç	Č	É	Ě	Ë	Ě	Í	Î	Ď
D0h	Đ	Ń	Ň	Ó	Ô	Ǫ	Ö	×	Ř	Ů	Ú	Ů	Ü	Ý	ı	ß
E0h	ř	á	â	ǻ	ä	ĺ	ć	ç	č	é	ě	ë	ě	í	î	ď
F0h	đ	ń	ň	ó	ô	ǫ	ö	÷	ř	ů	ú	ů	ü	ý	ı	·

Windows-1251 (Cyrillic)

	00h	01h	02h	03h	04h	05h	06h	07h	08h	09h	0Ah	0Bh	0Ch	0Dh	0Eh	0Fh
80h	Ѡ	ѡ	,	ѣ	„	…	†	‡	€	‰	Ѡ	‹	Ѡ	Ѐ	Ѡ	Ѡ
90h	Ѣ	‘	’	“	”	•	–	—		™	ѡ	›	Ѡ	Ѐ	Ѣ	Ѡ
A0h		Ѥ	ѥ	Ј	Ѧ	Г	І	§	Ё	©	Є	«	¬		®	Ї
B0h	°	±	І	і	Г	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

	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	ç	£	¤	¥	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	¶	·	È	Θ	Ι	»	Ο	½	Υ	Ω
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	Ϊ	Ϋ	ά	έ	ή	ί
E0h	ϖ	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	ϊ	ϋ	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	ø	£	₪	¥	¦	§	¨	©	×	«	¬	–	®	¯
B0h	°	±	²	³	´	µ	¶	·	¸	¹	÷	»	¼	½	¾	¿
C0h	◌̑	◌̑̇	◌̑̈	◌̑̉	◌̑̊	◌̑̋	◌̑̌	◌̑̍	◌̑̎	◌̑̏		◌̑̐	◌̑̑	◌̑̒	-	◌̑̓
D0h		◌̑̔	◌̑̕	:			"	'	"	,	:	;	.	!	?	
E0h	א	ב	ג	ד	ה	ו	ז	ח	ט	י	ך	כ	ל	ם	נ	ן
F0h	נ	ס	ע	ף	פ	ץ	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	ı	»	¼	½	¾	æ
C0h	Ą	Į	Ā	Ć	Ä	Å	Ę	Ē	Č	É	Ž	È	Ğ	Ķ	Ī	Ļ
D0h	Š	Ń	Ņ	Ó	Ō	Õ	Ö	×	Ų	Ł	Ś	Ū	Ü	Ż	Ž	ß
E0h	ą	į	ā	ć	ä	å	ę	ē	č	é	ž	è	ğ	ķ	ī	ļ
F0h	š	ń	ņ	ó	ō	õ	ö	÷	ų	ł	ś	ū	ü	ż	ž	·

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 $d_1 d_2 d_3 \dots d_n$ $\{1 \leq n \leq 20\}$. '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.19. Brightness adjustment

Adjust the brightness of the vacuum fluorescent display.

When n=3, brightness=70%

When n=4, brightness=100%

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