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# **Touch POS System SERIES 8100B**

**OPERATION  
MANUAL**



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## System Drivers Installation

This session introduces the ways to install the drivers under both Windows/98SE and windows/NT platforms for system peripherals, such like VGA display, Touch Panel, Ethernet, etc. For more details about installation under each platform, please refer the document files on each attached driver diskettes or CD.

### Installation drivers under Windows 98SE platform

When the first installation of Windows 98SE all most the drivers will be installed properly besides the VGA, Sound, LAN and Touch Panel's drivers.

This section introduces user how to install the VGA, Sound, LAN and Touch Panel's drivers. User is suggested to follow the next installation sequence:

#### Step1:

After Windows 98SE installed and reboot, the system will ask user to install the LAN driver and the Sound card driver firstly. User can find the specific drivers from attached CD-ROM and following the guidance on the screen to install these drivers.

#### Step2:

When the system restarts properly then run the W98600.EXE, which user also can find from the attached diskette or CD to install the "Chips and Tech. 69000 PCI" VGA adapter.

#### Step3:

In order to install the Touch Panel driver, run the SETUP.EXE.

After proper installation, double click **[Advance]** icon from Start->Programs->PenMount Utilities->PenMount Control Panel->Configure menu to find and settle the IRQ=11 and I/O address=3E8H.

#### Step4:

To do calibration, double click **[Calibration]** from Start->Programs-> PenMount Utilities->PenMount Control Panel->calibration menu

### Installation drivers under Windows NT V.40 workstation

Follow the next installation sequence:

#### Step1:

After Windows NT installed and reboot, double click the **[Change]** icon from Display Properties-> Settings-> Display Type menu to install the C&T 69000 VGA driver from attached CD-ROM. Restart the system.

#### Step2:

Click **[Yes]** icon from right-click the "Network Neighborhood" icon -> "Properties" and follow the guidance on the screen to install the Realtek 8139 LAN driver from the attached diskette or CD-ROM. Restart the system.

#### Step3:

Run setup.exe from the attached CD-ROM to install the ESS Solo-1 Audio driver automatically.

#### Step 4:

In order to install the Touch Panel driver, run the SETUP.EXE from the attached CD-ROM.

After proper installation, double click **[Detect]** icon from Start->Programs->PenMount Utilities->PenMount Control Panel->Configure menu to find and settle the IRQ=11 and I/O address=3E8H. Restart the system.

Then to do calibration, double click [Calibration] from Start->Programs->PenMount Utilities->PenMount Control Panel->calibration menu.

## More Details about Touch Screen Installation

### Drivers for the Touch Screen

The driver diskette of Touch Screen supports DOS, Windows, Windows 95/98/NT/2000 and OS/2 operating system under PC environment.

- The PenMount DOS, Windows 3.1 driver diskette contains the following files:

INSTALL.EXE-- *General-purpose installation utility*

README.TXT -- *The file for installing the drivers*

<UTILITY> -- *PenMount DOS driver contains the following files:*

PMOUSE.EXE

ICECREAM.EXE: *The demo program, ice cream order*

PMDETECT.EXE: *to identify the communication port and IRQ number of PenMount Touch Screen. The detected data will be saved to PMOUSE.CFG file*

PMNUMBER.EXE: *demo program for numerical key*

PMSET.EXE

PMOUSE.CFG

SWITCH.COM

PM.BAT: *PenMount Touch Screen drivers' functions*

PMINIT.BAT: *to start up PenMount driver in system*

CALIBRAT.BAT: *calibration utility*

SVGA256.BGI

SVGA16.BGI

EGAVGA.BGI

NUMBER.KEY

ICECREAM.KEY

PMINITAL.EXE

PMGET.EXE: *To get touching data*

- <WIN31> -- PenMount Windows V3.1 driver contains the following files:

INSTALL.EXE: *Installation program for PenMount Windows 3.1 driver*

DIALOGUE

DETCMD.DL\_

MPEN.38\$

MPEN.DR\$

PMOUSE.38\$  
PMOUSE.DR\$  
STFSETUP.EX\_  
STFSETUP.IN\_  
VER.DL\_  
README.1ST  
CALIBRAT.EXE  
INITIAL.EXE  
COMPRESS.EXE

- Windows 95/98 driver contains following files:

OS.DAT  
\_ISDEL.EXE  
SETUP.EXE: *Installation program*  
LANG.DAT  
\_INST32I.EX\_  
\_SETUP.DLL  
SETUP.INS  
\_SYS1.CAB  
SETUP.BMP  
DATA.TAG  
SETUP.INI  
\_USER1.CAB  
CONFIG.INI  
DATA1.CAB  
README.TXT: *How to install Windows 95/98 driver to system (please read it first before driver setup)*  
LAYOUT.BIN  
SETUP.LID  
\_SYS1.HDR  
\_USER1.HDR  
DATA1.HDR

## TO INSTALL DOS DRIVER

Step 1: Using 'INSTALL.EXE' utility to install software driver

To install software under DOS mode, insert the driver diskette to floppy disc drive and type "INSTALL"; E.g. A:\INSTALL. You will see the screen show " Salt International Corp. PenMount Install Utilities, to install the PenMount Package into your hard disk". Press 'ENTER' key to allow PenMount install the drivers to drive C or

use keyboard to key-in the hard disc drive that you plan to install the drivers. After installing the PenMount drivers to system, the driver will ask, "Do you want to modify your Autoexec.bat to initialize PenMount? (Y/N)"; suggest you choose 'YES' for generating the initialization instructions in AUTOEXEC.BAT file. Follow up the message to complete the installation.

#### Step 2: Identify the communication port and IRQ number

For the first time installing the driver, or change PenMount Touch Screen's com port, please use PMDETECT to check the com port and IRQ number. Factory had connected this Touch to COM3 and IRQ11, You are recommended, not to change this setting. Check your setting and save the correct data to PMOUSE.CFG file for further use. E.g. : \PENMOUNT\UTILITY\PMDETECT

To change the default settings, The driver is detecting your communication port and IRQ number from COM1 IRQ4, COM2 IRQ3, COM3 IRQ4, COM4 IRQ15. PenMount will find the com port and IRQ number automatically. The screen will show:

```
PenMount is initialized successfully!!!  
Create file 'pmouse.cfg'. Success.  
PenMount internal settings:  
Comm. Port: COM<n>  IRQ<n>  
.....
```

The data will be saved until you change the communication port or IRQ number.

#### Step 3: Initializing the PenMount driver

If you do not have the initialization commands in AUTOEXEC.BAT, initializing PenMount controller before you use the PenMount Touch Screen. E.g. C:\PENMOUNT\UTILITY\PMINIT

The display will show the initialization message twice:

```
PMSET V6.40 Copyright (c) SALT International Corp.  
Test: COM<n> IRQ<n> (NOTE:<n> is the number after PMDETECT done)  
Open configuration file 'C:\PENMOUNT\UTILITY\PMOUSE.CFG'.  
Success.  
Initialize PenMount Device Data ..... OK!  
PenMount communication settings: COM<N> IRQ<n> Baud Rate: <xxxx>
```

#### Step 4: Do Calibration

To adjust the touch screen mapping properly to display screen. Use PM.BAT to do Calibration

E.g. C:\PENMOUNT\UTILITY\PM

Choose '1' - DO CALIBRATION (adjust screen mapping).

The display will ask you to select video mode number, select by keyboard to start the calibration.

Touch the upper-center point, then right-center point, bottom-center point and left-center point.

After calibration, the data is shown in the screen; press any key to continue the progress.

After doing the calibration, suggest you to test touch screen and display mapped results by Choose '4'

## DRAWING TEST under PM.BAT

### Step 5: Demonstration

To demonstrate touch screen, use PM file under Utility directory, select '5' NUMBER KEYPAD DEMO. Touch four '0' to quit the demonstration program (Touch 0000 to EXIT).

The other demonstration program is 'ICECREAM.EXE' that is in the 'UTILITY' directory. Now, the PenMount DOS driver is installed well.

## DOS DRIVER FUNCTIONS

### a. Change communication baud rate

Use PMDETECT to check the PenMount Controller baud rate first. If it is 1200 baud, we suggest you change the baud rate to 9600 for normal use.

C:\PENMOUNT\UTILITY\PM

Choose '3' CHANGE DETAIL SETTINGS (for the controller) the display will show ' PenMount Setting' message, choose '1' Communication setting, select '3' Baud Rate and press 'ENTER',

Use up or down arrow key to move to '9600' and press 'ENTER'.

### b. Show Current Setting

The current setting data could be found from PM.BAT file; C:\PENMOUNT\UTILITY\PM

Choose '2' SHOW CURRENT SETTINGS

### c. Other setting

Sampling Rate changed is from 'Other settings' under '(3) CHANGE DETAIL SETTINGS (from the controller) of PM.BAT file. The suggested number for sampling rate is 6.

Up-down Threshold changed could be from 'Other settings' of PM.BAT Suggest figure is 7.

## TO INSTALL WINDOWS 3.1 DRIVER

### 1. Have Windows 3.1 system Installed ready in system.

PenMount Windows driver is able to co-exist with mouse, if you like to use mouse and touch simultaneously, plug mouse to one com port and noted that PenMount touch Screen was connect to COM 3 before installing PenMount Windows 3.1 driver.

### 2. Open FILE MANAGER under MAIN group and then run 'Install.exe' software in PenMount 'WIN31' directory. The first display will show 'Welcome to install the PenMouse Driver', click 'Continue' to start installation.

### 3. The second screen will ask whether you like to have 'Both Pen and Mouse Driver', 'PEN drivers only' or 'Mouse driver only', select one of them. Caution: the system will have some problem if you do not choose the proper one based on your current hardware.

### 4. Then the screen will ask which com port you plug PenMount touch screen to, select the COM3 or correct one and click 'Continue'.



5. Next screen is "Serial Port Address", select "...[default]" or choose 'User define'.
6. Then, the display is 'Set IRQ Number', select "...[default]" or choose 'User define'.
7. Key-in IRQ 5 if selecting 'User define'. For example, if PenMount Touch Screen is in COM3 port, choose 'User define' and click 'Continue', the screen now is 'User define IRQ no', key-in the IRQ11 by keyboard. Click 'Continue'.
8. The last screen will show you 'Setup succeeded'.  
Double click 'INITIALIZE' icon to initialize PenMount Touch Screen controller, now, restart Windows system, PenMount Windows driver is working now with mouse.

## WINDOWS 3.1 DRIVER FUNCTIONS

After installing PenMount Windows's driver, the system will generate a GROUP named 'PenMount'; there are two icons in the Group.

'PenMount Initialize': to initialize PenMount controller from Windows system, double-click this icon to do initialization.

'PenMount Calibration': double click this icon, the display will show a circle in the upper-center place, touch it. Then the display will show the circle in the right-center, bottom-center and left-center, touch those places to adjust the touch screen mapping.

## Install OS/2 driver

Use mouse or keyboard to install PenMount OS/2 driver first.

Run 'OS/2 SYSTEM'; insert PenMount OS/2 driver diskette to your floppy disk drive. Choose 'Drivers' icon and select the correct drive.

The display will show 10 files in the screen. They are WPEN.DRV, CALIBRAT.EXE, CHANGE.EXE, INIT.EXE, PENINST.EXE, WINSET.EXE, WSTART.EXE, PEN.SYS, VPENMNT.SYS AND README.TXT

Choose 'PENINST.EXE' in PenMount OS/2 driver to start installation.

The display will show PENMOUNT INSTALLATION:

## Installation Options

Install PenMount for OS/2

Install PenMount for WIN-OS2

Modify your CONFIG.SYS

### Path

Source path

A:\

### Destination path

C:\PENMOUNT\

**Connection**

COM1	COM2
COM3	COM4

Select the correct OS/2 version you are installing in your system as well as COM 3 port, which factory had been connected PenMount touch screen to. Then, press 'GO' icon. PenMount OS/2 driver is starting to install now. When installing PenMount OS/2 driver, system will modify CONFIG.SYS file, press 'YES' to create a backup CONFIG.SYS.

The final screen will remind you to re-boot your system again, press 'OK'. Press 'QUIT' icon to leave OS/2 and shut down your system.

Turn on System. Wait a while to start using PenMount OS/2 .

## DO CALIBRATION and DOUBLE CLICK SENSITIVITY ADJUSTMENT

### 1. When need 'DO CALIBRATION'

- The first time installing PenMount OS/2 driver or
- Cursor is not matched properly to display or
- Change display resolution

### 2. 'DO CALIBRATION'

Choose 'Screen Calibration' icon under PENMOUNT directory to do calibration. Please await your system appear the calibration function, do not touch the screen otherwise the calibration data will be lost.

The display will appear four blocks and messages. Don't touch anything before message comes out, if after 30 seconds nothing comes out touch any place of the screen to check panel is OK or not.

The first message appear:

'Please touch the Top edge ....' in the top area, touch the black brick area of your display first.

Then second message will appear:

'Please touch the Right edge...' in the right hand side, touch the black brick area of your display.

Then Third message will appear:

'Please touch the Bottom edge...' in the bottom area, touch the black brick area of your display.

Then last message will appear:

'Please touch the Left edge...' in the left hand side, touch the black brick area of your display.

After doing calibration, the system will automatically show 'Double-Click Setup' display, it is to adjust double click performance.

'Double-Click Sensitive Area' and 'double-click time duration' to be proper figure.

Suggest: 1. Double-Click Sensitive Area figures is 8 or 9 or 10, move the arrow to change the figure.

### 3. Double-click time duration is suggested to be 900ms to 1100ms

## PenMount Software Functions

1. PenStart: to initialize PenMount touch screen.
2. Screen Calibration: see above.
3. Mouse Emulation:

It is for emulating three keys mouse function, L-Btn (left button), Move and R-Btn (right button).

## What you will find after installing PenMount OS/2 driver?

In CONFIG.SYS of OS/2:

```
DEVICE=PENMOUNT\PEN.SYS /<com>
```

```
DEVICE=PENMOUNT\VPENMNT.SYS
```

```
DEVICE=PENMOUNT\MOUSE.SYS TYPE=PENMOUN$ /QSIZE=100
```

In STARTUP folder of OS/2

"PenInit" object

In WIN.INI of WinOS2:

run=penmount\wstart.exe

In SYSTEM.INI of WinOS2:

os2mouse=penmount\wpen.drv

## How to uninstall OS/2 driver from your system?

In CONFIG.SYS of OS/2:

Remove those new statements mentioned in section 5 and add this line:

DEVICE=C:\OS2\BOOT\MOUSE.SYS

Or remove the "REM" before:

REM DEVICE=C:\OS2\BOOT\MOUSE.SYS.....

In WIN.INI of WinOS2:

run=

In SYSTEM.INI of WinOS2:

os2mouse=mouse.drv

## Q & A

Q1: The touch screen is unable to use after power off, how to initialize the touch screen?

A1: 1. Under DOS, do the initialize by the way C:\PENMOUNT\UTILITY\PMINIT

2. Under Windows 3.1, double click the 'PenMount Initialize' icon under PenMount Group.

3. Under Windows 95/98, the system will initialize the controller automatically.

Q2: The drawing speed is slow under DOS mode.

A2: Change the baud rate of PenMount controller by following way:

C:\PENMOUNT\UTILITY\PM

Choose '3' CHANGE DETAIL SETTINGS (for the controller).

Select '1' communication setting,

Select '3' Baud Rate and press 'ENTER', use up or down arrow key to move to '9600' baud and press 'ENTER' key.

Q3: Why 'EDIT' command is unable to use under DOS?

A3: It is very possible that the PenMount driver is not installed by normal installation way, use the command to wake up PenMount controller and try again.

C:\PENMOUNT\UTILITY\PMINIT

You have to do this way all the time if do not reinstall PenMount DOS driver by formal way again.

Q4: Why is 'EDIT' command unable used under MS-DOS MODE of Windows 3.1?

A4: It could happen because you have not installed PenMount DOS driver to your system, install it now.

Q5: Why is the touch function not working properly after use SUSPEND mode of system under Windows 95?

A5: There are several reasons, if your mouse is using Logitech, we suggest you to see Q6 below to change the mouse setting. If you use another brand mouse device, we suggest you change your mouse driver from current one to 'Standard Serial Mouse' or 'Microsoft Serial Mouse' from the system setup.

Q6: The touch screen is unable to use after SUSPEND mode or Restart Windows 95/98 system, and the mouse is using Logitech brand mouse.

A6: Logitech mouse driver is able to handle several mice simultaneously, it could happen that Logitech mouse driver treat touches as another mouse and hang it up. To solve this problem, we suggest you following up the modification procedures to have Logitech mouse driver handle only one mouse in your system:

From 'START' menu of WIN 95/98, select 'RUN'. Typing in C:\windows\regedit.exe, and select 'OK'. You will see 'Registry Editor' windows is shown, select "HKEY\_LOCAL\_MACHINE", then "SOFTWARE" directory, then "Logitech" directory, then "Mouse Ware", then "Current Version" , then Global" folder. You will see a NAME and DATA table list in the right hand side of display, Find "PortScrachOrder" and select it, there is a 'String Editor' window will appear, you will see "COM1, COM2" in this windows.

If your Logitech mouse is connected to COM1 and touch screen is to COM2 port, delete the comma and COM2 from the String Editor window and select 'OK'. Re-boot your Windows 95/98 system.

## Commands for Peripheral Controlling

This chapter describes some commands used to duly control the peripherals in the application software.

The internal peripherals such as magnetic card reader (MCR), IC-card reader, internal customer display and the external AUX ports are controlled by special command sequences, which are sent to COM4. Whereas the programmers can use COM1 and COM2 for any external device and program those interfaces directly as if he would do on a "normal" PC, COM3 and COM4 are reserved for special purpose:

- COM3 is used for the internal connection of the touch panel and can not be used for any user purpose.
- COM4 is connected to the internal peripheral controller. All peripherals communication of Touch POS was emulated to use with the COM 4 Port. Its default parameter was set by factory as:

**COM4, 9600 Bps, 8 data bit, 1 stop bit, None parity, handshake enable**

**\* handshake RTS/ CTS:    RTS=1:enable,    RTS=0:disable**

All the commands are initiated by **[ESC]** (Dec 27, Hex 1B) character. Any string not beginning with **[ESC]** is interpreted as a display string that will be directly sent and displayed to the internal customer display (optional).

Example in QBASIC:

Display the string "Hello World!" on the internal customer display, if your Touch POS is equipped with this display.

```
OPEN "COM4: 9600,N, 8,1,DS0" FOR OUTPUT AS #1
PRINT #1, "Hello World!"
CLOSE #1
```

(Please note: All the examples in this manual are just samples to clarify the differences. They don't really work, since QBASIC only accepts COM1 and COM2)

There are 2 groups of command set of the peripheral controller offered. One was named "**System Command**" which should be used to perform all the functions of the peripherals. Another group, "**The peripherals programming commands**", should be used to setup the internal parameters for each peripheral.

Following two sections are the descriptions about these 2 groups of command.

## System Commands - Command set of the peripherals

Command Format	ESC + data
----------------	------------

Example: Move the cursor location to the second raw and the last column on Customer Display

Description: Send "0x1b""0x28""0x32""0x44" to COM4

I.e. Send "ASC (27)""ASC (40)""ASC (50)""ASC (68)" to COM4

Example in QBASIC:

OPEN "COM4: 9600,N, 8,1,DS0" FOR OUTPUT AS #1

PRINT #1, CHR\$ (27)+CHR\$ (40)+CHR\$ (50)+CHR\$ (68)

CLOSE #1

Data		Description
by Hex	By Dec	
Internal customer display commands		
0x20	32	Clear customer display & move cursor to first digit
0x21	33	Move cursor to first digit
0x22	34	Set customer display cursor on
0x23	35	Set customer display cursor off
0x24	36	Set customer display blinking on
0x25	37	Set customer display blinking off
0x26	38	Set customer display on
0x27	39	Set customer display off
0x28+y+x	40+ y + x	Move customer cursor to y, x y range : Hex 31~32 (Dec 49~50) x range : Hex 31~44 (Dec 49~68)
0x29+n	41+ n	Set customer display contrast n range : Hex 1~22 (Dec 1~34)
0x2A+ n	42+ n	Set customer display backlight n range : Hex 1~40 (Dec 1~64)
0x2D	45	Save customer display contrast value to EEPROM
0x2E	46	Save customer display backlight value to EEPROM
Main 12.1" flat panel commands		
0x2B+ n	43+ n	Set main LCD panel display contrast (DSTN LCD only) n range : Hex 32~B8 (Dec 50~185)
0x2C+ n	44+ n	Set main LCD panel display backlight n range : Hex 50~FF (Dec 80~255)
0x2F	47	Save main LCD panel contrast value to EEPROM
0x30	48	Save main LCD panel backlight value to EEPROM
0x38	56	Enable main LCD panel (TFT only)
0x39	57	Disable(Shutdown) main LCD panel (TFT only)
The auxiliary serial port commands		

This Touch POS offers you two COM ports (COM1 and COM2) that can be directly used as standard serial ports. If you intend to connect more than two external serial peripherals, you can use the AUX ports. Those work as a standard RS232 interface, but are controlled by AUX commands sent to COM4. The AUX commands need the data length and the data string that should be sent to the peripheral as a parameter. The peripheral controller has to know the length of the following data so that it can send this data directly to the AUX port and it will not interpret any part of this data (e.g. ESC sequences used by your external device) as a internal system command.

This Touch POS can offer four AUX ports totally. The AUX3 and AUX4 are optional purchased in your order.

Example: If you want to connect a serial printer to your Touch POS, the code for the automatic cutter is ESC "I" for this printer type.

- a). If you connect it to COM1, the command to force the printer to execute a paper cut is:

```
OPEN "COM1: 9600,N, 8,1,DS0" FOR OUTPUT AS #1
PRINT #1, CHR$(27) + "I"           ;; ESC "I" , cut command
CLOSE #1
```

- b). If you connect this printer to AUX1 of the Touch POS, the command is:

```
OPEN "COM4: 9600,N, 8,1,DS0" FOR OUTPUT AS #1
PRINT #1, CHR$(27)+CHR$(65)+CHR$(2)+CHR$(27) + "I"
CLOSE #1
```

0x41+Len+ data	65+Len+ data	Send data to AUX1 Len: data length of user's data Return value: ESC+"S1N" means AUX chip die or no chip on board. ESC+"S1O" means AUX port buffer full. ESC+"1"+ESC+<0x10>+<0x0d>+<0x0a> means AUX port off line.
0x42+Len+ data	66+Len+ data	Send data to AUX2 Len: data length of user's data Return value: ESC+"S2N" means AUX chip die or no chip on board. ESC+"S2O" means AUX port buffer full. ESC+"2"+ESC+<0x10>+<0x0d>+<0x0a> means AUX port off line.
0x43+Len+ data	67+Len+ data	Send data to AUX3 Len: data length of user's data Return value: ESC+"S3N" means AUX chip die or no chip on board. ESC+"S3O" means AUX port buffer full. ESC+"3"+ESC+<0x10>+<0x0d>+<0x0a> means AUX port off line.
0x44+Len+ data	68+Len+ data	Send data to AUX4 Len: data length of user's data Return value: ESC+"S4N" means AUX chip die or no chip on board. ESC+"S4O" means AUX port buffer full. ESC+"4"+ESC+<0x10>+<0x0d>+<0x0a> means AUX port off line.
Note:		<ol style="list-style-type: none"> <li>Parameters &lt;0x0d&gt; and &lt;0x0a&gt; of [ESC+"1~4"] are the prefix and suffix of AUX ports and it can be programmable.</li> <li>If CTS low and timeout when send data to AUX port, then System will clear output the buffer of the AUX port.</li> </ol>



0x45	69	Read AUX1 CTS status If ON device return: ESC+"1"+ESC+<0x11>+<0x0D>+<0x0A> If OFF device return: ESC+"1"+ESC+<0x10>+<0x0D>+<0x0A>
0x46	70	Read AUX2 CTS status If ON device return: ESC+"2"+ESC+<0x11>+<0x0D>+<0x0A> If OFF device return: ESC+"2"+ESC+<0x10>+<0x0D>+<0x0A>
0x47	71	Read AUX3 CTS status If ON device return: ESC+"3"+ESC+<0x11>+<0x0D>+<0x0A> If OFF device return: ESC+"3"+ESC+<0x10>+<0x0D>+<0x0A>
0x48	72	Read AUX4 CTS status If ON device return: ESC+"3"+ESC+<0x11>+<0x0D>+<0x0A> If OFF device return: ESC+"3"+ESC+<0x10>+<0x0D>+<0x0A>
0x49	73	Clear AUX1 output buffer <b>Note</b> There is 1 Kbytes buffer for AUX1.
0x4A	74	Clear AUX2 output buffer <b>Note</b> There is 1 Kbytes buffer for AUX2.
0x4B	75	Clear AUX3 output buffer <b>Note</b> There is 1 Kbytes buffer for AUX3 from firmware 5.0 or later and only 512 bytes for the previous revision
0x4C	76	Clear AUX4 output buffer <b>Note</b> There is 1 Kbytes buffer for AUX3 from firmware 5.0 or later and only 512 bytes for the previous revision
0x4D	77	Set AUX1 RTS to High level: enable AUX1 to send data
0x4E	78	Set AUX2 RTS to High level: enable AUX2 to send data
0x4F	79	Set AUX3 RTS to High level: enable AUX3 to send data
0x50	80	Set AUX4 RTS to High level: enable AUX4 to send data
0x51	81	Set AUX1 RTS to Low level: disable AUX1 to send data
0x52	82	Set AUX2 RTS to Low level: disable AUX2 to send data
0x53	83	Set AUX3 RTS to Low level: disable AUX3 to send data
0x54	84	Set AUX4 RTS to Low level: disable AUX4 to send data
0x55	85	Existence of the AUX ports test If OK return ESC+"S5"+m+<0x0D>+<0x0A> m : 0x8F all AUX ports exist 0x80 no AUX. ports 0x83 Aux1, Aux2 exist 0x8B Aux3, Aux4 exist

0x56	<div> <div>Note</div> <div>This command only for the firmware 5.0 or later</div> </div>	Read devices status of Touch POS Response data: ESC + "S6" + <2 bytes> + <0x0d> <0x0a> (Check the bits of this 2 bytes, 0:device not exist , 1: device exist) First byte:                      Second Bye: Bit 0 : 20x2 display              Bit 0 : (Reserve) Bit 1 : AUX1                      Bit 1 : Cash drawer port 1 Bit 2 : AUX2                      Bit 2 : Cash drawer port 2 Bit 3 : AUX3                      Bit 3 : (Reserve) Bit 4 : AUX4                      Bit 4 : (Reserve) Bit 5 : MSR TK1                      Bit 5 : (Reserve) Bit 6 : MSR TK2                      Bit 6 : (Reserve) Bit 7 : MSR TK3                      Bit 7 : (Reserve)
<b>Other peripherals commands</b>		
0x31	49	Short Buzzer sound (only for the firmware 5.0 or later)
0x32	50	Normal Buzzer sound (only for the firmware 5.0 or later)
0x33	51	Long Buzzer sound (only for the firmware 5.0 or later)
0x34	52	Open Cash Drawer 1 Return value: ESC+"8"+"1"+"A" means Drawer1 still closed. ESC+"8"+"1"+"B" means Drawer1 still opened.
0x35	53	Open Cash Drawer 2 Return value: ESC+"8"+"2"+"A" means Drawer2 still closed. ESC+"8"+"2"+"B" means Drawer2 still opened.
0x3A	58	Detect Cash Drawer 1 sensor Return value: ESC+"8"+"1"+"A" means Drawer2 still closed. ESC+"8"+"1"+"B" means Drawer2 still opened.
0x3B	59	Detect Cash Drawer 2 sensor Return value: ESC+"8"+"2"+"A" means Drawer2 still closed. ESC+"8"+"2"+"B" means Drawer2 still opened.
<b>Enable / Disable devices Commands</b>		
0x82	130	Enable MCR
0x83	131	Disable MCR
0x84	132	Enable TK1 only
0x85	133	Disable TK1 only
0x86	134	Enable TK2 only
0x87	135	Disable TK2 only
0x88	136	Enable TK3 only
0x89	137	Disable TK3 only
0x8A	138	Enable Buzzer
0x8B	139	Disable Buzzer
0x8C	140	Enable AUX1
0x8D	141	Disable AUX1
0x8E	142	Enable AUX2
0x8F	143	Disable AUX2
0x90	144	Enable AUX3
0x91	145	Disable AUX3
0x92	146	Enable AUX4
0x93	147	Disable AUX4
0x94	148	Enable Cash Drawer 1
0x95	149	Disable Cash Drawer 1
0x96	150	Enable Cash Drawer 2
0x97	151	Disable Cash Drawer 2

0x9A	154	Enable Infra Red Interface (Reserved)
0x9B	155	Disable Infra Red Interface (Reserved)
0x9C	156	Enable Customer Display (Normal mode)
0x9D	157	Disable Customer Display (Freezed message)
0xF0	240	Enable FDD
0xF1	241	Disable FDD
0xF2	242	Enable PC/AT keyboard
0xF3	243	Disable PC/AT keyboard
0xFD	253	Reset all parameters back to the default value.
0xFE	254	Read the version Number of this Touch POS Controller return: 1b+1b+ version data + 0D+0A
0xFF	255	Enter programming Mode

### Responded DATA

Some system commands and some internal/external devices send back data to the peripheral controller. You can use this data in your application reading from COM4. In order to allow you distinguishing from which device the data has been sent, the controller adds a prefix (beginning with ESC) to the incoming data as shown in the following table: (The prefix and suffix can be define by the special address)

Peripheral	Responded DATA Format
AUX1	<ESC> + "1" + data + <0x0d> + <0x0a>
AUX2	<ESC> + "2" + data + <0x0d> + <0x0a>
AUX3	<ESC> + "3" + data + <0x0d> + <0x0a>
AUX4	<ESC> + "4" + data + <0x0d> + <0x0a>
Cash Drawer	<ESC> + "8" + data + <0x0d> + <0x0a>

### € Current Mark

“€” Character will be available from firmware version 2.24 the ASCII code is: 80Hex (128 Dec)  
Following is a sample in QBASIC for sending the “€” character to 20x2 display:

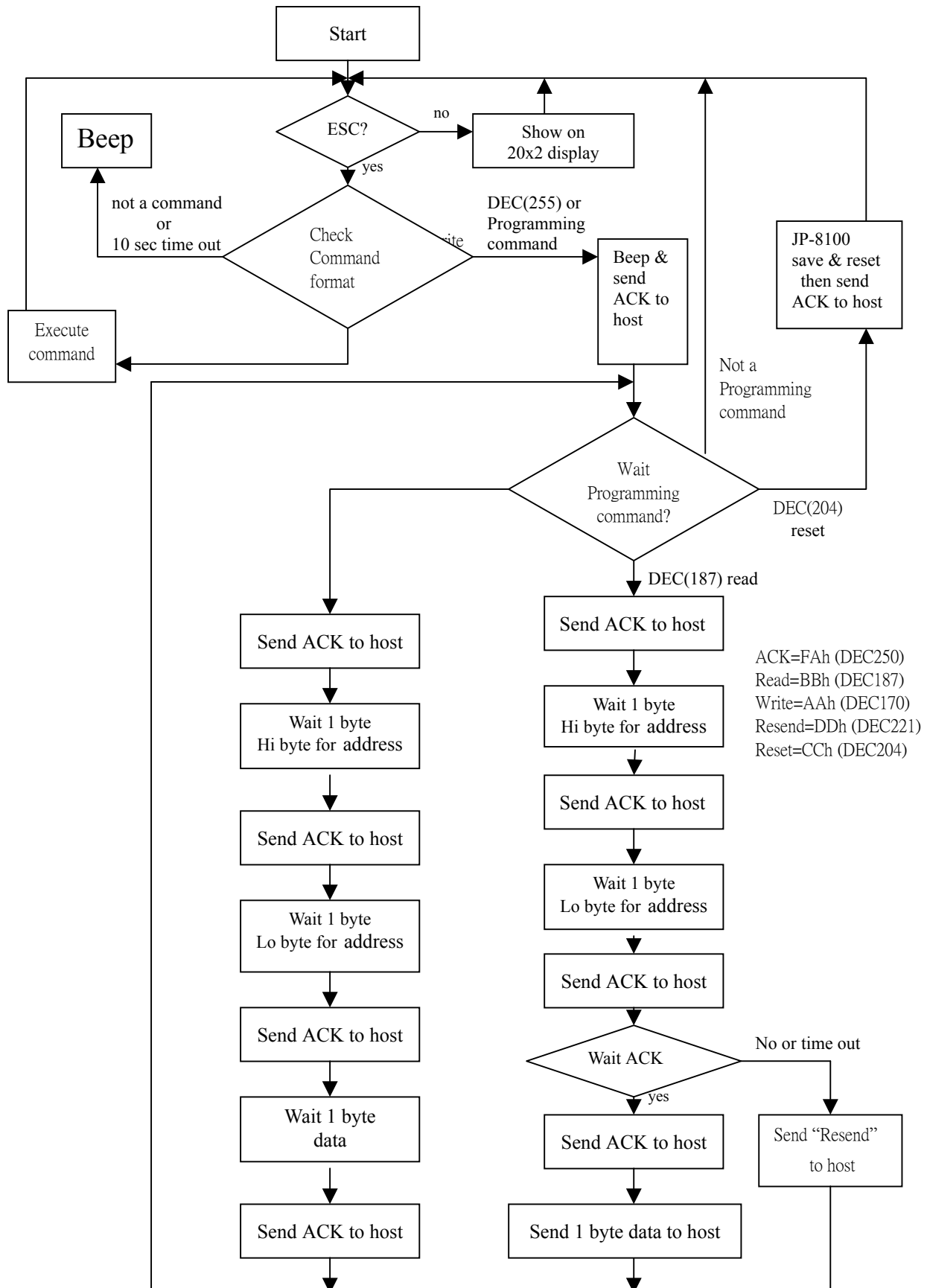
```
OPEN "COM4: 9600,N, 8, 1, DS0" for output AS #1
PRINT #1, CHR$(128)
CLOSE #1
```

## To setup the Peripherals

In some circumstance, user needs to change the individuality of each peripheral for a long time.

For example, they may want to lock up input device like as FDD and PS/2 keyboard, change the communication speed, the prefix & suffix of card reader... etc. Following section introduce user the commands to program or set up these peripherals and save them into specific memory area.

Next section will introduce user how to program all the peripherals.



## Peripheral Commands – Command set to control the peripherals

**Syntax:** To change the setting of each peripheral, user is noted to save a value into a specific memory address, which has 2 bytes, as following section description.

**Example:** To change Baud Rate for all the peripherals into 57600 bps

HOST (PC)	↔	TouchPOS	Description
ESC+DEC255	→		Enter the program mode
DEC170	→		Writing Announcement
DEC128	→		Send Hi Byte of address first
	←	DEC250	Echo ACK to HOST
DEC001	→		Send Low Byte of address for Baud Rate
	←	DEC250	Echo ACK to HOST
DEC004	→		Set Baud Rate = 57600 bps
	←	DEC250	Echo ACK to HOST
DEC204	→		Save, exit program mode and then reset the system

### Programming Command Definition:

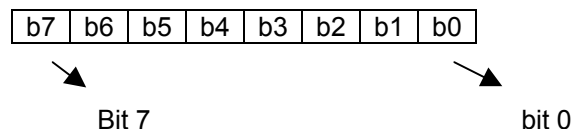
Following Command Characters should be leaded by ESC character

Command Character		Function
Hex	DEC	
1Bh	027	ESC Command leading character
FFh	255	Enter the program mode
AAh	170	Write value to specific address
BBh	187	Read value from specific address
CCh	204	Save settings, exit program mode and then reset the system with the new settings
DDh	221	Ask HOST or PC to re-send the command
FAh	250	Acknowledge (only for firmware 5.0 or later)

## Programming Address and its Value

### ● Hi Byte=80h

Note:



Low Byte	Default value	Description																																
00h	AA	Show statuses: System had been programmed. The else value means that this system is never programmed																																
01	20	RS-232 baud rate <table><tr><td>Baud Rate</td><td>Value</td><td>Baud Rate</td><td>Value</td></tr><tr><td>2400</td><td>81h</td><td>300</td><td>FFh</td></tr><tr><td>4800</td><td>40h</td><td>600</td><td>A0h</td></tr><tr><td>9600</td><td>20h</td><td>1200</td><td>90h</td></tr><tr><td>19200</td><td>0Fh</td><td>14400</td><td>0Bh</td></tr><tr><td>38400</td><td>07h</td><td>28800</td><td>09h</td></tr><tr><td>57600</td><td>04h</td><td colspan="2">(above values only applied by</td></tr><tr><td>115200</td><td>02h</td><td colspan="2">firmware 5.0 or later)</td></tr></table>	Baud Rate	Value	Baud Rate	Value	2400	81h	300	FFh	4800	40h	600	A0h	9600	20h	1200	90h	19200	0Fh	14400	0Bh	38400	07h	28800	09h	57600	04h	(above values only applied by		115200	02h	firmware 5.0 or later)	
Baud Rate	Value	Baud Rate	Value																															
2400	81h	300	FFh																															
4800	40h	600	A0h																															
9600	20h	1200	90h																															
19200	0Fh	14400	0Bh																															
38400	07h	28800	09h																															
57600	04h	(above values only applied by																																
115200	02h	firmware 5.0 or later)																																
02	80	RS-232 protocol Bit 0=x x=0 : 1 stop bit , x=1 : 2 stop bit Bit 1=x x=0 : odd parity , x=1 : even parity Bit 2=x x=0 : no parity check , x=1 : parity check Bit 7=x x=0 : no flow control , x=1 : RTS/CTS flow control (Note: If stop bit=2 then the parity will be always “1”)																																
03	32	Customer display backlight Value range : Dec1 ~ Dec 64(Dec 64 : max light)																																
04	03	Customer display contrast Value range : Dec1 ~ Dec 34(Dec 1 : darkness)																																
05	FF	Main LCD Panel backlight Value range : Dec 80 ~ Dec 255(Dec255 : max light)																																
06	7E	Main LCD Panel contrast (DSTN LCD only) Value range : Dec50 ~ Dec 185(Dec 50 : sharp)																																
07	0F	Cash drawer 1 open period Value range : dec 01~40 (0.5sec ~ 3sec)																																
08	0F	Cash drawer 2 open period Value range : dec 01~40 (0.5sec ~ 3sec)																																
09	FF	Case drawer debouch voltage Value: 00 means 12V Without test sense pin. F0 means 12V With test sense pin. 0F means 24V Without test sense pin. FF means 24V With test sense pin.																																

0A	50	MCR track 1 setting Bit 7=x don't care Bit 6=1 enable track1 Bit 5=1 send prefix Bit 4=1 send suffix Bit 3=1 send LRC Bit 2=1 send start sentinel Bit 1=1 send end sentinel
0C	50	MSR track 2 setting Bit 7=x don't care Bit 6=1 enable track2 Bit 5=1 send prefix Bit 4=1 send suffix Bit 3=1 send LRC Bit 2=1 send start sentinel Bit 1=1 send end sentinel
0E	50	MSR track 3 setting Bit 7=x don't care Bit 6=1 enable track3 Bit 5=1 send prefix Bit 4=1 send suffix Bit 3=1 send LRC Bit 2=1 send start sentinel Bit 1=1 send end sentinel
10	C6	MSR setting Bit 7=1 ISO MSR enable Bit 6=0 RS232 Interface Bit6=1 : KB wedge Bit 5=0 Scan Code mode Bit5=1 : ALT Mode Bit 4=x don't care Bit 3=x don't care Bit 2=1 Enable MSR prefix Bit 1=1 Enable MSR suffix
11	00	MSR KB wedge Inter-Scan Code delay (0 – 255msec)
12	00	MSR KB wedge Inter-Message delay (0 – 255msec)
16	FF	Security Setting Bit 0=x x=0 : lock FDD read/write , x=1 : unlock FDD Bit 1=x x=0 : lock PC keyboard and KB wedge MSR x=1 : unlock PC Keyboard and KB wedge MSR Bit 2=x x=0 : lock PC keyboard only x=1 : unlock PC keyboard Bit 7=x x=0 : Disable beep sound. Bit 7=x x=1 : Enable beep sound.
<b>Note</b> The functions of KB wedge are only influenced on both hardware 5.0 & firmware 5.0		
20~27	"TK1"	MSR track 1 prefix string
28~2F	[ENTER] (8DH)	MSR track 1 suffix string
30~37	"TK2"	MSR track 2 prefix string
38~3F	[ENTER] (8DH)	MSR track 2 suffix string
40~47	"TK3"	MSR track 3 prefix string
48~4F	[ENTER] (8DH)	MSR track 3 suffix string
50~57	<0x1b>,"5"	MSR prefix string

58~5F	<0x0d> , <0x0a>	MSR suffix string
A0~C7	"Welcome to TouchPOS"	Power on show message on the customer display.

### User definable characters (for Customer 20x2 display)

User can program up to 7 user-defined characters for 20x2 display in TouchPOS. User can use this for foreign characters or for a little graphics. First, user must define character matrix (5x8 dots) and save this matrix to 8 specific addresses as bellowing with the Programming Commands (i.e. ESC+DEC255+DEC170 ....etc, see also Table-1). After that user can just send ASC(001) to the COM4 to show up the first defined characters on 20x2 display.

Address	ASCII	Define the custom character
68 ~ 6F	ASC (001)	Example: (x don't care, 0 : no dot, 1 : show dot) Bit      7   6   5   4   3   2   1   0 68h    x   x   x   1   1   1   1   1      // save ASC(041) to Address(68h) 69h    x   x   x   1   0   0   0   1      // save ASC(017) to Address(69h) 6Ah    x   x   x   1   1   0   0   1      // save ASC(025) to Address(6Ah) 6Bh    x   x   x   1   0   1   0   1      // save ASC(021) to Address(6Bh) 6Ch    x   x   x   1   0   0   1   1      // save ASC(019) to Address(6Ch) 6Dh    x   x   x   1   0   0   0   1      // save ASC(017) to Address(6Dh) 6Eh    x   x   x   1   0   0   0   1      // save ASC(017) to Address(6Eh) 6Fh    x   x   x   1   1   1   1   1      // save ASC(041) to Address(6Fh)  After all 8 definitions then send ASC(001) to show up this "☐" character on the display.
70 ~ 77	ASC (002)	Custom character 2 (The definition is same as above)
78 ~ 7F	ASC (003)	Custom character 3 (The definition is same as above)
80 ~ 87	ASC (004)	Custom character 4 (The definition is same as above)
88 ~ 8F	ASC (005)	Custom character 5 (The definition is same as above)
90 ~ 97	ASC (006)	Custom character 6 (The definition is same as above)
98 ~ 9F	ASC (007)	Custom character 7 (The definition is same as above)



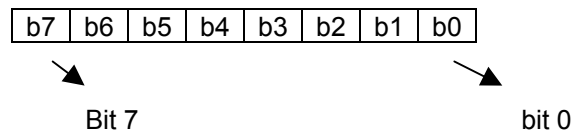
**MSR Scan Code table (KB wedge only)**

This table is for the MSR which sets the bit 6 of address 8010h to 1 for KB wedge, and bit 5 sets to 0 for Scan code mode, the customer can follow this table to define the prefix and suffix string for the special key of Keyboard. For example, if users want to define the MSR Track1 prefix string to [F1] + [PageUp] + [TAB], then the prefix string for track1 in address 8020h ~ 8027h should be: Dec129+Dec11+Dec143.

ASCII Code			Keys			ASCII Code			Keys		
HEX	DEC					HEX	DEC				
00h	0		Reserve			90h	144		[Pad * ]		
01h	1		[Up]			91h	145		[Pad - ]		
02h	2		[Down]			92h	146		[Pad 7]		
03h	3		[Right]			93h	147		[Pad 8]		
04h	4		[Left]			94h	148		[Pad 9]		
05h	5		[Insert]			95h	149		[Pad 4]		
06h	6		[Delete]			96h	150		[Pad 5]		
07h	7		[Home]			97h	151		[Pad 6]		
08h	8		[End]			98h	152		[Pad 1]		
09h	9		[Pad / ]			99h	153		[Pad 2]		
0Ah	10		Reserve			9Ah	154		[Pad 3]		
0Bh	11		[Page Up]			9Bh	155		[Pad 0]		
0Ch	12		[Page Down]			9Ch	156		[Pad . ]		
0Dh	13		[Pad Enter]			9Dh	157		[Pad +]		
20h~ 7Fh	32~ 127		Standard ASCII characters								
80h	128		[ESC]								
81h	129		[F1]								
82h	130		[F2]								
83h	131		[F3]								
84h	132		[F4]								
85h	133		[F5]								
86h	134		[F6]								
87h	135		[F7]								
88h	136		[F8]								
89h	137		[F9]								
8Ah	138		[F10]								
8Bh	139		[F11]								
8Ch	140		[F12]								
8Dh	141		[Enter]								
8Eh	142		[Backspace]								
8Fh	143		[Tab]								

## Hi byte=81h

Note:



Low byte	Default value	Description
00	0C	AUX1 RS-232 baud rate Baud Rate    Value 1200            60h 2400            30h 4800            18h 9600            0Ch 19200           06h 38400           03h 57600           02h 115200          01h
01	03	AUX1 RS-232 protocol Bit 0=x    x=0 : 7 bits data ,        x=1 : 8 bits data Bit 1=1 Bit 2= x    x=0 : 1 stop bit            x=1 : 2 stop bit Bit 3= x    x=0 : no parity check    x=1 : parity check Bit 4= x    x=0 : odd parity            x=1 : even parity Bit 5=0 Bit 6=0 Bit 7=0
02	F0	AUX1 Control Format Bit 0=x    x=0 : enable transmit ,        x=1 : disable transmit Bit 1=x    x=0 : enable receive ,            x=1 : disable receive Bit 2=x    x=0 : enable prefix to HOST,    x=1 : disable prefix to HOST Bit 3=x    x=0 : enable suffix to HOST,    x=1 : disable suffix to HOST Bit 4=x    (Don't care) Bit 5=x    x=0 : enable terminator char. ,    x=1 : disable terminator char. Bit 6=x    (Don't care) Bit 7=x    x=0 : no flow control ,            x=1 : RTS/CTS flow control
03	0A	Define terminator character for AUX1    *1
04	20	Setting AUX1 Receive time out value (times 1.6msec)
05	0A	Setting AUX1 Transmit time out value (times 1.6msec)
06	00	Reserved for AUX1
07	00	Reserved for AUX1
08	0C	AUX2 RS-232 baud rate Baud Rate    Value 1200            60h 2400            30h 4800            18h 9600            0Ch 19200           06h 38400           03h 57600           02h 115200          01h

09	03	AUX2 RS-232 protocol Bit 0=x    x=0 : 7 bits data ,        x=1 : 8 bits data Bit 1=1 Bit 2= x    x=0 : 1 stop bit                x=1 : 2 stop bit Bit 3= x    x=0 : no parity check        x=1 : parity check Bit 4= x    x=0 : odd parity                x=1 : even parity Bit 5=0 Bit 6=0 Bit 7=0
0A	F0	AUX2 Control Format Bit 0=x    x=0 : enable transmit ,        x=1 : disable transmit Bit 1=x    x=0 : enable receive ,        x=1 : disable receive Bit 2=x    x=0 : enable prefix to HOST,    x=1 : disable prefix to HOST Bit 3=x    x=0 : enable suffix to HOST,    x=1: disable suffix to HOST Bit 4=x    (Don't care) Bit 5=x    x=0 : enable terminator char. ,    x=1 : disable terminator char. Bit 6=x    (Don't care) Bit 7=x    x=0 : no flow control ,        x=1 : RTS/CTS flow control
0B	0A	Define terminator character for AUX2    *1
0C	20	Setting AUX2 Receive time out value (times 1.6msec)
0D	0A	Setting AUX2 Transmit time out value (times 1.6msec)
0E	00	Reserved for AUX2
0F	00	Reserved for AUX2
30	0C	AUX3 RS-232 Baud Rate <u>Baud Rate</u> <u>Value</u> 1200            60h 2400            30h 4800            18h 9600            0Ch 19200            06h 38400            03h 57600            02h 115200            01h
31	03	AUX3 RS-232 protocol Bit 0=x    x=0 : 7 bits data ,        x=1 : 8 bits data Bit 1=1 Bit 2= x    x=0 : 1 stop bit                x=1 : 2 stop bit Bit 3= x    x=0 : no parity check        x=1 : parity check Bit 4= x    x=0 : odd parity                x=1 : even parity Bit 5=0 Bit 6=0 Bit 7=0
32	F0	AUX3 Control Format Bit 0=x    x=0 : enable transmit ,        x=1 : disable transmit Bit 1=x    x=0 : enable receive ,        x=1 : disable receive Bit 2=x    x=0 : enable prefix to HOST,    x=1 : disable prefix to HOST Bit 3=x    x=0 : enable suffix to HOST,    x=1: disable suffix to HOST Bit 4=x    (Don't care) Bit 5=x    x=0 : enable terminator char. ,    x=1 : disable terminator char. Bit 6=x    (Don't care) Bit 7=x    x=0 : no flow control ,        x=1 : RTS/CTS flow control
33	0A	Define terminator character for AUX3    *1
34	20	Setting AUX3 Receive time out value (times 1.6msec)
35	0A	Setting AUX3 Transmit time out value (times 1.6msec)
36	00	Reserved for AUX3
37	00	Reserved for AUX3

38	0C	AUX4 RS-232 baud rate <table><tr><th>Baud Rate</th><th>Value</th></tr><tr><td>1200</td><td>60h</td></tr><tr><td>2400</td><td>30h</td></tr><tr><td>4800</td><td>18h</td></tr><tr><td>9600</td><td>0Ch</td></tr><tr><td>19200</td><td>06h</td></tr><tr><td>38400</td><td>03h</td></tr><tr><td>57600</td><td>02h</td></tr><tr><td>115200</td><td>01h</td></tr></table>	Baud Rate	Value	1200	60h	2400	30h	4800	18h	9600	0Ch	19200	06h	38400	03h	57600	02h	115200	01h
Baud Rate	Value																			
1200	60h																			
2400	30h																			
4800	18h																			
9600	0Ch																			
19200	06h																			
38400	03h																			
57600	02h																			
115200	01h																			
39	03	AUX4 RS-232 protocol Bit 0=x    x=0 : 7 bits data ,        x=1 : 8 bits data Bit 1=1 Bit 2= x    x=0 : 1 stop bit                x=1 : 2 stop bit Bit 3= x    x=0 : no parity check        x=1 : parity check Bit 4= x    x=0 : odd parity                x=1 : even parity Bit 5=0 Bit 6=0 Bit 7=0																		
3A	F0	AUX4 Control Format Bit 0=x    x=0 : enable transmit ,        x=1 : disable transmit Bit 1=x    x=0 : enable receive ,        x=1 : disable receive Bit 2=x    x=0 : enable prefix to HOST,    x=1 : disable prefix to HOST Bit 3=x    x=0 : enable suffix to HOST,    x=1 : disable suffix to HOST Bit 4=x    (Don't care) Bit 5=x    x=0 : enable terminator char. ,    x=1 : disable terminator char. Bit 6=x    (Don't care) Bit 7=x    x=0 : no flow control ,        x=1 : RTS/CTS flow control																		
3B	0A	Define terminator character for AUX4    *1																		
3C	20	Setting AUX4 Receive time out value (times 1.6msec)																		
3D	0A	Setting AUX4 Transmit time out value (times 1.6msec)																		
3E	00	Reserved for AUX4																		
3F	00	Reserved for AUX4																		
10~17	<0X1B>, "1"	AUX1 prefix string																		
18~1F	<0X0D> <0x0A>	AUX1 suffix string																		
20~27	<0X1B>, "2"	AUX2 prefix string																		
28~2F	<0X0D> <0x0A>	AUX2 suffix string																		
40~47	<0X1B>, "3"	AUX3 prefix string																		
48~4F	<0X0D> <0x0A>	AUX3 suffix string																		
50~57	<0X1B>, "4"	AUX4 prefix string																		
58~5F	<0X0D> <0x0A>	AUX4 suffix string																		

Note:

- \*1. The AUX ports will receive data to its in-buffer, and will send to HOST once it receive the terminator character, The in-buffer size of all the AUX ports is 256 bytes, if the AUX in-buffer were full but still not receive the terminator character yet, then the data which come in later will over write the previous data in the buffer.

## PMB Processor Mother Board Specifications

- CPU : AMD K6®-III Processor with 3DNow!™ up to 550MHz, AMD K5/K6/K6-II, Cyrix M1/M2, Intel Pentium P54C/P55C (Socket 7), Intel Low-power Embedded Pentium Processor with MMX technology 166/266.
- VGA Chipset : C&T 69000
- BIOS : AWARD PCI/ISA PnP system BIOS
- Green Function : power saving options supported in BIOS.DOZE / STANDBY / SUSPEND modes
- L2 Cache : write BACK Cache mode with Direct Mapped Cache Organization, 512KB pipelined Burst SRAM (up 1MB – 2MB)
- DRAM Memory : up to 1024MB of EDO or SDRAM in two 168-pin DIMM sockets
- Bus Interface : PCI and PC/104
- Data Bus : PCI – 32 bit, PC/104 – 16 bit
- Bus Speeds : PCI – 33.3 MHz, PC/104 – 8.3 MHz
- DMA Controllers : 8237 x 2 (7 channels)
- Interrupt Controllers : 8259 x 2 (15 levels)
- PCI Enhanced IDE with Ultra DMA : supports two ports and up to four hard drives or Enhanced IDE devices. Supports IDE PIO Timing Mode 0, 1, 2, 3 and 4, Multiword DMA Mode 0, 1, and ultra DMA 33/66
- Watchdog Timer : generates an NMI or system RESET when your application loses control over the system. The timer interval is: 1, 2, 10, 20, 110 and 220 seconds.
- Real-time Clock : included in SIS 530 with lithium battery backup for 10 years of data retention. CMOS data backup of BIOS setup and BIOS default.
- Keyboard and Mouse Connectors :  
6-pin header connector for PS/2 Mouse  
6-pin header connector for PS/2 Keyboard

## PCI GRAPHICS ACCELERATOR FOR FLAT PANEL

- Chipset : C&T69000 HiQVideo™ Accelerator with 2 MB integrated SDRAM on chip
- BIOS : combined with system BIOS
- Display Type : CRT, TFT, DSTN, SSTN, EL, Plasma Quarter VGA (VGA, SVGA, XGA)
- Connectors : 50-pin box header for Flat Panel display and 15-pin header for CRT (C&T69000)

## 10Base-T/100Base-TX PCI Ethernet

- Chipset : Realtek 8139
- Type : 10Base-T / 100Base-TX

- Connector : 10-pin box header

## FLASH DISK DISKONCHIP® 2000

- Package : Single Chip Flash Disk in 32-pin DIP JEDEC
- Capacity : 1-144 Mbyte
- Data Reliability : ECC/EDC error correction
- Memory Window : 8 Kbyte

## Jumper Quick Reference

### CPU Clock Speed (JF0~JF2, JR0~JR2)

CPU type	FSB	Ratio	JF0	JF1	JF2	JR0	JR1	JR2
Intel Pentium 100MHz (3.3V)	66	1.5	1-2	1-2	1-2	2-3	2-3	2-3
Intel Pentium 133MHz (3.3V)	66	2.0	1-2	1-2	1-2	1-2	2-3	2-3
Intel Pentium 166MHz (3.3V)	66	2.5	1-2	1-2	1-2	1-2	1-2	2-3
Intel Pentium 200MHz (3.3V)	66	3.0	1-2	1-2	1-2	2-3	1-2	2-3
Intel P55C MMX 166MHz (2.8V)	66	2.5	1-2	1-2	1-2	1-2	1-2	2-3
Intel P55C MMX 200MHz (2.8V)	66	3.0	1-2	1-2	1-2	2-3	1-2	2-3
Intel P55C MMX 233MHz (2.8V)	66	3.5	1-2	1-2	1-2	2-3	2-3	2-3
Cyrix M2 PR-200 (2.9V)	66	3.0	1-2	1-2	1-2	2-3	1-2	2-3
Cyrix MX PR-233 (2.9V)	66	3.5	1-2	1-2	1-2	2-3	2-3	2-3
IDT C6-200 (3.5V)	66	3.0	1-2	1-2	1-2	2-3	1-2	2-3
IDT C6-225 (3.5V)	75	3.0	1-2	1-2	2-3	2-3	1-2	2-3
AMD K5 PR133 (2.9V)	66	2.0	1-2	1-2	1-2	1-2	2-3	2-3
AMD K5 PR166 (2.9V)	66	2.5	1-2	1-2	1-2	1-2	1-2	2-3
AMD K6 166 (2.9V)	66	2.5	1-2	1-2	1-2	1-2	1-2	2-3
AMD K6 200 (2.9V)	66	3.0	1-2	1-2	1-2	2-3	1-2	2-3
AMD K6 233 (3.2V)	66	3.5	1-2	1-2	1-2	2-3	2-3	2-3
AMD K6-2 266 (2.2V)	66	4.0	1-2	1-2	1-2	1-2	2-3	1-2
AMD K6-2 300 (2.2V)	66	4.5	1-2	1-2	1-2	1-2	1-2	1-2
AMD K6-2 333 (2.2V)	66	5.0	1-2	1-2	1-2	2-3	1-2	1-2
AMD K6-2 350 (2.2V)	100	3.0	2-3	1-2	1-2	2-3	1-2	2-3
AMD K6-2 400 (2.2V)	100	4.0	2-3	1-2	1-2	1-2	2-3	1-2
AMD K6-2 450 (2.2V)	100	4.5	2-3	1-2	1-2	1-2	1-2	1-2
AMD K6-2 500 (2.2V)	100	5.0	2-3	1-2	1-2	2-3	1-2	1-2
AMD K6-3 400 (2.4V)	100	4.0	2-3	1-2	1-2	1-2	2-3	1-2
AMD K6-3 450 (2.4V)	100	4.5	2-3	1-2	1-2	1-2	1-2	1-2
AMD K6-3 500 (2.4V)	100	5.0	2-3	1-2	1-2	2-3	1-2	1-2

**CPU Voltage (JV0~JV4)**

CPU Voltage	JV0	JV1	JV2	JV3	JV4
1.9V	2-3	2-3	1-2	1-2	1-2
2.0V	2-3	1-2	1-2	1-2	1-2
2.1V	1-2	2-3	2-3	2-3	2-3
2.2V	2-3	1-2	2-3	2-3	2-3
2.4V	2-3	2-3	1-2	2-3	2-3
2.5V	1-2	2-3	1-2	2-3	2-3
2.8V	2-3	2-3	2-3	1-2	2-3
2.9V	1-2	2-3	2-3	1-2	2-3
3.2V	2-3	2-3	1-2	1-2	2-3
3.3V	1-2	2-3	1-2	1-2	2-3
3.5V	1-2	1-2	1-2	1-2	2-3

**CMOS Operation (JRTC)**

JRTC	Mode
1-2	Clear CMOS
2-3	Normal Operation★

**Watchdog Timer Mode Setting (JP4)**

JP4	Mode
1-2	Enable for System Reset
2-3	Enable for Active NMI★
OFF	Disable

**DiskOnChip® 2000 Flash Disk Address Setting (JDOC)**

JDOC	Base Address
1-2	D0000
3-4	D8000★

**Flat panel voltage select (JVOLT1)**

1-2	5V
2-3	3.3V★

**Enable/Disable Audio Interface (JSND)**

PMB uses onboard ESS Solo-1 ESS-19385 chip, supports 3D sound effect

JSND	Mode
1-2	ENABLE★
2-3	DISABLE

**Enable/Disable LAN Controller (JLAN)**

The Realtek RTL8139A is a highly integrated single-chip Fast Ethernet controller that provides 32-bit performance, PCI bus master capability, and full compliance with IEEE 802.3u 100base-T specifications and IEEE 802.3x Full Duplex Flow Control.

JLAN	Mode
1-2	ENABLE ★
2-3	DISABLE



## 8100ATP – The Top I/O Board

### IMPORTANT NOTICE

Before preceding this section, you are noted following:

- Make sure that the Touch POS is turned off.
- Leave the boards in anti-static bag or materials, until you are ready to install it.
- Use an anti-static wrist strap and a grounding mat.

If you don't have a grounding kit, make sure that you handle card by its top edge only, or by the metal support bracket.

### SPECIFICATIONS AND FEATURES

This Top I/O board is designed to support the extra 2 or 4 serial ports and two cash drawer openers. Users can work these I/O ports with specific commands with will be offered by factory. See previous Chapter-“Commands for Peripheral Controlling” and next “Connector Pin Assignments” for more details

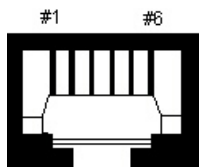
Default settings are listed with a black asterisk (\*).

### SHUNT SETTING

JP2 - Adjust the fire pins for CD1 port either Pin 4-5 or Pin 2-4

The voltage of pin 4 can be selected by software command (8009h)

CD1	Pin 2 and Pin 4	Pin 4 and Pin 5
JP2	1-2 shot*	2-3 shot

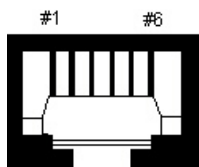


#2: Switch (fire)      #5: Switch (fire)  
#3: Sense              #6: Sense GND  
#4: +24V/12 V(Default 24 V)

JP3 - Adjust the fire pins for CD2 port either Pin 4-5 or Pin 2-4

The voltage of pin 4 can be selected by software command (8009h)

CD2	Pin 2 and Pin 4	Pin 4 and Pin 5
JP3	1-2 shot*	2-3 shot

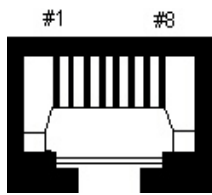


#2: Switch (fire)      #5: Switch (fire)  
#3: Sense              #6: Sense GND  
#4: +12V\*/24V

JP4 - Adjust the output power either +5VDC or +12VDC for both Pin 7 and Pin 8 of AUX3 (optional). The totally maximum output current of COM1~2 and AUX1~4 is 1Amp.

\*Factory default setting is +12VDC

\* Factory default setting for European Countries is NONE voltage

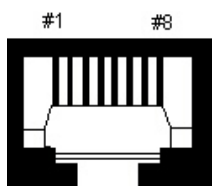


#1: CTS                      #2: GND  
#3: RX                      #4: RTS  
#5: TX                      #6: GND  
#7, #8: +12V\* or +5V (Max 1Amp)

JP6 - Adjust the output power either +5VDC or +12VDC for both Pin 7 and Pin 8 of AUX4 (optional). The totally maximum output current of COM1~2 and AUX1~4 is 1Amp.

\*Factory default setting is +12VDC

\*Factory default setting for European Countries is NONE voltage

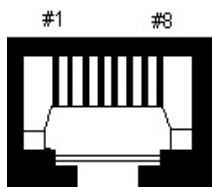


#1: CTS                      #2: GND  
#3: RX                      #4: RTS  
#5: TX                      #6: GND  
#7, #8: +12V\* or +5V (Max 1Amp)

JP5 - Adjust the output power either +5VDC or +12VDC for both Pin 7 and Pin 8 of AUX1. The totally maximum output current of COM1~2 and AUX1~4 is 1Amp.

\*Factory default setting is +12VDC

\*Factory default setting for European Countries is NONE voltage

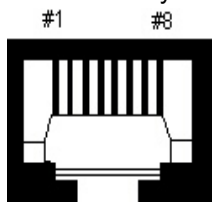


#1: CTS                      #2: GND  
#3: RX                      #4: RTS  
#5: TX                      #6: GND  
#7, #8: +12V\* or +5V (Max 1Amp)

JP7 - Adjust the output power either +5VDC or +12VDC for both Pin 7 and Pin 8 of AUX2 (optional). The totally maximum output current of COM1~2 and AUX1~4 is 1Amp.

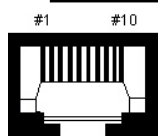
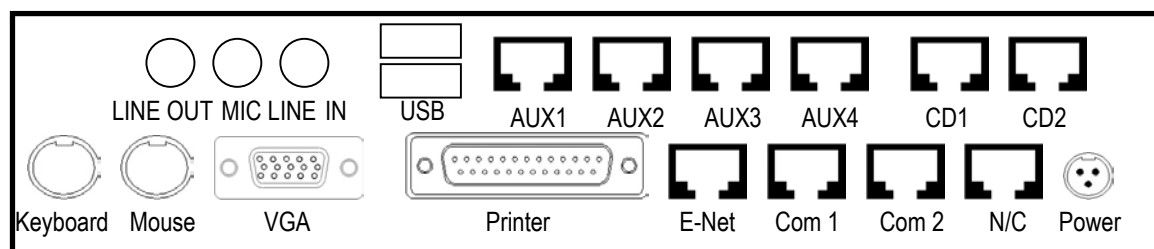
\*Factory default setting is +12VDC

\*Factory default setting for European Countries is NONE voltage



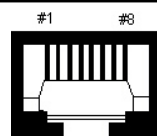
#1: CTS                      #2: GND  
#3: RX                      #4: RTS  
#5: TX                      #6: GND  
#7, #8: +12V\* or +5V (Max 1Amp)

## Connector Pin Assignments



### COM 1 & COM 2

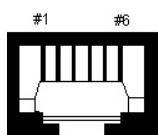
- |                             |         |
|-----------------------------|---------|
| #1: DCD                     | #6: TX  |
| #2: +12V* or +5V (Max 1Amp) | #7: CTS |
| #3: DSR                     | #8: DTR |
| #4: RX                      | #9: GND |
| #5: RTS                     | #10: RI |



### AUX1 ~ AUX2

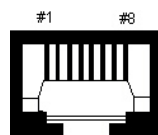
- |                                 |
|---------------------------------|
| #1: CTS                         |
| #2: GND                         |
| #3: RX                          |
| #4: RTS                         |
| #5: TX                          |
| #6: GND                         |
| #7, #8: +12V* or +5V (Max 1Amp) |

**Note: The totally maximum output current of COM1~2 and AUX1~4 is 1Amp.**



### CD1 & CD2

- |                   |               |
|-------------------|---------------|
| #4: +12V*/24V     | #3: Sense     |
| #5: Switch (fire) | #6: Sense GND |
| or                |               |
| #2: Switch (fire) |               |
| #4: +12V*/24V     |               |



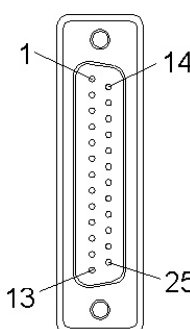
### E-Net

- |           |
|-----------|
| #1: TXTP+ |
| #2: TXTP- |
| #3: RFTP+ |



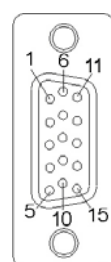
### USB

- |            |
|------------|
| #1: VCC    |
| #2: -DATA0 |
| #3: +DATA0 |
| #4: GND    |



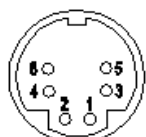
### Printer Port

- |            |                   |
|------------|-------------------|
| #1: STROBE | #10: ACKNOWLEDGE  |
| #2: D0     | #11: BUSY         |
| #3: D1     | #12: PE           |
| #4: D2     | #13: SELECT       |
| #5: D3     | #14: AUTO FEED XT |
| #6: D4     | #15: ERROR        |
| #7: D5     | #16: INIT         |
| #8: D6     | #17: SLCT IN      |
| #9: D7     | #18~25: GROUND    |



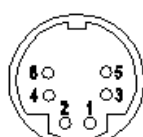
### VGA Monitor Connector

- |              |
|--------------|
| #1: RED      |
| #2: GREEN    |
| #3: BLUE     |
| #5~#8: GND   |
| #9: VCC      |
| #10: GND     |
| #12: DDC DAT |
| #13: HSYNC   |
| #14: VSYNC   |
| #15: DDC CLK |



### Keyboard Port

- |            |
|------------|
| #1: KDATA  |
| #3: GND    |
| #4: +5V    |
| #5: KS CLK |



### Mouse

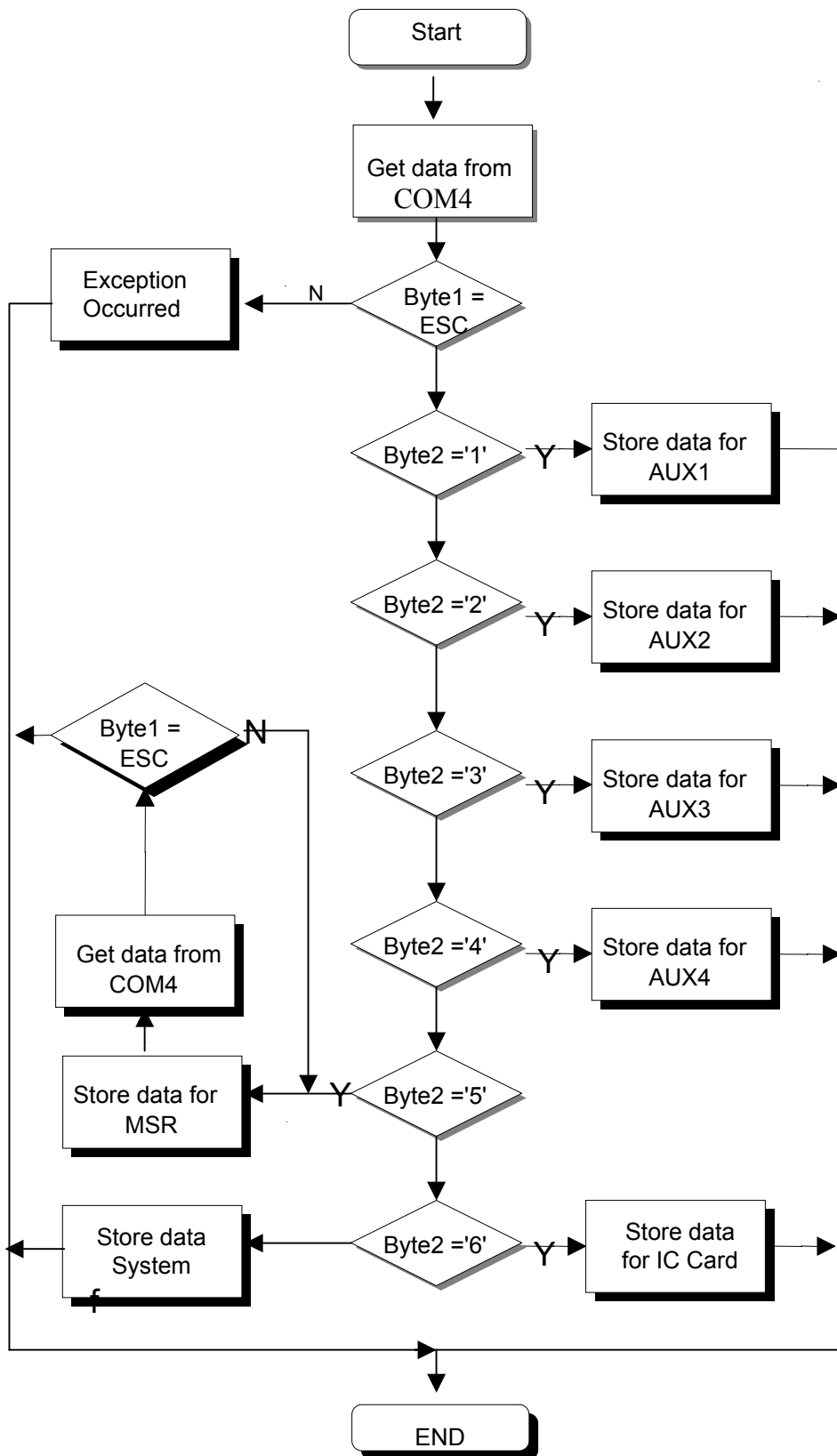
- |            |
|------------|
| #1: MDATA  |
| #3: GND    |
| #4: +5V    |
| #5: MS CLK |



### Power port

- |         |
|---------|
| #1: GND |
| #3: VCC |

## Example Flow Chart for Getting Data From 8100



## Dynamic Link Library for TouchPOS

In order to provide a convenient environment for the application developer to develop their applications, we have developed a dynamic link library (DLL) file. This file is created with Borland Delphi and using a standard Win32 DLL structure. No matter what compiler you are using, you also can link with this DLL and working with it. Of course, you need to know how to link to DLL with your compiler.

### ● Install with CD-ROM

1. Insert the attached CD of TouchPOS to the CD-ROM.
2. Open the folder "TouchPOS Utility"
3. You will find a folder named "TPOSLIB" and then open it.
4. Run the Setup program and complete the setup process.
5. After the setup is done, a folder named "TPOSLIB" will be created on the root directory. Three sample programs was attached in the subdirectory, one for Delphi was placed in the "Delphi" folder, one for Borland C++ Builder was placed in the "BCB" folder and one for Visual Basic was placed in the "VB6" folder.
6. A help file was placed in the "TPOSLIB" folder. All the information can be found in this file or you can visit our Web site: <http://www.jarltech.com> for more information.

### ● Floppy diskette installation

1. Insert the attached specific diskette to floppy drive.
2. Open the folder named "TPOSLIB"
3. Run the Setup program.

## 20 x 2 Customer Display Character Sets

### \* European Character Set

To get the ASC() of a character = AB(hex) = A x 16 + B

A \ B	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	CG RAM (1)	±		0	1	P	'	F	S	E	±	'	r	R	B	t
1	CG RAM (2)	±	!	1	A	0	a	a	0	a	i	'	J	+	y	0
2	CG RAM (3)	7	"	2	B	R	b	r	e	R	±	'	w	e	e	z
3	CG RAM (4)	7	#	3	C	S	c	s	±	±	±	'	P	T	e	w
4	CG RAM (5)	7	*	4	D	T	d	t	±	±	±	'	e	r	z	o
5	CG RAM (6)	7	%	5	E	U	e	u	±	±	±	'	a	t	a	n
6	CG RAM (7)	7	0	6	F	V	f	v	±	±	±	'	u	l	e	e
7	CG RAM (8)	7	'	7	G	W	w	w	S	U	R	x	±	±	±	±
8	CG RAM (1)	7	(	8	H	X	h	x	±	±	±	'	±	±	±	±
9	CG RAM (2)	7	)	9	I	Y	i	y	±	±	±	'	±	±	±	±
A	CG RAM (3)	±	*	±	J	Z	j	z	±	±	±	'	±	±	±	±
B	CG RAM (4)	7	+	±	K	C	k	c	±	±	±	'	±	±	±	±
C	CG RAM (5)	±	,	<	L	\	l	l	±	±	±	'	±	±	±	±
D	CG RAM (6)	±	-	±	M	J	m	j	±	±	±	'	±	±	±	±
E	CG RAM (7)	±	.	>	N	^	n	^	±	±	±	'	±	±	±	±
F	CG RAM (8)	±	/	±	0	_	o	±	±	±	±	'	±	±	±	±

\* Japanese Character set (Optional)

To get the ASC() of a character = AB(hex) = A x 16 + B

B \ A	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	CG RAM ( 1 )			0aP`P								—	9	E	wp	
1	( 2 )		!	1aDaa							a	ア	チ	△	あ	や
2	( 3 )		"	2BRbr							r	イ	ウ	×	べ	お
3	( 4 )		#	3CScs							J	ウ	テ	E	え	こ
4	( 5 )		\$	4DTdt							\	エ	ト	ト	わ	お
5	( 6 )		%	5ELeu							.	オ	タ	一	こ	ウ
6	( 7 )		&	6FVfv							フ	カ	ニ	ヨ	pe	Σ
7	( 8 )		'	7Gwaw							フ	キ	ス	ヲ	ga	π
8	( 1 )		(	8Hxhx							4	ク	ホ	リ	ノ	Σ
9	( 2 )		)	9IViw							5	ケ	ル	リ	ノ	ウ
A	( 3 )		*	JZjz							π	コ	ノ	ノ	ノ	π
B	( 4 )		+	KKk							π	カ	ヒ	コ	ノ	π
C	( 5 )		,	Lll							π	セ	フ	フ	π	π
D	( 6 )		—	MIm)							π	ズ	ノ	ノ	π	π
E	( 7 )		.	Nn~							π	ト	ト	ノ	π	
F	( 8 )		/	Oo*							π	ウ	ウ	π	π	π

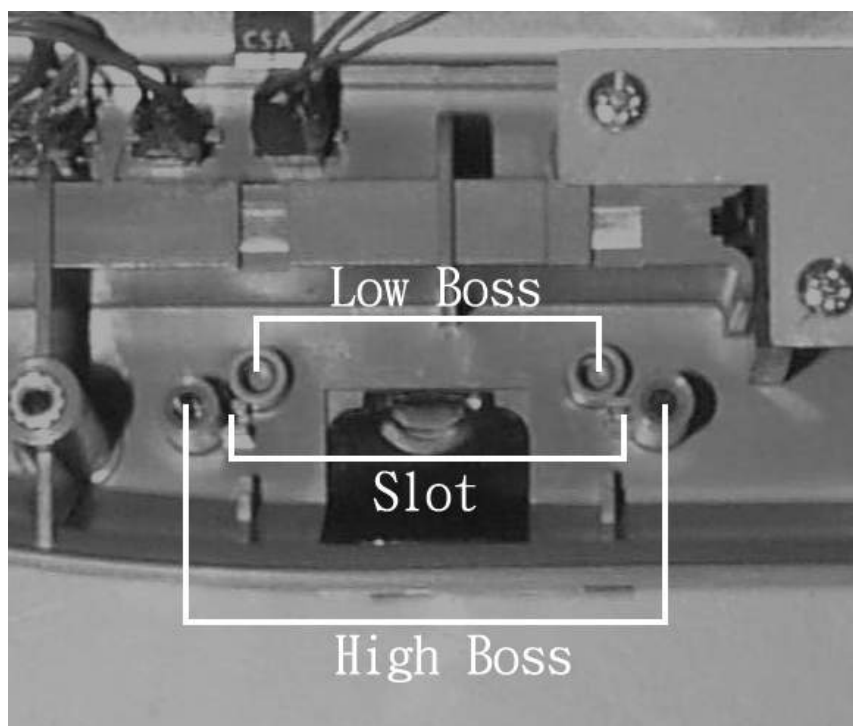
## ● IR module Installation Guide

The default position of IR module is for user who will adjust the touch panel in the angle between  $17^{\circ}$ ~ $60^{\circ}$ .

Due to the limited Receiving range of IR devices, If user will adjust the touch panel in the angle between  $60^{\circ}$ ~ $90^{\circ}$ , you have to change the position of IR module follow these instructions



1. Take the upper part of Touch POS only, face the panel down carefully
2. Remove the IR module from the lower boss.
3. Mount the IR module vertically to the slots beside 2 high boss (around the IR window) and secure the module in the slot with 2 screws on higher boss.





## Abbreviations

Abbreviator	Description
0x??	Hexa-decimal Indicator
ACK	Acknowledge
ASC( )	ASCII Code
ATR	Answer To Reset
CTS	Clear To Send. A signal of RS232C
CR	Carriage Return
Dec	Decimal
DOC	Disk-On-Chip
ESC	Escape key of keyboard; Equal to Hex 0x1B or DEC(027)
FDD	Floppy Disk Drive
Hex	Hexa-decimal
MCR	Magnetic Card Reader
MSR	Magnetic Stripe Reader
PSC	
RTS	Request To Send. A signal of RS232C
WDT	Watch-Dog Timer



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