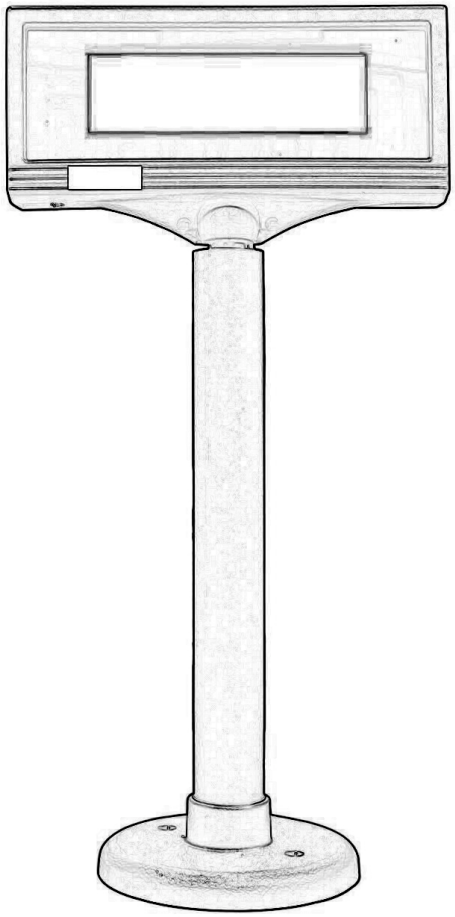
# Customer Pole Display

# SERIES 8013

## Operation Manual

Version 1.0

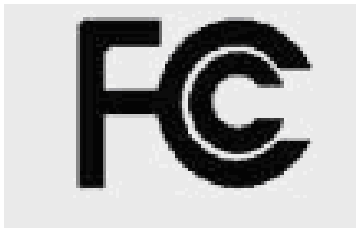


This equipment has been tested and found to comply with the limits for Class A digital device. Pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in aresidential installation. This equipment generates, uses, and if not installed and used in accordance with the instructions may cause harmful interference will not occur in a particular installation. If this equipment does causeharmful interference to radio or television reception, which can be determined by turning the equipment off and on. The user is encouraged to try correct interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help. This booklet is available from the U.S. government Printing Office, Washington, DC 20402, Stock NO.004-000-00345-4.

**CAUTION:**
Any changes of modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment.

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.

# *Table of Contents:*

# *Chapter 1* Introduction

The 8013, a Multi-Language LCD customer display, is an excellent tool for transmitting transactions, AD message, and customer greeting at POS systems. 8013 LCD customer display supports Multi-Languages (**Traditional Chinese/ English, Simplified Chinese/English, Europe/English, Russia/ English & Arabic/ English**), in order to meet your multilingual demand. 8013 can manually adjust brightness via setting button, and create your own individual style desktop under the size of 320 x 240 pixels. With ESC/POS command codes,8013 can work under any operating system and platform.

**Features:**

- With an easy to read blue background & white characters display
- Adjustable brightness setting button
- Individual desktop creation
- With a Multi-Languages support:
  (**Traditional Chinese/ English, Simplified Chinese/ English,Europe/English, Russia/ English & Arabic/ English**)
- Supports both USB & RS232 Interface
- Built-in ESC/POS command codes
- OPOS (OLE for retail POS) Compatible

Additionally institute design 8013 OPOS(OLE for retail POS) firmware, not only accordance with Microsoft OPOS standard but also we developed various special function. We simultaneously simplify OPOS driver numerous install steps, let 8013 OPOS only need one step to complete the installment. In additional we also provide the 8013 OPOS test program, enable to operators easy learning and test each functions, save the learn start to use times and to carry out the compatibility problem. Let 8013 customer display can smoothly match with other OPOS demand environment.

**OPOS Features:**

- One step to installation
- Quick start
- Marquee show
- Blink light show
- Brightness adjustable

For It's high compatibility and convenience with integrated others hardware, it is suitable for applying into retail, hospitality, fast food, hotel, financial service and other industrial application。 In the same time, we also provide the OEM/ODM optimized solution for clients.

# *Chapter 2* Appearance


**JD-8013**

# Chapter 3 Before You Install

This manual describes functions and usage of the Model 8013 customer pole display. The 8013 is a 4x30 alphanumeric customer pole display designed with multi-languages for retail and other environments. Its outstanding features include high quality liquid crystal display in blue & white color, USB interface, easy to use and powerful programming features. The 8013 also can combine with any brand of serial receipt printer.

**Step 1: Turn Off Your Computer**

By shutting off your computer, you will prevent any accidental damage to the pole display and computer.

**Step 2: Review Packing List**

Please ensure that your pole display shipment is complete.

Model 8013 includes:

- 1 pcs 8013 pole display
- 1 pcs operation manual
- 1 pcs +12V DC power plate with internal power cable
- 1 pcs DC cable
- 1 pcs RS-232 cable or USB cable
- 1 pcs pole

NOTE: The last character of "GC-8013BYW" indicates Cable's color.

Ex: W=White; B=Black

# Chapter 4 Installing Model 8013

This chapter describes the procedures for installing the 8013 pole display by using RS-232 & USB interface.

## 4-1 RS-232 Interface

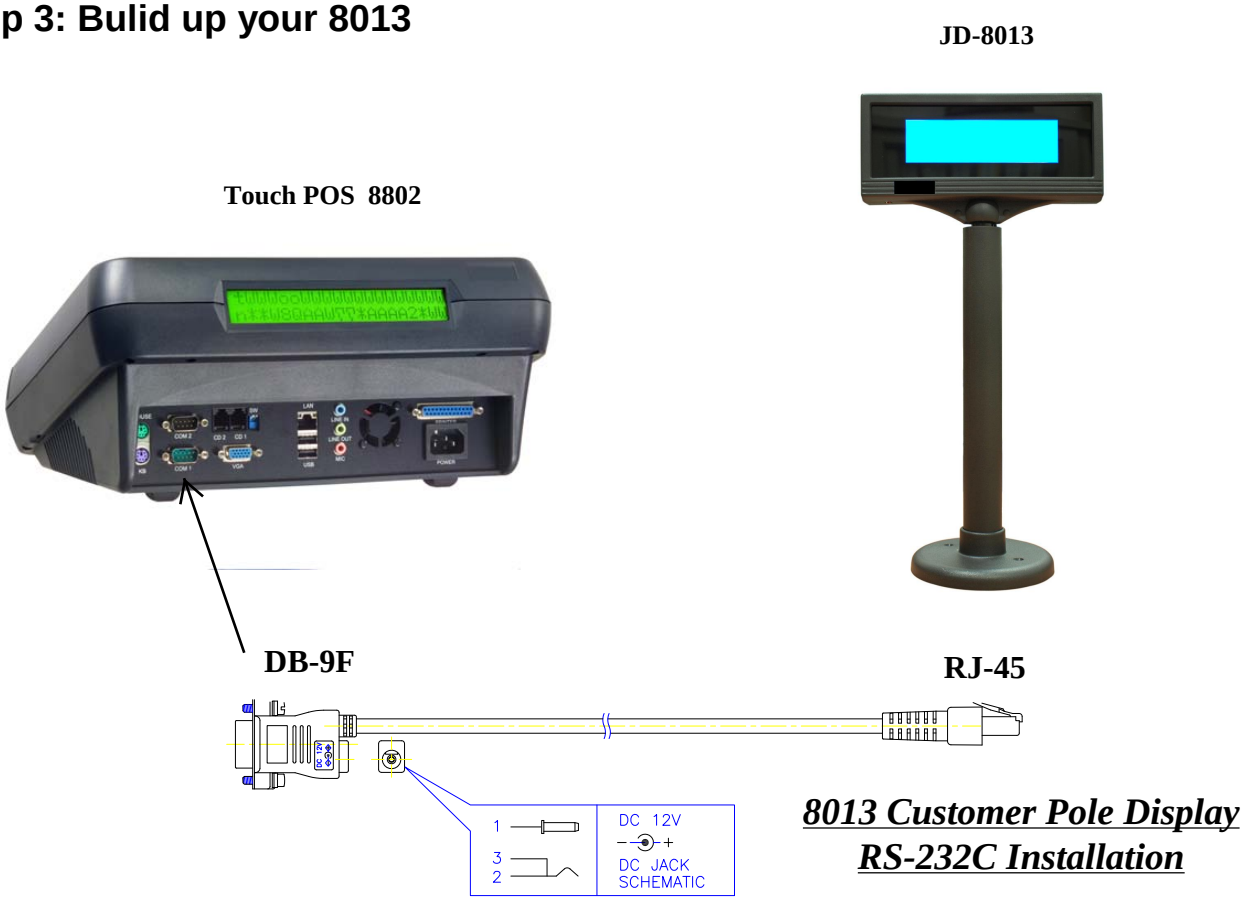
### Step 1: Turn off your computer

If you have not already done so, turn off your computer to avoid any accidental damage to the pole display and computer.

### Step 2: Decide on baud rate, character set and command type

There are some functions such as baud rate, character set and command types are selected by Dip switch. Please refer to Appendix I: Specification to set the 8013 to meet your requirement.

### Step 3: Bulid up your 8013




***8013 Customer Pole Display***
***RS-232C Installation***

### Step 4: Decide on power access

The RS-232 connection requires power +12V DC. This may be provided through an internal connection in your computer or through an external connection to a 110/220V adapter. The components for an internal connection are provided. If you are using an external connection,be sure that your adaptor confirms with the specifications listed in Appendix I.

### Step 5: Using internal power source

Refer to the installation diagram as below. Remove the access cover to your computer. Mount the +12V DC power plate on an available expansion slot in the back of your computer. Attach the 4-pin male connector to the open female connector of the same type in your computer.Alternatively, an internal power source may be available already if the com port on your computer or terminal matches the 8013 pin assignment (see Specifications in Appendix I).

### Step 6: Connect to your computer

Connect the RS-232 connector to the male equivalent com port on your computer or terminal. Provide power to the DC jack on the DB9F connector using either a cable connection to the +12V DC power plate or an external adapter.

### Step 7: Turn on your computer

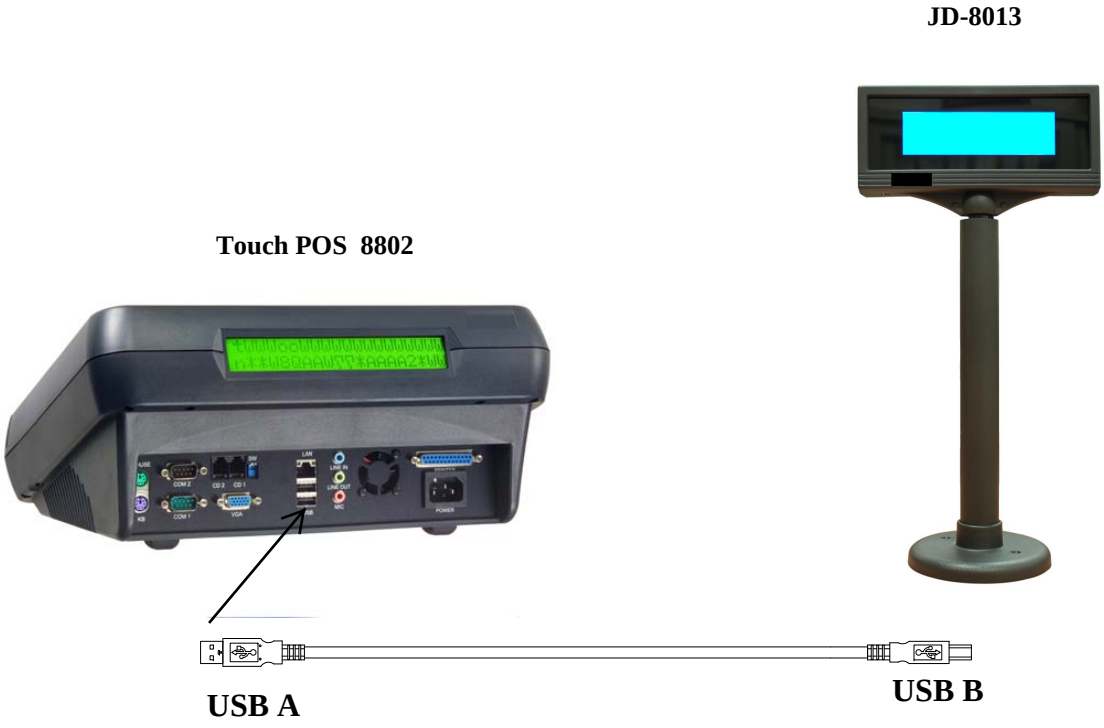
Turn on your computer. It should boot up normally.
The pole display will show a self-diagnostic status and then the display will be blank.

### Step 8: Turn to Chapter 5

You are now ready for operation; please refer to Chapter 5 for programming to meet the specific requirement of your application environment.

## 4-2 USB Interface

### Step 1: Bulid up your 8013




***8013 Customer Pole Display***
***USB Installation***

### Step 2: Connect to your computer

Connect the USB connector to the usb port on your computer.

### Step 3: Refer to RS-232 configuration

Please refer to RS-232 configuration step 3 and following steps.
(USB 2.0 user access 8013 via virtual com port)

# Chapter 5 Programming Commands

There are four programming modes available for model 8013 which are ESC/POS mode, UTC standard mode and UTC w/pass through mode. In this Chapter, we will all use the command codes for other modes, please refer to Appendix II. For multi-languages, please refer to Appendix III and IV for details.

The basic function of the 8013 display is comparable to the display programming by your software should be as easy. You only need open the COM-port on which the display has been connected from you. Then, you just need send the character what you want to display on 8013 directly via the COM interface. Please following the USB parameters to use as below:

***9600 Baud, No Parity, 8 Data Bits, 1 Stop bit***
In Basic, you would initialize the interface as follows:
***OPEN "COMx: 9600, N, 8, DS0" FOR OUTPUT AS #1***
(x=number of the COM port you are using for the display)

And you would print something to the display using the PRINT command:
***PRINT#1, "Hello World!"***
In the end, you can close the interface:
***CLOSE #1***
In other programming languages, the commands for serial output shall be different, but they will work in a similar way. For some compilers, you will need an extra toolbox, that offers you USB routines. Please refer to your compiliers/interpreters manual for more details.

***Example:***
***OPEN "COMx: 9600, N, 8, 1, DS0" FOR OUTPUT AS #1***
***PRINT #1, "Hello World!"***
***CLOSE #1***

# Programming using DOS routines

You can also generate a display output using the simple DOS routines.

***Example:***

***MODE COMx: 9600, N, 8, 1***

***ECHO Hello! >COMx:***

## Control characters and special functions

For special display functions, there are some commands which will be explained in this chapter. Some of the commands consist of one ASCII-CTRL-code, others are command strings, introduced by ESC.

If a command needs additional parameters, please do not forget to use ASCII format for the parameter. That means, if the parameter is 0 (zero), then you have to transmit the ASCII code “0” (=CHR$(48) in Basic; 48 is the decimal position of the “0” character in the ASCII code table). But please consider that only ONE byte is allowed for each parameter. That is why you cannot transmit two digit numbers. In this case, just add the number you want to transmit as parameter 48 and transmit the corresponding character. For example, if you want to transmit the parameter 11, you have to send CHR$(11+48)=CHR$(59)=“;”. Attention: For some other commands, only BYTE values are allowed as parameter. For those, you directly send the corresponding character code without adding 48 (e.g. CHR$(11) for 11). For details, please refer to the individual command code descriptions.

***Example: Set the cursor to the last position in the display area***

***WRONG:***

***PRINT #1, CHR$(27)+“=”; :REM command ESC =***

***PRINT #1, 19;1 :REM parameter column 19, line 1***

***CORRECT:***

***PRINT #1, CHR$(27)+“=”;***

***PRINT #1, CHR$(48+19)+“1” :REM or CHR$(48+19)+CHR$(48+1)***

Below is a list of command sequences for user to design an interface to the 8013 customer pole display.

Please note that pole display is default with **9600 bps baud rate, no parity, 8 data bits, 1 stop bit.**

## Command codes explanation(control sequences )

Note: They are with switch 7' 8 OFF(Refer Appendix I:Dip switch setting)

# *Appendix I* Specifications

| NO | Item | Descriptions |
|---|---|---|
| 1 | Display method | Liquid crystal display |
| 2 | LCD type | STN Blue mode |
| 3 | Backlight mode | LED backlight |
| 4 | Brightness | 25~30 cd/㎡ |
| 5 | Display color | Blue (back color) and<br>White (character color) |
| 6 | Adjustable angle | Swivels 360° and Tilt 45° Angles |
| 7 | Viewing angle | 0– 45 degrees |
| 8 | Numberof character | 30 columns x 4 lines |
| 9 | Character size | 8.47 mm x 4.24 mm( 16x8 dot matrix)<br>8.47 mm x 8.47 mm( 16x16 dot matrix) |
| 10 | Character font | 8 x 16 dot matrix by alpha numeric<br>16 x 16 dot matrix by Chinese character |
| 11 | Language | Traditional Chinese/ English<br>Simplified Chinese/ English<br>Russia/ English<br>Europe/ English<br>Arabic/ English |
| 12 | Interface | USB 2.0 user access 8013 via virtual Comport<br>RS-232 with DC jack |
| 13 | Software Programming | Command ESC/POS<br>OPOS (OLE for Retail POS)<br>Ultimate mode |
| 14 | Power Requirement | 5V DC from HOST USB port<br>12V DC from RS232 port |
| 15 | Panel dimensions | 184 (W) x65 (H) x16(D) mm |
| 16 | Total dimensions | 184 (W) x65 (H) x36(D) mm |
| 17 | Optional Pole Height | 140mm or 280mm |
| 18 | Approximate Weight | 950g |
| 19 | Material | ABS Plastic & ABS Plastic with Metal |
| 20 | Colors | Dark Gray or White |
| 21 | Operating temperature | 5 - 45℃ |
| 22 | Operating Humidity | 30% - 85% |
| 23 | Storage Temperature | -10 - 55℃ |
| 24 | Storage Humidity | 10% - 85% |

# *Appendix II* Interface

**1. INTERFACE CONNECTOR**

| NO | SYMBOL | FUNCTION |
|---|---|---|
| 1 | CN1 | **WAFER** |
| 2 | CN2 | Contrast/OSD Control |
| 3 | CN3 | RJ45 |
| 4 | CN4 | CCFL Connect |
| 5 | CN5 | ON/OFF SWITCH |
| 6 | CN6 | No use |
| 7 | CN7 | No use |
| 8 | LCD1 | Connect to LCD |

**2. WAFER SPECIFICATIONS**

| Pin | Signal | Direction | FUNCTION |
|---|---|---|---|
| 1 | Vin | - | 12Vcc |
| 2 | DTR | Display to PC | Display/printer signal |
| 3 | DSR | Printer to display | Printer signal |
| 4 | RXD | PC to display | transmit |
| 5 | TXD | Display to printer | Receive |
| 6 | GND | - | GND |

**3. RS232 PROTOCOL**

| | |
|---|---|
| Data transmission: | Serial |
| Synchronization: | Asynchronous |
| Handshaking: | DTR / DSR |
| Signal level: | MARK = -3 to –15 V (logic “0”)<br>SPACE = +3 to +15 V (logic “1”) |
| Baud rates: | 38400,19200,9600,4800bps |
| Parity: | None |
| Bit length: | 8 bits |
| Stop bits: | 1 or more |

# *Appendix III* Device Setting

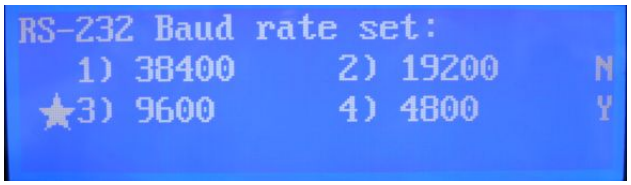
**1. Brightness adjustment:**

**Please using the "+" & "-" button to adjust the screen brightness.**

**2. Device configure:**

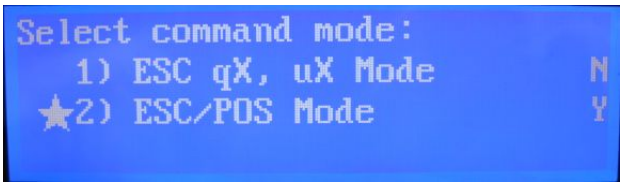
**2-1. RS-232 Baud rate set:**

**Please hold down the "+" button then connect to the power, it will be show the first setting screen. Please use the "-" button to adjust options, then using the "+" button to enter the next set.**



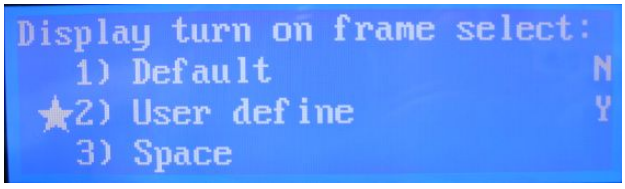

**2-2. Select command mode:**

**Please use the "-" button to adjust options, then using the "+" button to enter the next set.**



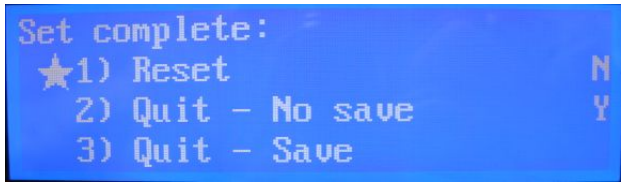

**2-3. Display turn on frame select:**

**Please use the "-" button to adjust options, then using the "+" button to enter the next set.**




**2-4. Set complete:**

**Please use the "-" button to adjust options, then using the "+" button to choose save/no save or reset.**



# *Appendix IV* Command List

**1. Esc/pos Command List**

| Command | Code (hex) | Function description |
|---|---|---|
| ESC_n | 1B 5F n<br>n=1,0 | Select/cancel display cursor. |
| HT | 09 | Move cursor right. |
| BS | 08 | Move cursor left. |
| US LF | 1F 0A | Move cursor up. |
| LF | 0A | Move cursor down. |
| ESC [ C | 1B 5B 43 | Move cursor right. |
| ESC [ D | 1B 5B 44 | Move cursor left. |
| ESC [ A | 1B 5B 41 | Move cursor up. |
| ESC [ B | 1B 5B 42 | Move cursor down. |
| HOM | 0B | Move cursor to home position. |
| US CR | 1F 0D | Move cursor to right-most position. |
| CR | 0D | Move cursor to left-most position. |
| US B | 1F 42 | Move cursor to bottom position. |
| ESC [ H | 1B 5B 48 | Move cursor to home position. |
| ESC [ R | 1B 5B 52 | Move cursor to right-most position. |
| ESC [ L | 1B 5B 4C | Move cursor to left-most position. |
| ESC [ K | 1B 5B 4B | Move cursor to bottom position. |
| US $ x y | 1F 24 x y<br>0<x<30,1<y<4 | Move cursor to specified position. |
| ESC l x y | 1F 6C x y<br>0<x<30,1<y<4 | Move cursor to specified position. |
| CLR | 0C | Clear display screen. |
| ESC @ | 1B 40 | Initialize display. |
| US r n | 1F 72 n<br>n=1,0 | Select/cancel reverse character. |
| US T h m | 1F 54 h m<br>0<=h<=17<br>0<=m<=3b | Set time h=hour ,m=minute |
| US U | 1F 55 | Display time continuously |
| SO | 0E | Set double-width character mode . |
| DC4 | 14 | Cancel double-width character mode . |

**1.1 Extra command:**

| | | |
|---|---|---|
| GS q A | 1D 71 41 [datax30] 0D | Show string data 30 bytes to display line 1. |
| GS q B | 1D 71 42 [datax30] 0D | Show string data 30 bytes to display line 2. |
| GS q C | 1D 71 43 [datax30] 0D | Show string data 30 bytes to display line 3. |
| GS q D | 1D 71 44 [datax30] 0D | Show string data 30 bytes to display line 4. |
| GS q E | 1D 71 45 [datax30] 0D | Show double-height string data 30 bytes to display line 1 and line 2. |
| GS q F | 1D 71 46 [datax30] 0D | Show double-height string data 30 bytes to display line 3 and line 4. |
| GS r A | 1D 72 41 [datax46] 0D | Marquee on line 1. |
| GS r B | 1D 72 42 [datax46] 0D | Marquee on line 2. |
| GS r C | 1D 72 43 [datax46] 0D | Marquee on line 3. |
| GS r D | 1D 72 44 [datax46] 0D | Marquee on line 4. |
| GS r E | 1D 72 45 [datax46] 0D | Double-width marquee on line 1 and line 2. |
| GS r F | 1D 72 46 [datax46] 0D | Double-width marquee on line 3 and line 4. |
| ESC s | 1B 73 | Store the use define pattern |

**2. SD-304 Standard Mode Command List**

| Command | Code (hex) | Name and description |
|---|---|---|
| ESC q A | 1B 71 41 [datax30] 0D | Show string data 30 bytes to display line 1. |
| ESC q B | 1B 71 42 [datax30] 0D | Show string data 30 bytes to display line 2. |
| ESC q C | 1B 71 43 [datax30] 0D | Show string data 30 bytes to display line 3. |
| ESC q D | 1B 71 44 [datax30] 0D | Show string data 30 bytes to display line 4. |
| ESC q E | 1B 71 45 [datax30] 0D | Show double-height string data 30 bytes to display line 1 and line 2. |
| ESC q F | 1B 71 46 [datax30] 0D | Show double-height string data 30 bytes to display line 3 and line 4. |
| ESC q G | 1B 71 47 [datax46] 0D | Marquee on line 1. |
| ESC q H | 1B 71 48 [datax46] 0D | Marquee on line 2. |
| ESC q I | 1B 71 49 [datax46] 0D | Marquee on line 3. |
| ESC q J | 1B 71 4A [datax46] 0D | Marquee on line 4. |
| ESC q K | 1B 71 4B [datax46] 0D | Double-width marquee on line 1 and line 2. |
| ESC q L | 1B 71 4C [datax46] 0D | Double-width marquee on line 3 and line 4. |
| US | 1F | Clear display screen. |
| FF | 0C | Clear display screen. |
| SO | 0E | Set double-width character mode . |
| DC4 | 14 | Cancel double-width character mode . |
| ESC s | 1B 73 | Store the use define pattem |
| ESC q t | 1B 71 74 h m<br>0<=h<=17<br>0<=m<=3b | Set time h=hour ,m=minute. |

**3. SD-8240 Mode Command List**

| Command | Code (hex) | Name and description |
|---|---|---|
| ESC q A | 1B 51 41 [datax30] 0D | Show string data 30 bytes to display line 1. |
| ESC q B | 1B 51 42 [datax30] 0D | Show string data 30 bytes to display line 2. |
| ESC q C | 1B 51 43 [datax30] 0D | Show string data 30 bytes to display line 3. |
| ESC u A | 1B 75 41 [datax30] 0D | Show string data 30 bytes to display line 1. |
| ESC u B | 1B 75 42 [datax30] 0D | Show string data 30 bytes to display line 2. |
| ESC u C | 1B 75 43 [datax30] 0D | Show string data 30 bytes to display line 3. |
| ESC u D | 1B 75 44 [datax46] 0D | Marquee on line 1. |
| ESC u J | 1B 75 4A [datax46] 0D | Marquee on line 2. |
| ESC u K | 1B 75 4B [datax46] 0D | Marquee on line 3. |
| CLR | 0C | Clear display screen. |
| US T h m | 1B 75 45 h m<br>0<=h<=17 , 0<=m<=3b | Set time h=hour ,m=minute. |

# *Appendix V* Font Table

**5-1. ASCII (20H – 7EH) for SD-240B series**

| | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | A0 | B0 | C0 | D0 | E0 | F0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | SP | 0 | @ | P | ` | p | | | Chinese character | | | | | |
| 1 | ! | 1 | A | Q | a | q | | | | | | | | |
| 2 | “ | 2 | B | R | b | r | | | | | | | | |
| 3 | # | 3 | C | S | c | s | | | | | | | | |
| 4 | $ | 4 | D | T | d | t | | | | | | | | |
| 5 | % | 5 | E | U | e | u | | | | | | | | |
| 6 | & | 6 | F | V | f | v | | | | | | | | |
| 7 | ‘ | 7 | G | W | g | w | | | | | | | | |
| 8 | ( | 8 | H | X | h | x | | | | | | | | |
| 9 | ) | 9 | I | Y | I | y | | | | | | | | |
| A | ✞ | : | J | Z | j | z | | | | | | | | |
| B | + | ; | K | [ | k | { | | | | | | | | |
| C | , | < | L | \ | l | \| | | | | | | | |
| D | - | = | M | ] | m | } | | | | | | | | |
| E | . | > | N | ^ | n | ~ | | | | | | | | |
| F | / | ? | O | _ | o | SP | | | | | | | | |

**5-2. Standard Europe (80H – FFH) for SD-240B2**

| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 0A | 0B | 0C | 0D | 0E | 0F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | ñ | Ñ | ã | õ | ¿ |
| A0H | á | í | ô | ú | ȼ | ₤ | ¥ | ¤ | ƒ | ¡ | Ã | £ | Õ | õ | Ø | ø |
| B0H | § | ´ | · | ± | ¸ | ½ | ¼ | × | ÷ | Dø | ȼ | « | » | ╪ | ‖ | ¯ |
| C0H | ¶ | Đ | ə | Þ | ¦ | ¡ | λ | DZ | ɦ | ɋ | ¬ | Nj | ʊ | ° | ® | ⓒ |
| D0H | ‘I | Ö | ‘ϒ | Ω | Г | Д | θ | л | Ξ | П | Σ | ϒ | Φ | Ψ | Ω | α |
| E0H | β | γ | б | ε | ʒ | ɳ | θ | ι | к | λ | μ | ʒ | π | ρ | ʂ | σ |
| F0H | τ | ν | Φ | Χ | Ψ | ω | ï | ÿ | ó | ý | í | ϕ | ¯ | ⓒ | α | σ |

### 5.3 PC-850 (80H – FFH) for SD-240B2

| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 0A | 0B | 0C | 0D | 0E | 0F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | × | ƒ |
| A0H | á | í | ó | ú | ñ | Ñ | ª | º | ¿ | ® | ¬ | ½ | ¼ | ¡ | « | » |
| B0H | § | ´ | · | ± | ¸ | Á | Â | À | © | Dz | ȼ | « | » | ¢ | ¥ | ¯ |
| C0H | ¶ | Đ | ð | Þ | ¦ | ¡ | á | Ã | ɦ | ơ | ¬ | Nj | ȣ | ° | ® | ¤ |
| D0H | ð | Đ | È | Ë | É | \| | í | î | ï | dz | Ǵ | ǵ | ʜ | ƿ | Ǹ | ǹ |
| E0H | Ó | β | ô | Ò | ô | õ | µ | þ | Þ | Ú | Û | Ù | β | Ý | ¯ | ´ |
| F0H | ¯ | ± | ‖ | ¾ | ¶ | § | ÷ | ´ | ° | ˝ | ¸ | ¹ | ³ | ² | ǂ | \| |

#### 5.3.1 PC850 support country

| Character set | Code table ( 80H-FFH) |
|---|---|
| FRANCE | PC-850(multilingual) |
| GERMANY | PC-850(multilingual) |
| U.K. | PC-850(multilingual) |
| DENMARK I | PC-850(multilingual) |
| SWEDEN | PC-850(multilingual) |
| ITALY | PC-850(multilingual) |
| SPAIN | PC-850(multilingual) |
| NORWAY | PC-850(multilingual) |
| DENMARK II | PC-850(multilingual) |