

Model: PD7000 Series

Customer Display

7 inch TFT LCD Media Display



USER MANUAL

NOTICE

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1. BRIEF INTRODUCTION

1.1. THE PRODUCT

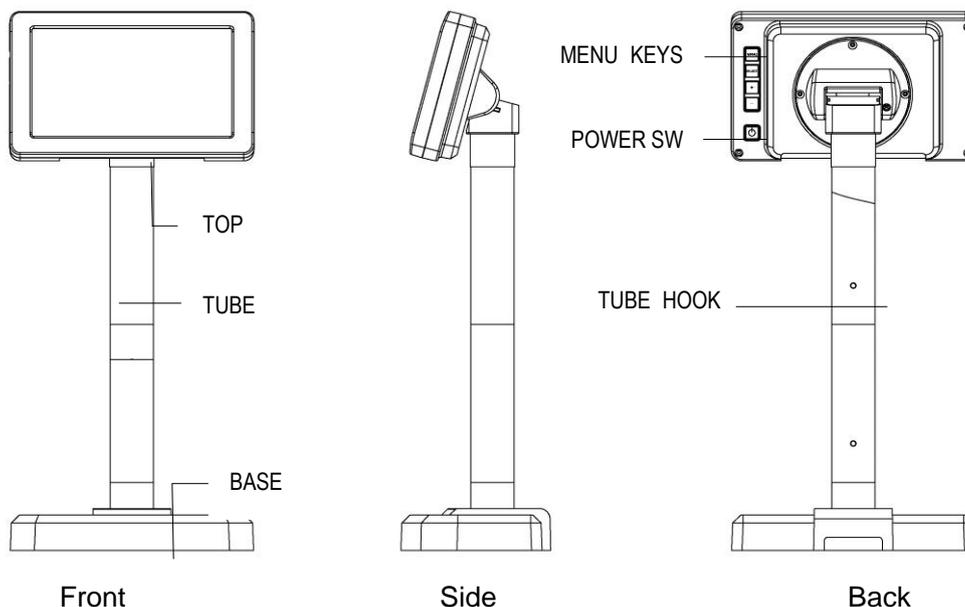
PD7000 is an innovative product that is designed to replace the current 2-line VFD customer display in the market. It retains the functions of the tradition 2-line customer display by offering command mode support from a majority of display makers (EPSON®, CD5220, UTC, Logiccontrol) in a 7" display package. This means the current 2-line display in operation can be easily replaced without complicated software modification.

But PD7000 is more than a simple 7" customer display. It is its multimedia capability that really sets PD7000 apart from the ordinary 2-line customer display. For the first time, store owner can deliver eye catching and colorful promotion message, advertising banner, or graphical item picture to the customers with the aid of powerful functions that comes with the display.

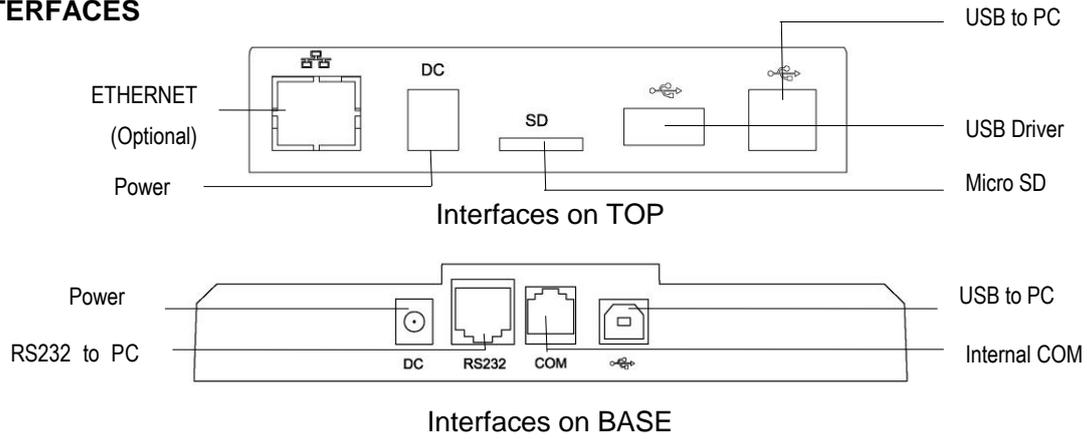
1.2. FEATURES

- 7" TFT LCD display with 800 x 480 dots resolution
- Character color and background color can be set independently
- Multiple text formats:
 - 20 chars x 2 lines / 20 chars x 4 lines / 20 chars x 12 lines
 - 30 chars x 2 lines / 30 chars x 4 lines / 30 chars x 12 lines
- Support commercial pictures in BMP, JPEG, or PNG format
- Slide show function for programmable time interval
- ESC/POS, CD5220 command support
- Pictures loading by USB driver
- Display frame can be portrait or landscape direction
- Both RS232 and USB interfaces
- Easily integrated with POS, ECR, Fiscal Printer and information terminal

1.3. OUTLOOK



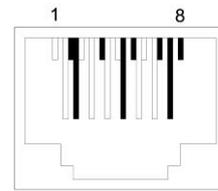
1.4. INTERFACES



1.5. RS232 Serial Interface Configuration (RJ45)

The pin out configuration for the standard serial pole display is a RJ45 connector on the base stand. The serial cable connects display from this port to the computer.

Pin Number	I/O	Signal Name
1	-	Field Ground
2	O	TXD
3	I	RXD
4	I	DSR
5	O	DTR
6	-	PS Ground
7	I	PS (+5V)
8	-	NC

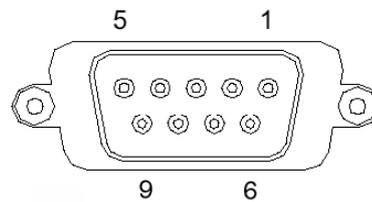


RJ45 connector to computer

1.6. RS232 Serial Cable Configuration (DB9F)

The pin out configuration for the standard serial cable is a DB9F connector. It plugs directly into the serial port of the computer.

Pin Number	I/O	Signal Name
1	-	NC (no connection)
2	I	RXD
3	O	TXD
4	O	DTR
5	-	GND
6	I	DSR
7	O	RTS
8	I	CTS
9	-	+5V



DB9F connector

2. INSTALLATION GUIDES

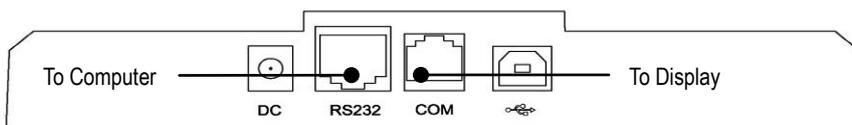
2.1. PACKAGE CONTENTS

The pole display has following components inside the package:

1. Display main unit (TOP) x 1
2. Tubes x 2
3. Base Stand x1
4. USB cable x 1 + RS232 cable (RJ45-DB9) x1 (optional)
5. Power adapter 5V/2.0A (optional)

2.2. PHYSICAL INSTALLATION

Find a flat surface to site the base of the display for application operation. Find in the bottom of the base the connectors as in the drawing below:



Please unpack the inner box of pole display and it easy to find the base, display unit, 2 tubes and adapter separately. Please remove the PE foam and bring out the components carefully.

Firstly, place the display head and tubes on a flat surface and find the cable which in the bottom of the display unit. Let this cable pass through the first tube and it shows in the picture at right. When “click” sound is heard, the tube is hooked in right position.



Pass the cable into the first tube



Hook the tube to the TOP



Buckle 2nd tube to the 1st one



Pass the cable through the BASE



Insert cable into the connector

Next, please pass through the cable into the second tube, and assemble the display head with tube to the second tube in the right picture. Please pay more attention during the process since there is a hole and a compression lock which are in the two side of tube and marked arrow signs. Aim these two arrow signs nearby compression lock to the holes and push the tube to the end. After hear the “click” sound, the assembly is complete.

Then pass through the cable into the base stand, and hook the second with the base stand as the same way above.

Once combine the display head with tube and base stand, please place the pole display as a horizontal position which can easily to check the bottom plate.

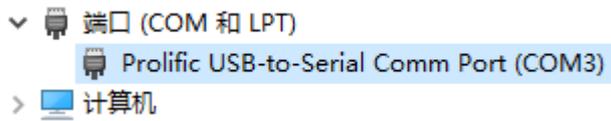
Please plug the cable to the connector which showing “To Display” and route the cable as arrowed in the right picture.

2.3. DRIVER INSTALLATION

For application software to use the RS232 interfaced PD-7000 series, there is no direct need for any driver.

For application to use the USB interfaced, you need to install Virtual Com Port Driver. You can get the driver from the maker of the display.

After you successfully installed driver, it shows in the computer as below when you browse the computer hardware device:



3. SPECIFICATION

OPTICAL

Display Size	7 inch TFT LCD
Resolution	800x400 dots
Dot matrix	16(W) x32 (H) dots
Character height	5.73 mm
Character width	3.08 mm
Characters per line	20-40 chars
Text lines	2,4,12
Graphic format	BMP, JPEG

MECHANICAL

Total Height	413 mm
Total Width	185 mm
Total Depth	114 mm
Tilting angles	30 degree
Rotating angle	270 degree
Case color	Black or Ivory

ELECTRICAL

Power from adapter:	5 VDC 2.0A/110V-240VAC
RS232 interface	9600 bps, none parity, 8 data bits, 1 stop bits
USB interface	USB 2.0 VCP mode

ENVIRONMENTAL

Operating temperature	0 to +50 °C
Storage temperature	-10 to + 60 °C
Operating humidity	20% to 85%, non-condensing
Storage humidity	5% to 90%, non-condensing

4. Key Function

There are 5 keys on back top of display for configuration of the display.

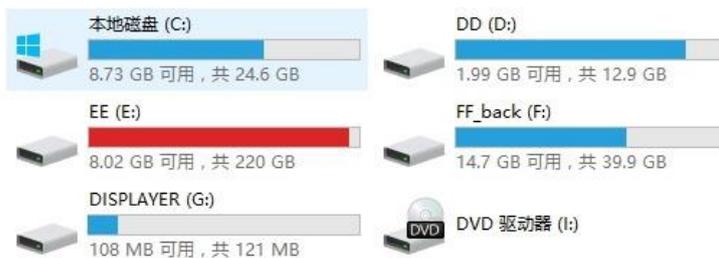
Key name	Function 1 (customer display, short press)	Function 2 (customer display, long press)	Function 3 (GUI)	Function 4 (switch mode)
	Enter the sales window, Stop picture playback	Enter GUI	Quit GUI Quit child window	(long press) after power on, Immediately enter USB disk mode
	Enter the full picture window, Start or Stop picture playback	Previous picture	Select the current item	(Short press) Exit USB disk mode, Enter customer display mode
	Increase the brightness	default brightness	Focus to the next item	
	Reduce the brightness	Lowest rightness	Focus to the previous item	(long press) after power on, Immediately enter IAP update mode
	Backlight on/off	Reset system		

5. IMAGE OPERATIONS

The display can show pictures of banners, advertisement messages, or item photos. Pictures are saved in certain directories on internal memory (NAND Flash) or Micro SD card, which is externally accessible. PD-7000 supports BMP, JPEG, and PNG image format. The image resolution adapted is 800x480 (full screen) and 400 x 480 (half screen). The full-screen pictures are played as slide show when the display enters idles status.

5.1. Load pictures from PC

When PD7028 work in **USB disk mode**, Connect the display to the computer. Display internal memory will show as a Driver name “Displayer” in explore window as shown below



Then you click “Displayer” disk, you will find there are file directories as following:



Full-size pictures saved in directory “pic_full”, half-size saved in “pic_half”. Now you can drag and drop pictures on your computer to appropriate directories according to your needs.

Please follow naming rules of graphic files in below table:

Directory	Names of graphic files	Descriptions
pic_full	f000.bmp, ... f008.bmp f000.jpg, ... f008.jpg	Full-size pictures of 800x480 dots. These pictures are played when the display enters into idle mode. Supports loop playback 9 pictures
pic_half	h000.bmp h000.jpg	Half-size pictures of 400x480. it is played on the right side while sales information is shown on left side. Supports display only one pictures
pic_other	start.bmp, open.bmp, close.bmp...	Start.bmp is displayed on power up.
pic_PLU	p000.gif, ... p999.gif	PLU images. These images are stored in the display. The host sends command to display it when making PLU sales.
System	System parameters, no accessible by users	

5.2. Load pictures through SD card

Pictures can be saved from PC to a SD card and put SD card inside the display. Then the display can play pictures saved on SD card. There are the same directories on SD card as in internal NAND

5.3. Play pictures

The pictures stored in **pic_full** directory are played when the display enter idle status. Files in **pic_half** are played in normal operation (showing messages from the host).

6. International Code Pages

DEC n	HEX n	Table of External Font (80H...FFH)
0	00H	PC437--U.S.A. and Standard Europe(A)
1	01H	Katakana for Japan(K)
2	02H	PC850--Multilingual(M)
3	03H	PC860--Portuguese(P)
4	04H	PC863--Canadian French(C)
5	05H	PC865--Nordic(N)
6	06H	SLAVONIC(S)
7	07H	RUSSIA(R)
8	08H	Win1252
9	09H	PC866--Cyrillic #2
10	0AH	PC852--Latin2
11	0BH	PC858--Euro
12	0CH	Win1251
13	0DH	
14	0EH	
15	0FH	Chinese

7. Command Set Emulations

7.1. SYSTEM COMMAND

Command	Hex Code	Description
STX 2	02 32	Reset the display
STX MD5	02 05	Select international character set
STX MD6	02 06	Select extend font
STX B n	02 42 n	Set baud rate
STX D n	02 44 01	Display demo message
STX S 1	02 53 31	Save data for demo display
STX C n	02 43 n	Command type select
STX MD5 D 8 ETX	02 05 44 08 03	Run Scroll Demo message
STX MD5 L n m ETX	02 05 4C nn mm 03	Save data for scroll demo display
STX 8 n n	02 38 n n	Display PLU image by its number nnn. In display this image saved in name pnnn
ESC S 1	1B 53 31	Save data for Power-on Moving Message
STX 3 f	02 33 66	Enter USB disk mode
STX 3 h	02 33 68	Exit USB disk mode

7.2. DISPLAY FORMAT COMMAND

Factory setting

Display Format: 2 lines x 20 chars per line

Font Size: 32(H) x 16 (W) for English letters, 32 (H)x32(W) for Chinese characters

Command	Hex Code	Description
STX 4 a n	02 34 61 n	Number of lines: n = 0x02, 0x04, or 0x12
STX 4 b n	02 34 62 n	Number of chars per line: n=0x20, or 0x30
STX 4 c n	02 34 63 n	Font height: n= 0x24 or 0x32 0x36 0x48
STX 3 i	02 33 69	Save settings of display format. You must restart the display by power off in order to make settings effect!
STX 4 ` n	02 34 60 n	Set font height dynamically: n= 0x24 or 0x32 0x36 0x48
STX 4 p n	02 34 70 n	Set foreground color dynamically: n= 0x31...0x37 or 0x41...0x43
STX 4 q n	02 34 71 n	Set background color dynamically: n= 0x31...0x37 or 0x41...0x43
STX 4 r n	02 34 72 n	Enable or Disable underling dynamically
STX 3 s	02 33 73	Start picture playback
STX 3 t	02 33 74	Stop picture playback
STX 4 e n	02 34 65 n	Wait time for starting picture playback: n=0x03...0xff
STX 4 f n	02 34 66 n	Interval time for next picture: n=0x03...0xff

7.3. CD5220 Commands

Command	Hex Code	Description
ESC DC1	1B 11	overwrite mode
ESC DC2	1B 12	vertical scroll mode
ESC DC3	1B 13	horizontal scroll mode
ESC * n	1B 2A n	brightness adjustment
ESC _ n	1B 5F n	set cursor ON/OFF
ESC c	1B 63	Select extend fonts
ESC f	1B 66	select international fonts
ESC [A	1B 5B 41	move cursor up
ESC [B	1B 5B 42	move cursor down
LF	0A	move cursor down
BS	08	move cursor left
HT	09	move cursor right
ESC [D	1B 5B 44	move cursor left
ESC [C	1B 5B 43	move cursor right
HOM	0B	move cursor to home position
ESC [H	1B 5B 48	move cursor to home position
ESC [K	1B 5B 4B	move cursor to bottom position
CR	0D	move cursor to left-most position
ESC [L	1B 5B 4C	move cursor to left-most position
ESC [R	1B 5B 52	move cursor to right-most position
ESC I x y	1B 6C x y	move cursor to specified position
ESC @	1B 40	initialize display
CLR	0C	clear display screen
CAN	18	clear cursor line, and clear string mode
ESC Q A d ₁ d ₂ d ₃ ...d _n CR	1B 51 41 d ₁ d ₂ d ₃ ...d _n 0D	Upper line display
ESC Q B d ₁ d ₂ d ₃ ...d _n CR	1B 51 42 d ₁ d ₂ d ₃ ...d _n 0D	Lower line display
ESC Q D d ₁ d ₂ d ₃ ...d _n CR	1B 51 44 d ₁ d ₂ d ₃ ...d _n 0D	upper line message scroll continuously
ESC Q C d ₁ d ₂ d ₃ ...d _n CR	1B 51 43 d ₁ d ₂ d ₃ ...d _n 0D	lower line message scroll continuously

7.4. ESC/POS Commands

Command	Hex Code	Description
US MD1	1F 01	overwrite mode
US MD2	1F 02	vertical scroll mode
US MD3	1F 03	horizontal scroll mode
US X n	1F 58 n	brightness adjustment
US C n	1F 43 n	Turn cursor display mode on/off
ESC R n	1B 52 n	select international character set
ESC t n	1B 74 n	select character code table
US LF	1F 0A	move cursor up
LF	0A	move cursor down
BS	08	move cursor left
HT	09	move cursor right
HOM	0B	move cursor to home position
US B	1F 42	move cursor to bottom position
CR	0D	move cursor to left-end position
US CR	1F 0D	move cursor to right-end position
US \$ x y	1F 24 x y	move cursor to specified position
ESC @	1B 40	initialize display
CLR	0C	clear display screen
CAN	18	clear cursor line
US @	1F 40	execute self-test
US r n	1F 72 n	select/cancel reverse character
US,	1F 2C n	Display character n , and turn the comma of the character on
US.	1F 2E n	Display character n , and turn the point of the character on
US;	1F 3B n	Display character n , and turn the semicolon of the character on
US #	1F 23 n	turn annunciator ON/OFF
US T h m	1F 54 h m	set and display time
US U	1F 55	continue to display time
US E n	1F 45 n	Sets display screen blank interval
ESC W	1B 57 n m x1 y1 x2 y2	Set/cancel window rang
ESC = n	1B 3d n	Select other display
ESC & s n m	1B 26 01 n m a(p1...pa*s) x (m-n+1)	download user defines characters
ESC % n	1B 25 n	select/cancel download character set

7.5. LOGIC CONTROLS Commands

Command	Hex Code	Description
ESC u A d1...dn	01	Data to Peripheral
ESC u B d1...dn	21 23 02	Data to Display
EOT n	04 n	Brightness Control
BS	08	back space
HT	09	horizontal tab
LF	0A	Line Feed
CR	0D	Carriage Return
DLE	10 n	move cursor to specified position
DC1	11	Normal Display Mode
DC2	12	vertical scroll mode
DC3	13	Cursor On
DC4	14	Cursor Off
US	1F	Reset

7.6. UTC/standard mode

Command	Hex Code	Description
EOT n	04 n	Brightness Control
BS	08	back space
HT	09	horizontal tab
LF	0A	line feed
CR	0D	carriage return
DEL n	10 n	move cursor to specified position
DC1	11	over write display mode
DC2	12	vertical scroll mode
DC3	13	cursor on
DC4	14	cursor off
CAN	18	clear cursor line
ESC d	1B 64	change to UTC enhanced mode
US	1F	clear display

7.7. UTC/enhanced mode

Command	Hex Code	Description
ESC u A d1...dn	1B 75 41 d1...dn 0D	upper line display
ESC u B d1...dn	1B 75 42 d1...dn 0D	bottom line display
ESC u D d1...dn	1B 75 44 d1...dn 0D	upper line message scroll continuously
ESC u F d1...dn	1B 75 46 d1...dn 0D	upper line message scroll one pass
ESC u I d1...dn	1B 75 49 d1...dn 0D	two line display
ESC RS CR	1B 0F 0D	change to UTC standard mode