CD5X USER MANUAL

Pinnacle Technology Corp.
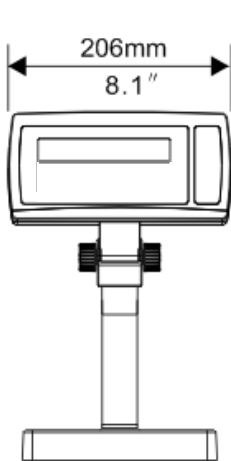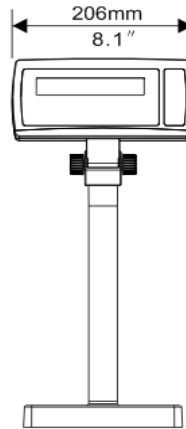
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1   GENERAL DESCRIPTION
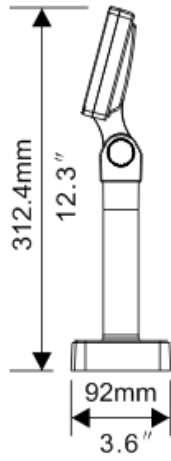
- According to shortest play mode to explain or play advertisement automatically.
- Capable to update the customer display program by PC.
- With RS232/USB port, full communication protocol, easy to connect to PC or other equipment. Compatible with ESC/P command.
- 32*240 graphic LCD display
- 2 lines, 20 characters each line.

2   DIMENSION

CD5X100   CD5X240
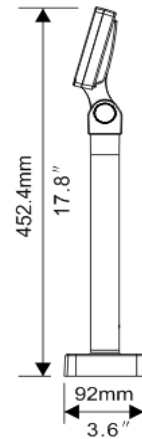
3   UNPACKING

Located in the packing are the following items:

Display screen

PC Disk
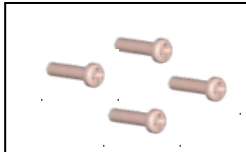
4 screws

Display pole
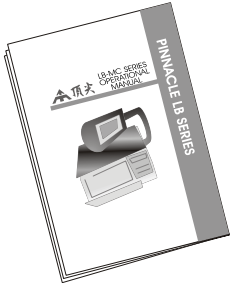
User manual

Display pedestal

Connecting cable (for CD5U)

Connection cable (for CD5R)

4 INSTALLATION

Draw the wire out
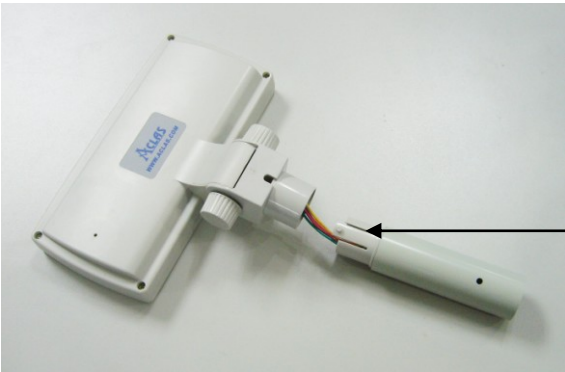
Make the wire through the hollow pole and mount the pole on.
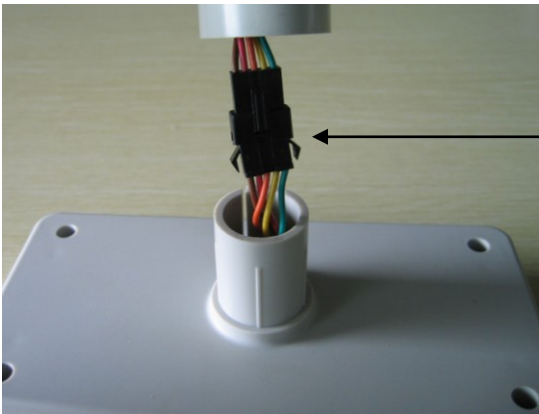
Connect the wires
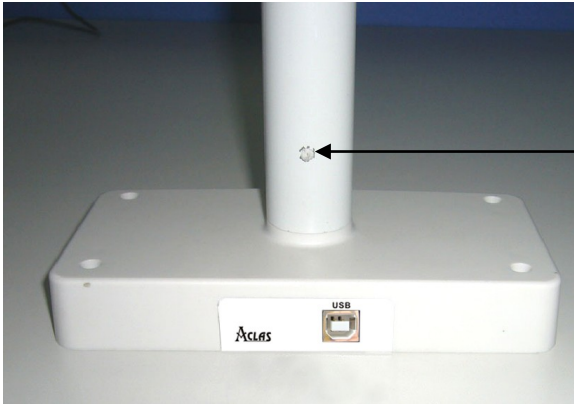
Mount the pole onto the display pedestal
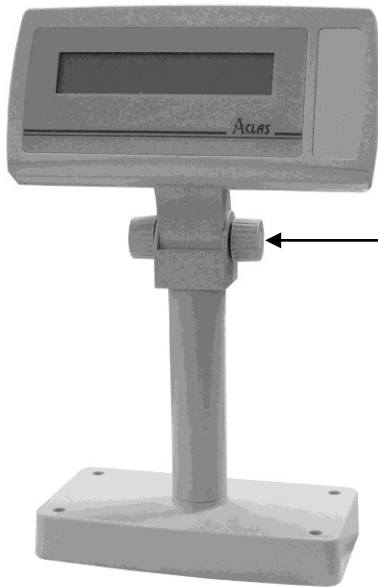
Finish. Loose the knob to change the display's direction.

5 CONNECTION

RS232 port type:

Connect to CDX	RS232 A

PHONE4

Connect to D9 port of PC or other terminal

D9(母)

D9 B

| USB		PHONE4		D9
红	1	红	1	1
黑	4	黑	2	4
	3	蓝	3	5
	2	白	4	3
				2
				6
				7
				8
				9

USB C

4321

Connect to USB port of PC or other terminal to get power.

USB port type:

Connect to CDX

A
Slave AM

B
Master AM

Connect to USB port or other terminal

C
Master AM

4321

USB Connection

Color	port A	port B	port C
Blue	1	1	1
White	2	2	
Red	3	3	
Black	4	4	4

Connect to USB port of PC or other terminal to get power.

Note: if there is no USB port on the terminal or the power supply is short, you can use the optional USB power supplier.

6 FIRICH COMMAND SET TABLE

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 QA *d1...dn* **CR**	1B 51 41 *d1...dn* 0D 1<=*n*<=20	Set string display mode, write string to upper line
ESC QB *d1...dn* **CR**	1B 51 42 *d1...dn* 0D 1<=*n*<=20	Set string display mode, write string to lower line
ESC QD *d1...dn* **CR**	1B 51 44 *d1...dn* 0D 1<=*n*<=20	Set string display mode, write string to upper line and scroll the message continuously
ESC [A	1B 5B 41	Move cursor up
ESC [B	1B 5B 42	Move cursor down
LF	0A	Move cursor down
ESC [C	1B 5B 43	Move cursor right
HT	09	Move cursor right
ESC [D	1B 5B 44	Move cursor left
BS	08	Move cursor left
ESC [H	1B 5B 48	Move cursor home
HOM	0B	Move cursor home
ESC [L	1B 5B 4C	Move cursor to left-end
CR	0D	Move cursor to left-end
ESC [R	1B 5B 52	Move cursor to right-end
ESC [K	1B 5B 4B	Move cursor to bottom
ESC l *x y*	1B 6C *x y* 01h<=*x*<=14h *y*=01h, 02h	Move cursor to specified position
ESC @	1B 40	Initialize display
CLR	0C	Clear display, clear string mode
CAN	18	Clear cursor line, clear string mode
ESC _ *n*	1B 5F *n* *n*=00h, 01h	Set cursor on/off
ESC W *s x1 x2 y*	1B 57 *s x1 x2 y s*=00h, 01h 01h<=*x1*<=*x2*<=14h *y*=01h, 02h	Set/cancel the window range in horizontal scroll mode
ESC * *n*	1B 2A *n* 01h<=*n*<=04h	Brightness adjustment

7 FIRICH DISPLAY MODE DESCRIPTION

There are basically four display modes for the Customer Display. The user may choose the mode that is most appropriate for the application.

Overwrite Mode

This is the default mode. **ESC DC1** and **ESC @** commands would also put the display into this mode. The cursor moves from left to right, if it is at the end of the line, it moves to the beginning of the other line. Characters are displayed at the current cursor position, overwriting what is originally there, the cursor is then moved to the next position.

Vertical Scroll Mode

If the cursor is at the upper line it behaves like the **overwrite mode**. When it is at the end of the lower line, the next character would scroll the content of the lower line to upper line, the lower line is cleared and the cursor is moved to the beginning of the lower line.

Horizontal Scroll Mode

In this mode the cursor stays in whatever line it is at, unless changed by cursor movement commands. When the cursor is not at the end of the line, the input character is displayed at current cursor position, the cursor is then moved right. Once at the end of the line, subsequent character input would scroll the current line left one position, and the new character is displayed at the end position. There is also a command, **ESCW**, to set display window in this mode. The effective display line would be limited within the window as defined by the command.

String Mode

This mode is perhaps the simplest used. The two display lines are treated independently. Only two commands, **ESC QA** and **ESC QB**, are needed. **ESC QA** followed by a string of no more than twenty characters would display the string on the upper line, left aligned. A **CR** (0Dh) character terminates the command. If the string is less than twenty characters in length, the rest of the display line is padded with blank. **ESC QB** does the same for the lower display line. The only other commands active in this mode are **CLR** and **CAN**. **CLR** would clear the display and change the Customer Display into **overwrite mode**. **CAN** clears the last line that was changed and change the Customer Display into **overwrite mode**. The initialization command, **ESC @**, has no effect in this mode.

8   FIRICH COMMAND SET DESCRIPTION

ESC DC1   /Set overwrite mode/
Dec. Format   [027] [017]
Hex. Format: [1Bh] [11h]
Description: Set the display to overwrite mode. This is the default power on display mode.

ESC DC2   /Set vertical scroll mode/
Dec. Format   [027] [018]
Hex. Format: [1Bh] [12h]
Description: Set the display to vertical scroll mode.

ESC DC3   /Set horizontal scroll mode/
Dec. Format   [027] [019]
Hex. Format: [1Bh] [13h]
Description: Set the display to horizontal scroll mode.

ESC QA *d1d2d3 . . . dn* **CR** /Set string display mode, write string to upper line/
Dec.Format   [027] [081] [065] *d1d2d3 . . . dn* [013]
Hex. Format: [1Bh] [51h] [41h] *d1d2d3 . . . dn* [0Dh]
                   {20h <= dn <= FFh, 1 <= n <=20}
Description: Set string display mode, write to the upper line.
                   The string display mode can be cancelled with **CLR** or **CAN**.

ESC QB *d1d2d3 . . . dn* **CR** /Set string display mode, write string to lower line/
Dec.Format   [027] [081] [066] *d1d2d3 . . . dn* [013]
Hex. Format: [1Bh] [51h] [42h] *d1d2d3 . . . dn* [0Dh]
                   {20h <= dn <= FFh, 1 <= n <=20}
Description: Set string display mode, write to the lower line.
                   The string display mode can be cancelled with **CLR** or **CAN**.

ESC QD *d1d2d3 . . . dn* **CR**
                   /Write string to the upper line and scroll the message continuously/
Dec.Format   [027] [081] [068] *d1d2d3 . . . dn* [013]
Hex. Format: [1Bh] [51h] [44h] *d1d2d3 . . . dn* [0Dh]
                   {20h <= *dn* <= FFh, 1 <= *n* <=20}
Description: Scroll message continuously on the upper line. Upon receiving a new command, the upper line is
                   cleared and the cursor is moved to the upper left end.

ESC [A   /Move cursor up/
Dec. Format: [027] [091] [065]
Hex. Format: [1Bh] [5Bh] [41h]
Description: Move the cursor up one line. When the cursor is at the upper line, this command operates
                   differently depending on the display mode:
                   1. Overwrite mode:

The cursor is moved to the same column on the lower line.

2. Vertical scroll mode:

The characters displayed on the upper line are scrolled to the lower line, and the upper line is cleared. The cursor remains at the same position.

3. Horizontal scroll mode:

The cursor is not moved.

ESC [B	/Move cursor down/
LF	
Dec. Format:	[027] [091] [066]
	[010]
Hex. Format:	[1Bh] [5Bh] [42h]
	[0Ah]
Description:	Move the cursor down one line. When the cursor is at the lower line, this command operates differently depending on the display mode:

1. Overwrite mode:

The cursor is moved to the same column on the upper line.

2. Vertical scroll mode:

The characters displayed on the lower line are scrolled to the upper line, and the lower line is cleared. The cursor remains at the same position.

3. Horizontal scroll mode:

The cursor is not moved.

ESC [C	/Move cursor right/
HT	
Dec. Format:	[027] [091] [067]
	[009]
Hex. Format:	[1Bh] [5Bh] [43h]
	[09h]
Description:	Move the cursor one position to the right. When the cursor is at the right end, this command operates differently depending on the display mode:

1. Overwrite mode:

The cursor moves to the left end of the other line.

2. Vertical scroll mode:

When the cursor is at the upper right end, it is moved to the lower left end.

When the cursor is at the lower right end, the lower line message is moved to the upper line. The lower line is cleared, and the cursor moves to the lower left end.

3. Horizontal scroll mode:

All characters on the current line are scrolled one to the left in the window. The cursor is not moved but the character area at the right end of the window is cleared.

ESC [D	/Move cursor left/
BS	
Dec. Format	[027] [091] [068]
	[008]
Hex. Format:	[1Bh] [5Bh] [44h]

[08h]

Description: Move the cursor one position to the left. When the cursor is at the left end, this command operates differently depending on the display mode:

1. Overwrite mode:

The cursor moves to the right end of the other line.

2. Vertical scroll mode:

When the cursor is at the lower left end, it is moved to the upper right end.

When the cursor is at the upper left end, the upper line message is moved to the lower line. The upper line is cleared, and the cursor moves to the upper right end.

3. Horizontal scroll mode:

All characters on the current line are scrolled one to the right in the window. The cursor is not moved but the character area at the left end of the window is cleared.

ESC [H   /Move cursor to home position/

HOM

Dec. Format: [027] [091] [072]

[011]

Hex. Format: [1Bh] [5Bh] [48h]

[0Bh]

Description: Move the cursor to the left-most position on the upper line.

ESC [L   /Move cursor to left-most position/

CR

Dec. Format: [027] [091] [076]

[013]

Hex. Format: [1Bh] [5Bh] [4Ch]

[0Dh]

Description: Move the cursor to the left-most position on the current line.

ESC [R   /Move cursor to the right-most position/

Dec. Format: [027] [091] [082]

Hex. Format: [1Bh] [5Bh] [52h]

Description: Move the cursor to the right-most position on the current line.

ESC [K   /Move cursor to the bottom position/

Dec. Format: [027] [091] [075]

Hex. Format: [1Bh] [5Bh] [4Bh]

Description: Move the cursor to the right-most position on the lower line.

ESC l x y /Move cursor to the specified position/

Dec. Format: [027] [108] x y {01h <= x <= 14h, 01h <= y <= 02h}

Hex. Format: [1Bh] [6Ch] x y

Description: Move the cursor to the x-th column on the y-th line.

ESC @   /Initialise display/

Dec. Format: [027] [064]

Hex. Format: [1Bh] [40h]

Description: Clear the data in the input buffer and reset settings to power on defaults.

CLR   /Clear display screen, and clear string mode/

Dec. Format: [012]

Hex. Format: [0Ch]

Description: Clear all the characters displayed, clear string mode.

CAN   /Clear cursor line, and clear string mode/

Dec. Format: [024]

Hex. Format: [18h]

Description: Clear the line where the cursor is at, clear string mode.

ESC _ *n*   /Set cursor ON or OFF /

Dec. Format: [027] [095] *n* {00h <= *n* <= 01h}

Hex. Format: [1Bh] [5Fh] *n*

Description: Set cursor ON or OFF.

                When n = 00h, cursor is set to OFF

                When n = 01h, cursor is set to ON

ESC W *S X1 X2 Y* /Set or cancel the window range at horizontal scroll mode/

Dec. Format: [027] [087] [000]

                [027] [087] [001] x1 x2 y

Hex. Format: [1Bh] [57h] [00h]

                [1Bh] [57h] [01h] x1 x2 y

                {01h <= x1 <= x2 <= 14h, 01h <= y <= 02h}

Description: Set or cancel the window on the display screen.

                When s = 00h, window is cancelled.

                When s = 01h, window is set, where x1 and x2 set the position of the left-most and the right-most

                columns of the window.

                y sets the upper or lower line.

                The window is effective in the horizontal scroll mode.

ESC * *n*   /Adjust brightness/

Dec. Format: [027] [042] *n*   {01h <= *n* <= 04h}

Hex. Format: [1Bh] [2Ah] *n*

Description: Adjust display brightness