

Users' Manual

CITIZEN CUSTOMER DISPLAY MODEL C2202-PD

Japan CBM Corporation

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1. FEATURES

- 20 columns x 2 lines for each side
- Display panel is adjustable both by tilting vertically and rotating horizontally.
- Configuration of baud rate, command emulation mode, and user defined font is selectable by window based support software .
- Command emulation modes include C2202-PD, ESC/POS.
- Support software has facility for designing user-defined characters and downloading setup parameters to the display. Once in the display new characters are stored in non-volatile EEPROM.
- Reverse characters (black characters on blue green background) can be specified using the ESC/POS command emulation.
- Display windowing commands are available using C2202-PD or ESC/POS command emulation.
- Uses RS-232 serial interface with communication speeds from 300 to 38400 BPS.
- Display pass through function allows printer and display to share one port.

※ESC/POS is a trade mark of SEIKO EPSON corporation.

2. GENERAL SPECIFICATIONS

ITEM	C2202-PD		
Display method	Vacuum fluorescent display		
Display color	Blue green		
Number of characters	40 characters (20 columns x 2 lines)		
Brightness	700 cd/m ²		
Character type	96 alphanumeric 13 kinds of international character set and 1 user-define character set		
Character font	5 x 7 dot matrix, comma, decimal point		
Character size	9.2mm x 5.25mm		
Character pitch	8.3mm		
Power supply	12VDC		
Power consumption	4.5W		
MTBF(power on time)	25000 hours		
Dimensions	230(W)x100(H)x42(D)mm		
Viewing angle	±30 degrees		
Rotation angle	Maximum 270 degrees		
Weight	0.9 Kg		
Environmental Condition	Operating	Temperature	5 - 45°C
		Humidity	Less than 95%
	Storage	Temperature	-5 - 55°C
		Humidity	Less than 95%
Safety	FCC class B 、CE		

Table 1-2

3. INTERFACE SPECIFICATIONS

3.1 Serial port (RS232C)

3.1.1 Serial port (RS232C) communication

- (a) This interface specification is based on EIA RS232C baud rate 300 to 38400 BPS,
8 data bits, none parity, 1 or more stop bits
- (b) Serial port (RS232C) communication data link

Data link flow chart:



Control for RTS and DTR :



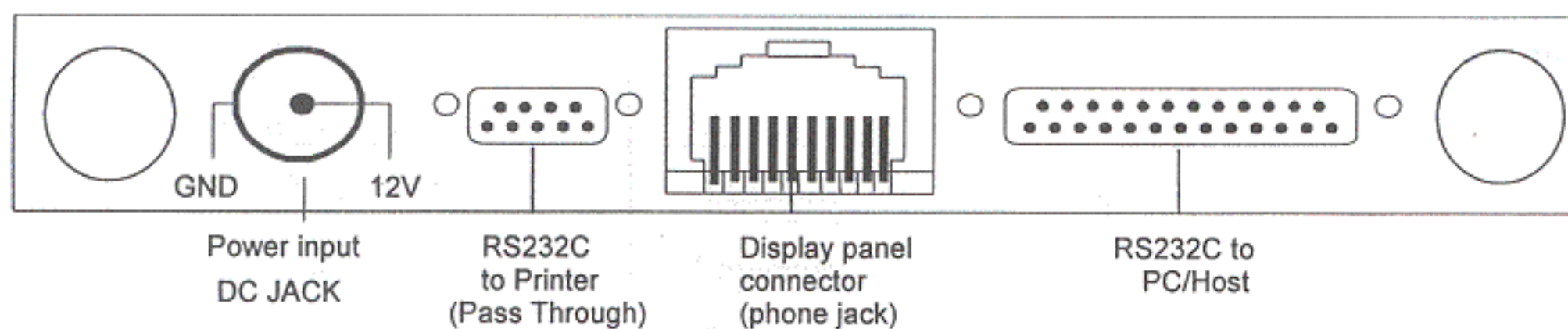
- (c) C2202-PD will activate DTR or RTS signal to PC/host in the following two conditions:

1. Printer will activate DTR or RTS signal.
2. The pass through buffer in C2202-PD is full (200 bytes) .

* If PC/host keep transmitting the data to printer when C2202-PD activate DTR or RTS, the data will be lost.

3.1.2 Serial port interface for rectangle basic section

- (a) Serial port interface connector position for rectangle basic section



- (b) Power input

Connector type: DC JACK (5.5/2.1)

(c) RS232C to PC/HOST connector: D-sub 25 pin female pin assignment

Pin No.	Signal	Direction	Function description
1	FG		Frame ground
2	TXD	From printer to PC/Host	Printer status data
3	RXD	Input	Receive data
4	RTS	Output	Display/printer ready signal
5	CTS	From PC/HOST to printer Host	Ready signal
6	DSR	From PC/HOST to printer	Host ready signal
7	GND		Signal ground
16	V+	Input	If using power built-in
20	DTR	Output	Display/printer ready signal

Table 3-1

(d) RS232C to printer connector: D-sub 9 pin male pin assignment

Pin No.	Signal	Input / Output direction	Function description
2	RXD	From printer to PC/Host	Printer status data
3	TXD	Output	Transmit data
4	DTR	From PC/HOST to printer	Host ready signal
5	GND		Signal ground
6	DSR	Input	Printer ready signal
7	RTS	From PC/HOST to printer	Host ready signal
8	CTS	Input	Printer ready signal

Table 3-2

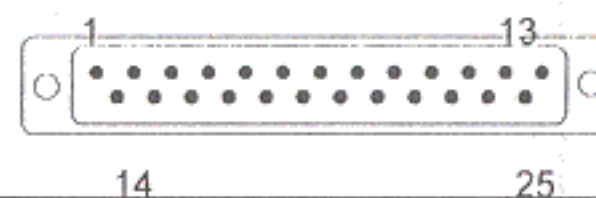
3.1.3 Serial port interface to the space-saving base portion

(a) Power cable connector: DC jack (5.5/2.1)



GND 12V

(b) RS232C interface pass through cable connector: D-sub 25 pin female pin assignment

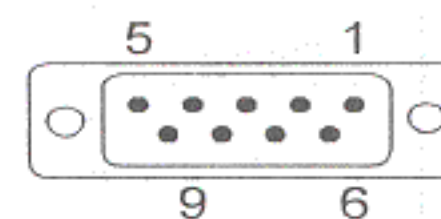


Pin No.	Signal	Input / Output direction	Function description
2	RXD	From printer to PC/Host	Printer status data
3	TXD	Output	Transmit data
4	CTS	Input	Printer ready signal
5	RTS	From PC/HOST to printer	Host ready signal
6	DTR	From PC/HOST to printer	Host ready signal
7	GND		Signal ground
20	DSR	Input	Printer ready signal

Table 3-3

(c) RS232C interface to PC/HOST cable, PC/HOST side connector pin assignment

Connector type: D-sub 9 pin (Male)



Pin No.	Signal	Direction	Function description
2	TXD	From printer to PC/Host	Printer status data
3	RXD	Input	Receive data
4	DSR	From PC/HOST to printer	Host ready signal
5	GND		Signal ground
6	DTR	Output	Display/printer ready signal
7	RTS	Output	Display/printer ready signal
8	CTS	From PC/HOST to printer	Host ready signal

Table 3-4

4. SYSTEM COMMAND DETAILS

4.1 Baud rate

STX 05 B n ETX /Set baud rate and keep it with EEPROM/
 ASCII Format STX 05 B n ETX
 Dec. Format [02][05][66] n [03]
 Hex. Format [02h][05h] [42h] n [03h] $30h \leq n \leq 37h$
 Description Change the display communication baud rate. The baud rate setting can be selected from 300 to 38400. The setting function will be saved to EEPROM.

n	Baud rate
※ 30h	9600
31h	4800
32h	2400
33h	1200
34h	600
35h	300
36h	38400
37h	19200

※Factory Setting

4.2 Set Communication Option

STX 05 P n ETX Set the communication parity
 ASCII Format STX 05 P n ETX
 Dec. Format [02][05][80] n [03]
 Hex. Format [02h][05h][50h] n [03h] $31h \leq n \leq 36h$
 Description Change the display communication parity. Set 7 or 8 data bit and the parity set for even, odd, or non-parity.

N	Parity
※ 31h	N-8-1
32h	N-7-1
33h	E-8-1
34h	E-7-1
35h	O-8-1
36h	O-7-1

※Factory Setting

4.3 Default Command emulation select

STX 05 C n ETX Change command emulation
 ASCII Format STX 05 C n ETX
 Dec. Format [02][05][67] n [03]
 Hex. Format [02h][05h] [43h] n [03h] $30h \leq n \leq 31h$
 Description This command will change the command emulation and initialize the display. The display emulation mode is based on C2202-PD/ESC/POS. The setting function will be saved to EEPROM.

n	Command emulation	n	Command emulation
※ 30h	C2202-PD	31h	ESC/POS

※Factory Setting

4.4 Default code page

STX 05 T n ETX Chang code page
 ASCII Format STX 05 T n EXT
 Dec. Format [02][05][84] n [03]
 Hex. Format [02h][05h][54h] n [03h] $30h \leq n \leq 37h$
 Description Select code page

N	Code page
※ 0	Page 0,(PC437:U.S.A.,standard Europe)
1	Page 1,(Katakana for Japan)
2	Page 2,(PC850:multilingual)
3	Page 3,(PC860:Portuguese)
4	Page 4,(PC863:Canadian-French)
5	Page 5,(PC865:Nordic)
6	Page 6,(SLAVONIC)
7	Page 7,(RUSSIA)
8	Page 8,(PC858:Euro)
9	Page 9,(WPC1252:Window Code)

※Factory Setting

4.5 Default International character set

STX 05 S n ETX Change international character set

ASCII Format STX 05 S n ETX

Dec. Format [02][05][83] n [03]

Hex. Format [02h][05h] [53h] n [03h] 30h≤n≤3fh

Description Change the display international character font. A total of 16 different character fonts to select from. The setting function will be saved to EEPROM.

n	International character set	N	International character set
※ 30h	U.S.A	38h	JAPAN
31h	FRANCE	39h	NORWAY
32h	GERMANY	3Ah	DENMARK II
33h	U.K	3Bh	SLAVONIC
34h	DENMARK I	3Ch	RUSSIA
35h	SWEDEN	3Dh	Factory define
36h	ITALY	3Eh	Factory define
37h	SPAIN	3Fh	User define pattern

※Factory Setting

4.6 Reset EEPROM

STX 05 07 n ETX Reset EEPROM

ASCII Format STX 05 07 n ETX

Dec. Format [02][05][07][n][03]

Hex. Format [02h][05h][07h][n][03h]

Description This command will reset the content of EEPROM (eg. demo scroll data, user-define character, baud rate setting.)

n=31h clear all EEPROM contents

n=32h clear upper line data message

n=33h clear lower line data message

4.7 Save data for demo display

STX 05 L n m ETX Save demo message to EEPROM

ASCII Format STX 05 L n m ETX

Dec. Format [02][05][76] n m [03]

Hex. Format [02h][05h][4Ch] n m [03h]

Description Save demo message for upper line and bottom line

n = 31h save data message for upper line

n = 32h save data message for lower line

m = data message; the maximum data character is under 200

4.8 Run Demo message

STX 05 D 08 ETX Run demo message

ASCII Format STX 05 D 08 ETX

Dec. Format [02][05][68][08][03]

Hex. Format [02h][05h][44h][08][03h]

Description Run demo message for the display

5. COMMAND

5.1 Command list

5.1.1 C2202-PD STANDARD MODE

Command	Code description (hex)	Function description
ESC DC1	1B 11	overwrite mode
ESC DC2	1B 12	vertical scroll mode
ESC DC3	1B 13	horizontal scroll mode
ESC Q ACR	1B 51 41 [n]x20 0D	set the string display mode, write string to upper line
ESC Q BCR	1B 51 42 [n]x20 0D	set the string display mode, write string to lower line
ESC Q DCR	1B 51 44 [n]x20 0D	upper line message scroll continuously
ESC [D	1B 5B 44	move cursor left
BS	08	move cursor left
ESC [C	1B 5B 43	move cursor right
HT	09	move cursor right
ESC [A	1B 5B 41	move cursor up
ESC [B	1B 5B 42	move cursor down
LF	0A	move cursor down
ESC [H	1B 5B 48	move cursor to home position
HOM	0B	move cursor to home position
ESC [L	1B 5B 4C	move cursor to left-most position
CR	0D	move cursor to left-most position
ESC [R	1B 5B 52	move cursor to right-most position
ESC [K	1B 5B 4B	move cursor to bottom position
ESC l x y	1B 6C x y 1≤x≤20,y=1,2	move cursor to specified position
ESC @	1B 40	initialize display
ESC W s x1 x2 y	1B 57 1 x1 x2 y 1≤x1≤x2≤20 y=1,2	reset window range at horizontal scroll mode
CLR	0C	clear display screen, and clear string mode
CAN	18	clear cursor line, and clear string mode
ESC * n	1B 2A n 1≤n≤4	Brightness adjustment
ESC & s n m [a(p1..pa)]x (m-n+!)	1B 26 1 n m [a(p1..pa)]x (m-n+1) 20h<n≤m≤FFh a=1-5, p1..p5 =row1..row5	define download characters.
ESC ?	1B 3F	delete download characters.
ESC %	1B 25	select/cancel download character set.
ESC _ n	1B 5F n n=0,1	set cursor ON/OFF
ESC f n	1B 66 n	select international character set
ESC s l	1B 73 01	store user-define character into EEPROM
ESC d l	1B 64 01	restore user-define character from EEPROM
ESC c n	1B 63 n	select code page
ESC = n	1B 3D n n=1; enable printer, disable display n=2; disable printer, enable display n=3; enable printer, enable display	select peripheral device, display or printer: display for customer side or display for operator side

Table 5-1

(REMARK)

* While using command "ESC QA" or "ESC QB", other commands can not be used except when using command "CLR" or "CAN" to change operating mode.

* When using command "ESC QD", the upper line message will scroll continuously until a new command is received, it will then clear the upper line and move the cursor to the upper left-end position.

Set international character set for C2202-PD (Table 5-2)

n	International character set	N	International character set
A	U.S.A.	N	NORWAY
G	GERMANY	W	SWEDEN
I	ITALY	D	DENMARK I
J	JAPAN	E	DENMARK II
U	U.K.	L	SLAVONIC
F	FRANCE	R	RUSSIA
S	SPAIN		Reserved

Select code page for C2202-PD (Table 5-3)

n	Code page
0	Page 0,(PC437:U.S.A.,standard Europe)
1	Page 1,(Katakana for Japan)
2	Page 2,(PC850:multilingual)
3	Page 3,(PC860:Portuguese)
4	Page 4,(PC863:Canadian-French)
5	Page 5,(PC865:Nordic)
6	Page 6,(Slavonic)
7	Page 7,(Russia)
8	Page 8,(PC858:Euro)
9	Page 9,(WPC1252:Window Code)

5.2 ESC/POS command list

Command	Code description(hex)	Function description
HT	09	Move cursor right
BS	08	Move cursor left
US LF	1F 0A	Move cursor up
LF	0A	Move cursor down
US CR	1F 0D	Move cursor to right-end position
CR	0D	move cursor to left-end position
HOM	0B	move cursor to home position
US B	1F 42	move cursor to bottom position
US \$ x y	1F 24 x y 1≤x≤20,y=1,2	Move cursor to specified position
CLR	0C	Clear display screen
CAN	18	Clear cursor line
US X n	1F 58 n 1≤n≤4	Brightness adjustment
US E n	1F 45 n 0≤n≤255	Blink display screen
ESC @	1B 40	Initialize display
ESC t n	1B 74 n 1≤n≤15	Select character code page
ESC R n	1B 52 n 1≤n≤15	Select international character set
US r n	1F 72 n n=0,1	Select/cancel reverse character
US MD1	1F 01	Specify overwrite mode
US MD2	1F 02	Specify vertical scroll mode
US MD3	1F 03	Specify horizontal scroll mode
ESC & s n m [a(p1..pa)]x m-n	1B 26 1 n m [a(p1..pa)]x m-n 20h<n≤m≤FFh; a=1-5, p1..p5=row1..row5	Define download characters
ESC ?	1B 3F	Delete download characters
ESC %	1B 25	Select/cancel download character set
ESC W n s x1 y1 x2 y2	1B 57 n s x1 y1 x2 y2 n=1-4,s=0,1,1≤x1≤x2≤20; 1≤y1≤y2≤2	Reset window range
ESC = n	1B 3D n (default n=2) n=1; enable printer, disable display n=2; disable printer, enable display n=3; enable printer, enable display	Select peripheral device
US :	1F 3A	set starting/ending position to define macro
US ^ n m	1F 5E n m, 0≤(n, m)≤255	Execute and quit macro
US @	1F 40	Execute self-test
ESC T h m	1B 54 h m ,0≤h≤23 0≤m≤59	Display time
US . n	1F 2E n , n = a displayable character code	Specify period
US , n	1F 2C n , n = a displayable character code	Specify comma
US ; n	1F 3B n , n = a displayable character code	Specify semicolon (period + comma)
US # n m	1F23 n m , n= 0 or 1 , 0≤m≤20	Turn annunciator ON/OFF

Set international character set for ESC/POS (Table 5-6)

n	International Character set	n	International Character set
0	U.S.A.	7	SPAIN
1	FRANCE	8	JAPAN
2	GERMANY	9	NORWAY
3	U.K.	10	DENMARK II
4	DENMARK I	11	SLAVONIC
5	SWEDEN	12	RUSSIA
6	ITALY	15	Reserved

Select code page for ESC/POS (Table 5-7)

n	Code page
0	Page 0,(PC437:U.S.A.,standard Europe)
1	Page 1,(Katakana for Japan)
2	Page 2,(PC850:multilingual)
3	Page 3,(PC860:Portuguese)
4	Page 4,(PC863:Canadian-French)
5	Page 5,(PC865:Nordic)
6	Page 6,(Slavonic)
7	Page 7,(Russia)
8	Page 8,(PC858:Euro)
9	Page 9,(WPC1252:Window Code)

5.3 C2202-PD standard command details

ESC DC1 /Overwrite mode/

ASCII Format ESC DC1

Dec. Format [027][017]

Hex. Format [1Bh][11h]

Description

Change the display mode to the overwrite mode. In this mode, the cursor will move rightward and begin from the upper left-end position. When the cursor reached the end of the upper line, the cursor will move down to the bottom left-end position to continue. When the cursor reached the end of the bottom line, it will move up to the upper left-end position and overwrite the previous characters.

ESC DC2 /Vertical scroll mode/

ASCII Format ESC DC2

Dec. Format [027][018]

Hex. Format [1Bh][12h]

Description

Change the display mode to the vertical scroll mode. In this mode, the cursor will move rightward. The cursor will begin from the upper left-end position until it reached the end of the upper line, the cursor will then move down to the bottom left-end position to continue until it reached the end of the bottom line. Then, C2202-PD will scroll the bottom line up to replace the upper line. The bottom line will be cleared, and the cursor will continue to the first position of the bottom line.

ESC DC3 /Horizontal scroll mode/

ASCII Format ESC DC3

Dec. Format [027][019]

Hex. Format [1Bh][13h]

Description

Change the display mode to the horizontal mode. In this mode, the extend of the cursor activity is bond by predefined range, limited to the upper line. (Please refer to Set or cancel window command), where the default window is the whole upper line. Once the cursor activity reached the end of the range, the characters that comes there after will push displayed characters forward from behind.

ESC Q A d1d2d3d4d5d6.....dn CR

ESC Q B d1d2d3d4d5d6.....dn CR /Set the string display mode, and write string to display/

ASCII Format ESC Q A d1d2d3d4d5d6...dn CR

ESC Q B d1d2d3d4d5d6...dn CR

Dec. Format [027][081][065] d1d2d3..dn [013]

[027][081][066] d1d2d3..dn [013]

Hex. Format [1Bh][51h][41h] d1d2d3..dn [0Dh]

[1Bh][51H][42h] d1d2d3..dn [0Dh] {20h≤dn≤ffh}

Description

Set the string display mode, write to upper or lower line d1 d2 d3 . . . dn {1≤n≤20}

"A" stands for the upper line, "B" stands for the lower line. The string display mode will be cancelled and back to last mode after receive CLR or CAN.

ESC Q D	d1d2d3d4d5d6.....dn CR	/ Upper line message scroll continuously
ASCII Format	ESC Q D d1d2d3d4d5d6...dn CR	
Dec. Format	[027][081][068] d1d2d3..dn [013]	
Hex. Format	[1Bh][51h][44h] d1d2d3..dn [0Dh] {20h≤dn≤ffh}	
Description	The message (previously defined) will scroll continuously in the horizontal direction until a new command is received.	
ESC D	/Move cursor left/	
BS	/Move cursor left/	
ASCII Format	ESC [D	
Dec. Format	[027][091][068]	
Hex. Format	[1Bh][5Bh][44h]	
ASCII Format	BS	
Dec. Format	[008]	
Hex. Format	[08h]	
Description	When the current cursor is at the left-end position, this command operates differently depends on the display mode.	
	<ol style="list-style-type: none"> 1. Overwrite mode: When the cursor reached the left-end of the lower line, it will continue to the right-end of the upper line, overwrite previous characters. When it reached the left end of the upper line, it will continue to the right-end of the lower line. 2. Vertical scroll mode: When the cursor reached the left-end of the lower line, the lower line will scroll up and replace the previous upper line, the lower line will be cleared and the cursor will continue to the right end of the lower line. 3. Horizontal scroll mode: The cursor will remain stationary. 	
ESC [C	/Move cursor right/	
HT	/Move cursor right/	
ASCII Format	ESC [C	
Dec. Format	[027][091][067]	
Hex. Format	[1Bh][5Bh][43h]	
ASCII Format	HT	
Dec. Format	[009]	
Hex. Format	[09h]	
Description	Move the cursor to the right. When the cursor reached the right-end, this command operates differently depending on the display mode.	
	<ol style="list-style-type: none"> 1. Overwrite mode: When the cursor reached the right-end of the lower line, it will continue to the left-end of the upper line, overwrite previous characters. When it reached the right-end of the upper line, it will continue to the right-end of the lower line. 2. Vertical scroll mode: When the cursor reached the right-end of the lower line, the lower line will scroll up to replace the upper line, the lower line is cleared and ready to continue characters there after. 3. Horizontal scroll mode: The cursor will remain stationary. 	
ESC A	/Move cursor up/	
ASCII Format	ESC [A	
Dec. Format	[027][091][065]	
Hex. Format	[1Bh][5Bh][41h]	
Description	Move the cursor up one line. When the cursor is on the upper line, this command operates differently depending on the display mode.	
	<ol style="list-style-type: none"> 1. Overwrite mode: The cursor is moved to the same column on the lower line. 2. Vertical scroll mode: The characters display on the upper line are scrolled to the lower line, and the upper line is cleared. The cursor will remain at the same position. 3. Horizontal scroll mode: The cursor will remain stationary. 	

ESC B	/Move cursor down/
L F	/Move cursor down/
ASCII Format	ESC [B
Dec. Format	[027][091][066]
Hex. Format	[1Bh][5Bh][42h]
ASCII Format	LF
Dec. Format	[010]
Hex. Format	[0Ah]
Description	<p>Move the cursor down one line. When the cursor reached the lower line, this command operates differently depending on the display mode.</p> <ol style="list-style-type: none"> 1. Overwrite mode: The cursor is moved to the same column on the upper line. 2. Vertical scroll mode: The characters display on the lower line are scrolled to the upper line, and the lower line is cleared. The cursor will remain at the same position. 3. Horizontal scroll mode: The cursor will remain stationary.
ESC H	/Move cursor to home position/
HOM	/Move cursor to home position/
ASCII Format	ESC [H
Dec. Format	[027][091][072]
Hex. Format	[1Bh][5Bh][48h]
ASCII Format	HOM
Dec. Format	[011]
Hex. Format	[0Bh]
Description	The cursor will move to the left-end position of the upper line
ESC L	/Move cursor to left-most position/
CR	/Move cursor to left-most position/
ASCII Format	ESC [L
Dec. Format	[027][091][076]
Hex. Format	[1Bh][5Bh][4Ch]
ASCII Format	CR
Dec. Format	[013]
Hex. Format	[0Dh]
Description	The cursor will be moved to the left-end position of the current line.
ESC R	/Move cursor to right-most position/
ASCII Format	ESC [R
Dec. Format	[027][091][082]
Hex. Format	[1Bh][5Bh][52h]
Description	The cursor will be moved to the right-end position of the current line.
ESC K	/Move cursor to bottom position/
ASCII Format	ESC [K
Dec. Format	[027][091][075]
Hex. Format	[1Bh][5Bh][4Bh]
Description	The cursor will be moved to the right-end position on the lower line.
ESC I x y	/Move cursor to specified position/
ASCII Format	ESC I x y
Dec. Format	[027][108] x y { 1≤x≤20, 1≤y≤2 }
Hex. Format	[1Bh][6Ch][x][y]
Description	The cursor will be moved to the x column on the y line.
ESC @	/Initialize display/
ASCII Format	ESC @
Dec. Format	[027][064]
Hex. Format	[1Bh][40h]
Description	The data in the input buffer will be cleared and reset from default.

ESC W s x1x2 y /Reset the window/
 ASCII Format ESC W s x1 x2 y
 Dec. Format [027][087][000]
 [027][087][001] x1 x2 y { 1<=x1<=x2<=20 , 1<=y<=2 }
 Hex. Format [1Bh][57h][000]
 [1Bh][57H][01h][x1][x2][y]
 Description Reset the window on the display. When s = 0, window is cancelled (values: x1, x2, and y are not required.)
 When s = 1 the window will be reset (values: x1, x2, and y are required.) The x1 and x2 set the position of the left column and right column, respectively, of the window. The y sets the upper line or the lower line of the window. This function is valid within the horizontal mode.

CLR /Clear display screen, and clear string mode/
 ASCII Format CLR
 Dec. Format [012]
 Hex. Format [0Ch]
 Description All the display characters will be cleared, and the string mode will be cancelled.

CAN /Clear current line, and cancel string mode/
 ASCII Format CAN
 Dec. Format [024]
 Hex. Format [18h]
 Description The current line is cleared, and the string mode is cancelled.

ESC * n /Brightness adjustment /
 ASCII Format ESC * n
 Dec. Format [027][042] n {3<=n<=4}
 Hex. Format [1Bh][2Ah][n]
 Description Adjust the brightness of the vacuum fluorescent display.
 When n = 3 ,brightness = 70 %
 When n = 4 ,brightness =100 %

ESC _ n /Set cursor ON or OFF /
 ASCII Format ESC _ n
 Dec. Format [027][095] n {0<=n<=1}
 Hex. Format [1Bh][5Fh][n]
 Description: Set cursor ON or OFF
 When n = 0, cursor is OFF
 When n = 1, cursor is ON

ESC f n /Select international character set/
 ASCII Format ESC f n
 Dec. Format [027][102] n
 Hex. Format [1Bh][66h][n]
 Description Set international character set

n	International character set	n	International character set
A	U.S.A.	N	NORWAY
G	GERMANY	W	SWEDEN
I	ITALY	D	DENMARK I
J	JAPAN	E	DENMARK II
U	U.K.	L	SLAVONIC
F	FRANCE	R	RUSSIA
S	SPAIN		Reserved

Table 5-8

ESC c n /Select code page /
 ASCII Format ESC c n
 Dec. Format [027][099] n
 Hex. Format [1Bh][63h][n]
 Description Select code page

n	Code page
0	Page 0,(PC437:U.S.A.,standard Europe)
1	Page 1,(Katakana for Japan)
2	Page 2,(PC850:multilingual)
3	Page 3,(PC860:Portuguese)
4	Page 4,(PC863:Canadian-French)
5	Page 5,(PC865:Nordic)
6	Page 6,(Slavonic)
7	Page 7,(Russia)
8	Page 8,(PC858:Euro)
9	Page 9,(WPC1252:Window Code)

Table 5-9

ESC = n /Select peripheral device, Display or Printer/
 ASCII Format ESC = n
 Dec. Format [027][061] n {n=1,2,3}
 Hex. Format [1Bh][3Dh][n]
 Description Select peripheral device
 When n = 01h, enable printer, disable display
 When n = 02h, disable printer, enable display
 When n = 03h, enable printer, enable display

ESC & s n m /Set user-defined characters/
 [a(p1...pa)]
 x(m-n+1) n
 ASCII Format ESC & s n m [a(p1...pa)] x (m-n+1) s=1
 Dec. Format [027][038][001] n m [a(p1...pa)] x (m-n+1) 20h≤n≤m≤FFh
 Hex. Format [1Bh][26h][01h][n][m][a(p1...pa)] x (m-n+1) 0≤a≤5
 0≤p1...pa≤255
 Description The n defines the beginning character code, and m defines the ending character code. When only one character is defined, use n = m
 The "a" denotes the number of dots in the horizontal direction. When a <5, the dot pattern for "a" on the right side of the user-defined characters are padded with spaces p1... pa, the dot data is to defined the characters. This indicates the dot pattern for "a" in the horizontal direction from the left side.

ESC % n /Reset user defined character set/
 ASCII Format ESC % n
 Dec. Format [027][037] n {n=0 or 1 }
 Hex. Format [1Bh][25h][n]
 Description When n=1, user-defined characters are selected. When the user-defined characters are not defined by the ESC & command, the internal character set will be displayed.
 When n=0, user-defined characters are cancelled and the international character set is selected.

ESC ? n /Cancel user defined characters/
 ASCII Format ESC ? n
 Dec. Format [027][063] n {20h≤n≤FFh or 1 }
 Hex. Format [1Bh][3Fh][n]
 Description User-defined characters are cancelled.
 This command cancels the defined characters specified by n.
 If specified code is transmitted after the pattern is cancelled, the international character will be displayed.

ESC s 1 /Store the user defined character into EEPROM.
 ASCII Format ESC s 1
 Dec. Format [027][115] [001]
 Hex. Format [1Bh][73h][01h]
 Description This command is successful when the display is selected under command ESC=03h

ESC d 1 /Restore the user defined character from EEPROM.
 ASCII Format ESC d 1
 Dec. Format [027][100] [001]
 Hex. Format [1Bh][64h][01h]
 Description C2202-PD will restore user-defined characters from EEPROM, and the user-defined characters will be selected.

6. CHARACTER SET/CODE PAGE

(1) Control code set

HEX	CODE	HEX	CODE
00H	NULL	10H	DLE
01H	MD1	11H	DC1
02H	MD2	12H	DC2
03H	MD3	13H	DC3
04H	MD4	14H	DC4
05H	MD5	15H	
06H	MD6	16H	
07H	MD7	17H	
08H	BS,MD8	18H	CAN
09H	HT	19H	
0AH	LF	1AH	
0BH	HOM	1BH	ESC
0CH	CLR	1CH	
0DH	CR	1DH	
0EH	SLE1	1EH	SF1
0FH	RS,SLE2	1FH	US,SF2

(2) Character table (20h-70h)

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
20h
30h
40h
50h
60h
70h

(3) International character set

ASCII CODE

No.	International	23	24	40	5B	5C	5D	5E	60	7B	7C	7D	7E
0	USA	.0.0	.0.0	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
1	FRANCE	.0.0	.0.0	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
2	GERMANY	.0.0	.0.0	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
3	U.K.	.0.0	.0.0	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
4	DENMARK I	.0.0	.0.0	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
5	SWEDEN	.0.0	.0.0	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
6	ITALY	.0.0	.0.0	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
7	SPAIN	.0.0	.0.0	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
8	JAPAN	.0.0	.0.0	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
9	NORWAY	.0.0	.0.0	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
10	DENMARK II	.0.0	.0.0	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
11	SLAVONIC	.0.0	.0.0	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
12	RUSSIA	.0.0	.0.0	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000

(4) Code page

a. PC-437 U.S.A/ Standard European

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
80h
90h
A0h
B0h
C0h
D0h
E0h
F0h

b. PC-850 Multi-lingual

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
80h
90h
A0h
B0h
C0h
D0h
E0h
F0h

c. PC-860 Portuguese

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
80h	0000	0.0	.0.	.0.	.0.	.0.	.0.	.0.	.0.	.0.	.0.	.0.	.0.	.0.	.0.	.0.
90h	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
A0h	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
B0h	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
C0h	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
D0h	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
E0h	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
F0h	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000

d. PC-863 Canadian - French

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
80h	0000	0.0	.0.	.0.	.0.	.0.	.0.	.0.	.0.	.0.	.0.	.0.	.0.	.0.	.0.	.0.
90h	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
A0h	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
B0h	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
C0h	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
D0h	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
E0h	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
F0h	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000

e. PC-865 Nordic

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
80h	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
90h	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
A0h	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
B0h	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
C0h	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
D0h	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
E0h	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
F0h	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000

f. Slavonic

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
80h	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
90h	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
A0h	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
B0h	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
C0h	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
D0h	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
E0h	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
F0h	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000

g. Russia

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
80h	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
90h	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
A0h	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
B0h	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
C0h	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
D0h	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
E0h	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
F0h	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000

h. Katakana

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
80h	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
90h	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
A0h	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
B0h	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
C0h	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
D0h	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
E0h	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
F0h	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000

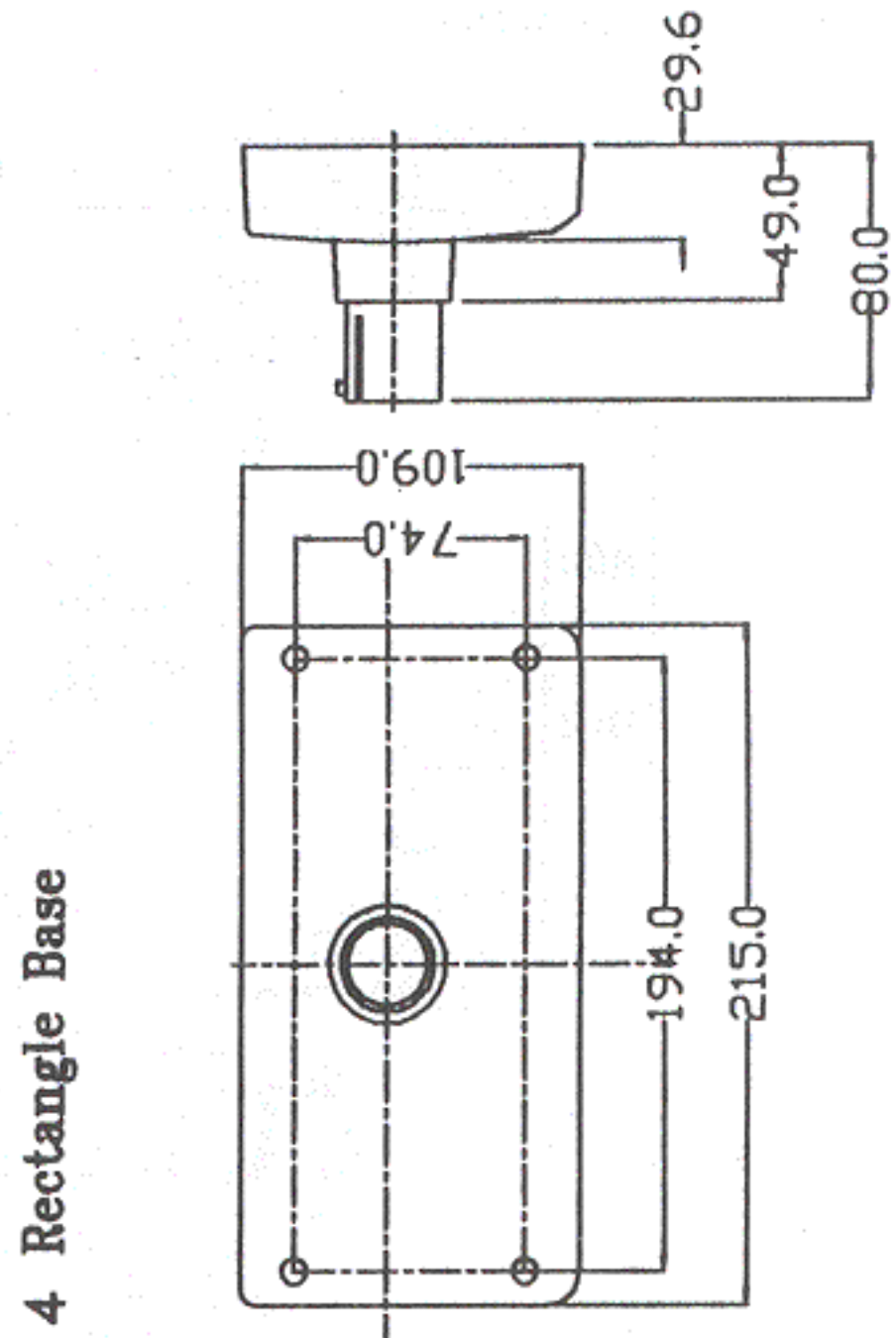
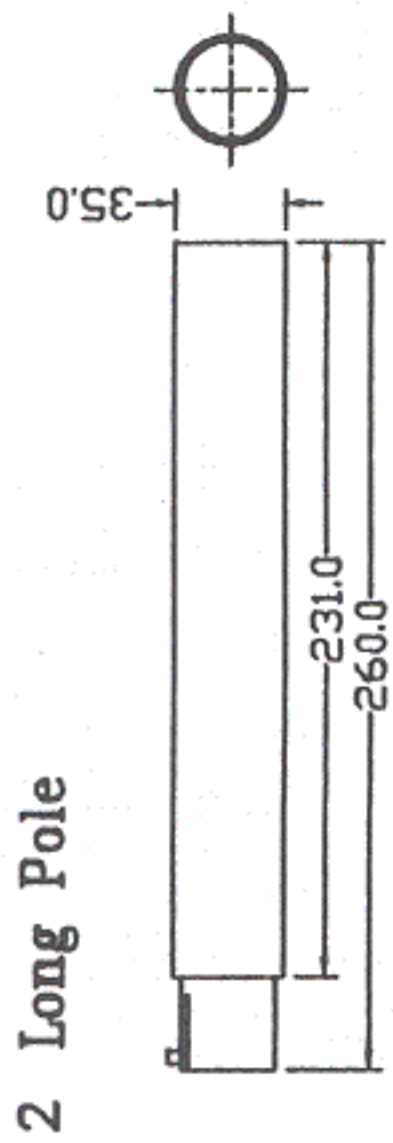
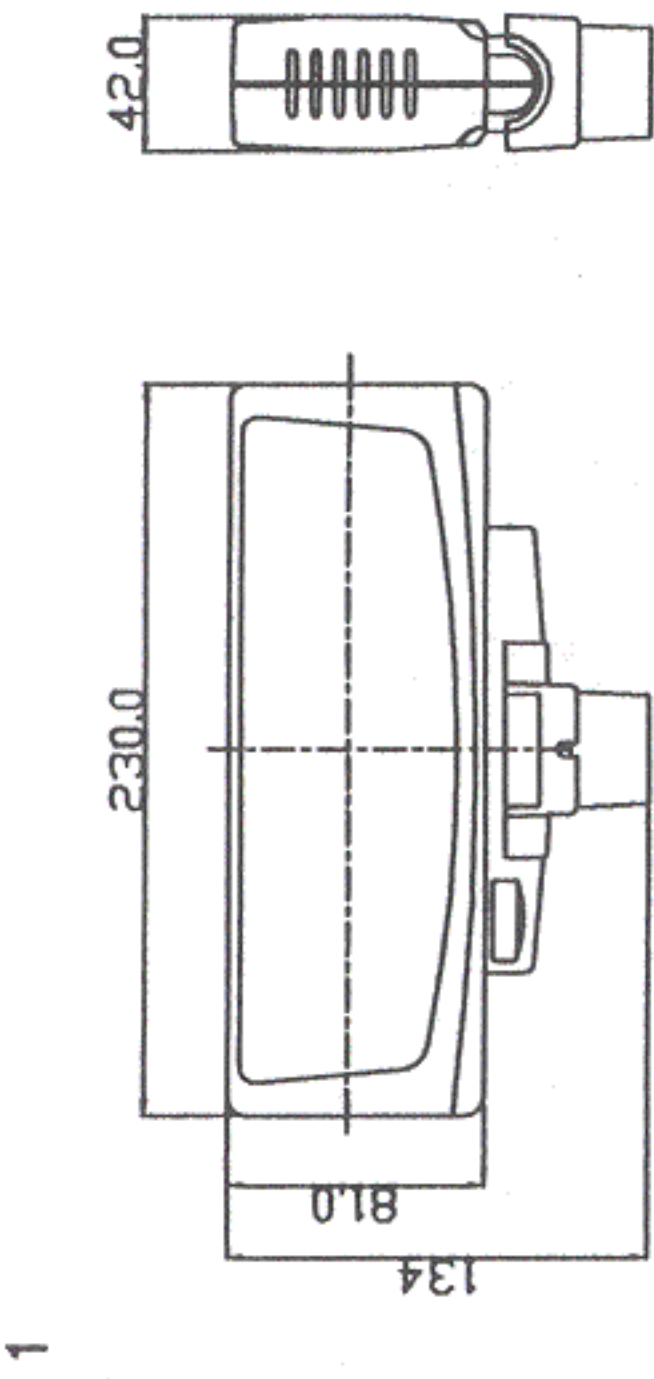
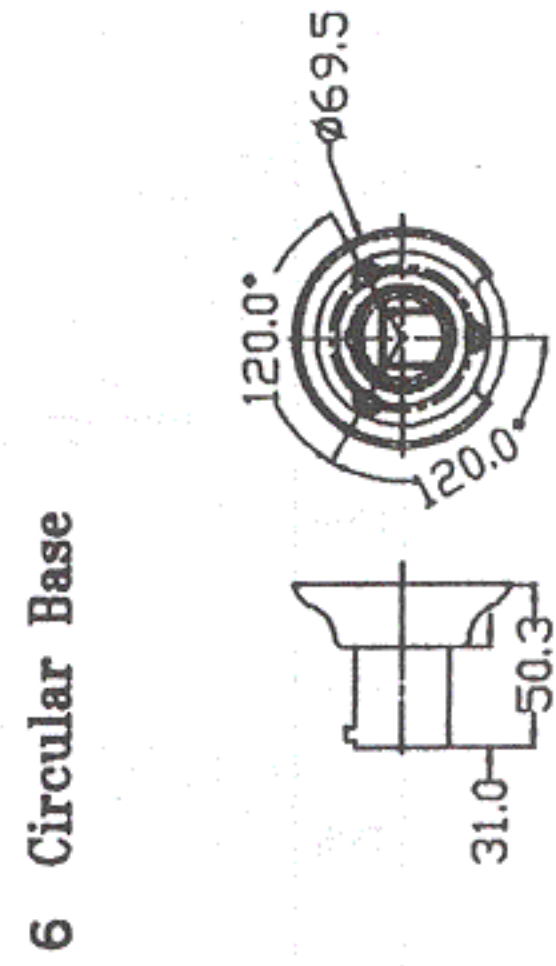
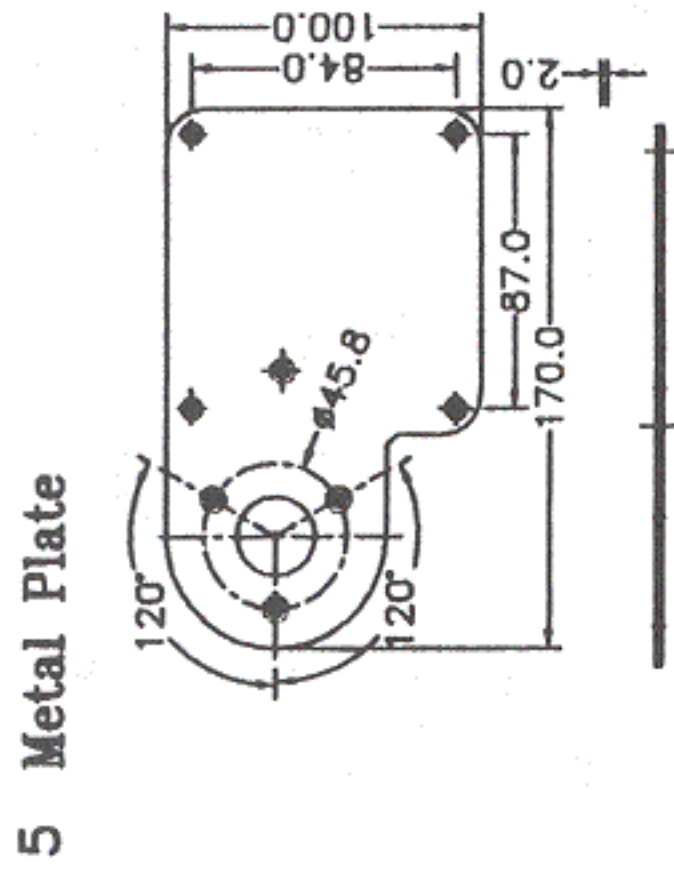
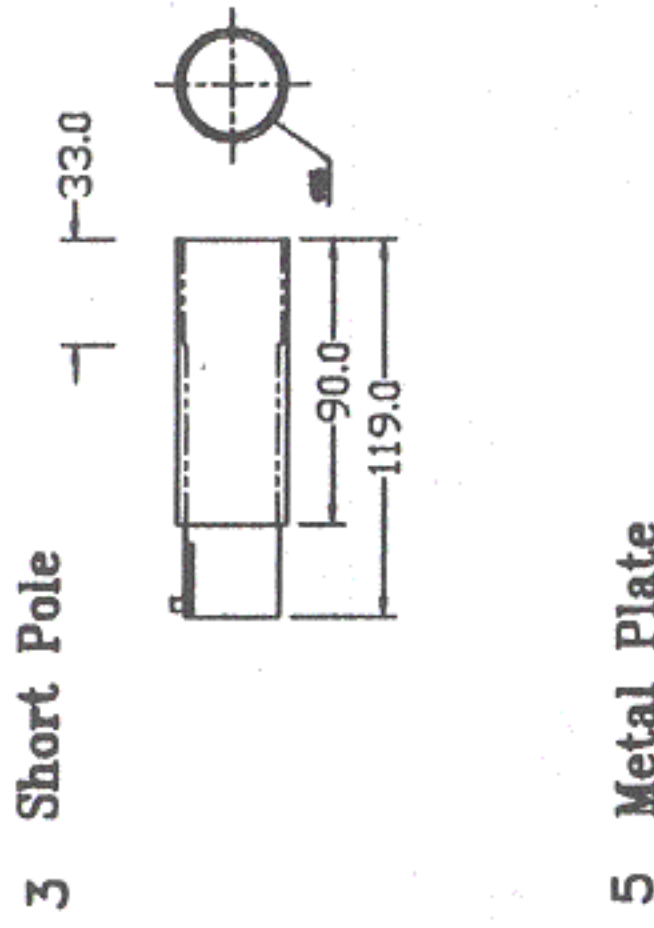
i. PC-858 EURO

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
80h	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
90h	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
A0h	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
B0h	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
C0h	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
D0h	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
E0h	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
F0h	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000

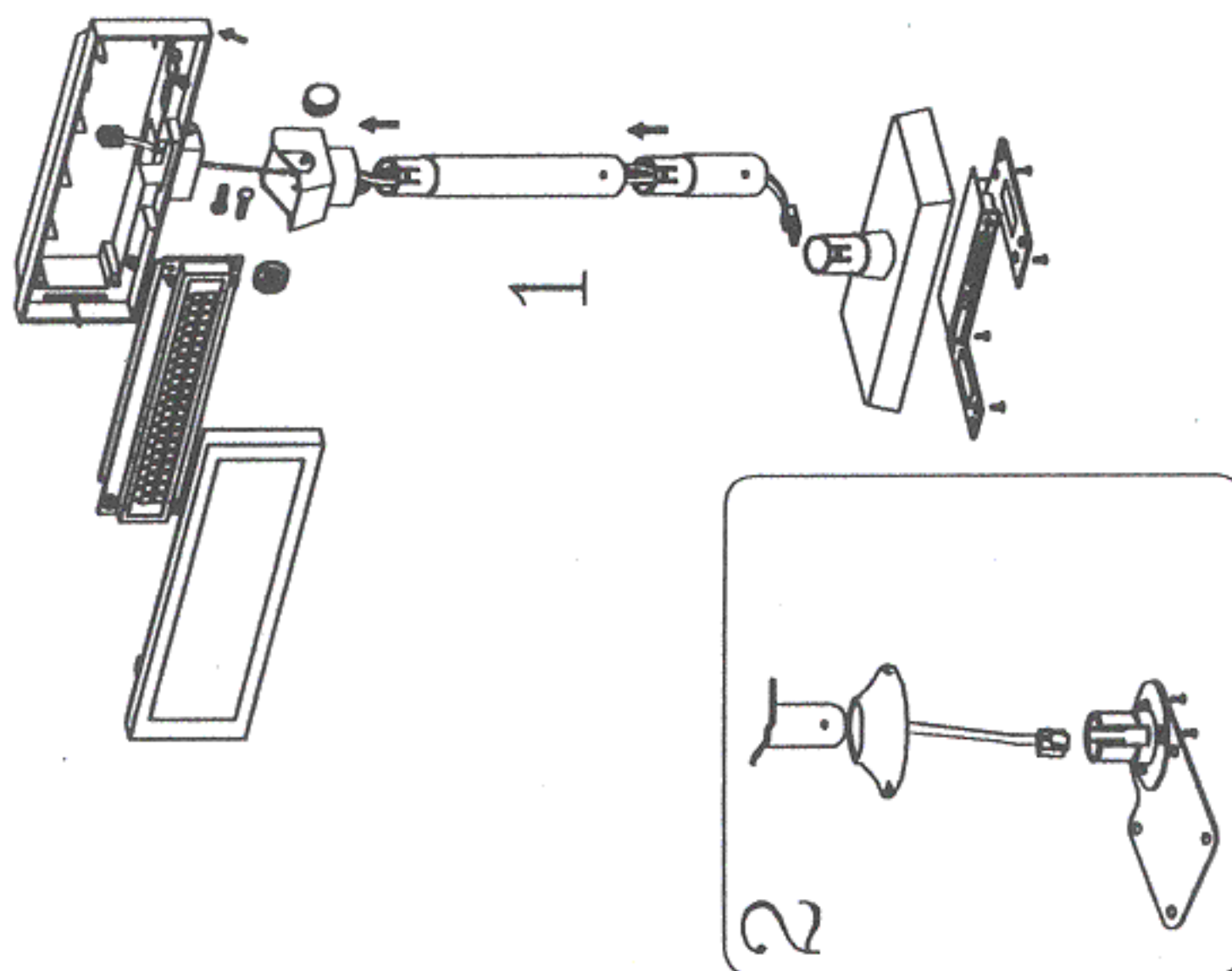
j. WPC1252 Window Code (WIN.C)

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
80h	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
90h	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
A0h	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
B0h	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
C0h	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
D0h	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
E0h	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
F0h	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000

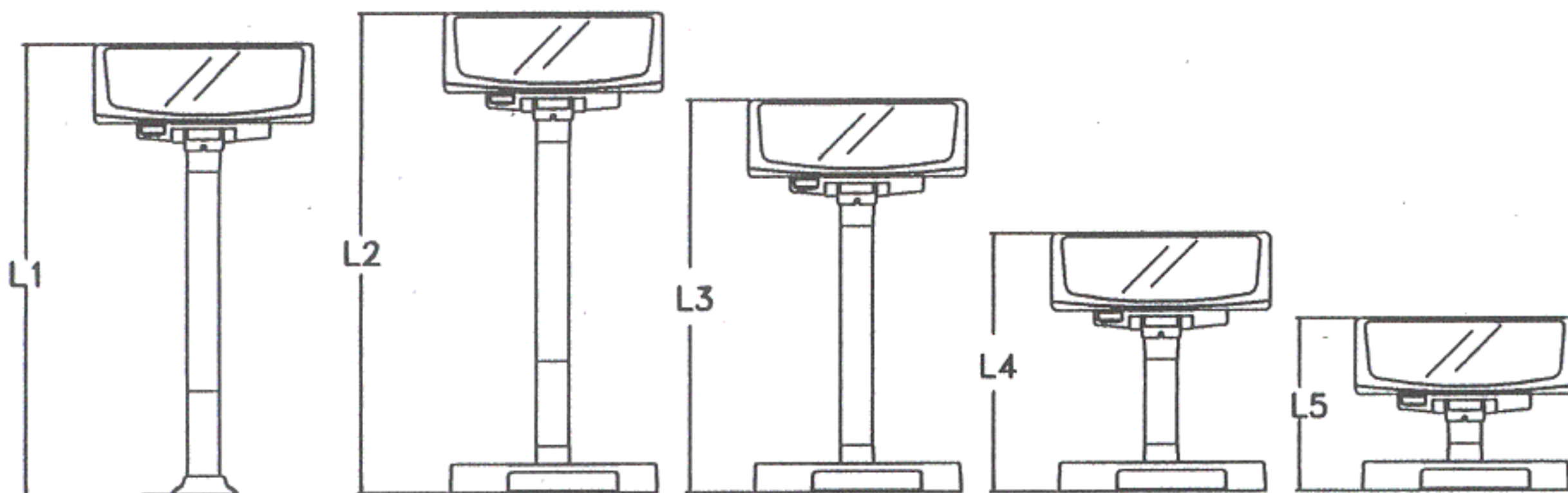
7. DIMENSION



8. INSTALLATION GUIDE



L1	L2	L3	L4	L5	
474	504	414	273	183	mm



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