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GENERAL FEATURES

A new family of customer displays with a clear-cut, modern and elegant design enhanced by the blue backlighting of the 2-line x 20-character display. The new support system makes the display easy to position and offers two different display heights. The XD is available in single- and double-sided versions and can be incorporated in the body of Custom printers.

- Nice and modern design customer display
- Single or double side
- Blue colour backlighted display
- Easy view angle adjustment
- Low and high version available

DISPLAY+ PRINTER COMPONENTS

- 1 Display 2*
- 2 Display 1
- 3 Horizontal adjustment
- 4 Inclination angle adjustment
- 5 Base
- 6 Communication cable
- * Only double-side display.





DISPLAY COMPONENTS

- 1 Display 2*
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MANUAL CONTENTS

In addition to the Introduction which includes a description of the explanatory notes used in the manual, general safety information, how to unpack the display and a brief description of the display including its basic features, this manual is organized as follows:

- Chapter 1: Contains the information required for correct display installation and its proper use
- Chapter 2: Contains a description of the display command set
- Chapter 3: Contains Technical Specifications of the display
- Chapter 4: Contains the character sets (fonts) used by the display

EXPLANATORY NOTES USED IN THIS MANUAL



Gives important information or suggestions relative to the use of the display.



WARNING

N.B.

Information marked with this symbol must be carefully followed to guard against damaging the display.



DANGER

Information marked with this symbol must be carefully followed to guard against operator injury or damage.

GENERAL SAFETY INFORMATION

- Read and keep the instructions which follow.
- Follow all warnings and instructions indicated on the display.
- Before cleaning the display, disconnect the power supply.
- Clean the display with a damp cloth. Do not use liquid or spray products.
- Do not operate the display near water.
- Do not use the display on unstable surfaces that might cause it to fall and be seriously damaged.
- Only use the display on hard surfaces and in environments that guarantee proper ventilation.
- Make sure the display is placed in such a way as to avoid damage to its wiring.
- Use the type of electrical power supply indicated on the display label. If in doubt, contact your retailer.
- Do not introduce foreign objects of any kind into the display as this could cause a short circuit or damage parts that could jeopardize display functioning.
- Do not spill liquids onto the display.
- Do not carry out technical operations on the display, with the exception of the scheduled maintenance procedures specifically indicated in the user manual.
 - Disconnect the display from the electricity supply and have it repaired by a specialized technician when:
 - A. The feed connector has been damaged.
 - B. Liquid has seeped inside the display.
 - C. The display has been exposed to rain or water.
 - D. The display is not functioning normally despite the fact that all instructions in the users manual have been followed.
 - E. The display has been dropped and its outer casing damaged.
 - F. Display performance is poor.
 - G. The display is not functioning.



UNPACKING THE DISPLAY

Remove the display from its carton being careful not to damage the packing material so that it may be re-used if the display is to be transported in the future. Make sure that all the components illustrated below are present and that there are no signs of damage. If there are, contact Customer Service.



- Take out the base and the display group.
- Keep the box packing materials in the event the display must be transported/shipped in the future

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1.1 DISPLAY MOUNTING

- Insert the display group in the hinge pin of the base. Insert the communication cable inside the hinge pin (see Fig. 1.1).
- Rotate the display group until it stops (see Fig.1.2).
- Lock the display group using the fixing screw included in the package (see Fig.1.3).





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1.2 CONNECTIONS

1.2.1 RS232 Serial Interface and power supply

(Fig.1.4)



The display with a serial RS232 interface has a female RJ45 connector. Refer to the table below for the connector pin signals:

PIN	SIGNAL	DESCRIPTION
1	TXD - OUT	Data transmission
2	RXD - IN	Data reception
3	RTS - OUT	Ready to receive data
4	CTS - IN	Ready to receive data
5	GND	Ground signal
6	GND	Ground signal
7	+VI	Power supply
8	+VI	Power supply



NOTE

The information in this page are valid for all the models.



WARNING

For the display version without printer use the power voltage indicated on the product label.



1.3 SELF-TEST

At the power ON on the display panel is indicated the current configuration (see Fig 1.5 and 1.6), the following information is given:

(Fig.1.5)

1th Screenshot

- Firmware version.
- Baud rate.

2nd Screen

- Command's set.
- Character's set and Pass
 Trough function.



COMMAND:	ESC/POS
CHAR:USA	P.T.:SW

(Fig.1.6)



1.4 MAINTENANCE

1.4.1 Display adjustments

It's possible to regulate the horizontal position and the inclination angle by acting on the mobile parts as shown (see Fig.1.7 and Fig.1.8).



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1.4.2 Cleaning the customer display



WARNING

Make sure no water or other liquids seep inside the display.



BEWARE

Before any type of work is done on the machine, disconnect the power supply cord from the mains outlet.

The user is responsible for cleaning the display case. To clean the unit, use compressed air or a soft cloth. Do not use alcohol, solvents or stiff brushes.





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(Tab.2.1)

2.1 COMMAND DESCRIPTIONS

The table 2.1 shows the commands list, ordered by their hexadecimal value.

LEGEND :	
Symbol	Function
\$	indicates the representation of the command hexadecimal value (for example \$40 means HEX 40).
{}	indicates an ASCII character not performable.
n, m, t, x, y	are optional parameters that can have different values.

2.1.1 ESC/POS Emulation

The following table lists all the commands for function management in ESC/POS Emulation of the display. The commands can be transmitted to the dispay at any moment, but they will only be carried out when the commands ahead of them have been executed. The commands are carried out when the circular buffer is free to do so.

COMMAND DESCRIPTION TABLE

HEX Com.	ASCII Com.	DESCRIPTION
\$08	BS	Move cursor left
\$09	HT	Move cursor right
\$0A	LF	Move cursor down
\$0B	НОМ	Move cursor to home position
\$0C	CLR	Clear display screen
\$0D	CR	Move cursor to left-most position
\$18	CAN	Clear cursor line
\$1B \$25 n	ESC % n	Select/cancel user character set
\$1B \$26 s n m [a[p]s x a] (m - n+1)	ESC & s n m [a[p]s x a] (m - n+1)	Define user programmables characters
\$1B \$3D n	ESC = n	Select peripheral device
\$1B \$3F n	ESC ? n	Delete user defined characters
\$1B \$40	ESC @	Initialize display
\$1B \$52 n	ESC R n	Select international characters set
\$1F \$01	US MD1	Specify overwrite mode
\$1F \$02	US MD2	Specify vertical scroll mode
\$1F \$03	US MD3	Specify horizontal scroll mode
\$1F \$0A	US LF	Move cursor up
\$1F \$0D	US CR	Move cursor to right-most position
\$1F \$24 n m	US\$nm	Move cursor to specified position
\$1F \$3A	US :	Set start/ end macro definition
\$1F \$40	US @	Execute self-test
\$1F \$42	US B	Move cursor to bottom position
\$1F \$45 n	US E n	Select/cancel blink display screen
\$1F \$54 h m	USThm	Set clock display
\$1F \$55	USU	Display clock
\$1F \$58 n	US X n	Brightness adjustment
\$1F \$5E n m	US ^ n m	Execute macro



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2. DISPLAY FUNCTIONS

The following pages provide a more detailed description of each command.

\$08			
[Name]	Move cursor left.		
[Format]	ASCII	BS	
	Hex	08	
	Decimal	8	
[Description]	Moves the cursor to the left.		
[Notes] When the current cursor is at the left-end position, this command operate depends on the display mode.			
	1. Overwrite to the rigi left end c	e mode: When the cursor reached the left-end of the lower line, it will continue ht-end of the upper line, overwrite previous characters. When it reached the of the upper line, it will continue to the right-end of the lower line.	
	 Vertical s line will s and the c 	croll mode: When the cursor reached the left-end of the lower line, the lower croll up and replace the previous upper line, the lower line will be cleared cursor will continue to the right end of the lower line.	
	 Horizonta the right. 	al scroll mode: All characters on the current line are scrolled one character to Thecursor is not moved, but the character area at the left end is cleared.	
[Default] [Reference]	\$1F \$01, \$1F	⁵ \$02, \$1F \$03	
[Example]			

\$09			
[Name] [Format]	Move cursor right. ASCII HT Hex 09 Decimal 9		
[Description]	Move the cursor to the right.		
[Notes] [Default] [Reference]	 When the cursor reached the right-end, this command operates differently depending the display mode. 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 reach 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, it lower line will scroll up to replace the upper line, the lower line is cleared and react to continue characters there after. 3. Horizontal scroll mode: All characters on the current line are scrolled one character the left. Thecursor is not moved, but the character area at the right end is cleared. 		



\$0A						
[Name]	Move cursor down.					
[Format]	ASCII LF					
	Hex 0A					
	Decimal 10					
[Description]	Move the cursor down one line.					
[Notes]	When the cursor reached 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.					
	 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. 					
	Horizontal scroll mode: The cursor will remain stationary.					
[Default]						
[Reference] [Example]	\$1F \$01, \$1F \$02, \$1F \$03					

•	-	
- U-	"	
_ J)	U	

[Name]	Move curso	or to home position.
[Format]	ASCII	HOM
	Hex	0B
	Decimal	11
[Description]	The cursor w	vill move to the left-end position of the upper line.
[Notes]	The start po	sition indicates the first column of the upper line.
[Default]		
[Reference]		
[Example]		

* •	0	
ЪU	UC.	

[Name]	Clear displa	ay screen.
[Format]	ASCII	CLR
	Hex	0C
	Decimal	12
[Description]	All the displa	ay characters will be cleared.
[Notes]	After execut	ion this command the cursor moves to the home position.
[Default]		
[Reference]		
[Example]		

\$0D			
[Name]	Move curso	or to left-most position.	
[Format]	ASCII	CR	
	Hex	0D	
	Decimal	13	
[Description] [Notes] [Default] [Reference] [Example]	The cursor r	noves to the left-end position of the current line.	



User Manual XD CUSTOMER DISPLAY 2-3

2. DISPLAY FUNCTIONS

64	0
	O
	-

[Name]	Clear current li	ne.
[Format]	ASCII	CAN
	Hex	18
	Decimal	24
[Description]	The current line	is cleared.
[Notes]	After execution line.	this command the cursor moves to the left-end position of the current
[Default] [Reference] [Example]		

\$1B \$25 n

[Name]	Select/cancel u	iser-de	fined ch	naracters.
[Format]	ASCII	ESC	%	n
	Hex	1B	25	n
	Decimal	27	37	n
[Range]	0 ≤ n ≤ 1			
[Description]	Selects or cance	els the u	user-def	ined character set.
[Notes]	 When n = 1, the set is not define When n = 0, t selected). In this have already be This command 	e user-d d using he user s case, en defir l has no	efined c the \$1E -definec this com ned usin effect c	haracter set is selected. When the user-defined character \$26 command, the internal character set is displayed. I character set is canceled (the internal character set is immand has no effect on the user-defined characters that g the \$1B \$26 command. on the characters already displayed.
[Default]	n=0			
[Reference] [Example]	\$1B \$26			

\$1B \$26 s n m [a[p]s x a] (m - n+1)

[Name]	Defines user-defined characters.						
[Format]	ASCII	ESC	&	s n m [a [p] s x a] m - n + 1			
	Hex	1B	26	s_n_m[a [p1 p2ps] x a] m - n + 1			
	Decimal	27	37	s n m [a [p] s x a] m - n + 1			
[Range]	s = 1						
	32 ≤ n ≤ m ≤ 12	26					
	0 ≤ a ≤ 5						
	0 ≤ p1ps x a	a ≤ 255					
[Description]	Defines user-de	efined c	haracter	S.			
	 s specifies the number of bytes in the vertical direction. 						
	 n specifies th 	e begin	ning cha	aracter code for the definition, and m specifies the final			
	code. When a single character is defined $n = m$.						
	 The allowable character code range is from ASCII \$20 (32) to \$7E (126). 						
	• a specifies the number of dots in the horizontal direction. When a< 5 any remaining dots						
	• n1 _ nk is the det data to be defined for the characters. This indicates the det nation						
	for a dots in the borizontal direction from the left side						
	• The number of data items to be defined is a via When 8 bits are specified for the com						
	munication wor	d lenath	the mo	be defined is 3 x a. When o bits are specified for the com-			
[Notes]	Once the use	r_dofino	d chara	stars are defined, they remain effective until they are re-			
	defined \$1B \$/			or the nower is turned off			
	defined, \$1B \$4	10 is exe	ecuted, o	or the power is turned off.			



• When only the user-defined characters are defined and the user-defined character set is not selected using the \$1B \$25 command, the user-defined characters are not displayed.

[Default] [Reference] [Example]

\$1B \$25, \$1B 3F

\$1B \$3D n	
[Name]	Select peripheral device.
[Format]	ASCII ESC = n
	Hex 1B 3D n
	Decimal 27 61 n
[Range]	1 ≤ n ≤ 2, 31 ≤ n ≤ 32
[Description]	Select the device to which the host computer sends data, using n as follows:
	n FUNCTION
	1, 31 Select printer
	2, 32 Select display
[Notes]	 When n = 1 the printer is selected and all the data from the host computer is transmitter to the printer via the display. When n = 2 the customer display is selected and all the data from the host computer processed internally in the display, and no data is transmitted to the printer.
[Default] [Reference] [Example]	n = 2

\$1B \$3F n					
[Name]	Cancel user-defined characters.				
[Format]	ASCII	ESC	?	n	
	Hex	1B	3F	n	
	Decimal	27	63	n	
[Range]	32 ≤ n ≤ 126				
[Description]	Cancels user-	-defined	charact	ters.	
[Notes]	 This commany user-defined of is printed. If the specific internal chara If the specifies of the sp	nd cance character ed code cter is di ed code ind has n efined ch s this cor	Is the part r is can is trans splayed is not d o effec paracter mmand	attern defined for the character code specified by n. After celled, the corresponding pattern for the internal character smitted after, the pattern is cancelled by this command, d. defined, this command is ignored. et on character already displayed. r has not been defined for the specified character code, d.	the ster the the
[Default] [Reference] [Example]	\$1B \$26				



2. DISPLAY FUNCTIONS

\$1B \$40

[Name]	Initialize displa	у.	
[Format]	ASCII	ESC	@
	Hex	1B	40
	Decimal	27	64
[Description] [Notes]	Resets the vario • The software s • This command • The data in the • After initialize of tion.	ous displ ettings resets buffer display, f	lay settings to their initial values. are reset to their power-on values. the software setting to that in effect when power was turned on. is not cleared. the display screen is cleared and move the cursor to home posi-
[Default] [Reference] [Example]			

\$1B \$52 n										
[Name]	Select an international character set.									
[Format]	ASCII ESC R n									
	Hex 1B 52 n									
	Decimal 27 82 n									
[Range]	0 ≤ n ≤ 10									
[Description]	Selects the international character set n according to the table below:									
	n CHARACTER SET									
	0 U.S.A.									
	1 France									
	2 Germany									
	3 United Kingdom									
	4 Denmark I									
	5 Sweden									
	6 Italy									
	7 Spain I									
	8 Japan									
	9 Norway									
	10 Denmark II									
[Default] [Reference] [Example]	n = 0									
\$1F \$01										
[Namo]	Select overwrite mede									
[Format]	ASCII US MD1 Hex 1F 01									

	Decimal 31 1	
[Description]	Change the display mode to the overwrite mode.	
[Notes]	 In this mode, entering a character code moves the 	cursor to the left end of the lower
	line when the cursor is at the right end of the upper li	ne, and to the left end of the upper
	line when the cursor is at the right end of the lower lin	1e.



- This mode is selected when the power is turned on.
- Selecting overwrite mode cancels horizontal or vertical scroll mode.
- Except when the cursor is at the right end, entering a character code moves the cursor one character to the right after displaying the character.

[Default] [Reference] [Example]

\$1F \$02, \$1F \$03

\$1F \$02

[Name]	Select vertical scroll mode.						
[Format]	ASCII	US	MD2				
	Hex	1F	02				
	Decimal	31	2				
[Description]	Change the disp	olay moo	de to the vertical scroll mode.				
[Notes]	 In vertical scro the lower line whether the lower line whether displayed on the at the right end of At this time, the Selecting vertice Except when the one character to the scroper screet the screet screet	oll mode nen the lower l of the lo cursor i cal scro ne curso the rigl	e, entering a character code moves the cursor to the left end of cursor is at the right end of the upper line, scrolls the characters ine to the upper line, and clears the lower line when the cursor is wer line. I moved to the left end of the lower line. Il mode cancels overwrite or horizontal scroll mode. or is at the right end, entering a character code moves the cursor th after displaying the character.				
[Default]		0					
[Reference] [Example]	\$1F \$01, \$1F \$0)3					

\$1F \$03

[Name]	Select horiz	ontal sci	roll mode					
[Format]	ASCII	US	MD3					
[i official]	Hex	1F	03					
	Decimal	31	3					
[Description]	Change the	display m	node to the horizontal scroll mode.					
[Notes]	 In horizonta cluding com at the right e Selecting h Except whe one characte 	 In horizontal scroll mode, entering a character code scrolls all displayed characters (including commas and periods) one character to the left, then displays the new character at the right end (when the cursor is at the right end of either line.) Selecting horizontal scroll mode cancels overwrite or vertical scroll mode. Except when the cursor is at the right end, entering a character code moves the cursor is at the right end the scheme displayed character code moves the cursor. 						
[Default] [Reference] [Example]	\$1F \$01, \$1	F \$02						

\$1F \$0A

[Name]	Move curso	or up.		
[Format]	ASCII	US	LF	
	Hex	1F	0A	
	Decimal	31	10	
[Description]	Move the cu	rsor up or	ne line.	
[Notes]	When the cu	ursor is or	n the upp	er 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 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 is not moved.

[Default] [Reference] [Example]

\$1F \$01, \$1F \$02, \$1F \$03

\$1F \$0D

[Name]	Move curso	or to right	-most po	osition.				
[Format]	ASCII	UŠ	CR					
	Hex	1F	0D					
	Decimal	31	13					
[Description]	The cursor v	vill be mov	ved to the	e right-end position of the current line.				
[Notes]	The cursor is	The cursor is moved only within the current window.						
[Default]								
[Reference]								
[Example]								

\$1F \$24 n m

[Name]	Move curso	Move cursor to specified position.							
[Format]	ASCII	US	\$	n	m				
	Hex	1F	24	n	m				
	Decimal	31	36	n	m				
[Range]	1 ≤ n ≤ 20 m = 1, 2								
[Description]	Moves the cu	irsor to th	ne n th co	olumn o	n the m th line.				
[Notes]	If the movem is ignored an	If the movement value of the cursor is out of the range specified by n or m, this command is ignored and the cursor will remain at the same position.							
[Default] [Reference] [Example]	-								

\$1F \$3A			
[Name]	Start/end m	nacro defi	inition.
[Format]	ASCII	US	:
	Hex	1F	3A
	Decimal	31	58
[Description]	Starts or en	ds macro	definition.
[Notes]	 Up to 80 b Macro defisecond \$1F Receipt of tion error. N as normal d 1) The \$1F 	ytes can b inition pro \$3A com either of f lacro defir ata. At this \$5E com	be defined for macro processing (one byte per character). cessing starts with the first \$1F \$3A command and ends with the mand. the two types of data shown below is regarded as a macro defini- nition processing is stopped, and any following data is processed s time, the macro remains undefined. nand is received during a macro processing definition.
	2) A macro jTo delete a	processing a macro de	g definition exceeds 80 bytes (except for the \$1F \$3A command). efinition, send a \$1F \$3A command just after \$1F \$3A.



[Default] [Reference]	\$1F \$5E
[Example]	Example Macro Definition Processing Program:
	PRINT#1,CHR\$(&H1F);CHR\$(&H3A);(1)
	PRINT#1,CHR\$(&HC);(2)
	PRINT#1,CHR\$(&H1F);CHR\$(&H45);CHR\$(0);(3)
	PRINT#1,"Execution MACRO !!";(4)
	PRINT#1,CHR\$(&H1F);CHR\$(&H45);CHR\$(10);(5)
	PRINT#1,CHR\$(&H1F);CHR\$(&H3A);(6)
	 (1) is the starting command and (6) is the ending command of a macro definition. The 26-byte data from (2) to (5) is stored in the macro definition range. When the display receives the macro execution command, the defined data is in processed order. (Refer to \$1F \$5E) (2) is a screen clear command. (Refer to \$0C) (3) and (5) are blinking commands. (Refer to \$1F \$45)

\$1F \$40

[Name]	Execute self-	test.		
[Format]	ASCII	US	@	
	Hex	1F	40	
	Decimal	31	64	
[Description]	Executes the	self-test.		
[Notes]	 A series of sized: 1. User-define 2. Macro de 3. Time course After complete 	self-tests ned char finitions nter valu tion of th	is displayed. All se acter definitions e e self-tests, the scre	t values except those listed below are initial- en is cleared and the display position is moved
[Default] [Reference] [Example]		0510011.		

\$1F \$42								
[Name]	Move curso	or to botto	om positio	on.				
[Format]	ASCII	US	B					
	Hex	1F	42					
	Decimal	31	66					
[Description]	Moves the c	ursor to th	ne bottom	position.				
[Notes]	 The bottom 	n position	indicates f	he 20 th colu	umn of tl	ne lower l	ine.	
[Default]								
[Reference]								
[Example]								



2. DISPLAY FUNCTIONS

\$1F \$45 n

[Name]	Set display scr	een blir	nk inter	val.
[Format]	ASCII	US	Е	n
	Hex	1F	45	n
	Decimal	31	69	n
[Range]	0 ≤ n ≤ 255			
[Description]	Sets or cancels • n specifies the • When n = 0, th • When n = 255, maintained.	the blinl blink ir e displa the dis	k interva iterval. iy is kep play is t	al of the display screen. (n 50 msec.) ON / (n 50 msec.) OFF] is repeated. It on (cancels blinking). urned off but the contents of the display are
[Notes] [Default] [Reference] [Example]	• This command n=0	does n	ot affect	: the brightness of the vacuum fluorescent display.

\$1F \$54 h m						
[Name]	Set and disp	lay time o	ounter			
[Format]	ASCII	US	Т	h	m	
	Hex	1F	54	h	m	
	Decimal	31	84	h	m	
[Range]	0 ≤ h ≤ 23					
	0 ≤ m ≤ 59					
[Description]	The counter	time is se	et and d	isplaye	ed at the rig	ght side of the bottom line.
	 h is hours, 	and m is	minute	S.		
[Notes]	 When this a 	command	l is ente	ered, th	e screen i	is cleared and the time is displayed in 24-
	mode at the	right side	of the l	oottom	line.	
	 The time co 	ounter sta	rts from	the tra	ansmitted	code h:m:00.
	 After the tin 	ne is disp	layed, t	he curs	sor moves	to the home position.
	 The counter 	r display	disappe	ears wh	ien any of	the following occurs:
	1. The curs	or moves	to the	bottom	line.	
	2. Display of	character	s move	to the	bottom line	e.
	3. The \$0C	commar	id is rec	eived.	., ,.	
	• Even if the	time cour	nter is c	leared,	it continu	es to be updated in the display.
	h = 0, m = 0					
[Reference]	\$1F \$55					
[Example]						

\$1F \$55				
[Name]	Display tim	e counter		
[Format]	ASCII	US	U	
	Hex	1F	55	
	Decimal	31	85	
[Description]	Displays the	time cou	iter at the right side of the bottom line.	
[Notes]	 If the time is displayed 	has alread in real tim	y been set using the \$1F \$54 (h) (m) command, the elapsed till e in the format "hours : minutes : seconds".	me
	 If the time I 	has not ye	been set, the elapsed time (from when the counter was initializ	zed
	by turning o format "hour	n the pow s : minute	er or from the \$1B \$40 command) is displayed in real time in t s :seconds".	the
	After the counter	ounter is c er display	isplayed, the cursor moves to the home position. s cleared when any of the following occurs:	



- 1. The cursor moves to the bottom line.
- 2. Display characters move to the bottom line.
- 3. The \$0C command is received.
- Even if the time counter is cleared, it continues to be updated in the display.

[Default] [Reference] [Example]

\$1F \$54

1. Counter display just before receiving \$1F \$54 (h) (m):



2. Example Display Before Setting the Counter

\$1F \$54 h m \$1F \$54 \$0E \$0F (31) (84) (14) (15)

The screen is cleared, and the input time is displayed at the right side of the lower line; counting begins from 14:15:00 seconds. At this time, the cursor moves to the home position indicated by "_".

л.		 																										0.0
 III.																		 			 							10
	 - 8			- 81				101		- 81			 					 			 							410
 III.																		 			 							10
	 - 8			- 81				101		- 81			 					 			 							410
	 10			- 81				101		- 81			 					 			 							410
	10					- 1								i .		i .										- 1		411
	10							T										 			 				1000			000
	10							T														 						(B)
 	 												 							1.10.00								110
	- 6	Ξ.	a	- 81	- E -	- 8	- E - E	- 61		- 81	- E -	- 61	 - E -	a	Ξ.	a	Ξ.						- 8		- E -	- E	- E -	660
	- 22					- 2							 					 - 62				 		-				6 B B
 	 												 					 		1.10.00								110
	- 6	Ξ.	a	- 81	- E -	- 8	- E - E	- 61		- 81	- E -	- 61	 - E -	a	Ξ.	a	Ξ.	 				 				- 8	18 C I	416
11	- 2		a 1	- 21		- 2		- 61		- 21	- E -	- 21			÷		÷							-	100	0 B	1.00	60 E
	 - 22	 Ξ.	S		- E				 				 		-		-		_									- 21

3. Display data ("ABC") is received:

÷.,																			- N		 													
	- 81			÷		- B- 1			81	н.	8	. B. I				 		- 81	- B	- 81			- 81	- 8			- B		8	. B. I	8			÷
	- 51	10 M H	÷	a		- B. I.			ан.	ы.	a	- B.			a a		- 21	- 81	- B	- 21	 	- 2	- 21	- 8	- Al-	- 81	- Al - 1	- 21	a	- B.	a	- 21	-	a
		- E	- 81	a		- S			ан.	ы.	a	- B.			a a		- 21	- 81	- C	- 21	 	- 2	- 21	- 8	- Al-	- 81	- Al - 1	- 21	a	- B.	a	- 21	-	a
	- 21	S			- 51		-		a	18 I.		18 J					- S - 1	- 21		- 61	 	- 2	- 61	- 21	- S	- 21		- 61		18 J		- 61		
								- 24	 e	 ÷.		÷21	S				- Sec.			-21	 		- 24		- E			-2.	See. 1	÷.	See. 1	- 21		e
									 -								-				 													-
 									 2 H	 				1		 																		
		1000			-	1912			e	121		121							1000	- B.														
	- 61	a	- 61	a	- 61	- E -			e	÷.	a	- R.					- R. I.	- 61	- E	- 61	 				- 22				- 66		a			a
									÷		i .	÷.									- 10							- H			i .			i .
					- 81																 													
					- 81																													

Example Indication When the Cursor Does Not Move counter display in the bottom line has no effect on data displayed in the top line.

4. \$0A \$10 (16) if received:

 i ii i	ii ii i	
	innei innei innei innei innei	

Moving the cursor to the bottom line clears the time display, but counting continues internally.

Note: In this example the cursor is represented on its position for a more clear explanation but is not enabled with \$1F\$54 command.



2. DISPLAY FUNCTIONS

\$1F \$58 n											
[Name]	Brightness	adjustme	ent.								
[Format]	ASCII	US	Х	n							
	Hex	1F	58	n							
	Decimal	31	88	n							
[Range]	1 ≤ n ≤ 6		<u></u>								
[Description]	Sets the brig	ghtness o	t the flu	orescen	t chara	acter d	isplay	tube.	n selec	ts the p	percentage
	of brightnes	s as tollov	VS:								
	n	BI	RIGHTNE	SS							
	1		20%								
	2		40%			-					
	3		60%								
	4		100%			-					
	5	Ne	gative fac	ling		1					
	6	Po	sitive fad	ing							
[Notes] [Default] [Reference] [Example]	n = 4										
\$1F \$5E n m											
[Name]	Execute ma	cro.									

[ivanie]	Execute ma	CIO.						
[Format]	ASCII	US	Λ	n	m			
	Hex	1F	5E	n	m			
	Decimal	31	94	n	m			
[Range]	0 ≤ n ≤ 255							
	0 ≤ m ≤ 255							
[Description]	Executes the	e process	defined	l as a r	nacro.			
	 n specifies 	the time	interval	for dis	playing chara	cters in units	s of [n x 20 mse	ec] when a
	macro is ex	ecuted. T	his spe	cifies tl	he time interv	al before di	splaying each s	successive
	character bu	t does no	t affect	the pro	cessing spee	d of comma	nd codes.	
	 m specifies 	the interv	al of ex	ecutior	n. Where mac	ro processing	g is repeated, it	starts over
	from the beg	ginning af	ter the o	comple	tion state of t	he previous	macro process	ing is held
	for [m x 50 n	nsec].						
[Notes]	 If data is rec 	eived from	the hos	st during	g macro proces	sing, the mac	ro processing is	terminated.
	 After macro 	processi	ng is fini	shed, t	he current win	idow is cleare	ed and the curso	or is moved
	to the home	position i	n the cu	irrent w	vindow. Displ	ay settings a	it the completion	n of macro
	processing r	emain va	lid.					
	 If a macro i 	s undefin	ed, this	comma	and is invalid a	and the displa	ay content is no	t affected.
	• If \$1B \$40,	and \$1F	\$40 are	e define	ed in the macr	o, these con	nmands are ign	ored when
	executing th	e macro o	commar	nds.				
[Default]								
[Reference]	\$1F \$3A	5 6	5					
[Example]	Example Ma	cro Defin	ition Pro	ocessir	ig and Macro	Execution P	rogram:	
	PRINT #1,	CHR\$ (&H	1F);CH	IR\$ (&I	H3A);		(1)	
	PRINT #1,	CHR\$ (&H	C);				(1)	
	PRINT #1,	CHR\$ (&H 	1F);CH	IRŞ (&H	145);CHR\$()	0);	(1)	
	PRINT #1,	" Execu	tion N	ACRO	!!";		(1)	
	PRINT #1,	CHRŞ (&H	1F);CH	HRŞ (&H	145);CHRŞ(1	10);	(1)	
	PRINT #1,	CHRŞ (&H	1F);CH	1R\$ (&F	H3A);		(1)	
	PRINT #1,	CHRŞ (&H	1F);CH	1KŞ (&B	15E) ;CHRŞ (!	5);CHRŞ(1(JU);(2)	



• (1) Macro definition

• (2) Macro execution is started. In this case, the time interval for displaying the characters is (5 x 20 msec). When 100 msec has passed after the character "E" has been displayed, the next character, "x", is displayed.

 		 				 		 	D.		 																				 		
																		 										- 11	 		- B.		
 10											10	- 8			110			 101											 - 0		1.01	 	
 1.5											- 12							 											 				
	10		101	10 U	101	101	10 U	101	10 U	• 11			101	101		11 H	1 H H		10 H	1 H	 110		101	11 H						• 11		 	
 10											10	10			110			 101										- 11	 - 0		1.01	 	
 1.5		 									- 12							 											 				
 						 		 	D.		 																				 		
 		 				 		 	D.		 																				 		
 1.5											- 12							 											 				
 																		 										- 11	 		- B.		
 1.5											- 12							 											 				
 1.5											- 12							 											 				
 10		- 8									10	- 8			110			 101											 - 0		1.01	 	
 1.5											- 12							 											 				
 		 				 		 	D.		 																				 		

after 100 msec

			- 21					18			120	0.00				123																																
								1.4					81	- H.	1.1											- H.					÷.,					- 11			- H.	1.1			н.					
	÷	- 8				÷	. A 4	- He		- 64			81	8 H.		- 81		8.		8	- 81	. B. I				- B. I.	8				8.	÷	- 81	- 81		-86		- 81	÷.,				81	÷		- B- 1		
	a	- 22	181	_			÷.,	- 14		- 84	- 64		8 P.	ан,		- 21		8.	81	a	- 81	- B.				- B. I.	8	16	- 24		81	a	- 81	- 64		-86		- 21	- E - I				81	a	- 24	- B. I.		
	a	- 22	181			1.00		- 14		- 84	- 64		8 P.	ан,		- 21		8.	81	a	- 81	- B.				- B. I.	8	16	- 24		81	a	- 81	- 64		-86		- 21	- E - I				81	a	- 24	- B. I.		
	÷ .	- 2	- 21		н.	н÷.	22	11		- 21	а.		8 F	a		- 21		8.	8.	a –	- 81	- R.				а.	8.		- 21		÷ .	a -	- 81	- 21		- 11		- 61	а.				а.	÷	- 21	- B. I.		
	ñe e	ъŝ			÷.,	÷.,		-	100	- 61	184		61 B	Ger.	- 1	- 64		а.	 а.	ā. s	. i i i	124	a ni			÷.	iin.		- 64		÷	iin e	. i i i	- 64		- 12		ый I	Бъ.				÷.	ñe e	ый.	- E		
								12			100		- C	-				-	 -																			_	_			_			_			
			101	TT			TT		TT		100		10 E	a ar	TT	100	TT					100	TTT					TT	100					100						TT		$\overline{\mathbf{T}}$					TT	
		- 8	101				10						1 17	10 H K	10													10	- 81											10					- 81			
		- 8	101				10						1 17	10 H K	10													10	- 81											10					- 81			
							- 12								- 12													1.5												- 12								
							- 12								- 12													1.5												- 12								
		- 5	- 81							- 51			8.			- 81					- 81							1.5	- 81				- 81												- 81		- 15	
	5 a a	- 5	181		÷.,	S		- He		- 51	184		еr,	8 W.				8.	 81	5 a a		184					S					5 m m		184		-86		-81	5 a.					5 a a	- 51	- S		
			12		-	-		- L.			193					- 24		•	 •			100												- 44		- 14		-						-				
(_	_	_	_	_	_	_	_	_	_	_		_	_	_	_	_	_	 _	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	 -

The macro execution interval is (100 x 50 msec). After the blinking display shown in the figure below is held for 5 seconds, macro processing is repeated from a clear screen.

ecurti	on∏MAC	CROU!!U



2.1.2 CD5220 Emulation

The following table lists all the commands for function management in CD5220 display Emulation. The commands can be transmitted any moment, but they will only be carried out when the commands ahead of them have been executed. The commands are carried out when the circular buffer is free to do so.

	COMMAND DES	CRIPTION TABLE (Tab.2.2)
HEX Com.	ASCII Com.	DESCRIPTION
\$08	BS	Move cursor left
\$09	HT	Move cursor right
\$0A	LF	Move cursor down
\$0B	НОМ	Move cursor to home position
\$0C	CLR	Clear display screen
\$0D	CR	Move cursor to left-most position
\$18	CAN	Clear cursor line
\$1B \$11	ESC DC1	Specify overwrite mode
\$1B \$12	ESC DC2	Specify vertical scroll mode
\$1B \$13	ESC DC3	Specify horizontal scroll mode
\$1B \$25 n	ESC % n	Select/cancel user character set
\$1B \$26 s n m [a[p]s x a]	ESC & s n m [a[p]s x a]	Define user programmables characters
(m - n+1)	(m - n+1)	
\$1B \$2A n	ESC * n	Brightness adjustment
\$1B \$3D n	ESC = n	Select peripheral device
\$1B \$3F n	ESC ? n	Delete user defined characters
\$1B \$40	ESC @	Initialize display
\$1B \$51 \$41 n x 20 \$0D	ESC Q ACR	Set the string display mode, write string to upper line
\$1B \$51 \$42 n x 20 \$0D	ESC Q BCR	Set the string display mode, write string to lower line
\$1B \$51 \$44 n x m \$0D	ESC Q DCR	Upper line message scroll continuously
\$1B \$5B 41	ESC [A	Move cursor up
\$1B \$5B 42	ESC [B	Move cursor down
\$1B \$5B 43	ESC [C	Move cursor right
\$1B \$5B 44	ESC [D	Move cursor left
\$1B \$5B 48	ESC [H	Move cursor to home position
\$1B \$5B 4B	ESC [K	Move cursor to bottom position
\$1B \$5B 4C	ESC [L	Move cursor to left-most position
\$1B \$5B 52	ESC [R	Move cursor to right-most position
\$1B \$66 n	ESCfn	Select international characters set
\$1B \$6C x y	USIxy	Move cursor to specified position.
\$1F \$42	US B	Move cursor to bottom position.

Given below are more detailed descriptions of each command.





\$08						
[Name]	Move cursor left.					
[Format]	ASCII BS					
	Hex 08					
	Decimal 8					
[Description]	Moves the cursor to the left.					
[Notes]	When the current cursor is at the left-end position, this command operates differently depends on the display mode.					
	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.					
	 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: All characters on the current line are scrolled one character to the right. Thecursor is not moved, but the character area at the left end is cleared.					
[Default] [Reference] [Example]	\$1B \$11, \$1B \$12, \$1B \$13					

\$09	
[Name] [Format]	Move cursor right.ASCIIHTHex09Decimal9
[Description] [Notes]	 Move the cursor to the right. When the cursor reached the right-end, this command operates differently depending on the display mode. 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. 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: All characters on the current line are scrolled one character to the left. Thecursor is not moved, but the character area at the right end is cleared.
[Default] [Reference] [Example]	\$1B \$11, \$1B \$12, \$1B \$13



2. DISPLAY FUNCTIONS

\$0A						
[Name] [Format]	Move cursor down. ASCII LF Hex 0A Decimal 10					
[Description] [Notes]	 Move the cursor down one line. When the cursor reached 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 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. 					
[Default] [Reference] [Example]	\$1B \$11, \$1B \$12, \$1B \$13					
\$0B						
[Name] [Format]	Move cursor to home position. ASCII HOM Hex 0B Decimal 11					
[Description] [Notes] [Default]	The cursor will move to the left-end position of the upper line. The start position indicates the first column of the upper line.					

\$ 00	2	

[Reference] [Example]

[Name] [Format]	Clear display s ASCII Hex Decimal	creen. CLR 0C 12
[Description] [Notes] [Default] [Reference] [Example]	All the display cl After execution t	haracters will be cleared. this command the cursor moves to the home posiition.

\$0D		
[Name]	Move curso	or to left-most position.
[Format]	ASCII	CR
	Hex	0D
	Decimal	13
[Description] [Notes] [Default] [Reference] [Example]	The cursor r	noves to the left-end position of the current line.



\$18

[Name]	Clear current I	ine.			
[Format]	ASCII	CAN			
	Hex	18			
	Decimal	24			
[Description]	The current line is cleared.				
[Notes]	After execution this command the cursor moves to the left-end position of the current line.				
[Default]					
[Reference]					
[Example]					

\$1B \$11

[Name]	Select overwrit	e mode	3			
[Format]	ASCII	ESC	DC1			
	Hex	1B	11			
	Decimal	27	17			
[Description]	Change the disp	olay moo	de to the overwrite mode.			
[Notes]	• In this mode, e	entering	a character code moves the cursor to the left end of the lower			
	line when the cursor is at the right end of the upper line, and to the left end of the upper					
	line when the cu	irsor is a	at the right end of the lower line.			
	 This mode is selected when the power is turned on. 					
	 Selecting overwrite mode cancels horizontal or vertical scroll mode. 					
	• Except when the cursor is at the right end, entering a character code moves the cursor					
	one character to	the right	ht after displaying the character.			
[Default]						
[Reference] [Example]	\$1B \$12, \$1B \$ ⁺	13				

\$1B \$12

[Name]	Select vertical	scroll	mode.
[Format]	ASCII	ESC	DC2
	Hex	1B	12
	Decimal	27	18
[Description]	Change the dis	play mo	de to the vertical scroll mode.
[Notes]	 In vertical scr the lower line w displayed on th at the right end At this time, the Selecting vert Except when to one character t 	oll mode then the e lower of the le cursor ical scro the curs o the rig	e, entering a character code moves the cursor to the left end of e cursor is at the right end of the upper line, scrolls the characters line to the upper line, and clears the lower line when the cursor is ower line. is moved to the left end of the lower line. oll mode cancels overwrite or horizontal scroll mode. or is at the right end, entering a character code moves the cursor ght after displaying the character.
[Default]			
[Reference] [Example]	\$1B \$11, \$1B \$	13	



\$1B \$13

[Name]	Select horizontal scroll mode.			
[Format]	ASCII	ESC	DC3	
	Hex	1B	13	
	Decimal	27	19	
[Description]	Change the disp	olay mo	de to the horizontal scroll mode.	
[Notes]	 In horizontal scroll mode, entering a character code scrolls all displayed characters (including commas and periods) one character to the left, then displays the new character at the right end (when the cursor is at the right end of either line.) Selecting horizontal scroll mode cancels overwrite or vertical scroll mode. Except when the cursor is at the right end, entering a character code moves the cursor one character to the right after displaying the character. 			
[Default]				
[Reference] [Example]	\$1B \$11, \$1B \$ [*]	12		

\$1B \$25 n

[Name]	Select/cancel	user-de	fined	characters.
[Format]	ASCII	ESC	%	n
	Hex	1B	25	n
	Decimal	27	37	n
[Range]	0 ≤ n ≤ 1			
[Description]	Selects or can	cels the	user-d	efined character set.
[Notes]	 When n = 1, the user-defined character set is selected. When the user-defined character set is not defined using the \$1B \$26 command, the internal character set is displayed. When n = 0, the user-defined character set is canceled (the internal character set is selected). In this case, this command has no effect on the user-defined characters that have already been defined using the \$1B \$26 command. This command has no effect on the characters already displayed. 			
[Default] [Reference]	n=0 \$1B \$26			
[Example]				

\$1B \$26 s n m [a [p] s x a]

[Name]	Defines user-o	defined	charac	sters.		
[Format]	ASCII	ESC	ă.			
	Hex	1B	26	n m [a [p1 p2ps] x a] m - n + 1		
	Decimal	27	37	s n m[a[p]sxa]m-n+1		
[Range]	s = 1					
	$32 \le n \le m \le 12$	26				
	0 ≤ a ≤ 5					
	0 ≤ p1ps x	a ≤ 255				
[Description]	Defines user-d	Defines user-defined characters.				
	s specifies the number of bytes in the vertical direction.					
	n specifies the beginning character code for the definition, and m specifies the final code					
	When a single character is defined $n = m$					
	• The allowable character code range is from ASCII \$20 (32) to \$7E (126)					
	The anomalo character code range is non-matching $20(32)(0.971(120))$.					
	• a specines the number of dots in the horizontal direction. When a< 5 any remaining					
	dots on the right side of the user-defined characters are padded with spaces.					
	• p1pk is the dot data to be defined for the characters. This indicates the dot pattern					
	for a dots in the horizontal direction from the left side.					



	• The number of data items to be defined is s x a. When 8 bits are specified for the com- munication word length, the most significant bit is ignored.
[Notes]	• Once the user-defined characters are defined, they remain effective until they are re- defined, \$1B \$40 is executed, or the power is turned off.
	• When only the user-defined characters are defined and the user-defined character set is not selected using the \$1B \$25 command, the user-defined characters are not displayed.
[Default]	
[Reference] [Example]	\$1B \$25, \$1B \$3F

\$1B \$2A n

[Name]	Brightne	ss adjustm	ent.							
[Format]	ASCII	ESC	*	n						
	Hex	1B	2A	n						
	Decimal	27	42	n						
[Range]	1 ≤ n ≤ 6									
[Description]	Sets the l of brightn	orightness c ess as follov	of the flue ws:	orescent ch	naracte	er displa	ay tube.	n seleo	ots the pe	ercentage
	n	В	RIGHTNE	SS						
	1		20%							
	2									
	3		60%							
	4		100%							
	5	Ne								
	6	P	ositive fad	ing						
[Notes]										
[Default] [Reference] [Example]	n = 4									

¢40 ¢20												÷
\$1B \$3D n												
[Name]	Select	periphe	ral dev	ice.								
[Format]	ASCII	-	ESC	=	n							
	Hex		1B	3D	n							
	Decima	1	27	61	n							
[Range]	1 ≤ n ≤ 2	2, 31 ≤ r	า ≤ 32									
[Description]	Select t	he devic	e to wh	nich the	host comp	uter s	sends da	ata, using	g n as f	ollows:		
	n FUNCTION											
	1, 31	Select printer										
	2, 32	Select display			ау							
[Notes]	• When	n = 1 the	e printei	r is sele	ected and all	I the o	data from	n the hos	st comp	uter is tra	ansmitte	;d
	to the p	rinter via	a the dis	splay.								
	 when 	n = 2 the	e custo	mer dis	play is sele	cted	and all th	ne data i	rom the	e nost co	mputer	IS
	process	ea inter	nally in	the dis	play, and no	o dat	a is trans	smitted t	o the p	rinter.		



n = 2

[Default]	
[Reference]	
[Example]	

\$1B \$3F n												
[Name]	Cancel user	-defined	charac	ters.								
[Format]	ASCII	ESC	?	n								
	Hex	1B	3F	n								
	Decimal	27	63	n								
[Range]	32 ≤ n ≤ 126											
[Description]	Cancels use	r-defined	charact	ters.								
[Notes]	 This comma user-defined is printed. If the specirinternal char If the specie This comm If the user-oprinter ignore 	and cance character fied code acter is di fied code and has n defined ch es this cor	Is the part is can is trans splayed is not d o effect paracter mmand	attern c celled, mitted d. lefined t on ch has no	lefined the cor after, th , this c aracter ot been	for the rrespon he patt comma r alread n define	chara nding ern is nd is i dy disp ed for t	cter cc patterr cance gnorec played the spe	de spo n for th lled by l. ecified	ecified the intern this co	by n. Aff nal cha ommand oter cod	ter the racter d, the le, the
[Default] [Reference] [Example]	\$1B \$26											

\$1B	\$40	

[Name]	Initialize dis	splay.								
[Format]	ASCII	ESC	@							
	Hex	1B	40							
	Decimal	27	64							
[Description]	Resets the v	Resets the various display settings to their initial values.								
[Notes]	 The software 	are settings	are reset to	o their power-on valu	es.					
[Default]										
[Reference]										
[Example]										

\$1B \$51 \$41 n x 20 \$0D

[Name]	Set the string dis	splay m	ode, and	d write s	string to display	
[Format]	ASCII	ESC	Q	А	(n) x 20	CR
	Hex	1B	51	41	(n) x 20	0D
	Decimal	27	81	65	(n) x 20	13
[Description] [Notes] [Default] [Reference] [Example]	Set the string dis	splay m	ode, wri	te to up	per line.	



\$1B \$51 \$42 n x 20 \$0D

[Name]	Set the strin	ng display	mode	, and w	rite string to	display.
[Format]	ASCII	ESC	Q	В	(n) x 20	CR
	Hex	1B	51	42	(n) x 20	0D
	Decimal	27	81	66	(n) x 20	13
[Description] [Notes] [Default] [Reference] [Example]	Set the string	g display n	node, v	vrite to I	ower line.	

\$1B \$51 \$44 n x 20 \$0D

\$1B \$5B \$41

[Name]	Upper line mess	sage sc	roll cont	inuously	/				
[Format]	ASCII	ESC	Q	D	(n) x 20	CR			
	Hex	1B	51	44	(n) x 20	0D			
	Decimal	27	81	68	(n) x 20	13			
[Description]	The message (previously defined) will scroll continuously in the horizontal direction until a new command is received.								
[Notes]									
[Default]									
[Reference]									

ΨΙΒ ΨΟΒ Ψ ΤΙ										
[Name]	Move cursor up.									
[Format]	ASCII ESC [A									
	Hex 1B 5B 41									
	Decimal 27 91 65									
[Description]	Move the cursor up one line.									
[Notes]	 When the cursor is on 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 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 is not moved. 									
[Default] [Reference] [Example]										

+ +- +					1
[Name]	Move curso	r down.			
[Format]	ASCII	ESC	[В	
	Hex	1B	5B	42	
	Decimal	27	91	66	
[Description]	Move the cu	rsor down	one lin	e.	
[Notes]	When the cu differently de	rsor reach pending o	ed the	lower line, this command operates lisplay mode.	



\$1B \$5B \$42

- 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.

[Default] [Reference] [Example]

\$1B \$5B \$43				
[Name] [Format]	Move cursor rig ASCII Hex Decimal	ght. ESC 1B 27	[5B 91	C 43 67
[Description] [Notes] [Default] [Reference] [Example]	 Move the cursor When the cursor the display mod Overwrite m tinue to the the right-end Vertical scrol lower line w to continue Horizontal s the left. The 	r to the r reache e. hode: W left-end d of the oll mode rill scroll charact ccroll mc cursor i	right. ed the rig of the up upper li e: When up to re ers there ode: All c	ght-end, this command operates differently depending on cursor reached the right-end of the lower line, it will con- oper line, overwrite previous characters. When it reached ne, it will continue to the right-end of the lower line. In the cursor reached the right-end of the lower line, the eplace the upper line, the lower line is cleared and ready e after. haracters on the current line are scrolled one character to poved, but the character area at the right end is cleared.

\$1B \$5B \$44				
[Name] [Format]	Move cursor le ASCII Hex Decimal	f t. ESC 1B 27	[5B 91	D 44 68
[Description] [Notes] [Default] [Reference] [Example]	 Moves the curse When the curred depends on the 1. Overwrite mass to the right-oright of the curse left end of the 2. Vertical scrool line will scrool and the curse 3. Horizontal since the right. The 	br to the nt curs display ode: W end of the oll mode oll up an sor will coroll mo necurso	e left. or is at mode. hen the er line, it when twhen to repla continue ode: All c r is not r	the left-end position, this command operates differently cursor reached the left-end of the lower line, it will continue r line, overwrite previous characters. When it reached the will continue to the right-end of the lower line. the cursor reached the left-end of the lower line, the lower ce the previous upper line, the lower line will be cleared to the right end of the lower line. characters on the current line are scrolled one character to moved, but the character area at the left end is cleared.



\$1B \$5B \$48

[Name]	Move curso	r to home	positi	on.		
[Format]	ASCII	ESC		Н		
	Hex	1B	5B	48		
	Decimal	27	91	72		
[Description]	The cursor v	vill move to	the le	ft-end pos	sition of the upp	er line
[Notes]	The start pos	sition indic	ates th	e first colu	umn of the uppe	er line.
[Default]						
[Reference]						
[Example]						

\$1B \$5B \$4C

[Name] [Format]	Move curso ASCII Hex	r to left-m ESC 1B	iost po [5B	L 4C			
[Description] [Notes] [Default] [Reference] [Example]	The cursor m	27 noves to th	9 I ne left-e	76 end positio	on of the c	urrent line.	

\$1B \$5B \$52

[Name]	Move curso	r to right-	most p	oosition.		
[Format]	ASCII	ESC	[R		
	Hex	1B	5B	52		
	Decimal	27	91	82		
[Description]	The cursor w	/ill be mov	ed to th	he right-er	nd position of the curre	nt line.
[Notes]	The cursor is	s moved o	nly with	nin the cur	rrent window.	
[Default]						
[Reference]						
[Example]						

\$1B \$66 n										
[Name]	Select	t an intern	ationa	al chara	acter set.					
[Format]	ASCII		ESC	f	n					
	Hex		1B	66	n					
	Decim	al	27	102	n					
[Range]	0 ≤ n ≤	≤ 10								
[Description]	Select	s the interr	nation	al chara	icter set n a	CCO	rding to the	e table b	elow:	
	n		CHAF	RACTER	SET					
	0	U.S.A.								
	1	France								
	2	Germany								
	3	United King	dom							



4

5

Denmark I

Sweden

n = 0

6	Italy
7	Spain I
8	Japan
9	Norway
10	Denmark II

[Default] [Reference] [Example]

\$1B \$6C x y

[Name]	Move curso	r to speci	ified po	sition	n.	
[Format]	ASCII	ESC		Х	У	
	Hex	1B	6C	х	У	
	Decimal	27	108	х	у	
[Range]	1 ≤ x ≤ 20 y = 1, 2					
[Description]	Moves the cu	ursor to th	e x th co	lumn o	on the y th line.	
[Notes]	 If the mover is ignored an 	• If the movement value of the cursor is out of the range specified by x or y, this command is ignored and the cursor will remain at the same position.				
[Default]	-					
[Reference] [Example]						

\$1F \$42			
[Name]	Move curso	or to botto	om position.
[Format]	ASCII	US	B
	Hex	1F	42
	Decimal	31	66
[Description]	Moves the c	ursor to th	he bottom position.
[Notes] [Default] [Reference] [Example]	The bottom	position ir	ndicates the 20 th column of the lower line.



3.1 TECHNICAL SPECIFICATIONS

Table 3.1 gives the main technical specifications for the display.

(Tab.3.1)

Available interface	Serial RS232				
Baud rate	From 600 to 38400 bps				
Emulations	ESC/POS, CD5220				
МТВF	68509 hours				
DISPLAY SPECIFICATIONS					
Display method	Liquid crystal display backlighted				
Number of characters	40 (20 columns x 2 lines)				
Backlighted colour	Blue				
MECHANICAL SPECIFICATION					
View angle	8 ÷ 35 °				
Rotation angle	90° (1 direction)				
Inclination angle	-35° ÷ +35°				
CHARACTER SPECIFICATIONS					
Character type	Alphanumeric = 96				
	International characters set = 12				
Character font	5 x 8 dot matrix				
Character size (L x H)	6 mm x 9.66 mm				
Character pitch	7.2 mm x 10.98 mm				
Spacing between character	1.2 mm				
Spacing between lines	1.32 mm				
ELECTRICAL SPECIFICATIONS					
Power supply	12 ÷ 24 Vdc ± 10%				
Peak current	2 A peak				
Normal absorption	150 mA (single side) 200 mA (double side)				
COMPLIANCE STANDARD					
	2006/95/CE - Low voltage directive				
	EN60950				
	2004/108/CE - EMC Compatibility directive				
Electromagnetic compatibility	EN55024				
	EN55022 class B				
Climatic test	IEC 68-2				
EMVIROMENTAL CONDITIONS					
Operating temperature	0 ÷ 50°C				
Relative humidity	10 ÷ 80% Rh				
Storage temperature / Humidity	-20 ÷ 70 °C / 10% ÷ 90% Rh				



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3.2 DIMENSIONS

3.2.1 Low version display (single / double side)















3.2.3 High version display + printer (single / dopuble side)



4.1 CHARACTER SET

In Fig.4.1 is shown the characters set.

UPPER 4 BIT 2 3 5 7 В С E F 4 6 8 9 Α D ŕ -----Ξ. • ₿ 0 . . .] •* ------Ĥ i • •...... -7 1 3. 1.... 2 8 8 -Q-1 R é :---2 00 0 ô ۰. •* **.**.... -----3 Ŵ ... • Ï ÷ •* 4 ::::: 4 ł £..., 1 ۰. • Ŧ ÷ Π 5 U ... -• • 1 Ü L.) **.**... 6 • -----1.... ۰. 2 Å 33 Ξ • -----7 60 • Į___ OWER 4 × :---: €, ë .; 38 • K ÷ ... 8 Ï) 9 ¥ j. -Ś ·...! 9 2 2 è ... -----.] Α -:" ••• K k ÷ :** 3 **1**,2 1 ... B ÷., :" i ٠.] ć ÷ • * • 3 С 1 2] ۰. W ------..... Î ... D 1 • 2 . . ŀ $\mathcal{A}^{(n)}$ $\mathcal{O}_{\mathcal{O}_{\mathcal{O}}}$ ø ŵ Ε Ä €... 0 0 Ű F

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Fig.4.1

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A.1 ACCESSORIES

A.1.1 Stand Alone Kit for customer display

A kit is available for customer display stand alone model.

PCXSP-CDKUBE	Stand Alone Kit for customer display composed of (See Fig. A.1) :
	1. Interface / power supply cable
	2. Power supply
	3. F/F RJ45 Ethernet adapter

POWER SUPPLY 230Vac						
Input specifications						
Input voltage	230 Vac					
Input frequency	50 Hz					
Output specifications						
Output voltage	18 Vdc					

NOTE This kit is usable with all models.

Assembly instruction

To connect the kit refer to Fig.A.2 and proceeds as follow:

- Connect the RJ45 connector from the customer display (4) with the ethernet adapter (3).
- Connect the RJ45 connector from interface cable (1A) with the ethernet adapter (3).
- Connect the power supply jack (2) with the interface cable (1B).
- Insert the power supply plug in the wall socket.

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