

POS VFD MODULE

(POS 客显-工控仪表用 VFD 显示模块)

MODEL: KH202LD57R2-M

SPECIFICATION FOR APPROVAL

SPEC NO.		Div.	Signature	Date
REV.NO.	V2.0	Issued by		
DATE	2014-11-01	Checked by		
		Approved by		

General	Display method	Vacuum Fluorescent Display Blue Green
	Number of Characters	20 x 2 for 5 x 7 dot matrix
	Brightness	350~700 cd/m2
	Character Font	95 Alphanumeric & 32 International Characters
	Interface	RS232/USB
	Character Size	5.25(W) x 9.3(H)
	Dot Size(X*Y)	0.85* 1.05 mm
	Dimension	200*72*24
	Power	5VDC
Command	CD5220, EPSON POS, Aedex, UTC/S, UTC/E, ADM788, DSP800, EMAX, LOGIC CONTROL	
Language (0x20-0x7F)	U.S.A,FRANCE, GERMANY, U.K, DENMARKI,DENMARKII,SWEDEN, ITALY, SPAIN, JAPAN,NORWAY, SLAVONIC, RUSSIA	
Language (0x80-0xFF)	PC437,U.S.A. (Standard European) PC850,Multilingual PC858,Euro symbol PC860,Portuguese PC864,Arabic PC866,Russia PC865,Nordic PC852,Slavonic Katakana for Japan Greek (Optional) Czech (Optional) Turkish (Optional) Baltic (Optional) Canadian French (Optional)	
Language Support (Total:29)	1、U.S.A（美英标准）,2、FRANCE（法）,3、GERMANY（德）,4、U.K（英）,5、DENMARK I（丹麦I）,6、DENMARKII(丹麦II),7、SWEDEN(瑞典),8、ITALY（意大利）,9、SPAIN（西班牙）,10、JAPAN（日本）,11、NORWAY（挪威）,12、SLAVONIC（斯拉夫）,13、RUSSIA（俄）,14、PORTUGUESE（葡萄牙）,15、ARABIC（阿拉伯）,16、GREEK（希腊）,17、Nordic(日耳曼语系)、18、Croatian(克罗地亚),19、Bosina(波斯尼亚-南斯拉夫),20、Hungarian(匈牙利),21、Romanian(罗马尼亚),22、Czech(捷克),23、Bulgaria(保加利亚),24、Finnish(芬兰),25、Turkish(土耳其),26、Hebrew(希伯来-犹太),27、Polish(波兰),28、Baltic(波罗的海-立陶宛、拉脱维亚、爱沙尼亚),29、Canadian French(加拿大-法)	

1. SCOPE:

This specification applies to VFD module (Model No: KH202LD57R2-M) manufactured in CHINA.

2. FEATURES:

- 2.1 Simple connection to the host system by RS232 or USB. The baud rate is 9600bps(default).
- 2.2 Since a DC/DC converter is used, only +5VDC power source is required to operate the module.
- 2.3 Characters are provided with a 5×7 dot matrix with comma and decimal point.

3. GENERAL DESCRIPTIONS

- 3.1 This specification becomes effective after being approved by the purchaser.
- 3.2 When any conflict is found in the specification, appropriate action shall be taken upon agreement of both parties.
- 3.3 The expected necessary service parts should be arranged by the customer before the completion of production.

4. PRODUCT SPECIFICATIONS

4.1 Type

Type	KH202LD57R2-M
Digit Format	5 * 7 Dot Matrix with Comma and Decimal point, Annunciator (▼)

4.2 Outer Dimensions,Weight

Parameters	Symbols	Specification	Unit
Outer Dimensions	W * H * t	200*72*24	mm
Display Area	W * H	157.05* 22.86	mm
Character Size	W * H	5.25 * 9.03	mm
Dot size	W * H	0.85* 1.05	mm
Weight		180	g

4.3 Environment Conditions

Parameter	Min.	Max.	Unit
Operating Temperature	-30	70	℃
Storage Temperature	-40	85	℃
Operating Humidity	-30	85	%

Storage Humidity	-	95	%
Vibration (10 ~ 55 Hz)	-	0.5(Displacement)	mm
Shock	-	40(Duration =11ms)	G

4.4 Absolute Maximum Ratings

Parameter	Symbols	Min.	Max.	Unit
Supply Voltage	VCC	-0.3	+5.5	VDC
Input Signal Voltage(RS232)	VIN	-25	+25	VDC
Input Signal Voltage(USB)	VIN	USB 2.0 compatible		

4.5 Recommend Operating Conditions

Parameter	Symbols	Min.	Typ.	Max.	Unit
Supply Voltage	VCC	+4.75	5	+5.25	VDC
Input Signal Voltage (RS232)	MARK	+3	+12	+15	VDC
	SPACE	-15.0	-12	-3	VDC
Input Signal Voltage(USB)	USB 2.0 compatible				

4.6 DC Characteristics

Parameters	Test Conditions	Min.	Typ.	Max.	Unit
Supply Power (*) (When all dots are lit)	VCC = + 5VDC	-	2-	3-	W
Input Signal Current (RS232)	VIN = +12 VDC	-	-	+3	mA
	VIN = - 12 VDC	-	-	-3	mA
Input Signal Voltage(USB)	USB 2.0 compatible				
Brightness	VCC = +5VDC	102	204	-	ft-L
		350	700	-	cd/m2
Display Color	-	Green			-
MTBF	VCC = +5VDC	-	30,000	-	hours

5. TIMING CHART(RS232)

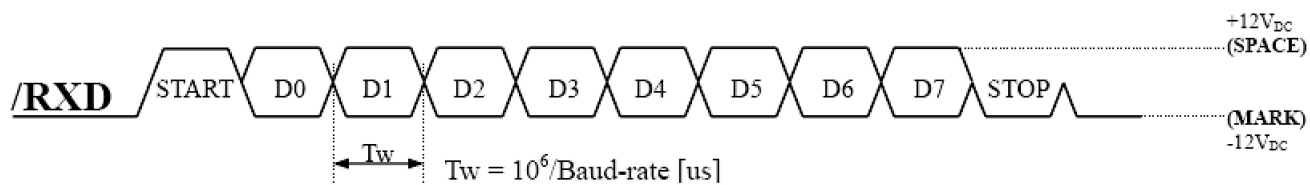
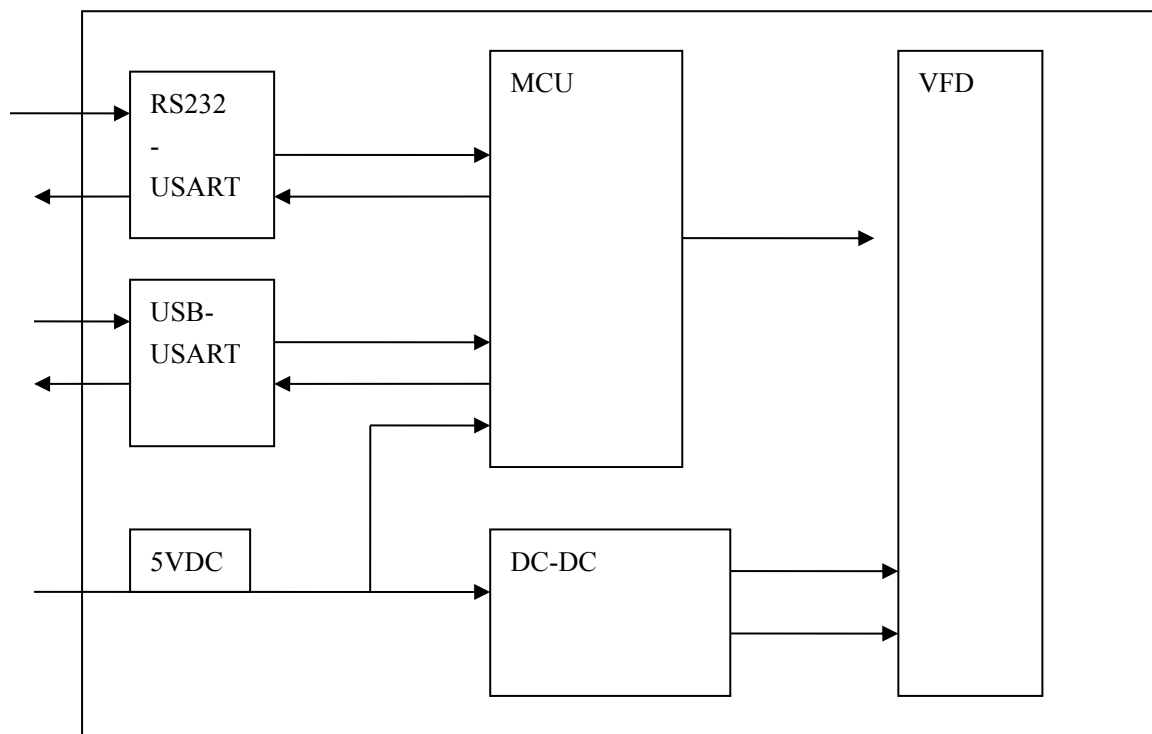
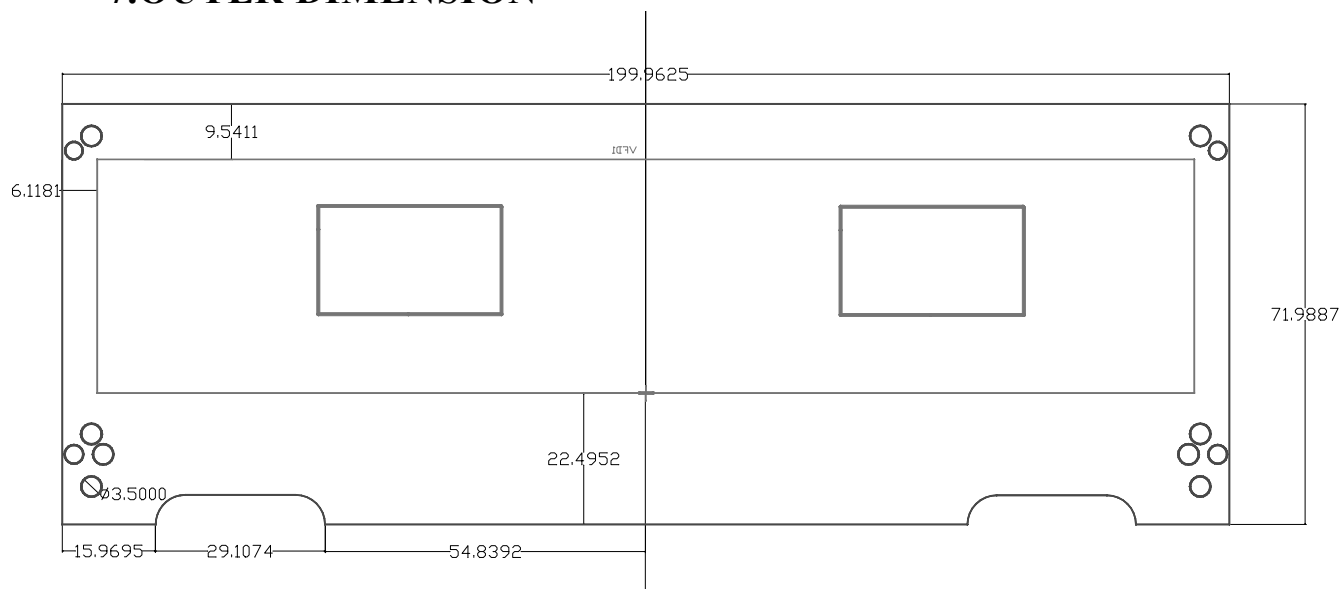


Fig.-1 Serial Input Timing Diagram (/RXD input signal)

6. SYSTEM BLOCK DIAGRAM

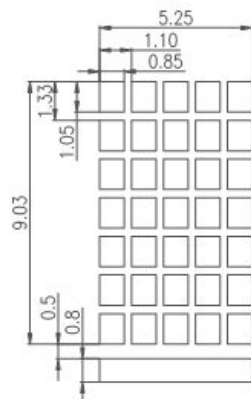
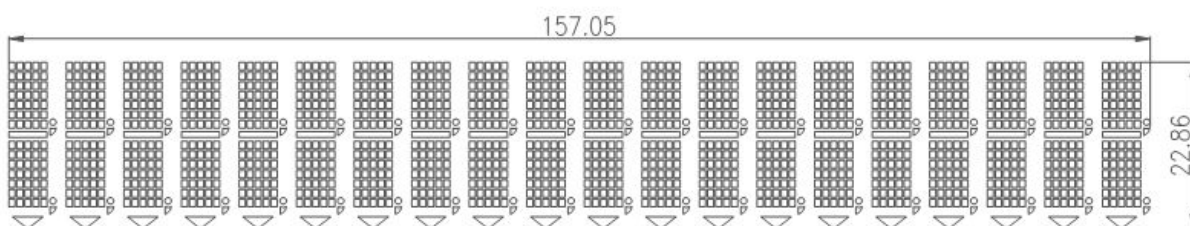


7. OUTER DIMENSION



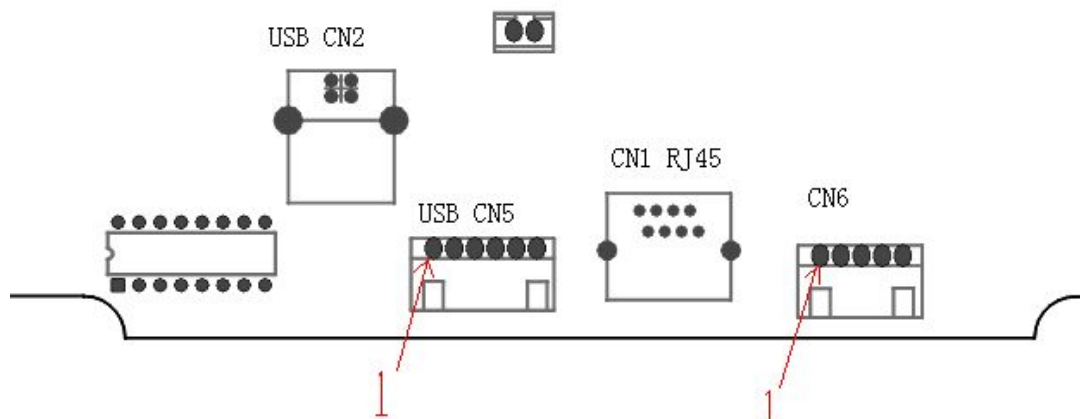
- Unit:mm
- Tolerance: Mounting Hole Size: $\pm 0.3\text{mm}$
 Length: Range<10mm: $\pm 0.5\text{mm}$
 Range $\geq 10\text{mm}$: $\pm 1.0\text{mm}$

8. PATTERN DETAIL

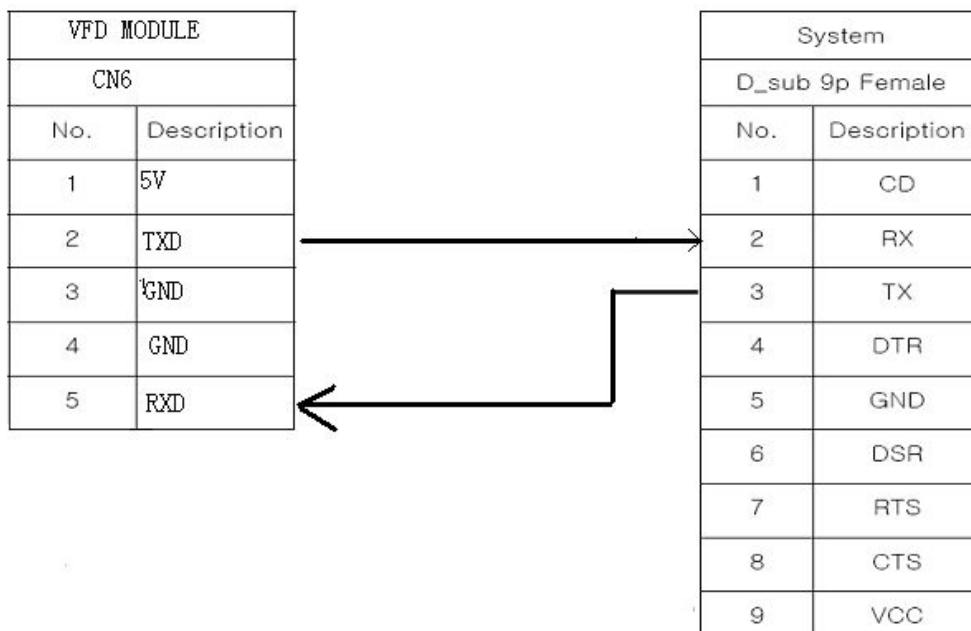


显示颜色 Color of Illumination:
 绿色 Green: $x=0.250, y=0.440$ 全部 (All)
 Cadmium Free Phosphor used

9.INTERFACE CABLE



USB CN2		USB CN5		RS232 CN6	
No.	Description	No.	Description	No.	Description
1	Vbus	1	5-12VDC	1	5VDC
2	D-	2	Open the cash box	2	TXD
3	D+	3	Vbus(5VDC)	3	GND
4	GND	4	D-	4	GND
		5	D+	5	RXD
		6	GND		



10. Function Setting

10.1 Baud Rate Select

Function Description Baud Rate (bps)

9600

19200

10.2 Command Type Select

Function Description	Software Defined
Command Type	Hex Code
EPSON POS	01
UTC Standard	02
UTC Enhance	03
AEDEX	04
ADM788	05
DSP800	06
CD5220	07
EMAX	08
LOGIC CONTEOL	09

10.3 International Character Set

International Fonts (Code 20H-7FH)	Extended Character (Code 80H-FFH)
U.S.A	PC437,U.S.A.
FRANCE	pc858,Euro symbol
GERMANY	pc858,Euro symbol
U.K	pc858,Euro symbol
DENMARKI	pc858,Euro symbol
SWEDEN	pc858,Euro symbol
ITALY	pc858,Euro symbol
SPAIN	pc858,Euro symbol
JAPAN	Katakana for Japan
NORWAY	pc858,Euro symbol
DENMARKII	pc858,Euro symbol
SLAVONIC	PC852,SLAVONIC
RUSSIA	PC866,RUSSIA
ASCII	PC850,Multilingual
ASCII	PC864,Arabic
ASCII	PC860,Portuguese
ASCII	Greek
.....

11. SYSTEM COMMAND DETAIL

11.1 Command Set

Command	Hex	Function
HT	09	Move cursor right (Only valid in overwrite mode)
BS	08	Move cursor left (Only valid in overwrite mode)
CR	0D	Move cursor to left-most position (Only valid in overwrite mode)
ESC @	1B 40	Initialize customer display to initial state, clears display buffer, set display mode to shift and sets current display row to upper row
ESC U	1B 55	Select upper row as current row (Initial default)
ESC D	1B 44	Select lower row as current row
ESC A n	1B 41 n	Sets customer display disable or enable n=D, Disable ; n=E, Enable
ESC C r c	1B 43 r c	Move cursor to specified position (Only valid in overwrite mode) r=U, upper row ; r=D, lower row $1 \leq c \leq 20$ (column number)
ESC E r n	1B 45 r n	Set special effect or display mode of specified row
ESC R n	1B 52 n	Set international font sets (Please refer International Font Set Table)
ESC % n	1B 25 n	Set font pattern n=0, selected ; n=1, canceled
ESC & n s [p]	1B 26 n s data	Define user font pattern n=code for first character s=code for last character data=5 bytes required for each character

(REMARK)*Using commands “ESC E r n”, the value (Hex) of parameter

r 58h=all rows	n special function, the value is one of
55h=upper row	30h=shift mode (Default display mode)
44h=lower row	31h=rotation mode
	32h=blink mode
	33h=clear this row and switch to shift mode
	34h=overwrite mode
	35h=vertical mode

* International Font Set Table

n (Hex)	International Font Set	n (Hex)	International Font Set
30h	U.S.A	32h	FRANCE
31h	GERMANY	33h	JAPAN

11.2 EPSON ESC/POS Command Set (Default)

Command	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-most position
CR	0D	Move cursor to left-most position
HOM	0B	Move cursor to home position
US B	1F 42	Move cursor to bottom position
US \$ x y	1F 24 x y	Move cursor to specified position $1 \leq x(\text{column}) \leq 20$; $1 \leq y(\text{row}) \leq 2$
US C n	1F 43 n	Select/cancel cursor display n=0, canceled ; n=1, selected
CLR	0C	Clear display screen
CAN	18	Clear cursor line
US X n	1F 58 n	Brightness adjustment $1 \leq n \leq 4$
US E n	1F 45 n	Blink display screen $0 \leq n \leq 255$ (n*50msec) ON / (n*50msec) OFF
ESC @	1B 40	Initialize display
ESC t n	1B 74 n	Select character code table $0 \leq n \leq 5$ (Please refer “Chapter 5”)
ESC R n	1B 52 n	Select international character set (Please refer International Font Set Table)
US r n	1F 72 n	Select/cancel reverse character n=0, canceled ; n=1, selected
US MD1	1F 01	Specify overwrite mode
US MD2	1F 02	Specify vertical scroll mode
US MD3	1F 03	Specify horizontal scroll mode
US . n	1F 2E n	Specify period display n= display character code
US , n	1F 2C n	Specify comma display n= display character code
US ; n	1F 3B n	Specify semicolon (period+comma) display n= display character code
US # n m	1F 23 n m	Specify display annunciator,, turn the annunciator at “m” column on or off n=0,1 (Off, On) ; $0 \leq m \leq 20$
ESC & s n m	1B 26 s n m	Define download characters

[a(pl..p5)] (m-n+1)	[a(pl..p5)](m-n+1)	s=1 ; $32 \leq n \leq m \leq 126$; a=5 (p1..p5 = pattern1..pattern5)
ESC ? n	1B 3F n	Cancel user-defined characters $32 \leq n \leq 126$ (n=character code)
ESC % n	1B 25 n	Select/cancel download character set n=0, canceled ; n=1, selected
ESC W n s (x1 y1 x2 y2)	1B 57 n s (x1 y1 x2 y2)	Specify/cancel the window range n=1,2,3,4 (four windows) ; s=0,1 (disable, enable) $1 \leq x1 \leq x \leq 220$ (column) ; $1 \leq y1 \leq y2 \leq 2$
ESC = n	1B 3D n	Select peripheral device n=1, printer ; n=2, display ; n=3, printer & display
US :	1F 3A	Set starting/ending position of macro definition
US ^ n m	1F 5E n m	Execute and quit macro $0 \leq (n,m) \leq 255$ n: specifies the time interval for display of characters in units of [n* 50msec] m: specifies the interval of macro execution every [m*50msec]
US @	1F 40	Execute self-test
US T h m	1F 54 h m	Display time : $0 \leq h \leq 23$; $0 \leq m \leq 59$
US U	1F 55	Display of time counter

*** International Font Set Table**

Decimal n	Hex n	Country
0	00H	U.S.A
1	01H	FRANCE
2	02H	GERMANY
3	03H	U.K.
4	04H	DENMARKI
5	05H	SWEDEN
6	06H	ITALY
7	07H	SPAIN
8	08H	JAPAN.
9	09H	NORMAY
10	0AH	DENMARKII
11	0BH	SLAVONIC
12	0CH	RUSSIA

※Specify decimal point, comma, semicolon, annunciator*

(1) US . n (Decimal Point) / US , n (Comma) / US ; n (Semicolon):

The displayed character codes are from 32(20h) to 127(7Eh), and 128(80h) to 255(FFh) in the character code table. The period/comma/semicolon displayed only for n. The period is not displayed for the subsequent display characters.

(2) US # n m (annunciator):

[range] n = 0(00h) or 1(01h) / m = 0(00h)~20(14h)

[notes] When n = 0, the annunciator at column m is turned off.

When n = 1, the annunciator at column m is turned on.

"m" specify column number (the most left column is column 1) at which annunciator to be turned on/off is placed.

When m = 0, all annunciators are turned on or off.

Once an annunciator(s) is turned on, it remains on until turned off by this command, the ESC@ or US@ command is executed, or the power is turned off.

[example]: To turn on the annunciator at the third column:

[n = 01h], [m = 03h]

To turn off all the annunciators:

[n = 00h], [m = 00h]

※Above commands relating decimal point, comma, semicolon, and annunciator may not be available due to hardware limit of display tube.

11.3 UTC Standard Command Mode

Command	Hex	Function Description
BS	08	Back space
HT	09	Horizontal tab
LF	0A	Line feed
CR	0D	Carriage return
DC0 p	10 p	Move cursor to specified position, $0 \leq p \leq 39$ (Please refer Row Character Position Chart)
DC1	11	Over write display mode
DC2	12	Vertical scroll mode
DC3	13	Cursor on
DC4	14	Cursor off
ESC d	1B 64	Change to UTC enhanced mode
US	1F	Clear display

Row Character Position Chart (Decimal)

Row1	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Row2	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39

Row Character Position Chart (Hex)

Row1	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	10	11	12	13
Row2	14	15	16	17	18	19	1A	1B	1C	1D	1E	1F	20	21	22	23	24	25	26	27

11.4 UTC Enhance Command Mode

Command	Hex	Function Description
ESC u A..CR	1B 75 41 [data x 20] 0D	Upper line display
ESC u B..CR	1B 75 42 [data x 20] 0D	Bottom line display
ESC u D..CR	1B 75 44 [data x 45] 0D	Upper line message scroll continuously
ESC u E..CR	1B 75 45 hh ':' mm 0D	Set and display 24 hour time $0 \leq h, m \leq 9$
ESC u F..CR	1B 75 46 [data x 45] 0D	Upper line message scroll once pass
ESC u H..CR	1B 75 48 n m 0D	Change attention code $32 \leq n, m$ (Default attention code $n=1Bh, m=75h$)
ESC u I..CR	1B 75 49 [data x 40] 0D	Two line display
ESC RS..CR	1B 0F 0D	Change to UTC standard mode

11.5 AEDEX Command Mode

Command	Hex	Function Description
! # 1..CR	21 23 31 [data x 20] 0D	Upper line display
! # 2..CR	21 23 32 [data x 20] 0D	Bottom line display
! # 4..CR	21 23 34 [data x 45] 0D	Upper line message scroll continuously
! # 5..CR	21 23 35 hh ':' mm 0D	Set and display 24 hour time $0 \leq h, m \leq 9$
! # 5 CR	21 23 35 0D	Display 24 hour time
! # 6..CR	21 23 36 [data x 45] 0D	Upper line message scroll once pass
! # 8..CR	21 23 38 n m 0D	Change attention code $32 \leq n, m$ (Default attention code $n=1Bh, m=75h$)
! # 9..CR	21 23 39 [data x 40] 0D	Two line display

11.6 ADM788 Command Mode

Command	Hex	Function Description
CLR	0C	Clear display
CR	0D	Carriage return
SLE1	0E	Clear up line and move cursor to upper line left most end
SLE2	0F	Clear low line and move cursor to lower line left most end
DC0	10 n	Set period to upper line last n position $1 \leq n \leq 7$
DC1	11 n	Set line blinking n=1, upper line n=2, lower line
DC2	12 n	Clear line blinking n=1, upper line n=2, lower line
SF1	1E	Clear field 1 and move cursor to field 1 fast position
SF2	1F	Clear field 2 and move cursor to field 2 fast position

11.7 DSP800 Command Mode

Command	Hex	Function Description
EOT SOH I n ETB	04 01 49 n 17	Select international character set (Please refer International Font Set Table)
EOT SOH P n ETB	04 01 50 n 17	Move cursor to specified position $49 \leq n \leq 88$
EOT SOH C n m ETB	04 01 43 n m 17	Clear display range from n position to m position and move cursor to n position $49 \leq n \leq m \leq 88$
EOT SOH S n ETB	04 01 53 n 17	Save the current displaying data (40 characters) to n'th layer for demo display $1 \leq n \leq 3$ (n specify the layer 1, 2, or 3)
EOT SOH D n m ETB	04 01 44 n 17	Display the saved data $1 \leq n \leq 3$ (n specify the layer 1, 2, or 3) “m” can be ignored
EOT SOH A n ETB	04 01 41 n m 17	Brightness adjustment 1n4
EOT SOH = n ETB	04 01 3D n 17	Select peripheral device n=1, printer ; n=2, display
EOT SOH % ETB	04 01 25 17	Initialize display

*** International Font Set Table**

ASCII n	Decimal n	Hex n	Country
0	48	30H	U.S.A
1	49	31H	FRANCE
2	50	32H	GERMANY
3	51	33H	U.K
4	52	34H	DENMARKI
5	53	35H	SWEDEN
6	54	36H	ITALY
7	55	37H	SPAIN
8	56	38H	JAPAN
9	57	39H	NORWAY
A	58	3AH	DENMARKII
B	59	3BH	SLAVONIC
C	60	3CH	RUSSIA

11.8 CD5220 Command Mode

Command	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 A CR	1B 51 41 [N]20 0D	Set string display mode, write string to upper line
ESC Q B CR	1B 51 42 [N]20 0D	Set string display mode, write string to lower line
ESC Q D CR	1B 51 44 [N]20 0D	Upper line message scroll continuously $m < 40$
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 [x y	1B 6C x y	Move cursor to specified position $1 \leq x \leq 20$ (column) ; $y \leq 1, 2$ (row)
ESC @	1B 40	Initialize display
ESC W s x1 x2 y	1B 57 s x1 x2 y	Enable or disable the window range at horizontal scroll mode $s=0, 1$ (disable, enable) $1 \leq x1 \leq x2 \leq 20$ (column) ; $y=1, 2$ (row)
CLR	0C	Clear display screen, and clear string mode
CAN	18	Clear cursor line, and clear string mode
ESC * n	1B 2A n	Brightness adjustment $1 \leq n \leq 4$
ESC & s n m [a(pl..p5)] (m-n+1)	1B 26 s n m [a(pl..p5)] (m-n+1)	Define download characters $s=1$; $32 \leq n \leq m \leq 126$; $a=5$ (p1..p5 = pattern1..pattern5)

ESC ? n	1B 3F n	Delete download characters $32 \leq n \leq 126$ (n=character code)
ESC % n	1B 25 n	Select / cancel download character set. n=0, canceled ; n=1, selected
ESC _ n	1B 5F n	Set cursor ON/OFF n=0,1 (Off,On)
ESC f n	1B 66 n	Select international fonts set
ESC c n	1B 63 n	Select fonts, ASCII code or JIS code
ESC = n	1B 3D n	Select peripheral device n=1, printer ; n=2, display ; n=3, printer & display

(REMARK)

* While using command “ESC Q A” or “ESC Q B”, these two commands could be used combining with terminal printer - TP 2688 or TP3688

* If using command “ESC Q A” or “ESC Q B”, others commands can't be used except using command “CLR” or “CAN” to change operating mode.

* If using command “ESC Q D”, message on upper line will move continuously till receiving a new command, clearing upper line, and moving cursor to most left position on upper line.

● **International Font Set Table**

ASCII n	Decimal n	Hex n	Country
A	65	41H	U.S.A
D	68	44H	DENMARKI
E	69	45H	DENMARKII
F	70	46H	FRANCE
G	71	47H	GERMANY
I	73	49H	ITALY
J	74	4AH	JAPAN.
L	76	4CH	SLAVONIC
N	78	4EH	NORMAY
R	82	52H	RUSSIA
S	83	53H	SPAIN
U	85	55H	U.K.
W	87	57H	SWEDEN

● * **Select Code Table**

ASCII n	Decimal n	Hex n	character code table(80H...FFH)
A	64	41H	U.S.A. and Standard Europe
J	74	4AH	Katakana for Japan
L	76	4CH	SLAVONIC
R	82	52H	RUSSIA

11.9 EMAX Command Mode

Command	Hex	Function Description
ESC DC1	1B 11	Overwrite mode
ESC DC2	1B 12	Vertical scroll mode
ESC DC3	1B 13	Horizontal scroll mode
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 [x y	1B 6C x y	Move cursor to specified position 1x20 (column) ; y \leq \leq =1,2 (row)
ESC @	1B 40	Initialize display
CLR	0C	Clear display screen, and clear string mode
CAN	18	Clear cursor line, and clear string mode
ESC * n	1B 2A n	Brightness adjustment $1 \leq n \leq 4$
ESC _ n	1B 5F n	Set cursor ON/OFF n=0,1 (Off,On)
ESC f n	1B 66 n	Select international fonts set
ESC c n	1B 63 n	Select fonts, ASCII code or JIS code
ESC = n	1B 3D n	Select peripheral device n=1, printer ; n=2, display ; n=3, printer & display

● **International Font Set Table**

ASCII n	Decimal n	Hex n	Country
A	65	41H	U.S.A
D	68	44H	DENMARKI
E	69	45H	DENMARKII
F	70	46H	FRANCE
G	71	47H	GERMANY
I	73	49H	ITALY
J	74	4AH	JAPAN.
L	76	4CH	SLAVONIC
N	78	4EH	NORMAY
R	82	52H	RUSSIA
S	83	53H	SPAIN
U	85	55H	U.K.
W	87	57H	SWEDEN

● * **Select Code Table**

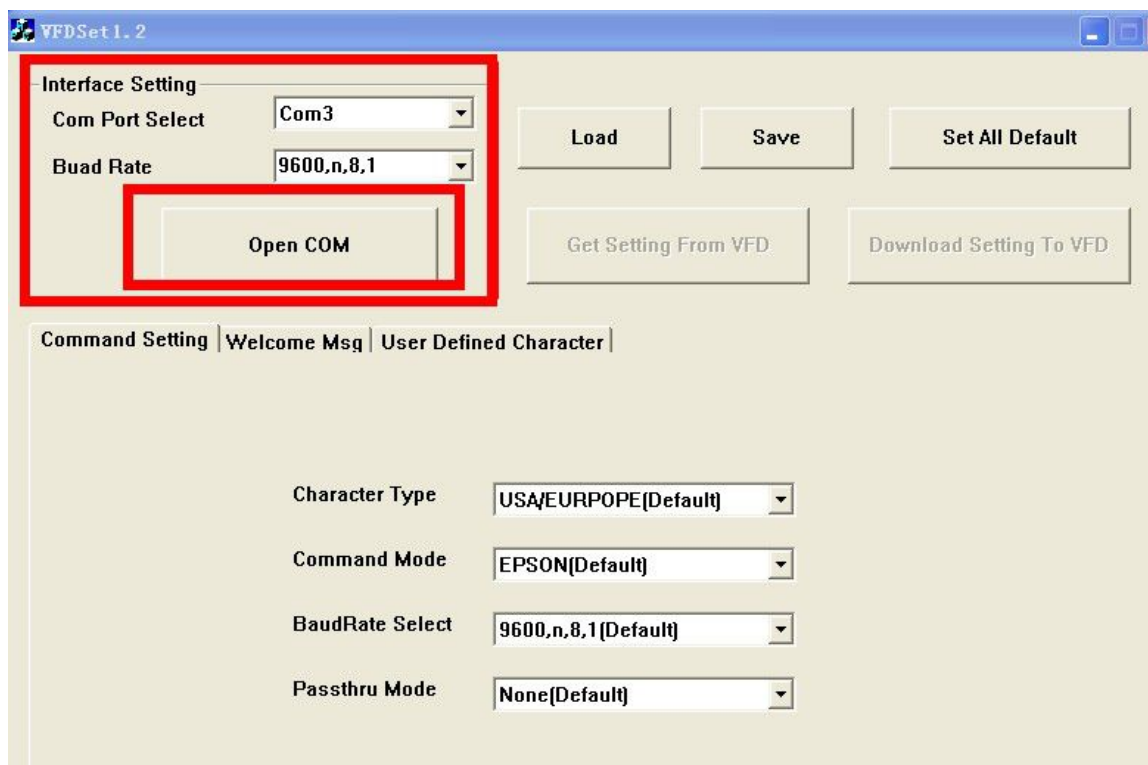
ASCII n	Decimal n	Hex n	character code table(80H...FFH)
A	64	41H	U.S.A. and Standard Europe
J	74	4AH	Katakana for Japan
L	76	4CH	SLAVONIC
R	82	52H	RUSSIA

11.10 LOGIC Command Mode

Command	Hex	Function Description
^Q	11	Over write display mode
^R	12	Vertical scroll mode
^I	09	Horizontal tab
^H	08	Back space
^J	0A	Line feed
^M	0D	Carriage return
^S	13	Cursor on
^T	14	Cursor off
^P	10 P	Move cursor to specified position, 0 ≤ p ≤ 39 (Please refer Row Character Position Chart)
^_	1F	Clear display
^D n	0C n	Brightness mode 04 FF – 100% Brightness mode 04 60 – 60% Brightness mode 04 40 – 40% Brightness mode 04 20 – 20% Brightness mode

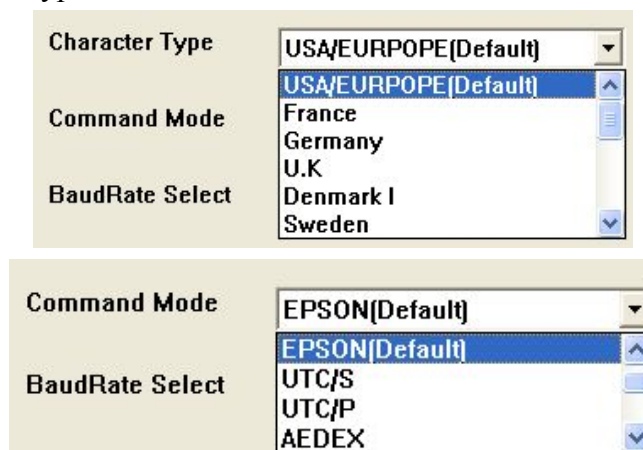
12 VFDset Setup Software Utility Guide

1. Power on VFD module ,display Baud rate , Command ,and character set. And you may set up VFD module by” VFDset X.X.exe” software(For example VFDSet1.2).
2. Setup VFDsetX.X.exe software.
3. To execute “VFDsetX.X.exe” for setup communication between software and VFD module.



The baud rate will show on states page of VFD module(Note:You may check it when power on VFD module),then click “Open COM” button.

3. “Get Setting From VFD” button To get all setting from VFD module and it’ll refresh the “VFDsetX.X.exe” software.
4. Select “Character Type”/ “Command Mode”/ “Baud Rate Select”/ “Passthru Mode”



BaudRate Select	9600,n,8,1(Default)
Passthru Mode	9600,n,8,1(Default)
	19200,n,8,1
	None/Default

5. Click “Set All Default” button To show default setting, the Default table is

Character Type : USA

Command Type : EPSON/EUROPE

BaudRate Setting : 9600/n/8/1

Passthru Mode : None

Welcome msg line1 : *** VFD DISPLAY ***

Welcome msg line2 : **HAVE A NICE DAY AND THANK YOU **

6. Welcome Msg

Welcome Msg line1 maximum 20 characters, line 2 maximum 20 characters, total of 40 characters.

a. ASCII mode

Command Setting | **Welcome Msg** | User Defined Character

Welcome Message1

☒ ASCII ☐ Hex

0	5	10	15	20
*	*	*	V	F
D	D	I	S	P
L	A	Y	*	*
*				

Clear

Welcome Message2

☒ ASCII ☐ Hex

0	5	10	15	20
*	*	H	A	V
E	A	N	I	C
E	D	A	Y	A
N				
21	25	30	35	40
D	T	H	A	N
K	Y	O	U	*
*				

Clear

You can type the character by keyboard (0x20h ~ 0x7Fh), if you press clear icon, it will clear the all Msg characters on AP.

b. Hex mode

Hex mode can define the character from 0x20h to 0xFFh, the range 0x80~0xFF which depends on the code page table.

Command Setting | **Welcome Msg** | User Defined Character

Welcome Message1

☐ ASCII ☒ Hex

0	5	10	15	20
2A	2A	2A	20	56
46	44	20	44	49
53	50	4C	41	59
20	20	2A	2A	2A

Clear

Welcome Message2

☐ ASCII ☒ Hex

0	5	10	15	20
2A	2A	48	41	56
45	20	41	20	4E
49	43	45	20	44
41	59	20	41	4E
21	25	30	35	40
44	20	54	48	41
4E	4B	20	59	4F
55	2A	2A	20	20
20	20	20	20	20

Clear

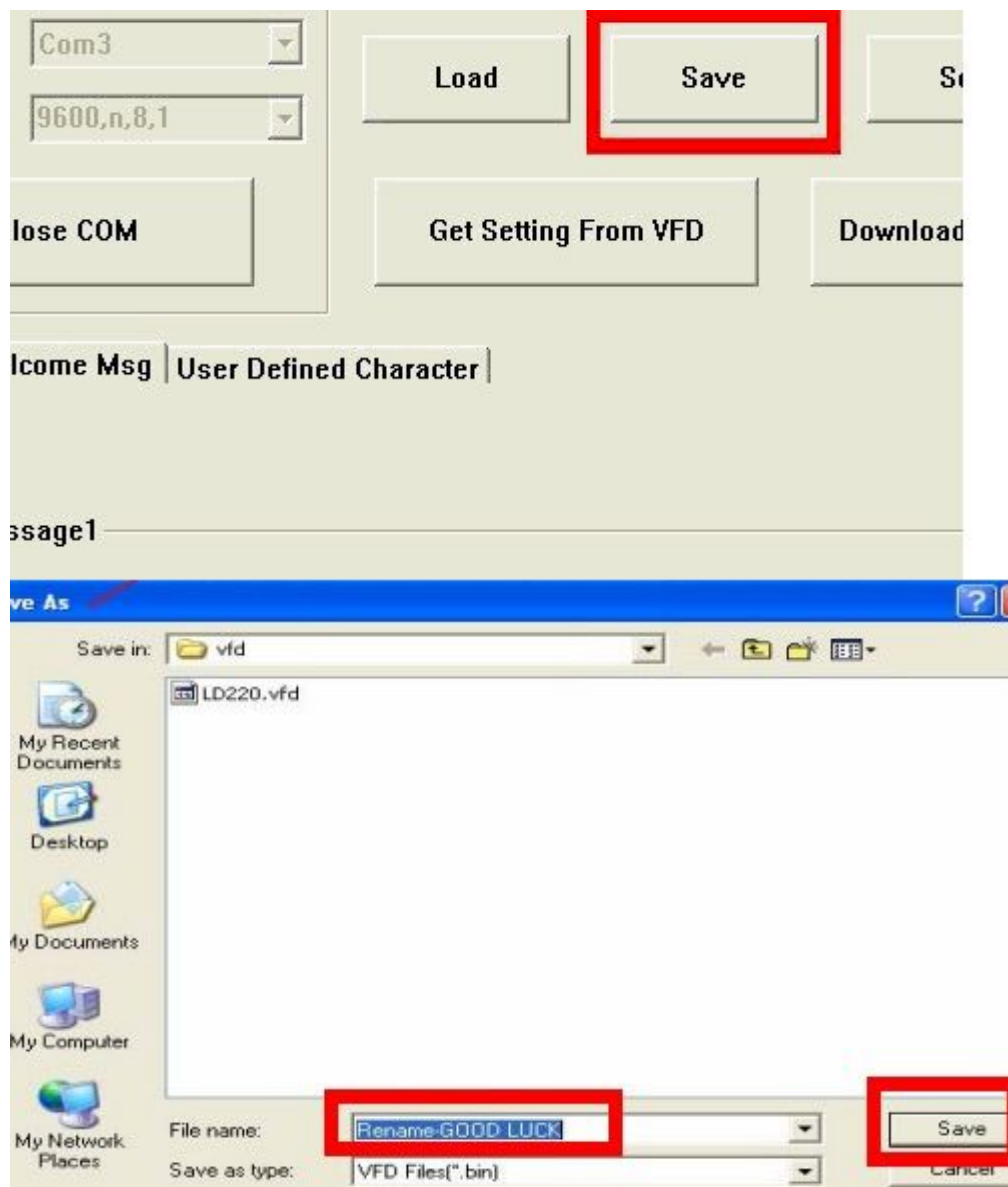
Like the first character (0x80), in default code page will show on VFD module.

7. Click “Download setting to VFD” button

This button is to download the setting from VFDset1.3.exe to VFD module. *After success dialog “Download O.K ! Please restart !” message popped up.

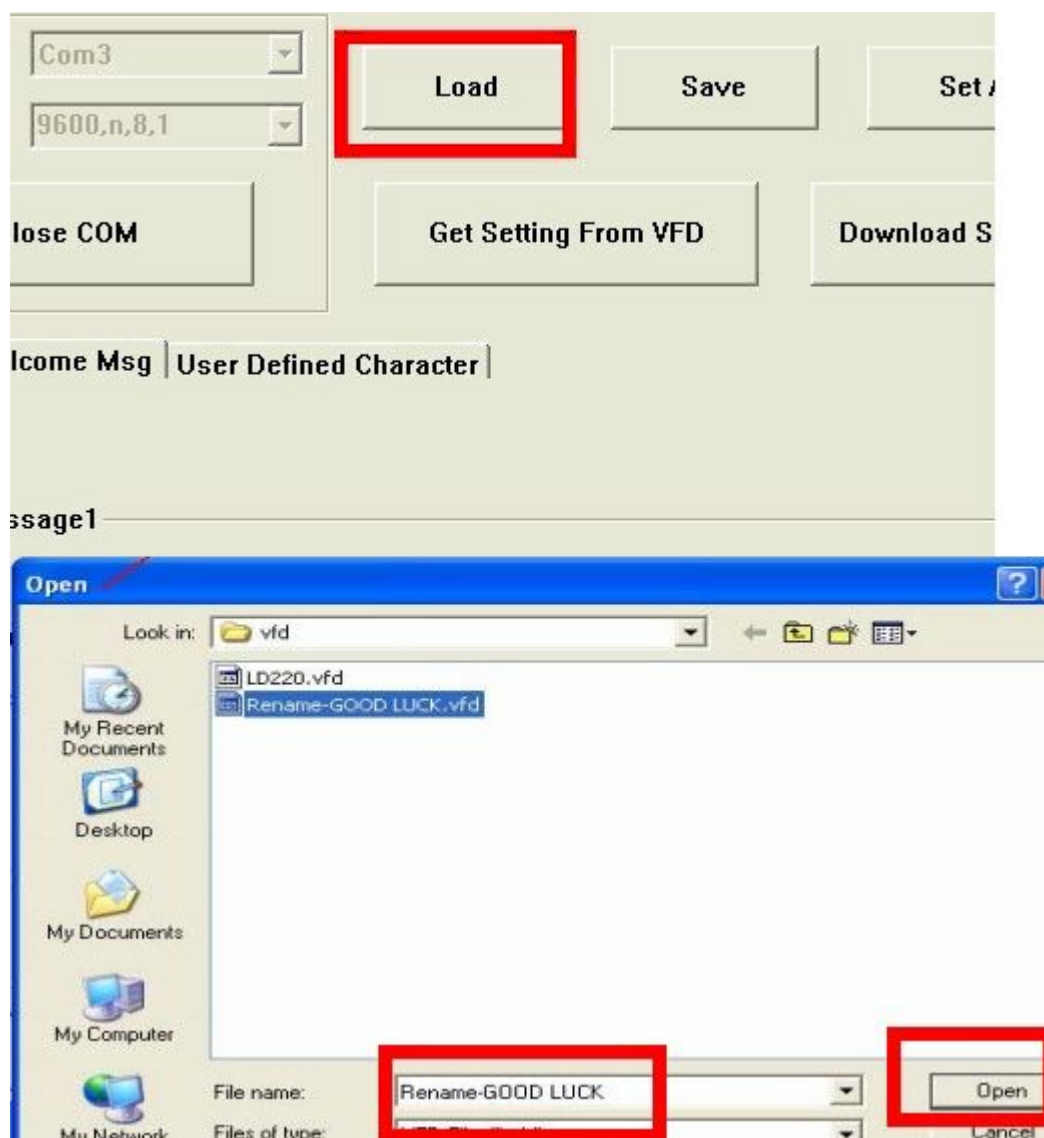
8. Click “Save” button

To save user’s setting in file, example: below picture to save file name as “GOODLUCK” file set for Welcome Msg.



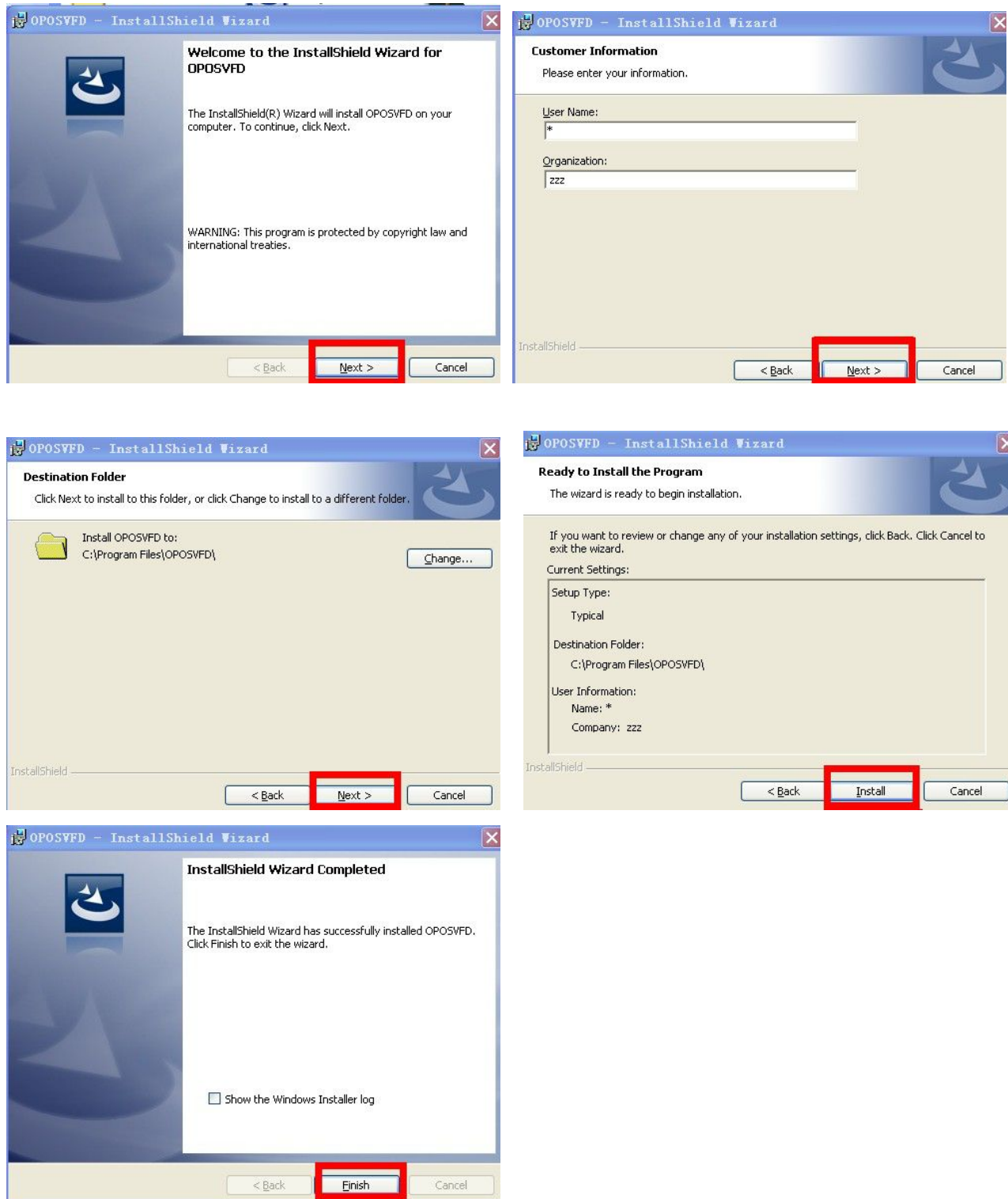
9. Click “Load’ button

After saving, you must restart the utility here. Then load your setting GOOD LUCK.vfd.



13 OPOS VFD X.X.exe Setup Software Utility Guide

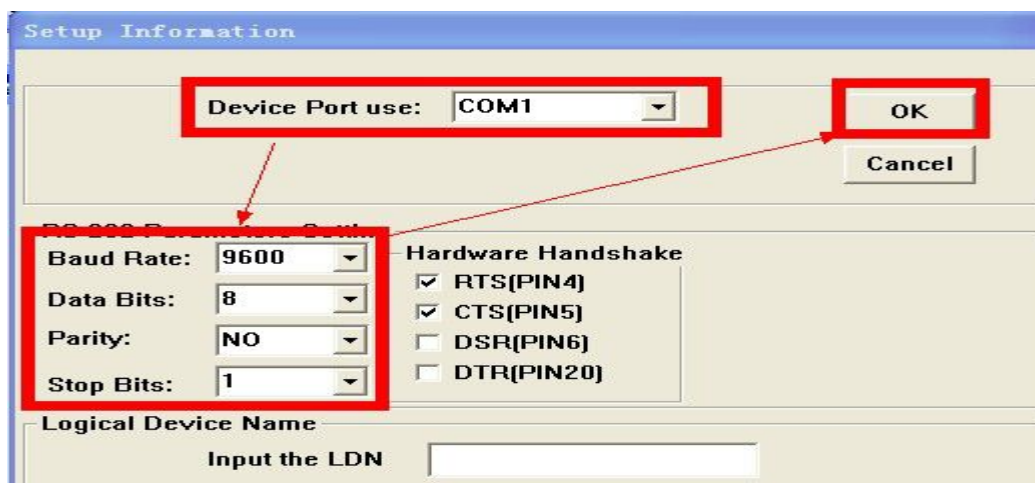
1. Setup VFDsetX.X.exe software.(For example OPOS VFD1.3)



2. To execute "OPOSVFD1.3.exe" for setup a display device(VFD module).
3. Input VFD Device name is "KINGHIGH", then click "setup" button.



4. Select device port ,baud rate ,data bits ,parity ,and stop bits ,then click OK.



5. Display as follow is finish.



6. If you want delete VFD Device. Select VFD Device , then click “delete” button.































































































































































14 Character Set

USA Font Table(ASCII)

L	H	0	1	2	3	4	5	6	7
0									
1									
2									
3									
4									
5									
6									
7									
8									
9									
A									
B									
C									
D									
E									
F									

Select international fonts ,the character differences, please refer to the following:

	23	24	40	5B	5C	5D	5E	60	7B	7C	7D	7E
USA												
FRANCE												
GERMANY												
U.K												
DENMARK I												
SWEDEN												
ITALY												
SPAIN												
JAPAN												
NORWAY												
DENMARK II												
SLAVONIC												
RUSSIA												

Standard Europe

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
80H																
90H																
A0H																
B0H																
C0H																
D0H																
E0H																
F0H																

Katakana

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
80H																
90H																
A0H																
B0H																
C0H																
D0H																
E0H																
F0H																

































































































































SLAVONIC

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
80H																
90H																
A0H																
B0H																
C0H																
D0H																
E0H																
F0H																

































































































































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



















































































































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






























































































































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