Zircon Series

All-in-One POS System

Vacuum Fluorescent Customer Display

Configuration Manual

ESC/POS commands Sets Support

Ver. 1.2

CONTENTS

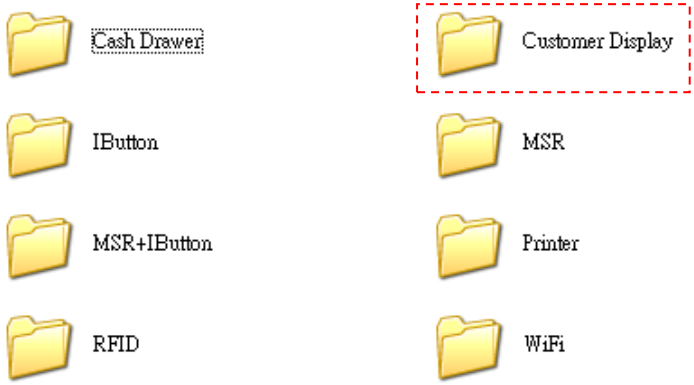
Configuration of the Customer Display

I. Installation of Configuration Utility

Please place the supplied CD into the CD-ROM driver.
Browse the CD and open the folders required to install the software or driver.

There are categorized folders for POS Terminal, Peripherals and Touch Screen drivers.
Select “Peripherals” to access the subfolders.

The subfolders of peripherals are as follows:



There are two folders for LCD type Customer Display (DSP) and Vacuum Fluorescent type Display (VFD).
Select the folder “VFD” to access the subfolder.

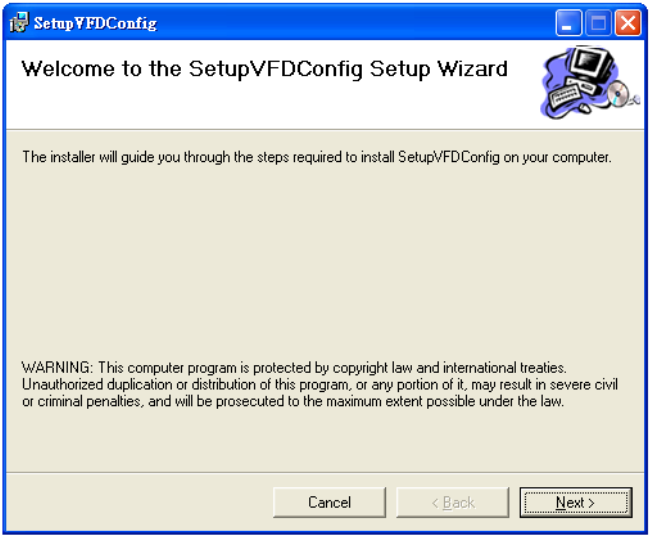
Step 1: Open (double click) the folder
“VFD-860 & 890 & 950 Setup Utility Driver”.

Step 2: Open (double click) the folder “VFD-860 & 890 & 950”.

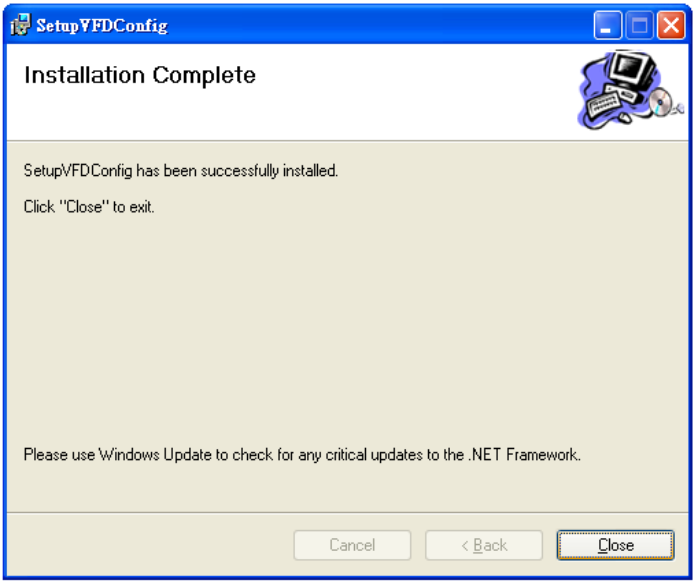
Step 3: Double click “SetupVFDConfig.EXE” to start installation.

Step 4: The dialog windows pop up and ready for installation.

Click “Next” to continue.



Step 5: Installation is completed. Click “Close” to exit.



Step 6: There is a short-cut icon displayed on the desktop.

Double click the icon “VFDConfig” to initiate the configuration utility.

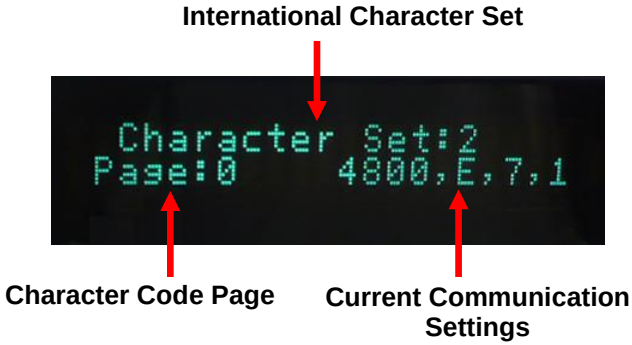
II. Configure Your VFD Customer Display

A. Before Setup

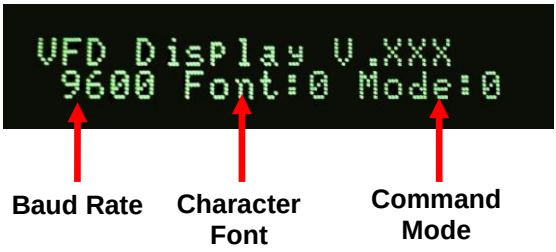
Before setting up your customer display:

1. Make sure the customer display is properly connected to the computer.
2. The current communication setting should display on the customer display (as image below illustrated).
3. Note the parameters of current communication setting and prepare for configuration.

ESC/POS Mode:



200/450/650/850/895 Mode:



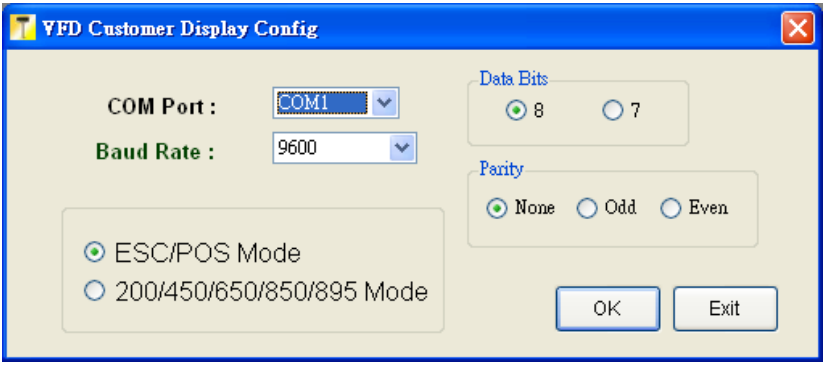
Note: The incorrect communication settings should cause failure and not able to start configuration.

Selecting the Operating Modes

This function allows user to initial communication with your display and select the proper command set mode for your display.

When first access the VFD configuration utility (VFDConfig.EXE), select the parameters of communication settings to meet the settings of your display. This can create the communication between your computer and the display.

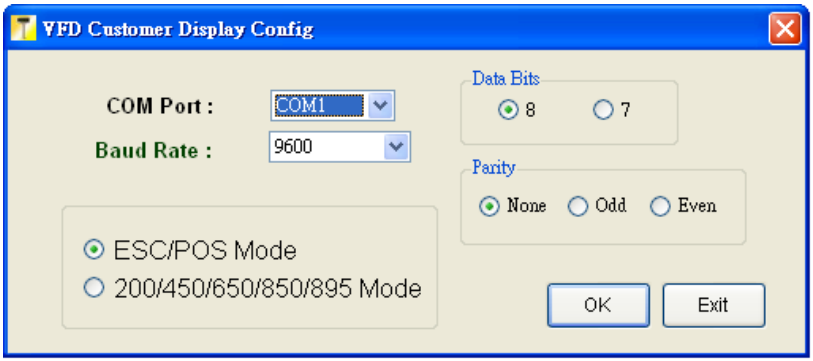
Warning: The incorrect communication settings should cause failure and unable to start configuration.



There are two modes of operation:

◆ **ESC/POS Mode:**

Set the customer display to operate by using ESC/POS command sets.



ESC/POS Mode

❖ **COM Port**

Select the proper com port to communicate with the customer display. (Recommended COM Port: COM1)

❖ **Baud Rate**

Set the transmission baud rate.

❖ **Data Bits**

Set the Data Bits.

❖ **Parity**

Set Parity parameter.

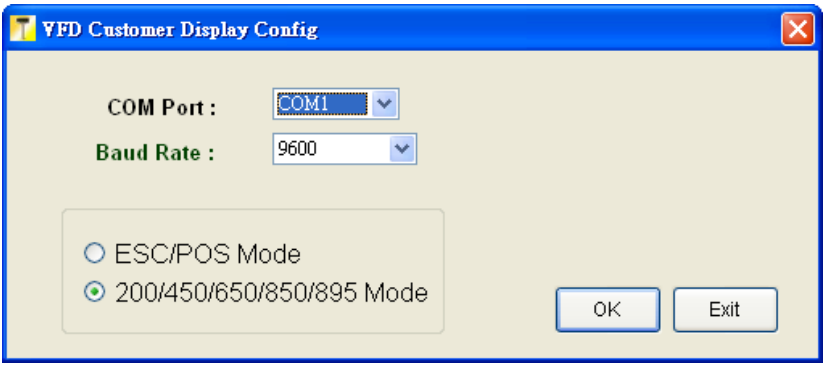
Note: The communication settings will be reset to Default Values when enter the ESC/POS mode.

Character Set	Page	Baud Rate	Parity	Data Bit	Stop Bit
0	0	9600	None	8	1

* **Stop Bit** is a fixed value (“1”) and need not change.

◆ **200/450/650/850/895 Mode:**

Set the customer display to operate by using the command sets of VFD 200/450/650/850/895 series.



200/450/650/850/895 Mode

❖ **COM Port**

Select the proper com port to communicate with the customer display.

❖ **Baud Rate**

Set the transmission baud rate.

Note: The Baud Rate, Font, and Command Mode will be reset to Default Values when enter the 200/450/650/850/895 Mode.

Baud Rate	Font	Command Mode
9600	0	0

Default Settings on the customer display (VFD 200/450/650/850/895 Mode)

For Example: ESC/POS Mode Selection

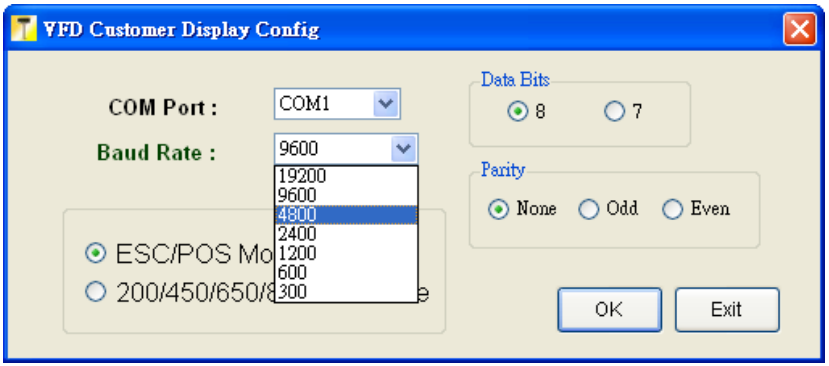
When first initiate the display, the current communication setting of the display is shown as follows:

Current communication setting on the customer display

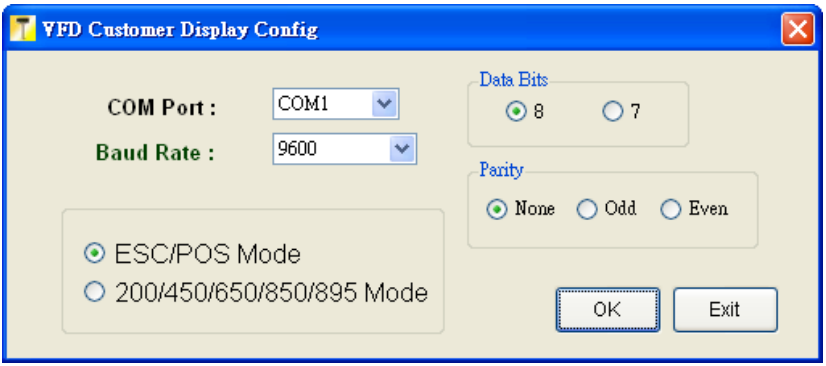
Character Set	Page	Baud Rate	Parity	Data Bit	Stop Bit
2	0	4800	Even	7	1

* **Stop Bit** is a fixed value (“1”) and need not change.

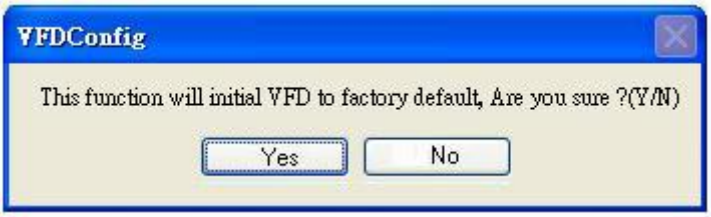
1. Initiate the Configuration utility.
   Select the correct COM Port, Baud Rate, Data Bit and Parity to match the Current Communication Setting of the display.



2. Select the Command Set Mode and click “Ok”



3. The display would be reset to factory default setting.
Click “Yes” button to proceed.



4. The display is reset to the default setting
(as image below illustrated):

Default communication setting

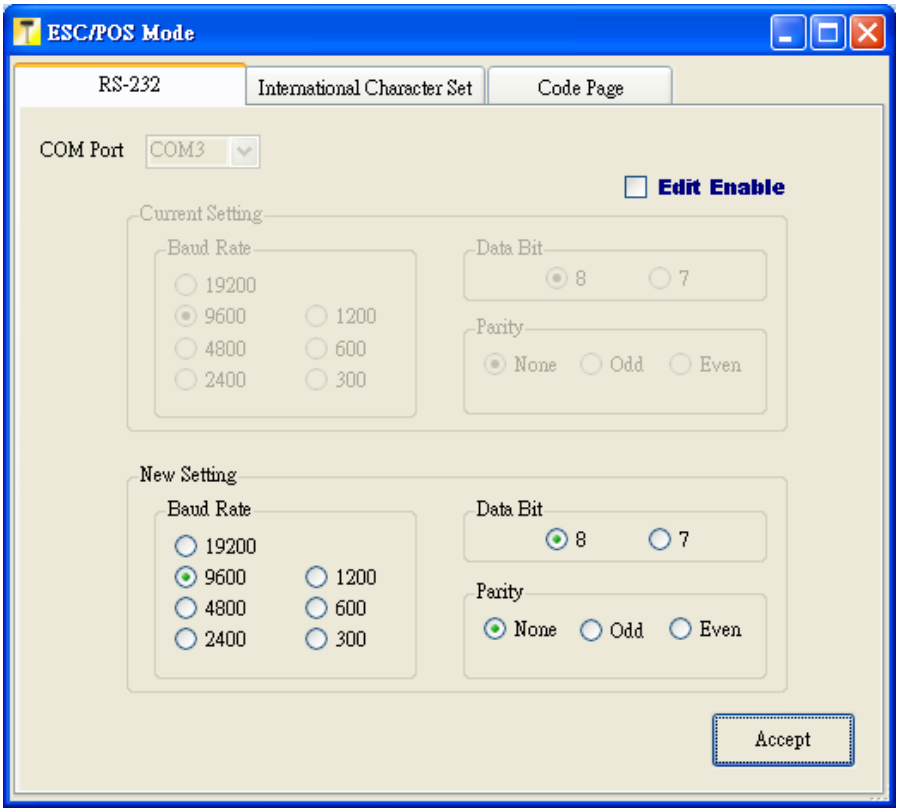
Character Set	Page	Baud Rate	Parity	Data Bit	Stop Bit
0	0	9600	None	8	1

* **Stop Bit** is a fixed value (“1”) and need not change.

The display is reset to default setting and user can re-configure the display via configuration utility (VFDConfig.EXE)

B. ESC/POS Mode configuration

This function is to configure the display to operate in ESC/POS Mode. Click on the selection menus to make proper configurations.



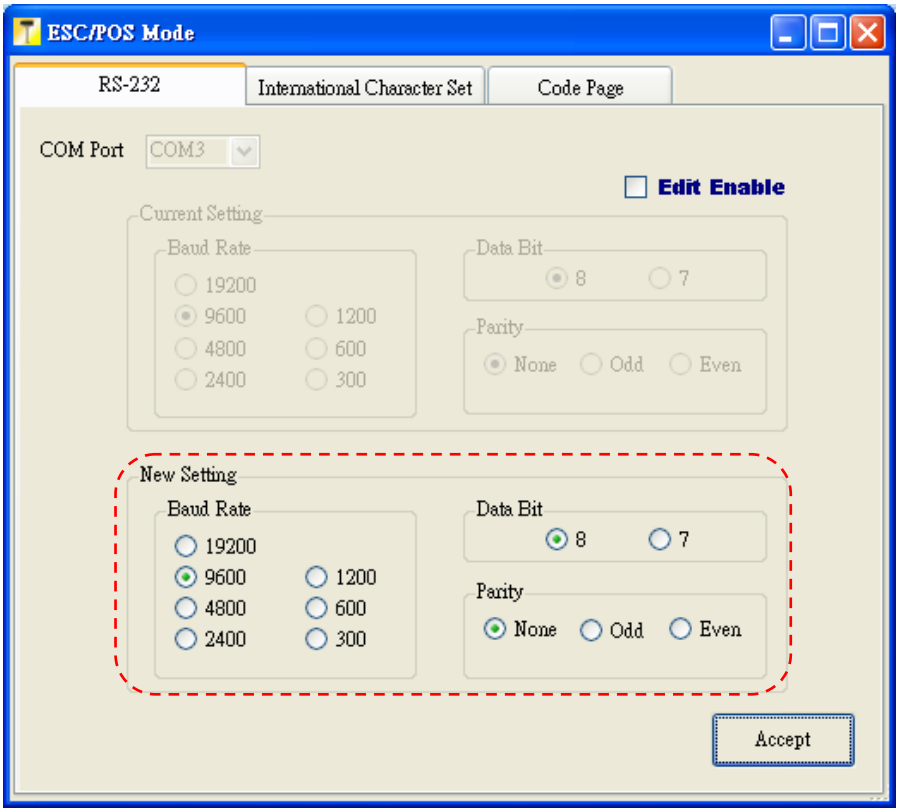
Note: The communication settings will be reset to Default Values when enter the ESC/POS mode.

Character Set	Page	Baud Rate	Parity	Data Bit	Stop Bit
0	0	9600	None	8	1

* **Stop Bit** is a fixed value (“1”) and need not change.

a. RS-232 (Communication Setting)

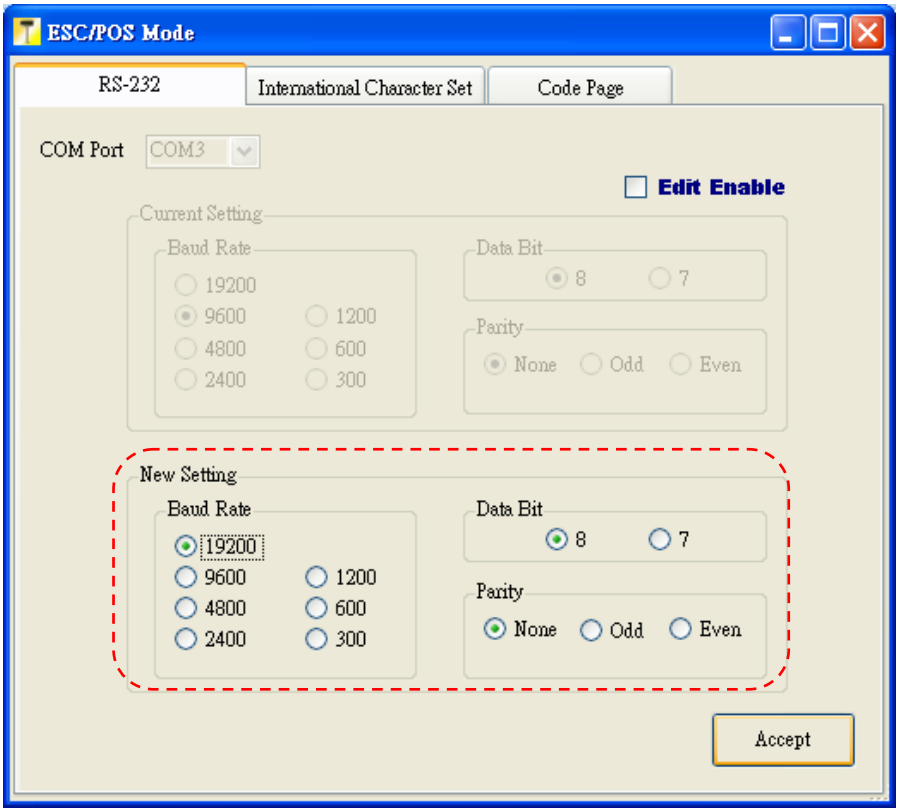
This function allows user to configure the communication setting.
You can configure the parameters of Com Port, Baud Rate, Data Bit, and Parity to the values desired. Click “Accept” to complete.



◆ **New Setting**

This function is to configure the display to apply the new communication setting (for Example: Baud Rate: 19200, Parity: None, Data Bit: 8).

Click the button “Accept” to complete.

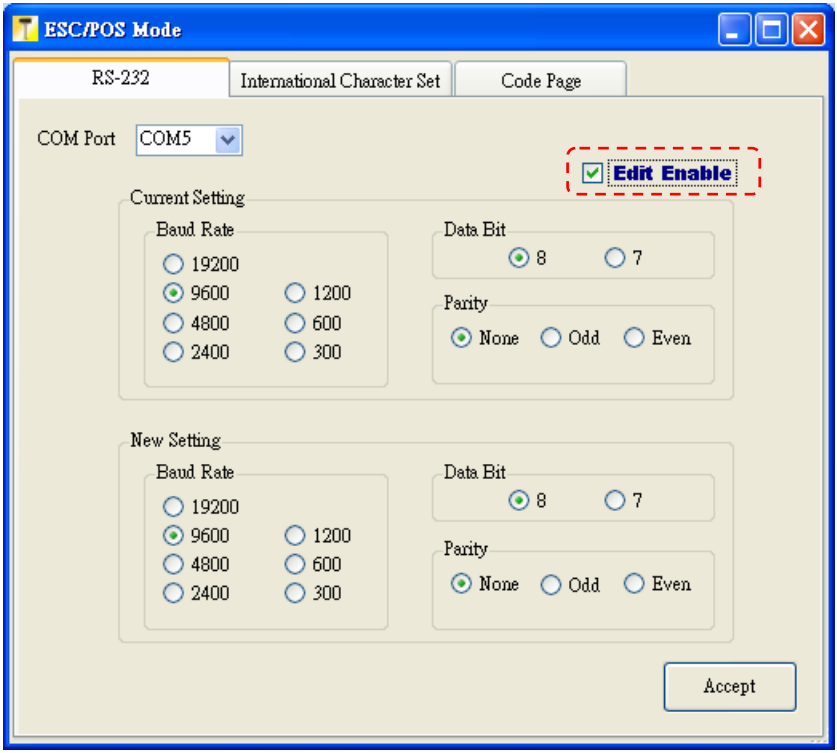


New Communication Setting

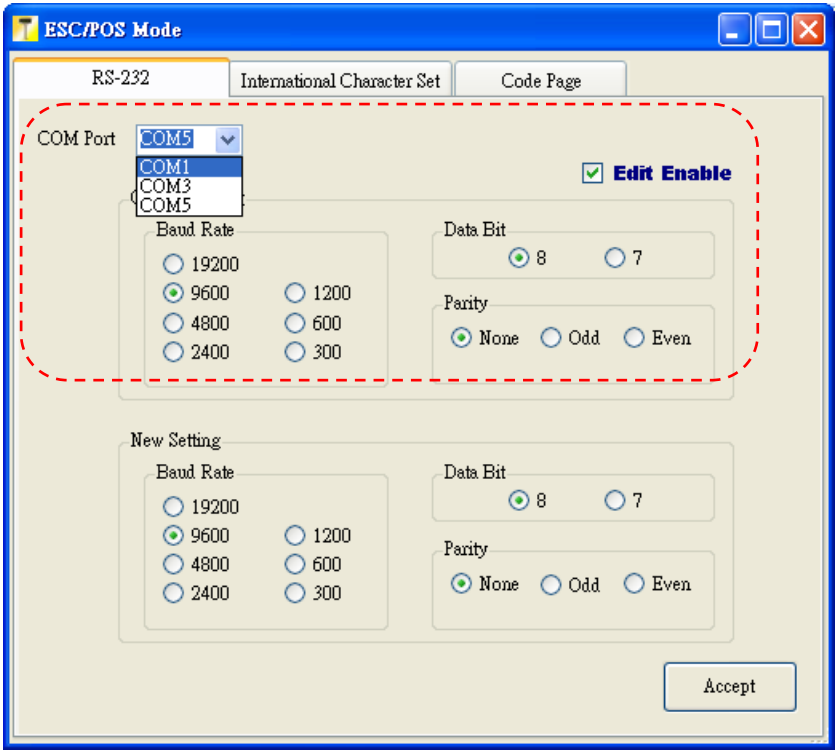
◆ **Current Setting Modification**

The function allows user to manually modify the COM port and current communication settings to match the parameters of the display

Click “Edit Enable” to enable the modification.



Warning: Make sure the modified parameters of Current Setting are matched to the parameters of the display or it should cause failure and not able to functioning.
Wrong Modification should cause communication failure and not able to functioning.



- **Edit Enable**
  Click to enable the modification

- **COM Port Modification**
  This function allows user to assign a different COM port to communicate with the display.
  (For Example: user can manually specify COM1 instead of the COM5).

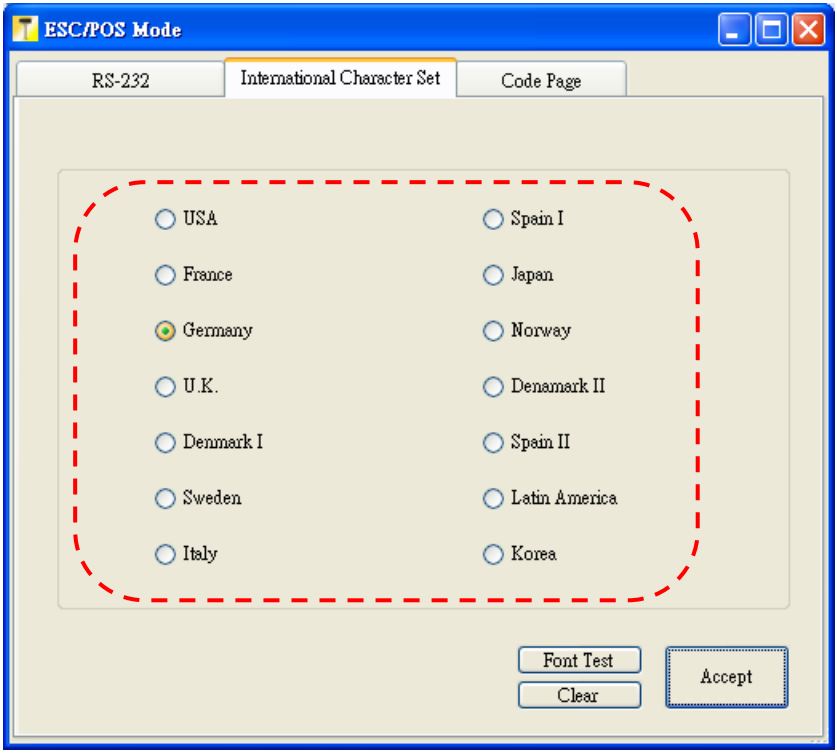
- **Current Setting modification**
  This function allows user to modify the communication settings so as to match the settings of your display.

- **Accept**
  Click the button “Accept” to complete the modification.

Warning: Make sure to select the correct COM port and Current Settings to match the settings for your display.
Wrong Modification should cause communication failure and not able to functioning.

b. International Character Set

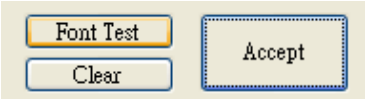
This function allows user to select the proper Character Set for your display.
Click the button “Accept” to apply the setting.



- **Character Set Selection**
  This function allows user to select character set desired for the display (USA [Set 0] ~ Korea [Set 13] selectable).
  Default setting: USA [Set 0].

- **Font Test**
  This function would display the current character set on the customer display. It may take several minutes to complete.
  Click “Ok” to exit.

Note: Font Test is functional only when the font is applied to the display. Remember to click “Accept” button and apply the new character set before perform the test.



- **Clear**
  This function would clear all the contents displayed on the display.

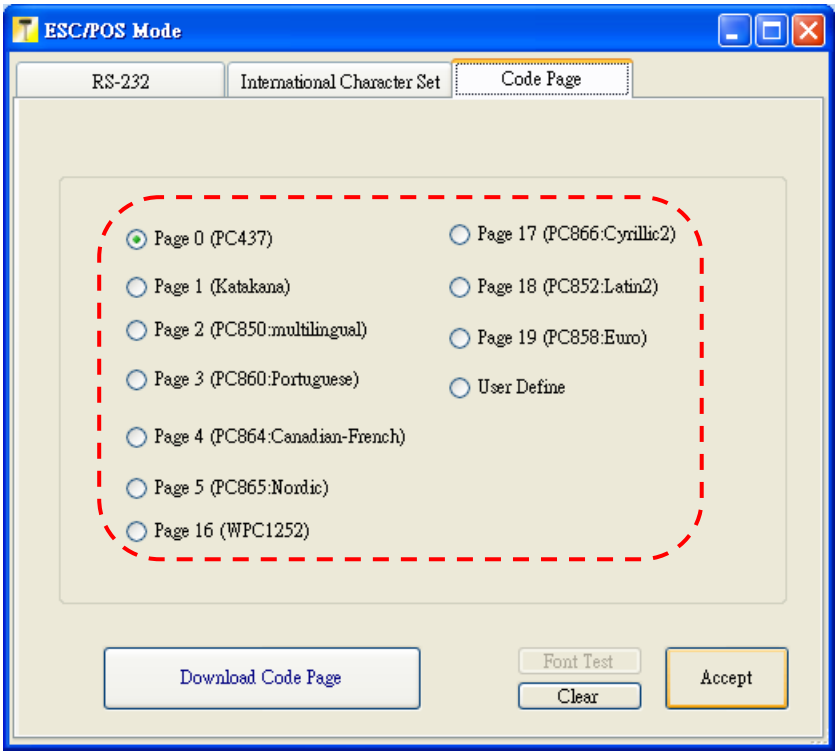
- **Accept**
  This function allows user to select the International Character for your display. Click to apply the setting.

  There is a pop-up message when the selected character is applied to your display. Click “OK” to exit.

New Character Set Configuration

c. Code Page

This function allows user to select proper Code Page for your display. Click “Accept” button to apply the new setting.



◆ **Preset Code Page Selection**

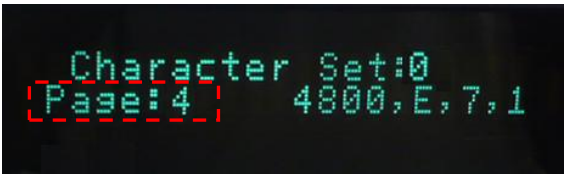
User can select desired Code Pages (page 0~ 5, page 16~19, and User Define) and apply to the display.

Note: The Default Code Page is Page 0 (PC437)
The User Define Code Page is defined as “Page 254”.

- **Accept**

  This function allows user to select the required Character Code Page for your display. Click “Accept” to apply the setting.

  There is a pop-up message when the selected character is applied to your display Click “OK” to exit.

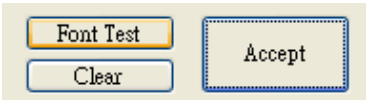


New Code Page Configuration

- **Font Test**

  This function would display the current code page on the customer display.
  It may take several minutes to complete. Click “Ok” to exit.

Note: Font Test is functional only when the table is applied to the display. Remember to click “Accept” button and apply the new character set before perform the test.



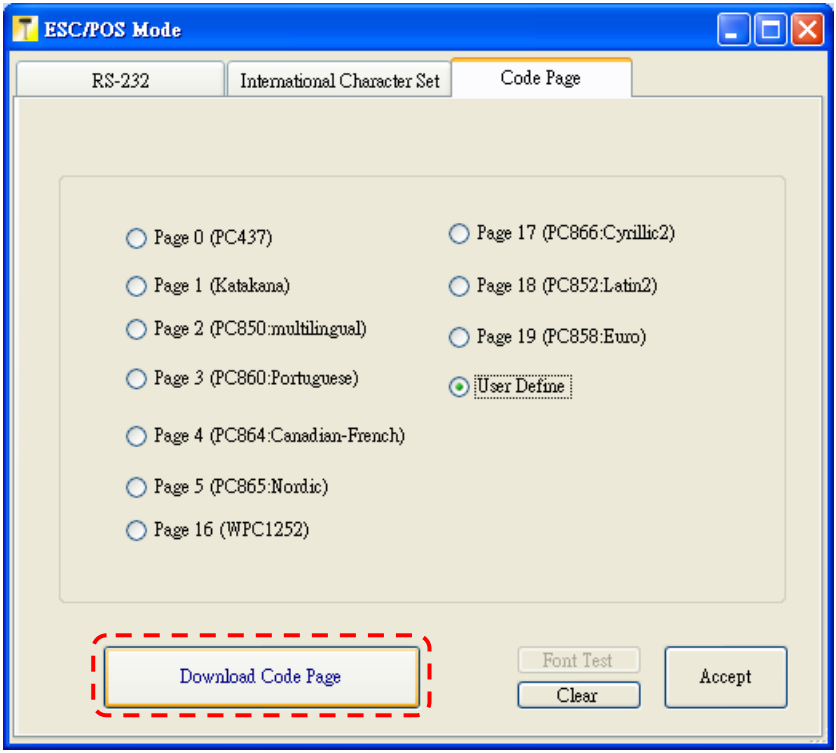
- **Clear**

  This function would clear all the contents displayed on the display.

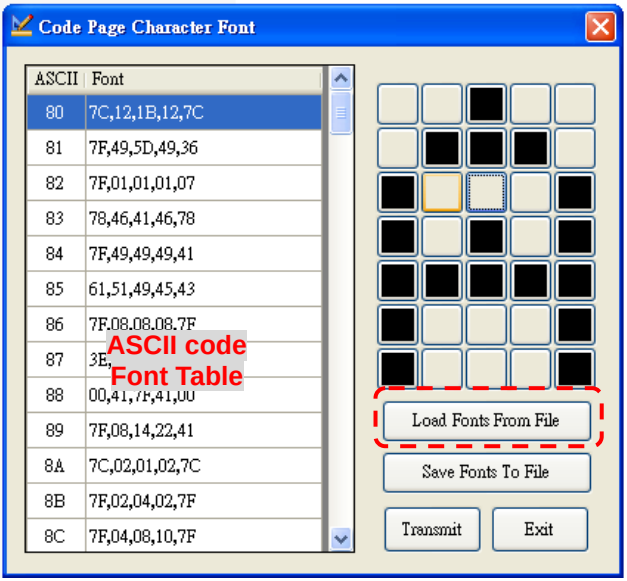
Tips: Apply User Define Character Code Page

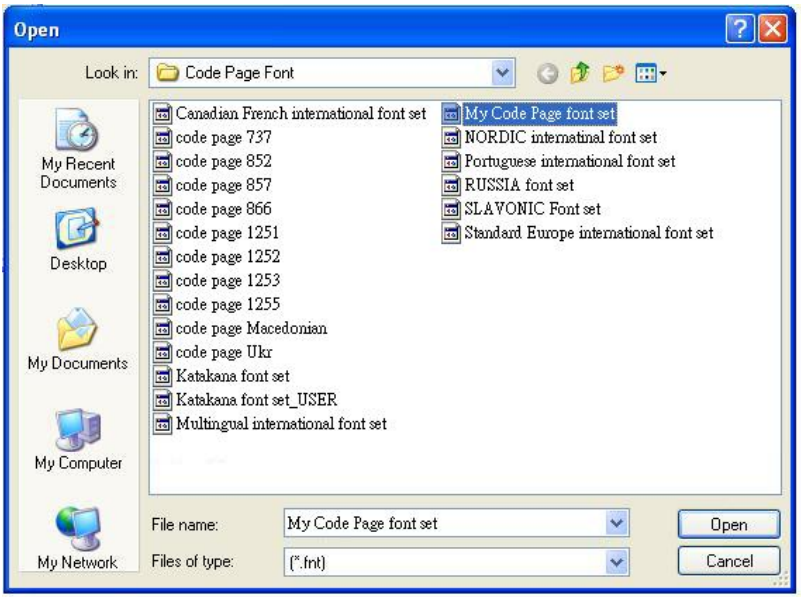
To revise or apply user-defined character set table to the display:

1. Click the button “Download Codepage Character Set” to continue.

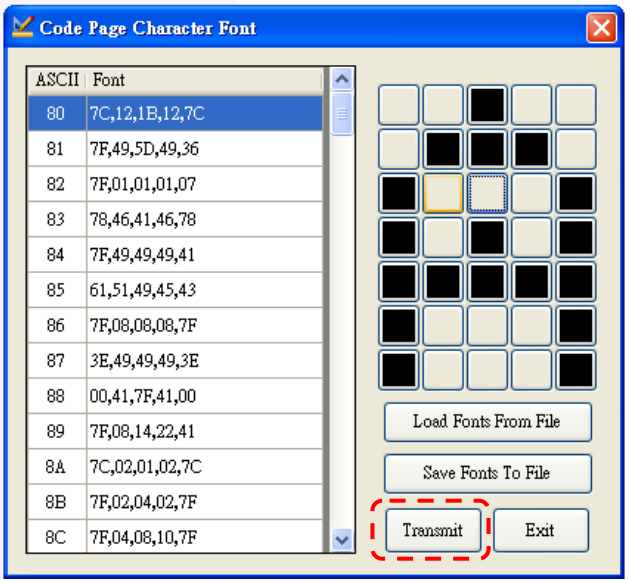


2. Click “Load Form From file” and browse the folder to apply the User-defined Codepage Character Font.

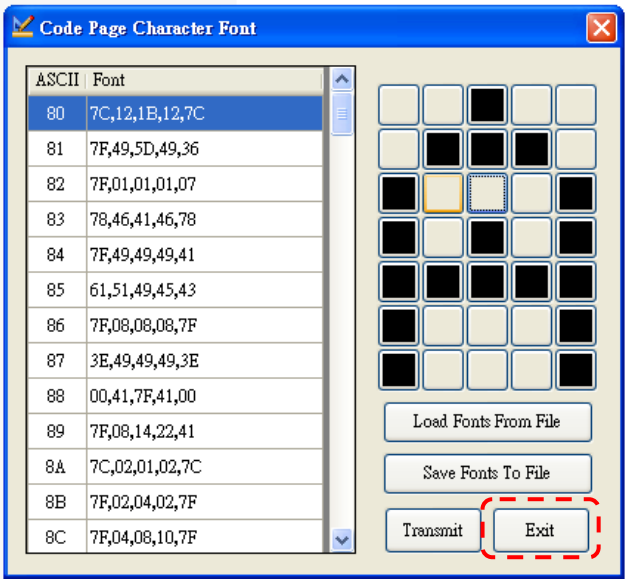




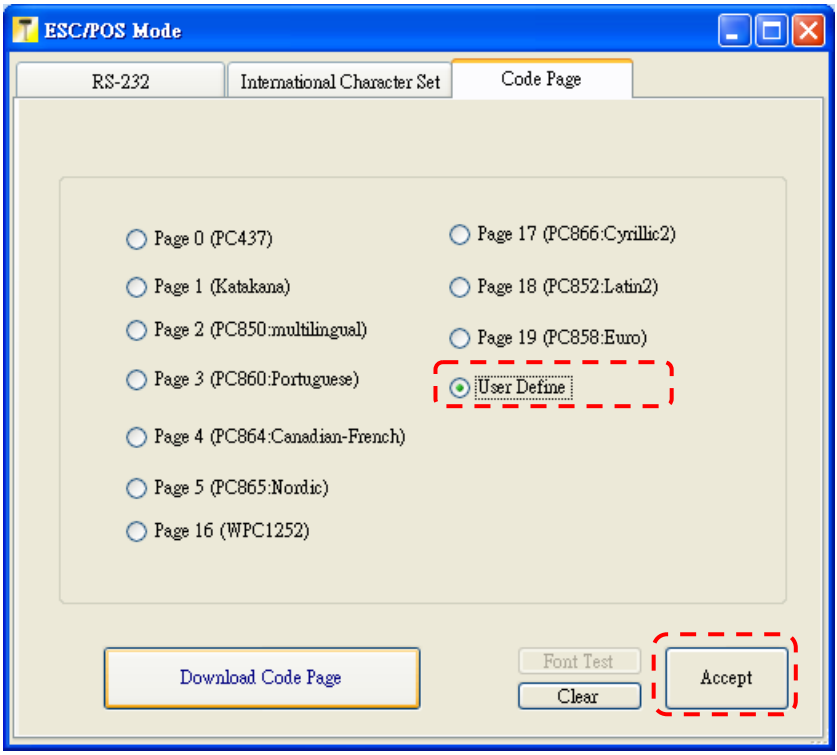
3. Click “Transmit” to send the font to your display.



4. Click “Exit” when the transmission is completed



5. Click and select “User Define”.
6. Select “Accept” to confirm the selection.



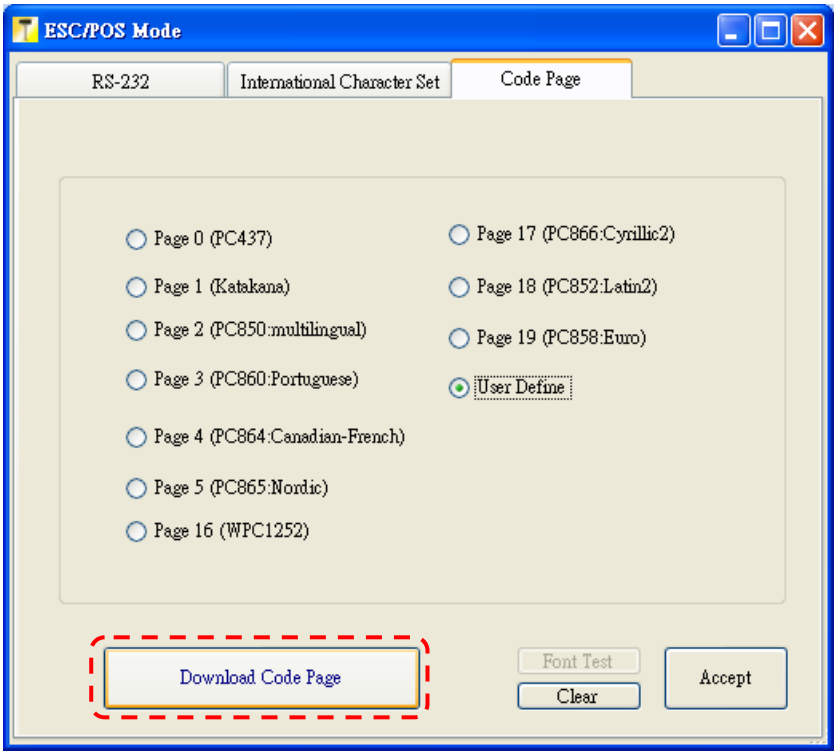
User Define Code Page

Note: The User Define Code Page is defined as “Page 254”.

Tips: Create/Revise the Code Page

User can create the User-Define Code Page by revising the preset font files and apply to the display

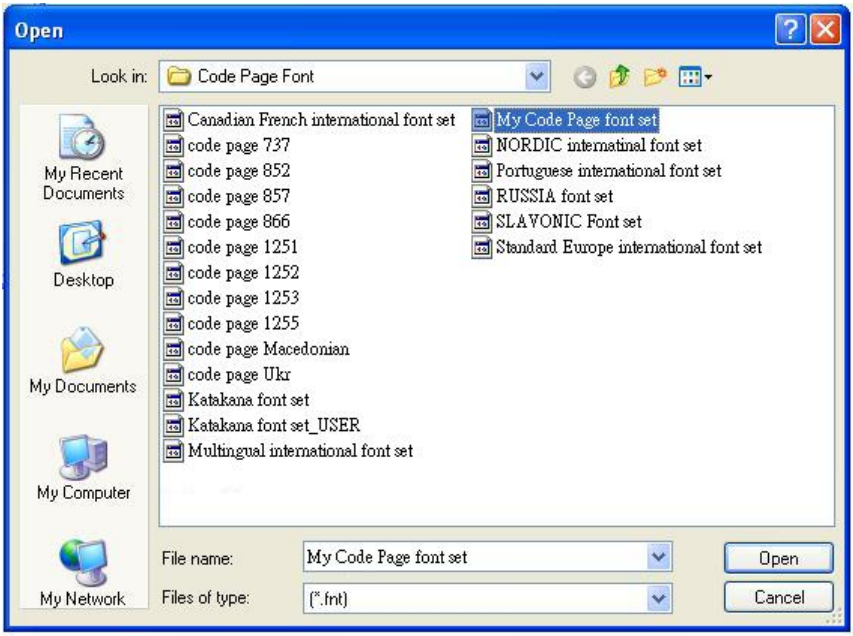
Click “Download Code Page” to open or create the user-define code page file via the menu (as image below illustrated)



Warning: To overwrite preset font file may not possible to restore the original characters.
It’s recommended to save the revised code page fonts as different filename.

❖ **Load Font From File:**

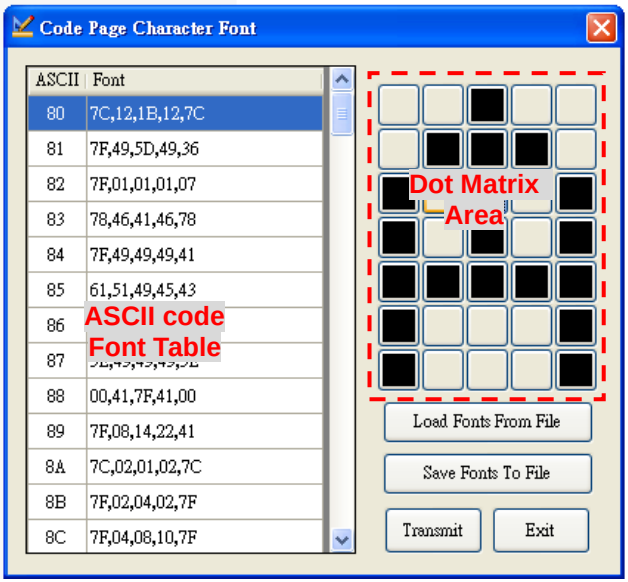
This function allows user to load the preset or user-defined code page font file.



❖ Create/Revise the Character Set Fonts

- This function allows user to create or revise the fonts of the character set.

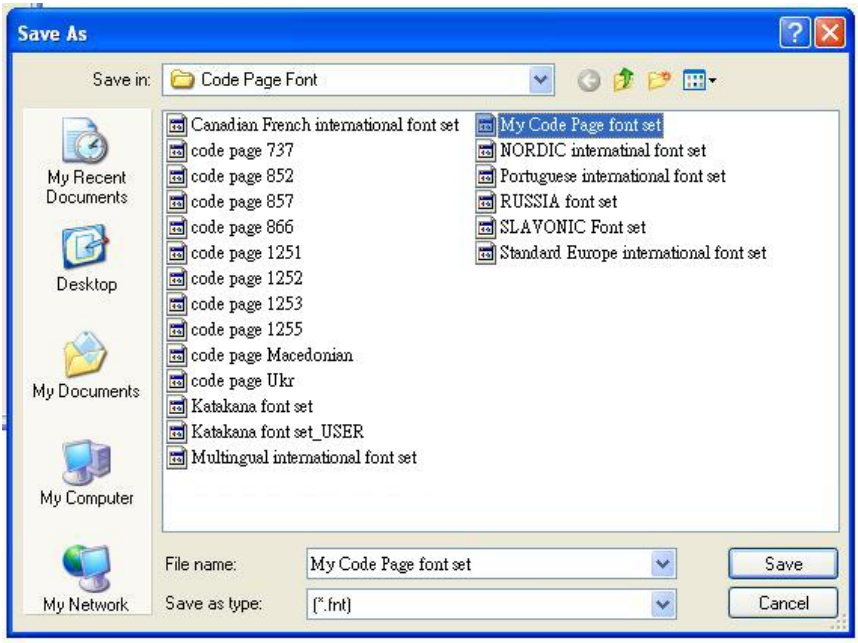
  To create a new character set font, select each ASCII code and create character via the Dot Matrix Area and then save as the user-defined font file.



1. Click to select an ASCII Code for the character to be created. The selected character is displayed on the right (dot matrix area).
2. Move the cursor to the dot-matrix area and click the dots to generate the fonts.
   Click to add dot in the matrix, and click the dot again to clear.
   Repeat Step 1 and 2 to complete all the characters to be revised or created.
3. Click “Save Font To File” button to save the revised/created font file.
4. Click “Transmit” button to send the file to the display.

❖ **Save Fonts To File:**

This function allows user to save the revised character set font file to the computer.



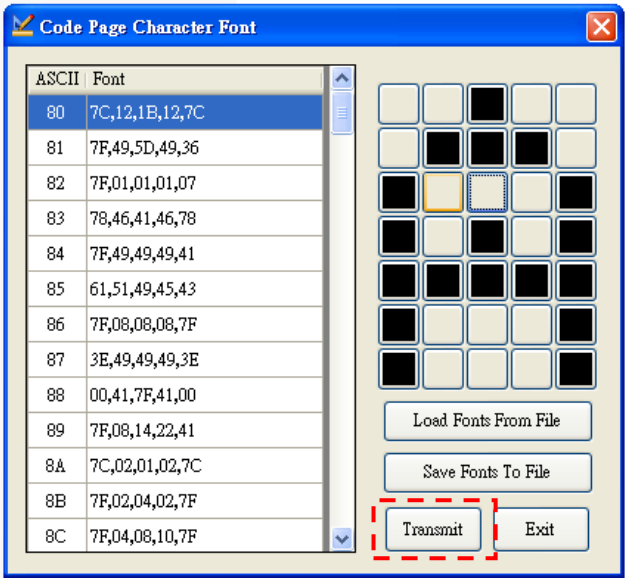
Warning:

DO NOT overwrite preset code page font files or it may not possible to restore the original characters.

It's recommended to save the revised code page font file as different filename.

❖ **Transmit:**

Transmit the selected code page font file (preset or user-defined) to the display.

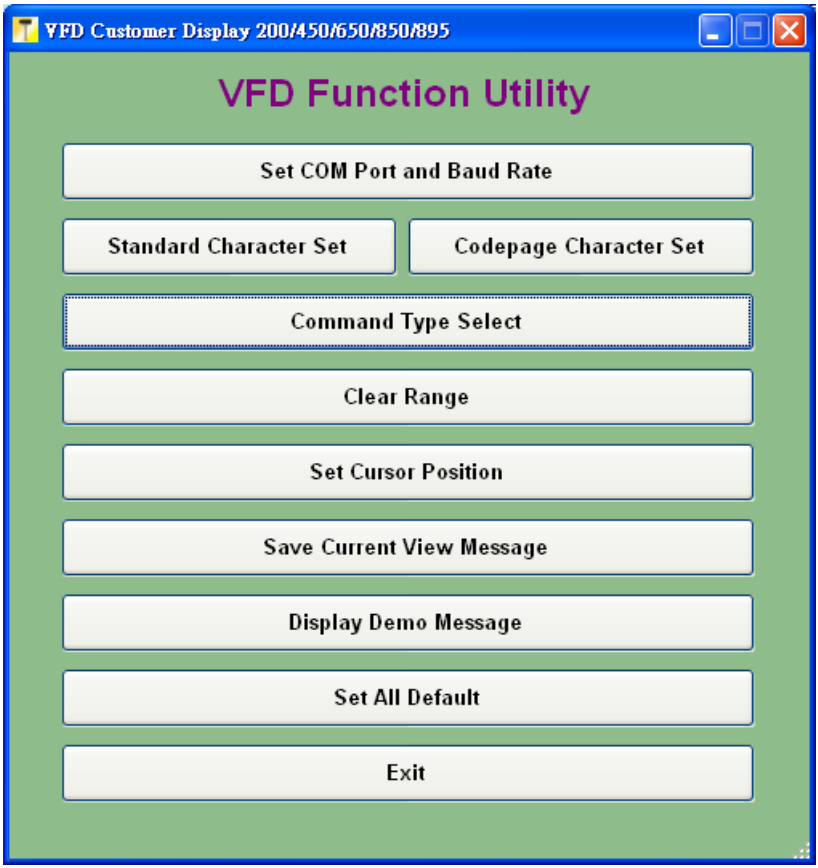


❖ **Exit**

Click “Exit” button to exit.

C. 200/450/650/850/895 Mode Configuration

This function is to configure the display to support 200/450/650/850/895 VFD customer display.
Click on the selection menus to make proper configurations.

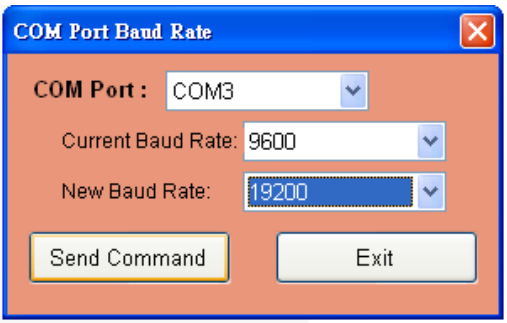


Note: The settings (Baud Rate, Font, and Command Mode) will be reset to Default Values when enter the 200/450/650/850/895 Mode.

Baud Rate	Font	Command Mode
9600	0	0

Default Setting

a. Set COM Port and Baud Rate



- **COM Port**

  Select the proper com port to communicate with the display.

- **Current Baud Rate Setting**

  The function is to revise the current Baud Rate of the display.

- **New Baud Rate**

  Set up the new Baud Rate communication setting.

- **Send Command**

  Confirm the setting and apply to the display.

- **Exit**

  Return to the previous menu.

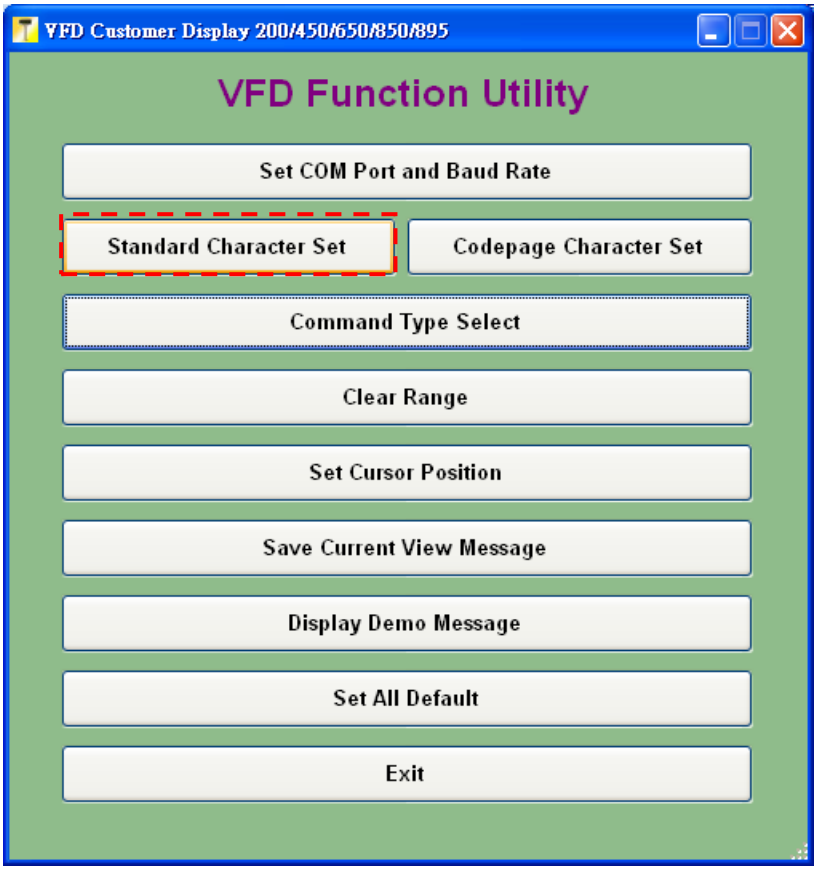
Warning: Make sure the selections in the menu (COM Port, Current Baud Rate) are the same as the parameters of the display, or it should cause communication failure and not functioning.

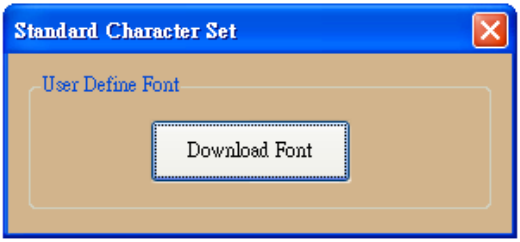
b. Standard Character Set

This function allows user to download or revise the Standard Character Set and then transmit to the display.

Default Setting: Font 0

User-Define Setting: Font 1.

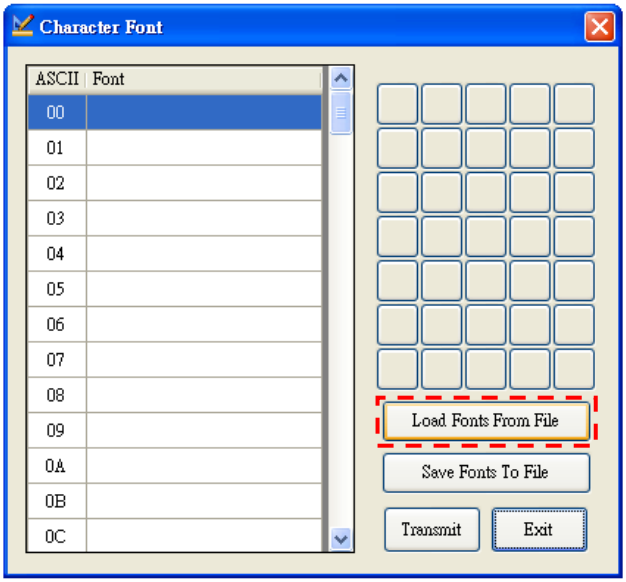




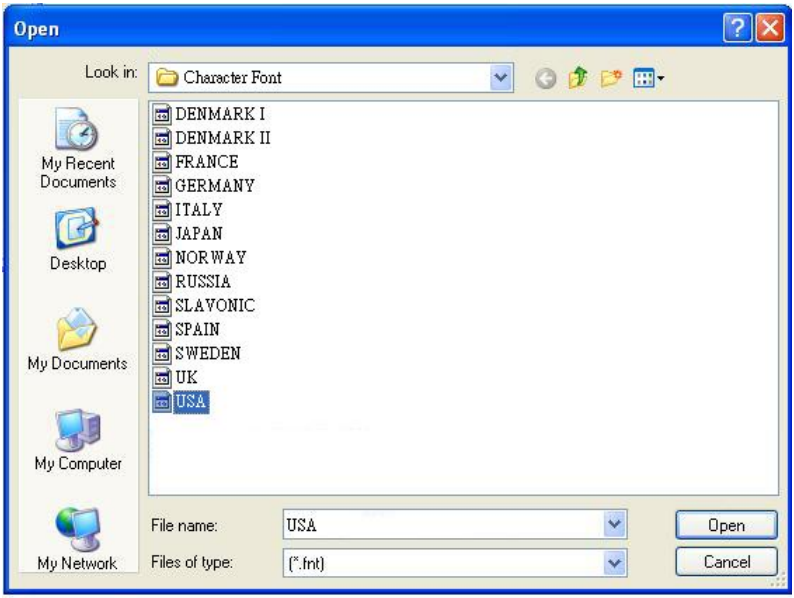
◆ **Download User Define Font**

This function allows user to apply the user-define font to the display. Click the button “Download Font” to load the font.

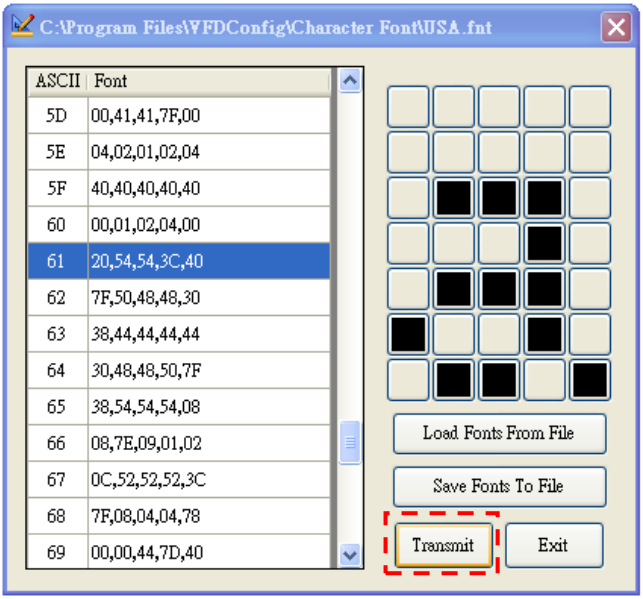
1. Click “Load Fonts From File” to load the preset Standard Character Set.



2. Select the font desired and click “Open” to load the font file.



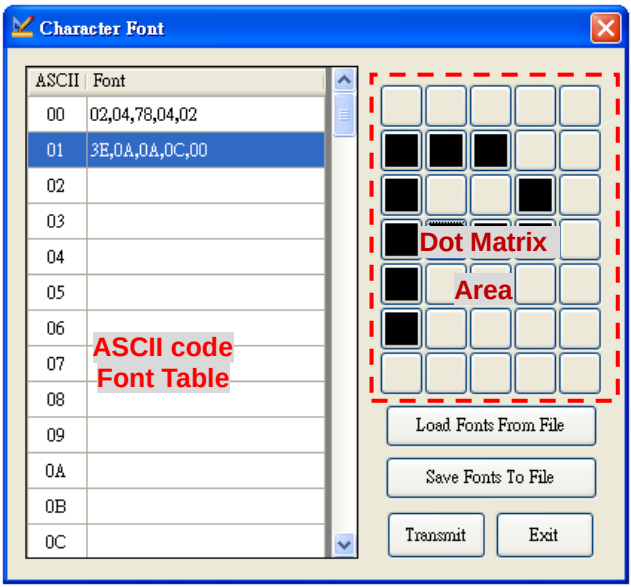
3. Click “Transmit” to send the font to your display.



4. The setting of the display is set to “Font 1”
(as image below illustrated).
Click “Exit” to exit.

Tips: Create/Revise the Standard Character Fonts

This function allows user to create or revise the Character Font with the assistance of the menu:



1. Click to select an ASCII Font Code for the character to be created. The selected character is displayed on the right (dot matrix area).
2. Move the cursor to the dot-matrix area and click the dots to revise the fonts.
   Click to add dot in the matrix, and click the dot again to erase.
3. Repeat Step 1 and 2 to complete all the characters to be revised or created.
4. Click “Save Font To File” button to save the revised/created font file.
5. Click “Transmit” button to send the file to the display.

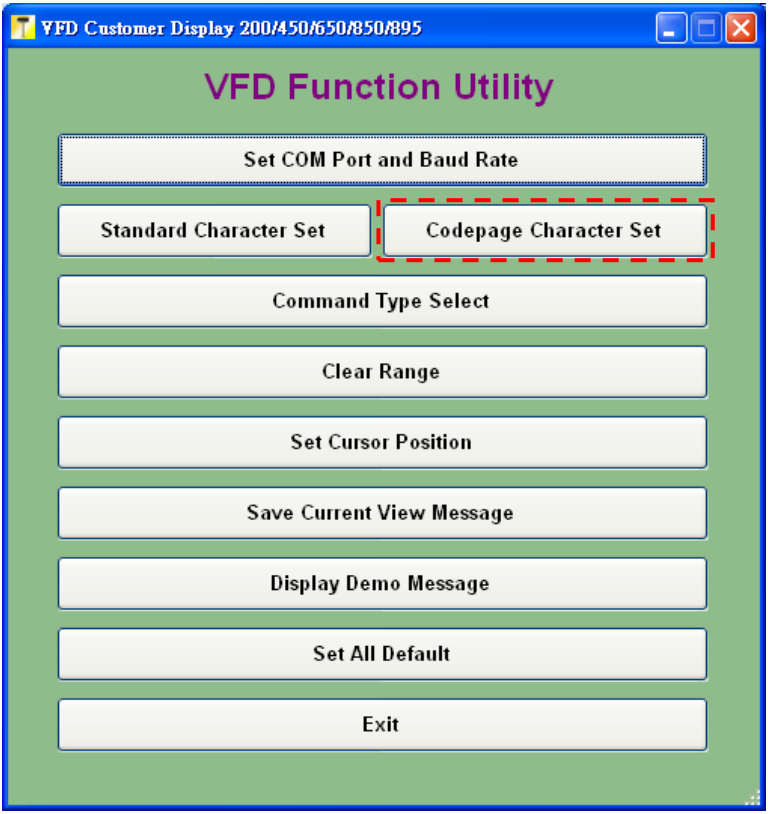
Note: It is recommended to save the revised fonts as a different file name.

c. Code Page Character Font

This function allows user to select or create/revise the Code Page Character Fonts and apply to the display.

Default Setting: Font 0

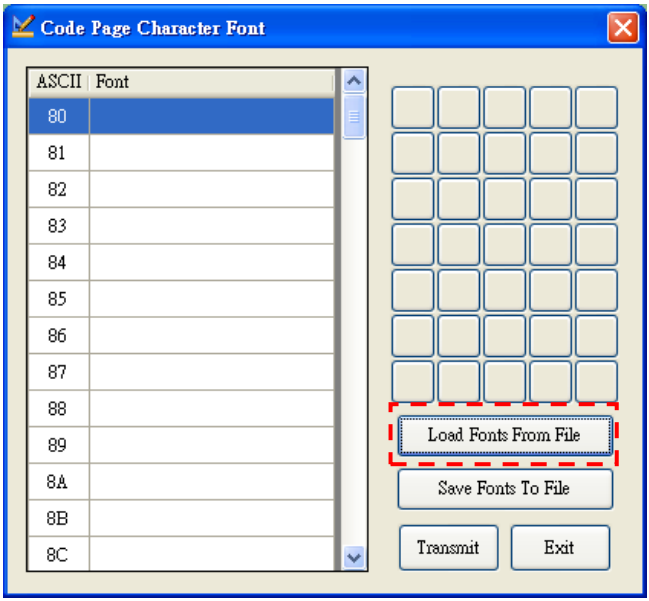
User-Define Setting: Font 1.



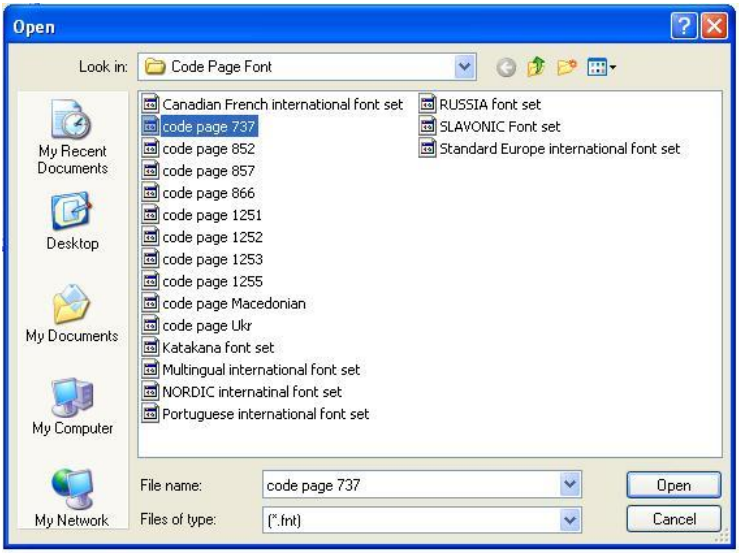
◆ Download the Code Page Character Font

This function allows user to download or revise the Code Page Character Font font and then transmit to the display.

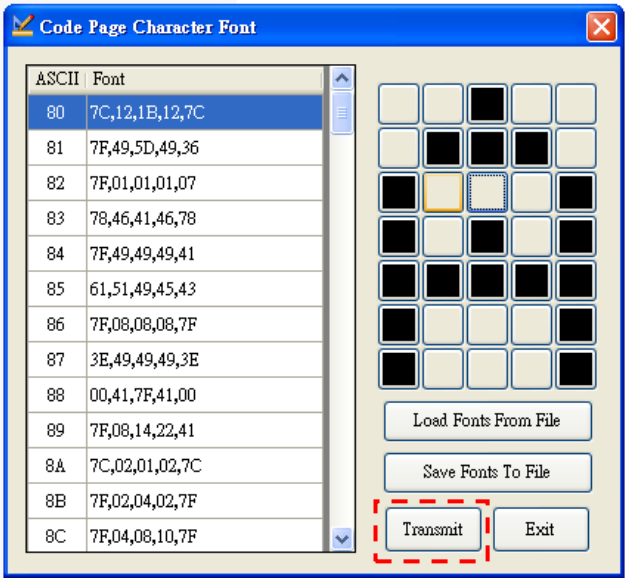
1. Click the button “Load Font from File” to open the font.



2. Select the font desired and click “open” to download the file



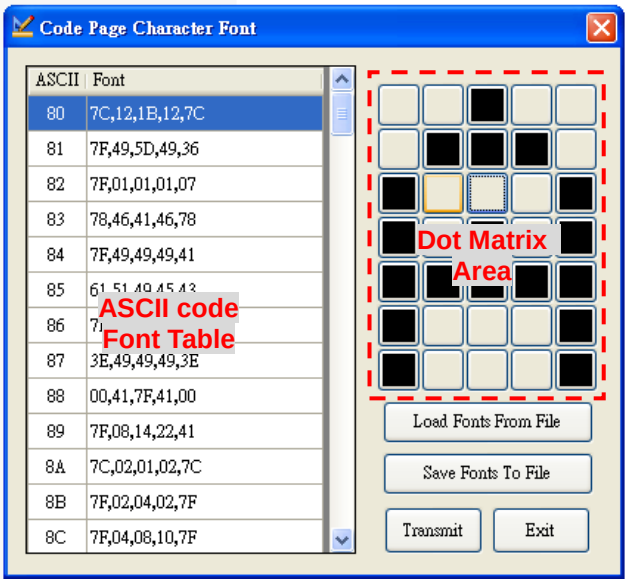
3. Click “Transmit” to sent the font to the display



4. The setting of the display is set to “Font 1”
(as image below illustrated).
Click “Exit” to exit.

Tips: Create/Revise the Use-Define Code Page Character Fonts

This function allows user to create or revise a user-define Code Page Character Font with the assistance of the menu:



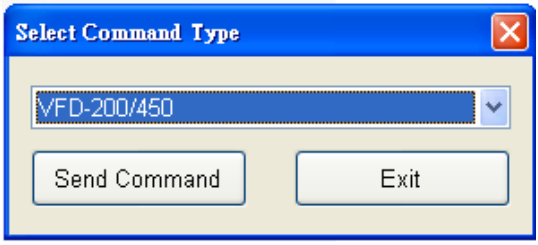
1. Click to select an ASCII Code for the character to be created. The selected character is displayed on the right (dot matrix area).
2. Move the cursor to the dot-matrix area and click the dots to generate the fonts.
   Click to add dot in the matrix, and click the dot again to clear.

3. Repeat Step 1 and 2 to complete all the characters to be revised or created.
4. Click “Save Font To File” button to save the revised/created font file.
5. Click “Transmit” button to send the file to the display.

Note: It is recommended to save the revised/created fonts as a different file name.

d. Select the Command Set

This Function allows user to select the command type desired and apply to the display.



- **Command Type Selection**

  The Command Types are as follows:

  VFD-200/450, EPSON ESC/POS Compatible,

  UTC S, UTC E, AEDEX, ICD2002, CD5220 and DSP800.

  Please refer to ***Appendix SELECT COMMAND MODES*** **(page 75)** for the detailed information relating to the command sets.

- **Send Command**

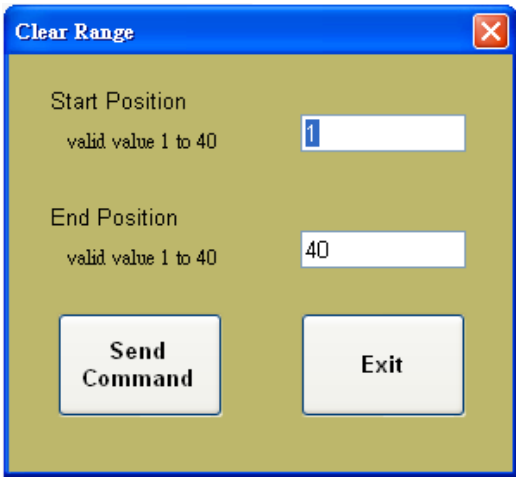
  Confirm the setting and apply to the display.

- **Exit**

  Return to the previous menu.

e. Clear Range

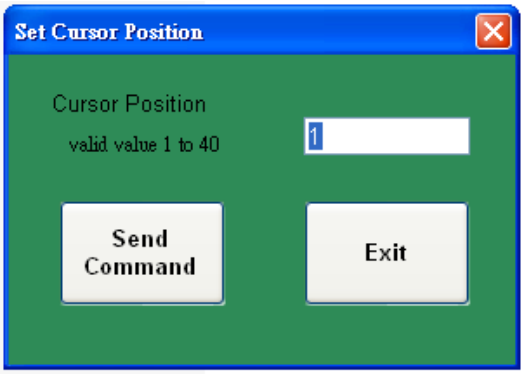
This function allows user to define a range and clear the display.



- **Start Position**
  Define the start position of the display (1~40).
- **End Position**
  Define the end position of the display (1~40).
- **Send Command**
  Confirm the setting and apply to the display.
- **Exit**
  Return to the previous menu.

f. Set Cursor Position

This function allows user to set the cursor position of the display.



- **Cursor Position**
  Set the cursor position of the display (1~40).
- **Send Command**
  Confirm the setting and apply to the display.
- **Exit**
  Return to the previous menu.

g. Save Current View Message

This function allows user create or edit the display messages to the customer display.

- **Upper Line**

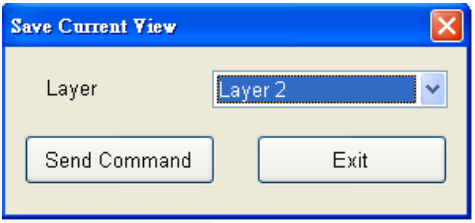
  Enter the messages displayed on the upper line of the display (1~20 characters).

- **Lower Line**

  Enter the messages displayed on the lower line of the display (1~20 characters).

- **Send Message**

  Send the messages (upper line and lower line) to the display. User can define 3 different sets of messages (Layer 1~Layer 3). Select the layer desired and click “Send Command” to save the setting.

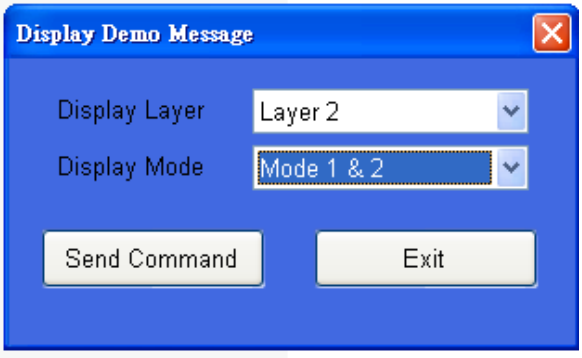


- **Exit**

  Return to the previous menu.

h. Display Demo Message

This function allows user to apply the animation effect to the selected messages.



- **Display Layer**

  Select the messages desired (Layer 1~ Layer 3).

- **Display Mode**

  Select the animation effect of the messages

  (Mode 1, Mode 2, and Mode 1& Mode 2 selectable).

- **Send Command**

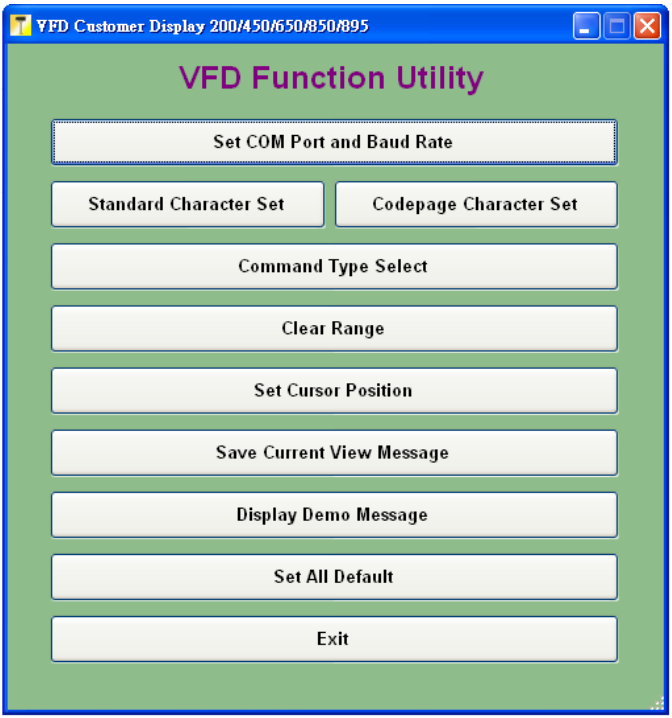
  Confirm the setting and apply to the display.

- **Exit**

  Return to the previous menu.

i. Set All Default

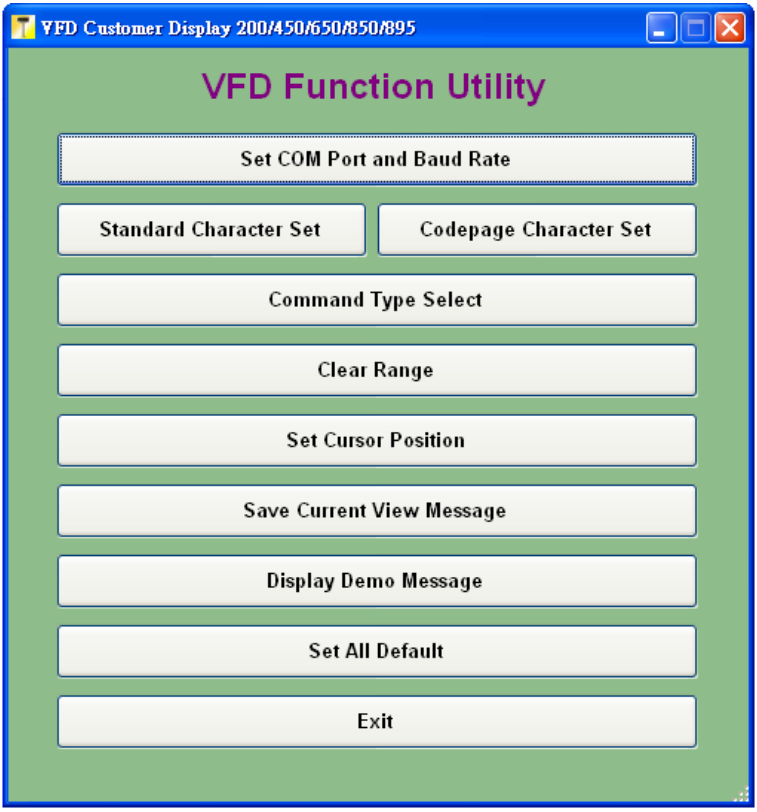
This function allows user to reset all the setting to the factory Default.



There is a pop-up dialogue to notice the change. Click “OK” to confirm.

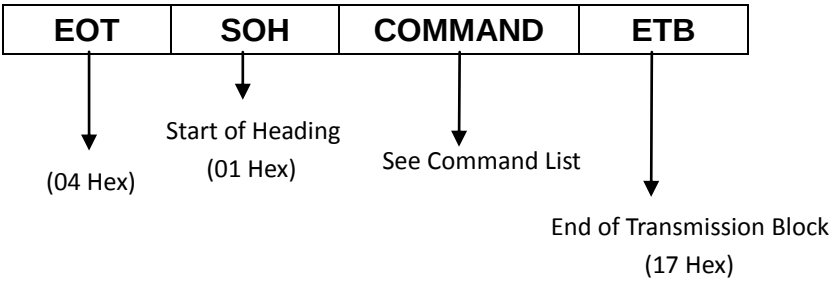
j. Exit

Click to quit the utility.



III. System Commands

A. Command Format



B. Command List

a. Set Baud Rate

COMMAND:	B						
COMPUTER:	EOT	SOH	'B'	'BAUD RATE'		'N'	ETB
ASCII	(04H)	(01H)	(42H)	(31H~37H)		(4EH)	(17H)
Byte	1	1	1	1		1	1
DISPLAY:	ACK			(or NACK if failed)			
ASCII	(06H)			(15H)			
Byte	1			1			

Note: Baud Rate Settings:

31H:	9600
32H:	4800
33H:	2400
34H:	1200
35H:	600
36H:	300
37H:	19200

b. Save the current view message (Save Demo view data)

COMMAND:	S					
COMPUTER:	EOT	SOH	‘S’	‘Layer’	ETB	
ASCII	(04H)	(01H)	(53H)	(31H~33H)	(17H)	
Byte	1	1	1	1	1	
DISPLAY:	ACK			(or NACK if failed)		
ASCII	(06H)			(15H)		
Byte	1			1		

Note: 31H: Layer 1 / 32H: Layer 2 / 33H: Layer 3

c. Set cursor position

COMMAND:	P					
COMPUTER:	EOT	SOH	‘P’	‘Position’	ETB	
ASCII	(04H)	(01H)	(50H)	(31H~58H)	(17H)	
Byte	1	1	1	1	1	
DISPLAY:	ACK			(or NACK if failed)		
ASCII	(06H)			(15H)		
Byte	1			1		

Note: The cursor can be set to the position from 1 to 40

Position 1	means the upper left corner position.
Position 20	means the upper right corner position
Position 21	means the lower left corner position
Position 40	means the lower right corner position

d. Clear display range

COMMAND:	C					
COMPUTER:	EOT	SOH	‘C’	‘Start’	‘END’	ETB
ASCII	(04H)	(01H)	(43H)	(31H~58H)	(31H~58H)	(17H)
Byte	1	1	1	1	1	1
DISPLAY:	ACK			(or NACK if failed)		
ASCII	(06H)			(15H)		
Byte	1			1		

Note: Some part of the current view messages can be cleared by this COMMAND. It can start cleaning between position 1 and position 40.

e. Display the saved DEMO message (DEMO on set)

COMMAND:	D					
COMPUTER:	EOT	SOH	‘D’	‘Layer’	‘Mode’	ETB
ASCII	(04H)	(01H)	(44H)	(31H~37H)	(31H~33H)	(17H)
Byte	1	1	1	1	1	1
DISPLAY:	ACK			(or NACK if failed)		
ASCII	(06H)			(15H)		
Byte	1			1		

Note:

a) There are three layers of saved view messages as described on

COMMAND “S”

b) There are two modes of display:
Mode 1 is running the saved messages from right to left, which is a horizontal scroll mode.
Mode 2 is running the saved messages from the lower line to the upper line, which is a vertical scroll mode.

c) For display layers:
Select 31H means display the message saved on layer 1.
Select 32H means display the message saved on layer 2.
Select 33H means display the message saved on layer 1 + layer 2.
Select 34H means display the message saved on layer 3.
Select 35H means display the two messages saved on layer 1 + layer 3.
Select 36H means display the two messages saved on layer 2 + layer 3.
Select 37H means display all the messages saved on layer 1 + layer 2 + layer 3.

d) For display modes,
Select 31H means display the message with Mode 1.
Select 32H means display the message with Mode 2.
Select 33H means display the message with Mode 1 + Mode 2.
For this Demo display function, saving the message by COMMAND “S” first is required.
For Example: select 37H for displaying layers and select 33H for displaying modes, and the customer display will show all the three messages saved on layer 1 + layer 2 + layer 3 with both Mode 1 + Mode 2 displaying modes.

e) Any new message from the computer would stop this Demo display function and DSP would display that new message from the computer.

f. Select the Command Mode

COMMAND:	M				
COMPUTER:	EOT	SOH	‘M’	‘Mode’	ETB
ASCII	(04H)	(01H)	(4DH)	(31~38H)	(17H)
Byte	1	1	1	1	1
DISPLAY:	ACK		(or NACK if failed)		
ASCII	(06H)			(15H)	
Byte	1			1	

Note:

Command Modes Selection	
30H: VFD-450	35H: ICD 2002
31H: EPSON ESC/POS	36H: CD 5220
32H: UTC/S	37H: DSP-800
33H: UTC/E	38H: ADM 787/788
34H: AEDEX	

g. Set all default

COMMAND:	X			
COMPUTER:	EOT	SOH	‘X’	ETB
ASCII	(04H)	(01H)	(58H)	(17H)
Byte	1	1	1	1

C. Transmit Method

Each ASCII character is transmitted with

1 start bit

8 data bits

1 stop bit

No parity

Note: You may generate your own application software to run the display according to the standard RS-232C communication protocols and the SOFTWARE CONTROL information listed on this chapter.

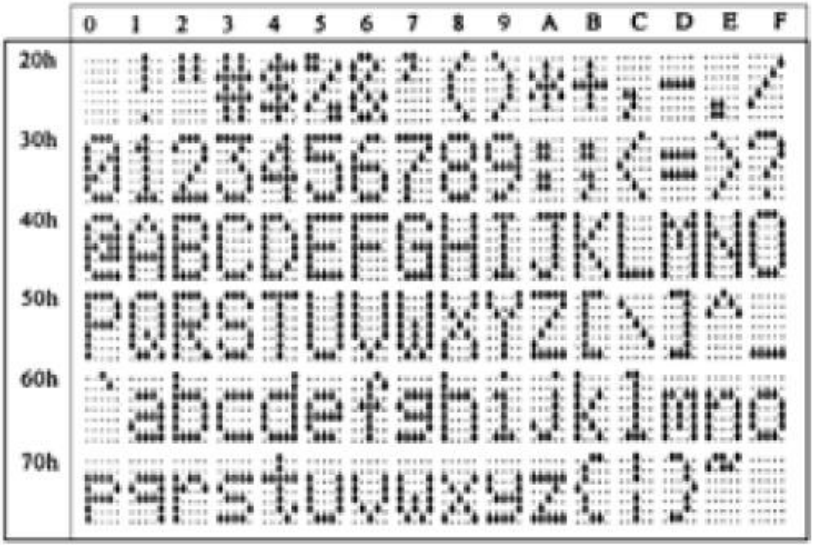
Appendix

Character Font Table

A. 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

B. U.S.A. font set

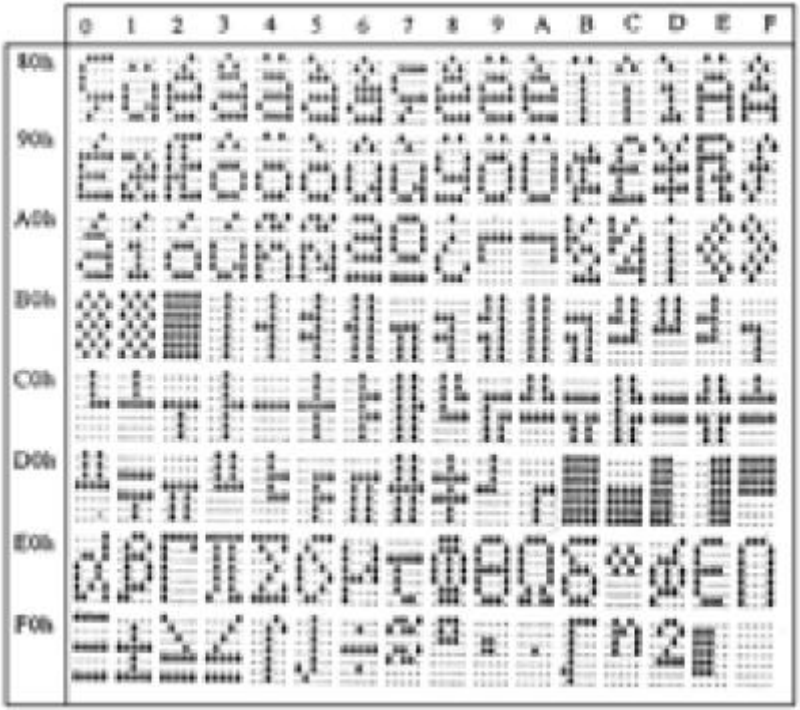


C. International character selection

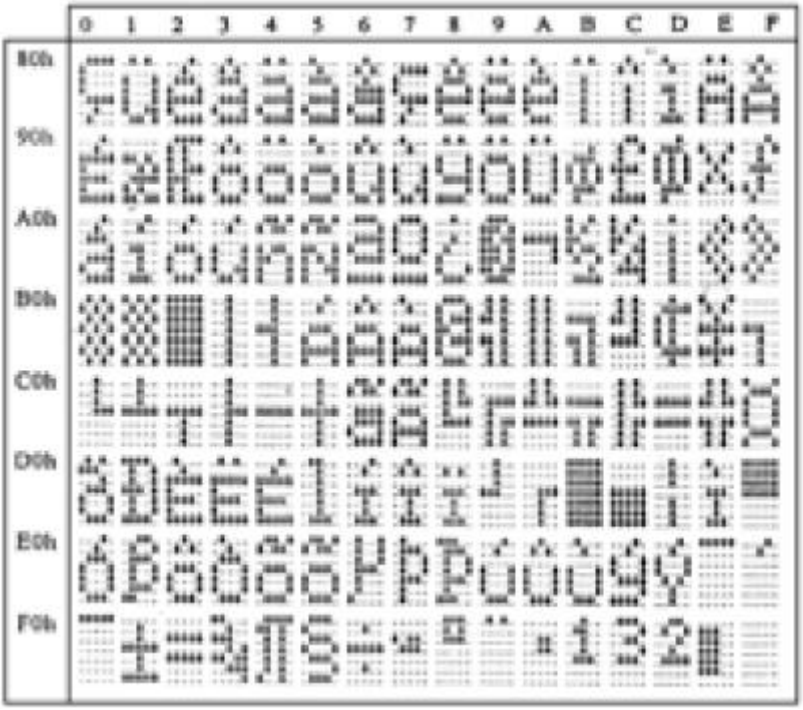
ASCII CODE

Hex. Value	International	23	24	40	5B	5C	5D	5E	60	7B	7C	7D	7E
30H	USA	#	$	@	[	\	]	^	`	{	|	}	~
31H	FRANCE	#	$	à	°	ç	§	^	`	é	ù	è	¨
32H	GERMANY	#	$	§	Ä	Ö	Ü	^	`	ä	ö	ü	ß
33H	U.K.	£	$	@	[	\	]	^	`	{	|	}	~
34H	DENMARK I	#	$	@	Æ	Ø	Å	^	`	æ	ø	å	~
35H	SWEDEN	#	¤	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü
36H	ITALY	#	$	@	°	ç	é	^	ù	à	ò	è	ì
37H	SPAIN	Pt	$	@	¡	Ñ	¿	^	`	¨	ñ	}	~
38H	JAPAN	#	$	@	[	¥	]	^	`	{	|	}	~
39H	NORWAY	#	¤	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
3AH	DENMARK II	#	$	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
3BH	SLAVONIC	#	$	@	[	\	]	^	`	{	|	}	~
3CH	RUSSIA	#	$	@	[	\	]	^	`	{	|	}	~

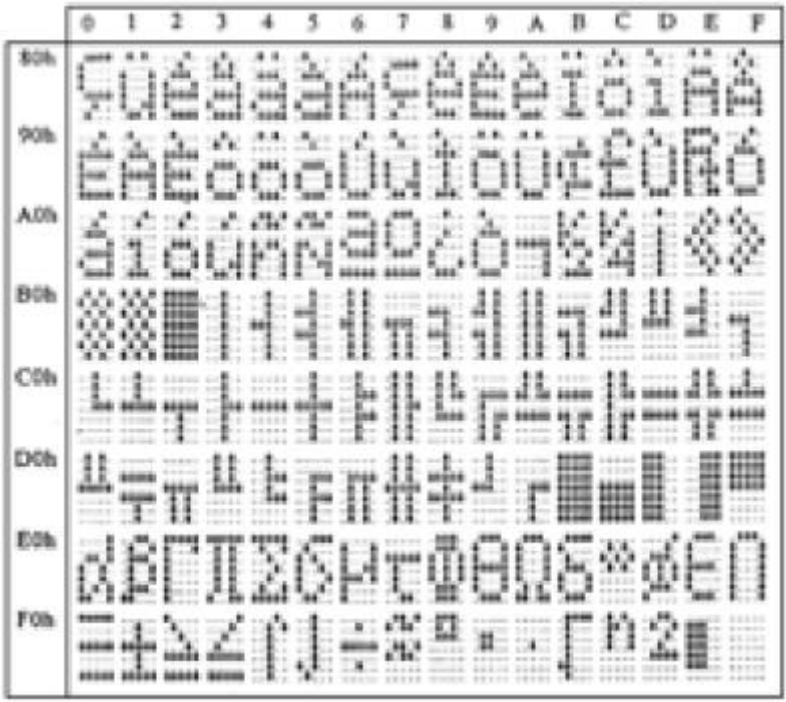
3DH: Standard Europe international font set



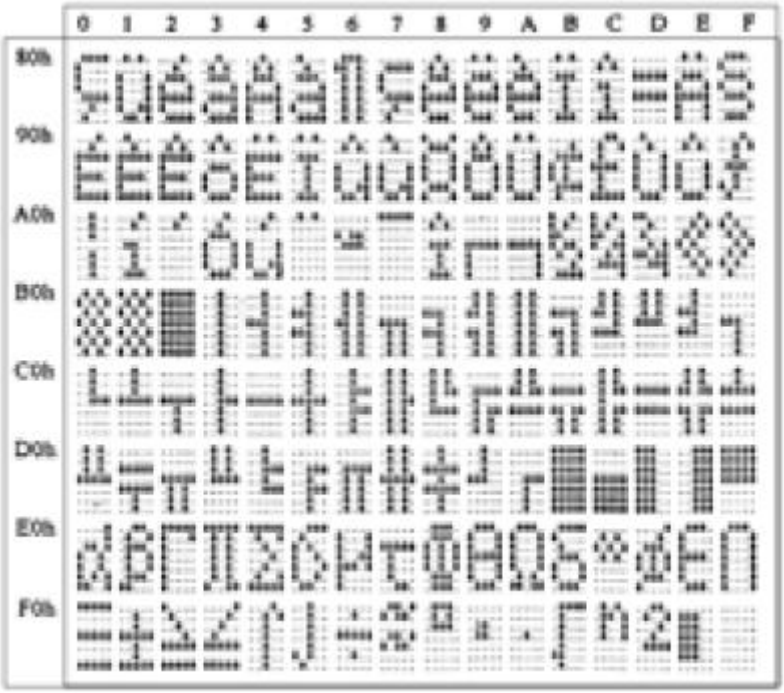
3EH: Multilingual international font set



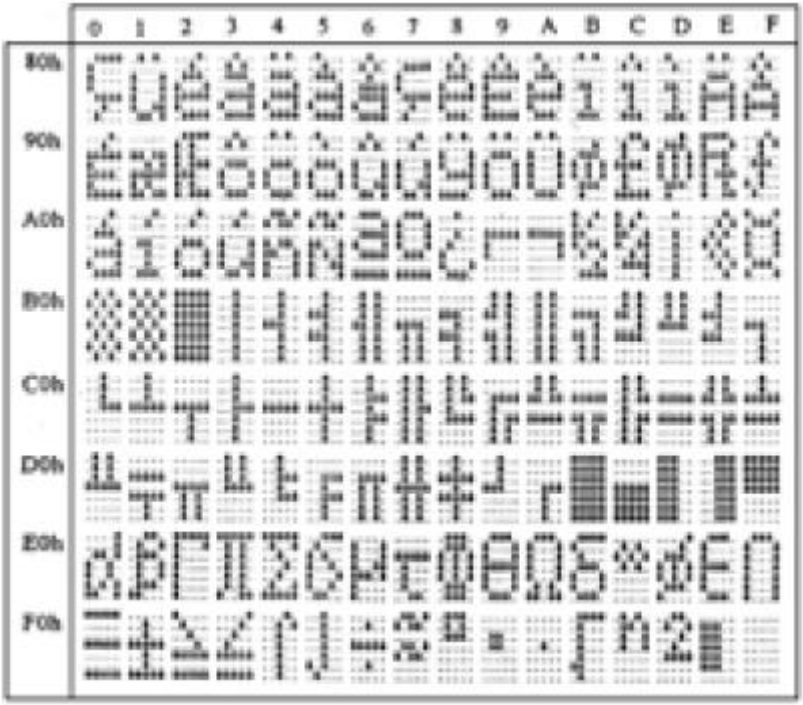
3FH: Portuguese international font set



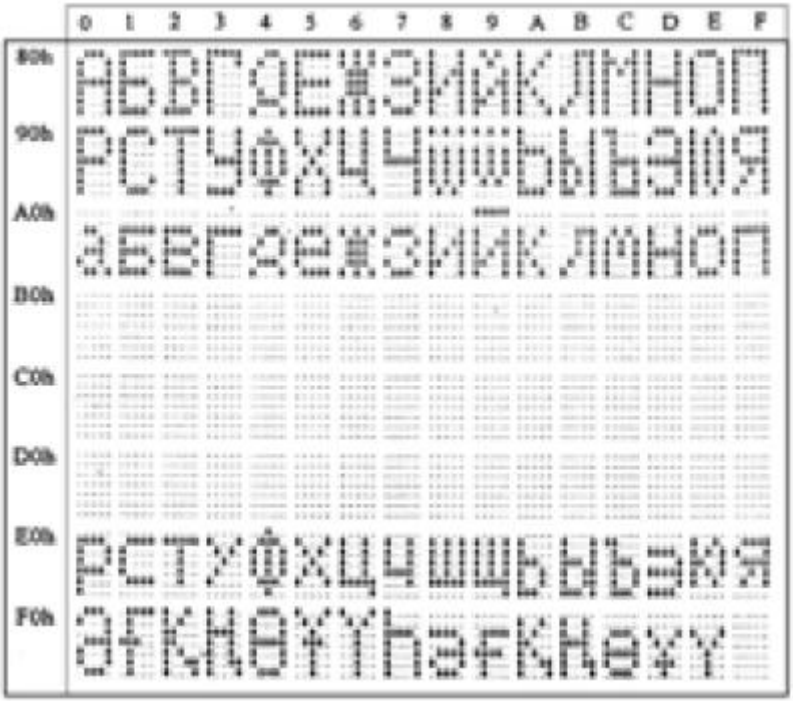
40H: Canadian French international font set



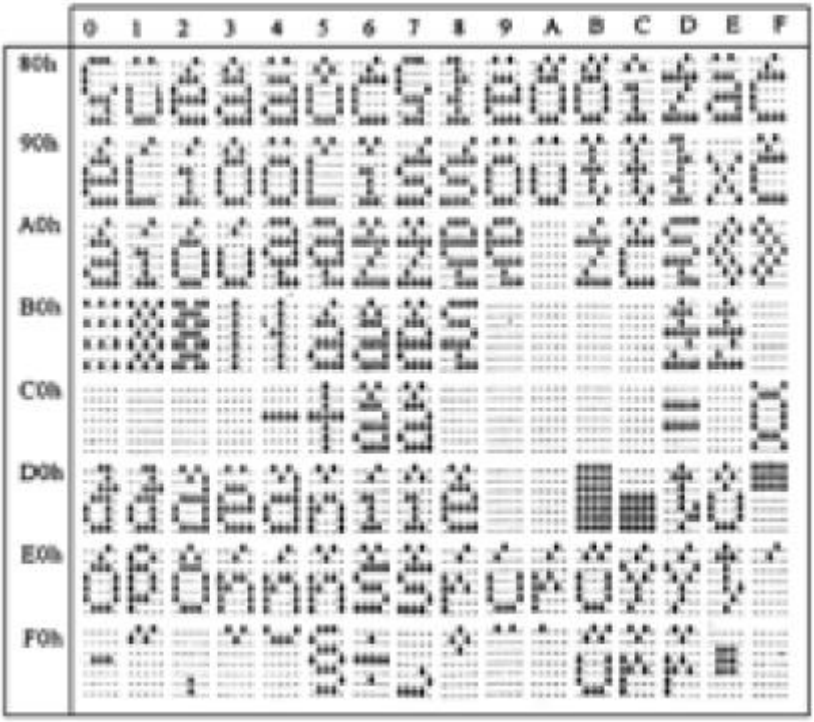
41H: NORDIC international font set



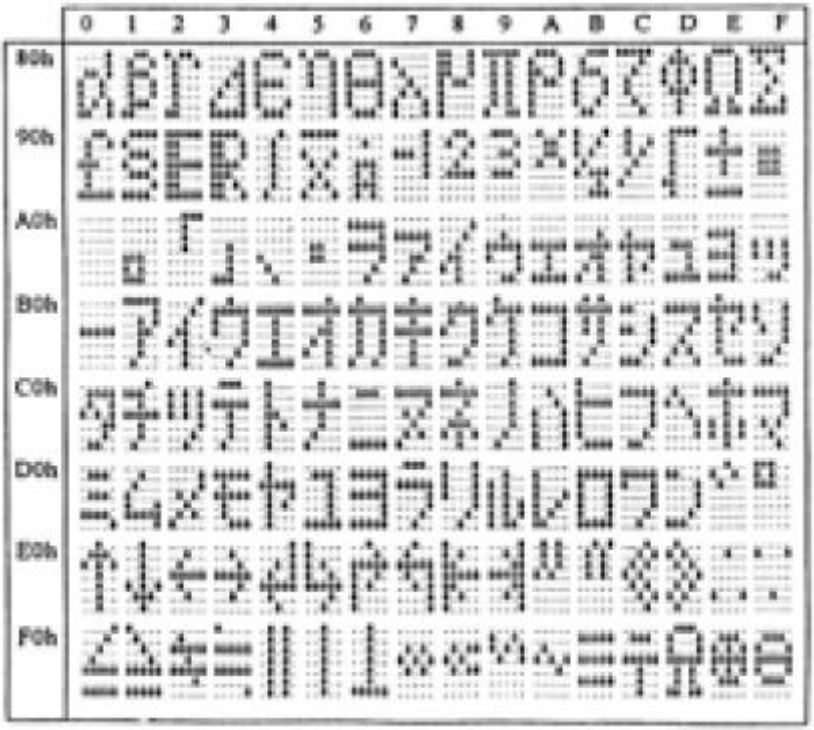
42H: RUSSIA font set



43H: SLAVONIC font set



44H: Katakana font set



ESC/POS Commands List (for ESC/POS Mode)

Command	Code Description (decimal)	Function Description
BS	8	Move cursor left
HT	9	Move cursor right
LF	10	Move cursor down
US LF	31 10	Move cursor up
HOM	11	Move cursor to home position
CR	13	Move cursor to left-most position
US CR	31 13	Move cursor to right-most position
US B	31 66	Move cursor to bottom position
US $	31 36 n m 1≤n≤20 m=1 or 2	Move cursor to specified position
CLR	12	Clear display screen
CAN	24	Clear cursor line
ESC=	27 61 n 0≤n≤255	Select peripheral device
ESC @	27 64	Initialize display
ESC %	27 37 n 1≤n≤3	Select/cancel user-defined character set
ESC &	273 8sbm s=1 32≤n≤m≤126 0≤a≤5 0≤p1…≤psx a_255	Define user-defined character set
ESC ?	27 63 n 32≤n≤126	Cancel user-defined characters
ESC R	27 82 n 0≤n≤13	Select an international character set

Command	Code Description (decimal)	Function Description
ESC t	27 116 n 0≤n≤5, 16, 17, 18, 19, 254, 255	Select character code table
ESC W	27 28 n m(x1 y x2 t2) 1≤n≤4 M=0, 1, 48, 49 1≤x≤1≤x2 20	Select/cancel window range
US MD1	31 1	Specify overwrite mode
US MD2	31 2	Specify vertical scroll mode
US MD3	31 3	Specify horizontal scroll mode
US C	31 67 n n=0, 1, 48, 49	Select/cancel cursor display
US E	31 69 n 0≤n≤255	Select/cancel display screen blinking
US T	31 84 h m 1≤h≤23 1≤m≤59	Set and display time counter
US U	31 85	Display time counter
US X	31 88 n 1≤n≤4	Brightness adjustment
US r	31 114 n n=0, 1, 48, 49	Select/cancel reverse characters
US v	31 118 n n=0, 1, 48, 49	Status confirmation by DRT signal
US @	31 64	Execute self-test
US :	31 58	Start/end macro definition
US ^	31 94 n m 0≤n≤255 0≤m≤255	Execute and quit macro
US.n	31 46 n 32≤n≤255	Select/cancel cursor display

Command	Code Description (decimal)	Function Description
US,n	31 42 n 32≤n≤255	n= a displayable character code display the code with a dot
US:n	31 59 n 32≤n≤255	n= a displayable character code display the code with a semicolon
US#nm	31 35 n 1≤n≤20 1≤m≤2	Turn the annunciator (▼) ON/OFF

SELECT COMMAND MODES
(for VFD 200/450/650/850/895)

The command modes can be selected when the display is operating in VFD/200/450/650/850/895 mode.

Mode 0: VFD-450 (Default)

Mode 1: EPSON ESC/POS Compatible

Mode 2: UTC Standard

Mode 3: UTC Enhanced

Mode 4: AEDEX

Mode 5: ICD 2002

Mode 6: CD 5220

Mode 7: DSP-800

Mode 8: ADM 787/788

Mode 0: VFD-450 mode

Command	Hexadecimal Codes	Function
B	42H	Set baud rate and parity
S	53H	Save the current view message
P	50H	Set cursor position
C	43H	Clear display message
D	44H	Display the saved DEMO message
ESC G ESC S	IBH 47H IBH 53H	Print ON command Print OFF command
M	4DH	Select command mode
X	58H	Set all default

Mode 1: EPSON ESC/POS Compatible

Command	Code Description (hex)	Function
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 x=1-20 y=01,02	Move cursor to specified position
CLR	0C	Clear display screen
CAN	18	Clear cursor line
US E n	1F 45 n n=00-ff	Blink display screen
ESC @	1B 40	Initialize display
US MD1	1F 01	Specify overwrite mode
US MD2	1F 02	Specify vertical scroll mode
US MD3	1F 03	Specify horizontal scroll mode
ESC W n s x1 y1 x2 y2	1B 57 n s x1 y1 x2 y2 n=1,2,3,4 s=0,1	Specify/cancel the window range 1≤x1≤x2 ≤20 1≤y1≤y2 ≤2
US:	1F 3A	Set starting/ending position of macro definition
US ^ n m	1F 5E n m 00≤(n,m)≤ff	Execute and quit macro
US @	1F 40	Execute self-test

Command	Code Description (hex)	Function
US T h m	1F 54 h m 0≤h≤17 0≤m≤3b	Display time
US U	1F 55	Display time continuously
US.n	1F 2E n	n= a displayable character core Display the code with a dot
US,n	1F 2C n	n= a displayable character code Display the code with a comma
US;n	1F 3B n	n= a displayable character code Display the code with a semicolon
US#nm	1F 23 n m n=0 or 1 0≤m≤20	Turn the anuciator (▼) ON/OFF

Mode 2: UTC Standard mode

Command	Code Description (hex)	Function
BS	08	Back space
HT	09	Horizontal tab
LF	0A	Lined feed
CR	0D	Carriage return
DLE	0F	Display position
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

Mode 3: UTC enhanced mode

Command	Code Description (hex)	Function
ESC u ACR	1B 75 41 [data x 20] 0D	Upper line display
ESC u BCR	1B 75 42 [data x 20] 0D	Bottom line display
ESC u DCR	1B 75 44 [data x 20] 0D	Upper line message scroll continuously
ESC u ECR	1B 75 45 hh ':' mm 0D h,m='0'-'9'	Display time
ESC u FCR	1B 75 46 [data x 20] 0D	Upper line message scroll once pass
ESC u HCR	1B 75 48 n m 0D 20h≤n,m	Change attention code
ESC u ICR	1B 75 49 [data x 40] 0D	Two line display
ESC RS CR	1B 0F 0D	Change to UTC standard mode

Mode 4: AEDEX mode

Command	Code Description (hex)	Function
! # 1CR	21 23 31 [data x 20] 0D	Upper line display
! # 2CR	21 23 32 [data x 20] 0D	Bottom line display
! # 4CR	21 23 34 [data x 20] 0D	Upper line message scroll continuously
! # 5CR	21 23 35 hh ':' mm 0D h,m='0'-'9'	Display time
! # 6CR	21 23 36 [data x 20] 0D	Upper line message scroll once pass
! # 8CR	21 23 38 n m 0D 20h≤n,m	Change attention code
! # 9CR	21 23 39 [data x 40] 0D	Two line display
! # ACR	21 23 41 [data x 20] 0D	Upper line scroll message
! # BCR	21 23 42 [data x 20] 0D	Bottom line display message

Mode 5: ICD 2002 mode

Command	Code Description (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 left-most (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 (default)
ESC D	1B 44	Select lower row as current row
ESC A Φ	1B 41 Φ	Set customer display disable or enable Φ ‘D’=disable ‘E’=enable
ESC C r c	1B 43 r c	Move cursor to specified position (only valid in overwrite mode) -r Row (‘U’=upper, ‘D’=lower) -c Column number (range from 1-20)
ESC E r Φ	1B 45 r Φ	Set special effect or display mode of specified row

(REMARK)*Using command “ESC E r Φ”, the value of parameter:

r 58= all rows

55= upper row

44= lower row

Φ special function, the value is one of

30= shift mode (default)

31= rotation mode

32= blink mode

33= clear this row and switch to shift mode

34= overwrite mode

35= vertical mode

Mode 6: CD 5220 standard mode

Command	Code Description (hex)	Function
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]x20 0D	Set the string display mode, write string to upper line
ESC Q B…CR	1B 51 42 [n]x20 0D	Set the string display mode, write string to lower line
ESC Q D…CR	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

Command	Code Description (hex)	Function
ESC [R	1B 5B 52	Move cursor to right-most position
ESC [K	1B 5B 4B	Move cursor to bottom position
ESC 1 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 0≤x1≤x2≤20 y=1,2	Set or cancel the 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 5F n n=0.1	Set cursor ON/OFF

Mode 7: DSP-800 mode

Command	Code Description (hex)	Function
EOT SOH P n ETB	04 01 50 n 17 n=31H-58H	Move cursor to specified position
EOT SOH C n m ETB	04 01 53 n 17 31H≤n≤m≤58H	Clear display range from n position to m position and move cursor to n position
EOT SOH S n ETB	04 01 53 n 17 n=31H-35H	Save the current displaying data to n layer for demo display
EOT SOH D n m ETB	04 01 44 n m 17 n=31H-4FH m=31H-33H	Display the saved data
EOT SOH T ETB	04 01 54 17	Transmit the current view message to computer
EOT SOH B n N ETB	04 01 42 n 4E 17 n=31H: 9600 n=32H: 4800 n=33H: 2400 n=34H: 1200 n=35H: 600 n=36H: 300	Set baud rate

Mode 8: ADM 787/788 mode

Command	Code Description (hex)	Function
CLR	0C	Clear display
CR	0D	Carriage return
SLE1	0E	Clear upper line and move cursor to upper left-end position
SLE2	0F	Clear bottom line and move cursor to bottom left-end position
DC0	10 n	Set period to upper line, last n position 31h≤n≤37h
DC1	11 n	Set line blinking, upper line n=’1’, bottom line n=’2’
DC2	12 n	Clear line blinking, upper line n=’1’, bottom line n=’2’
SF1	1E	Clear field 1 and move cursor to field 1, first position
SF2	1F	Clear field 2 and move cursor to field 2, first position

FAQ

● The Customer Display is not working

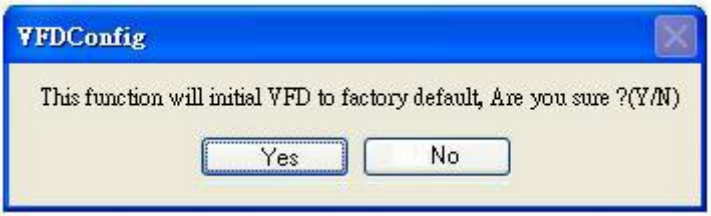
When your device is not working:

1. Check the connection of your device.
   Make sure the cables are properly connected to your device.
2. For USB connections: it's recommended to plug both the Main an Auxiliary USB connectors to the computer and install the driver.
3. Initiate the configuration utility (VFDConfig.EXE) and reconfigure the device again.

Warning: the previous settings of the device would be reset to default setting when initiating the configuration utility.

● The Factory Default Setting of the Customer Display

When initiate the configuration utility, the utility may ask user to select the operating mode for the display and reset the setting to the Factory Default. The Factory Default Setting of each mode is listed as the tables below:



ESC/POS Mode:

Character Set	Page	Baud Rate	Parity	Data Bit	Stop Bit
0	0	9600	None	8	1

* **Stop Bit** is a fixed value (“1”) and need not change.

VFD 200/450/650/850/895 Mode:

Baud Rate	Font	Mode
9600	0	0

- **Communication Failure**

When communication to your device is failed, there might be mismatch between your computer and your device.
Please reconfigure the communication setting to retrieve the connection to your device:

1. Make sure the customer display is properly connected to the computer.
2. Initiate your device and notes the communication parameters of your device (Baud Rate, Font Page, Set…etc).
3. Check the COM Port: make sure to select the right COM port or the device may not response.
4. Reset the communication settings: activate the VFDConfig.exe and configure the communication settings the same as your device (Baud Rate, Data Bit, and Parity).

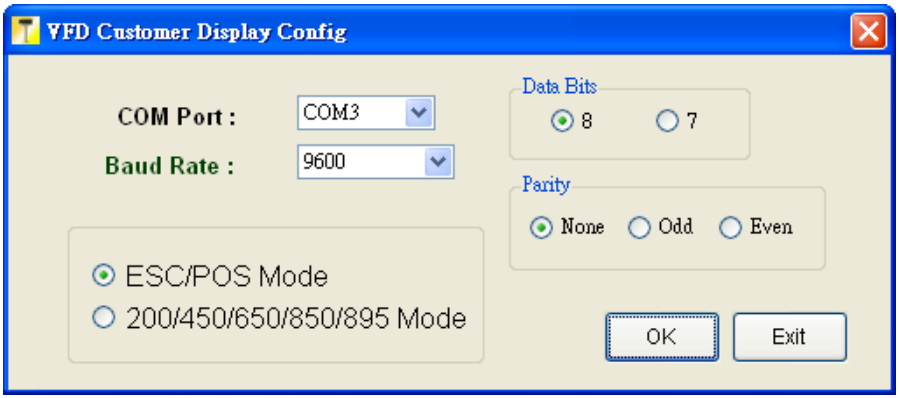
- **VFDConfig-COM port Setting Error**

When transmitting the Codepage font to your device, the transmission might be failed and the device may unable to display the right characters.

To retrieve the communication to your device, please reconfigure the communication setting to retrieve the connection to your device:

1. Make sure the customer display is properly connected to the computer.
2. Check the COM port: make sure to select the right COM port or the device may not response.
3. Activate the Configuration Utility and reset the communication settings: make sure to set the parameters to the same as your device (Baud Rate, Data Bit, and Parity).

- **I don’t know the communication parameters of the Customer Display…**



When first initiate the VFDConfig.EXE, the start menu will ask user to establish communication with your device. The device (customer display will perform self-test and display the communication setting of the device.

To examine the communication setting of the device:

1. Exit the VFDConfig.EXE.
2. Switch off the device (or unplug the two USB cables of the device)
3. Switch on the device and examine the data displayed on the device.
4. Check the COM port that the device is connected.