

User's Manual

VFD220A Customer Display

1.Information

1>. Power Supply: DC 12V, 2A

2>. Data transmission method: Asynchronous Serial.

Default protocol : 57600 bsp, non-parity, 8data bits, 1stop bit

2.Installation

RJ45 Connector:





RS-232 Interface:

Step 1: Connect the display cable to the RS-232 port of the computer.

Step 2: Connect the DC power source by the appropriate DC power adapter.

Step 3: Turn on the computer and the power supply unit, the display will be on and ready for receiving data.



USB Interface:

Step 1: Connect the display cable to the USB port of the computer.

Step 2: Windows needs to install virtual COM driver by using a custom INF file. Linux doesn't need virtual COM driver.



3.System Commands

3.1 Set baud rate

command: B

STX B n [0<=n<=6]
ASCII: (02H) (42H) n [30H<=n<=36H]

n	ASCII	Baud Rate
0	30H	9600
1	31H	4800
2	32H	2400
3	33H	1200
4	34H	600
5	35H	300
6	36H	57600

3.2 Select the command mode

command: C

STX C n [0<=n<=3]
ASCII: (02H) (43H) n [30H<=n<=33H]

n	ASCII	Command mode
0	30H	CD5200/20
1	31H	ESC/POS
2	32H	BA63 Display
3	33H	DSP-800

3.3 International character selection

command: MD5

STX MD5 n [0<=n<=1]
ASCII: (02H) (05H) n [30H<=n<=3CH]

































































































































n(ASCII)	n(Decimal)	n(Hexadecimal)	International Character Code
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

command: MD6

	STX	MD6	n	[0<=n<=1]
ASCII:	(02H)	(06H)	n	[30H<=n<=3aH]

n(Decimal)	n(Hexadecimal)	Extended character table (80H...FFH)
48	30H	U.S.A. and Standard Europe
49	31H	Katakana for Japan
50	32H	Multilingual
51	33H	Portuguese
52	34H	Canadian French
53	35H	Nordic
54	36H	SLAVONIC
55	37H	RUSSIA
56	38H	GREEK(Code Page 737)
57	39H	Turkish
58	3aH	Windows-1253 Greek
58	3bH	Windows-1250 Greek

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																

Multilingual

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

Portuguese

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

Canadian French

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

































































































































Nordic

	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																

RUSSIA

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

4.Command mode

4.1 EPSON ESC/POS mode commands list

Command	Code description(hex)	Function description
HT	09	Move cursor right
BS	08	Move cursor left
US LF	1F 0A	Move cursor up
LF	0A	Move cursor down
US CR	1F 0D	Move cursor to right-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
US . n	1F 2E n	n=a displayable character code. 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 # n m	1F 23 n m n = 0 or 1 1<=m<=20	Turn the annunciator ON/OFF

4.2 CD5200-II mode commands list

Command	Code description(hex)	Function description
ESC DC1	1B 11	Overwrite mode
ESC DC2	1B 12	Vertical scroll mode
ESC DC3	1B 13	Horizontal scroll mode
ESC Q 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]xm20 0D m<40	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
ESD [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 I x y	1B 6C x y 1<=x<=20, y=1,2	Move cursor to specified position
ESC @	1B 40	Initialize display
CLR	0C	Clear display screen, and clear string mode
CAN	18	Clear cursor line, and clear string mode

4.3 BA63 display commands list

Command	Code description(hex)	Function description
BS	08	backspace(without deleting)
LF	0A	line feed,move the invisible cursor down a line and the column position remains unchanged. If the position of cursor is already in the last line,the contents of the last line are copied to the first line and the last line is deleted.
CR	0D	carriage return, the cursor is move to the start of the line in which it is currently positioned.
ESC [2 J	1B 5B 32 4A	deletd display, the cursor position remains unchanged.
ESC [Py ; Px H	1B 5B Py 3B Px 48 [31H<=Py<=32H, 31H<=Px<=44H]	position cursor
ESC [0 K	1B 5B 30 4B	delete to the end of line,the position of cursor remains unchanged.
ESC R N	1B 52 N	Set country code. 1.International character selection: N = 0, U.S.A N = 1,France N = 2,Germany N = 3,U.K N = 4,Denmark I N = 5,Sweden N = 6,Italy N = 7,Spain N = 8,Japan N = 9,Norway N = 0A,Denmark II N = 0B,Slavonic N = 0C,Russia 2.Extended character selection: N = 30, U.S.A. And Standard Europe N = 31,Katakana for Japan N = 32,Multilingual N = 33,Portuguese N = 34,Canadian French N = 35,Nordic N = 36,Slavonic N = 37,Russia N = 38,Greek(Code page 737) N = 39,Turkish N = 3a,Windows-1253 Greek N = 3b,Windows-1250 Greek
ESC [H	1B 5B 48	Set cursor to home position

ESC [0 c	1B 5B 30 63	Call display identification
ESC [1 c	1B 5B 31 63	Character set identification
ESC [2 c	1B 5B 31 63	Firmware identification
ESC [<n> ; <m> S	1B 5B <n> 3B <m> 53	Set baud rate n=01, baud rate=110bps n=02, baud rate=300bps n=03, baud rate=600bps n=04, baud rate=1200bps n=05, baud rate=2400bps n=06, baud rate=4800bps
ESC [0 ?	1B 5B 30 3F	Start self test

4.4 DSP-800 mode commands list

Command	Code description(hex)	Function description
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 43 n m 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-33H]	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-37H,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

Note:

For display the saved data (COMMAND "D"), there are three layers of saved view messages as described on COMMAND "S". 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.

For display layer,

n=31H, display the message saved on layer 1.

n=32H, display the message saved on layer 2.

n=33H, display the two messages saved on layer 1 + layer 2.

n=34H, display the message saved on layer 3.

n=35H, display the two messages saved on layer 1 + layer 3.

n=36H, display the two messages saved on layer 2 + layer 3.

n=37H, display all the three messages saved on layer 1 + layer 2 + layer 3.

For display mode,

m=31H, display the message with Mode 1.

m=32H, display the message with Mode 2.

m=33H, display the message with Mode 1 + Mode 2.

For this demo display function, you must have saved the messages by COMMAND "S" previously. Any new message from the computer would stop this demo display function and would display the that new message from computer.

5. Technical Data

Model	VFD220A
Display Technology	Vacuum fluorescent display
Characteristics	2 rows x 20 characters Matrix: 5 x 7 dot matrix Character size:9.03mm x 5.25mm Character color:Green
Viewing angle: left/right/top/bottom	75/75/75/75
Brightness	350 cd/m2
Character Resolution	5 x 7 dot matrix
Host Interface	USB VCOM or RS232
Character Coding	ASCII
Ratings	USB: 5V, 0.5A RS232: 12V, 0.3A
Data rate	USB:12 Mbit/s (Full-Speed) RS232:110bps,300bps,600bps,1200bps ,2400bps,4800bps,9600bps,14400bps,1 9200bps,38400bps,56000bps,57600bps ,115200bps
Supported Codepages	Code page 737, Windows- 1250, Windows-1253
Upgradeability	Updating firmware via USB
Compatibility	BA63, ESC/POS, CD5200
Middleware	VirtualCOM driver or directly programming the device.
Supported OS	Windows XP & 7 & 10 , Linux
Operating Environment	0 ~ 40°C± 2°C
Dimensions (WxHxD)	Panel:220 x 90 x 36 mm
Weight	340 g