User's Manual

VFD-860/880 Series

VFD Customer Display

Contents

1. Information..... 2
1.1 Standard Package..... 2
1.2 Optional Accessories..... 2
1.3 Specifications..... 3
2. Installation..... 4
2.1 RS-232 Connection..... 4
2.2 Pass-through Connection (For VFD-860/880).... 5
3. Interface..... 6
3.1 RS-232 Cable-end..... 6
3.2 DC Power Jack..... 6
3.3 Interface of Display Panel Side..... 7
3.4 Pass-through Cable Pinouts 8
4. Demo Software..... 9
5. Command List..... 10
5.1 ESC/POS Command List for VFD-860..... 10
5.2 ESC/POS Command List for VFD-880..... 13

1. Information

1.1 Standard Package

- Display Unit
- Support CD
- Power Kit
  to retrieve power DC 12V from switching power supply inside the computer.

1.2 Optional Accessories

- Switch-Mode Power Supply
  Input: AC 100V~240V, 50Hz~60Hz
  Output: DC 9 V, 1A
- Power adapter
  Input: AC 110V, 60Hz
  Output: DC 9 V, 1A
- Power adapter
  Input: AC 230V, 60Hz
  Output: DC 9 V, 1A
- Optional fixed pole 300mm or 400mm
- Pass through cable

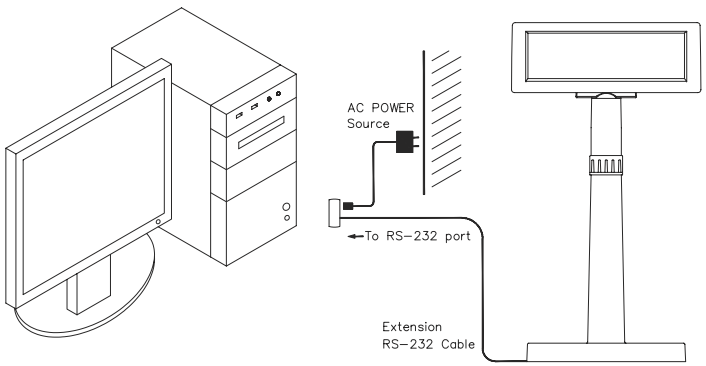
1.3 Specifications

Model	VFD-860	VFD-880
	Tube Display	
Customer Display	Vacuum Fluorescent Display	
Display Pattern	5 x 7 dot matrix	16 x 15 dot matrix
Brightness	700 cd/m2	
Character Type	96 alphanumeric & 13 international characters	Chinese(Big5/GB)/ Korean/Japanese
Command Set	ESC/POS	
Character Size	6.40W x 9.20H mm	6.52W x 9.77H mm
Character Number	2 x 20	
	Electrical	
Power Source	DC 9V~12V (RS-232)	
Power Consumption	4.5 Watts (RS-232)	
Central Control Unit	CPU 8032 ROM 64K flash ROM 32K SRAM	CPU 8031BH ROM 64K flash ROM 32K SRAM
Speed	29MHz	11MHz
	Physical	
Dimensions (Panel)	224W x 45D x 83H mm	
Dimensions (Support)	Telescopic pole 270~440mm or optional fixed pole 300mm or 400mm	
Dimensions (Base)	187W x 84D x 22H mm	
Tilt Angle	Max. 53°	
Rotation Angle	Max. 360°	
Weight	About 0.8Kg	
Interface	RS-232	
Color	Black or beige	
	Environmental	
Operating Temperature	0℃~40℃ (32°F~104°F)	
Storage Temperature	-10℃~50℃ (14°F~122°F)	
Relative Humidity	0%~90% RH	

2. Installation

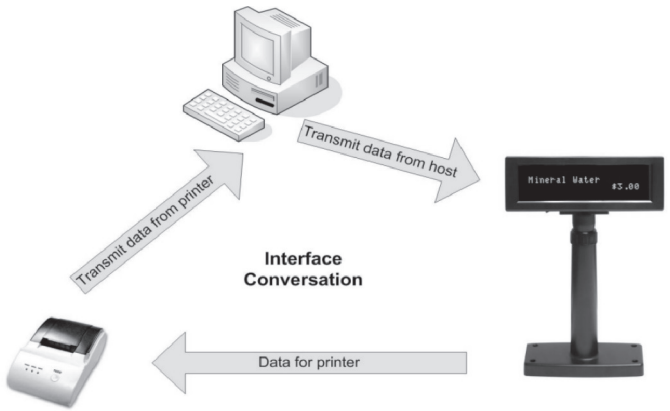
2.1 RS-232 Connection

Step 1: Turn off the computer.
Step 2: Connect the display cable to the RS-232 port of the computer.
Step 3: Set the connection between the bundled power kit and the switch power supply inside the computer or connecting the DC power source by the appropriate DC power adapter.
Step 4: Turn on the computer. The display will be on and ready for receiving data.



2.2 Pass-through Connection

Step 1: Turn off the computer, printer and display.
Step 2: Refer to 3.4 Pass-through Cable Pinouts for detailed information of the cable to make proper connection to the proper ports on the devices.
Step 3: Turn on the computer. The display will be on and ready for receiving data.



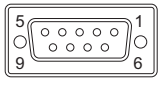
Note: Select the proper peripheral through command, either the printer or the display, and all the data transmitted from the host will be processed by the selected device.

3. Interface

3.1 RS-232 Cable-end

DSUB-9 Pin Female Connector

2	TX
3	RX
5	GND
7	CTS
8	RTS
9	VCC
1 — **4** — **6**	Short Connection



3.2 DC Power Jack

GND —— +9~12VDC/500~1000mA

3.3 Interface of Display Panel Side

- Specifications

  Data Transmission method: Asynchronous Serial
  Default protocol: 9600 bps, non-parity,
  8 data bits, 1 stop bit

- Interface connector (display panel side)

  6 pin Male-Header
  Pin assignments:

1	TXD
	DSR
	RXD
	DTR
	GND
6	VCC

3.4 Pass-through Cable Pinouts

CBL-VFD-PASS 1

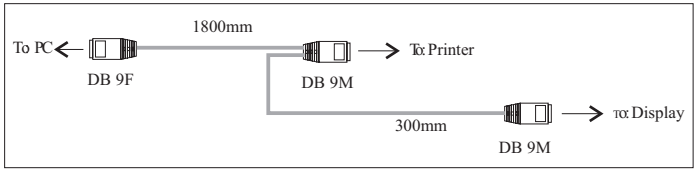
For printers with ESC commands

To:Host DB9F	To:Printer DB9M	To:Display DB9M
2 (RXD)	2 (TXD)	
3 (TXD)	3 (RXD)	3 (RXD)
4 (DTR)	4 (DSR)	
5 (GND)	5 (GND)	6 (RXD)
6 (DSR)	6 (DTR)	
7 (RTS)	7 (CTS)	
8 (CTS)	8 (RTS)	

CBL-VFD-PASS 2

For printers without ESC commands

To:Host DB9F	To:Printer DB9M	To:Display DB9M
2 (RXD)	2 (TXD)	
	3 (RXD)	3 (TXD)
3 (TXD)		3 (RXD)
4 (DTR)	4 (DSR)	
5 (GND)	5 (GND)	5 (GND)
6 (DSR)		6 (DTR)
7 (RTS)	7 (CTS)	
8 (CTS)	8 (CTS)	
	6 (DTR)	4 (DSR)



4. Demo Software

Connect the display to the COM 1 of the computer. The default communication parameters of the display are:

COM port: COM 1
Baud rate: 9600
Parity: None
Data bits: 8
Stop bit: 1

- Make sure the display is powered on and connected properly to the computer.
- Insert the bundled CD and install the demo software through the following directories.
  VFD-860: Utilities\VFD-660&460\setup.exe
  VFD-880: Utilities\VFD-1615\setup.exe
- Run the demo software through the directories.
  VFD-860: Start\Programs\VFD-660_460
  VFD-880: Start\Programs\VFD-1615
- Test the software commands, such as Cursor Position, Screen Display, and Display Mode, by each index.
- Close the configuration utility to complete the setup process.

5. Command List

5.1 ESC/POS Command List for VFD-860

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 66 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 0≤n≤m≤126 0≤a≤5 0≤p1... ≤psx a_255	Define user-defined character set

Command	Code Description (decimal)	Function Description
ESC ?	27 63 n 32≤n≤126	Cancel user-defined characters
ESC R	27 82 n 0≤n≤13	Select an international character set
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

Command	Code Description (decimal)	Function Description
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
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

5.2 ESC/POS Command List for VFD-880

Command	Code Description (decimal)	Function Description
BS	08	Move cursor left
HT	09	Move cursor right
LF	0A	Move cursor down
US LF	1F 0A	Move cursor up
HOM	0B	Move cursor to home position
CR	0D	Move cursor to left-most position
US CR	1F 0D	Move cursor to right-most position
US B	1F 42	Move cursor to bottom position
US $ n m	1F 24 n m 1≤n(column)≤20 m(line)=1 or 2	Move cursor to specified position; nth column and mth line
CLR	0C	Clear display screen
CAN	18	Clear cursor line
ESC=n	1B 3D n 1≤n≤3	Select peripheral device
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 % n	1B 25 n 1≤n≤3	Select/cancel user-defined character set
ESC & s n m	1B 26 s n m s=1, 32≤n≤m≤126	Define user-defined character set
ESC ? N	1B 3F n 32≤n≤126	Cancel user-defined characters

Command	Code Description (decimal)	Function Description
ESC R n	1B 52 n 0≤n≤13	Select an international character set
ESC t n	1B 74 n	Select character code table
ESC W n m	1B 52 n m 1≤n≤4 M=0, 1, 48, 49	Select/cancel window range
US C n	1F 43 n n=0, 1, 48, 49	Select/cancel cursor display
US E n	1F 45 n 0≤n≤255	Set display screen blink interval
US T h m	1F 54 h m 0≤h≤23 0≤m≤59	Set and display time counter
US U	1F 55	Display time counter
US X n	1F 58 n 1≤n≤4	Brightness adjustment
US r n	1F 72 n n=0, 1, 48, 49	Select/cancel reverse characters
US v n	1F 76 n n=0, 1, 48, 49	Status confirmation by DRT signal
US @	1F 40	Execute self-test
US :	1F 3A	Start/end macro definition
US ^ n m	1F 5E n m 0≤n≤255 0≤m≤255	Execute and quit macro