

User's Manual

VFD-860 Series **VFD Customer Display**



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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

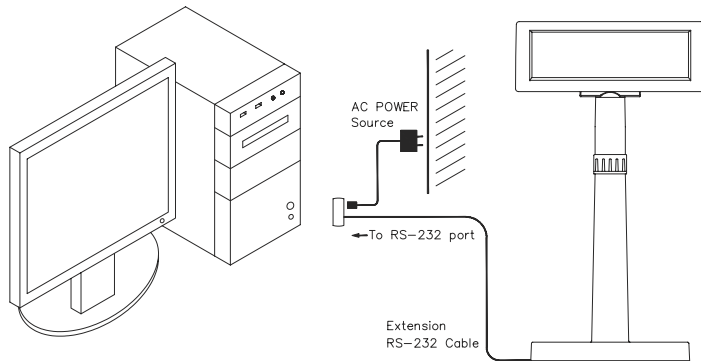
1.3 Specifications

<i>Tube Display</i>	
Customer Display	Vacuum Fluorescent Display
Display Pattern	5 x 7 dot matrix
Brightness	700 cd/m ²
Command Set	96 alphanumeric & 13 international characters
Character Type	ESC/POS
Character Size	6.40W x 9.20H mm
Character Number	2 x 20
<i>Electrical</i>	
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
Speed	29MHz
<i>Physical</i>	
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
<i>Environmental</i>	
Operating Temperature	0°C~40°C (32°F~104°F)
Storage Temperature	-10 °C~50 °C (14 °F~122 °F)
Relative Humidity	0%~90% RH

2. Installation

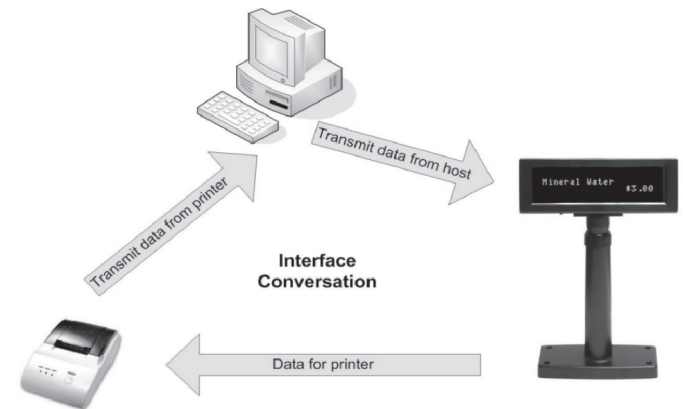
2.1 RS-232 Connection

- 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.



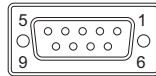
Note: Select the proper peripheral through command, either the printer or the display, and all the data transmitted from the host will be processed by the selected device.

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	Short Connection
4	
6	



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

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.
 Utilities\VFD-660&460\setup.exe
- Run the demo software through the directories.
 Start\Programs\VFD-660_460
- 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.

3.4 Pass-through Cable Pinouts

CBL-VFD-PASS 1

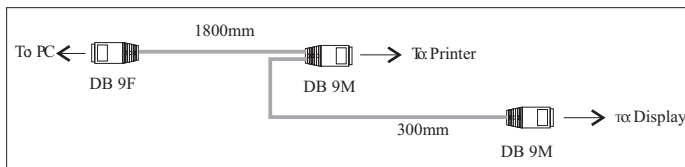
For printers with ESC commands

To:Host	To:Printer	To:Display
DB9F	DB9M	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	To:Printer	To:Display
DB9F	DB9M	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)



5. Command List

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

Command	Code Description (decimal)	Function Description
ESC R n	1B 52 n $0 \leq n \leq 13$	Select an international character set
ESC t n	1B 74 n	Select character code table
ESC W n m	1B 52 n m $1 \leq n \leq 4$ 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 $0 \leq n \leq 255$	Set display screen blink interval
US T h m	1F 54 h m $0 \leq h \leq 23$ $0 \leq m \leq 59$	Set and display time counter
US U	1F 55	Display time counter
US X n	1F 58 n $1 \leq n \leq 4$	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 $0 \leq n \leq 255$ $0 \leq m \leq 255$	Execute and quit macro