

VFD Manual

Version V1.0 Aug. 2010



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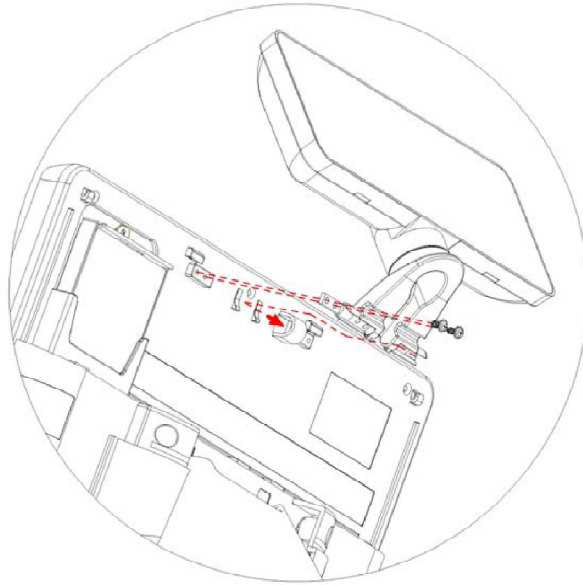
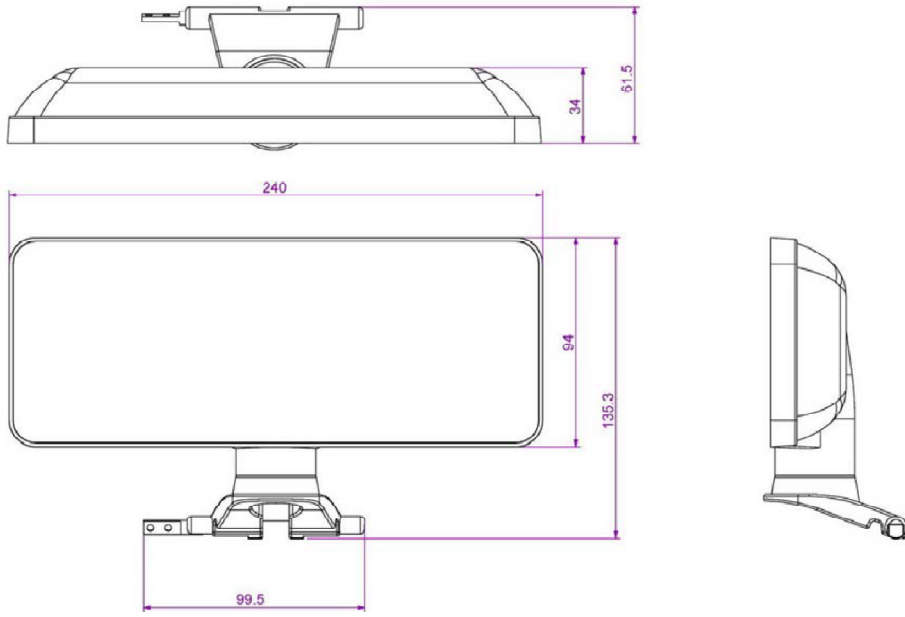
1. FEATURES

- 1.) Data can be displayed on 20 columns x 2 lines.
- 2.) Green color and large character are easy to eyes.
- 3.) The display panel is adjustable to provide the best view angle.
- 4.) The VFD Utility setting emulates commands mode, baud rate and international characters.
- 5.) UTC / ESCPOS emulation command sets.
- 6.) Display area can be controlled by window function.
- 7.) Provides a centronics interface link to PC Host, and auto transfer to display panel by RS232 with baud rate at 9600 bps.
- 8.) Power input (12 Vdc).

2. GENERAL SPECIFICATIONS

NO	ITEM	Descriptions
1	Display method	Vacuum fluorescent display
2	Number of character	40 characters (20 columns x 2 lines)
3	Character font	5 x 7 Dot matrix
4	Display color	Green
5	Brightness	700 cd/m ²
6	Character type	96 alphanumeric 13 kinds of international character set 1 kind of user define character
7	Character size	9.2 mm x 5. 25 mm
8	Power supply	12 Vdc
9	Power consumption	3 – 6 W
10	MTBF	25000 hours (power on time)
11	Panel dimensions	240 (W) x 94 (H) x 34(D) mm
12	Viewing angle	Maximum 60 degrees
13	Rotation angle	Maximum 180 degrees
14	Weight	0.5 Kg
15	Operating temperature	5 - 40°C
16	Operating Humidity	20% - 80%
17	Storage Temperature	-10 - 55°C
18	Storage Humidity	10% - 90%

3. COMPONENT DIMENSIONS AND ASSEMBLY

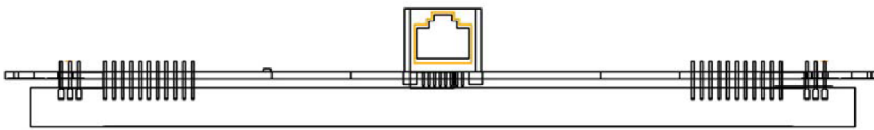


4. INTERFACE

4.1 RS232 interface Specification

Data transmission:	Serial
Synchronization:	Asynchronous
Signal level:	MARK = -3 to -15 V (logic "1") SPACE = +3 to +15 V (logic "0")
Baud rates:	9600 bps
Parity and bit length	None parity, 8 data bits (fixed)
Stop bits:	1 (fixed)

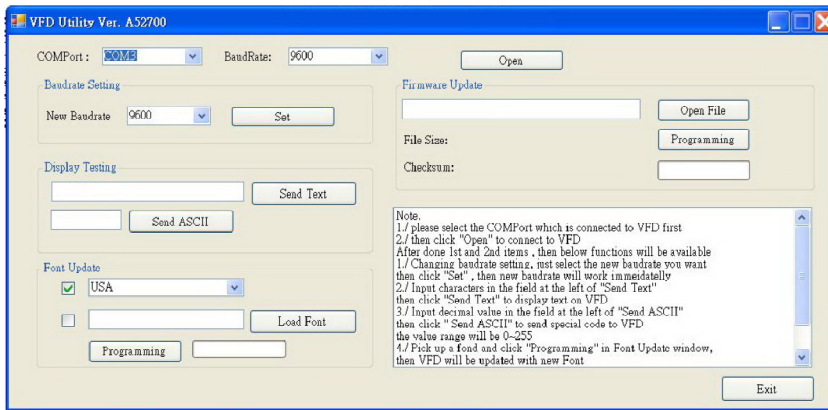
4.2 CN1 Pin Define



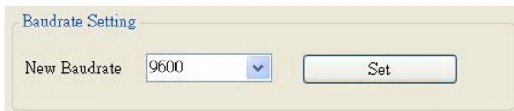
Type: RJ45/10P/10C Pin

No	Signal	Direction
Pin4	TXD	To PC RXD
Pin6	RXD	To PC TXD
Pin9	GND	Ground
Pin10	Vin	Power 12 Vdc

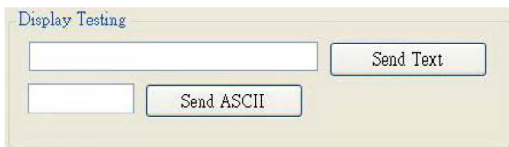
5. VFD UTILITY SETTING



1. Please select the COM Port which is connector to VFD first.
2. Then Click " Open " to connector to VFD.
3. After done 1st and 2nd item, then below functions will be available.



4. Changing baudrate setting, just select the new baudrate you want, then click "Set", then new baudrate will work immediately.



5. Input characters in the field at the left of "Send Text", then click "Send Text" to display text on VFD.
6. Input decimal value in the field at the left of "Send ASCII", then click "Send ASCII" to send special code to VFD, the value range will be 0~255.



7. Pick up a font and click "Programming" in Font Update window, then VFD will be updated with new Font.

	Character set
1	U.S.A.
2	FRANCE
3	GERMANY
4	UK
5	DENMARK I
6	DENMARK II
7	ITALY
8	JAPAN
9	NORWAY
10	SWEDEN
11	SPAIN
12	Slavonic
13	Russia



8. Click " Open File" and give a BIN file, click "Programming" in Firmware Update window, new firmware is available to be upgraded.

	Command Code list
1.	UTC standard mode command / enhanced mode command
2.	EPSON Esc/pos command

6. COMMAND

6.1 UTC standard mode command list

Command	Code (hex)	Function description
BS	08	Back space
HT	09	Horizontal tab
LF	0A	Line 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
US	1F	Clear display
ESC d	1B 64	Change to UTC enhanced mode

6.2 UTC enhanced mode command list

Command	Code (hex)	Function description
ESC u A ..CR	1B 75 41 <i>data</i> x m 0D	Upper line display $0 \leq m \leq 20$
ESC u B ..CR	1B 75 42 <i>data</i> x m 0D	Bottom line display $0 \leq m \leq 20$
ESC u D ..CR	1B 75 44 <i>data</i> x m 0D	Upper line message scroll continuously $0 \leq m \leq 40$
ESC u E ..CR	1B 75 45 hh:' mm 0D	Display time '00' \leq hh \leq '23' '00' \leq mm \leq '59'
ESC u F ..CR	1B 75 46 <i>data</i> x m 0D	Upper line message scroll once pass
ESC u H ..CR	1B 75 48 n m 0D	Change attention code $32 \leq n \leq 255$ $32 \leq m \leq 255$
ESC u I ..CR	1B 75 49 <i>data</i> x m 0D	Two line display $0 \leq m \leq 40$
ESC RS CR	1B 0F 0D	Change to UTC standard mode

6.3 EPSON Esc/pos command list

Command	Code (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. $1 \leq x \leq 20$ $1 \leq y \leq 2$
CLR	0C	Clear display screen.
US X n	1F 58 n	Brightness adjustment. $1 \leq n \leq 4$
US E n	1F 45 n	Blink display screen. $0 \leq n \leq 255$
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	Specify/cancel the window range. $1 \leq n \leq 4, 0 \leq s \leq 1$ $1 \leq x1 \leq x2 \leq 20$ $1 \leq y1 \leq y2 \leq 2$
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 time continuously

7. CHARACTER SET

7.1 International character set selection

Character set	Code table (80H-FFH)
U.S.A.	PC-437(USA&Europe)
FRANCE	PC-858(Euro)
GERMANY	PC-858(Euro)
UK	PC-858(Euro)
DENMARK I	PC-858(Euro)
DENMARK II	PC-858(Euro)
ITALY	PC-858(Euro)
JAPAN	Katakana
NORWAY	PC-858(Euro)
SWEDEN	PC-858(Euro)
SPAIN	PC-858(Euro)
Slavonic	Slavonic
Russia	Russia
U.S.A	PC860 (Portuguese)

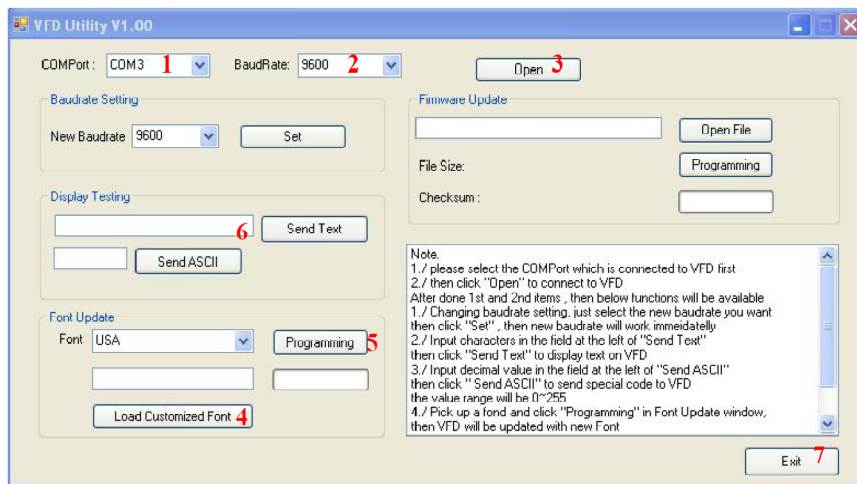
7.2 USA, standard character set (20h – 7Eh)

USA, standard character set (20H ~ 7FH)

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
20H		!	"	#	\$	%	&	'	()	*	+	,	-	.	/
30H	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?@
40H	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	
50H	P	Q	R	S	T	U	V	W	X	Y	Z	[\]	^	_`
60H	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	
70H	p	q	r	s	t	u	v	w	x	y	z	{		}	~	

7.3 Internation Character Sets

Internation character sets												
Country/Hex	23	24	40	5B	5C	5D	5E	60	7B	7C	7D	7E
U.S.A												
France												
Germany												
U.K.												
Denmark I												
Sweden												
Italy												
Spain												
Japan												
Norway												
Denmark II												
Slavonic												
Russia												



1. COM Port => set to COM3
2. BaudRate => 9600
3. Click "Open"
4. Click "Load Customized Font" and select "FONT_PC860.bin" from the path you saved the file
5. Click "Programming". A window will pop up asking to confirm the VFD screen is blank. After you click to confirm, a progress bar will appear beneath the "Programming" button. Do NOT click or enter anything when the progress bar is running. A small box will pop out saying uploading is done after the programming is done.
6. Display Testing => enter words for testing and click "Sent Text"
7. Exit => click this when testing is done