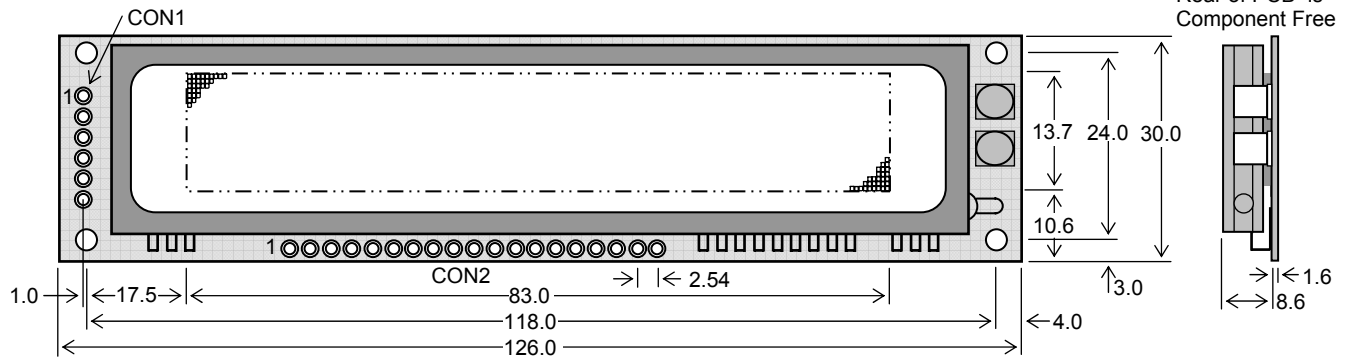


# Dot Graphic VFD Module

# GU128x18F-K612A2

- 128 x 18 High Brightness Dot Graphic Display
- Single 5V DC Supply
- 2 ASCII Fonts ( 5 x 7 and 10 x 14 )
- Mixed Graphics and Text Display
- RS232 Serial Interface
- SPI Clock Serial Interface and 12 I/O Pins
- Variable Active Writing Area
- Low Profile Construction

The module includes the VFD glass, VF drivers and microcontroller with refresh RAM, character generation, interface logic and patented transformerless DC/DC converter. The RS232 serial interface is suitable for connection to a host PC serial port and accepts baud rates up to 38,400 with or without parity. The module features a low profile design with numerous custom options available including special fonts, application specific commands and key scanning.



Dimensions in mm & subject to tolerances. Mounting holes 3.5mm dia.

## ELECTRICAL SPECIFICATION

Parameter	Symbol	Value	Condition
Power Supply Voltage	V <sub>DD</sub>	5.0VDC +/- 10%	GND=0V
Power Supply Current	I <sub>DD</sub>	300 mA typ.	V <sub>DD</sub> =5VDC
RS232 Serial High Input	V <sub>IH</sub>	3.0VDC min.	V <sub>DD</sub> =5VDC
RS232 Serial Low Input	V <sub>IL</sub>	0.8VDC max.	V <sub>DD</sub> =5VDC
RS232 Serial High Output	V <sub>OH</sub>	8.0VDC min.	V <sub>DD</sub> =5VDC
RS232 Serial Low Output	V <sub>OL</sub>	-4.0VDC max.	V <sub>DD</sub> =5VDC
Logic High Input	V <sub>IH</sub>	2.0VDC min.	V <sub>DD</sub> =5VDC
Logic Low Input	V <sub>IL</sub>	0.8VDC max.	V <sub>DD</sub> =5VDC
Logic High Output	V <sub>OH</sub>	2.4VDC min.	I <sub>OH</sub> =-2.0mA
Logic Low Output	V <sub>OL</sub>	0.5VDC max.	I <sub>OH</sub> =2.0mA

## CHARACTER FONT 10 x 14

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

## OPTICAL & ENVIRONMENTAL SPECIFICATION

Parameter	Value
Display Area (X x Ymm)	83.05 x 13.69
Dot Size/Pitch (XxY mm)	0.5 x 0.6 / 0.65 x 0.77
Luminance	700 cd/m <sup>2</sup> (200 fL) Typ.
Colour of Illumination	Blue-Green (505nm)
Operating Temperature	-30°C to +80°C
Storage Temperature	-40°C to +85°C
Operating Humidity	20 to 85% RH @ 25°C

Optical filters can provide violet, red, yellow, blue & green output.

## SOFTWARE COMMANDS

Command Name	Hex
Set Display Mode	10+
XON Handshake	11
Set I/O RS232, SPI, C0-3, D0-7	12+
XOFF Handshake	13
Set Active Area (llH,ttH,rrH,bbH)	14+
Position Cursor (lxH, tyH)	15+
Set Luminance (00H-1FH)	16+
Inverse Active Area	17
Fill Active Area	18
Outline Active Area	19
Write Graphic Bytes (len,nn..)	1A+
Extended Commands	1B+
Write ASCII Characters	20-7F

## DISPLAY MODE SETTINGS (10H)

Bit	Function
1	0=Font 5x7 1=Font 10x14
2	0=Normal Font 1=Inverse Font
3	0=Cursor Increment 1=Dec.
4	0=Cursor Move Hor. 1=Vertical
5	0=Graphic Write Hor. 1=Vertical
6,7	Write mode 00=Overwrite 01=AND, 10=OR, 11=XOR

## CON1

Pin	Signal	Function
1	EIN	RS232 Host Busy
2	EOUT	RS232 Module Busy
3	TXD	RS232 Transmit
4	GND	0V
5	RXD	RS232 Receive
6	VDD	5V

Link EIN and EOUT for XON/XOFF  
Default: 19200, N, 8, 1

## CON2

Pin	Signal	Function
1	GND	0V
2	/SS	Slave Select
3	RES	Reset Input
4	SIN	SPI Receive
5	SOUT	SPI Transmit
6	SCK	SPI Clock
7	GND	0V
8	VDD	5V
9-12	C3-C0	User I/O
13-20	D0-D7	User I/O

All I/O at Logic Level Voltages

## CONTACT

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Certain commands operate within the specified active area. The writing position (cursor) can be positioned to dot resolution within the active area. I/O control allows the user to set C0-C3, D0-D7 as individual input or output or universal keyboard matrix. When MOSI and MISO are linked at power on, C0-C3 and D0-D7 set the asynchronous serial baud rate and parity, which is saved in internal EEPROM. JP5 on the front of the module must be solder linked for the SPI interface to operate. Detailed specification, software commands and interface timing are available on request.

Subject to change without notice.  
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