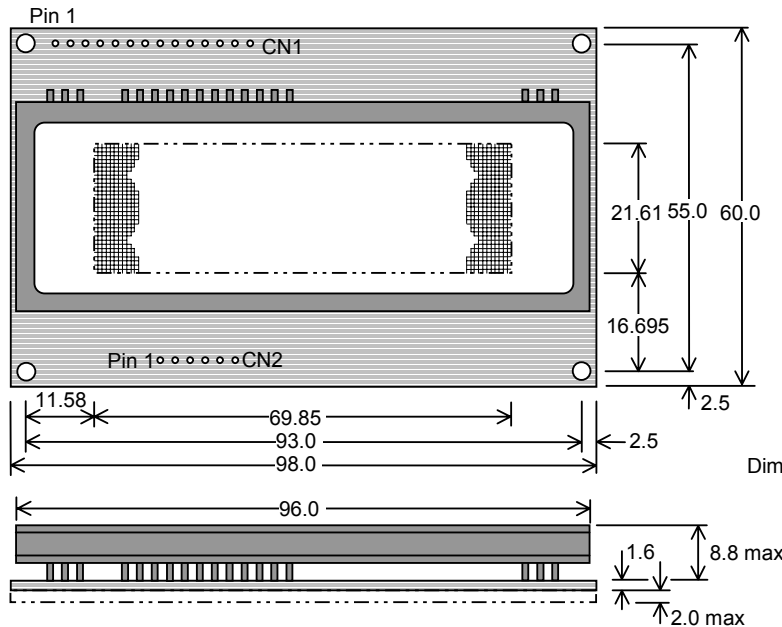


# Dot Graphic VFD Module

# GU140x32F-7000

- ❑ 140x32 Dot Graphic
- ❑ Single 5V Supply
- ❑ High Brightness Blue Green Display
- ❑ Operating Temp -40°C to +85°C
- ❑ 11 Multi Sized Fonts
- ❑ High Speed 8 Bit Parallel Interface
- ❑ Asynchronous RS232 Serial Interface

The module includes the Vacuum Fluorescent Display glass, VFD drivers and micro-controller ICs with refresh RAM, character generator and interface logic. The high speed 8 bit parallel interface is 5V TTL/CMOS compatible suitable for connection to a host CPU bus. The asynchronous serial interface accepts baud rates up to 115,200 with none parity. The module is ready to receive ASCII characters without initialization commends.



Dimensions in mm & subject to tolerances.  
Mounting holes 3.0mm dia.

## ELECTRICAL SPECIFICATION

Parameter	Symbol	Value	Condition
Power Supply Voltage	VCC	5.0VDC +/- 5%	GND=0V
Power Supply Current	ICC	400mADC typ.	VCC=5V
RS232 SIN High Input	VIH	3.0VDC min. 15VDC max.	VCC=5V
RS232 SIN Low Input	VIL	-15VDC min. 0.5VDC max.	VCC=5V
SBUSY High Output	VOH	4.0VDC min. Vcc max.	VCC=5V
SBUSY Low Output	VOL	0VDC min. 0.5VDC max.	VCC=5V
Logic High Input	VIH	0.8VDC min. Vcc max.	VCC=5V
Logic Low Input	VIL	0VDC min. 0.2VDC max.	VCC=5V
Logic High Output	VOH	3.5VDC min. Vcc max.	IOH=-10uA
Logic Low Output	VOL	0VDC min. 0.6VDC max.	IOL=4mA

The power on rise time should be less than 100ms. Inrush current at power on can be 2 x ICC.

## OPTICAL and ENVIRONMENTAL SPECIFICATIONS

Parameter	Value
Display Area (XxY mm)	69.85 x 21.61
Dot Size/Pitch (XxY mm)	0.35 x 0.53 / 0.5 x 0.68
Luminance	700 cd/m <sup>2</sup> Typ.
Colour of Illumination	Blue-Green (Filter for colours)
Operating Temperature	-40°C to +85°C
Storage Temperature	-40°C to +85°C
Operating Humidity (non condensing)	20 to 80% RH @ 25°C

## SOFTWARE COMMANDS – Popular codes, more included

Command	Code
Write Character to Display	20H-FFH
BS, HT, LF, CR, Display Clear	08H, 09H, 0AH, 0DH, 0CH
Initialize Display	1BH 40H
Specify International Font	1BH 52H n
Vertical Scroll Mode	1FH 02H
Horizontal Scroll Mode	1FH 03H
Cursor Set	1FH 24H xL xH yL yH
Scroll Display Action	1FH 28H 61H 10H wL wH cL cH s
Display Blank	1FH 28H 61H 11H p t1 t2 c
Screen Saver	1FH 28H 61H 40H p
Bit Image Display Group	1FH 28H 66H 11H xL xH
Font Magnified Display	1FH 28H 67H 40H x y
Brightness Level Setting	1FH 58H n

The module defaults to 5x7 font, cursor top left at power on.

## COMMON FONT

	00	10	20	30	40	50	60	70
00				0	1	2	3	4
01				5	6	7	8	9
02				A	B	C	D	E
03				F	G	H	I	J
04				K	L	M	N	O
05				P	Q	R	S	T
06				U	V	W	X	Y
07				Z	[	\	]	^
08				_	`	{		}
09				~				
0A								
0B								
0C								
0D								
0E								
0F								

## INTERNATIONAL FONTS (n=0)

	80	90	A0	B0	C0	D0	E0	F0
00								
01								
02								
03								
04								
05								
06								
07								
08								
09								
0A								
0B								
0C								
0D								
0E								
0F								

## PARALLEL INTERFACE – CN1

Pin	Sig	Pin	Sig
1	GND	8	D1
2	VCC	9	D2
3	NC*	10	D3
4	RS	11	D4
5	/WR	12	D5
6	/RD	13	D6
7	D0	14	D7(PBUSY)

\*Pin 3 can be changed to /RESET or PBUSY terminal by selection of Jumper JRB. RS is not used. Full specification available on request.

## SERIAL INTERFACE – CN2

Pin	Async. Sig	Description
1	VCC (5V)	Power Supply I/P
2	SIN	RS232 Data Input
3	GND	GND
4	SBUSY	Busy Output
5	NC	-
6	/RESET	Reset Input

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