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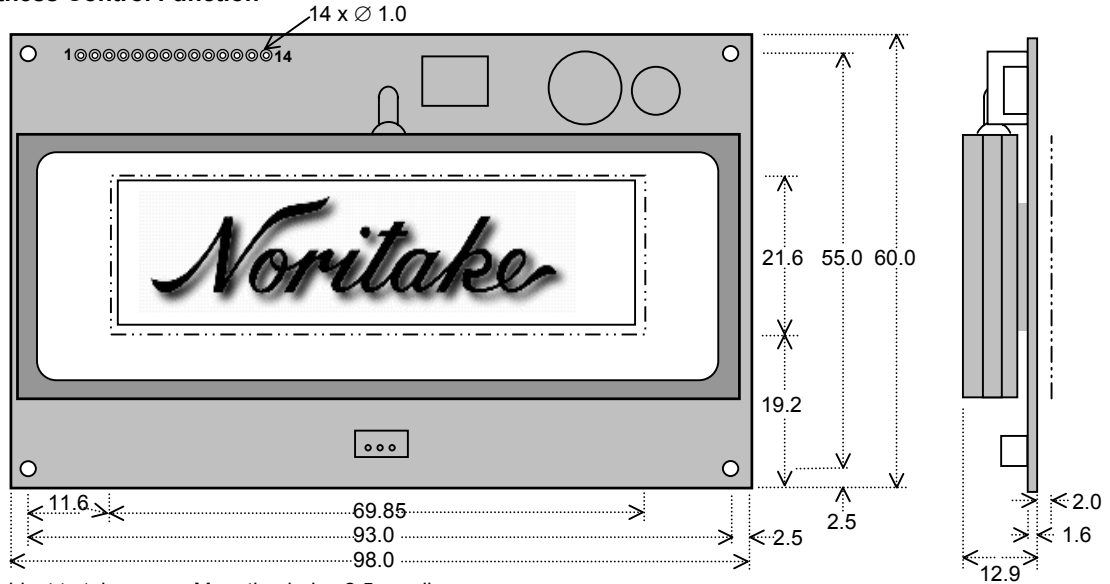
# 140x32 Dot Graphic VFD Module

# GU140x32F-7003

- ❑ Character Graphic ,Transformerless display
- ❑ Size compatible with U-Version
- ❑ Operating Temp -40°C to +85°C
- ❑ Single 5V Supply with Power Save Mode
- ❑ Smooth vertical/Horizontal scroll
- ❑ Proportional and scalable fonts
- ❑ CMOS sync & Async Serial interface
- ❑ Screen saver & window definition function
- ❑ 8 Level Brightness Control Function

The module includes the Vacuum Fluorescent Display glass, driver and micro-controller ICs with refresh RAM, character generator and interface logic. This module have CMOS Sync or asyn. Serial Interface.

The module can simultaneously display graphic pattern and / or characters on screen.



Dimensions in mm & subject to tolerances. Mounting holes 2.5mm dia.

## ELECTRICAL SPECIFICATION

Parameter	Symbol	Value	Condition
Power Supply Voltage	Vcc	6.0 VDC Max.	GND=0V
Power Supply Current	Icc	400mADC typ.	Vcc=5V
Logic High Input	V <sub>IH</sub>	0.8VCC min.	Vcc=5V
Logic Low Input	V <sub>IL</sub>	0.2VCC max.	Vcc=5V
Logic High Output	V <sub>OH</sub>	3.8VDC min.	I <sub>OH</sub> = -1.5mA
Logic Low Output	V <sub>OL</sub>	0.6VDC max.	I <sub>OL</sub> = 1.6mA

The power on rise time should be less than 50ms. The inrush current at power on can be 2 x Icc. The Icc current is 10mA maximum while in power down mode.

## OPTICAL and ENVIRONMENTAL SPECIFICATIONS

Parameter	Value
PCB size/Display area ( in mm)	98.0x60.0/ 69.85x21.61
Dot Size/Pitch (XxY mm)	0.35x0.53/ 0.50x0.68
Luminance	700 cd/m <sup>2</sup> (204 fL) Typ.
Color of Illumination	Blue-Green (Filter for more colors)
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

Instruction	Code
Character display	20H-FFH
Cursor set	1FH 24H xL xH yL yH
Display clear	0CH
Initialize display	1BH 40H
Specify International font	1BH 52H n
Vertical scroll mode	1FH 02H
Horizontal scroll mode	1FH 03H
Brightness level Setting	1FH 58H n
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

## Parallel interface connector

Pin	Sig	Pin	Sig
1	Gnd	2	Vcc
3	NC	4	RS
5	/W	6	/RD
7	D0	8	D1
9	D2	10	D3
11	D4	12	D5
13	D6	14	D7

## Serial Connector

Pin	Asyn. Sig	Syn. Sig
1	Vcc	Vcc
2	SIN	SIN
3	Gnd	Gnd
4	SBUSY	SBUSY
5	NC	SCK
6	/ RESET	/ RESET

## COMMON FONT

	2	3	4	5	6	7
x0H	00P'P	00P'P	00P'P	00P'P	00P'P	00P'P
x1H	11A0aa	11A0aa	11A0aa	11A0aa	11A0aa	11A0aa
x2H	22BRbr	22BRbr	22BRbr	22BRbr	22BRbr	22BRbr
x3H	33CScs	33CScs	33CScs	33CScs	33CScs	33CScs
x4H	44DTdt	44DTdt	44DTdt	44DTdt	44DTdt	44DTdt
x5H	55EUEu	55EUEu	55EUEu	55EUEu	55EUEu	55EUEu
x6H	66FVfv	66FVfv	66FVfv	66FVfv	66FVfv	66FVfv
x7H	77GWgw	77GWgw	77GWgw	77GWgw	77GWgw	77GWgw
x8H	88HXhx	88HXhx	88HXhx	88HXhx	88HXhx	88HXhx
x9H	99IYiy	99IYiy	99IYiy	99IYiy	99IYiy	99IYiy
xAH	AJZjz	AJZjz	AJZjz	AJZjz	AJZjz	AJZjz
xBH	BKkKk	BKkKk	BKkKk	BKkKk	BKkKk	BKkKk
xCH	CLlLl	CLlLl	CLlLl	CLlLl	CLlLl	CLlLl
xDH	DMmMm	DMmMm	DMmMm	DMmMm	DMmMm	DMmMm
xEH	ENnNn	ENnNn	ENnNn	ENnNn	ENnNn	ENnNn
xFH	FOoOo	FOoOo	FOoOo	FOoOo	FOoOo	FOoOo

## CHARACTER CODE (n=0)

	8	9	A	B	C	D	E	F
x0H	00P'P	00P'P	00P'P	00P'P	00P'P	00P'P	00P'P	00P'P
x1H	11A0aa	11A0aa	11A0aa	11A0aa	11A0aa	11A0aa	11A0aa	11A0aa
x2H	22BRbr	22BRbr	22BRbr	22BRbr	22BRbr	22BRbr	22BRbr	22BRbr
x3H	33CScs	33CScs	33CScs	33CScs	33CScs	33CScs	33CScs	33CScs
x4H	44DTdt	44DTdt	44DTdt	44DTdt	44DTdt	44DTdt	44DTdt	44DTdt
x5H	55EUEu	55EUEu	55EUEu	55EUEu	55EUEu	55EUEu	55EUEu	55EUEu
x6H	66FVfv	66FVfv	66FVfv	66FVfv	66FVfv	66FVfv	66FVfv	66FVfv
x7H	77GWgw	77GWgw	77GWgw	77GWgw	77GWgw	77GWgw	77GWgw	77GWgw
x8H	88HXhx	88HXhx	88HXhx	88HXhx	88HXhx	88HXhx	88HXhx	88HXhx
x9H	99IYiy	99IYiy	99IYiy	99IYiy	99IYiy	99IYiy	99IYiy	99IYiy
xAH	AJZjz	AJZjz	AJZjz	AJZjz	AJZjz	AJZjz	AJZjz	AJZjz
xBH	BKkKk	BKkKk	BKkKk	BKkKk	BKkKk	BKkKk	BKkKk	BKkKk
xCH	CLlLl	CLlLl	CLlLl	CLlLl	CLlLl	CLlLl	CLlLl	CLlLl
xDH	DMmMm	DMmMm	DMmMm	DMmMm	DMmMm	DMmMm	DMmMm	DMmMm
xEH	ENnNn	ENnNn	ENnNn	ENnNn	ENnNn	ENnNn	ENnNn	ENnNn
xFH	FOoOo	FOoOo	FOoOo	FOoOo	FOoOo	FOoOo	FOoOo	FOoOo

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