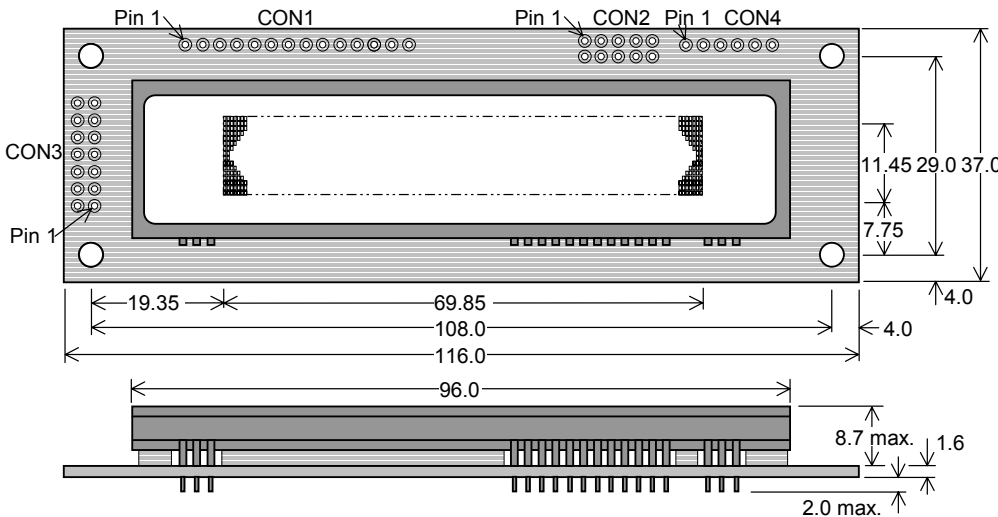


Dot Graphic VFD Module

GU140x16G-7806

- ❑ 140x16 Dot Graphic (2x20 characters)
- ❑ Single 5V Supply
- ❑ High Brightness Blue Green Display
- ❑ Operating Temp -40°C to +85°C
- ❑ 3 Multi Sized Fonts
- ❑ 4/8 Bit Parallel LCD & Serial Interfaces

The module includes the Vacuum Fluorescent Display glass, VF drivers and micro-controller ICs with refresh RAM, character generator and interface logic. The 4/8 bit parallel & serial bi-directional interfaces are 5V TTL/CMOS compatible. The command set is LCD compatible with extended graphic functions.



SERIAL INTERFACE-CON2

Pin	Async	SPI
1	5V	5V
2	NC	SCK
3	RXD	/SS
4	NC	SIN
5	0V	0V
6	NC	SOUT
7	TXD	NC
8	/RES	/RES
9	MB	MB
10	HB	HB

Dimensions in mm & subject to tolerances. Mounting holes 3.2mm dia.

NC = Do Not Connect

PARALLEL INTERFACE - CON1

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

* /RESET = Jumper J6.1 & J6.2
BUSY = Jumper J6.2 & J6.3

ELECTRICAL SPECIFICATION

Parameter	Symbol	Value	Condition
Power Supply Voltage	VCC	5.0VDC +/- 5%	GND=0V
Power Supply Current	ICC	250mADC typ.	VCC=5V
Logic High Input	VIH	0.8VDC min. Vcc max.	VCC=5V
Logic Low Input	VIL	0VDC min 0.6VDC 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

OPTICAL and ENVIRONMENTAL SPECIFICATIONS

Parameter	Value
Display Area (XxY mm)	69.85 x 11.45
Dot Size/Pitch (XxY mm)	0.35 x 0.575 / 0.5 x 0.725
Luminance	700 cd/m ² 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

Instruction	R/W	RS	D0-D7
Clear Display	L	L	01H
Cursor Return Home	L	L	02H
Entry Mode Set	L	L	04H-07H
Display ON/OFF	L	L	08H-0FH
Cursor Shift Left	L	L	10H
Cursor Shift Right	L	L	14H
Display Shift Left	L	L	18H
Display Shift Right	L	L	1CH
Select 4 bit interface	L	L	20H + optional luminance data
Select 8 bit interface	L	L	30H + optional luminance data
Set CG RAM Addr.	L	L	40H-7FH
Set DD RAM Addr.	L	L	80H-E7H
Read BUSY/Addr.	H	L	00H-FFH D7 Busy = High
Read Data from RAM	H	H	00H-FFH
Set Graphic Cursor	L	L	F0H + xpos + ypos
Set Area Commands	L	L	F1H + x1 + y1 + x2 + y2 + cmd
	L	H	where cmd 49H = Invert Area
	L	H	46H = Fill Area
	L	H	43H = Clear Area
	L	H	4FH = Set Outline Box
	L	H	6FH = Clear Outline Box
	L	H	+ others for graphic data write
Set Font / Spacing	L	L	F2H + font style
Set RS Low			0FH Serial Comms. only
Read Data			FEH Serial Comms. only
Read Cursor Position			FFH Serial Comms. only

CHARACTER SET

5x7 & 10x14 Font	LCD Font	International Font																																																																																																																																																																																																																																																													
00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F	10	11	12	13	14	15	16	17	18	19	1A	1B	1C	1D	1E	1F	20	21	22	23	24	25	26	27	28	29	2A	2B	2C	2D	2E	2F	30	31	32	33	34	35	36	37	38	39	3A	3B	3C	3D	3E	3F	40	41	42	43	44	45	46	47	48	49	4A	4B	4C	4D	4E	4F	50	51	52	53	54	55	56	57	58	59	5A	5B	5C	5D	5E	5F	60	61	62	63	64	65	66	67	68	69	6A	6B	6C	6D	6E	6F	70	71	72	73	74	75	76	77	78	79	7A	7B	7C	7D	7E	7F	80	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F	90	91	92	93	94	95	96	97	98	99	9A	9B	9C	9D	9E	9F	A0	A1	A2	A3	A4	A5	A6	A7	A8	A9	AA	AB	AC	AD	AE	AF	B0	B1	B2	B3	B4	B5	B6	B7	B8	B9	BA	BB	BC	BD	BE	BF	C0	C1	C2	C3	C4	C5	C6	C7	C8	C9	CA	CB	CC	CD	CE	CF	D0	D1	D2	D3	D4	D5	D6	D7	D8	D9	DA	DB	DC	DD	DE	DF	E0	E1	E2	E3	E4	E5	E6	E7	E8	E9	EA	EB	EC	ED	EE	EF	F0	F1	F2	F3	F4	F5	F6	F7	F8	F9	FA	FB	FC	FD	FE	FF

Mini Font

00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
20	21	22	23	24	25	26	27	28	29	2A	2B	2C	2D	2E	2F
30	31	32	33	34	35	36	37	38	39	3A	3B	3C	3D	3E	3F
40	41	42	43	44	45	46	47	48	49	4A	4B	4C	4D	4E	4F
50	51	52	53	54	55	56	57	58	59	5A	5B	5C	5D	5E	5F

The default font can be changed by J3. Other fonts can then be selected by software command.

FONT SELECTION

J3	Font
Open	LCD (default)
Link	International

SERIAL/PARALLEL SELECTION

J8	Interface
Open	Parallel (default)
Link	Serial

SERIAL MODE

J9	J10	Configuration
O	O	SPI / Clock Serial (def)
L	O	Async 9600,N,8,1
O	L	Async 19200,N,8,1
L	L	Async 38400,N,8,1

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