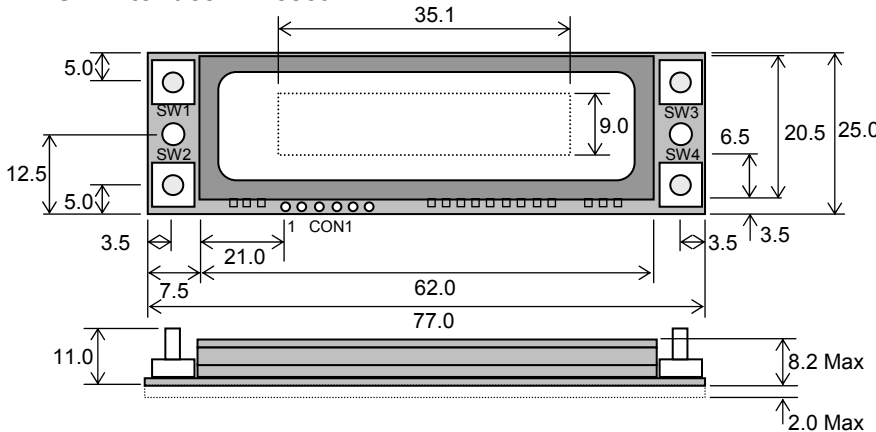


Graphic VFD Module

GU84x16D-K609A1

- **84 x 16 Dot Matrix + 4 switches** This compact high brightness VF display module provides a solution for ovens and control systems. The unique low profile onboard DC/DC convertor avoids using inductive components or electrolytic capacitors to enable a wide temperature range. 4 push button switches readable via the SPI interface.
- **Single 5V Supply**
- **High Brightness Display**
- **Wide Temperature +105°C**
- **SPI interface + /Reset**



CON1	
Pin	Signal
1	VCC
2	GND
3	Clock
4	Data OUT
5	Data IN
6	/RESET

Dimensions in mm.
Tolerances +/-0.1mm.
PCB is 1.6mm thick

ELECTRICAL SPECIFICATION

Parameter	Sym	Min	Typ	Max	Unit	Condition
Supply Voltage	Vcc	4.5	5.0	5.5	V	Vss=0V
Supply Current	Icc	-	200	250	mA	Vcc=5V All dots
Logic High Input	V _{IH}	3.7	-	Vcc	V	Vss=0V
Logic Low Input	V _{IL}	0	-	0.3	V	Vss=0V

ENVIRONMENTAL and OPTICAL SPECIFICATION

Parameter	Value
Display Area (XxY mm)	35.1 x 9.0
Dot Size/Pitch (XxY mm)	0.27 x 0.42/0.42 x 0.57
Luminance	2000 cd/m ² Typ
Colour of Illumination	Blue-Green (Filter for colours)
Operating Temperature	-40°C to +105°C - 4 hour peak
Storage Temperature	-40°C to +85°C - continuous
Operating Humidity (non condensing)	10 to 90% @ 25°C

SOFTWARE COMMANDS

Hex	Command
00-07	Display user defined 8x8 icon in EEPROM at cursor
08-0D	Display user defined 16x16 icon in EEPROM at cursor
10+	Position Cursor where top left = 0,0 (10, x, y)
11	Set Pixel On at Cursor
12	Clear Pixel at Cursor
13+	Fill Area, co-ordinates inclusive (13, tx, ty, bx, by)
14+	Clear Area, co-ordinates inclusive (14, tx, ty, bx, by)
15+	Invert Area, co-ordinates inclusive (15, tx, ty, bx, by)
16+	Draw boxed outline, co-ordinates inclusive (16, tx, ty, bx, by)
17+	Clear boxed outline, co-ordinates inclusive (17, tx, ty, bx, by)
18+	Set write mode (18, mode)
19+	Define icon (19, 00-07, n1, ... n8) or (19, 08-0D, n1, ... n32)
1A+	Graphic write (1A, n1, ... n168)
1C+	Set luminance (1C, 00-1F)
1D	Select 5x7 Font
1E	Select 10x14 Font
1F	Software reset
20-7F	Write ASCII Characters (5x7 font)
20-5F	Write ASCII Characters (10x14 font)

The module defaults to a 2 x 14 character display using the 5x7 font with single pixel spacing. The cursor position auto increments after each character write. The bottom left of a character is placed at the cursor x,y. Data is sent via synchronous SPI. For all data sent the data returned from the module on data OUT reflects the current state of the 4 switches (SW1 – 4 = D0 – 3). If required, an unused code (ie 0F) can be sent to get key data.

5X7 FONT

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
00																
10																
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	{	}	~		

10X14 FONT

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
00																
10																
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	[\]	^	_

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