
APPLICATION NOTE

VACUUM FLUORESCENT DISPLAY MODULE

AN-E-3165B



GRAPHIC DISPLAY MODULE

GP1049B01A INSTRUCTION MANUAL

GENERAL DESCRIPTION

FUTABA GP1049B01A is a graphic display module using a FUTABA 224×16 VFD.

It consists of a driver, a control circuit and power source.

The module can be connected directly to the bus line of the host system CPU.

Important Safety Notice

Please read this note carefully before using the product.

Warning

- The module should be disconnected from the power supply before handling.
- The power supply should be switched off before connecting or disconnecting the power or interface cables.
- The module contains electronic components that generate high voltages which may cause an electrical shock when touched.
- Do not touch the electronic components of the module with any metal objects.
- The VFD used on the module is made of glass and should be handled with care. When handling the VFD, it is recommended that cotton gloves be used.
- The module is equipped with a circuit protection fuse.
- Under no circumstances should the module be modified or repaired.
Any unauthorized modifications or repairs will invalidate the product warranty.
- The module should be abolished as the factory waste.

1. FEATURES

1-1. High quality and long life can be achieved with FUTABA VFD.

1-2. Display drivers are used for this module.

1-3. Driven through a simple interface.

1-4. High speed 8bits data write-in capability.

2. GENERAL SPECIFICATIONS

2-1. DIMENSIONS, WEIGHT (Refer to OUTER DIMENSION)

Table-1

Item	Specification	Unit
Outer Dimensions	(L) 625 ± 1.0	mm
	(W) 79.5 ± 0.4	
	(T) 43 Max.	
Weight	approx. 1400	g

2-2. SPECIFICATIONS OF THE DISPLAY PANEL

Table-2

Item	Specification	Unit
Display Area	559.7×51.7	mm
Number of Dots	224×16	Dot
Dot Pitch	2.5×3.25	mm
Dot Size	2.2×2.95	mm
Color Illumination	Green($\lambda_p=505\text{nm}$)	–
Luminance	300Typ.	cd/m ²

Note)

By using a filter, uniform color ranging from blue to orange (including white) can be obtained.

2-3. ENVIRONMENT CONDITIONS

Table-3

Item	Symbol	Min.	Max.	Unit
Operating Temperature	<i>T_{opr}</i>	0	60	°C
Storage Temperature	<i>T_{stg}</i>	-20	+70	°C
Operating Humidity	<i>H_{opr}</i>	20	80	%
Storage Humidity	<i>H_{stg}</i>	20	90	%
Vibration (10 ~ 55Hz)	–	–	2	G
Shock	–	–	40	G

Note) Avoid operations and or storage in moist environmental conditions.

2-4. ABSOLUTE MAXIMUM RATINGS

Table-4

Item	Symbol	Min.	Max.	Unit
Supply Voltage	Vcc1	-0.5	7.0	Vdc
	Vcc2	-0.5	28.8	Vdc
Input Signal Voltage	V _{IS}	0.5	Vcc1+0.3	V

2-5. RECOMMENDED OPERATING CONDITIONS

Table-5

Item	Symbol	Min.	Typ.	Max.	Unit
Supply Voltage	Vcc1	4.5	5.0	5.5	Vdc
	Vcc2	21.6	24.0	26.4	Vdc
H-Level Input Voltage	V _{IH}	2.2	–	–	V
L-Level Input Voltage	V _{IL}	–	–	0.8	V

2-6. ELECTRICAL CHARACTERISTICS

Table-6

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Supply Current (Note 1)	I _{cc1}	Vcc1=5.0Vdc Vcc2=24.0Vdc All on	–	0.1	0.15	A
	I _{cc2}		–	1.2	1.5	A
Power Consumption	–		–	29.3	36.8	W
Luminance	L		150	300	–	cd/m ²
H-Level output Voltage	V _{OH}	Vcc1=4.5Vdc I _{OH} =-2mA	3.8	–	–	V
L-Level output Voltage	V _{OL}	Vcc1=4.5Vdc I _{OL} =3.2mA	–	–	0.4	V

Note 1) The surge current can be approx.5 times the specified supply current at power on.

6. CIRCUIT BLOCK DIAGRAM

